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COMMISSION FOR SYNOPTIC METEOROLOGY

ABRIDGED FINAL REPORT
OF THE
THIRD SESSION

Washington, 26 March - 19 April 1962

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LIST OF REPRESENTATIVES ATTENDING THE SESSION

1. Officers of the session

P.H. Kutschenreuter	president
S.N. Sen	vice-president

2. Representatives of Members of WMO

R.A.E. Holmes	principal delegate	Australia
G.T. Rutherford	delegate	
L. Dufour	principal delegate	Belgium
G. Doumont	delegate	
P.D. Devuyst	delegate	
L.R. Ratisbona	principal delegate	Brazil
F.P. Alves	delegate	
J.P. Henderson	principal delegate	British East African Territories, including the Seychelles
F.W. Benum	principal delegate	Canada
R.R. Dodds	delegate	
E.B. Humphrey	delegate	
W.C. Shen	principal delegate	China
L. Lysgaard	principal delegate	Denmark
S.N. Venho	principal delegate	Finland
L. Vuorela	delegate	
P. Leclercq	principal delegate	France
R. Mittner	delegate	
A. Durget	delegate	
H. Ribault	delegate	
H.K. Meyer	principal delegate	Germany, Federal Republic of
P. Wüsthoff	delegate	
W. Buschner	delegate	
G. Georgoutsos	principal delegate	Greece
T. Keladinos	delegate	
F. Dési	principal delegate	Hungary
M. Mohácsi	delegate	
C. Ramaswamy	principal delegate	India
S.N. Sen	delegate	
W.E. Sijatauw	principal delegate	Indonesia
T. Fattah	principal delegate	Iraq
M.G. Granville	principal delegate	Ireland
Y.L. Tokatly	principal delegate	Israel
D. Montanari	principal delegate	Italy
M. Montalto	delegate	

N. Nishina	principal delegate	Japan
C. Cook	principal delegate	Korea
K. Kim	delegate	
K.R. Postma	principal delegate	Netherlands
C.G.C. Schütte	delegate	
W.R. Dyer	principal delegate	New Zealand
P. Thrane	principal delegate	Norway
S. Rafalowski	principal delegate	Poland
T.R. do Espiroto Santo	principal delegate	Portugal
C. Sorodoc	principal delegate	Rumania
R.M. Al-Rumaih	principal delegate	Saudi Arabia
J.J. le Roux	principal delegate	South Africa
F. Huerta	principal delegate	Spain
O. Lönnqvist	principal delegate	Sweden
R. Schäffer	delegate	
J. Häfelin	principal delegate	Switzerland
R. Schneider	delegate	
B. Mahmandar	principal delegate	Syria
S. Buspabutr	principal delegate	Thailand
P. Soontarotok	delegate	
H. Bel Hadj Ali	principal delegate	Tunisia
U. Çölaşan	principal delegate	Turkey
M. Inan	delegate	
K.T. Logvinov	principal delegate	Union of Soviet Socialist Republics
A.D. Tchistyakov	delegate	
I.S. Nikolaev	delegate	
V.D. Karmanov	delegate	
M.K. Naguib	principal delegate	United Arab Republic
V.R. Coles	principal delegate	United Kingdom
J.A. Burnett	delegate	
J. Harding	delegate	
L.H. Starr	delegate	
E.M. Vernon	principal delegate	United States of America
S.R. Barbagallo	delegate	
C.G. Reeves	delegate	
L.W. Snellman	delegate	
W.R. Franklin	adviser	
W.C. Huyler	adviser	
G.G. Sink	adviser	
A.W. Goldbrunner	principal delegate	Venezuela
O. Coronel	delegate	

3. Observers from international organizations

(a) Inter-governmental organizations

G.J.W. Oddie	International Civil Aviation Organization
R. Froom	International Telecommunication Union

(b) Other organizations

L.R. Ulrich	International Air Transport Association
J. Namias	International Council of Scientific Unions
J. Namias	International Union of Geodesy and Geophysics

4. Other participants

D.M. Hanson	Chairman, CSM Satellite Working Group
A.H. Nagle	Commission for Aeronautical Meteorology
A.E. Sik	Commission for Maritime Meteorology

5. Secretariat of the session

K. Langlo	executive secretary	WMO Secretariat
N. Leonov	technical secretary	WMO Secretariat
G. Weiss	technical secretary	WMO Secretariat
R. Mathieu	technical secretary	WMO Secretariat
D.H. Daniels	conference officer	
J.K. Bishop	press officer	
J.G. Nyhan	press officer	
M.J. Scanlon	administrative officer	
G. Hatzenbuhler	special events officer	
W.T. Chapman, Jr.	exhibits officer	
T.H. Leon	language services officer	
A.E. duBois	deputy language services officer	
I.E. Scher	documents officer	
E.C. McAllister	deputy documents officer	
M. Rhine	registration and information officer	
E.C. Holscher	assistant registration and information officer	

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GENERAL SUMMARY OF THE WORK OF THE SESSION

ORGANIZATION OF THE SESSION

At the invitation of the Government of the United States of America, the third session of the Commission for Synoptic Meteorology was held in Washington, D.C. from 26 March to 19 April, 1962. The meetings took place in the International Conference Suite of the State Department Building where excellent facilities and experienced conference staff were at the disposal of the Commission. Simultaneous interpretation in English and French was provided at plenary meetings and similar arrangements were made for the committee meetings.

The session was chaired by the president of the Commission, Mr.Paul H.Kutschenreuter. The vice-president was Dr. S.N. Sen, who chaired one of the working committees.

1. OPENING OF THE SESSION (Agenda item 1)

The president declared the third session of the Commission open at 3.00 p.m. on 26 March 1962. In welcoming the delegates and guests on behalf of the United States, Mr. Harlan Cleveland, Assistant Secretary of State for International Organization Affairs, pointed out that the first international conference in which the United States participated was the Meteorological Conference in Brussels in 1853. Mr. Cleveland went on to say that it was gratifying to see that the same ten nations which participated in the Brussels meeting - and many more - were represented at the third session of CSM. The fact that men of different backgrounds and nationalities have been working together successfully for more than 100 years is not just an example of a sentimental fact, but it is also a demonstration of a basic reason for international co-operation - a real and recognized need on the part of many nations, a need which cannot be met except through such co-operation.

Mr. Cleveland concluded by pointing out some of the scientific advances in the field of meteorology since that Brussels meeting - such as meteorological satellites, unmanned atomic-powered weather stations and communications satellites. The progress in science must be matched by the building of international institutions.

Mr. D.A. Davies, Secretary-General of WMO, thanked the United States for providing such excellent facilities for the third session of the Commission. He thanked the Department of State and the Weather Bureau for providing the assistance so necessary to the successful conduct of the meeting.

The Secretary-General expressed gratification for the broad representation at the meeting, especially that from the newly-independent countries. He wished the Conference success in the achievement of its goals.

Dr. F.W. Reichelderfer, Chief of the U.S. Weather Bureau, welcomed the delegates and associates on behalf of the Secretary of Commerce and the Weather Bureau. He stated that the meteorological community has always been characterized by personal congeniality, and that not the least of the rewards in participating in these international conferences is the opportunity to renew personal acquaintances.

Dr. Reichelderfer said that many of us need to be reminded of the vast amount of data required in meteorology for the achievement of its goals. The space age not only gives us the prospect for large amounts of new data, but has been accompanied by new data processing technology. Meteorology indeed occupies a front seat in the arena of the space age.

Finally, the president thanked the previous speakers for their comments and good wishes.

He stated that much of the concern of the Commission for Synoptic Meteorology cuts across the concerns of other commissions. CSM must provide for the regular interchange of meteorological data which, in addition to meeting the requirements of synoptic meteorologists, must also meet the requirements of the aeronautical meteorologist, the climatologist and the research meteorologist as well.

Mr. Kutschenreuter pointed out to the Commission the challenge of the space age, both its new potential and its new problems. He extended a hearty welcome to the new members of the CSM, and especially to those present at the Commission.

Attendance at the session

There were 90 participants at the session. These included representatives from 40 Members and observers from five international organizations. Furthermore, upon invitation from the president of CSM, the chairman of the Working Group on the Synoptic Use of Meteorological Data from Artificial Satellites, and representatives of CAeM and CMM also attended the session.

The Secretary-General of WMO, Mr. D.A. Davies, was present at part of the session. The representative of the Secretary-General, Dr. K. Langlo, was designated executive secretary and the WMO Secretariat was further represented by Dr. N. Leonov, Dr. G. Weiss, and Mr. R. Mathieu. A complete list of participants is given at the beginning of this report.

2. CONSIDERATION OF THE REPORT ON CREDENTIALS (Agenda item 2)

At the second plenary meeting the representative of the Secretary-General presented a provisional list of individuals present and the capacities in which they were attending the session. This list was accepted as the first report on credentials and it was consequently decided not to set up any credentials committee.

3. ADOPTION OF THE AGENDA (Agenda item 3)

The provisional agenda was adopted at the second plenary meeting without amendments. The final agenda is given at the beginning of this report, together with a list of relevant documents and decisions.

4. ESTABLISHMENT OF COMMITTEES (Agenda item 4)

4.1 Working Committees

The following three working committees were set up to examine in detail the various items of the agenda :

(a) Committee A to deal mainly with code questions. Mr. F.W. Benum (Canada) served as chairman, Dr. H.K. Meyer (Germany) as vice-chairman, and Mr. R. Mathieu (WMO Secretariat) as technical secretary of this committee.

(b) Committee B to deal with telecommunication questions. Mr. P. Leclercq (France) served as chairman, Mr. S.R. Barbagallo (U.S.A.) as vice-chairman, and Dr. G. Weiss (WMO Secretariat) as technical secretary of this committee.

(c) Committee C to deal with the remaining questions (general). Dr. S.N. Sen (India) served as chairman, Mr. L. W. Snellman (U.S.A.) as vice-chairman, and Dr. K. Langlo and Dr. N. Leonov (WMO Secretariat) as technical secretaries of this committee.

4.2 Nomination committee

In accordance with General Regulation 22, a Nomination Committee was established consisting of Messrs. M. K. Naguib (U.A.R.), A. D. Tchistyakov (U.S.S.R.), L. R. Ratisbona (Brazil), F. W. Benum (Canada), W. R. Dyer (New Zealand) and P. Leclercq (France).

4.3 Co-ordination committee

In accordance with General Regulation 26, a Co-ordination Committee was set up consisting of the president, the chairman of the three working committees, the representative of the Secretary-General, and representatives of the conference secretariat.

4.4 Other committees

A number of ad hoc committees was established during the session, both by the Commission and by the working committees, in particular for the purpose of proposing names of experts to serve on the various working groups (item 18) and to deal with the question of revision of previous CSM decisions (item 19). The Commission did not establish a drafting committee but requested each of the working committees to present its findings in final form for adoption by plenary. The reports of the working committees were presented in the form of a proposed text for inclusion in the general summary of the work of the session with attached draft resolutions and recommendations.

5. REPORT BY THE PRESIDENT OF THE COMMISSION (Agenda item 5)

When presenting his report the president invited attention to the fact that it touched only briefly on the highlights of the activities over the past four years, since details of these matters had already been covered in his reports to the Executive Committee, which had been circulated to members of the Commission. Developments subsequent to the president's report to the thirteenth session of the Executive Committee, however, not having as yet been included in a report to the Commission, were treated in more detail.

It was pointed out that the Commission membership now totaled 117, representing 74 Members, and that the quorum for the session, in accordance with General Regulation 152, therefore was 25 Members.

Noting that any items in the report requiring action by the Commission would be brought up under other agenda items, the Commission accepted the report with appreciation and agreed that action on agenda item 5 was completed.

6. REPORTS BY CHAIRMEN OF WORKING GROUPS ESTABLISHED BY THE COMMISSION (Agenda item 6)

6.1 Working Group on the Definition of Terms used to Describe the Intensity of Meteorological Phenomena (Agenda item 6.1)

The Commission noted with appreciation the report presented by the working group. Appropriate action on this report was taken under agenda item 7.6.

6.2 Working Group on Pressure Reduction Methods (Agenda item 6.2)

The Commission noted with appreciation and great interest the report presented by the working group. Appropriate action on this report was taken under agenda item 7.7.

6.3 Working Group on Code Problems (Agenda item 6.3)

The Commission noted with appreciation the valuable work carried out by the working group and the proposals established during the session held in Toronto in January 1962. The questions arising from this report are dealt with under agenda item 8.

6.4 Working Group on Networks (Agenda item 6.4)

The Commission noted with appreciation the report of the working group on networks. This report was considered in detail under agenda item 9.8.

6.5 Working Group on Telecommunications (Agenda item 6.5)

The Commission noted with appreciation the report submitted by the chairman of the working group and expressed its satisfaction with the important work which has been done. The technical questions indicated in the report were examined together with the report of the second session of the working group (Paris, April 1961) under agenda item 10.

6.6 Working Group on Isotherm Analysis and Isotherm, Stream-Line and Isotach Prognostic Techniques in the Tropics (Agenda item 6.6)

The Commission noted that this working group, due to various handicaps, had not been able to make much progress with the work assigned to it. Action on the report of the working group was taken under agenda item 11.9.

6.7 Working Group on the Guide to Synoptic Meteorological Practices (Agenda item 6.7)

The Commission expressed its satisfaction for the very comprehensive "Provisional Guide to the Preparation of Synoptic Weather Charts and Diagrams" prepared by the working group and the excellent results achieved in spite of the fact that all the work had to be done by correspondence. Details concerning the action taken on this report by the Commission are given in the paragraphs concerning agenda item 11.8.

6.8 Working Group on the Synoptic Use of Meteorological Data from Artificial Satellites (Agenda item 6.8)

This working group met immediately prior to the third session of the Commission and presented a very valuable report to the Commission. The report was noted with appreciation and appropriate action on the report was taken under agenda items 7.8, 10.6.12 and 10.6.18.

6.9 Working Group on the Forecasting of Hail, Turbulence in Clear Air and in Cloud, Icing and Dense Cirrostratus Clouds (Agenda item 6.9)

The Commission noted with appreciation the work done by the group and agreed that as the results were now available in WMO Publication No.109, TP. 47, no further action was required under this agenda item.

7. OBSERVATIONAL REQUIREMENTS FOR SYNOPTIC METEOROLOGY (Agenda item 7)

7.1 Standards required for meteorological observations in the field of synoptic meteorology (Agenda item 7.1)

7.1.1 The discussion of this item was based on the comprehensive document presented by the vice-president of CSM and also on the relevant proposals made by other technical commissions.

The Commission agreed to specify the accuracies listed in Annex I as those required for synoptic meteorology with the understanding that these requirements should be considered

as guidance material only at this stage. As requested by CIMO the accuracies in Annex I have been given in terms of the interval within which the error should fall in 95 per cent of all cases; i.e., an interval equal to twice the standard deviation interval. The reason for choosing this interval is that the accuracy requirement stated in this way will correspond closely to the non-statistical terms used by some other commissions. As guidance to CIMO the time interval during which the mean value is to be obtained has also been specified in Annex I.

7.1.2 It was found that in addition to the elements listed in Annex I there were certain elements such as soil temperature and duration of sunshine which were of some interest to synoptic meteorology, but it was agreed that at the present time CCl and CAgM would be the proper bodies to specify accuracy requirements for such elements.

7.1.3 The Commission considered that it would be desirable to prepare a synthesis of the accuracy requirements stated by the various technical commissions for the purpose of achieving uniformity in these requirements as far as possible since in a number of cases the observations or measurements are used for various purposes. Since this question is of interest to several commissions it was suggested that it could appropriately be discussed at the next meeting of presidents of technical commissions.

7.2 Visibility (Agenda item 7.2)

The Commission noted that no changes had occurred since the second session of the Commission in the visibility reporting procedures used by Members, i.e. while a majority of Members reports minimum visibility, a substantial minority reports "visibility index." In pursuance of Recommendation 15 (CSM-II) certain Members had carried out tests to determine the accuracy of estimates of visibility and the frequencies of occurrences of directional differences of visibility but did not achieve any positive results due to the lack of precision of taking visibility observations. Taking these tests into account and noting that no evidence of serious confusion due to the simultaneous use of the two different reporting methods was presented to the session, the Commission felt that no further action was needed on this matter at present.

The Commission noted a statement by the ICAO observer inviting attention to Recommendation 28 (CAeM-I/MET IV) to the effect that there was a standing aviation requirement for full international uniformity on the reporting of visibility. In view of this, the Commission would welcome every effort made by Members for improving the technique of measuring visibility and for further study on directional differences of visibility. On the basis of such developments and on further experience of Members, the Commission could reconsider at a future session the question of uniformity in the reporting of visibility.

7.3 Definition of gust (Agenda item 7.3)

The Commission examined the results of the tests carried out by Members in accordance with Recommendation 77 (CSM-II) as approved by the Executive Committee in its Resolution 21 (EC-X). It concluded that the criteria for reporting gusty wind proposed in Recommendation 77 (CSM-II) were not fully satisfactory since there were practical difficulties in reporting gusty wind in strict conformity with those criteria; further studies are required before better guidance could be given. The Commission wished to reaffirm the opinion expressed at the second session of the Commission that the reporting of gusty wind in synoptic reports is of limited use for synoptic meteorology. It further considered that since information on gusty wind is mainly provided for aeronautical purposes it could be left to the Commission for Aeronautical Meteorology, in co-operation with the appropriate bodies of ICAO, to study the matter further.

7.4 Criteria for reporting squalls (Agenda item 7.4)

The Commission examined a summary of the relevant information received from Members in response to Recommendation 78 (CSM-II) and noted that Members are using various practices for reporting squalls. For the purpose of achieving greater uniformity, the Commission developed criteria for reporting squalls which are recommended for general use (see Recommendation 1 (CSM-III).

The Working Group on Codes was requested to examine these criteria and prepare appropriate notes to code 4677 (ww - Present weather) of WMO Publication No.9 TP. 4, Volume B, and consider any revision of specification for ww = 18.

The Commission considered that the present ww 18 should normally relate to squalls at the station but when squalls are observed from their effect on water surfaces, provision should exist for reporting squalls "at a distance".

7.5 Standard isobaric surfaces (Agenda item 7.5)

The Commission noted that there exist certain regional association agreements for reporting data for constant pressure surfaces above 100 mb, but there is no uniformity with regard to the selection of surfaces for which data should be reported. It considered that a world-wide uniform procedure for reporting data for surfaces above 100 mb should be established as a recommended practice. In this connexion the Commission agreed that an appropriate new paragraph should be included in the Technical Regulations after paragraph 7.4.1.2 and a new Note be added to FM 35.B in WMO Publication No.9. TP. 4. The relevant conclusions of the Commission are incorporated in Recommendation 2 (CSM-III).

The Commission further examined under this item the desirability of adding to the existing standard isobaric surfaces, an additional surface between 1000 and 850 mb. It was unanimously recognized that for various computation purposes, such as divergence computations, it would be desirable to exchange data for such an isobaric surface. However, it was considered premature to make any definite decision on this point at present because (1) there is no general requirement for these data for operational purposes and (2) the precise requirements for research purposes have not been definitely established.

7.6 Decisions taken by the Working Group on the Definition of Terms used to Describe the Intensity of Meteorological Phenomena (Agenda item 7.6)

The Commission examined the report presented by the working group and agreed, with minor modifications, to the quantitative criteria for describing the intensity of precipitation proposed by the working group. The agreed criteria are given in Annex II and were also referred to the re-established Working Group on Codes for the purpose of making the necessary provisions for reporting the intensity of precipitation in code 4677.

The Commission noted the suggestion by the working group that the information on the "Intermittent" and "Continuous" character of precipitation may be included under past weather W, by combining rain or drizzle or snow under one code figure for W. The Commission considered that it is desirable to have information on "Intermittent" and "Continuous" character and also to have complete information in regard to rain, or drizzle or snow, under the code for W. In case both of these requirements cannot be satisfied within the code specification, information on "Intermittent" or "Continuous" may be excluded.

The Commission agreed that the presidents of other technical commissions concerned should be invited to send their comments on the above criteria to the president of the Commission for Synoptic Meteorology.

In order to facilitate the proper reporting of intensities of precipitation it would be necessary to develop appropriate instruments and methods of making quantitative estimates of precipitation intensities over the specified ten-minute intervals. The Commission agreed

that CIMO should be requested to develop such instruments and methods, taking into account the criteria given in Annex II and bearing in mind that such instruments, as far as practicable, should be as inexpensive as possible, simple to maintain and to operate.

The Commission finally decided in Resolution 1 (CSM-III) to re-establish the Working Group on Definition of Terms used to Describe the Intensity of Meteorological Phenomena for the purpose of continuing and completing the work assigned to the group.

7.7 Decisions taken by the Working Group on Pressure Reduction Methods (Agenda item 7.7)

The Commission examined the report presented by the Working Group on Pressure Reduction Methods and additional suggestions submitted by Members. It was agreed that greater uniformity in the pressure reduction methods used by Members was highly desirable but the Commission was unable to agree on any specific method to achieve this aim. Some members considered that the recommended methods were rather complicated and expressed the view that further studies be made in order to develop acceptable simple reduction methods for low-level stations, say up to 100 or 200 metres above sea level. Although it was considered premature to include the methods recommended by the working group in the Technical Regulations or in an appropriate Guide, the Commission recognized the value of the report as guidance material for Members, and recommended that the report be published as a WMO Technical Note. Before publishing the Technical Note the Secretary-General should invite the chairman of the working group to consider the inclusion of the proposals submitted by the United Arab Republic (CSM-III/Doc. 50) as an appendix to the Technical Note. Recommendation 3 (CSM-III) was adopted.

7.8 Decisionstaken by the Working Group on the Synoptic Use of Meteorological Data from Artificial Satellites (Agenda item 7.8)

7.8.1 During the discussion of this item several delegations expressed their appreciation to the United States of America for the great and continuing efforts to advance the science of meteorology by means of meteorological satellites. The Commission warmly endorsed these appreciations.

The Commission reviewed the various aspects of synoptic uses of meteorological satellites on the basis of the report submitted by the working group. It was agreed that satellite cloud data had already been demonstrated to be a valuable contribution to synoptic analysis and it was considered that for the next few years cloud data would probably continue to be of great importance. The Commission agreed that WMO should assist in making better known the usefulness of satellite data for synoptic meteorology and also in arranging training seminars on the techniques used in preparation of nephanalyses and in the interpretation of cloud photographs and nephanalyses for purposes of synoptic analyses and forecasting. These decisions are incorporated in Recommendation 4 (CSM-III).

7.8.2 The Commission decided that a mapped or pictorial form of some type was best suited for the international exchange of satellite cloud data. The most desirable form for both broad-scale and local analysis is considered to be photos or photomosaics with latitude and longitude grids and explanatory notes added. However, the wide-band telecommunication channels required for this are not yet available.

Pending the establishment of international capability for transmitting photographs, the dissemination of nephanalyses via facsimile is considered most suitable. In facsimile nephanalyses, much of the broad-scale synoptic usefulness is retained, but some of the detail will probably be lost.

It is likely to be some time before every potential user of cloud data has the capability of facsimile reception. Therefore coded nephanalyses should continue to be transmitted on teletypewriter networks. Coded nephanalyses have the disadvantage of requiring

the additional processing-encoding and decoding.

Action on the above telecommunication questions was taken under agenda items 10.6.12 and 10.6.18.

With regard to the code problems involved the Commission noted that the U.S.A. has developed formats for the facsimile nephanalyses, and codes for coded nephanalyses. It further noted that the principle guiding such development has been to disseminate the maximum amount of useful information within the limitations of existing communications facilities. These codes and formats were considered quite satisfactory at this time and the Commission had no suggestions for improvement.

7.8.3 With regard to the question of meteorological requirements of Members for satellite data, the Commission considered that in view of the rapid development of meteorological satellites it was difficult at the present stage to establish precise world-wide requirements. It was agreed that the area coverage required by each user could most appropriately be determined by the Member concerned and by the regional associations. In this connexion several delegates expressed the view that, in general, satellite data would be particularly useful for oceanic areas. With regard to frequency of satellite observations for any given area and the elapsed time from observation to receipt of the user, the Commission agreed to the recommendation of the working group that the desirable minimum frequency of observation over any given area for general synoptic purposes should be every six hours and within three hours of the actual observation.

7.8.4 The Commission decided to re-establish the Working Group on the Synoptic Use of Meteorological Satellite Data for the purpose of studying and preparing advice on the various requirements of synoptic meteorology for present and expected satellite data (see Resolution 2 (CSM-III).

7.9 The problem of definition of dust haze, mist and fog (Agenda item 7.9)

The Commission had a lengthy discussion on this item, in particular on the question of the definitions of fog and mist, following the decision of the Commission at its second session in Recommendation 9 and 71 (CSM-II).

The Commission noted that there is no complete uniformity in the reporting procedures for mist and fog used by Members. It was agreed that it would be desirable to obtain from Members up-to-date information on the visibility criteria used for reporting mist and fog and also their views on the question whether mist and fog should be considered as one and the same hydrometeor. The Secretary-General was invited to undertake such an inquiry with Members in consultation with the president of CSM. The Commission requested the president of CSM, if necessary by calling upon the services of a specialist on these questions, to present a report not later than six months prior to the fourth session of the Commission. This report should include recommendations on criteria to be used universally for reporting mist and also proposals for appropriate revision, as may be necessary, of the definitions of mist and fog now appearing in the International Cloud Atlas. Action on reporting haze has been taken under agenda item 7.6 (see Resolution 1 (CSM-III).

8. CODE MATTERS (Agenda item 8)

8.1 Code forms for land/sea and sea/land exchanges - Revision of paragraphs 5.1.1.1 and 5.1.1.2 of the Technical Regulations (Agenda item 8.1)

The Commission first considered whether paragraph 5.1.1.2 of the Technical Regulations should be kept in addition to paragraph 5.1.1.1. It was considered that the general

expression of "meteorological messages exchanged for international purposes" does not preclude the messages transmitted from and to ships and that it was therefore not necessary to maintain paragraph 5.1.1.2.

It was also pointed out that the notes under FM 23.B-SHRED, in Volume B, authorize certain ships to report in plain language if the use of the code is impracticable and that Chapter 10 of the Technical Regulations specifies that certain parts of weather bulletins for shipping are transmitted in plain language. In order to remove any possible inconsistencies in this respect a new wording was proposed for paragraph 5.1.1.1 in Recommendation 5 (CSM-III).

The Commission expressed no opinion about paragraph (2) of the operative part of Recommendation 3 (CMM-III) which was considered to be a purely CMM matter.

8.2 Units used in international exchanges of meteorological reports (Agenda item 8.2)

The Commission considered the request of the Third Congress that the technical commissions should consider and recommend the necessary changes in the Technical Regulations, guides and codes which would be necessitated by Resolution 30 (Cg - III).

The Commission, in considering recommended changes in Chapter 1, Part A, Volume B of Publication No. 9, had no difficulties in following the directive regarding the Celsius degree and metric units except in respect to wind speed. Resolution 30 (Cg-III) does not make specific reference to wind speed. Some Members are convinced that the resolution, in specifying the metric system of units, automatically rules that wind speeds shall be reported in metres per second. Other Members are equally convinced that a change in the approved unit of wind speed, which is now the knot, was not intended by Congress.

At its 44th Session, ICAO Council expressed the view that there is an aeronautical requirement to retain reporting procedures and codes for surface and upper-air wind speeds which permit their direct use (without conversion) in terms of knots. A number of Members, who are also contracting States of ICAO, would find it impossible to meet this requirement of ICAO and at the same time use metres per second as the unit of wind speed in coded meteorological messages. The Commission, by adopting Recommendation 6 (CSM-III), requested the Executive Committee to take steps to resolve this conflict with a view to the universal use of metres per second as the unit for reporting surface and upper-air wind speeds in international exchanges for synoptic, aeronautical and other purposes.

A list of recommended changes to the Technical Regulations and to Volume B of WMO Publication No. 9 is given in Recommendation 7 (CSM-III).

8.3 Report of the Executive Committee Working Group on the Beaufort Scale (Agenda item 8.3)

The three recommendations of the Executive Committee Working Group on the Beaufort Scale were considered to be generally acceptable to the Commission.

The Commission noted with interest that there is still some doubt about the wind-speed equivalents for certain Beaufort numbers and that CMM recommends postponing any alteration in the Beaufort scale until its fourth session, pending further experiments on the matter (see Recommendation 12 (CMM-III). Bearing in mind the far-reaching effects of changes of the Beaufort wind-speed equivalents, CSM strongly requests that any revised scale should not be adopted until CMM has scientific evidence that the entire revised scale is more satisfactory than the current scale and is likely to withstand the test of time.

8.4 Decisions taken by the Working Group on Code Problems at its first session (Agenda item 8.4)

8.4.1 General matters (Agenda item 8.4.1

The Commission recommended that, as far as possible, the revised codes approved by the session be implemented as from 1 January 1964. In adopting Recommendation 13 (CSM-III) the Commission emphasized the urgency attached to the implementation of the revised PILOT and TEMP code forms.

8.4.1.1 Notes in Volume B

The Commission examined the possibility of complying with the Congress directive (paragraph 5.8.1.9 of the general summary of the work of Third Congress) and decided that, without a complete rewriting of the notes in Part A, Chapter I, Volume B, it is not possible to separate standard practices therein from the other material. A complete rewrite of the notes was not practicable in the time available at the session.

The Commission recommended progressive revision of Part A, Chapter I to include the separation of standard practices from the remainder of the notes, but recognized that this will be a lengthy and formidable task. The Commission recognized the need to avoid confusion between the present notes and the reworded text and recommended that a new format be adopted to be followed in all future changes to Part A of Chapter I. The notes to code forms and specifications, recommended for revision during the session, have been redrafted in the new format. A progressive revision of the notes in Volume B will continue to be made by the Working Group on Codes.

To meet present conditions the Commission recommended that a suitable introduction be inserted in Part A, Chapter I, Volume B and that suitable references to this be inserted in the general introduction to Volume B and in the introduction to the Technical Regulations. Recommendation 8 (CSM-III) was adopted.

8.4.1.2 Introduction of new units and codes

The Commission, in considering the request of the Commission for Maritime Meteorology that future changes in units and codes affecting the data which have to be entered on the international maritime meteorological punch-card should always become effective on the first of January, decided to recommend that all code changes should be effected on that date as a matter of principle. At the same time it was recognized that special codes designed to meet the needs of user-interests may have to be introduced on other dates as a matter of expediency. Recommendation 9 (CSM-III) was adopted.

8.4.1.3 Use of Beaufort numbers to report wind speed

The Commission considered Resolution 8 (CMM-III) in which the deletion of Beaufort numbers 13 to 17 in Code 1100 is proposed, with corresponding changes to code figures 2, 3 and 4 for T_1 in code 3940. The Commission agreed that as Beaufort numbers above 12 lack descriptive terms and specifications, the CMM proposal was a sound one and therefore adopted Recommendation 10 (CSM-III).

8.4.1.4 Recommendations of the Symposium on Tropical Meteorology in Africa (Nairobi - December 1959)

The Commission studied Recommendations 9 and 10 of the Symposium on Tropical Meteorology in Africa held at Nairobi in December 1959.

It was decided that no action was necessary on Recommendation 9 dealing with nephoscope observations. There is no coding problem involved in this recommendation, as the NEPH coding procedure is already laid down.

Recommendation 10 of the symposium asking that consideration be given to the inclusion in the SYNOP code form on a regional basis of information on convective processes needed for forecasting in the tropics was but one of several requests for similar amendments to the SYNOP code form for use not only within the tropics but elsewhere. It was decided that a piecemeal solution of the problem raised by the symposium was not acceptable, and that the more general problem of the SYNOP code form should be referred to the Working Group on Codes.

8.4.1.5 Publication of obsolete codes

The Commission considered the suggestion that WMO should prepare a special publication in which all old code forms would be published, together with an indication of the periods during which they were in force, the object of the suggestion being to ensure that research workers requiring to use old coded observations will have an easy reference to the appropriate code details. It was realized that such a publication would be a lengthy and costly work.

The Commission decided that detailed recommendations could not be made, realizing that the Secretary-General of WMO was in a better position to assess the nature of the problem and the best means of meeting any requirements along these lines. It was nevertheless considered that as a first step the possible relevant requirements of research workers in relation with the use of IGY/IGG data should be satisfied, and that a study of the overall problem should be made by the Secretary-General. Recommendation 11 (CSM-III) was adopted on this matter.

8.4.1.6 Replacement of X by the solidus / in meteorological figure codes

As a consequence of the decision to use the solidus / to indicate missing figures and letters in meteorological bulletins the Commission considered the possibility of replacing the sign X by the solidus / in all meteorological figure codes. No difficulties were foreseen in replacing X by / wherever X is now used in figure codes to denote missing data or as a coding device in place of one of the digits 0 to 9, for example, in code 1838-i_h. Recommendation 12 (CSM-III) was adopted.

8.4.1.7 Transmission of precipitation data for hydrological purposes

The Commission considered the resolution of the Commission for Hydrological Meteorology at its first session - Resolution 4 (CHM-I) - that exchanges of precipitation amounts every six hours on a regional basis would be advisable in the interests of hydrological forecasting.

The Commission examined the results of the inquiry conducted on this matter amongst the regional associations and noted that there was in fact no firm statement of an international requirement in this field. As provision already exists for the adoption, if necessary, of the relevant regional coding procedures, it was considered inappropriate to make coding recommendations at this stage.

8.4.1.8 Establishment of a Working Group on Codes

The Commission examined the report of the Working Group on Code Problems set up by Resolution 6 (CSM-II). In considering this report, and other coding matters referred to it during the session, the Commission was acutely conscious of the many serious and urgent coding problems which still remain unsolved. The urgent and most important of these include (inter alia) :

(a) To study and determine the fundamental requirements in the international exchange of meteorological observations. Code forms can not be wholly satisfactory until there is general agreement upon the elements necessary in the exchanges and upon the degree of precision necessary in the reports of those elements. There are

differing requirements for national, regional, inter-regional and international exchanges and for the various user groups, e.g. transportation, agriculture, aviation, etc. It is desirable that as many of these interests as possible should be met by common code forms.

(b) To review existing code forms with particular reference to the SYNOP code FM 11.A and its derivatives. This code is notably deficient for the reporting of weather and sky conditions and for tropical usage in general.

(c) To restudy the various versions of code forms for upper-air observations (TEMP and PILOT) submitted to CSM at its third session with a view to determining the feasibility of representing one of these proposals in a modified form, if required, to CSM at its fourth session taking into account, as far as possible, the desirability of meeting with one single code form the international and national requirements.

(d) To revise the notes in Volume B to comply with the request of Congress (paragraph 5.8.1.9 of the general summary of the work of Third Congress) which work could only be started at the session.

(e) To study the family of analysis codes which has become complex and unwieldy.

Although, as a principle, major code changes should be avoided, the known deficiencies in present code forms are such that a definite plan should now be laid down for solving these problems by CSM at its fourth session.

The Commission therefore considered that the Working Group on Code Problems should be re-established immediately and that its terms of reference should include the specific problems now outstanding together with those other matters which might occur from time to time.

Bearing in mind the large volume of investigation, correspondence and co-ordination involved in the proposed work programme of the group, the Commission considered that the group could not accomplish its task unless a full-time officer was available to it from its inception until presentation of its report to the fourth session of CSM. The cost of financing this proposed appointment would have to be met by WMO. The officer himself would, in effect, be a code expert acting as full-time secretary to the Working Group on Codes. He would, no doubt, be based in the Secretariat but would work closely with the chairman of the working group and would need to spend extended periods at the office of the chairman. It is possible that he might even work continuously at the office of the chairman although decision on this should be left until the identities of the chairman and of the full-time expert have been established. The Commission adopted Recommendation 14 (CSM-III) and Resolution 3 (CSM-III).

8.4.2 Codes for surface observations (Agenda item 8.4.2)

8.4.2.1 Specifications and notes for N_h and h

The Commission recognized that there are ambiguities in the coding instructions for N_h and h in Volume B, Publication No. 9 and that changes are required to guarantee a uniform coding procedure.

A small change was introduced in the notes for the coding of h so that h be coded / and not 0 when there is fog and that the sky is not discernible. Recommendation 15(CSM-III) was therefore adopted.

8.4.2.2 Coding N, C_H and C_M (Reporting of condensation trails)

The Commission considered a proposal that, as contrails are clouds by definition in the International Cloud Atlas, facilities should exist in the specifications for C_H and C_M

to permit the reporting of contrails in meteorological codes. The Commission agreed that there is some need to report condensation trails but decided that this need is not sufficient to warrant a change in the specifications of C_H and C_M . It was noted that RA VI has provisions for regional exchange of this information in the group $9S_pS_pS_pS_p$ and also that France and the Netherlands have a national practice to report the existence of condensation trails, France using the word COTRA and the Netherlands using a national supplementary group with indicators. Recommendation 16 (CSM-III) was adopted.

8.4.2.3 Coding wwW

The recommendations of the Working Group on Codes concerning the revision of code tables 4677 ww and 4500 W, and other documents on the same subject, were considered by the Commission. The document presented by the U.S.S.R. contains proposals for fundamental changes to permit reporting of past weather in greater detail and also proposals for many changes in the specification of the ww code table. The latter changes were designed to meet the proposal of the Working Group on the Definition of Terms used to Describe the Intensity of Meteorological Phenomena.

The U.S.S.R. and other proposals call for a complete review of the ww and W code tables and the Commission decided that such sweeping changes in tables of such long standing warranted longer and deeper consideration of proposals than could be given during the session. The Working Group on Codes will have to make a detailed study of codes for surface observations and the Commission decided that the group include in its study a detailed examination of the ww and W code tables, taking into consideration the U.S.S.R. and other proposals, major and minor, and the conclusions of the working group on the Definition of Terms used to Describe the Intensity of Meteorological Phenomena as recommended for adoption by the Commission. The working group should be able to come up with consolidated proposals for new ww and W code tables for adoption by CSM at its fourth session.

The Commission also decided to ask the Secretary-General to distribute the U.S.S.R. proposals to all Members, asking them to study and test the new procedures to determine their full implications, and to provide for the benefit of the Working Group on Codes a detailed report giving their views on the proposals.

8.4.2.4 Code 0900 - E-State of the ground

The Commission adopted a proposal for amendment to code table 0900 which will permit the coding of ice occurring without snow or melting snow as is done at present for glaze. Recommendation 17 (CSM-III) was adopted.

8.4.2.5 Reporting h_sh_s

A proposal was made to the Commission to include in Chapter I of Volume B a note specifying that, when due to distance or obscuring phenomena the cloud height cannot be determined, h_sh_s should be reported as //. The opinion was that this procedure is consistent with the general use of the solidus / for indicating missing data. On the other hand there was some concern that such a note might encourage the observer not to report an estimated height even when this is normally possible, and no change to Volume B was recommended in this respect.

8.4.2.6 Reporting wind direction at the North and South Poles

The Commission examined the code requirement expressed in recommendation M.8(SCAR.IV) for reporting wind direction at the South Pole. It noted that satisfactory arrangements have already been made on a national basis for solving this problem. It was decided to eliminate the ambiguity existing in code 0877 for South Pole stations and to specify the area over which the wind coding procedures for North and South Pole stations should be applied. The relevant proposals are given in Recommendation 18 (CSM-III).

8.4.2.7 Coding pp - Amount of pressure tendency

In connexion with the discussions on the revision of the surface synoptic code forms the Commission studied a proposal concerning the reporting of the amount of pressure tendency by code figures instead of tenths of millibars.

In view of the decision of the Commission to undertake a major revision of the SYNOP and related code terms at its fourth session, it was agreed to refer this proposal to the re-established Working Group on Codes.

8.4.2.8 Notes concerning code form FM 17 - MONT

The Commission approved the replacement in Chapter I of Volume B of the notes relating to code form FM 17 - MONT by the revised notes prepared by the working group. The new notes are intended to eliminate certain difficulties in the use of this code which were brought to the attention of the group. The decision of the Commission is given in Recommendation 19 (CSM-III).

8.4.2.9 Height of cloud tops

The Commission examined a proposal that the "8 group" in FM 11.A, FM. 15.A and related codes be used for reporting tops as well as bases of cloud. It had been suggested that any $8N_sCh_sh_s$ group could be followed by a second $8N_sCh_sh_s$ group with N_s reported as 0 and h_sh_s giving the top of the cloud, reported when the observer is able to determine the height of the top. The use of $N_s = 0$ for this purpose would cause no confusion.

The Commission however considered that, at this stage, there is little or no international requirement for such usage but realized that the proposal might well be studied and tested nationally or regionally.

8.4.3 Codes for upper-air observations (Agenda item 8.4.3)

8.4.3.1 Reports from meteorological reconnaissance aircraft - FM 41.B

The Commission examined the proposals made by the United States which are reproduced in the report of the Working Group on Code Problems. It agreed that the proposed changes would improve this code. However, it was noted that this code was at present used by two Members only and that various elements were reported in this code using non-metric units. Due to these circumstances, it was decided not to maintain the RECCO code form in Volume B, Chapter I, Part A. The Commission invited the countries concerned to take appropriate action to have this code included in Chapter III as national practice for the benefit of Members which use the relevant reports. The relevant decisions are included in Recommendation 20 (CSM-III).

8.4.3.2 Implementation of universal standard practice for coding TEMP and PILOT messages

The Commission considered the various aspects of the problem of attaining uniformity in the application of coding procedures to upper-air observations. The Commission reiterated its position that uniformity is essential in all aspects of the international exchange of meteorological messages. It was not considered advisable at this time to recommend the adoption of a new Technical Regulation to cover deviations in coding practices, but the Commission suggested that, when deficiencies are noted, Members bring them to the attention of the Secretary-General so that corrective action may be taken as appropriate.

8.4.3.3 TEMP and TEMP SHIP code forms

The Commission examined the two alternative code forms (i.e., the full version and the short version) for TEMP reports proposed by the Working Group on Code Problems (CSM-III/Doc.20 Rec. 23 (WG Codes) Annexes I and III). While it was agreed that a short version was

preferable from the telecommunications point of view, a full version was preferable from the synoptician's point of view in that it provided for reporting temperature and humidity to a high degree of refinement which some Members need in order to meet their operational requirements particularly with respect to forecasting cloud cover, precipitation amounts and severe thunderstorms and tornadoes.

During discussions the Commission noted a strong requirement from some Members for reporting air temperature to tenths of a degree Celsius on the basis that although the instrument may be in error with respect to absolute temperature, the error would be more or less constant throughout an ascent thereby giving reasonably accurate changes in the vertical. Others considered that the temperature to 1/2° C would meet their needs while others con- that whole degrees would be satisfactory. It was considered, therefore, that in order to meet the over-all requirement it would be necessary to report temperatures to approximately tenths of a degree.

The question of reporting dew-point depression instead of the dew-point temperature was discussed at great length. The various advantages and disadvantages of the use of dew-point temperature were thoroughly ventilated including the plotting of aerological diagrams, the analysis of fronts on surface charts, identification of tropical air masses, etc. The depression of the dew-point was subjected to the same rigorous examination and both parameters were compared in all respects.

A code form providing for the reporting of both temperature and dew-point depression to tenths of a degree was presented to the Commission for consideration. It developed that a majority of the Members had strong reservations regarding the advantages dew-point depression might have over actual dew-point temperature and the reporting of temperatures to tenths of a degree. The Commission considered that the introduction of a new code form would be premature at this time and decided to retain the present TEMP and TEMP SHIP code forms (FM 35.B and 36.B) without change.

The Commission agreed that some of the procedures given in the rejected proposal would be helpful and should be adopted. Specifically, the retention of the M_1M_1 identifiers within the coded report for identifying parts of individual TEMP and TEMP SHIP messages and the retention of the arrangement for reporting Sections 1, 11 and 10, up to and including 100 mb, in the messages exchanged internationally. The Commission considered that the M_1M_1 indicators are essential for the successful operation of electronic computers and at the same time will be helpful in conventional methods of processing data. The Commission directed the chairman of the Working Group on Codes to appoint an ad hoc group to prepare in the form of a recommendation, the list of changes required in WMO Publication No. 9, Volume B, to bring it into conformity with the substance of the Commission's decision. The Commission also directed the president of CSM to approve the resulting recommendation for inclusion in the final report of the work of the session. Therefore, Recommendation 21 (CSM-III) was adopted.

8.4.3.4 PILOT and PILOT SHIP code forms

The Commission considered the two alternative code forms for PILOT reports proposed by the Working Group on Code Problems (CSM-III/Doc. 20, Rec. 21 (WG Codes) Annexes I and III). The first code form is based on current procedures and the second one is an entirely new form departing from the present practices. Although the Commission recognized definite merits to the second proposal it was felt that it represented a considerable change and that it would be premature to adopt it at this stage. The Commission decided therefore to refer it to the Working Group on Codes for further study.

The Commission then examined the first version, in slightly modified form, prepared by the working group. The Commission noted with satisfaction the revised notes which were proposed for use with this version, specifically, that the notes would increase standardization of reporting procedures on a world-wide basis, and that the known requirements of electronic

computers had been met by procedures which would assist also in the manual processing of the data.

The Commission further noted that the new features of the proposed code form consisted primarily of a rearrangement of the sections of the present PILOT (FM 32.B) code form. After due consideration, the Commission decided that the desired objectives could be obtained more efficiently by retaining the present code forms (i.e., FM 32.B and FM 33.B) and revising the notes currently given in Volume B for these forms to conform to those given in connexion with the proposed new code form (i.e., given in CSM-III/Doc. 280/P). The primary features of the proposed new notes are the provision for the use of M_1M_1 indicator within the coded report to identify individual parts of PILOT and PILOT SHIP[1] and the mandatory inclusion of winds for levels approximating the standard isobaric surfaces, and maximum winds in that part of the report which is exchanged internationally.

The Commission directed the chairman of the Working Group on Codes to appoint an an ad hoc working group to prepare, in the form of a recommendation, the changes required in Volume B to implement the Commission's decision given above. The Commission also authorized the president of CSM to approve the resulting recommendation for inclusion in the final report of the work of the session. Therefore, Recommendation 22 (CSM-III) was approved by the president of CSM.

8.4.4 Analysis codes (Agenda item 8.4.4)

8.4.4.1 Expansion of FM 45.B (IAC) code form for aeronautical requirements

The Commission examined the issues raised in Recommendation 15/5 (CAeM-II/MET V) concerning amendments to code form FM 45.B (IAC)

The CAeM-II Recommendation 15/5 called for the inclusion of wind and temperature data at the 600 mb level. The Commission, however, noted that 600 mb is not a standard isobaric surface, and data are not generally exchanged to enable the preparation of charts for this surface. It would be a simple matter for any Member wishing to encode 600 mb wind information to do so without confusion in the group 99977 by adding an extra group 6ddff but the Commission considered it undesirable to make a mandatory provision for this purpose. Similar considerations apply to the requirement for temperature at 600 mb. The Commission has therefore taken no action on part (a) of Recommendation 15/5 (CAeM-II/MET V).

The Commission made provision for the encoding of tropopause temperature data in FM 45.B as requested by CAeM at its second session in Recommendation 15/5 (b). A method of including isopleths of mean vertical windshear as requested in Recommendation 15/5 (c), was also recommended.

The Commission considered that the requirements covering the inclusion of significant weather in the code form FM 45.B (IAC) should be more clearly stated before it is possible to develop the relevant code section. The ICAO observer pointed out that there was an increasing need for such a code to cater for the exchange of area forecasts. It was finally decided that the president of the Commission would request the president of CAeM in collaboration with the appropriate bodies of ICAO to specify the basic requirements for coding significant weather and other elements given in area forecasts so that the Working Group on Codes can develop an appropriate coding procedure. Recommendation 23 (CSM-III) was adopted.

8.4.4.2 Code for transmission of analysis data in grid point form

The code used by the United States for the transmission of analysis data in grid point form has been found to be a more convenient code form than IAC for the transmission of analysis charts prepared by machine methods. Moreover, other countries are making good use of the messages broadcast in this form by the United States. The Commission considered that in years to come machine produced charts will gradually replace charts produced by manual

methods and members should become acquainted with the grid point system. The Commission was of the opinion that it would be very useful to have this code published in Chapter III - National practices - of Volume B and therefore invited the United States to take the appropriate steps to this end.

8.4.4.3 Code 0551 - C_s - Cloud system

In conformity with Resolution 6 (CSM-II) the Commission examined Code 0551-C_s - Cloud system. It was agreed that the specifications of this code are out of date and that if there is a continued need for the code new specifications should be developed. In addition the Commission felt that a survey of the codes and code forms in Volume B may reveal that certain code forms or parts of them are no longer in use and could be deleted from the Volume. It therefore decided to request the Secretary-General to conduct an inquiry among Members to determine (i) what are the requirements for Code 0551-C_s and (ii) whether there are any international meteorological codes which are no longer used.

The results of this inquiry should be transmitted to the Working Group on Codes so that it may take them into account in any revision of the relevant parts of Volume B.

8.4.4.4 Expansion of FM 45.B (IAC) and FM 46.A (IAC FLEET) for maritime requirements

The Commission studied this question on the basis of the new section developed by the Working Group on Code Problems. In addition, special optional code groups were proposed to permit the reporting, if necessary, of direction and period wave data at discrete points along the isopleths described in this new section. The proposals of the Commission are given in Recommendation 24 (CSM-III).

8.4.5 Codes for maritime purposes (Agenda item 8.4.5)

8.4.5.1 Codes for fishing vessels

The Commission noted CMM's request for a study of the most appropriate code form and coding procedures for reports from fishing vessels together with consideration of arrangements whereby fishing vessels and auxiliary ships would report present weather by using a selection of 10 or more code figures of the ww code table. The Commission also noted CMM's general reluctance to the introduction of a new code form.

Two arguments were advanced in favour of the use of a selection of ww specification in place of the complete code table. First it facilitates recruitment of new reporting ships where crews are not accustomed to meteorological codes and are discouraged from co-operating because of the complexity of the ww code table. Secondly, as was evidenced during the IGY and the use of the SHIGY code form, it results in a considerable increase in reports from areas where the reporting network is normally very poor.

The Commission considered that the SHRED code form FM 23.B is suitable for reports from fishing vessels - it was devised by CSM at its second session for use by such vessels. Arguments advanced at the second session of CSM in favour of the use of ww in FM 23.B instead of a simple w code form are still valid today.

It was therefore decided not to amend code form FM 23.B. However, in view of the special requirements expressed by CMM the president of CSM was requested to inform the president of CMM that if a limited number of ww code figures is to be used in some cases for recruiting purposes, the following selection is recommended :

00, 03, 10, 16, 45, 63, 73, 81 and 95.

In such cases the meteorological services concerned should urge the ships to use the full ww code as soon as some experience in weather reporting has been gained.

8.4.5.2 Special weather reports from ships - FM 26.B - SPESH

In 1961 the president of RA VI pointed out a possible discrepancy between the notes on page I-A-1-29, Volume B, and Recommendation 2 (CSM-II). Regional Association VI was in doubt whether it was the intention of CSM, when adopting Recommendation 2 (CSM-II), that this code form should be used by mobile ship stations as well as ocean weather stations.

The Commission concluded that there is no discrepancy of this nature between the notes on page I-A-1-29, Volume B, and Recommendation 2 (CSM-II), and that although the code was developed mainly for use by ocean weather stations it may be used by other ships when there exists a requirement for such reports.

The Commission considered that the descriptive title of code form FM 26.B should be amended to read "Special weather report from ship" instead of "Selected weather report from ship" and requested the Secretary-General to amend Volume B accordingly.

8.4.5.3 Code 4562-W_1 - Forecast weather

The Commission noted the suggestion of CMM at its third session (general summary, paragraph 9.1) that the specifications of code figures 5 and 8 in Code table 4562 be amended, and agreed that this would be an improvement. Recommendation 25 (CSM-III) was adopted.

8.4.5.4 Coding visibility at ocean weather stations

The amendments to Publication 9, Volume B suggested by CMM to permit ocean weather stations to report visibility by code figures 90-99 (Code 4377) were examined and agreed to. The Commission considered that the methods of observing visibility at sea did not warrant the use of the full code table and that the code figures 90-99 met the requirements of synoptic meteorology. There is no aeronautical requirement for more detailed reports of visibility from ocean weather stations. Recommendation 26 (CSM-III) was adopted.

8.4.5.5 Coding report of ice accretion on ships

The Commission noted Recommendation 18 (CMM-III)designed to permit selected supplementary and auxiliary ships to add at the end of their synoptic weather messages, in plain language, an indication of the thickness of ice when icing on ships' superstructures is being encountered. The Commission also noted Resolution 18 (EC-XIII) expressing a preference for a figure code for this purpose. Recommendation 27 (CSM-III) was adopted.

Statistics of ice accretion on ships were not available to the Commission, therefore it was not practicable to develop quantitative terms for rate of ice accretion. The Commission agreed that quantitative values should be assigned to R_s - Rate of ice accretion on ships - as soon as possible.

8.4.5.6 Codes for reporting sea ice

The Commission considered the proposed WMO unified ice code (Annex to Recommendation 28 (CMM-III)). Although no inconsistencies are evident at this time, it was thought that such a complicated code needs an extensive trial before adoption on a world-wide basis.

The Commission decided that at this stage it was premature to include this code in Volume B, but requested the Secretary-General to draw the attention of Members to its existence so that those which have the opportunity to do so may try it out. Copies of the code should be provided by the Secretariat to all Members which require it.

8.4.5.7 Coding 7RR$t_R t_R$

Further to a request expressed by the president of CMM in relation to the reporting of precipitation data by ships during the Indian Ocean Expedition (1 July 1962 - 30 June 1964) the Commission examined Code table 4080 - $t_R t_R$. It noted that this code does not in

all cases specify the precise period over which the precipitation reported by RR has been measured. Relevant amendments to these codes were proposed for adoption as a matter of urgency in Recommendation 28 (CSM-III).

8.4.5.8 Coding of sea surface temperature

The Commission discussed at length the problem of reporting sea surface temperature as raised in paragraph 7.13 of the general summary of the work of the third session of the CMM. The recommendation of the Working Group on Code Problems to report sea temperature to the nearest whole degree Celsius in place of T_sT_s was considered, but the Commission decided that this recommended procedure is unsatisfactory for synoptic meteorology as it does not give the difference between air and sea temperatures in sufficient detail when this difference is small. The Commission also discussed a proposal to report air and sea temperatures in tenths of degrees Celsius. This proposal involved changes in the PPPTT and ($0T_sT_sT_dT_d$) groups and in particular the latter group in its proposed form would have to be mandatory. There were strong objections to this proposal, partly because it would lead to a basic discrepancy between the SYNOP and SHIP code forms and partly on doubts as to the accuracy of determination of sea temperatures, but mainly because it involves substantial changes to the SHIP code form. Substantial changes to the SYNOP code form are highly probable at the fourth session of the Commission, and some of these changes are likely to involve parallel changes in the SHIP code form. Frequent changes to the SHIP code form are highly undesirable, and the Commission decided that in view of probable changes at the fourth session of the Commission there should be no changes at this time in the reporting procedures for sea surface temperature. The study of this question has been included in the terms of reference of the Working Group on Codes.

8.4.5.9 Coding Y - Day of the Week (Code 4900)

The CMM has pointed out (paragraph 7.12 of the general summary of the work of its third session) that there is a discrepancy existing between the systems for numbering the days of the week used in Code 4900 and in Publication 9, Volume A. The Commission concurred with the opinion of CMM that no change is called for in Code 4900, for no confusion has arisen, nor is it likely to arise.

8.4.5.10 Ship position verifying group

(a) The Commission examined the problems arising through inaccuracies in the position groups in sea station reports due either to incorrect encoding at the source or to subsequent mutilation in transit.

It was agreed that reports from sea stations are of such synoptic value that some positive arrangement is desirable to ensure accuracy in the position groups as used by the analyst.

The Commission therefore examined the practicability of including position verification groups in the code forms used by sea stations considering, separately, the cases of upper-air and surface reporting ships.

The advantages of a mandatory position verifying groups were obvious. The main disadvantages fall under two headings : (1) The extra costs involved in transmission of additional groups; (2) The extra work load and perhaps complexity of encoding procedures imposed upon ships' officers.

Position verification in upper-air reports from sea stations

(b) The problem of position verification is most pressing and, too, most easily solved in upper-air reports from sea stations. In these cases position errors could invalidate much valuable and irreplaceable data. But, on the other hand, the addition of one check group to an already lengthy message represents only a small

proportional increase in any particular message and there are relatively few upper-air reporting ships. Then, too, such reports are invariably encoded by specialist personnel and the addition of a position verifying group would impose no extra burden on ships' officers.

The Commission therefore concluded that immediate provision should be made for a mandatory position verifying group to be added to all upper-air reports from sea stations. The recommended group has the symbolic form

$$MMMU_{La}U_{Lo} \text{ where}$$

MMM is the Marsden square number

U_{La} is the units figure in latitude (neglecting all tenths of degrees)

U_{Lo} is the units figure in longitude (neglecting all tenths of degrees)

(These two unit figures U_{La} and U_{Lo} are taken directly from the position group figures $L_aL_aL_a$ and $L_oL_oL_o$ and are not adjusted to the nearest whole degree).

The Marsden square number serves to confirm the quadrant Q and the general location of the ship within a 10 degree square. The unit figures of latitude and longitude locate the ship position in this square to within one degree in both latitude and longitude. The recommended new group therefore gives a positive independent check upon both encoding and transmission errors.

Position verification in surface reports from ships

(c) The Commission agreed that the addition of a position verifying group to the normal surface synoptic sea station report would be equally as desirable as in the case of upper-air reports. It recognized however that, because of the large number of such reports, there would be considerable resistance to the additional group largely on financial considerations but also, to some extent, because of the extra work load imposed on ships' officers. The Commission also felt that there would be strong opposition to the introduction of any other position checking device, internal to the present code, if this increased the work or complexity of encoding procedures.

For these reasons the Commission agreed that it was undesirable to recommend any immediate provision in the case of surface sea stations. However, recognizing that the problem still exists the Commission wishes to invite CMM to study the matter with a view to the general introduction at a later date, to all sea station reports, of the position verifying group now recommended for upper-air sea stations. When examining this question the Commission for Maritime Meteorology should take into account the increasing importance of the automatic processing of data for the provision of services to all users.

The Commission also felt that the proposed form of the position verifying group might be particularly applicable in the climatological use of ship reports and invites the Commission for Climatology to study the proposals and, if appropriate, to support the general inclusion of the group in all sea surface and upper-air reports. The Commission adopted Recommendation 29 (CSM-III).

8.4.5.11 State of the sea

The Commission considered the request of CMM concerning the reporting of the state of the sea. The comments of the Working Group on Codes on this subject were taken into account. It was noted that the president of CMM was conducting a postal ballot among members of his Commission on the possible adoption of a new wave and sea groups of the form $(22\ P_WH_WH_W)\ (d_Wd_WP_WH_WH_W)$.

Some Members expressed the opinion that the scale proposed by CMM for the period of waves was not entirely satisfactory, particularly in that the increments are too large. In view of the uncertainty of the results of the CMM postal ballot, the Commission felt that it should await more definite information regarding CMM's desires in the matter before taking definitive action. The Commission, noting its previous decision to make no major changes in the SYNOP or SHIP at this session, directed the reconstituted Working Group on Codes to give the Wave Group and State of Sea priority in its study of the SHIP code. It is expected that the studies to be carried out by the Working Group on Codes will result in major changes in the SYNOP and SHIP at the fourth session of CSM. Also, the Commission decided to request the president of CSM to inform the president of CMM that some Members would consider the code more acceptable if the period of waves could be expressed in steps of one second for low values and in steps of two seconds for higher values.

Although CMM had made a very clear statement of the requirements for reporting sea waves and swell waves, the specifications were stated in terms of codes. This method of stating requirements makes it very difficult to construct the required code forms and codes. The Commission suggested that CMM and other technical commissions, Members, etc., state their requirements in terms of the elements to be reported, their relative importance, the intervals desired, the precision needed, etc., then the construction of the code forms and codes are frequently simplified.

The representative of CMM drew the attention to the problem of reporting forecast wave heights of more than 4.5 metres in MAFOR (FM 61.B). It was noted that MAFOR did not provide for coding wave heights in excess of 4.5 metres. There were no difficulties involved in solving this problem and only a slight change was required in the ($33D_kP_wH_w$) groups. Recommendation 30 (CSM-III) was adopted.

8.4.6 Codes for aeronautical purposes (Agenda item 8.4.6)

8.4.6.1 Self-evident forms of message

As a consequence of Recommendation 4/3 (CAeM-II/MET V), which contains an invitation to WMO to study the possibility of developing a revised version of the AERO code form to make it as far as possible self-evident, the Working Group on Code Problems tried to develop such a code. A tentative form using letters was elaborated but the working group itself did not consider it as satisfactory and the Commission concurred with this view.

The possibility of bringing this tentative form to the attention of CAeM and ICAO was envisaged but in view of the fact that the form does not constitute a good example and that many members considered it as inacceptable no follow up action was decided.

8.4.6.2 Codes for aircraft meteorological reports and meteorological reports obtained from debriefing

The Commission examined a compact code form proposed by the Working Group on Code Problems for the dissemination of bulletins of meteorological information obtained from AIREP reports and from debriefing of air-crews. It was considered that such a code might be of great importance in countries where the upper-air observing network is sparse. The Commission was of the opinion that the study carried out by the working group should be pursued further with a view to developing a figure code to meet the computing requirements and might be used for both synoptic and aeronautical meteorology. It was therefore decided to include this problem under the terms of reference of the new Working Group on Codes.

8.4.6.3 Report from transport aircraft - FM 42.A-POMAR

In view of the fact that all references to the POMAR code have been deleted from ICAO documents and that there is no longer any need for retaining this code in Volume B, the Commission decided by Recommendation 31 (CSM-III) that Volume B should be amended accordingly.

8.4.6.4 Code 1864

The Commission considered a discrepancy in the pictorial illustrations of variations in Code 1864 and approved Recommendation 32 (CSM-III) which removes it.

8.4.6.5 Reporting of QNH values and runway visual ranges in AERO - FM 15.A reports

The Commission examined the alternatives proposed by the Working Group on Code Problems for the reporting of runway visual range and QNH values in AERO reports. It was considered that the inclusion in the code form of two optional groups to be used in accordance with regional air navigation agreement presents certain advantages from the coding viewpoint. Provision was also made to indicate clearly whether the reported values for runway visual range are within the limits measurable by the observational apparatus. Recommendation 33 (CSM-III) was adopted.

8.4.6.6 Modifications to the forecast code forms for exchange of operational meteorological information

Recommendation 15/4 (CAeM-II) invites WMO to review TAFOR, TAF, ARFOR, ROFOR, FIFOR, HIARF, HIROF and HIFIF code forms to meet aeronautical requirements. The major change proposed is to replace heights indicated in ICAO flight level numbers by pressure units in FM 56.B, FM 57.B and FM 58.B. The Commission, in supporting this proposal, agreed that there is a continued need for code forms FM 53.B, FM 54.B and FM 55.B in which heights are expressed in the normal height units (Code 1577). The Commission proposed new code names for code forms FM 56.B, 57.B and FM 58.B, as requested by the Commission for Aeronautical Meteorology, but felt that it would be better, if possible, to keep the present code names. Recommendation 34 (CSM-III) was adopted.

8.4.6.7 Omission of index numbers and of time groups in certain messages transmitted on the meteorological operational telecommunication network in Europe (MOTNE)

The Commission examined Recommendation 14 of the third session of the MOTNE panel as previously approved by the Executive Committee for interim application. There were some divergent opinions regarding omission of index numbers and time groups in certain messages transmitted on the MOTNE and it was agreed that the information received on the provisional implementation of this decision was not sufficent to allow exact determination of the implications. Trials should be continued on the MOTNE and results examined before a final decision is taken in this respect, in order to ensure that such procedure causes no difficulties for the meteorological services concerned.

8.4.6.8 Notes in Volume B concerning amended forecasts for aviation

As a consequence of the decision to adopt the abbreviation AMD in the abbreviated headings of amended bulletins, the Commission recommended similar changes in the notes in Volume B concerning the amended forecasts for aviation. Recommendation 35 (CSM-III) was adopted.

8.4.7 Codes for climatological purposes (Agenda item 8.4.7)

8.4.7.1 Coding $\overline{PP}$ and $\overline{TTT}$

The Commission noted Recommendation 4 (CCl-III) recommending that the specifications of the symbols $\overline{PP}$ and $\overline{TTT}$ used in codes FM 71 to FM 76 be amended to delete reference to feet and Fahrenheit degrees. The Commission saw no difficulties and decided also to make a small parallel change in the specifications of $\overline{T_dT_dT_d}$ and $\overline{T_sT_sT_s}$. Recommendation 36 (CSM-III) was adopted.

8.4.7.2 Inclusion of surface and wind data in CLIMAT TEMP reports

The climatological requirements expressed in Recommendations 10, 11 and 12 (CCl-III) were considered by the Commission, and it was proposed to add two new groups to CLIMAT TEMP and CLIMAT TEMP SHIP reports for the reporting of monthly mean values of surface pressure, temperature and dew-point at the time of release of radiosonde. On the other hand when studying the proposal to include surface and upper-air mean wind data in CLIMAT TEMP reports from remote aerological stations the Commission reached the conclusion that such data would be useful for general synoptic purposes in all regions, and appropriate coding practices were developed. Recommendation 37 (CSM-III) contains the relevant proposals of the Commission.

8.4.8 Codes for other purposes (Agenda item 8.4.8)

8.4.8.1 Codes for exchange of ground radar weather observations

The Commission examined the advisability of developing an international code for exchange of ground radar weather observations, taking into account the conclusions of the Working Group on Code Problems and the results of the inquiry on this subject conducted by the Secretary-General. The Commission was of the opinion that the conditions which induced CSM at its second session to decide that such a development was premature, have not changed materially since then. As there was no known international requirement for such a code it was agreed that at the present stage any action should be left to national, bilateral or regional decision. It was noted that Regional Association I has now developed a special code for exchange of ground radar weather observations.

9. NETWORKS OF STATIONS AND TIME OF OBSERVATIONS FOR SYNOPTIC PURPOSES (Agenda item 9)

9.1 Definition of basic surface synoptic network (Agenda item 9.1)

The Commission noted that the provisional definition of "basic synoptic network" proposed by the Commission in Recommendation 80 (CSM-II) and subsequently adopted by the Executive Committee in its Resolution 21 (EC-X), has given rise to some difficulties. It noted in particular that the use of the word "basic" in the two expressions "basic synoptic network" and "basic land station" had caused some confusion. Regional Association VI in its Recommendation I (III-RA-VI) requested that the definition of the regional basic network be reconsidered. The Commission decided in Recommendation 38 (CSM-III) that it would clarify matters if the term "Basic land station" in the Technical Regulations be amended to read "Principal land station". The recommended change would be consistent with the terminology used for classifying other types of meteorological stations. Some minor changes were also recommended to further clarify the definition. It further proposed, in Recommendation 39 (CSM-III), an amended version of the definition of "basic synoptic network" to meet the objections raised by Regional Association VI. The Commission also agreed that the note appended to the previous provisional definition be deleted.

9.2 Specification of synoptic stations as "Basic" and "Supplementary" in Volume A of WMO Publication No. 9. TP. 4 (Agenda item 9.2)

The Commission considered that it would be useful to indicate in Volume A of Publication No. 9, for example by a reference mark on the index number, which of the stations listed are in the category "Basic land station" (proposed by CSM-III to be called "Principal land station"). Therefore, the Secretary-General was requested to make the necessary changes in Volume A of this publication when new supplements are issued, based on information provided by Members.

9.3 Density of ships' observations - Revision of paragraphs 2.2.1.7 and 2.2.1.8 of the Technical Regulations (Agenda item 9.3)

Pending any specific recommendation of the CSM Working Group on Networks, the Commission agreed that the proposals of CMM contained in Recommendation 2 (CMM-III) are an improvement of the present text of paragraphs 2.2.1.6 to 2.2.1.8 of the Technical Regulations. Therefore, the Commission endorsed the above CMM proposals, slightly amended, in Recommendation 40 (CSM-III).

9.4 Definition of standard time of observation for inclusion in the Technical Regulations (Agenda item 9.4)

At the request of the Third Congress the Commission developed a definition of the term "Standard time of observation" to be included in Chapter 1 of the Technical Regulations. This definition is given in Recommendation 41 (CSM-III).

9.5 Actual time of upper-air synoptic observations - Revision of paragraphs 4.2.1.2 and 4.2.1.3 of the Technical Regulations (Agenda item 9.5)

The Commission noted the request of Congress (paragraph 5.8.1.8 of the General Summary of the Work of Third Congress and also the opinion expressed by RA-VI in its Resolution 9 (III-RA VI). The Commission agreed that the present Technical Regulations on this subject could be improved by deleting the present paragraph 4.2.1.3, by making paragraph 4.2.1.2 more specific and by rewording the note following paragraph 4.2.1.2 to meet the request of RA-VI. The proposal to specify a time (H-30) in paragraph 4.2.1.2 as the preferred actual time for upper-air observations was based on the desire of the Commission to achieve the maximum possible uniformity in the actual time for such observations. The decisions of the Commission are incorporated in Recommendation 42 (CSM-III).

9.6 Definition of "Lightship station" for inclusion in the Technical Regulations (Agenda item 9.6)

The Commission noted that CMM at its third session developed a definition for "Lightship station" recorded in Recommendation 1 (CMM-III).

The Commission found this definition fully acceptable and also supported the proposal of CMM to add a note to paragraph 2.1.2.1 of the Technical Regulations to the effect that for reporting purposes a lightship station may be considered as either a land or sea station.

9.7 Automatic weather stations (Agenda item 9.7)

The Commission reaffirmed the opinion expressed by CSM at its second session (1) that automatic weather stations constitute an increasingly valuable means of obtaining meteorological information in areas where the establishment or maintenance of a regularly manned and full-time operating surface synoptic station is not feasible, (2) that automatic weather stations (including those on buoys) are not yet totally satisfactory replacements for a manned surface synoptic station, and (3) that Members be encouraged to initiate or to continue the development of automatic weather stations. With regard to the request recorded in paragraph 4.6 of the general summary of the third session of RA VI, the Commission agreed that reports from automatic weather stations which have only limited observing and reporting facilities are, nevertheless, useful for synoptic purposes.

The Commission also expressed the wish that inexpensive automatic weather stations be developed to facilitate the purchase by Members confronted with network problems.

9.8 Questions arising from the report of the Working Group on Networks (Agenda item 9.8)

The Commission recognized that, because of the enormous task and the complexity of the problems involved, it had not been possible for the working group to complete the work

assigned to it. The Commission agreed that the work should be continued by a re-established working group (see Resolution 4 (CSM-III)) and recommended that funds be provided both for the working group meetings and, if required, for carrying out certain calculations (see Recommendation 43 (CSM-III)).

The Commission considered that it would be desirable to make arrangements, under General Regulation 16, for continuation of ICAO participation in the activity of the working group.

The Commission further recommended that the report of the working group submitted to CSM at its third session should be published as a WMO Technical Note. Dr. P.D. Thompson, chairman of the previous working group, should be invited to edit the report, in particular by adding a suitable introduction.

10. TELECOMMUNICATIONS (Agenda item 10)

The Commission considered certain problems of principle concerning the composition and the satisfactory operation of the Working Group on Telecommunications between sessions. It was agreed that the chairman of the Working Groups on Telecommunications of all six regional associations and representatives of those Members responsible for the operation of northern and southern hemisphere exchange centres should be members of the working group. Because of the great importance attached to the work of the group, it was also agreed that experts of any other Members wishing to participate in the work could be nominated by the permanent representative concerned. Furthermore, it was agreed that ways and means should be sought to make important findings of the group available to all Members. Finally, Resolution 51 (CSM-III) was adopted.

10.1 Transmissions of non-meteorological messages on WMO channels (Agenda item 10.1)

The Commission studied the request of COSPAR regarding the dissemination on meteorological telecommunication channels of satellite movement information. It was noted that COSPAR already has made arrangements for dissemination of such data to certain recipients and that the suggested dissemination on meteorological telecommunication channels would be supplementary to this. The Commission was concerned over the possible implications of passing non-meteorological messages over meteorological channels and in view of the permanent nature and expected gradual increase in the volume of satellite movement information to be disseminated, the Commission felt unable to recommend at this stage the inclusion of these data in the already overloaded inter-regional exchange schedules. However, in view of the desire of WMO to support space research activities, regional associations and Members of WMO may wish to study the feasibility of disseminating these COSPAR messages within their Regions or within the countries concerned.

10.2 Review of Publication No. 9. TP. 4, Volume C, Chapter I, Introduction (Agenda item 10.2)

The Commission studied the present contents of Chapter I of Volume C. It found that those parts of paragraph 1.1.1.3 of Chapter I, Part II on pages C-1-6 and C-1-7 (English version) concerning contents and plan of continental broadcasts are obsolete and should therefore be revised. The Working Group on Telecommunications is requested to develop a new plan which should be incorporated in Publication No. 9. TP. 4, Volume C, after its approval. Furthermore, all references to the POMAR code form which is no longer in use should be deleted.

The decisions on telecommunication matters taken at its third session have to be included in this chapter and the Secretary-General was requested to make necessary editorial changes as soon as these decisions come into force.

10.3 Training of personnel engaged in meteorological telecommunications (Agenda item 10.3)

The Commission noted with satisfaction the draft training syllabus prepared and submitted by the Secretary-General. It was agreed that the information presented is very valuable and that this document should be the basis for further detailed studies with the aim of preparing a Guide for training of personnel engaged in meteorological telecommunications. It was felt that the establishment of such a Guide could help Members in drawing up national instructions and also be of importance to technical assistance experts working in this field. At the same time, however, it was felt that further studies should be made to cover all activities of Members in this field. Therefore, the Commission requested its Working Group on Telecommunications to prepare this Guide, which will, after approval by the president of CSM, be made available to Members. The question of publication of a Guide will be considered at a later date.

10.4 Improvement of dissemination of ships' reports - Amendment of the Technical Regulations (Agenda item 10.4)

The Commission studied Recommendation 6 (CMM-III). While endorsing this recommendation in principle, further modifications to the Technical Regulations were considered desirable.

These additional changes treat :

(a) The great importance of the expeditious collection of ship reports by coastal radio stations,

(b) The need to include in appropriate subregional transmissions all reports made from ships.

Recommendation 44 (CSM-III) embraces the desired changes and was adopted.

The Commission appreciated the steps taken by CMM at its third session in establishing a Working Group on the Collection of Ships' Weather Reports and the Provision of Shipping Forecasts. This working group has submitted, through the president of CMM, an outline plan for improved collection and dissemination of reports from ships.

It was felt that the guiding principle in establishing the plan should be to facilitate the work of ships' radio officers in relaying messages to coastal stations. Some delegates expressed the view that there is urgent need to adopt on a world-wide basis the principle referred to in that plan, by which a ships' report shall be transmitted to the nearest coastal radio station in the area in which the ship is situated. As regards the chart embodied in the plan, the majority were of the opinion that this chart, when made final, should be considered merely as a guide to voluntary reporting ships.

The Commission noted that several delegates suggested changes in the geographical limits of collecting areas shown on the chart and it assumed that their respective CMM members will bring those comments to the attention of CMM.

As regards the CMM working group's suggestion that the procedure of addressing ship observations be simplified by the use of OBS, the Commission was of the opinion that this could be met by a change of the word "should" to read "shall" in paragraph 6.2.2.8 of the Technical Regulations, but it felt that this should be considered for recommendation by CMM.

The foregoing comments should be brought to the attention of the president of CMM as a matter of urgency.

10.5 Radio frequency bands allocated to meteorological aids service (Agenda item 10.5)

The Commission noted the decision taken by CIMO at its third session concerning the allocation of radio frequency bands for meteorological aids services. It confirmed that

every effort should be made in order to get a sufficient number of radio frequency bands for this purpose. It was agreed to request the Secretary-General to inform Members and the International Telecommunication Union (ITU) of the CIMO decision recorded in paragraph 14.3 of the general summary of the report of its third session. Furthermore the question has been raised of protection of the 10 kc/s frequency, which is being used by atmospheric stations, against harmful interference. It was agreed that this problem should be further studied by the CSM Working Group on Telecommunications.

10.6 Decisions taken by the Working Group on Telecommunications at its second session. (Agenda item 10.6)

10.6.1 Definition of broadcasts (Agenda item 10.6.1)

The Commission studied the various proposals which had been made by its Working Group on Telecommunications for changes in the Technical Regulations relating to meteorological telecommunications. In particular the Commission noted that certain definitions were, by realistic telecommunication concepts, now outmoded and, further, that certain developments, which had in fact taken place in meteorological communications, had rendered new regulations and definitions necessary. An example of such a development is the inauguration of the northern hemisphere exchange. An example of changing telecommunication concepts is the unacceptability of the definition now current of a "continental broadcast". This stipulates a possibility of "world-wide reception" which is now regarded as being so difficult to implement as to be impracticable. Additionally, the so-called "continental broadcast" has become far more closely linked with WMO Regions than with geographical continents and for this reason some revision of terms used for such broadcasts appears desirable.

Changes in Technical Regulations considered necessary by the group have been included in Recommendation 45 (CSM-III).

The Commission noted that the recommended changes would imply consequential amendments in other paragraphs of Technical Regulations and also in other WMO publications.

Finally, the Commission studied the question raised by Congress (paragraph 5.8.1.4) of the general summary of the work of Third Congress concerning paragraph 6.2.2.9 of the Technical Regulations which deals with the four-letter call-signs of ships. The Commission considered it necessary to maintain this paragraph in the Technical Regulations as the ITU Radio Regulations do not stipulate the mandatory use of the call-sign (see Article 19 - Section 737).

10.6.2 Protection of meteorological broadcasts (Agenda item 10.6.2)

An inquiry carried out by the Secretary-General concerning the utilization of the existing meteorological broadcasts, brought to light the fact that interference from other transmissions hindered the reception of certain broadcasts. In consequence of this and in view of the congestion of the radio frequency spectrum the Commission considered that it was essential to take all measures necessary to insure adequate protection to the reception of meteorological transmissions. The Commission noted that this protection against harmful radio interference gives rise to a problem of fundamental importance whose solution fell within the competence of national telecommunication authorities and of the International Telecommunication Union (ITU) /International Frequency Registration Board (IFRB).

Nevertheless it was noted that so as to be able to assess the problem and ultimately to reach a solution, the national telecommunication authorities and the ITU (IFRB) should have at their disposal technical details of a more precise nature than those requested by Technical Regulation 6.1.1.7 to which modifications are consequently suggested.

In addition the Commission considered that the best possible co-ordination in this field should be achieved between ITU (IFRB) and WMO. With this aim in view all necessary contacts should be made between the respective Secretariats of these two organizations and Members should, for their part, ensure that their responsible telecommunication authorities with great precision furnish ITU all the information indicated in the modified version of paragraphs 6.1.1.7 and 6.1.1.8 of the Technical Regulations. The Commission adopted Recommendation 46 (CSM-III). The Commission also noted that local or limited interference problems, etc. could be worked out either by measures of a local nature or by bilateral agreements between Members concerned in the reception and the transmission of these broadcasts.

Several Members raised the question of local interference to both radio transmission and meteorological aids resulting from automobile ignition and the operation of certain industrial, medical and other electrical equipment. To minimize this kind of interference, which can in some cases be very severe, meteorological receiving stations should be selected with great care. However, additional safeguards are necessary, and in accordance with Article 14 of the Radio Regulations (Geneva 1959), national telecommunication administrations should take all practicable steps including where necessary the promotion of legislative measures to insure that the installation and operation of electrical apparatus does not result in harmful interference.

10.6.3 The feasibility of using higher teleprinter modulation rates, i.e., modulation rates greater than 50 bauds (Agenda item 10.6.3)

Experience gained in the Federal Republic of Germany, in the U.S.A. and in the U.S.S.R. indicates that circuits and equipments engineered to operate at a modulation rate of the order of 75 bauds are thoroughly practical. The satisfactory operation of such channels can also be inferred from the decision of a number of other administrations to provide similar facilities. In regard to a higher modulation rate, of the order of 100 bauds, the absence of suitable teleprinters has been an obstacle. The prospect of dual-speed teleprinters becoming available capable of functioning at speeds in the region of 75 bauds and in the region of 100 bauds alternatively, may change the situation, but even so, 100-baud facilities are not likely to be widely used for several years to come.

A serious obstacle to the wider adoption by meteorological services of higher-speed channels is the absence of internationally agreed standards. Within the boundaries of a single country it is of little consequence whether the modulation speed is 74.23, 75 or 78 bauds, to mention three speeds in current use. Difficulties arise immediately international exchanges are contemplated; a complication that may prove to be unavoidable is the installation of a tape-relay station to negotiate the change of speed. The matter is receiving the attention of CCITT Study Group VIII, but the complexities are such that it would be unrealistic to expect an early solution. It would certainly be inappropriate for the Commission to make any recommendation on the technical issues involved in securing international standards although quite within its terms of reference to draw attention to the consequences of delay.

Another aspect which tends to discourage meteorological services from seeking higher-speed facilities is the tariffs. In those cases where the charges levied are directly proportional to the speeds, meteorological services naturally prefer to increase the number of lower-speed channels in the interest of dependability. It is also desirable that the error rate in the higher-speed channels should be not greater than that in the lower-speed channels.

Finally, the attention of meteorological services is drawn to the potentialities of high-speed circuits operating at 600 bauds and more. These are already being exploited in some countries on automatic data exchange systems. It seems likely that in the foreseeable future there will be a requirement for carefully protected very high-speed circuits linking a small number of major centres engaged in numerical forecasting with the aid of high-speed computers. It is desirable that the utilization of these high-speed channels should receive early study with a view to their being established on the most economical lines. In this

connexion it must be recognized that the large band-width implications of high modulation rates must be regarded as excluding, in general, this type of transmission from the HF spectrum. It is also important to assess the error rate which can be tolerated.

It is incidentally noted that the problems of operating these high-speed channels are also receiving the attention of the International Telegraph and Telephone Consultative Committee (CCITT) which has established Special Study Group A for the purpose. The Commission adopted Recommendation 47 (CSM-III).

In pursuing this matter, the Commission requests its Working Group on Telecommunications to study all aspects of the problem of the use for meteorological purposes of equipment with high modulation rates.

10.6.4 Character for indicating missing information in meteorological bulletins (Agenda item 10.6.4)

The Commission studied the problem of determining a character for indicating missing information in meteorological bulletins.

Taking into account the conclusions of the International Telecommunication Union (ITU) and ICAO, the Commission agreed to recommend the use of / (the figure case position of signal No. 24 of the International Telegraph Alphabet No. 2) to denote missing figures or letters in meteorological bulletins. The Commission adopted Recommendation 48 (CSM-III).

10.6.5 Uniformity of procedures for transmission of meteorological data (Agenda item 10.6.5.)

The Commission studied Recommendations 5 and 6 of the second session of its Working Group on Telecommunications with the aim of meeting the requirements of automatic transmission and facilitating, at least in part, data recognition by computers. (see paragraph 7.2 (a) of the general summary of the work of the third session of the CAe). It also considered replies received from Members to a questionnaire issued by the Secretary-General concerning these two recommendations. Their replies, in general, favoured the detailed procedures of the first of these recommendations, while some suggested changes which were practicable and useful.

The Commission considered it best to differentiate, as far as telecommunication procedures were concerned, those procedures which were necessary to both telecommunications and numerical weather prediction computers and those which were additionally required by the latter. It was agreed that when the need of automatic data processing could not be met by accepted telecommunication procedures any additional requirement should be treated as a coding problem. The various parts of Recommendation 6 of the second session of the CSM Working Group on Telecommunications were so differentiated, and those sections redundant to the need of telecommunications were abandoned.

The two recommendations have been combined with useful suggestions made by Members, in reply to the questionnaire issued by the Secretary-General referred to above, in Recommendation 49 (CSM-III) which was adopted by the Commission.

With reference to Recommendations 7 and 14 of the third meeting of the ICAO MOTNE Panel, the Commission considered that times shown in the abbreviated headings of meteorological bulletins should relate only to their origination, actual or scheduled (see paragraph 8.4.6.7 above).

10.6.6 Study of procedures necessitated by the use of automatic apparatus for transmission and for numerical processing of meteorological data (Agenda item 10.6.6)

Reference is made to the discussions under item 10.6.5.

10.6.7 Specifications for radio-teleprinter equipment (Agenda item 10.6.7)

With increasing emphasis being placed on RTT for meteorological transmissions in every part of the world, it is more than merely desirable that definitive standards for the magnitude of the frequency shift in FSK transmissions should be established as soon as possible. These standards must take account of the growing congestion in the radio frequency spectrum and the inevitable trend towards the theoretical minimum shift appropriate to the telegraph speed in use. This implies more stringent frequency stability requirements for both transmitter and receiver.

Recommendation 46 (CSM-II) attempted to set out comprehensive specifications for RTT equipment, but because of uncertainties regarding CCIR views (since resolved), it was necessarily tentative. It also contained certain inconsistencies so that its revision is necessary.

It is relevant to note that the International Radio Consultative Committee (CCIR) in its Recommendation 246 (Los Angeles 1959) favoured not one value of frequency shift, but indicated three preferred values, namely 200 c/s, 400 c/s and 500 c/s.

In taking into account this CCIR recommendation, the seventh session of the ICAO COM Division (Montreal, January-February 1962) recommended that for aeronautical RTT (F_1) transmission one of the above values should be chosen.

The sole use of the International Telegraph Alphabet No. 2 for international meteorological teleprinter transmissions, is recommended. Recommendation 50 (CSM-III) was subsequently adopted.

10.6.8 Plan of exchange of meteorological data in the northern hemisphere (Agenda item 10.6.8)

The Commission noted with satisfaction that the scheme for the northern hemisphere (NH) as recommended in Recommendation 38 (CSM-II) has been, in general, implemented.

The system operates with the following circuits as of 1 April 1961 :

(a) One duplex RTT circuit between Moscow and New Delhi;

(b) One duplex circuit between New Delhi and Tokyo consisting of a landline circuit between New Delhi and Poona and an RTT circuit between Poona and Tokyo;

(c) One duplex circuit between Tokyo and New York, consisting of an RTT circuit between Tokyo and Honolulu; an RTT circuit between Honolulu and San Francisco; and a landline circuit between San Francisco and New York;

(d) One duplex circuit between New York and Offenbach consisting of an RTT circuit between New York and Santa Maria; an RTT circuit between Santa Maria and Paris, and a landline circuit between Paris and Offenbach;

(e) One duplex landline circuit between Offenbach and Moscow with standby relay station at Potsdam.

It has been noted that in certain parts of the system NH-data share the circuit with other meteorological information. This hampers in some instances the expeditious transmission of NH-data. The Commission was of the opinion that when establishing the programme of transmission of hemispheric data due account should be taken of the fact that the transmission of the data should be made with a minimum of delay bearing in mind the delay acceptable for this data over the same circuits.

With respect to the retransmission of Offenbach data to Tokyo and Tokyo data to Offenbach, the Commission was of the opinion that the pentagonal scheme calls for the transmission of data to each centre from the two adjacent centres on both sides. The Commission recognized, however, that this principle could not be applied in actual practice in every case. The difficulties caused by a great number of relays and the heavy loading of the

circuit in the direction from New York to Tokyo preclude the transmission of Offenbach data to Tokyo via New York at present. In view of this and also the fact that the New Delhi-Tokyo circuit as compared to the New York-Tokyo circuit carries relatively less bilaterally exchanged data, the Commission felt that as an interim measure the Offenbach data should be retransmitted to Tokyo via New Delhi until such time as the system permits its transmission to Tokyo via New York.

At its second session, the Working Group on Telecommunications made a detailed study of the total number of groups that can be transmitted by each NHEC. But those statistics will no longer be valid in view of the changes made during the session and due to the changes made in the list of stations and code forms, it was not possible during the session to work out the statistics relating to future exchanges. It was noted, however, that the figure of 16,000 groups, indicated by the Working Group on Telecommunications during the second session as representing the volume of data that could be transmitted over a given circuit during a period of twelve hours, would certainly be exceeded. It has been emphasized that the time required at present for the exchange of northern hemisphere data was too long, and yet these new provisions may increase it further. The Commission, while recognizing the difficulties of this problem, strongly emphasized the need to accelerate the routing of data, and recommended that this need be kept in mind constantly, both in the studies relating to the codes and in those relating to telecommunications. With this in mind, the Commission considered that the regional associations should make every effort to accelerate the collection of the data to be transmitted by the NHE system.

In order to assess the reliability of NH exchange system or particular circuits, it was recommended that monthly records of circuit performance be made by northern hemisphere exchange centres and relay countries and exchanged between themselves, with copy to the chairman of the CSM Working Group on Telecommunications so that appropriate action for improvement could be taken. Furthermore, statistics concerning the regularity of the reports received were considered very useful. The Commission in recognizing the great amount of work involved made no recommendation to this effect. However, Members responsible for NHEC were asked to consider this question favourably. Finally, the Commission adopted Recommendation 51 (CSM-III).

10.6.9 Organization of the exchange of meteorological data within the southern hemisphere with connexions with the northern hemisphere exchange system (Agenda item 10.6.9)

The Commission examined the long standing needs for the rapid exchange of basic meteorological data between the various Regions of the southern hemisphere. It takes into account the requirements for exchanging meteorological data with the northern hemisphere and the problems arising from the advent of electronic computers and the development of facsimile transmissions. The Commission considered that a network of exchange centres similar to that operating in the northern hemisphere should be put into operation as soon as possible in the southern hemisphere. The network would comprise three centres (SHECs). These should be : Brazilia,* Nairobi and Melbourne or nearby points. From an engineering standpoint, the Commission felt that a relay station between Nairobi and Melbourne would be necessary and that this should be at Singapore; in addition a relay station between Melbourne and Brazilia would be necessary and that this station should be located preferably in the area of Tahiti.

The centres of Brazilia, Nairobi and Melbourne would be responsible for collecting and disseminating information from their respective areas of responsibility. Melbourne should include in its transmissions meteorological reports from Antarctica.

The centres of Brazilia, Nairobi and Melbourne would be responsible for exchanges with the northern hemisphere system. Brazilia would be connected to the NHEC at New York,

*Until a centre can be made fully operational at Brazilia, the existing Rio de Janeiro station should be used.

Nairobi to the NHEC at Offenbach, and Melbourne would be connected to the NHEC at New Delhi, with Singapore acting as intermediate relay station. The circuits of the SH network should be able to deal with exchanges using both radioteleprinter and facsimile modes of transmission.

The Commission considered that for the speedy implementation of the plan, technical and financial assistance will be necessary. In this connexion the adoption of Recommendation 90 (61-CSM) and also Resolution 14 (EC-XIII), taken subsequently has been noted with appreciation. It was, however, felt necessary to emphasize the urgency of the implementation, the maximum delay which can be regarded as acceptable being three years; it was considered that one or two technical assistance experts should be appointed as soon as possible (1962/1963) to make a detailed investigation and put forward specific proposals.

The Commission felt it desirable to stress the importance of the SHE network in the circulation and dissemination of the large volumes of data which it is to be expected will result from the development of meteorological satellites during the course of the next few years. The Commission adopted Recommendation 52 (CSM-III).

Furthermore, the southern hemisphere exchange centres are required to be interconnected with the northern hemisphere exchange system. This question is dealt with under agenda item 10.6.14.

10.6.10 Provision of aeronautical fixed services (AFS) exclusively for basic meteorological traffic (Agenda item 10.6.10

The Commission considered that certain deficiencies in the international and national exchange of basic meteorological data could be rectified if exclusive meteorological channels were to be made available by multiplexing a number of RTT links of the AFTN. Furthermore it was noted that certain regional associations have already adopted recommendations to this effect.

The Commission has expressed its desire that ICAO support this principle. The Commission adopted Recommendation 53 (CSM-III).

10.6.11 Notification of modifications in methods of transmission (Agenda item 10.6.11)

The Commission has noted the results of the inquiry carried out by the Secretary-General concerning the utilization of the existing meteorological broadcasts. In spite of its incompleteness, due both to the lack of answers and to the nature of the information supplied this inquiry has proved to be extremely valuable.

As regards the aim of this inquiry, the Commission considered that although the abandonment of frequencies or transmission times may become desirable in certain cases, Members concerned should not put these measures into effect before being certain that no inconvenience would ensue for other Members. This condition evidently does not apply to broadcasts by a Member which are intended primarily for its own use even if they are used by other Members. As regards the procedure to be followed, the Commission considered that the principles set out in paragraph 6.1.1.11 of the Technical Regulations were sound. However this paragraph deals only with changes in modes of transmission and with less precision than the Commission considered essential. It is necessary also to deal with transmission which it is desirable or necessary to discontinue. The implied changes in the Technical Regulations considered necessary by the Commission are indicated in Recommendation 54 (CSM-III).

The Commission noted that the present text of paragraph 6.1.1.10 of the Technical Regulations did not adequately meet the needs for timely notification of impending changes in frequencies or transmission schedules. Recommendation 55 (CSM-III) was adopted.

10.6.12 International distribution of meteorological data collected by artificial satellites (Agenda item 10.6.12)

The Commission having examined the report of the CSM Working Group on the Synoptic Use of Meteorological Data from Artificial Satellites considered that satellite information would be very useful to supplement basic information especially from those areas from which little or no meteorological information is available on a routine basis (see agenda item 7.8).

The Commission felt that facsimile was the preferred means of dissemination, for the time being, but that until adequate international facsimile exchanges are established the method now employed for dissemination of this information, namely by coded nephanalyses messages over international teleprinter facilities, should be used, as an interim measure.

Recommendation 91 (61-CSM) outlined a plan for inter-regional and regional distribution of coded nephanalyses. This plan could not be implemented fully because the volume of traffic involved could not be accommodated in appropriate transmissions; particularly within certain Regions. To overcome this difficulty, at least in part, the United States of America offered to identify, by reference to a special map, the area treated by each nephanalysis. Such an arrangement would facilitate a selective distribution of these messages and reduce the over-all traffic total. The map is annexed to Recommendation 56 (CSM-III) (see Annex XVII) which was adopted.

10.6.13 Abbreviated readings for amended forecasts for aviation (Agenda item 10.6.13)

Reference is made to the discussions under agenda item 10.6.5.

10.6.14 Organization for the exchange of hemispheric data (Agenda item 10.6.14)

The Commission discussed the possible circuits and procedures for the exchange of meteorological information from the northern hemisphere to the southern hemisphere and vice versa and for the redistribution of this information, or part of it, to the meteorological services within both hemispheres.

It was noted that the requirements with respect to these exchanges and the delays which Members consider to be acceptable for reception of northern hemisphere information in the southern hemisphere and for reception of southern hemisphere information in the northern hemisphere are not yet specified, although a number of delegates expressed a wish to receive all or part of the information from the other hemisphere. The Commission agreed that regional associations should be requested to specify their requirements in this respect at an early date.

A plan as presented in Annex III was discussed. The argument adduced in favour of the plan was that it would ensure even distribution of the additional workload on the different hemisphere centres. It was also pointed out that the study of the plan by the regional associations and CSM would not commit the Members concerned in any way and that the plan could be modified later, if found necessary, on the basis of the requirements of the various hemisphere centres concerned and in the light of the improved telecommunication facilities which may become available by the time the SHECs start functioning.

The arguments against the plan were that the NHE system is already heavily loaded and that additional loading due to the transmission of SHE data on this system would result in considerable delays in the reception of southern hemisphere information in certain services of the northern hemisphere.

In view of the above, the Commission came to the conclusion that the plan in Annex III need not be included in Recommendation 57 (CSM-III), but should be attached to the general summary.

The CSM Working Group on Telecommunications should undertake such a study as a matter of urgency after the requirements of regional associations for the reception of information from the other hemisphere are known.

Nevertheless the Commission agreed that the links between the northern hemisphere exchange system and the southern hemisphere exchange system, i.e., Brazilia-New York, Nairobi-Offenbach and Melbourne-New Delhi should be established as soon as possible as these circuits will be required in any case.

In this connexion the Commission noted also the action already taken in Resolution 14 (EC-XIII) with respect to Recommendation 90 (61-CSM).

After a lengthy discussion, Recommendation 57 (CSM-III) was finally adopted by a small majority.

10.6.15 Co-ordination of telecommunications matters and assistance of the Secretariat (Agenda item 10.6.15)

The Commission has examined the responsibilities of the regional associations' Working Groups on Telecommunications and of the CSM Working Group on Telecommunications. Since experience has shown that the participation of the chairmen of the regional working groups at the meetings of the CSM working group offers undeniable advantages, it is important to maintain such representation. The necessity of participation at these meetings by at least one telecommunications officer of the Secretariat has also been emphasized. Also it is reasonable to expect participation by chairmen of certain regional groups at the meetings of corresponding groups in neighbouring Regions and also that when urgent problems cannot be solved by correspondence, small meetings composed of a few experts should be convened. It has been recognized that the arrangements set forth above may give rise to certain financial problems and that this particular aspect should be given favourable consideration. Recommendation 58 (CSM-III) was adopted accordingly.

10.6.16 Equipment for the detection and correction of errors in RTT transmissions (Agenda item 10.6.16)

The increasing use of point-to-point radio-teleprinter circuits for the exchange of basic meteorological data and the introduction of automatic switching and data processing devices call for a survey of the practicability of the introduction of automatic error detection and correction systems on certain circuits.

Discussion of this item specially referred to the system of automatic error correction ARQ, as usually designated, which has received widespread acceptance. Suitable equipment for this system is now obtainable from manufacturers located in several countries. This system, as the ITU representative pointed out in the second session of the Working Group on Telecommunications, is quite expensive, partly because of the need for a return channel to permit the exchange of instructions between terminals. It is clear that the need for ARQ depends on the advantages and disadvantages of using the equipment on a particular circuit, and chiefly on the maximum tolerable error rate in relation to the error rate which occurs without ARQ on the same circuit. For meteorological traffic, it was generally agreed that the tolerable maximum would not be the same for all types of traffic.

ARQ techniques normally employed on point-to-point radio channels are not applicable to radio broadcasts because there can be no return channels between more than on recipient and a single transmitting source. An inquiry concerning the error rate that can be tolerated on meteorological circuits has been conducted by the Secretary-General. However, the replies received from Members showed tolerable error rates ranging from zero to 4 errors in 100 characters transmitted. Therefore, the Commission was unable to adopt any specific error rate as a unique criterion for the application of error detection and correction devices on meteorological circuits. However the Commission felt that the introduction of the ARQ system should be favourably considered by Members whenever it is practicable and desirable. Finally, Recommendation 59 (CSM-III) was accepted.

10.6.17 Standardization of meteorological transmissions by facsimile - Equipment characteristics (Agenda item 10.6.17)

The Commission noted that the facsimile characteristics recommended by the CSM Working Group on Telecommunications, Study Group for Facsimile, followed very closely the guidance provided in the Annex to Recommendation 50 (CSM-II). After thorough consideration of the problem at its third session the Commission considered it desirable to adopt the above-mentioned Study Group's recommendations with only a few relatively minor changes, and to recommend that the facsimile characteristics specified in Recommendations 60 (CSM-III) and 61 (CSM-III) be adopted. It is of interest to note that the following characteristics recommended in Recommendation 60 (CSM-III) are substantially the same as those suggested by Recommendation 50 (CSM-II) : index, speed, scanning density, drum length, direction of scanning, synchronization, frequency shift, signal levels and half-tone requirements; and that the standards for the following characteristics have been given values within ranges suggested by Recommendation 50 (CSM-II) : drum diameter and dead sector. Also, following the suggestion of Recommendation 50 (CSM-II), specific signals have been provided for starting recorders, selecting speed, selecting index and stopping recorders (or returning them to stand-by).

The Commission considers that the characteristics recommended will bring about the greatest degree of compatibility of equipment that can be achieved at this time. It is important to note that it was impossible to agree on a single phasing signal, and that the Commission agreed to define as an interim measure two different phasing signals either of which may be used. However, considering it as a matter of urgency that a single standard for the phasing signal be adopted as soon as possible, the Commission established a Working Group for Facsimile Equipment Standardization (see Resolution 6 (CSM-III).

10.6.18 Organization for the exchange of meteorological data by facsimile (Agenda item 10.6.18)

The Commission noted with appreciation that a number of Members are operating or planning to operate facsimile transmissions. It also noted that a considerable amount of experience had been gained in the operation of facsimile and in the use of the meteorological data received by facsimile.

The existence of requirements for the exchange of meteorological information such as for satellite nephanalyses data, analyses and forecast charts was recognized, but whilst considering this agenda item, it was felt that further studies are required to reach agreement on several points of operational significance.

Therefore, the Commission agreed that the CSM Working Group on Telecommunications should undertake the development of operational procedures and plans for establishment of a world-wide facsimile exchange. Since the work of the group cannot proceed without a precise statement of requirements for inter-regional exchanges, the regional associations should inform the Secretary-General of their requirements for the inter-regional exchanges.

In the interim period the Commission agreed that regional associations and Members should proceed with arrangements to establish at an early date inter-regional exchanges by facsimile to meet known requirements and that the principles outlined in Recommendation 62 (CSM-III) be followed as closely as possible.

10.6.19 Problems relating to inter-regional exchanges of basic meteorological data (Agenda item 10.6.19)

The Commission noted the statements made by the chairman of the Working Groups on Telecommunications of the regional association as regards plans on implementation aspects and deficiencies in the field of meteorological telecommunications (see Annex IV).

It was recognized as desirable to stress the urgency of a detailed study concerning the basic meteorological data that might be transmitted by cable with very great regularity and in the shortest possible time.

The Commission agreed that the above statements should be brought to the attention of the presidents of regional associations.

10.6.20 Other questions (Agenda item 10.6.20)

(1) Publication of the schedules of VHF meteorological radiotelephony broadcasts for aviation in Volume C, Publication No. 9. TP. 4

The Commission considered that the publication of the VHF schedules in Part B of Volume C Publication No. 9. TP.4 should be discontinued, the transmissions concerned being specifically short-range ground/air broadcasts and therefore not of general interest.

(2) Antarctic data

The question of the distribution of Antarctic data outside of the Antarctic was dealt with under agenda item 10.6.9.

(3) Geographical designation

The Commission examined the problem of geographical designation used in WMO publications for meteorological stations and agreed that no action was necessary.

10.7 Study of recommendations of the third meeting of ICAO MOTNE Panel which were submitted to WMO for examination (Agenda item 10.7)

The Commission noted the decision of the Executive Committee recorded in paragraph 2.1.3 of the general summary of the report of its thirteenth session, but studied under this agenda item only those aspects of Recommendations 3, 6, 7 and 14 of the third meeting of the MOTNE Development/Implementation Panel which call for changes of telecommunation procedures.

With respect to recommendations of the panel, the CSM Working Group on Telecommunications, which met in Paris in April 1961, recommended the introduction on a world-basis of the use of the solidus / instead of X to indicate missing figures and letters in coded reports. This question was separately dealt with under agenda item 10.6.4 (see Recommendation 48 (CSM-III).

All code problems of the above MOTNE Panel recommendations were dealt with under agenda item 8.4.6.

11. METHODS AND TECHNIQUES OF ANALYSES AND FORECASTING (Agenda item 11)

11.1 Reference surfaces for upper-air analyses in tropical areas - Revision of paragraph 7.4.1.1 and 7.4.1.3 of the Technical Regulations (Agenda item 11.1)

At the request of the Third Congress the Commission examined, on the basis of information provided by several Members, whether paragraphs 7.4.1.1 and 7.4.1.3 of the Technical Regulations are satisfactory to meet requirements in tropical areas. The Commission noted that no Members had raised any objection as regards paragraph 7.4.1.1 and it therefore decided to keep this paragraph unchanged. In regard to paragraph 7.4.1.3, however, the Commission considered the importance of analyzing 200 mb surface charts in tropical areas as well as in other areas. The Commission accordingly decided to recommend a revised text of paragraph 7.4.1.3 of the Technical Regulations as given in Recommendation 63 (CSM-III).

11.2 Inclusion in the Technical Regulations of an appropriate paragraph concerning the preparation of surface charts (Agenda item 11.2)

At the request of the Third Congress (Cg-III), paragraph 5.8.1.13 of the general summary, the Commission considered the possibility of including in the Technical Regulations an appropriate paragraph concerning the preparation of surface charts. Appropriate action on this subject was taken under agenda item 15.

11.3 Standardization of maps and diagrams for facsimile transmission (Agenda item 11.3)

The Commission considered the information received from Members in response to Recommendation 58 (CSM-II). It noted that paragraphs 7.2.1.1 and 7.2.1.2 of the Technical Regulations relating to scales and projections apply to maps prepared for transmission by facsimile. In order to reach as much uniformity as possible in this matter, the Commission decided to include a paragraph on this subject in the Guide to the Preparation of Synoptic Weather Charts and Diagrams. Reference is made to agenda item 11.8.

11.4 Verification of forecasts (Agenda item 11.4)

The Commission noted Recommendation 76 (CSM-II), and the action taken by the Secretariat on this recommendation. The information received from Members in response to the Secretariat inquiries had shown that methods used for verification of forecasts in various countries are quite different. It was agreed that the material so far collected is not suitable for publication as a Technical Note. The Commission further considered that it was neither feasible nor necessary to establish any universal systems for verification of forecasts and that even the publication of a Technical Note on the subject would be premature. The Commission recognized that verification of composite forecasts of different elements, such as an aviation forecast, involved many complications and therefore expressed the view that verification of forecasts for single elements, such as rainfall, temperature, etc., and of prognostic surface and upper-air charts be given consideration in the first instance.

The Commission considered that it was premature at this stage to establish a working group to undertake a study of these problems for the purpose of developing best methods for forecast verification. The Commission therefore decided to request the Secretariat to summarize in a suitable form the available information and such supplementary information as may be collected and to distribute it to Members.

11.5 Numerical analysis and forecasting (Agenda item 11.5)

11.5.1 Specification of data requirement (Agenda item 11.5.1)

The Commission considered the questions addressed to the third session of CSM by the third session of CAe as to how the accuracy of numerical analysis depends on the frequency of observations and on the inherent defects involved in utilizing forecast data in the analyses. The Commission concluded that although the CSM Working Group on Networks will deal with these questions, there is still a need for additional study of this problem by specialists concerned primarily with numerical techniques of analysis and forecasting. Provision for this further study was, therefore, included in the terms of reference suggested for a joint CSM-CAe Working Group on Numerical Analysis and Forecasting (see agenda item 11.5.3 below).

In order to avoid duplication of effort on network questions it was agreed that the joint working group should limit itself to expressing its view on this problem to the Working Group on Networks and also its view on the special network requirements of numerical forecasting.

The Commission noted the view expressed by CAe at its third session that Members should be informed of the data requirements for numerical analysis and forecasting. It was

agreed that no definite information of this kind can be given at this time. However, the first six paragraphs of Part III of the report of the Working Group on Numerical Methods of Weather Analysis and Forecasting to the third session of CAe could be considered as valuable information material at this stage of development. Those paragraphs should therefore be circulated to Members by the Secretary-General as guidance material on this specific point.

11.5.2 Exchange of aircraft weather reports (Agenda item 11.5.2)

The Commission endorsed the suggestion of the CAe (see paragraph 7.2 of the general summary of the work of its third session) that selected meteorological observations made aboard commercial aircraft reported to appropriate meteorological offices, should be coded in a suitable form, and retransmitted through normal channels of meteorological information. It was agreed, however, that the code aspect of the matter should be studied by the re-established Working Group on Codes and the exchange problems involved could be studied by the appropriate bodies of WMO when more precise requirements for such exchanges become available.

11.5.3 Participation of CSM in CAe Working Group on Numerical Prediction (Agenda item 11.5.3)

The Commission agreed that the numerical methods for analysis and forecasting constitute one of the most valuable techniques to be used as a routine in the field of synoptic meteorology. Noting with appreciation the development work so far carried out in various parts of the world as well as the furtherance and co-ordination of such work carried out by the CAe, the Commission agreed that the time had come to recommend the establishment of a joint working group between CSM and CAe to review methods for numerical analysis and forecasting and to assist in the co-ordination of research activities in this field. These questions are of such great concern to synoptic meteorology that it is highly desirable that the Commission for Synoptic Meteorology take an active part in such studies.

Since the CAe working group had already started its work, the Commission considered it desirable that the same individuals now serving on the CAe working group (including the chairman) should continue to serve on the joint working group.

Under this item the Commission also considered the suggestions of the CAe (see paragraph 7.2 (b) (c) and (d) of the general summary of the work of its third session) and agreed that the joint working group proposed in Recommendation 64 (CSM-III) should study and prepare more specific requirements of numerical weather prediction for subsequent study by the relevant working groups of CSM. The decisions of the Commission are incorporated in Recommendation 64 (CSM-III).

11.6 Extended and long-range forecasting (Agenda item 11.6)

11.6.1 Routine exchange of five-day means (Agenda item 11.6.1)

11.6.2 Computation of grid-point values (Agenda item 11.6.2)

The Commission examined, at the request of CAe at its third session, the report of the CAe Working Group on Methods of Long-Range Forecasting and the relevant documents submitted by France and Japan. It noted with interest the recommendation of the above working group regarding the exchange of data for long-range forecasting. However, it was agreed that it would be premature to make any definite recommendations at present because the requirements for data needed for the preparation of long-range forecasts and the requirements for international exchange of such data are not fully established.

It was also recognized that the questions of workload on individual Members and telecommunication problems would need to be considered in any recommendations which CSM may eventually make on this subject.

The Commission considered the great importance of long-range forecasting and decided in Resolution 7 (CSM-III) to set up a working group to study these problems.

11.7 Criteria for determination of significant levels for international exchange (Agenda item 11.7)

The Commission reviewed the criteria given in Recommendation 19 (CAe-III) for the selection of significant levels for publication of aerological data and agreed that one set of criteria should be used for both publication and routine transmission of these data. The Commission then studied the CAe criteria in detail. The Commission experienced considerable difficulty in understanding precisely what was meant by some of these criteria, and has attempted to clear up most of these difficulties by the following suggested revisions and additional clarifying statements.

(1) Preface the criteria by the statement : "The criteria for determining significant levels for international exchange are based on the premise that the significant level data alone should make it possible to reconstruct the actual temperature and relative humidity sounding within the limits of the criteria specified."

(2) Accept paragraph (c) in the form of the third session of CAe (without adding the words "and standard" after the word "significant" as mentioned in paragraph 21.3 of the general summary of the third session of this Commission.

(3) Amend paragraph (d) to read :

"(d) Levels which are necessary to ensure that relative humidity obtained by linear interpolation between adjacent significant levels shall not depart by more than 15 per cent from the observed value;"

(4) Specify that information transmitted relevant to paragraphs (a) to (d) inclusive should include both temperature and humidity data.

(5) With regard to paragraph (e) state that only wind data need to be transmitted.

(6) State that when a significant level happens also to be a standard level, the data for this level will be included in both the standard and significant level portions of the TEMP code.

(7) State that the term "15 per cent" in paragraph (d) refers to 15 per cent of 100 per cent relative humidity and not 15 per cent of the observed value.

(8) The Commission noted with some concern the use of the qualitative phrase "substantial change in relative humidity" in paragraph (b) but considered that due to current limitations of accuracy of radiosonde humidity observations, the application of this criterion could best be left to national instructions.

The Commission concluded that CAe criteria as clarified by the above statements are acceptable for transmission purposes.

The president of CSM was requested to inform the president of CAe of the above decision and to present the views of CSM to the Executive Committee at its fourteenth session. When the above criteria for determining significant levels are finally approved, Note 7 of FM 35.B in Volume B will have to be amended accordingly.

11.8 Discussion of the draft provisional Guide to the Preparation of Synoptic Weather Charts and Diagrams (Agenda item 11.8)

The Commission studied the provisional Guide to the Preparation of Synoptic Weather Charts and Diagrams which was prepared by the working group in accordance with Resolution 12 (CSM-II) and Recommendation 61 (CSM-II).

The provisional Guide was considered to correspond to the needs expressed by the second session of the Commission.

A number of changes were made during the session :

Bearing in mind that an essential purpose of the Guide is the standardization of synoptic practices and procedures throughout the world, the Commission endeavoured to select, as far as possible, one single method only for each procedure, as suggested by the working group. In a few cases it was decided to leave alternatives which were equally used at present or which could be used for different purposes.

Amendments were also made, as necessary, with regard to decisions on units, codes, standard isobaric surfaces, isopleth spacing and standardization of maps for facsimile transmission adopted at the session.

An amended plotting model for tropopause charts and plotting models for the maximum wind were introduced. The symbols for fronts and allied phenomena (Recommendation 60 (CSM-II)) were thoroughly revised with a view to make them more systematic and at the same time more fitted for varying uses by national services. A new single method for indication of missing wind data on charts was adopted.

The revised list of symbols for fronts and allied phenomena and the new plotting method for missing wind data were not in accordance with the Technical Regulations, Appendix E, and Chapter 12. A proposal for amendments of the relevant parts of Appendix E was submitted in Recommendation 73 (CSM-III). Further, the president of CSM was requested to invite CAeM to consider the relevant parts and models in Chapter 12 on the basis of the symbols for fronts recommended in the Guide.

It was also found that the codes 1152 - Type of fronts, and 3952 - Tropical circulation type - are not consistent with the frontal symbols. This item was referred, for consideration, to the Working Group on Codes established by Resolution 3 (CSM-III). Recommendation 65 (CSM-III) was adopted.

11.9 Questions arising from the report of the Working Group on Isotherm Analysis and Isotherm, Stream-Line and Isotach Prognostic Techniques in the Tropics (Agenda item 11.9)

The Commission noted that the working group had initiated a preliminary informal exchange of views on certain aspects of the problem assigned to it. The Commission considered it highly desirable that further studies of the question be made. Resolution 8 (CSM-III) and Recommendation 66 (CSM-III) were accordingly adopted.

12. CLARIFICATION OF CERTAIN TERMS USED IN THE DEFINITION OF SIGMET INFORMATION (Agenda item 12)

During the examination of this question, the Commission noted that the term "Heavy hail" appears in WMO Publication No. 9. TP.4, Volume B (code 4677, ww-90). It was therefore decided that the definition of this term should be developed by the re-established Working Group on the Definition of Terms used to Describe the Intensity of Meteorological Phenomena (see Resolution 1 (CSM-III)).

With regard to the other expressions used in SIGMET information (Active thunderstorm area, Tropical revolving storm, Severe line squall, Severe turbulence, Severe icing, Marked mountain waves, Widespread sandstorm/dust storm), the Commission considered that the qualifying terms "active, severe, marked and widespread" in this connexion, were intended for aeronautical purposes only. In this connexion the Commission noted that ICAO is carrying out certain studies on icing and turbulence in co-operation with Contracting States, following Recommendations 38 and 44 of CAeM-I/ MET IV and 7/3 of CAeM-II/MET V. Consequently, the Commission decided that guidance on the use of these terms could best be

provided by the CAeM in co-operation with the appropriate bodies of ICAO, and requested the president of CSM to inform the president of CAeM accordingly.

13. ROUTING OF SHIPS BY MEANS OF EXTENDED WEATHER FORECASTING (Agenda item 13)

The Commission noted the promising results already obtained by certain Members in economical routing of ships by the application of techniques based on extended weather forecasts and the related wave forecasts.

The Commission fully endorsed Recommendation 20 (CMM-III) regarding further steps that should be taken to improve the techniques of extended weather forecasting used in routing of ships. It was agreed that in order to meet the requirements expressed by CMM, more reports of wave data from ships are needed. The Commission therefore requested the president of CSM to inform the president of CMM accordingly.

14. METEOROLOGICAL QUALIFICATIONS AND TRAINING (Agenda item 14)

The Commission examined the Secretariat's report on meteorological training facilities as requested in paragraph 5.12.8 of the general summary of the work of the thirteenth session of the Executive Committee. No amendments to this report or additional information regarding such facilities were presented by Members represented at the session.

The Commission noted the existence of a WMO Guide to Qualifications and Training of Meteorological Personnel Employed in the Provision of Meteorological Services for International Air Navigation and considered that there was also a need for the development of more general guidance material regarding the basic and advanced qualifications and training, especially in mathematics and physics, as appropriate to the various categories of meteorological personnel required for work in the field of synoptic meteorology. Such guidance material would also be useful in the WMO technical assistance programme. The Commission therefore decided to take steps to develop the necessary guidance material on qualifications and training of such personnel. These decisions are incorporated in Resolution 9 (CSM-III).

15. TECHNICAL REGULATIONS (Agenda item 15)

15.1 The Commission considered the discrepancy between the symbols for ww-11 and 12 in the Technical Regulations and the symbols assigned to fog and mist in the International Cloud Atlas. The conclusion of the Commission is recorded in Recommendation 67 (CSM-III).

15.2 The Commission further examined Part II (Analyses on weather charts) of Appendix E to the Technical Regulations. It was found that there are some differences in the concept of fronts and frontal systems and that the symbols for them used by Members also differ. The Commission therefore considered that only the symbols which are commonly used should be included in Appendix E to the Technical Regulations while a more complete list of symbols should appear in the Guide to the Preparation of Synoptic Weather Charts and Diagrams. It concluded in Recommendation 68 (CSM-III) that only the terms for basic frontal systems be retained in the Technical Regulations. The president of the Commission was requested to invite the president of CAeM to consider the question of recommending consequential amendments, where appropriate, in Chapter 12 of the Technical Regulations.

15.3 The Commission further considered certain definitions, which are not fully consistent with other definitions appearing in the Technical Regulations. It agreed in Recommendation 69 (CSM-III) that the definition of the term "forecast" should be changed. The president of the Commission was requested to invite the attention of the president of CAeM to this

recommendation in view of the fact that this definition also appears in Part 1 of Chapter 12 of the Technical Regulations. The Commission also considered the definitions of the terms "mobile ship station","ocean weather station", "selected ship station", and "supplementary ship station". It agreed that the following amended definitions of these terms be submitted by the president of the Commission to the president of CMM for consideration :

(a) Mobile ship station. A station aboard a ship on passage.

(b) Ocean weather ship station. A station aboard a suitably equipped and staffed ship which tries to maintain a fixed maritime location and which observes and reports for international exchange the observations of the elements specified in 3.1.1.2 and 4.1.1.1.

(c) Selected ship station. A mobile ship station which is equipped with sufficient certified meteorological instruments for making observations and which transmits the required observations in the full code form for ships.

(d) Supplementary ship station. A mobile ship station which is equipped with a limited number of certified meteorological instruments for making observations and which transmits the required observations in an abbreviated code form for ships.

15.4 The Commission further examined, at the request of Third Congress, the possibility of including in the Technical Regulations appropriate paragraphs concerning the preparation of surface charts. The conclusion of the Commission is recorded in Recommendation 70 (CSM-III).

15.5 The Commission also considered the request of Third Congress (Cg-III, paragraph 5.8.1.2 of the general summary) regarding the possible inclusion in Chapter 1 of the Technical Regulations appropriate definitions of certain terms. It developed a definition of the term "Dropsonde" (Recommendation 71 (CSM-III)), and recommended its inclusion in Chapter 1 of the Technical Regulations.

15.6 The Commission noted that in all WMO Regions and also in the Antarctic the 150 mb surface is considered as a standard isobaric surface. It therefore agreed that paragraph 7.4.1.2 of the Technical Regulations should be amended accordingly and also that consequently changes should be made in Volume B of Publication No. 9. This decision is recorded in Recommendation 72 (CSM-III).

15.7 The Commission considered Recommendation 10 (CCl-III) concerning surfaces to be used for reporting data in CLIMAT TEMP, taking into account comments by CCl at its third session, paragraph 15.4 of the general summary and the Working Group on Codes. The Commission agreed that there would be no difficulties in making the changes proposed by CCl, i.e., not to report data for 400 mb but to add data for 50 mb and 30 mb in CLIMAT TEMP. The president of CCl should be informed accordingly.

15.8 Under agenda item 9.1 the Commission decided among other things to recommend an amended text of paragraph 3.4.4.1 of the Technical Regulations. In this connexion the question was raised whether a precision barometer other than a mercury barometer could be used for determining pressures at a basic land station (principal land station). It was agreed that this question could most appropriately be studied by CIMO and that the president of CIMO should be informed accordingly.

15.9 The Working Group on Pressure Reduction Methods proposed in its report that paragraph (5) of Appendix A to the Technical Regulations should be amended. The Commission examined this proposal and agreed that this question should be considered by CIMO. The following text of the paragraph in question may be used by CIMO as a basis for discussion :

"(5) Determination of local acceleration of gravity

The value of $g_{\varphi} H$ required for reducing barometer readings to standard gravity shall be based on the most accurate determination of the acceleration of gravity g available. In the event that the local value of the acceleration of gravity has not been determined on the basis of some method considered to be more accurate in the absolute sense it shall be ascertained in accordance with the provisions of Appendix B."

16. DESIRABILITY OF MAINTAINING A SEPARATE COMMISSION FOR INSTRUMENTS AND METHODS OF OBSERVATION (Agenda item 16)

The Commission noted the views of other constituent bodies and those expressed at the meeting of presidents of technical commissions with regard to the desirability of maintaining a separate commission for instruments and methods of observation. It was agreed that from the point of view of synoptic meteorology, a separate technical commission with terms of reference as recommended by the third session of CIMO should be maintained.

17. SCIENTIFIC LECTURES IN THE FIELD OF THE COMMISSION (Agenda item 17)

Three afternoon meetings were devoted to scientific lectures according to the following schedule :

Session I. General. Chairman : Dr. S.N. Sen.

1. A brief résumé of the Indian Meteorological Department's part in the Indian Ocean Expedition, by Mr. C. Ramaswamy.
2. The Indian Ocean Expedition, by Dr. C.S. Ramage.
3. Distant meteorological briefing of crews by means of TV at Brussels airport, Belgium, by Mr. G. Doumont.

Session II. a) Forecasting of ocean waves
b) Optimum track ship routing

Chairman : Dr. K.R. Postma

1. Problems of forecasting ocean waves, by Dr. H. Walden (Paper given by Dr. H. Kruhl),
2. Numerical treatment in forecasting the state of the sea, by R. Gelci, P. Chavy and E. Devillaz (Paper given by Mr. R. Mittner).
3. On the application of optimum ship routing techniques in the Indian seas, by Mr. C. Ramaswamy.
4. Results of weather routing of ships sailing from Hamburg to the east coast of North America, by Dr. H. Kruhl.
5. Present status of U.S. Navy ship routing program, by Mr. Rudolph Perchal.

Session III. a) Numerical forecasting
b) Extended forecasting

Chairman : Dr. K.T. Logvinov

1. Baroclinic forecasting with the primitive equations using actual data, by staff members of the Research Group, Offenbach (Main) (Presented by Dr. H.K. Meyer).

2. Some aspects on the numerical analysis of upper-air charts - Difficulties encountered in the numerical analysis of upper-air charts, by Dr. Olov Lönnqvist.

3. Wave analysis method in the extended forecasting at Japan Meteorological Agency, by Mr. Nobuhiko Nishina.

4. Principal characteristics of weather forecasting techniques for 3 - 7 days, by Y.B. Khrabrov, D.Sc. (Presented by Dr. Aleksei D. Tchistyakov).

5. Extended forecasting, by Mr. Jerome Namias.

18. ESTABLISHMENT OF WORKING GROUPS (Agenda item 18)

The Commission decided to establish working groups on the following subjects :

(a) Definition of terms used to describe the intensity of meteorological phenomena (Resolution 1 (CSM-III))

(b) Synoptic use of meteorological satellite data (Resolution 2 (CSM-III))

(c) Codes (Resolution 3 (CSM-III))

(d) Networks (Resolution 4 (CSM-III))

(e) Telecommunications (Resolution 5 (CSM-III))

(f) Facsimile equipment standardization (Resolution 6 (CSM-III))

(g) Long-range forecasting (Resolution 7 (CSM-III))

(h) Methods of analysis and prognosis in the tropics (Resolution 8 (CSM-III))

(i) Qualifications and training of meteorological personnel in the field of synoptic meteorology (Resolution 9 (CSM-III))

The Commission further recommended that a working group on numerical analysis and forecasting be established jointly with CAe (see Recommendation 64 (CSM-III)).

For four of the working groups listed above, i.e. groups (c), (e), (h) and (i), the chairman of the group was selected by the Commission. In the case of three other groups, i.e., (a), (f) and (g), the president of the Commission was authorized to nominate an acting chairman of each group. Finally, with regard to the remaining two groups, i.e. (b) and (d), the Commission agreed to the following procedure :

(i) The previous chairman of the Working Group on the Synoptic Use of Meteorological Data from Artificial Satellites, Mr. D.M. Hanson (United States), should be invited to continue to serve as chairman of the working group if the Permanent Representative of the USA concurs. If not, the president of CSM was authorized to nominate an acting chairman of this working group.

(ii) The Commission agreed that Mr. W. Kuipers (Netherlands) should be invited to accept the chairmanship of the Working Group on Networks, if the Permanent Representative of the Netherlands concurs. If not, the president of CSM was authorized to nominate an acting chairman of this working group.

19. REVIEW OF RECOMMENDATIONS AND RESOLUTIONS CONCERNING THE FIELD OF SYNOPTIC METEOROLOGY (Agenda item 19)

19.1 In accordance with current practice the Commission examined those resolutions and recommendations of CSM which are still in force and adopted Resolution 10 (CSM-III).

19.2 When deciding not to keep in force Resolution 4 (CSM-II) - Wind vector differences - the Commission realized that action on the resolution has not yet been completed. It therefore decided to re-affirm Resolution 4 (CSM-II) by the following statement :

> "The Commission considered that while there is a real need for provision to be made for the reporting of wind vector differences, advice on the best method of obtaining a wind value for the 1000 mb level is a requisite to the development of the appropriate sections of the PILOT and TEMP code forms. The Commission therefore invited the president of CSM to consult the president of CAe on the best method of determining the wind to be used for the 1000 mb level when calculating wind vector differences."

19.3 In connexion with the decision not to keep in force Recommendation 1 (CSM-II), the Commission noted that the substance of the recommendation has been included in Volume B of Publication No. 9. The Commission requested the Secretary-General to insert the substance of paragraph (4) of the operative part of the recommendation in an appropriate part of Volume D, Part D of Publication No. 9.

19.4 The Commission noted that Resolution 14 (61-CSM) and Recommendations 90 and 91 (61-CSM) were adopted by correspondence between CSM-II and CSM-III. For record purposes the Commission decided to append the text of these decisions to this report (see Annex V).

19.5 The Commission further examined the Executive Committee resolutions in the field of synoptic meteorology and agreed in Recommendation 74 (CSM-III) that one of these resolutions may now be considered as no longer necessary.

20. ELECTION OF OFFICERS (Agenda item 20)

Dr. S.N. Sen (India) was elected president and Dr. Konstantin T. Logvinov (U.S.S.R.) was elected vice-president.

21. DATE AND PLACE OF THE FOURTH SESSION (Agenda item 21)

The Commission noted that the date and place of its fourth session would be determined in accordance with General Regulation 147.

22. MISCELLANEOUS ITEMS (Agenda item 22)

22.1 Responsibility for the preparation and dissemination of monthly means for oceanic areas (Agenda item 22.1)

The Commission noted the request of CCl (see paragraph 18.3 of the general summary of the work of its third session) and agreed that CSM has some interest in this matter because the monthly mean data (Code form FM.73) are prepared from synoptic surface charts. The Commission concluded that since mean data currently are prepared for only a small part of the total ocean area the assignment of responsibility to individual Members for the preparation and dissemination of monthly means for the remaining ocean areas could most appropriately be considered by the regional associations. The president of CSM was requested to inform the president of CCl and the presidents of regional associations accordingly.

22.2 Draft plan for world-wide dissemination of atmospheric radioactivity data (Agenda item 22.2)

This item was discussed in a plenary session and the president pointed out that the item was on the agenda principally as an information item. The representative of the Secretary-General reviewed the developments which had taken place since the time of

preparation of the document submitted to the session by the Secretary-General. In view of these developments and the lack of precise requirements with regard to any possible action by CSM, it was agreed that it would be premature, at this stage, to make any comments or suggestions.

22.3 Format of tsunami warnings and relevant information (Agenda item 22.3)

The Commission examined the form of message for the transmission of seismic sea-wave observations by the rapporteur of the Executive Committee panel of experts. The Commission noted that this form of message is such that there is no risk of confusion with meteorological reports and that the number of such messages will be small. It was considered that, at this stage, no action was needed by the Commission.

23. CLOSING OF THE SESSION (Agenda item 23.)

At the last plenary meeting the Commission authorized the retiring president to approve those minutes of plenary meetings which had not been approved during the session.

Several delegations expressed their warm appreciation to Mr. P. Kutschenreuter for the excellent way in which he had directed the work of the Commission during the past four years and also for his efficient conduct of the third session of the Commission. Thanks were also expressed to the conference staff of the Department of State, the Weather Bureau staff and the representatives of the WMO Secretariat for their valuable contribution to the success of the session.

The session was closed at 11.50 p.m. on 19 April 1962.

RESOLUTIONS ADOPTED BY THE SESSION

Res. 1 (CSM-III) - WORKING GROUP ON THE DEFINITION OF TERMS USED TO DESCRIBE THE INTENSITY OF METEOROLOGICAL PHENOMENA

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING the report of the working group established by Resolution 10 (CSM-II) to examine and define quantitatively the terms used to describe the intensity of meteorological phenomena,

CONSIDERING that it is important for purposes of synoptic meteorology that this work be continued,

DECIDES :

(1) To re-establish a Working Group on the Definition of Terms used to Describe the Intensity of Meteorological Phenomena with the following membership :

E. Bontrond (France)
A member to be designated by Canada
A member to be designated by India
A member to be designated by Japan
A member to be designated by the U.S.A.

(2) That the terms of reference of the working group shall be :

(a) To develop quantitative criteria for the intensity terms for certain meteorological phenomena in code table 4677 - ww - Present weather - of Volume B, WMO Publication No. 9, in particular for the following :

(i)	Snow shower	(ww 85-86)
(ii)	Mixed precipitation	(ww 58-59, 68-69, 83-84 and 87-94)
(iii)	Freezing precipitation	(ww 56-57 and 66-67)
(iv)	Thunderstorms	(ww 95-99)
(v)	Sandstorms and dust storms	(ww 30-35)
(vi)	Drifting snow and blowing snow	(ww 36-39)

(b) To develop quantitative threshold criteria for lithometeors in code specifications ww = 04, 05, 06, 07 and 09;

(c) To develop a definition of "heavy hail" used in "SIGMET" information;

(d) When studying (a) and (b) above, the requirements of synoptic meteorology should be considered primarily, but due regard should also be paid to requirements in aeronautical and other specialized fields of meteorology, as it is desirable for all requirements to be satisfied by one set of terms;

(e) To submit a complete report to the president of CSM as early as possible and not later than January 1964.

Res. 2 (CSM-III) - RE-ESTABLISHMENT OF THE WORKING GROUP ON THE SYNOPTIC USE OF METEOROLOGICAL SATELLITE DATA

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING :

(1) Resolution 10 (EC-XIII),

(2) Resolution 14 (61-CSM),

(3) The report of the second session of the Panel of Experts on Artificial Satellites,

(4) The report of the Working Group on the Synoptic Use of Meteorological Data from Artificial Satellites;

CONSIDERING that developments in the field of meteorological satellites are such that satellite data are available for operational synoptic purposes,

DECIDES :

(1) To re-establish the Working Group on the Synoptic Use of Meteorological Satellite Data with the following membership :

D.J. Bargman (British East Africa)
V.R. Coles (United Kingdom)
G.T. Rutherford (Australia)
A member to be designated by the U.S.A.
A member to be designated by the U.S.S.R.

(2) That the terms of reference of the working group shall be :

(a) To examine the types of data, appropriate for synoptic use, which are and can be expected to be received from meteorological satellites;

(b) To study the suitability of satellite data for regular international exchange in original or interpreted form, and to prepare advice on the requirements for such exchange for synoptic purposes;

(c) To present a progress report to the president of CSM at the beginning of each year.

Res. 3 (CSM-III) - WORKING GROUP ON CODES

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING :

(1) The remarks of the chairman of the Working Group on Code Problems when presenting his report,

(2) The report of the CSM Working Group on Code Problems (Toronto, January 1962) (CSM-III/Doc. 20),

(3) Resolution 13 (III-RA I),

(4) Paragraph 5.8.1.9, of the general summary of the work of Third Congress,

(5) Recommendation 14 (CSM-III),

CONSIDERING :

(1) That the fundamental requirements in meteorological exchanges have not been fully enunciated,

(2) That many serious and urgent coding problems remain to be solved,

(3) That some existing code forms may be no longer required,

(4) That known deficiencies in present codes should be remedied,

DECIDES :

(1) To re-establish the Working Group on Codes with the following basic composition :

(a) F.W. Benum (Canada) (Chairman)

(b) A representative from each of the regional associations, the members being selected, as far as is practicable, to include one member with extensive tropical experience and one with experience in modern computers;

(2) That Members be invited to nominate other experts to assist the working group in its studies and particularly to attend the last general meeting of the working group to finalize the report of the group;

(3) That other technical commissions be invited to nominate representatives to serve on the working group;

(4) That the working group shall meet within one year after the third session of CSM and meet again to complete the final report;

(5) That the working group be given the terms of reference set out in Part A of the annex to this resolution;*

(6) That the working group shall be guided by the principles enunciated in Part B of the annex to this resolution;*

(7) That the final report of the working group shall be in the hands of all Members not later than six months before the fourth session of the Commission;

REQUESTS the president of the Commission for Synoptic Meteorology :

(1) To take early steps to establish and activate the working group,

(2) To invite the attention of the presidents of regional associations to the need for urgency in nominating regional representatives to the Working Group on Codes.

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* See Annex VI.

Res. 4 (CSM-III) - WORKING GROUP ON NETWORKS

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING :

(1) The network density criteria specified in Regulations 2.2.1.2 to 2.2.1.4 of the Technical Regulations,

(2) Resolution 7 (CSM-II),

(3) The Report of the Working Group on Networks submitted to the third session of the Commission,

CONSIDERING :

(1) The need to establish at an early date improved network density criteria based on available studies and on operational requirements,

(2) The need to continue and to complete the work on network density criteria based on theoretical considerations and appropriate experiments,

DECIDES :

(1) To re-establish a Working Group on Networks with the following membership :

W.J.A. Kuipers (Netherlands) (Chairman)*
R. Pône (France)
E.G. Davy (Mauritius)
A member to be designated by Norway
A member to be designated by Poland
A member to be designated by the U.S.A.
A member to be designated by the president of CAeM, if he concurs,

(2) That the terms of reference of the working group should be as follows :

(a) To review the criteria for surface and upper-air networks specified in the Technical Regulations and to recommend provisional criteria based on available studies;

(b) To establish, if necessary by computer experiments with simulated network, theoretical quantitative criteria for the density of network of upper-air observations in space and in time required to maintain a specified level of accuracy of upper-air analysis and forecasting of geopotential, wind and temperature;

(c) To study the possible use of surface synoptic data for improving upper-air analysis, in particular for areas with sparse upper-air data;

(d) To submit an interim report to the president of the Commission by the middle of 1964 and a final report at such a time that it may be circulated to Members six months before the fourth session of the Commission.

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* Subject to concurrence by the Permanent Representative of the Netherlands.

Res. 5 (CSM-III) - RE-ESTABLISHMENT OF A WORKING GROUP ON TELECOMMUNICATIONS

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING that developments in the field of telecommunications are progressing at an accelerating rate, and

CONSIDERING that these developments have world-wide repercussions in the field of meteorology,

DECIDES :

(1) To re-establish a Working Group on Telecommunications composed of :

(a) The chairmen of the working groups on telecommunications of all regional associations,

(b) Expert representatives to be nominated by Members responsible for the operation of the northern and southern hemisphere exchange centres;

(i) Northern hemisphere exchange centre :

P. Wüsthoff (Federal Republic of Germany)
V. Koenuma (Japan)
S.R. Barbagallo (U.S.A.)
A.V. Popov (U.S.S.R.)
An expert to be designated by India

(ii) Southern hemisphere exchange centre :

R.A.E. Holmes (Australia)
An expert to be designated by Brazil
An expert to be designated by British East Africa

(c) Experts nominated during the session :

L. Dufour (Belgium)
Y. Levy-Tokatly (Israel)
V. Mastino (Italy)

(d) Additional experts who may be nominated by any Member wishing to participate actively in the work of the group;

(2) To select, in accordance with Regulation 30 of the General Regulations, Mr. S.R. Barbagallo as chairman of the working group;

(3) That the terms of reference shall be as follows :

(a) To keep under constant review developments in telecommunications techniques and equipment, and their adaptation to the requirements of an efficient, world-wide system of meteorological telecommunication;

(b) To be responsible for proposals upon the international standardization of operating practices, procedures, equipment and other related questions, including the contents of, and schedules for, meteorological transmissions;

(c) To keep in touch with the activities of the Working Groups on Meteorological Telecommunications of all regional associations;

(d) To keep abreast of the activities relating to meteorological telecommunications of the International Telecommunication Union, the International Civil Aviation Organization, and other international organizations;

(e) To decide on action to permit the working group to perform its duties efficiently, such action to include the establishment of study groups for special studies, and inviting experts to assist it in any specific problem;

(f) To undertake any appropriate task in accordance with the directives given by the Commission for Synoptic Meteorology.

Res. 6 (CSM-III) - WORKING GROUP ON FACSIMILE EQUIPMENT STANDARDIZATION

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING Recommendation 50 (CSM-II) approved by Resolution 21 (EC-X),

CONSIDERING there is an urgent demand for standardization of the phasing signals required for automatic operation,

DECIDES :

(1) To establish a Working Group on Facsimile Equipment Standardization with the following membership :

P. Wüsthoff (Federal Republic of Germany)
Wojciech Cudny (Poland)
A member to be designated by Canada
A member to be designated by France
A member to be designated by the U.S.A.
A member to be designated by the U.S.S.R.

(2) To give the working group the following terms of reference :

(a) To study the problem of facsimile phasing signals with a view to determining a unique standard, taking into account the two signals specified in paragraph 9.4 of Recommendation 60 (CSM-III);

(b) To report to the president of CSM not later than 1 July 1963 their recommendations for a single phasing signal, including any consequential changes required in paragraphs 9.2, 9.3, 9.4 and 9.5 of Recommendation 60 (CSM-III).

Res. 7 (CSM-III) - WORKING GROUP ON LONG-RANGE WEATHER FORECASTING

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING :

(1) The report of the CAe Working Group on Methods of Long-Range Weather Forecasting presented to the third session of the Commission for Aerology, and

(2) The relevant documents presented to the Commission by France and Japan,

CONSIDERING :

(1) That studies of methods and techniques of long-range forecasting are of great concern to the Commission;

(2) That some definite action will have to be made in the near future with regard to exchange of information required for long-range forecasting;

DECIDES :

(1) To establish a Working Group on Long-Range Weather Forecasting with the following membership :

H.T. Mörth (British East Africa)
K. Takahashi (Japan)
Y.B. Khrabrov (U.S.S.R.)
A member to be designated by India
A member to be designated by Poland
A member to be designated by the U.S.A.

(2) That the terms of reference of the working group shall be as follows :

(a) To review the current methods of long-range weather forecasting; prospectives for development and possibilities of application to synoptic practices;

(b) To study the requirements of data for the preparation of long-range forecasts : e.g. meteorological data including five-day means, network in space and in time, etc;

(c) To determine which countries are interested in receiving such data for long-range forecasting purposes and whether these are required for research and/or operational purposes;

(d) To examine the exchange procedure and the forms in which such exchanges should take place, and give examples of consequential workload on Members;

(e) To submit a preliminary report including appropriate recommendations on items (b) and (d) above to the president of the Commission by 1 January 1964 for further action as required;

(f) To submit its final report to the president of CSM not later than six months before the fourth session of the Commission.

Res. 8 (CSM-III) - WORKING GROUP ON METHODS OF ANALYSIS AND PROGNOSIS IN THE TROPICS

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING :

(1) Resolution 11 (CSM-II),

(2) The report of the Working Group on Isotherm Analysis and Isotherm, Stream-Line and Isotach Prognostic Techniques in the Tropics;

CONSIDERING the desirability of further studies of methods of analysis and prognosis in the tropics,

DECIDES :

(1) To re-establish a Working Group on Methods of Analysis and Prognosis in the Tropics, with the following membership :

H.T. Mörth (British East Africa) (Chairman)
R. Southern (Australia)
J.F. Gabites (New Zealand)
A member to be designated by Brazil
A member to be designated by India
A member to be designated by the U.S.A.

(2) That the terms of reference of the working group shall be as follows :

(a) To examine the possibility of defining the term "in the tropics" or "tropical area" for the purpose of synoptic analysis;

(b) To keep abreast of new developments in methods of analysis and prognosis in the tropics;

(c) To examine to what extent analytical and statistical methods used in temperate latitudes may be applied in tropical areas;

(d) To prepare a report describing the methods of analysis and prognosis (with examples) in use by various Members with comments on the relative merits of each method;

(e) To recommend to the president of CSM by 1 January 1964, one or more suitable methods of analysis and prognosis in order that Members desiring to do so can use these methods on an experimental basis;

(f) To study the information received from Members in response to Recommendation 66 (CSM-14) and submit six months prior to the fourth session of the Commission a final report with recommendations on :

(i) The most suitable methods for analysis and prognosis in the tropics;

(ii) Suitable methods of presentation of such analysis and prognosis for international exchange.

Res. 9 (CSM-III) - ESTABLISHMENT OF A WORKING GROUP ON THE QUALIFICATIONS AND TRAINING OF METEOROLOGICAL PERSONNEL IN THE FIELD OF SYNOPTIC METEOROLOGY

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING :

(1) Paragraph 5.12.8 of the general summary of the work of the thirteenth session of the Executive Committee;

(2) That CAeM has developed a Guide on "Qualifications and Training of Meteorological Personnel employed in the Provision of Meteorological Services for International Air Navigation", which has been approved for publication by Resolution 22 (EC-XII);

CONSIDERING :

(1) The desirability for WMO to develop and promulgate, for the information of Members, guidance on the qualifications and training of meteorological personnel in the field of synoptic meteorology;

(2) The interchange of synoptic meteorological personnel with personnel employed in other fields of meteorology, in particular in aeronautical meteorology;

DECIDES :

(1) To establish a Working Group on the Qualifications and Training of Meteorological Personnel in the Field of Synoptic Meteorology with the following membership :

B.W. Thompson (British East Africa) (Chairman)
M. Montalto (Italy)
A member to be designated by France
A member to be designated by India
A member to be designated by the U.S.A.

(2) That the terms of reference of the working group shall be :

(a) To prepare guidance material regarding the basic qualifications, especially in mathematics and physics, and appropriate syllabi for meteorological training of all categories of meteorological personnel in the field of synoptic meteorology, including personnel engaged in numerical prediction;

(b) To take into consideration, as appropriate, the provisions in the WMO Guide on "Qualifications and Training of Meteorological Personnel employed in the Provision of Meteorological Services for International Air Navigation";

(c) To submit its report to the president of CSM as soon as possible but not later than July 1965;

REQUESTS the Secretary-General to provide the working group with all available material relevant to qualification and training of meteorological personnel.

Res. 10 (CSM-III) - REVISION OF THE RESOLUTIONS AND RECOMMENDATIONS OF THE COMMISSION FOR SYNOPTIC METEOROLOGY

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING the action taken on the recommendations adopted prior to its third session,

CONSIDERING that all the resolutions adopted prior to its third session, are now obsolete :

DECIDES :

(1) To keep in force Recommendations 30, 35, 36, 37, 53, 73, 74, 84 and 88 (CSM-II), 90 and 91 (61-CSM) and to publish their texts in the report of the third session;*

(2) Not to keep in force Resolutions 1-13 (CSM-II) and 14 (61-CSM);

(3) To note with satisfaction the action taken by the competent bodies on the following Recommendations : 23, 32 and 54 (CSM-I), 56-59 (55-CSM) inclusive, 60 and 61 (56-CSM) and 1-29, 31-34, 38-52, 54-72, 75-83, 85-87 and 89 (CSM-II), which are now redundant.

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* See page 174.

RECOMMENDATIONS ADOPTED BY THE SESSION

Rec. 1 (CSM-III) - CRITERIA FOR REPORTING SQUALLS

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING :

(1) Recommendation 78 (CSM-II),

(2) The lack of uniformity in the criteria used by various Members for reporting squalls;

CONSIDERING :

(1) That it is desirable to have universal criteria for reporting squalls,

(2) That, for reporting squalls, the criteria should be related only to wind,

RECOMMENDS that Members use the following criteria for reporting squalls :

"A sudden increase of wind speed by at least 8 m/s (16 knots) the speed rising to 11 m/s (22 knots) or more and lasting for at least one minute."

NOTE : When Beaufort scale is used for estimating wind speed, the following criteria should be used for the reporting of squalls :

"A sudden increase of wind speed by at least three stages of the Beaufort scale, the speed rising to force 6 or more and lasting for at least one minute."

Rec. 2 (CSM-III) - STANDARD ISOBARIC SURFACES (AMENDMENTS TO THE TECHNICAL REGULATIONS)

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING that the existing regional association agreements for reporting data above 100 mb include different standard isobaric surfaces;

CONSIDERING the desirability of establishing a world-wide uniform procedure for reporting data for those surfaces;

RECOMMENDS :

(1) That the following new paragraph be included in the Technical Regulations, after paragraph 7.4.1.2 :

"The standard isobaric surfaces for representing and analysing the conditions in the atmosphere above 100 mb should be the 70 mb, 50 mb, 30 mb, 20 mb and 10 mb surfaces :"

(2) That the following new note be added to FM 35.B in Volume B of WMO Publication No. 9 :

"If data for only one standard isobaric surface above 100 mb are included in Section 1 for international exchange, they should be for the 50 mb surface. If data for only two standard isobaric surfaces above 100 mb are transmitted, they should be for the 50 and 30 mb surfaces."

(3) That this recommendation be brought to the attention of the regional associations.

Rec. 3 (CSM-III) - PRESSURE REDUCTION METHODS

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING :

(1) The lack of uniformity in the methods of pressure reduction used by Members,

(2) The report submitted to the present session of the Commission by the Working Group on Pressure Reduction Methods,

CONSIDERING that at present it is not practicable to recommend any method of pressure reduction for universal use,

RECOMMENDS :

(1) That the report of the Working Group on Pressure Reduction Methods be published as a WMO Technical Note;

(2) That Members be invited

(i) To study the report of the working group,

(ii) To carry out further studies of pressure reduction methods including comparisons between national methods and those recommended by the working group, and

(iii) To submit their comments on the report and their results of further studies to the Secretary-General;

(3) That regional associations be invited to study the possibilities of achieving greater uniformity in pressure reduction methods on a regional basis, taking into consideration the above-mentioned Technical Note;

(4) That the Secretary-General be requested to summarize the information received from Members or presidents of regional associations and to submit it in appropriate form to CSM at its fourth session.

Rec. 4 (CSM-III) - INCREASING THE SYNOPTIC USE OF DATA FROM METEOROLOGICAL SATELLITES

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING :

(1) Resolution 10 (EC-XIII),

(2) Resolution 14 (61-CSM),

(3) The report of the second session of the Panel of Experts on Artificial Satellites,

(4) The report of the Working Group on the Synoptic Use of Meteorological Data from Artificial Satellites;

CONSIDERING :

(1) The current and potential usefulness of data from meteorological satellites in synoptic meteorology,

(2) The necessity to acquaint meteorologists with the use of these data;

RECOMMENDS :

(1) That the Permanent Representative of the United States be invited to undertake the preparation of a WMO Technical Note dealing with the synoptic use of data from meteorological satellites,

(2) That the Secretary-General be requested to endeavour to organize at various locations seminars on the synoptic use of meteorological satellite data.

Rec. 5 (CSM-III) - AMENDMENTS TO THE TECHNICAL REGULATIONS (Paragraphs 5.1.1.1 and 5.1.1.2)

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING :

(1) Paragraph 5.8.1.10 of the general summary of the work of Third Congress,

(2) Recommendation 3 (CMM-III),

CONSIDERING :

(1) That Technical Regulation 5.1.1.1 is a general one which covers, inter alia, the case of meteorological messages transmitted from and to ships;

(2) That Chapter 10 of the Technical Regulations makes provision for the transmission in plain language, of certain parts of weather bulletins for shipping,

RECOMMENDS :

(1) That Technical Regulation 5.1.1.1 be amended as follows :

"5.1.1.1

Meteorological messages exchanged for international purposes shall be in the appropriate international code forms specified in Publication No. 9.TP.4, Volume B (Annex II) with the exception of those messages or parts of messages specifically excluded by these Technical Regulations.

NOTE : Meteorological messages exclusively for exchange between one Member and another may be in other forms by bilateral agreement."

(2) That Technical Regulation 5.1.1.2 be deleted from the Technical Regulations.

Rec. 6 (CSM-III) - UNITS FOR WIND SPEED

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING :

(1) Resolution 30 (Cg-III),

(2) Paragraph 5.15.1 of the general summary of the work of Third Congress,

(3) Annex 5 to the Convention on International Civil Aviation,

(4) Recommendation 5 (CMM-III) and Resolution 18 (EC-XIII),

(5) Recommendations 1/3 and 1/4 (CAeM-II/MET V) and Resolution 23 (EC-XII),

(6) Recommendation 12 (CCl-III) and Resolution 15 (EC-XIII),

CONSIDERING :

(1) That the general use of the same metric units in coded meteorological messages would eliminate the confusion resulting from the use of a dual system of units and would facilitate the work of analysis and forecasting with the help of computers;

(2) That it is most desirable that only one unit be used for reporting wind speed;

(3) That the reporting of wind speed in metres per second would simplify to some extent the use of certain code forms;

(4) That if metres per second were used in coded messages, meteorological offices of many countries would be faced with the task of converting wind speeds to knots in a very large volume of reports supplied for aeronautical purposes and a risk of error would be involved, even though the conversion is simple;

(5) That on the basis of a study carried out in accordance with Recommendation 1/4 of CAeM-II/MET V, ICAO has stated a requirement for the retention of reporting procedures and codes for surface and upper wind speeds which permit their direct use (without conversion) in terms of knots;

(6) That there is an indicated requirement for maintaining the knot for marine purposes;

RECOMMENDS :

(1) That the Executive Committee take note of the conflict between Resolution 30 (Cg-III) and the ICAO Council decision in the matter of units of wind speed for all meteorological messages for international exchanges (16th meeting of the forty-fourth session of ICAO Council, 16 December 1961);

(2) That the Executive Committee take the appropriate steps to resolve this conflict with a view to the universal use of metres per second as the unit for reporting surface and upper-air wind speed in international exchanges for synoptic, aeronautical and other purposes.

Rec. 7 (CSM-III) - CHANGES TO BE MADE IN THE TECHNICAL REGULATIONS AND VOLUME B AS A CONSEQUENCE OF RESOLUTION 30 (Cg-III)

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING :

(1) Resolution 30 (Cg-III),

(2) Paragraph 5.15.1 of the general summary of the work of Third Congress,

(3) Recommendation 6 (CSM-III),

(4) Recommendation 8 (CSM-III),

CONSIDERING :

(1) That international meteorological codes are standard practices,

(2) That the metric system and the Celsius degree have been adopted by WMO for use in meteorological messages for international exchanges,

(3) That the question of units for the reporting of wind speed is to be considered by the Executive Committee,

RECOMMENDS :

(1) (a) That the changes listed in the annex to this recommendation* be made in Volume B in accordance with the decision of the Executive Committee on Recommendation 6 (CSM-III);

(b) That the relevant changes be implemented at the same time that the revised codes recommended by the Commission at the present session are introduced;

(c) That the Secretary-General be authorized, with the approval of the president of the Commission, to amend Volume B in accordance with the decision of the Executive Committee;

(2) (a) That the use of the units and codes specified in Volume B under the specifications of symbolic letters be considered as standard practices;

(b) That, if Members are not in a position to apply these standard practices, they notify any deviation from these codes to the Secretary-General, and provide full information concerning their coding practices;

(c) That the Secretary-General be requested to include these notifications and deviating codes in an appropriate form under Chapter III of Volume B;

(3) That the Technical Regulations be amended as follows :

TR 2.3.2.2 - delete "or feet" and the note.
TR 3.4.5.1 - delete "or 0.2°F."
TR 3.4.8.3 - delete "(0.4 inch)" and "(0.01 inch)."

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* See Annex VII.

Rec. 8 (CSM-III) - NOTES IN VOLUME B

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING :

(1) Paragraph 5.8.1.9 of the general summary of the work of Third Congress;

(2) Technical Regulation 5.1.1.1,

(3) That any Regulation must have one status and must not embody any material of lesser status,

(4) That certain notes are included in the Technical Regulations for explanatory purposes or for guidance,

(5) That the present notes in Part A of Chapter I, Volume B of WMO Publication No. 9 were drafted before the present Technical Regulations (2nd Edition, 1959) were adopted,

(6) That some of the present notes in Part A, Chapter I, Volume B of WMO Publication No. 9 refer to or are duplicated in Part 2 of Chapter 12 of the Technical Regulations;

CONSIDERING the vital necessity for uniform application of codes used in international exchanges, and the importance of publishing any divergent national practice in Chapter III, Volume B, of WMO Publication No. 9,

RECOMMENDS :

(1) That a progressive revision of Part A, Chapter I, Volume B, Publication No. 9 be made by the Working Group on Codes with the assistance, if required, of the Secretariat. This revision will separate the present notes into (a) Standard practices, and (b) Notes;

(2) That a new format be adopted in publishing Part A, Chapter I, Volume B, Publication No. 9, to satisfy the principle given in (1) above. An example for such a format is given in Part A of the annex to this recommendation.* The system of numbering given in this Part A is analogous with the system used in numbering the Technical Regulations; II refers to Annex II of Technical Regulations; 17 refers to the number of code form; 1, 2 etc. are the serial numbers of the Regulations;

(3) That until the revision referred to in (1) above has been completed, an introduction along the lines given in Part B of the annex* be inserted in Part A of Chapter 1 with suitable references in the general introduction to Volume B and in the introduction to the Technical Regulations;

(4) That CAeM be invited to consider amending the second paragraph of the Introductory note to Part 2 of Chapter 12 of the Technical Regulations which now reads : "If, however, a provision in Part 2 is also given in Part 1 of Chapter 12, the status of the provision as defined in Part 1 shall prevail." to read :

"Any provision in Part 2 of Chapter 12 of the Technical Regulations which is also given in Part 1 of Chapter 12, or which is included in Volume I of the Technical Regulations, or its annexes, shall have the status pertaining to its definition in Part 1 of Chapter 12, or in Volume I or its annexes."

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* See Annex VIII.

Rec. 9 (CSM-III) - INTRODUCTION OF NEW UNITS AND CODES

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING Recommendation 25 (CMM-III) and Resolution 18 (EC-XIII),

CONSIDERING that this recommendation has merit over a wide field,

RECOMMENDS :

(1) That all code changes should be introduced on the first of January as a matter of principle,

(2) That this principle should be abandoned only when urgent code changes are needed at other times to meet special requirements.

Rec. 10 (CSM-III) - USE OF BEAUFORT NUMBERS TO REPORT WIND SPEED

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING Resolution 8 (CMM-III),

CONSIDERING that there is no apparent need for Beaufort figures above 12 although a continuing need exists for encoding stronger winds,

RECOMMENDS :

(a) That Code 1100 be amended by the deletion of all reference to Beaufort numbers 13, 14, 15, 16 and 17;

(b) That in Code 1100 the several speed equivalents for the upper limits of Beaufort number 12 be amended to read " - and over" in each instance;

(c) That Code Table 3940 be amended to read :

Code 3940

T_i - Tropical system intensity when T_t=9*

Code figure	Beaufort scale	Mean speed in knots	Mean speed in m/sec	Mean speed in km/hour
0	Force 10	48 - 55	24.5 - 28.4	89 - 102
1	11	56 - 63	28.5 - 32.6	103 - 117
2	12	64 - 71	32.7 - 36.9	118 - 133
3	12	72 - 80	37.0 - 41.4	134 - 149
4	12	81 or over	41.5 or over	150 or over
5	5	17 - 21	8.0 - 10.7	29 - 38
6	6	22 - 27	10.8 - 13.8	39 - 49
7	7	28 - 33	13.9 - 17.1	50 - 61
8	8	34 - 40	17.2 - 20.7	62 - 74
9	9	41 - 47	20.8 - 24.4	75 - 88

* When T_t=9, the code figure given for T_i indicates the force of the strongest wind in the reported cyclonic circulation or, in the case of a prognosis, the strongest wind force expected at the time of the prognosis.

Rec. 11 (CSM-III) - PUBLICATION OF OBSOLETE CODES

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

CONSIDERING that there is a need for a special publication in which all old code forms would be published for the benefit of research workers,

RECOMMENDS :

(1) That as a first step the Secretary-General be requested to provide, if required, details of the appropriate SYNOP and TEMP codes when supplying IGY/IGC data to research workers;

(2) That as a second step the Secretary-General be requested to study and advise on the best means of meeting requirements of research workers for past code information.

Rec. 12 (CSM-III) - REPLACEMENT OF X BY THE SOLIDUS / IN METEOROLOGICAL FIGURE CODES

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING Recommendation 48 (CSM-III),

CONSIDERING that this recommendation presents no coding difficulties,

RECOMMENDS :

(1) That the sign x be replaced by the solidus / wherever x is now used in meteorological figure codes,

(2) That the relevant amendments be made to Volume B.

Rec. 13 (CSM-III) - DATE OF IMPLEMENTATION OF THE CODES REVISED BY CSM AT ITS THIRD SESSION

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING :

(1) Recommendation 6 (CSM-III),

CONSIDERING that it is desirable to introduce the revised notes for the use of PILOT, TEMP and related code forms as soon as possible to satisfy the needs of automatic data processing and numerical forecasting,

RECOMMENDS :

(1) That the revised notes proposed by the Commission be implemented as from 1 January 1964;

(2) That in any case special measures be taken to ensure that at least the revised notes for the use of FM 32.C, FM 33.C, FM 35.C and FM 36.C be introduced as from 1 January 1964.

Rec. 14 (CSM-III) - ASSISTANCE TO THE WORKING GROUP ON CODES

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING Resolution 3 (CSM-III),

CONSIDERING :

(1) That two full-scale meetings of the basic Working Group on Codes will be necessary before the fourth session of the Commission,

(2) That the full-time services of a code expert will be essential from the time of establishment of the group until presentation of its final report to the fourth session of the Commission,

(3) That these objectives could not be met unless all costs incurred under (1) and (2) are met by the Organization,

RECOMMENDS :

(1) That WMO appropriate funds to meet the travel and subsistence costs of the chairman and all six members of the basic Working Group on Codes,

(2) That WMO provide a code expert with wide meteorological experience to work full time on the Working Group on Codes from mid 1962 until early 1966.

Rec. 15 (CSM-III) - SPECIFICATIONS AND NOTES FOR N_h AND h

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING that ambiguity exists in the coding instructions for N_h and h in Part A of Chapter I, Volume B, WMO Publication No. 9,

CONSIDERING :

(1) That the group $N_hC_LhC_MC_H$ is intended to convey the best possible overall report on cloud conditions,

(2) That observations on individual cloud layers are reported in the group(s) $8N_sCh_sh_s$,

RECOMMENDS :

(1) That the specification and notes of h in Volume B be amended to read :

"h Height, above ground, of the base of the lowest cloud seen. (Code 1600) (FM 11.A, FM 21.A, FM 22.A, FM 35.B, FM 36.B)

Regulation (1). When the station is in a fog, a sandstorm or dust storm, or in blowing snow, but the sky is discernible through it, h shall refer to the base of the lowest cloud, if any, observed. When, under the above conditions, the sky is not discernible, h shall be reported as /. (also $N_h = 9$, $C_L = /$, $C_M = /$, $C_H = /$).

Note : At land stations, regulations for reporting clouds with bases below station level are given under FM 17 (MONT)."

(2) That the specification N_h be amended to read :

"N_h The fraction of the celestial dome covered by all the C_L cloud(s) present and if no C_L cloud is present, that fraction covered by all the C_M- cloud(s) present. (Code 2700)

(1) See Regulations (2) to (7) under N.

(2) See Regulation (1) under (h)."

(3) That the attention of Members be drawn to this recommendation and Members whose national coding practices for N_h and h differ from the ones mentioned above be urged to amend them accordingly.

Rec. 16 (CSM-III) - CODING N, C_H AND C_M (REPORTING OF CONDENSATION TRAILS)

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING :

(1) That according to the International Cloud Atlas condensation trails are clouds by definition,

(2) That no provision exists for indicating the presence of condensation trails in existing cloud Codes 0509 C_H and 0515 C_M,

CONSIDERING :

(1) That some such provision is desirable,

(2) That a revision of the Codes 0509 C_H and 0515 C_M is undesirable,

RECOMMENDS :

(1) The addition of the following note after the section SANDSTORM in Note 5(v) to FM 11.A, page I-A-1-20, Volume B, WMO Publication No. 9 :

"COTRA - when the cloud reported consists in whole or in part of condensation trails."

(2) That the remarks concerning C_H on page I-A-3-2, Volume B, WMO Publication No. 9 be rewritten as follows :

"C_H Clouds of the genera Cirrus, Cirrocumulus and Cirrostratus. (Code 0509) (FM 11.A, FM 21.A, FM 22.A, FM 35.B, FM 36.B)

Regulation (1) The figure to be reported for C_H shall be determined on the basis of the detailed description of C_H clouds and illustrations of them in the International Cloud Atlas in conjunction with specifications in Code 0509.

Regulation (2) Cloud observations made when the sky is visible through fog or other analogous phenomena shall be made as if these phenomena were non-existent.

Regulation (3) The figure C_H=9 shall be used when the predominant C_H clouds are Cirrocumulus although small amounts of Cirrocumulus may be present in C_H cloud system reported under C_H = 1 to 8.

Regulation (4) Rapidly dissipating condensation trails shall not be reported.

Regulation (5) Persistent condensation trails and cloud masses which have obviously developed from condensation trails shall be reported as C_H clouds when they resemble such clouds. Their existence is indicated by use of the word COTRA at the end of the report."

(3) That the remarks concerning C_M, on page I-A-3-3, Volume B, WMO Publication No. 9, be rewritten as follows :

"C_M Clouds of the genera Altocumulus, Altostratus and Nimbostratus. (Code 0515) (FM 11.A, FM 21.A, FM 22.A, FM 35.B, FM 36.B)

Regulation (1) The figure to be reported for C_M shall be determined on the basis of the detailed description of C_M clouds and illustrations of them in the International Cloud Atlas in conjunction with specifications in Code 0515.

Regulation (2) Cloud observations made when the sky is visible through fog or other analogous phenomena shall be made as if these phenomena were non-existent.

Regulation (3) Rapidly dissipating condensation trails shall not be reported.

Regulation (4) Persistent condensation trails and cloud masses which have obviously developed from condensation trails, shall be reported as C_M clouds when they resemble such clouds. Their existence is indicated by use of the word COTRA at the end of the report."

(4) That the remarks concerning N, on page I-A-3-20, Volume B, WMO Publication No. 9, be rewritten as follows :

"N The fraction of the celestial dome covered by cloud. (Code 2700) (FM 11.A, FM 15.A, FM 16.A, FM 21.A, FM 22.A, FM 23.B, FM 26.B, FM 51.A, FM 52.A, FM 53.B, FM 54.B, FM 55.B, FM 56.B, FM 57.B, FM 58.B)

Regulation (1) This symbolic letter shall embrace the total fraction of the celestial dome covered by clouds irrespective of their genus.

Regulation (2) In all codes reporting meteorological observations N is to be reported as actually seen by the observer during the observation.

Regulation (3) A mackerel sky (Altocumulus or Stratocumulus translucidus) shall be reported using code figures 7 or less since breaks are always present in this cloud form even if it extends over the whole celestial dome.

Regulation (4) N shall be reported as 0 when blue sky or stars are seen through existing fog or other analogous phenomena without any trace of cloud being seen.

Regulation (5) When clouds are observed through fog or analogous phenomena their amount shall be evaluated and reported as if these phenomena were non-existent.

Regulation (6) Rapidly dissipating condensation trails shall not be reported.

Regulation (7) Persistent condensation trails, and cloud masses which have obviously developed from condensation trails, shall be reported as cloud using the appropriate C_H or C_M code figure. Their existence is indicated by use of the word COTRA at the end of the report."

Rec. 17 (CSM-III) - CODE 0900 - E - STATE OF THE GROUND

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING that Code 0900 - E does not provide for reporting ice alone on the ground since the same code figures are used for ice and snow,

CONSIDERING that it may be useful at times to distinguish between these two phenomena,

RECOMMENDS that specifications for code figures 4 to 7 of Code 0900 - E be amended as follows :

"4 Glaze or ice on ground, but no snow or melting snow.

5 Snow or melting snow (with or without ice) covering less than one-half of the ground.

6 Snow or melting snow (with or without ice) covering more than one-half of the ground but ground not completely covered.

7 Snow or melting snow (with or without ice) covering ground completely."

Rec. 18 (CSM-III) - REPORTING WIND DIRECTION AT THE NORTH AND SOUTH POLES

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING :

(1) That the Scientific Committee on Antarctic Research (SCAR-IV), in its Recommendation M.8, has requested that WMO take prompt and effective action to remove difficulties involved in reporting surface wind direction at high latitude stations in the Antarctic due to the present use of the Polar stations Code 0878 for symbol "dd", and

(2) That SCAR's request has already been complied with on a national basis,

CONSIDERING :

(1) That while Code Table 0878 is satisfactory for reporting wind direction at the North Pole it is not satisfactory for use at the South Pole,

(2) That no definite area surrounding the North Pole has been specified wherein Code 0878 is to be applied,

RECOMMENDS that the following changes be made in Volume B, WMO Publication No. 9:

(1) Page I-A-3-4, amend dd specification to read :

"dd True direction, in tens of degrees, from which wind is blowing (or will blow) (Code 0877) (Stations within 1° of the North Pole use Code 0878)."

(2) Page I-A-3-5, under dd amend the notes to read :

"Regulation (1) All directions shall be referred to the true and not to the magnetic North.

Regulation (2) Stations within 1° of the North Pole shall use Code 0878 for reporting wind direction.

Regulation (3) In an upper wind sounding, 50 shall be added to dd, when the wind speed is over 99 and less than 200 m/s (see Note (5) under ff).

Regulation (4) In nephoscope observations, 50 shall be added to dd (direction of cloud movement), when the relative speed of cloud, determined by the nephoscope, is greater than 99 radians per hour.

Regulation (5) Stations within 1° of the South Pole shall use Code Table 0877 for reporting wind direction. These stations shall orient their azimuth rings so that the ring's zero coincides with the Greenwich meridian (e.g., wind from 0° longitude is coded 36, from 90°E longitude is coded 09, from 180° longitude is coded 18, and from 90°W longitude is coded 27, etc.)

Notes : (a) See notes under ff.

(b) Clouds near the zenith are preferable for nephoscope observations.

(c) In plain language reports or forecasts, the direction of the wind may be expressed by reference to the cardinal points, i.e. north-west, south, north-east, etc."

(3) Page I-A-4-18, Code 0878, alter definition of dd to read :

"dd True direction, in tens of degrees, from which wind is blowing (or will blow) at stations within 1° of the North Pole."

Rec. 19 (CSM-III) - NOTES CONCERNING CODE FORM FM 17 - MONT

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING :

(1) That a suggestion for the amendment of notes under FM 17 - MONT has been presented to the Working Group on Code Problems,

(2) Recommendation 8 (CSM-III),

CONSIDERING that a rewording of these notes in accordance with the new format adopted by the Commission would clarify their meaning,

RECOMMENDS that the text concerning code form FM 17 - MONT, page I-A-1-24 of Volume B be replaced by the text given in Part A of the annex to Recommendation 8 (CSM-III).*

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* See Annex VIII.

Rec. 20 (CSM-III) - DELETION OF CODE FORM FM 41.B-RECCO FROM CHAPTER I OF VOLUME B

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING that code form FM 41.B is used by two WMO Members only,

CONSIDERING that there is no need to maintain this code form among the international meteorological codes,

RECOMMENDS :

(1) That code form FM 41.B-RECCO and all notes, symbolic letters, specifications and codes relating only to this code form be deleted from Volume B, Chapter I, Part A,

(2) That the Members who will continue to use it be invited to notify the Secretary-General of the details concerning this code for inclusion as a national practice in Chapter III of Volume B.

Rec. 21 (CSM-III) - TEMP AND TEMP SHIP CODE FORMS

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING :

(1) The various comments and suggestions submitted by regional associations, technical commissions and Members,

(2) Recommendation 23 of the CSM Working Group on Code Problems,

CONSIDERING :

(1) That there is an urgent need to establish a high degree of standardization in reporting upper-air data for processing by electronic computers and by manual procedures,

(2) That the Working Group on Codes has been directed to study the differing requirements for domestic and international operations as stated by some Members during the discussions and that it would be premature to adopt new code forms for TEMP and TEMP SHIP at this session,

(3) That the results of the studies on requirements to be undertaken by the Working Group on Codes should result in the development of more satisfactory code forms for international use by the fourth session of the Commission,

(4) That the adoption of an amended set of notes for TEMP and TEMP SHIP is a positive step toward standardizing present reporting procedures and will provide considerable experience for the guidance of the Working Group on Codes in its preparation of reporting procedures for new code forms,

(5) That as the new notes provide for the mandatory use of Part A of TEMP in international exchanges, the present MESRAN (FM 37.B) is no longer required,

(6) That as specific information regarding the extent which ABTOP (FM 38.B) is being used on a national basis is not available, the code form should be retained in Volume B for the present,

RECOMMENDS :

(1) That the instructions and specifications currently given in Volume B, for the use of FM 35.B (TEMP) and FM 36.B (TEMP SHIP) be revised as specified in Parts A, B, C and D of the annex to this recommendation,*

(2) That the MESRAN (FM 37.B) code form be deleted from Volume B.

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* See Annex IX.

Rec. 22 (CSM-III - PILOT AND PILOT SHIP CODE FORMS

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING :

(1) The various comments and suggestions submitted by regional associations, technical commissions and Members,

(2) Recommendation 21 of the CSM Working Group on Code Problems (CSM-III/Doc. 20),

CONSIDERING :

(1) That there is an urgent need to establish a high degree of standardization in reporting upper-wind data for use by electronic computers and by manual procedures,

(2) That much can be accomplished to obtain the desired standardization by revising the notes presently given in Volume B, WMO Publication No. 9, regarding the use of PILOT (FM 32.B) and PILOT SHIP (FM 33.B),

(3) That the Working Group on Codes has been directed to study the different requirements for upper-wind data in accord with the information to be obtained from Members, with the view to developing new code forms for consideration by CSM at its fourth session,

(4) That as adequate information on requirements is not available, it would be premature to make changes in the basic structure of the code forms for PILOT and PILOT SHIP during this session,

RECOMMENDS that the instructions currently given in Volume B, WMO Publication No. 9, for the use of FM 32.B (PILOT) and FM 33.B (PILOT SHIP) be revised as specified in Parts A and B of the annex to this recommendation.*

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* See Annex X.

Rec. 23 (CSM-III) - EXPANSION OF FM 45.B - IAC CODE FORM FOR AERONAUTICAL REQUIREMENTS

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING Recommendation 15/5 (CAeM-II/MET V),

RECOMMENDS that the following changes be made in Volume B :

(1) (a) Section 99999 of FM 45.B, page I-A-1-50, read :

"99999

$4e_1$uuu (42uuu) yyyyy yyyyy ..... (00$C_1$00)

(00000 42uuu yyyyy .....)

(..... ....)"

(b) A new Note (11) be inserted under FM 45.B on page I-A-1-51.

"(11) In section 99999, tropopause temperature data in relation to isopleths of the level of the tropopause can be given by the concurrent use of groups $4e_1uuu$ and 42uuu.

In this case, the $4e_1uuu$ group gives the value of the isobar or of the isohypse described by all the yyyyy groups which follow up to the next $4e_1uuu$ group in the message. This group is used only once for the same level isopleth, whatever the temperature may be along this isopleth.

Along a given isobar or a given isohypse, each of the 42uuu groups gives the temperature at the points indicated by the following yyyyy groups. When the temperature changes along the tropopause isopleth, an indicator group 00000 is included, followed by a 42uuu group and the yyyyy groups.

In the 42uuu group, uuu gives the temperature in whole degrees Celsius (add 500 for negative values)."

(c) Notes (11) to (15) under FM 45.B be renumbered (12) to (16);

(d) Code 4892, page I-A-4-75, opposite $x_2x_2x_2 = 999$, Tropopause analysis, in column $x_3x_3x_3$, add the following : "$x_3x_3x_3$ is indicated by / / /."

(2) (a) FM 45.B, page I-A-1-50, before Section 77744 add

"88822

44vvv yyyyy yyyyy ....."

(b) FM 45.B, page I-A-1-50, to Note (4) add :
"88822 - Vertical wind shear section"

(c) Page I-A-3-30, add :

"vvv Vertical wind shear in metres/second per 1000 metres"

(3) (a) FM 45.B, page I-A-1-50, at end of Section 99988, add a new line :

"and/or $4e_1uuu$ yyyyy yyyyy ..... ."

Rec. 24 (CSM-III) - EXPANSION OF FM 45.B (IAC) AND FM 46.A FOR MARITIME REQUIREMENTS

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING paragraphs 9.6 and 16 of the general summary of the work of the third session of the Commission for Maritime Meteorology,

CONSIDERING :

(1) That it is desirable that code form FM 46.A contain provision for the coding of wave conditions, sea temperature analysis and full information on the movement and characteristics of pressure systems and fronts for the benefit of maritime users;

(2) That code form FM 45.B may also be used for the transmission of wave and sea temperature analysis;

RECOMMENDS :

(1) That code form FM 45.B, page I-A-1-50, be amended as follows :

(a) Add the new following section after Section 99999 :

"88800

$77e_2uu$ $(9d_wd_wP_wP_w)$ yyyyy $(9d_wd_wP_wP_w)$ yyyyy .....

.... $(9d_wd_wP_wP_w)$ yyyyy $(00C_100)$"

(b) Note (4) first line add "and 888.." after "999..";

(c) Note (4) add the following :

"88800 - Wave or sea temperature section"

(d) Add the new following Note (12) and renumber other notes accordingly :

"(12) In Section 88800, the group $(9d_wd_wP_wP_w)$ when used, indicates the direction and period of waves at the position defined by the $QL_aL_aL_oL_o$ group which follows"

(2) That code form FM 46.A, page I-A-1-53, be amended as follows :

(a) Replace the format of the code form by the format given in the appendix to this recommendation;

(b) Replace Note (4) by the following :

"(4) The sections of the message beginning with groups of the type 999.. or 888.. are the following :

99900	Section of pressure systems
99911	Section of frontal systems
99922	Isobars section
99944	Weather area section
99955	Tropical section
88800	Wave or sea temperature section"

(c) Repeat Notes 5, 7 and 12 (new) from page I-A-1-51 (FM 45.B IAC) after Notes (4), (5) and 11 respectively, substituting $QL_aL_aL_oL_o$ for yyyyy and renumber notes accordingly;

(3) Insert on page I-A-2.5 :

"88800 Waves or sea temperature data follow. (FM 45.B and FM 46.A)"

(4) Insert the following code on page I-A-4-20 :

Code 4063

e_2 – Type of isopleth (and unit of isopleth values uu)

Code figure	Description
0	Sea wave height isopleth, uu in metres.
1	Swell wave height isopleth, uu in metres.
2	Wave height isopleth (wave type undetermined), uu in metres.
3	Wave direction isopleth, uu in tens of degrees.
4	Wave period isopleth, uu in seconds.
5	Reserved
6	Reserved
7	Reserved
8	Reserved
9	Sea temperature isopleth, uu in whole degrees Celsius

(5) Insert the following on page I-A-3-22 :

"P_wP_w Period of waves in seconds (FM 45.B and 46.A)."

A P P E N D I X

FM 46.C Analysis in abbreviated form (IAC FLEET)

	10001	33388	$0YYG_cG_c$	or .	
	65556	33388	$0YYG_cG_c$	$000G_pG_p$	
	99900				
	$8P_tP_cPP$	$QL_aL_aL_oL_o$	$(QL_aL_aL_oL_o)$	$md_sd_sf_sf_s$	
or					
	$000g_pg_p$	$8P_tP_cPP$	$QL_aL_aL_oL_o$	$(QL_aL_aL_oL_o)$	$md_sd_sf_sf_s$
and					
	$000g_pg_p$	$8P_tP_cPP$	$QL_aL_aL_oL_o$	$(QL_aL_aL_oL_o)$	$md_sd_sf_sf_s$
	99911				
	$66F_tF_iF_c$	$QL_aL_aL_oL_o$	$QL_aL_aL_oL_o$	.....	$md_sd_sf_sf_s$
or	$000G_pG_p$	$66F_tF_iF_c$	$QL_aL_aL_oL_o$	.....	$md_sd_sf_sf_s$
and					
	$000G_pG_p$	$67F_tF_iF_c$	$QL_aL_aL_oL_o$	.....	$md_sd_sf_sf_s$
	99922				
	44PPP	$QL_aL_aL_oL_o$	$QL_aL_aL_oL_o$	.....	

99955					
$(55T_tT_iT_c)$	(555PP)	$QL_aL_aL_oL_o$	$QL_aL_aL_oL_o$	.....	$md_sd_sf_sf_s$
99944					
$987w_sw_s$	$QL_aL_aL_oL_o$	$QL_aL_aL_oL_o$	.....		
88800					
$77e_2uu$	$(9d_wd_wP_wP_w)$	$QL_aL_aL_oL_o$	$(9d_wd_wP_wP_w)$	$QL_aL_aL_oL_o$	.....
.....	.....	$(9d_wd_wP_wP_w)$	$QL_aL_aL_oL_o$	$(00C_100)$	
77744 ..... Vocabulary groups 44777					
19191					

Rec. 25 (CSM-III) - CODE 4562:W_1 - FORECAST WEATHER

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING the suggestion in paragraph 9.1 of the general summary of the work of the third session of the Commission for Maritime Meteorology,

CONSIDERING that implementation of the suggestion would effect a tidying up of code table 4562,

RECOMMENDS that the following amendments be made to Volume B :

Page I-A-4-64, Code 4562 : W_1 - Forecast weather, amend the specifications of code figures 5 and 8 to read :

"5 Drizzle
8 Squally weather with or without showers."

Rec. 26 (CSM-III) - CODING VISIBILITY AT OCEAN WEATHER STATIONS

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING the suggestion in paragraph 7.4 of the general summary of the work of the third session of the Commission for Maritime Meteorology,

CONSIDERING :

(1) That there are limitations in estimating visibility at sea,

(2) That the requirements of synoptic and aeronautical meteorology do not call for the use of a fine scale of visibility at sea,

RECOMMENDS that the following amendments be made to Publication No. 9, Volume B :

(a) Page I-A-1-30, Note (5) of FM 26.B should read :

"(5) Only code figures 00-89 shall be used to encode h_sh_s,"

(b) Page I-A-3-30, Notes (3) and (4) of VV should read :

"(3) Only the figures 00-89 in the code table for VV shall be used for aeronautical purposes.

(4) In reporting visibility at sea the decade 90-99 shall be used."

(c) Page I-A-4-62, Note (6) of Code 4377 should read :

"(6) Only code figures 00-89 shall be used for aeronautical purposes."

Rec. 27 (CSM-III) - CODING REPORTS OF ICE ACCRETION ON SHIPS

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING :

(1) Resolution 18 (EC-XIII),

(2) Recommendation 18 (CMM-III),

CONSIDERING the necessity for making provisions for the reporting in plain language of ice accretion on ships to conform to the Safety of Life at Sea Convention (1960),

RECOMMENDS :

(1) That the optional group ($2I_SE_SE_SR_S$) be adopted, with the following specifications :

"(a) I_S — Ice Accretion on Ships

I_S — 1 Icing from ocean spray
— 2 Icing from fog
— 3 Icing from spray and fog
— 4 Icing from rain
— 5 Icing from spray and rain

(b) E_SE_S — Thickness of ice accretion on ships in cm.

(c) R_S — Rate of ice accretion on ships

R_S — 0 Ice not building up
— 1 Ice building up slowly
— 2 Ice building up rapidly
— 3 Ice melting or breaking up slowly
— 4 Ice melting or breaking up rapidly."

(2) That this new group may be used in FM 21.A, 22.A, 23.B, and that it shall appear in the coded message as follows :

FM 21.A : Immediately following the waves group;

FM 22.A, FM 23.B : Following the group (D_Sv_Sxxx), and

(3) That when this phenomenon is reported in plain language it shall be preceded by the word "ICING",

(4) That the relevant changes be made in Volume B of Publication No. 9.TP.4.

Rec. 28 (CSM-III) - CODING 7RR$t_R t_R$

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING :

(1) Note (7) (i) of code form FM 21.A,

(2) Note (2) under symbolic letters RR,

(3) Code table 4080- $t_R t_R$,

(4) CMM-II/Doc. 33,

CONSIDERING that to meet the request of the president of CMM, it is necessary to amend the coding procedures of the group 7RR$t_R t_R$ to clarify the reporting of precipitation data by ships during the International Indian Ocean Expedition (1 July 1962 - 30 June 1964),

RECOMMENDS :

(1) That the present Note (2) of RR be amended to read as follows :

"(2) (a) In the case of mobile ship stations, the period for which the amount of precipitation is reported shall be approximately six hours preceding the main standard time of observation unless otherwise specified by the code figures.

(b) If the circumstances of wind and/or weather prevent the reading of rain-gauges with sufficient accuracy, and the amount of precipitation is reported for periods different from the six hours, this shall be specified by using the appropriate code figures of $t_R t_R$ (Code 4080)."

(2) That the following Regulations be added under symbolic letters $t_R t_R$:

"(1) When the period for which the amount of precipitation reported (RR) is approximately six hours, then :

(a) When the duration of precipitation is known, an appropriate figure for $t_R t_R$ shall be chosen between 00 and 84.

(b) When the duration of precipitation is unknown, $t_R t_R$ shall be coded 89."

"(2) In the case of mobile ship stations, when the period for which the amount of precipitation reported (RR) is approximately 12, 18 or 24 hours, $t_R t_R$ shall be coded as 90, 91 or 92 respectively.

Note : In these cases the duration of precipitation is not specified in the report."

(3) That code figure 89 be added at the appropriate place in Code Table 4080 with the following specifications :

"89 No specification of duration, RR relates to a period of approximately six hours."

(4) That these amendments be implemented as a matter of urgency and no later than 1 July 1962 to be applicable during the International Indian Ocean Expedition (1 July 1962 - 30 June 1964).

Rec. 29 (CSM-III) - SHIP POSITION VERIFYING GROUP

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

CONSIDERING :

(1) That valuable synoptic and upper-air information is invalidated when the reported ship positions are doubtful,

(2) That inaccurate or mutilated position groups may lead to serious errors of analysis, particularly in areas of sparse data or when analysis is performed by electronic computers,

(3) That there is no current provision for verifying ship position reports,

RECOMMENDS :

(1) That code forms FM 33.B and FM 36.B be amended by the addition of a group $MMMU_{La}U_{Lo}$ as the last group in Section 1,

(2) That new symbolic letters be inserted in Volume B as follows :

Page I-A-3-19 :

MMM Number of the Marsden square for the ship's position at the time of observation.

Page I-A-3-29 :

U_{La} Units figure in the reported latitude.

U_{Lo} Units figure in the reported longitude.

(3) That a chart showing the Marsden ten-degree squares be included in Volume B,

(4) That the CMM should study the desirability and practicability of introducing the ship position verifying group generally into all reports from sea stations,

(5) That the CCl should examine the ship position verifying group and should state whether this has any advantages for climatological practice which would support its general use in all reports from sea stations.

Rec. 30 (CSM-III) - AMENDMENTS TO FM 61.B (MAFOR)

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING paragraph 9.1 of the general summary of the third session of the Commission for Maritime Meteorology,

CONSIDERING that it is essential that this deficiency in code form FM 61.B be removed as soon as possible,

RECOMMENDS :

(1) That the code form FM 61.B (MAFOR) given in Volume B, WMO Publication No. 9, page I-A-1-67, be amended by changing the $(33D_KP_WH_W)$ group to $(3D_KP_WH_WH_W)$, and

(2) That the definition of H_wH_w be inserted on page I-A-3-11 of Volume B :

"H_wH_w Height of the waves in units of 0.5 metres (i.e., 01 = 0.5 metre, 02 = 1 metre."

NOTE : The definitions of D_K and P_w remain as given in Volume B.

Rec. 31 (CSM-III) FM 42.A - POMAR REPORT FROM TRANSPORT AIRCRAFT

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING that the code form 42.A - POMAR is no longer used,

RECOMMENDS that this code form, and all notes, symbolic letters, specifications and codes relating only to FM 42.A - POMAR be deleted from Volume B.

Rec. 32 (CSM-III) - CODE 1864

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING a discrepancy in the pictorial illustration of variations in Code 1864,

CONSIDERING that Code 1347 is not required, as G_p is direct reading,

RECOMMENDS :

(1) That G_p be amended to GG + G_p on the diagrams on pages I-A-4-39 and I-A-4-40 of Volume B,

(2) That Code 1347 be deleted from Volume B.

Rec. 33 (CSM-III) - REPORTING OF QNH VALUES AND RUNWAY VISUAL RANGE IN AERO - FM 15.A REPORTS

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING Recommendation 15/I (CAeM II/MET V),

RECOMMENDS that the following amendments be made to Volume B of WMO Publication No. 9 :

Pages I-A-1-5 and I-A-1-21, add to the AERO FM 15.A code the following optional groups :

"$(2P_HP_HP_HP_H)$ $(4i_RV_RV_RV_R)$"

Page I-A-3-17, insert :

"i_R Indicator for relationship of runway visual range to capability of observational system. (Code ...) (FM 15.A)"

Page I-A-3-24, insert :

"$P_HP_HP_HP_H$ QNH value in whole millibars (FM 15.A)"

Page I-A-3-30, insert :

"$V_RV_RV_R$ Runway visual range in decameters (FM 15.A)"

Page I-A-4-35, insert :

Code . . .

"i_R - Indicator for relationship of runway visual range to capability of observational system.

Code figure	
0	The runway visual range is less than the value given by $V_RV_RV_R$, which is the minimum observable with the system in use.
5	The runway visual range is given by $V_RV_RV_R$, which is within the range of values observable with the system in use.
9	The runway visual range is greater than the value given by $V_RV_RV_R$, which is the maximum observable with the system in use.

Rec. 34 (CSM-III) - MODIFICATIONS OF THE FORECAST CODE FORMS FOR EXCHANGE OF OPERATIONAL METEOROLOGICAL INFORMATION

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING Recommendation 15/4 (CAeM-II/MET V),

RECOMMENDS that Publication No. 9.TP.4, Volume B, be amended as follows :

(a) Amend the plain language alternative terminology for the group $91P_2P_2P_2$ on page I-A-4-38 to read :

"(i) Forecast lowest QFF (e.g., "Forecast QFF 10020") in the ARFOR, ROFOR, FIFOR, PROAR, PRORO and PROFI code forms.

(ii) Forecast lowest QNH (e.g., "Forecast QNH 10020") in the TAFOR and TAF code forms.

Note: In the plain language alternative the figure for tenths of mb shall always be included in the form of a zero to avoid confusion with the accepted definition of QFF and QNH which are always expressed in tenths of mb."

(b) Amend the specifications for $P_2P_2P_2$ as follows :

Page I-A-3-24

"Pressure reduced to mean sea level in whole millibars (FM 53.B, FM 54.B, FM 55.B, FM 56.B, FM 57.B, FM 58.B) or QNH altimeter setting in whole millibars (FM 51.A, FM 52.A)."

Page I-A-4-37

"Forecast mean sea level pressure (FM 53.B, FM 54.B, FM 55.B, FM 56.B, FM 57.B, FM 58.B) or forecast lowest QNH (FM 51.A, FM 52.A) in whole millibars during the period."

(c) Add the optional group ($2G_FG_FT_FT_F$) to FM 51.A (pages I-A-1-13 and 55) and to FM 52.A (pages I-A-1-13 and 58) immediately preceding the group $9i_3nnn$.

(d) Add the following note to Note (8) relating to FM 51.A, on page I-A-1-56, and to Note (6) relating to FM 52.A, on page I-A-1-58 :

"Groups ($G_FG_FT_FT_F$) may be used, as necessary, to give the forecast temperatures at H, H + 6 and H + 12 hours, H being the time of commencement of the period covered by the TAFOR or TAF, and the forecast minimum and maximum temperatures and their forecast times of occurrence."

(e) Include specifications of G_FG_F and T_FT_F as follows :

Page I-A-3-27

"T_FT_F Forecast temperature in degrees Celsius."

Page I-A-3-10

"G_FG_F Time to the nearest whole hour GMT to which the forecast temperature T_FT_F applies."

(f) In code forms FM 56.B, 57.B and 58.B replace all height indications in flight level numbers by height indications in pressure, expressed in tens of mb, and replace t_L, thickness of layer in height units by a new symbolic letter P_T, thickness of layer expressed as the pressure difference between bottom and top of layer, by the following amendments :

(i) Amend FM 56.B, on page I-A-1-63, to read as follows :

FM 56.B Area forecast

PROAR $G_1G_1G_2G_2G_3$
AAAAA (Nddff) (VVw_1w_1/) $8N_SCP_LP_L$
$7P_MP_MP_fP_f$ $6I_cP_iP_iP_T$ $5BP_BP_BP_L$ $4P_xP_xT_hT_h$
$3d_hd_hf_hf_h$ $2P_tP_tT_pT_p$ 11111 $QL_aL_aL_oL_o$
$P_jP_jf_jf_jf_j$ $9i_3nnn$ etc.

(ii) Amend FM 57.B (PRORO), on page I-A-1-65, and FM 58.B (PROFI) on page I-A-1-66, in the same way as FM 56.B;

(iii) Amend note (2) of FM 56.B on page I-A-1-63 to read :

"(2) This code form is used for communication of information to aerodromes at which there is no main meteorological office; it may, by agreement, be used for the exchange of forecasts between forecast offices."

(iv) Insert a new code table for P_T on page I-A-4-48 as follows :

Code . . .

P_T - Thickness of layer

Code figure	
0	Up to top of cloud
1	25 mb
2	50 mb
3	75 mb
4	100 mb
5	125 mb
6	150 mb
7	175 mb
8	200 mb
9	225 mb

(v) Insert new symbolic letters and specifications in Chapter I, Section A-3, as follows :

P_T Thickness of layer. (Code ...) (FM 56.B, FM 57.B, FM 58.B)

P_BP_B Pressure, in tens of millibars, of lowest level of turbulence. (FM 56.B, FM 57.B, FM 58.B)

P_fP_f Pressure, in tens of millibars, of the 0° C isotherm level. (FM 56.B, FM 57.B, FM 58.B)

P_iP_i Pressure in tens of millibars, of the lowest level of icing. (FM 56.B, FM 57.B, FM 58.B)

P_jP_j Pressure, in tens of millibars, of the level of the jet-stream core. (FM 56.B, FM 57.B, FM 58.B)

P_LP_L Pressure, in tens of millibars, of base of cloud layer or mass whose genus (type) is indicated by C. (FM 56.B, FM 57.B, FM 58.B)

P_MP_M Pressure, in tens of millibars, of top of cloud layer or mass whose genus (type) is indicated by C. (FM 56.B, FM 57.B, FM 58.B)

P_xP_x Pressure, in tens of millibars, to which temperature and wind refer. (FM 56.B, FM 57.B, FM 58.B)

(vi) Delete $h_B'h_B'$, $h_i'h_i'$, $h_s'h_s'$, $h_t'h_t'$, $h_f'h_f'$ and $h_x'h_x'$ from Chapter I, Section A-3, Volume B.

(vii) Amend the specifications for T_hT_h, d_hd_h, f_hf_h and $f_jf_jf_j$ in Chapter I, Section A-3, to read :

T_hT_h Air temperature in whole degrees Celsius at the height indicated by h_xh_x (FM 51.A, FM 53.B, FM 54.B, FM 55.B) or at the pressure indicated by P_xP_x (FM 56.B, FM 57.B, FM 58.B)

d_hd_h True direction in tens of degrees from which wind will blow at the height indicated by h_xh_x (FM 53.B, FM 54.B, FM 55.B) or by the pressure indicated by P_xP_x (FM 56.B, FM 57.B, FM 58.B) (Code 0877) (1) See note (1) under f_hf_h.

f_hf_h Wind speed, in m/sec, at the height indicated by h_xh_x (FM 53.B, FM 54.B, FM 55.B) or at the pressure indicated by P_xP_x (FM 56.B, FM 57.B, FM 58.B)

(1) Remains unchanged

$f_jf_jf_j$ Wind speed of jet stream in units indicated by i_j (FM 45.B)

Wind speed, in m/sec, at the level given by $h'_jh'_j$ (FM 53.B, FM 54.B, FM 55.B) or at the level given by P_jP_j (FM 56.B, FM 57.B, FM 58.B)

(viii) Amend the specifications for P_tP_t, T_PT_P and T_pT_p in Chapter I, Section A-3, as follows :

P_tP_t Add (FM 56.B, FM 57.B, FM 58.B)

T_PT_P Delete reference to (FM 56.B, FM 57.B, FM 58.B)

T_pT_p Add reference to (FM 56.B, FM 57.B, FM 58.B)

(g) That code names HIARF, HIROF and HIFIF be replaced by code names PROAR, PRORO and PROFI.

Rec. 35 (CSM-III) - NOTES IN VOLUME B CONCERNING AMENDED FORECASTS FOR AVIATION

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING Recommendation 49 (CSM-III),

CONSIDERING :

(1) That the use of the abbreviation AMD is recommended for the heading of amended bulletins,

(2) That the amended forecasts for aviation are now normally preceded by the word AMEND;

RECOMMENDS that in the notes concerning amended forecasts for aviation in Chapter I, Volume B, (FM 51.A, FM 52.A, FM 53.A, FM 54.B, FM 55.B, FM 56.B, FM 57.B and FM 58.B) the format of the heading be amended to read :

"TT AA(i) CCCC(k) $Y_aY_aG_aG_ag_ag_a$ AMD

YYGGgg TAFOR* $G_1G_1G_2G_2G_3$"

* or other code name as appropriate.

Rec. 36 (CSM-III) - SPECIFICATIONS FOR $\overline{PP}$, $\overline{TTT}$, $\overline{T_dT_dT_d}$ and $\overline{T_sT_sT_s}$

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING Recommendation 4 (CCl-III),

CONSIDERING that similar changes in the specifications of $\overline{T_dT_dT_d}$ and $\overline{T_sT_sT_s}$ are called for,

RECOMMENDS that the following amendments be made to Volume B of WMO Publication No. 9 :

(a) Page I-A-3-22, $\overline{PP}$, sub-paragraph (2), delete "or tens of geopotential feet" and "or hundreds of geopotential feet".

(b) Page I-A-3-29

$\overline{TTT}$

(i) First line should read : "Mean air temperature for the month in tenths of degrees Celsius."

(ii) In sub-paragraph (1) delete : "if in degrees Celsius, or this absolute value is subtracted from 1000, if in degrees Fahrenheit."

$\overline{T_dT_dT_d}$ and $\overline{T_sT_sT_s}$, add the word "Celsius" to the end of the first line in each case.

Rec. 37 (CSM-III) - INCLUSION OF SURFACE AND WIND DATA IN CLIMAT TEMP REPORTS

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING Recommendations 10, 11 and 12 (CCl-III),

CONSIDERING that the requirements for information on mean vector wind data are not limited to areas where the aerological observing network is sparse,

RECOMMENDS :

(1) That the entries in Volume B of Publication No. 9, pages I-A-1-71 and I-A-1-72, be replaced by the information given in Parts A and B respectively of the annex to this recommendation,*

(2) That corresponding amendments be made to the entries against FM 75 and FM 76 in the general list of code forms in Volume B, page I-A-1-16.

(3) That new symbolic letter specifications be inserted in Volume B as follows :

(i) Page I-A-3-6, add :

$\overline{d_vd_v}$ Direction, in tens of degrees, of the monthly mean vector wind at the surface and at specified isobaric surfaces (Code 0877) (FM 75 C, FM 76 C)

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* See Annex XI.

(ii) Page I-A-3-9, add :

$\overline{f_v f_v}$ Speed, in m/sec of the monthly mean vector wind at the surface and at specified isobaric surfaces (FM 75 C, FM 76 C).

(iii) Page I-A-3-24, add :

$P_o P_o P_o P_o$ Mean monthly surface pressure, in whole millibars, at the time of release of the radiosonde (FM 75 C, FM 76 C).
(1) See note (3) under $\overline{PP}$.

(iv) Page I-A-3-25, add :

r_f Steadiness of wind at the surface or at specified isobaric surface (FM 75.C, FM 76.C).

Regulation (1). The steadiness factor is defined as the ratio of the speed of the monthly mean vector wind to the speed of the monthly mean scalar wind; it shall be expressed as a percentage.

(v) Page I-A-3-29, add :

$\overline{T_o T_o T_o}$ Mean monthly surface temperature, in tenths of degrees Celsius, at the time of release of the radiosonde (FM 75 C, FM 76 C).
(1) See also notes under $\overline{TTT}$.

(vi) Page I-A-3-29, add :

$T_{do} T_{do} T_{do}$ Mean monthly dew-point temperatures in tenths of degrees Celsius at the time of release of the radiosonde (FM 75 C, FM 76 C).
(1) See also notes under $\overline{T_d T_d T_d}$.

(vii) Part I-A-4, insert the following code at the appropriate place :

r_f - Steadiness of wind

Code figure	Steadiness factor
0	0 - 9 %
1	10 - 19 %
2	20 - 29 %
3	30 - 39 %
4	40 - 49 %
5	50 - 59 %
6	60 - 69 %
7	70 - 79 %
8	80 - 89 %
9	90 - 99 %

(4) That the position group of code form FM 72 B CLIMAT SHIP be amended to read: "$9QL_aL_aL_a$ $L_oL_oL_o99$."

Rec. 38 (CSM-III) - AMENDMENT TO TECHNICAL REGULATIONS CONCERNING BASIC LAND STATION

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING that some confusion has arisen because of the use of the term "basic" in such expressions as "basic land stations" and "basic synoptic network",

CONSIDERING that the expression "principal land station" is consistent with the terminology used in the Technical Regulations for classifying other types of meteorological stations,

RECOMMENDS :

(1) That the definition of "Basic land station" in Chapter I of the Technical Regulations be replaced by :

"Principal land station. A surface synoptic station on land, suitably equipped and staffed, to observe the elements specified in paragraph 3.1.1.1 and normally to report these observations for international exchange."

(2) That the necessary consequential changes be made in the Technical Regulations such as :

2.1.2.1 paragraph A (a) to read :

"Principal stations";

2.2.1.2 to read :

"Principal land stations should be spaced at intervals not exceeding 150 km."

3.1.1.1 to read :

"At a principal land station a surface synoptic observation shall consist of the following elements :
(a) Present weather;"
(etc., as in present text)

3.3.1.1 to read :

"At a principal land station, surface synoptic observations should be made and reported at both main and intermediate standard times."

3.4.4.1 to read :

"At a principal land station atmospheric pressure shall be determined from a mercury barometer for which the index error has been determined."

Rec. 39 (CSM-III) - REVISED DEFINITION OF BASIC SYNOPTIC NETWORK

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING :

(1) Recommendation 80 (CSM-II) approved by the Executive Committee in Resolution 21 (EC-X),

(2) The objections raised against the provisional definition of basic synoptic network contained in Recommendation 1 (III-RA VI),

(3) Recommendation 38 (CSM-III),

RECOMMENDS that the following revised definition of basic synoptic network be adopted :

"The basic synoptic network within each World Meteorological Organization Region is the network of stations, including the observational programmes, which the Regional Association recommends that its Members establish and maintain. This network is to be composed of the stations, with specified observational programmes, which are considered a minimum regional requirement to permit Members to fulfill their responsibilities in the application of meteorology as recognized by the Regional Association."

Rec. 40 (CSM-III) - AMENDMENTS TO THE TECHNICAL REGULATIONS (Paragraphs 2.2.1.6, 2.2.1.7 and 2.2.1.8) - DENSITY OF REPORTS IN OCEANIC AREAS

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING :

(1) Paragraph 5.8.1.5 of the general summary of the work of Third Congress,

(2) Recommendation 2 (CMM-III),

CONSIDERING that the new text of paragraph 2.2.1.6 proposed by CMM at its third session expresses more clearly what is required as regards efforts of Members to improve the density of reports in oceanic areas,

RECOMMENDS that paragraphs 2.2.1.6 to 2.2.1.8 of the Technical Regulations be replaced by the following :

"2.2.1.6

In its recruitment programme, each Member should aim at making the maximum possible contribution towards attaining an adequate density of reports from mobile ship stations in all oceanic areas.

N O T E S :

(1) An adequate density of surface reports in oceanic areas is at least one per 300 km for each main standard time of observation. This network comprises observations from ships of all nationalities, from stations on appropriate islands, and from automatic weather stations.

(2) An adequate density of upper-air reports in oceanic areas is at least one per 1,000 km for each standard time of observation.

(3) A map giving an indication of the density of ships' surface reports received from all oceans is included in Publication No. 9.TP.4, Volume D."

Rec. 41 (CSM-III) - THE DEFINITION OF STANDARD TIME OF OBSERVATION FOR INCLUSION IN THE TECHNICAL REGULATIONS

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING paragraph 5.8.1.2 of the general summary of the work of Third Congress,

RECOMMENDS that the following definition be included in Chapter 1 of the Technical Regulations :

"Standard time of observation. A time specified in the Technical Regulations for making meteorological observations."

Rec. 42 (CSM-III) - AMENDMENTS TO TECHNICAL REGULATIONS CONCERNING ACTUAL TIME OF UPPER-AIR SYNOPTIC OBSERVATIONS

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING :

(1) Paragraph 5.8.1.8 of the general summary of the work of Third Congress,

(2) The opinion expressed by Regional Association VI in its Resolution 9 (III-RA VI);

CONSIDERING :

(1) The desirability of achieving the maximum possible uniformity in the actual time for upper-air observations;

(2) The desirability of making pilot-balloon observations to the greatest possible height;

RECOMMENDS the following amendments to the Technical Regulations :

(1) Amend paragraph 4.2.1.2 and the following note to read :

"4.2.1.2

The actual time of regular upper-air synoptic observations should be as close as possible to (H-30), and should not fall outside the time range (H-45) to H.

N O T E : The actual time of a pilot-balloon observation may be varied from the time range indicated in paragraph 4.2.1.2 if by doing so observed winds to considerably greater heights can be expected."

(2) Delete paragraph 4.2.1.3.

Rec. 43 (CSM-III) - SPECIAL ARRANGEMENTS FOR FACILITATING THE WORK OF THE WORKING GROUP ON NETWORKS

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING Resolution 4 (CSM-III),

CONSIDERING :

(1) That the Working Group on Networks will require a considerable amount of derived data such as normal values, variance and correlation functions for certain variables,

(2) That it is extremely difficult for the working group to reach conclusions by correspondence,

(3) That the group may need the assistance of individual scientists or research institutes,

RECOMMENDS :

(1) That provision be made for the Organization to finance the necessary sessions of the working group, the first of which should be held as soon as possible in 1963;

(2) That financial provision be made for the Secretary-General to invite experts or research institutes, upon recommendation of the working group, to undertake certain calculations, if such work cannot be done by individual Members on a voluntary basis;

(3) That CIMO be invited to take appropriate action to determine the systematic error and standard deviation of errors in temperature, pressure and height measurements for all types of radiosonde instruments;

(4) That ICAO be invited to formulate the aviation requirements for temperature and wind forecasts at high levels in statistical terms, and that statements of such requirements be accompanied by appropriate operational information relevant to defining these requirements.

(5) That the Secretary-General be invited to take the necessary steps to provide the data required to follow up paragraph (2) of the recommendations of the Working Group on Networks presented to CSM at its third session.

Rec. 44 (CSM-III) - AMENDMENTS TO THE TECHNICAL REGULATIONS CONCERNING DISSEMINATION OF SHIPS' REPORTS

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING :

(1) Recommendation 6 (CMM-III),

(2) Technical Regulations 6.2.2, 6.3.2 and 6.3.3,

(3) WMO Publication No. 9, Volume C - Transmissions
Chapter I, Part II, paragraph 2 (General responsibilities),

CONSIDERING :

(1) That ships' reports received by coastal stations are not always properly collected and relayed for international dissemination,

(2) That no specific instructions are given in the Technical Regulations regarding the collection and dissemination of ships' reports,

RECOMMENDS :

(1) That paragraph 6.1.1.1 of the Technical Regulations be amended to read as follows :

"6.1.1.1

Each Member shall make available to the appropriate communication centre for further dissemination such information as is reported in a territorial transmission either by a territorial broadcast or by other means of communication as agreed between the Members concerned."

(2) That paragraph 6.2.2 of the Technical Regulations be amended so as to read: 6.2.2.6 (as at present), [New sub-paragraph to follow immediately after 6.2.2.6 reading as follows :]

"Each Member shall arrange that its coastal stations designated to receive reports from ships

be ready to accept these reports with minimum delay and transmit them expeditiously to appropriate collection centres."

Subsequent sub-paragraphs to be renumbered through 6.2.2.13.

(3) That paragraph 6.3.2 be amended to read as follows :

"6.3.2

Subregional broadcasts

6.3.2.1

A Member which has accepted responsibility for making a subregional broadcast shall ensure that this broadcast includes, at least, the following information :

(a) Reports required by regional agreement for regional and inter-regional exchanges, from surface and upper-air synoptic land stations and fixed ship stations within the area of responsibility allocated to the subregional broadcast;

(b) All reports received from mobile ship stations either directly or via collecting centres or via territorial transmissions made within the area of responsibility allocated to the subregional broadcast;

(c) Other information as required by regional agreement."

(4) That paragraph 6.3.3 be amended to read as follows :

"6.3.3

Territorial transmissions

6.3.3.1

Territorial transmission shall include at least the following information for inclusion in subregional broadcasts :

(a) Surface and upper-air synoptic reports from land stations and fixed ship stations required by regional agreement for regional and inter-regional exchanges;

(b) All reports from mobile ship stations received either directly, or from other collecting centres within the area covered by the territorial transmission; and

(c) Other information as required by regional agreement."

Rec. 45 (CSM-III) - AMENDMENTS TO TECHNICAL REGULATIONS CONCERNING DEFINITION OF BROADCASTS

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING :

(1) Resolution 17 (Cg-XII),

(2) Paragraph 5.8.1 of the general summary of the work of Third Congress;

CONSIDERING :

(1) That certain existing definitions are by modern telecommunication concepts outmoded or inapplicable,

(2) That certain developments in meteorological communications are not covered by the Technical Regulations,

RECOMMENDS :

(1) That the additions and amendments shown in the annex to this recommendation* be made to the Technical Regulations;

(2) That the Secretary-General be requested to make necessary consequential editorial amendments and additions in other paragraphs of Technical Regulations for presentation to Fourth Congress and also when approved in other WMO publications.

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* See Annex XII.

Rec. 46 (CSM-III) - AMENDMENTS TO TECHNICAL REGULATIONS CONCERNING METEOROLOGICAL RADIO TRANSMISSIONS

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING :

(1) Recommendation 54 (CSM-II) approved by Resolution 21 (EC-X),

(2) Radio Regulations (Geneva 1959),

(3) That the survey conducted by the Secretary-General and presented to the meeting of the CSM Working Group on Telecommunications does not provide complete information on reception of meteorological radio transmissions (which are actually received) and did not seek explicit reports on the quality of reception on the various frequencies used,

(4) Technical Regulation 6.1.1.4;

CONSIDERING :

(1) That it is essential to take all steps necessary to insure adequate protection of the reception of meteorological transmissions;

(2) That because of the congestions in the radio spectrum, the question of protecting the reception of meteorological transmissions from harmful radio interference is of fundamental importance;

(3) That in this connexion the ITU (IFRB) has pointed out the need for specific technical details concerning meteorological radio transmissions;

(4) That effective protection requires the intended reception area(s) or point(s) to be specified for each transmission;

(5) That not all of the above technical details are currently available in publications of the WMO;

(6) That Technical Regulation 6.1.1.4 is not sufficiently detailed;

RECOMMENDS :

(1) That Technical Regulation 6.1.1.7 be amended as follows and that consequential amendments be made in Publication No. 9, Volume C :

(a) Change (b) to read : Power supplied to the antenna;

(b) Change (c) to read : Class of emission, necessary band width;

(c) Add (g) : Specific point(s) or area(s) in which the transmission is intended to be received.

(2) That Members insure that their telecommunication authorities notify ITU of the details required in paragraphs 6.1.1.7 as amended above and 6.1.1.8 of the Technical Regulations;

(3) That paragraph 6.1.1.4 be replaced by the following :

"6.1.1.4

A Member experiencing difficulties in receiving or observing any deficiencies in a transmission intended for its reception as specified in Publication No. 9, Volume C should first take corrective action of a local nature and if unsuccessful subsequently notify in detail the Member making this transmission and also keep the presidents of the regional associations concerned informed as necessary."

Rec. 47 (CSM-III) - USE OF HIGH MODULATION-RATE APPARATUS FOR THE INTERNATIONAL EXCHANGE OF METEOROLOGICAL DATA

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

CONSIDERING :

(1) The great importance of the use of higher modulation rates for the transmission of meteorological information;

(2) That, although this matter is being actively investigated by ITU (CCITT), it is as yet too early to formulate definite standards or dates for their application;

RECOMMENDS :

(1) That the regional associations keep abreast of developments in communication techniques and apparatus which may enable the modulation rate of meteorological transmissions to be raised;

(2) That the attention of Members be drawn to the desirability of reaching agreement on the requirement to use high modulation-rate apparatus for the transmission of meteorological information.

Rec. 48 (CSM-III) - CHARACTER FOR INDICATING MISSING INFORMATION IN METEOROLOGICAL BULLETINS

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING :

(1) Recommendation 49 (CSM-II) approved by Resolution 21 (EC-X);

(2) The conclusions which Sub-Group 2/1 - (Telegraph Operation and Tariffs) of the International Telegraph and Telephone Consultative Committee (CCITT) had reached during its meeting at Munich in September 1959;

(3) Recommendation 3 of the Third Meeting of the ICAO/Motne Development Implementation Panel;

CONSIDERING :

(1) That it is desirable to have a telegraphic character to indicate missing figures or letters in meteorological bulletins;

(2) That in order to save transmission time, the solidus (figure case position of signal No. 24 of the International Telegraph Alphabet No. 2), the only character available which is generally acceptable, should now be used;

RECOMMENDS that the solidus (figure case position of signal No. 24 of the International Telegraph Alphabet No. 2), should be used at the time of transmission to indicate missing figures and letters in meteorological bulletins.

Rec. 49 (CSM-III) - UNIFORMITY OF PROCEDURES FOR TRANSMISSION OF METEOROLOGICAL INFORMATION

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING :

(1) Recommendation 32 (CSM-II) and Resolution 21 (EC-X),

(2) Resolution 72 (60-RA VI),

CONSIDERING the desirability of uniform telecommunication procedures to meet the requirements of computers and automatic routing equipments;

RECOMMENDS :

(1) That procedures listed in the annex to this recommendation* shall be applied to all teleprinter transmissions by all Members on a world-wide basis,

(2) That WMO Publication No. 9, Volume C, Chapter I, Part III, paragraphs 7 and 8 be replaced by the annex to this recommendation.*

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* See Annex XIII.

Rec. 50 (CSM-III) - SPECIFICATIONS FOR RADIO-TELEPRINTER EQUIPMENT

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING :

(1) Recommendation 46 (CSM-II) and Resolution 21 (EC-X);

(2) That although the International Radio Consultative Committee (CCIR) felt it to be premature to standardize a value of frequency shift for systems working on two conditions only, it adopted Recommendation 246 (Los Angeles 1959) setting out preferred values of frequency shift, namely, 200 c/s, 400 c/s and 500 c/s;

(3) That the International Telegraph Consultative Committee (CCITT) - now the International Telegraph and Telephone Consultative Committee (CCITT) - has recommended that the standard modulation rate of start-stop apparatus used in international service should be 50 bauds (cf. CCIT, Plenary Assembly VIII, Recommendation C.4);

(4) That the International Civil Aviation Organization (ICAO) has recommended that, in so far as it is practicable, the modulation rate should be 50 bauds (cf. ICAO, Annex 10, point 1, paragraph 4.2.2.2);

(5) That both CCIT and ICAO have recommended that the nominal duration of the transmitting cycle of start-stop apparatus used in international service should be at least 7.4 units (preferably 7.5), the stop element lasting for at least 1.4 units (preferably 1.5) (cf. CCIT, Plenary Assembly VIII, Recommendation C.4, and ICAO, Annex 10, point 1, paragraph 4.2.2.3);

(6) That both the International Telecommunication Union (ITU) and ICAO have recommended that in the international service the International Telegraph Alphabet No. 2 should be used (cf. ITU, Telegraph Regulations, paragraph 80, and ICAO, Annex 10, point 1, paragraph 4.2.2.1);

(7) That both CCIT and ICAO have recommended that the number of characters which the textual line of page printing apparatus may contain should be fixed at 69 (cf. CCIT, Plenary Assembly VIII, Recommendation C.6, and ICAO, Annex 10, point 1, paragraph 4.2.2.5);

(8) That increasing use is being made of radio-teleprinter broadcast and point-to-point circuits for the international exchange of meteorological data;

CONSIDERING that in order to permit and facilitate the efficient and economical exchange of meteorological data by radio-teleprinter on a world-wide basis, it is desirable to standardize, in so far as may be possible, the characteristics of the equipment used;

RECOMMENDS :

(1) That the specifications given in the annex to this recommendation* be taken as guidance for the equipment to be used for the international exchange of meteorological data by radio-teleprinter facilities utilizing frequency shift modulation (F 1);

(2) That where it is not possible to adhere to the specifications :

(i) Characteristics be agreed multilaterally between the services concerned;

(ii) Detailed characteristics be published in appropriate publications or documents for the information of all concerned.

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* See Annex XIV.

Rec. 51 (CSM-III) - PLAN OF EXCHANGE OF METEOROLOGICAL DATA IN THE NORTHERN HEMISPHERE

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING Recommendation 38 (CSM-II) approved by Resolution 21 (EC-X),

CONSIDERING :

(1) That charts for the northern hemisphere are extremely important for the following reasons :

(a) For scientific research,

(b) To meet the requirements of long-distance aviation,

(c) To make long-range weather forecasts,

(d) To assist numerical weather prediction;

(2) That the meteorological services of many countries need for their operations and scientific work, surface and upper-air data originating from the whole of the northern hemisphere, for the two standard hours of 0000 GMT and 1200 GMT, with aerological data to at least the 100 mb level and that some services foresee a future requirement and for the exchange of surface reports for 06 and 18 hours;

(3) That the plan recommended by the second session of CSM has been, in general, implemented;

(4) That the experience gained shows that the principles on which the plan was based are sound;

(5) That it is essential that all steps be taken to reduce as much as possible the transmission time of data;

RECOMMENDS :

(1) That the exchange of northern hemisphere data should be made as outlined in the annex to this recommendation;*

(2) That any change in operation of the northern hemisphere exchange scheme found necessary should be brought to the attention of the chairman of the CSM Working Group on Telecommunications;

(3) That the efficiency and reliability of the whole system should be kept under review by the CSM Working Group on Telecommunications;

(4) That the requirement for the rapid exchange of the data be kept currently in mind, when studies concerning codes and telecommunications are made;

(5) That regional associations and all Members whose data are included in the northern hemisphere exchange should endeavour to insure a reliable and speedy transmission of these data to the appropriate northern hemisphere exchange centres (NHEC).

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* See Annex XV.

Rec. 52 (CSM-III) - ORGANIZATION FOR THE EXCHANGE OF SOUTHERN HEMISPHERE DATA

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING :

(1) Recommendations 37 and 38 (CSM-II) approved by Resolution 21 (EC-X),

(2) Recommendation 90 (61-CSM) approved by Resolution 14 (EC-XIII),

CONSIDERING :

(1) That there is for operational and scientific work a very wide and urgent need for surface and upper-air data originating within the southern hemisphere for the two standard hours of 0000 GMT and 1200 GMT with aerological data to at least the 100 mb level and that some Members foresee a future requirement also for the exchange of reports for 0600 and 1800 hours;

(2) That it is technically sound with appropriate terminal equipment to utilize the same telecommunications systems for both RTT and facsimile transmissions;

(3) That transmission centres are already established in the southern hemisphere which could be designated as southern hemisphere exchange centres provided the financial obstacles are overcome;

RECOMMENDS :

(1) That the plan for the southern hemisphere shown in the annex to this recommendation* be implemented with a view to the complete scheme being in operation at the earliest possible date;

(2) That the network be engineered to accommodate both teleprinter and facsimile transmissions;

(3) That the Members concerned, independently or with the help of technical assistance experts, adopt the measures necessary for the implementation of the plan as expeditiously as possible.

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* See Annex XVI.

Rec. 53 (CSM-III) - PROVISION OF CHANNELS FOR THE EXCHANGE OF BASIC METEOROLOGICAL DATA BY MULTIPLEXING RTT CHANNELS OF THE AFTN

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING :

(1) Resolution 13 (II-RA V),

(2) Recommendation 13 (60-RA I) adopted by Resolution 7 (EC-XII),

(3) Recommendation 10/5 of the ICAO-AFI-III and subsequently approved by the ICAO Council;

CONSIDERING the need for amplifying the existing meteorological telecommunication network in the most economical manner;

RECOMMENDS :

(1) That Members take into account the potentialities of diplexing or multiplexing existing and planned RTT channels of the AFTN to obtain meteorological circuits reserved exclusively for the exchange of basic meteorological data;

(2) That ICAO be invited to support this principle in view of the great importance to aviation of an efficient exchange of basic meteorological data.

Rec. 54 (CSM-III) - AMENDMENTS TO THE TECHNICAL REGULATIONS - NOTIFICATION OF MODIFICATIONS IN METHODS OF TRANSMISSION

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING Resolution 17 (Cg-III),

CONSIDERING :

(1) That it is necessary to make provisions covering cases in which Members desire to discontinue meteorological transmissions;

(2) That it is necessary to provide in greater detail the conditions which should apply to a change of mode of meteorological transmissions;

RECOMMENDS :

(1) That paragraph 6.1.1.11 of the Technical Regulations be amended to read as follows :

"6.1.1.11

When it is necessary to discontinue a transmission intended primarily for reception by other Members, provision shall be made to continue to meet the requirements of all recipients of the transmission.

N O T E : Transmissions by a Member intended primarily for its own use are not affected by the above, even if they are used by other Members."

(2) That the following new paragraph should be included in the Technical Regulations :

"6.1.1.12

When it is necessary or desirable to change the mode of a transmission intended primarily for reception by other Members, notice of a duration agreed regionally or multilaterally, shall be given to the recipients.

N O T E S :

(a) On expiry of this notice, the requirements of the recipients will be assumed to have been met by the transmission in the new mode.

(b) Transmissions by a Member intended primarily for its own use are not affected by the above, even if they are used by other Members."

Rec. 55 (CSM-III) - NOTIFICATION OF CHANGES IN THE OPERATION OF METEOROLOGICAL RADIO TRANSMISSIONS - AMENDMENTS TO TECHNICAL REGULATIONS

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING Technical Regulation 6.1.1.10,

CONSIDERING that it is necessary to inform users of a radio broadcast of all impending changes in the operation of the broadcast in advance,

RECOMMENDS that paragraph 6.1.1.10 of the Technical Regulations should be amended to read as follows :

"6.1.1.10

In addition to the information supplied to the Secretariat under 6.1.1.8, notification of impending changes in frequencies or in time schedules of any routine meteorological radio transmission shall be included within its transmissions for main synoptic hours during at least three days immediately prior to the change."

Rec. 56 (CSM-III) - REGIONAL DISSEMINATION OF CODED NEPHANALYSES

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING :

(1) The difficulties being experienced by regional associations in the dissemination of meteorological information available from artificial satellites due to lack of transmission time on regional circuits;

(2) That the officer of the United States is to identify the area covered by each nephanalysis to enable selective distribution to be made in those regions where full distribution is not possible;

RECOMMENDS :

(1) That wherever possible, all meteorological satellite information should be disseminated within the regions;

(2) That where full dissemination is not possible, this information be disseminated on a selective basis so as to provide at least the information of immediate interest to the region concerned;

(3) That the map in the annex to this recommendation,* which identifies the respective areas of satellite coverage, be published in Volume C of WMO Publication No. 9.

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* See Annex XVII.

Rec. 57 (CSM-III) - ORGANIZATION FOR THE EXCHANGE OF HEMISPHERIC DATA

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING :

(1) Recommendation 38 (CSM-II) and Resolution 21 (EC-X),

(2) Recommendation 90 (61-CSM) and Resolution 14 (EC-XIII);

CONSIDERING :

(1) That no detailed requirements with respect to the exchange between the northern and southern hemisphere exchange systems and with respect to the redistribution of information from one hemisphere into the other have yet been specified;

(2) The desire of several Members in the northern hemisphere to receive data from the southern hemisphere and vice versa;

(3) That links between the northern and southern hemisphere exchange centres will be required in any case;

(4) That a rapid development of a plan for the inter-hemispheric exchanges is highly desirable;

RECOMMENDS :

(1) That regional associations should be requested to state as a matter of urgency their requirements for inter-hemispheric exchanges and the acceptable time delays in reception of the various categories of meteorological information;

(2) That Members responsible for the operation of the northern and southern hemisphere exchange centres should establish as soon as possible the following links connecting the NHE centres and the SHE centres

(a) Brazilia - New York

(b) Nairobi - Offenbach

(c) Melbourne - New Delhi

REQUESTS the president of CSM to take, as a matter of urgency, all necessary steps, subsequent to the specification of the requirements by the regional associations, so that a plan for the inter-hemispheric exchanges of meteorological information be finalized.

Rec. 58 (CSM-III) - CO-ORDINATION OF TELECOMMUNICATIONS MATTERS AND ASSISTANCE OF THE SECRETARIAT

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING :

(1) Recommendations 55 and 56 (CSM-II) approved by Resolution 21 (EC-X),

(2) Resolution 5 (CSM-III);

CONSIDERING :

(1) That it is important to ensure proper continuity and co-ordination in the study of telecommunications problems between the sessions of the Commission for Synoptic Meteorology;

(2) That in order to permit the CSM Working Group on Telecommunications established by Resolution 5 (CSM-III) to carry out its tasks efficiently, it is essential that the regional associations participate effectively in the work of that group;

(3) That a number of important meteorological telecommunications problems are not yet solved and that a number of them have been submitted to the working groups of the regional associations for more thorough study;

(4) That the Secretary-General is in the best position to carry out a large portion of the co-ordination desired, particularly with the international agencies;

RECOMMENDS :

(1) That all appropriate measures be taken by the Secretary-General to arrange that :

(a) A telecommunications officer of the Secretariat attend the sessions of the working groups on telecommunications of the CSM and of the regional associations, if requested;

(b) The chairmen of the working groups on telecommunications of the regional associations attend the meetings of the CSM Working Group on Telecommunications;

(2) That in case urgent problems cannot be solved by correspondence :

(a) It be possible for the chairmen of the working groups on telecommunications of the regional associations to participate at the meetings of the neighbouring regions;

(b) It be possible to bring together a few members of the CSM Working Group on Telecommunications;

(3) That the question of meeting the travel expenses of representatives designated to participate at the meetings mentioned above be given favourable consideration.

Rec. 59 (CSM-III) - THE USE OF ERROR DETECTION AND CORRECTION DEVICES FOR POINT-TO-POINT RADIO CIRCUITS

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING the increasing use of automatic switching devices in meteorological telecommunications and the low error rates tolerable in automatic data processing devices and electronic computers;

CONSIDERING :

(1) That radio-telegraph circuits are required to operate under varying conditions of radio propagation, atmospheric noise and interference causing distortion which may at times exceed the working tolerance of the receiving apparatus;

(2) That, in consequence, the transmission of 5-unit code signals (teleprinter code for start-stop working) over radio circuits is liable to errors and that such errors are not automatically detectable by the receiving apparatus;

(3) That an effective means of reducing the number of wrongly printed characters is the use of codes permitting the correction of errors either by their intrinsic constitution or by detecting the error and automatically causing repetition;

RECOMMENDS :

(1) That when the direct use of a 5-unit telegraphic code on a point-to-point radio circuit used for the exchange of basic meteorological data results in an intolerable error rate, equipment for automatic error correction should be provided;

(2) That when the above provision is planned or undertaken, consideration should be given to a 7-unit automatic error-detection and correction system conforming to the International Telegraph and Telephone Consultative Committee (CCITT) Recommendation S 13 (CCITT-red book, Volume VII);

(3) That, in particular, Members responsible for the operation of radio circuits forming part of the northern or southern hemisphere exchange network, as well as the interconnexions between both networks, should give favourable consideration to the use of the devices described above, if practicable.

Rec. 60 (CSM-III) - STANDARDIZATION OF INTERNATIONAL METEOROLOGICAL TRANSMISSIONS BY FACSIMILE - EQUIPMENT CHARACTERISTICS

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING :

(1) Recommendation 50 (CSM-II) approved by Resolution 21 (EC-X),

(2) Contribution No. 4 (CCITT - Study Group XIV/1),

CONSIDERING :

(1) The progress in development of apparatus for transmission of meteorological charts by facsimile;

(2) The contribution that such apparatus can make to international meteorological exchanges;

(3) The need arising therefrom for attaining compatibility of facsimile equipment used in making international exchanges;

(4) The possibility of arriving at such compatibility by standardizing, on a world-wide scale, the functional and technical characteristics of facsimile equipment used in effecting international exchanges;

(5) The desirability of shaping the standards, so far as practicable, to the characteristics of equipments that have proved successful in daily operations and that are now in service;

(6) The possibility of classifying the documents to be transmitted in two different types corresponding to minimum black or white picture elements of 0.4 mm and 0.7 mm;

(7) The effective contribution made to WMO by the International Telecommunication Union [ITU/(CCITT)] in the study of this question;

RECOMMENDS :

That the facsimile equipment used for international meteorological transmissions be standardized as follows :

1. Index of co-operation

576, for minimum black or white picture elements of 0.4 mm; and
288, for minimum picture elements of 0.7 mm.

Index 288 may be replaced by index 576 with alternate line scanning.

2. Drum speed

60, 90 and 120 revolutions per minute.

Note : If speeds greater than 120 rpm are used they should be multiples of 60 rpm.

3. Diameter of drum

152 mm. In the case of flat-bed scanners this will be the length of the scanning line (including the dead sector) divided by π (For definition of dead sector see 7 below).

4. Scanning density

$$\text{Scanning density} = \frac{\text{index of co-operation}}{\text{diameter of drum}}$$

It is approximately :

4 lines per mm for index 576

2 lines per mm for index 288.

5. Length of the drum

The length of the drum should be at least 55 cm.

6. Direction of scanning

At the transmitter the plane (developed in the case of a drum transmitter) of the message area is scanned along lines running from left to right, commencing in the left hand corner at the top of the message area and finishing in the right hand corner at the bottom. This is the equivalent of scanning over a left hand helix.

7. Dead sector

4.5 per cent $\pm$ 5 per cent of the length of the scanning line; the signal

transmitted during the passage of the dead sector should correspond to white but it is permitted that a black pulse be transmitted within, and not exceeding one half the length of the dead sector.

8. Synchronization

The scanning speed should be maintained within five parts in 10^6 of its nominal value.

Note : This tolerance admits of a maximum oblique skew of approximately 1/55 when transmitter and receiver function at opposite maximum deviation limits. A smaller tolerance would reduce maximum oblique skew and is desirable.

9. Remote control signals transmitted

9.1 Selection of index of co-operation

A five-second transmission of alternating "black" and "white" signals at :

300 c/s for index 576
675 c/s for index 288 (or index 576 with alternate line scanning).

The envelopes of the signals transmitted will be roughly rectangular.

9.2 Selection of speed

The parameter used for speed selection will be the frequency of the phasing signals specified in 9.4 below.

9.3 Starting recorders

Recorders should be designed to start upon receipt of either the index selection signal (9.0 above) or the phasing signal (9.4 below) and no special signal for starting will be transmitted.

9.4 Phasing (Accepted as an interim measure pending further study. See general summary, agenda item 10.6.17 and Resolution 6 (CSM-III).

A 30-second transmission of alternating white and black signals of the following frequencies :

1 c/s for speed of 60 rpm
1.5 c/s for speed of 90 rpm
2 c/s for speed of 120 rpm

The waveform may be either symmetrical, i.e. white and black, each lasting half the line of scanning; or asymmetrical provided that in such event the white will last for 5 per cent and black for 95 per cent of the line of scanning. Members publishing details of their facsimile transmissions shall include details, i. e., 50 per cent or 5 per cent white phasing, of the phasing signal transmitted.

Phasing is actuated by the leading edge of the white signal. This leading edge must correspond in phase with the entry of the scanning beam into the dead sector of the subsequent transmission.

The envelopes of the signals transmitted will be roughly rectangular.

9.5 Adjustment of recording levels

Automatic adjustment of recording level when used, should be effected by reference to the phasing signal (9.4. above).

9.6 Stopping recorders

A five-second transmission of alternating black and white signals at 450 c/s, followed by 10 seconds of signals corresponding to continuous black. The envelopes of the 450 c/s signals will be roughly rectangular.

9.7 Precision of signals

The tolerances on the values indicated above will be as follows : for time intervals, 10 per cent; for frequencies, $\pm$ 0.0005 per cent.

Note : The above frequency tolerances are the same as that of the synchronization (8 above).

10. Modulation characteristics

(a) Amplitude modulation (AM)
The maximum amplitude of the carrying frequency should correspond to the transmission of signal black.
Value of the carrier frequency : about 1800 c/s.

(b) Modulation by frequency deviation (FM)
Value of the central frequency : about 1900 c/s
Value of the frequency for black : 1500 c/s
Value of the frequency for white : 2300 c/s

The frequencies for black and white should not vary by over 8 c/s over a period of 30 seconds and by more than 16 c/s over a period of 15 minutes.

11. Levels of signals in case of amplitude modulation

Receiving equipment should accept any level between + 5 db and - 20 db; zero reference level corresponding to a power of one milliwatt dissipated in a resistance of 600 ohms.

12. Contrast ratio

Contrast ratio for picture signals and control signals will be the same in any one transmission and will be between 12 and 25 db.

13. Half-tones

It is desirable to avoid the use of half-tones in international transmission of meteorological charts, while not excluding the possibility of their use in international transmissions of photographs from radar apparatus or satellites.

Rec. 61 (CSM-III) - INTERNATIONAL FACSIMILE TRANSMISSIONS BY RADIO

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING :

(1) Recommendation 50 (CSM-II) approved by Resolution 21 (EC-X),

(2) Recommendation 243 of the ninth Plenary Assembly of the CCIR,

(3) Recommendation T.16 of the second Plenary Assembly of the CCITT,

CONSIDERING the increasing use of facsimile transmissions by radio for meteorological purposes and, as a consequence, the need for standardization of the modes of transmission used,

RECOMMENDS that when direct frequency modulation (FSK) is used for transmissions by radio the following characteristics be applied :

(1) Decametric waves : (3 Mc/s - 30 Mc/s)

Frequency at the centre (corresponding to the frequency allocated) . . . . . = f_o

Frequency for black . . . . . = f_o - 400 c/s

Frequency for white . . . . . = f_o + 400 c/s

(2) Kilometric waves : (30 Kc/s - 300 Kc/s)

Frequency at the centre (corresponding to the frequency allotted) . . . . . = f_o

Frequency for black . . . . . = f_o - 150 c/s

Frequency for white . . . . . = f_o + 150 c/s

Rec. 62 (CSM-III) - ORGANIZATION FOR THE EXCHANGE OF METEOROLOGICAL INFORMATION BY FACSIMILE

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING :

(1) Recommendation 36 (CSM-II) and Resolution 21 (EC-X),

(2) That facsimile exchanges are being carried out in certain regions in accordance with regional associations' decisions;

(3) The existence of certain inter-regional requirements for exchanges by facsimile;

(4) That facsimile exchanges have already been established in some areas on an ad hoc basis;

(5) That no co-ordinated inter-regional exchanges exist at present;

CONSIDERING :

(1) The conclusions of the CSM Working Group on the Synoptic Use of Meteorological Data from Artificial Satellites which,

(a) Recognized the inadequacy of existing telecommunication systems to handle the present and expected volume of data available from artificial satellites, and

(b) Agreed that as long as meteorological telecommunication circuits do not permit the transmission of photographs, the dissemination of nephanalyses via facsimile is considered most suitable;

(2) The growing requirement for exchange by facsimile of analyses and forecasts for various purposes;

(3) The desirability of exchange by facsimile of the processed data from electronic computers;.

RECOMMENDS :

(1) That the regional associations should be requested to inform the Secretary-General of detailed requirements for the inter-regional exchange of meteorological information by facsimile not later than 31 March 1963;

(2) That regional associations and Members should maintain existing and establish new inter-regional facsimile exchanges as requirements become known;

(3) That the CSM through its Working Group on Telecommunications should coordinate inter-regional exchanges of meteorological information by facsimile as necessary.

Rec. 63 (CSM-III) - REVISION OF PARAGRAPHS 7.4.1.1 AND 7.4.1.3 OF THE TECHNICAL REGULATIONS

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING :

(1) Paragraph 5.8.1.12 of the general summary of the work of Third Congress,

(2) That a number of Members prepare 200 mb upper-air charts,

CONSIDERING the need for routine analyses of and forecasting for constant pressure surfaces above 300 mb;

RECOMMENDS that paragraph 7.4.1.3 of the Technical Regulations should be modified to read :

"7.4.1.3

Members should either prepare or have available upper-air charts for at least four of the five following standard isobaric surfaces : 850, 700, 500, 300 and 200 mb."

Rec. 64 (CSM-III) - PARTICIPATION OF THE COMMISSION IN A JOINT WORKING GROUP ON NUMERICAL PREDICTION

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING :

(1) Resolution 1 (CAe-III),

(2) The suggestion by the third session of the Commission for Aerology (paragraph 7.3 of the general summary) that the CAe Working Group on Numerical Prediction might be converted into a joint working group between CSM and the Commission for Aerology;

(3) General Regulations 34 and 35,

(4) Paragraph (h) of the Terms of Reference of CSM,

CONSIDERING that the use of electronic computers has now become valuable for routine analysis and forecasting, and that the development of such techniques as well as the problems of improving codes and telecommunications are of great concern to synoptic meteorology;

RECOMMENDS :

(1) That a joint Working Group on Numerical Analysis and Forecasting be established between CSM and CAe;

(2) That the terms of reference of the joint working group shall include those given to the CAe Working Group on Numerical Prediction and that the following items be added to the list :

(e) To express its view on the relationship between the accuracy of initial analysis and frequency and accuracy of observations, and on network requirements of numerical prediction and analysis for surface and upper-air networks of stations;

(f) To formulate requirements regarding :

(i) The use of codes, telecommunications, and telecommunications procedures for numerical purposes;

(ii) The acceptable time delays for reception of the various categories of information used for numerical prediction purposes;

(g) To keep the president of CSM informed about important developments regarding (e) and (f) above for the benefit of the relevant working groups of CSM and to present a final report on (f) by 1 January 1964;

(3) That the number of members of the joint working group be six, viz., three for CSM and three for CAe. In addition to the five individuals comprising the CAe working group, two of whom should be considered as serving for CSM, one expert from Japan should be asked to serve on the joint working group as the third CSM representative;

(4) That CSM be designated the constituent body to which the joint working group shall report;

(5) That the joint working group shall serve until the fourth session of both CSM and the Commission for Aerology;

(6) That the Secretary-General be requested to obtain from Members concerned a list of references to papers describing the methods used for numerical forecasts and analyses which are disseminated internationally, and to make such information available to all Members.

Rec. 65 (CSM-III) - ADOPTION OF THE GUIDE TO THE PREPARATION OF SYNOPTIC WEATHER CHARTS AND DIAGRAMS

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING :

(1) Recommendation 61 (CSM-II) and Resolution 12 (CSM-II),

(2) The provisional Guide submitted by the Working Group on the Guide to Synoptic Meteorological Practices,

(3) The amendments to international codes recommended by the third session of the Commission;

CONSIDERING :

(1) That this draft Guide corresponds to the needs expressed at the second session of the Commission;

(2) That a number of amendments are necessary mainly in order to incorporate decisions adopted at the third session of the Commission;

DECIDES to adopt the Guide prepared by the working group subject to the amendments listed in the annex to this recommendation;*

RECOMMENDS that the Guide be published by WMO as soon as possible.

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* See Annex XVIII.

Rec. 66 (CSM-III) - METHODS OF ANALYSIS AND PROGNOSIS IN THE TROPICS

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING :

(1) The report of the Working Group on Isotherm Analysis and Isotherm, Stream-Line and Isotach Prognostic Techniques in the Tropics,

(2) Resolution 8 (CSM-III);

CONSIDERING :

(1) The need for improvement in networks, accuracies of observation and transmission of data in the tropics;

(2) The need for further efforts in the development of methods of analysis and prognosis in the tropics;

RECOMMENDS that Members concerned :

(1) Take all possible steps to improve substantially the network of observing stations in tropical areas, in particular in areas with sparse data, to improve the accuracy of observations and also the communications arrangement for exchange of data,

(2) Be invited to report by 1 April 1965 on the methods used for analysis and prognosis in the tropics including any method tried during the interval 1 January 1964 to 1 January 1965, on the basis of recommendations to be made by the working group established by Resolution 8 (CSM-III).

Rec. 67 (CSM-III) - AMENDMENTS TO THE TECHNICAL REGULATIONS (APPENDIX E, PART I, SYMBOLS FOR PRESENT WEATHER)

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING the discrepancy between the symbols for ww=11 and 12 appearing in the Technical Regulations (Appendix E, table for present weather) and the symbols assigned to fog and mist in the International Cloud Atlas;

RECOMMENDS :

(1) That the following symbols for ww=11 and 12 be adopted :

⁼ to represent ww=11

⁼ to represent ww=12

(2) That the consequential changes be made in the Technical Regulations (Appendix E, table for present weather).

Rec. 68 (CSM-III) - AMENDMENTS TO THE TECHNICAL REGULATIONS (APPENDIX E, PART II, ANALYSES ON WEATHER CHARTS)

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING :

(1) Recommendation 65 (CSM-II),

(2) The divergence of opinion between Members on the use of terms and symbols for representing analyses on weather charts,

(3) That most of the terms and symbols listed in Appendix E, Part II, to the Technical Regulations have been included in the Guide to the Preparation of Synoptic Weather Charts and Diagrams;

CONSIDERING that only those terms and symbols which are commonly used should be included in the Technical Regulations,

RECOMMENDS :

(1) That only the following terms and symbols be listed in Appendix E, Part II, Analyses on Weather Charts, to the Technical Regulations :

(1)	Cold front at the ground	- present number (1)
(2)	Cold front above the ground	- present number (2)
(3)	Warm front at the ground	- present number (3)
(4)	Warm front above the ground	- present number (4)
(5)	Stationary front at the ground	- present number (7)
(6)	Stationary front above the ground	- present number (8)
(7)	Inter-tropical convergence zone	- present number (12)

(2) That the word "ground" be replaced by "surface" in terms (1), (2), (3), (4), (5) and (6) above;

(3) That the word "stationary" in terms (5) and (6) above be replaced by the word "quasi-stationary";

(4) That the symbol for the term "Inter-tropical convergence zone" now appearing in the Technical Regulations should be changed to conform with the symbol of this term included in the Guide to the Preparation of Synoptic Weather Charts and Diagrams, approved by the third session of the Commission.

Rec. 69 (CSM-III) - AMENDMENT OF THE DEFINITION OF THE TERM "FORECAST" IN CHAPTER 1 OF THE TECHNICAL REGULATIONS

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING the inconsistency between the definition of the term "Forecast" and other definitions in Chapter 1 of the Technical Regulations,

RECOMMENDS that the definition of the term "Forecast" in Chapter 1 of the Technical Regulations be amended to read :

Forecast. A statement of expected meteorological conditions for a specified period, and for a specified area or portion of air space.

Rec. 70 (CSM-III) - INCLUSION IN THE TECHNICAL REGULATIONS OF AN APPROPRIATE REFERENCE CONCERNING PREPARATION OF SURFACE CHARTS

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING paragraph 5.8.1.13 of the general summary of the work of Third Congress;

CONSIDERING that detailed guidance on the preparation of synoptic charts, as well as on the other subjects dealt with in Chapter 7 of the Technical Regulations, is given in the Guide to the Preparation of Synoptic Weather Charts and Diagrams;

RECOMMENDS :

(1) That the following note be added in the Technical Regulations immediately under the title of Chapter 7 :

N O T E :

In addition to the regulations contained in this chapter, detailed guidance is given in the Guide to the Preparation of Synoptic Weather Charts and Diagrams.

(2) That the note following paragraph 7.2.1.1 be deleted.

Rec. 71 (CSM-III) - DEFINITION OF THE TERM "DROPSONDE"

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING :

(1) Paragraph 5.8.13 of the general summary of the work of Third Congress,

(2) Recommendation 21 (CAe-III) - Revision of the Technical Regulations;

RECOMMENDS that the following definitions be included in Chapter 1 of the Technical Regulations :

"Dropsonde - A radiosonde released at altitude to obtain a sounding of the atmosphere while it descends."

Rec. 72 (CSM-III) - INCLUSION OF 150 mb AS A STANDARD ISOBARIC SURFACE (AMENDMENT TO PARAGRAPH 2.4.1.2 OF THE TECHNICAL REGULATIONS)

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING that in all WMO Regions and also in Antarctica data for the 150 mb surface are reported in section 1 of the TEMP Code;

CONSIDERING that this procedure should be recognized in the Technical Regulations;

RECOMMENDS that paragraph 7.4.1.2 of the Technical Regulations be amended to read:

7.4.1.2

The standard isobaric surfaces for representing and analysing the conditions in the atmosphere shall be the 1000 mb, 850 mb, 700 mb, 500 mb, 400 mb, 300 mb, 200 mb, 150 mb, and 100 mb surfaces.

Rec. 73 (CSM-III) - AMENDMENTS TO THE TECHNICAL REGULATIONS (APPENDIX E)

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING the new plotting method for missing wind data proposed for insertion into the Guide to the Preparation of Synoptic Weather Charts and Diagrams;

CONSIDERING that the method appearing in the Technical Regulations (Appendix E, Surface wind data) is unsatisfactory to several Members;

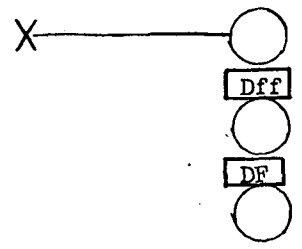
RECOMMENDS :

(1) That the following method be adopted for the plotting of missing wind data:

Missing wind speed

Missing wind direction

Missing wind direction and speed



Missing wind direction is indicated by the letter D followed by the reported wind speed in figures.

Missing wind direction and speed are indicated by the letters DF. These indications are inserted directly over the station circle, under the position of the C_M cloud, and within a frame in order to avoid confusion with PPP.

(2) That the consequential changes be made in the Technical Regulations (Appendix E, Surface wind data).

Rec. 74 (CSM-III) - REVISION OF RESOLUTIONS OF THE EXECUTIVE COMMITTEE BASED ON PREVIOUS RECOMMENDATIONS OF THE COMMISSION FOR SYNOPTIC METEOROLOGY

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING with satisfaction the action taken by the Executive Committee on the previous recommendations of the Commission for Synoptic Meteorology;

CONSIDERING that one of these recommendations has become redundant in the meantime;

RECOMMENDS :

(1) That the Executive Committee Resolution 21 (EC-X) be no longer considered necessary,

(2) That the following Executive Committee resolutions be maintained in force :

EC-III 4
EC-XIII 13, 14.

ANNEX I

Annex to paragraph 7.1.1 of the General Summary

ACCURACY OF MEASUREMENTS REQUIRED FOR THE PURPOSE OF SYNOPTIC METEOROLOGY
(This table shall not necessarily be used to specify the precision required in meteorological messages for international exchange)

Element	Accuracy	Time-interval during which the value, mean or instantaneous as appropriate, is to be obtained
A. Cloud observations		
1. Cloud amount	± ½ octa	Instantaneous
2. Height of cloud base	± 10 m below 100 m ± 10% above 100 m	Instantaneous
3. Direction of cloud movement	± 10 degrees	Instantaneous
B. Surface observations		
1. Atmospheric pressure	± 0.1 mb	Instantaneous
2. Pressure tendency	± 0.2 mb	Difference between two instantaneous measurements
3. Temperature		
(i) dry bulb temp.	± 0.1°C	Instantaneous
(ii) extreme temp.	± 0.5°C	
(iii) sea surface temp.	± 0.1°C	
4. Humidity		
(i) wet bulb. temp.	± 0.1°C	Instantaneous
(ii) relative humidity	± 5 %*	
5. Wind		
(i) direction	± 5 degrees	10 minutes
(ii) speed	± 0.5 m/s below 10 m/s ± 5 % above 10 m/s	[A few seconds for measurements of squalls]
6. Precipitation		
(i) accumulated amount	± 0.2 mm below 10 mm ± 2 % above 10 mm	

* For example between 45 and 55 per cent when the relative humidity is 50 per cent.

Element	Accuracy	Time-interval during which the value, mean or instantaneous as appropriate, is to be obtained
6. (ii) amount for intensity measurements	± 0.02 mm below 2 mm ± 0.2 mm between 2 mm and 10 mm ± 2 % above 10 mm	10 minutes
7. Visibility	± 10 %	Instantaneous
8. Depth of snow	± 1 cm below 20 cm ± 5 % above 20 cm	Instantaneous
B. Upper-air observations (by radiosonde and rawinsonde)		
1. Temperature	± 0.5°C	Instantaneous
2. Relative humidity	± 5 per cent* up to first tropopause or 300 mb whichever is the lower and 10% for higher levels	Instantaneous
3. Wind		
(i) direction	± 5 degrees for wind speed above 25 m/s ± 10 degrees for lower wind speeds	1 minute (300 - 400 m)
(ii) speed	± 1 m/s below 10 m/s ± 10 % above 10 m/s	
4. Geopotential of constant pressure surface	± 3 gpm below 1500 gpm ± 0.2% between 1500-20,000 gpm ± 0.1% above 20,000 gpm)	Instantaneous

* For example between 45 and 55 per cent when the relative humidity is 50 per cent.

NOTE : The expression "instantaneous" when used for cloud and for visibility observations in the column above is intended to cover, if necessary, several instantaneous observations within a period of 3 - 5 minutes.

A N N E X II

Annex to paragraph 7.6 of the General Summary

CRITERIA FOR DESCRIBING INTENSITY OF PRECIPITATION

The Commission referred the following criteria for describing the intensity of precipitation to the re-established Working Group on Codes so that this working group can develop the necessary code provisions for reporting appropriate ww in Code 4677.

Intensity in millimetres per hour measured during an interval of ten minutes immediately preceding the time of observation.

Rain and rain showers

Intensity Range	One	Trace to 1 mm per hour
	Two	More than 1 mm per hour to 5 mm per hour
	Three	More than 5 mm per hour to 25 mm per hour
	Four	More than 25 mm per hour to 50 mm per hour
	Five	More than 50 mm per hour

Drizzle

Intensity Range	One	Trace to 0.25 mm per hour
	Two	More than 0.25 mm per hour to 0.5 mm per hour
	Three	More than 0.5 mm per hour

NOTE : When precipitation exceeds 1 mm per hour there is a strong presumption that the precipitation is rain.

Snow

Intensity Range	One	Trace to 0.5 mm per hour of equivalent rain
	Two	More than 0.5 mm per hour to 5 mm per hour of equivalent rain
	Three	More than 5 mm per hour to 10 mm per hour of equivalent rain
	Four	More than 10 mm per hour of equivalent rain

NOTE : Descriptive terms such as light, moderate, heavy, very heavy, etc., may be used for these ranges in national instructions; however, it is recommended that the ranges be described as indicated above.

ANNEX III

Annex to paragraph 10.6.4 of the General Summary

ORGANIZATION FOR THE EXCHANGE OF HEMISPHERIC DATA

I. Transmission of northern hemisphere data to the southern hemisphere

(1)	New Delhi	may transmit	2 + 3	*data to Singapore/Melbourne
(2)	Offenbach	may transmit	5 + 1	data to Nairobi
(3)	New York	may transmit	4	data to Brazilia

II. Transmission of southern hemisphere data to the northern hemisphere

(1)	Melbourne	may transmit	7	data to New Delhi via Singapore
(2)	Nairobi	may transmit	6	data to Offenbach
(3)	Brazilia	may transmit	8	data to New York

III. Dissemination of southern hemisphere data in the northern hemisphere

(2)	New Delhi	may transmit	(2 + 1 + 5) + 7	to Tokyo
			(2 + 3) + 7	to Moscow
(5)	Offenbach	may transmit	(5 + 4) + 6 + 8	to Moscow
			(5 + 1) + 6	to New York
(4)	New York	may transmit	(4 + 3) + 8	to Offenbach
			(4) + 8 + 6	to Tokyo
(1)	Moscow	may transmit	(1 + 2) + 7	to Offenbach
			(1 + 5) + 6	to New Delhi
(3)	Tokyo	may transmit	(3 + 4) + 8	to New Delhi
			(2 + 3) + 7	to New York

IV. Dissemination of northern hemisphere data in the southern hemisphere

(1)	Nairobi	may transmit	6 + (1 + 5)	to Melbourne & Brazilia
(2)	Melbourne	may transmit	7 + (2 + 3)	to Nairobi & Brazilia
(3)	Brazilia	may transmit	8 + (4)	to Melbourne & Nairobi

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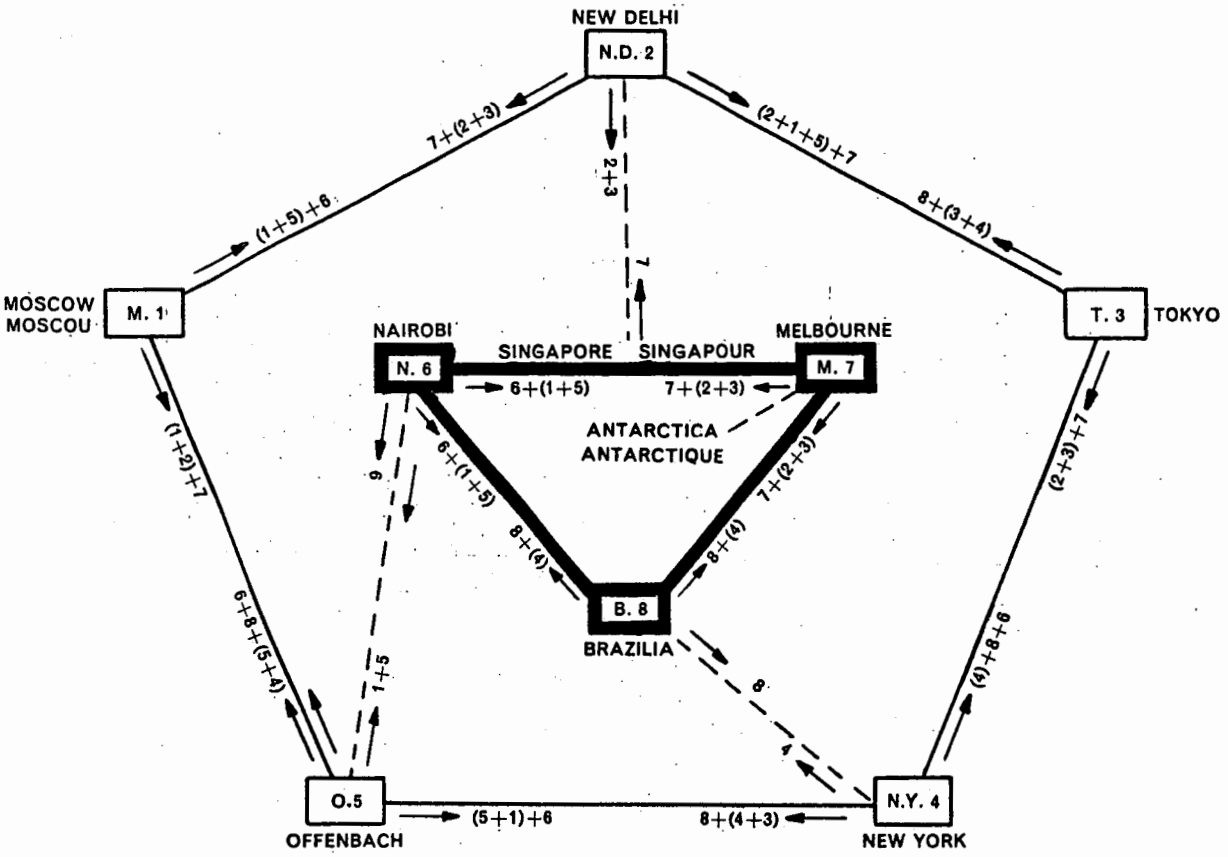
* 1 - Moscow
2 - New Delhi
3 - Tokyo
4 - New York
5 - Offenbach
6 - Nairobi
7 - Melbourne
8 - Brazilia

} Collectives



LEGEND :

- NHEC
- SHEC
- Connexion between NHECs
- Connexion between SHECs
- Interconnexion between a NHEC and a SHEC

ANNEX IV

Annex to paragraph 10.6.19 of the General Summary

PROBLEMS RELATING TO INTER-REGIONAL EXCHANGES OF BASIC METEOROLOGICAL DATA

REGION I

Continental broadcast

It is now evident that Brazzaville cannot undertake the responsibilities of a continental centre. Nigeria has indicated its readiness to change its AFMET IV broadcasts so that they become effectively continental in character, but in view of the setting up of a SHEC at Nairobi, it seems very desirable to pass any continental responsibilities to that station rather than Kano. There is, however, no intention to reach a firm decision on this matter for the next year or so.

E-W point-to-point link

(a) There is no immediate prospect of an AFTN RTT link being set up between Nairobi and Leopoldville/Brazzaville. However, air traffic between East and West Africa is increasing and the present MAS arrangements may soon prove to be inadequate.

(b) At the Dakar CCITT plan sub-committee meeting (Jan./Feb. 1962) proposals were made to establish a forward-scatter or similar multi-channel VHF/UHF link between the East African PTT and the Congo PTT. This link may materialize in the next five to seven years; if it does, the PTT's will almost certainly apply pressure to put meteorological and civil aviation traffic on the new channels.

Inadequate data

Certain services have indicated their intention to increase their 0000 GMT observational networks. This will improve the present coverage, but a number of deficiencies are certain to remain until the financial position of the Members concerned has considerably improved.

Other questions

The change-over to RTT operation of the AFMET transmissions is proceeding very satisfactorily. Consideration is being given to the adoption of multiplexing a number of AFTN channels, among other measures, to improve both inter-regional links, and the free dissemination of data within Region I.

REGION II

It was noted that New Delhi would begin RTT territorial and subcontinental transmissions before the end of 1962 and that the trial transmissions by RTT from New Delhi were expected to begin by May 1962. The power of the RTT transmissions would be 5 kw. The Morse transmissions from New Delhi would be continued for some more time. Tokyo was planning to increase the number of frequencies and the power of its existing RTT transmissions (JMG) during April 1962. Both Tokyo and New Delhi were also planning to include the contents of the

existing territorial broadcasts in their RTT subcontinental broadcasts. The territorial broadcasts from Tokyo by Morse were to be continued.

It was noted that Iran was still not in a position to institute subcontinental transmissions from Teheran and that, consequently, New Delhi would have to continue to shoulder the responsibility of including the data for the south-west of Region II in its subcontinental broadcasts for some more time. Iran was, however, expecting to institute territorial transmissions by RTT with kW power by mid-1962. These transmissions would enable New Delhi to include more data from the south-west of Region II in their subcontinental broadcasts.

With regard to the availability of more data from Saudi Arabia, Afghanistan, Ceylon, Laos, Viet Nam and Cambodia for inter-regional exchanges, it was noted that the position remained more or less the same. The chairman of the RA II Working Group on Telecommunications was, however, actively pursuing the matter through the proper channels with the countries concerned, but it was difficult for him to foresee when more data would become available from these countries for inclusion in the subcontinental broadcasts from New Delhi.

REGION III

Subcontinental broadcasts

Venezuela started a radio-teleprinter transmission 15 December 1961 (subregional broadcast), call sign YWZ, operation times 0000-2400 Z, type of modulation F_1, power of station 1 kW, at frequency 11625 ks/s. This broadcast had to be discontinued because this frequency was allocated to the U.S.A. in 1947. As soon as the frequency 16455 kc/s is assigned, the broadcast will be resumed. The broadcast includes SYNOP, PILOT, TEMP, TAFOR, etc., of the block numbers 80, 81, 82, 83 and 84, IAC surface analysis and absolute topographies of the 700 and 500 mb upper-air surfaces.

The provisional programme was sent to the WMO Secretariat for publication in Publication No. 9, Volume C, dated 15 December 1961.

Inadequate data

Although efforts are being made by Members of RA III to remedy existing deficiencies, in particular the lack of 0000 GMT reports, no extensive improvement can be expected until the overall financial situation of these countries have been improved.

REGION IV

Region IV experienced considerable difficulty in the dissemination of extra-regional data because the bulletins are not being received with the authorized abbreviated weather headings. Any deviation in the headings precludes the proper selection of data for relay and thus results in the loss of such data at the intended receiving points. Region IV also experiences difficulty in the receipt of these reports of observations from northern South America. Irregular receipt at the NHEC New York prevents their inclusion in the northern hemisphere exchange on a regular basis.

REGION V

Manila broadcasts

Difficulties have been experienced in the regular reception of the Manila subcontinental broadcasts. Every effort is being made to provide efficient transmissions.

Territorial broadcasts

Special attention has been given to the earlier dissemination of upper-air basic information by the territorial broadcast centres. Revisions of the Djakarta and Malaya broadcast transmissions have been implemented to achieve this requirement.

Conversion to RTT

The Canberra (AXM) and Himatangi (ZLX/ZLZ) Broadcasts are RTT. The third subcontinental broadcast, Manila (DUM), in RA V is expected to convert to RTT in 1962.

Certain territorial broadcasts are planned for conversion to RTT at an early date :

(i) Malaya by October 1962

(ii) Indonesia towards the end of 1962 (CW will continue for some time)

Radio facsimile

Radio facsimile broadcasts were commenced from Canberra (AXM) in July 1961.

REGION VI

(a) Santa Maria and Paris. However, in view of the increased needs, both as to the regularity of routing and speed, the conclusions of the fourth North Atlantic air navigation meeting regarding the use of teleprinter channels on the SCOTICE and ICEAN cables are of great interest. The utilization of cables is in line, in fact, with the CSM view point regarding the future development of suitable means of world-wide meteorological telecommunications.

A study, which should be made by RA IV and RA VI, taking into consideration the close links existing between exchanges in the North Atlantic and hemispheric exchanges and the RTT means being used at present, should make possible the preparation of specific directives to the WMO representative on the group established by Recommendation 6/3 (e) of the fourth RAN NAT meeting.

(b) With regard to exchanges between RA I and RA VI, any arrangement making it possible to facilitate the exchange of information between Region I and Region VI should be considered.

The development of automatic systems, the evolution of forecasting techniques, and the extent of the areas for which the analyses are prepared, call for the utilization of reliable telecommunication means that would make it possible to route the data in as short a time as possible. In view of the congestion of the frequency spectrum, it was recognized that the means capable of meeting the needs anticipated for the coming years would probably be the utilization of cable circuits or of satellites.

ANNEX V

Annex to paragraph 19.4 of the General Summary*

DECISIONS ADOPTED BY THE COMMISSION BETWEEN ITS SECOND AND THIRD SESSIONS

Res. 14 (61-CSM) - SYNOPTIC USE OF METEOROLOGICAL DATA FROM ARTIFICIAL SATELLITES

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING Resolution 28 (Cg-III) and Resolution 15 (EC-XII);

RECOGNIZING that developments in the field of meteorological satellites are such that satellite data may soon become available for regular use by meteorological services as aids for analysis and forecasting;

DECIDES :

(1) To establish a Working Group on the Synoptic Use of Meteorological Data from Artificial Satellites, with the following terms of reference :

(a) To examine the types of data, appropriate for synoptic use, which can be expected to be received from artificial satellites;

(b) To study the suitability of satellite data for regular international exchange in original or interpreted form;

(c) To keep the Working Group on Codes and Telecommunications advised regarding the requirements for exchange of satellite data for synoptic purposes;

(d) To report on these aspects not later than three months before the third session of the Commission;

(2) To invite the permanent representatives of the following Members to designate experts to serve as members on the working group :

Australia
United Kingdom
Union of Soviet Socialist Republics
United States of America

(3) To request the Secretary-General to assist the working group, as required, in its work.

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* The text of Recommendations 90 and 91 (61-CSM) is reproduced on page 178.

ANNEX VI

Annex to Resolution 3 (CSM-III)

WORKING GROUP ON CODES

Part A

TERMS OF REFERENCE IN ORDER OF PRIORITY

(a) To study the fundamental requirements in the international exchange of meteorological information and to enunciate these as a basis for the development of code forms meeting the several user requirements with the greatest possible economy of code groups.

(b) To review the basic SYNOP code form with its derivatives and associated codes and to suggest improvements, to meet both tropical and temperate zone requirements, if possible in a common code form. Special attention should be given to the element listed in the following attachment which also contains appropriate references.

(c) To restudy the TEMP code given in CSM-III/Doc. 291/P to determine the feasibility of representing it, in modified form if required, for the consideration of CSM at its fourth session. To restudy the PILOT code given in CSM-III/Doc. 280/P in conjunction with the proposed new basic form for PILOT given in CSM-III/Doc. 20, Rec. 21, Annex III, with the view to presenting a new PILOT to CSM-IV. To determine in the light of requirements furnished by Members if the international and national needs of most services can be satisfied in one code form.

(d) To revise the notes in Volume B in accordance with the request of Third Congress - paragraph 5.8.1.9 of the general summary - (see Recommendation 8 (CSM-III) and to have that work completed at the time of issue of the final report of the group.

(e) To develop coding or other arrangements to enable the use of aircraft weather reports in automatic computer processes (general summary, paragraph 8.4.6.2 of the report of the third session of the Commission).

(f) To review the analysis code (IAC), in its full and abbreviated form, to see if it can be improved or simplified and, further, to see if it can be extended to include significant weather information as requested by Rec. 15/5 (CAeM-II/MET V). (CSM-III/Doc. 20, paragraph 9.1 and Rec. 27(CSM-III), general summary, paragraph 8.4.4.1).

(g) To see that all codes and specifications in Volume B are internally consistent and are also consistent with the description in the Cloud Atlas.

(h) To study the present usage of code forms to see if any obsolete or unused forms could be deleted from Volume B and, on the other hand, to see if any common regional code forms should be brought into international usage. (CSM-III/Doc. 20, paragraph 14, and Rec. 34 - Rec. 32 (CSM-III), general summary, paragraph 8.4.4.3).

(i) To study such other coding problems as may be referred to it by the president of CSM and through him by Members or constituent bodies of the Organization.

(j) To study the coding problems in the following CSM recommendations : Recommendations 23 and 54 (CSM-I) and Recommendation 30 (CSM-II).

Attachment to Part A

(i)	Overall description of the state of the sky	CSM-III, general summary, para. 8.4.1.8(b) CSM-III/Doc. 63
(ii)	Convective cloud forms and their development	CSM-III, general summary, para. 8.4.1.4 CSM-III/Doc. 20 (para. 6.7) WMO Munitalp Joint Symposium, Rec. 10
(iii)	Present and past weather (with new intensity criteria)	CSM-III, general summary, paras. 7.6 and 8.4.2.3 CSM-III/Docs. 20 (paras. 7.1 to 7.12 and Rec. 19 (W/G Codes)), 45, 63, 75, 93, 99
(iv)	Dew point/dew-point depression	CSM-III/Docs. 20 (Rec. 22 (W/G Codes) and 88
(v)	Sea surface temperature	CSM-III, general summary (para. 8.4.5.8)
(vi)	Pressure (whole millibars or tenths) and tendency (tenths of millibars or code table)	CSM-III, general summary, para. 8.4.2.7 CSM-III/Docs. 20 (Rec. 22 (W/G Codes)), 45, 88 and 267/P
(vii)	State of the sea	CSM-III, general summary, para. 8.4.5.11 CSM-III/Docs. 47 and 52
(viii)	Dust haze, mist, fog (Code table 4677ww)	CSM-III, general summary, para. 7.9 CSM-III/Doc. 96

Part B

PRINCIPLES FOR GUIDANCE OF THE WORKING GROUP

(a) No changes shall be recommended unless they provide substantial advantages which are clearly demonstrated. Severe restriction in the frequency of code changes is necessary in order to minimize the need to re-programme computers and instruct observers.

(b) The messages should be as compact as possible in order to reduce the time required for their transmission. To aid in this objective the elements should not be reported with a greater precision than is justified by the measuring device or the requirement.

(c) In the interest of economy and for greater smoothness in communications, mixed figure and letter code groups should not be used (except as message indicators). Groups of more than five figures should not normally be used and groups of less than five figures should be used only when such groups constitute some marked advantage.

(d) Due regard shall be given to the needs of synoptic meteorology and of other branches of pure and applied meteorology, including particularly aeronautical, marine and agricultural interests and the needs of automatic data processing.

(e) Repercussions of economic and operational significance should be examined.

(f) The code format should be distinctive, enabling recognition of the code type in the case of lost bulletin headings or one or several lost groups within the individual report. The use in each report of a unique identifier for the type of report will aid substantially in reaching the objective.

(g) A distinctive and unique indication of the beginning and ending of each report is desirable, especially the beginning.

(h) It should be possible to obtain an easy and unambiguous identification of the station that took the observation. Furthermore, the station identifier should be complete in itself, not depending on headings of the bulletins.

(i) The maximum possible uniformity of code forms and coding procedures should be achieved in order to avoid excessive programming of computers. The use of optional parts of the message should be severely restricted. Such optional parts should be allowed only for the most compelling reasons, be clearly identifiable within the message, and should come as the last part of the message.

(j) The maximum possible uniformity of measuring units is required. It is essential that all stations not at permanently fixed and exactly specified geographical locations use the same system of units.

(k) Features enabling checking of essential data should be included, such as check information on the location of moving stations. However, check digits to be inserted by relatively inexperienced observers should be as simple as possible lest the check information itself prove a source of error and confusion.

(l) The principle of the "family" system in code-making e.g. SYNOP and AERO should not be carried to the extent of violating the above principles, since the different codes in a family serve a variety of purposes and users with different requirements.

(m) Any code names required should be brief, pronounceable and, if possible, self evident.

ANNEX VII

Annex to Recommendation 7 (CSM-III)

CHANGES TO BE MADE IN VOLUME B

The specifications, notes and code tables concerning code forms revised by CSM at the present session have not been taken into account in the present annex, as appropriate proposals are made in the relevant recommendations.

Part A-1 : Code forms

Page I - A - 1 - 19 :	Note 5 (i),	delete "(31 ft)" and "or feet"
Page I - A - 1 - 23 :	Note 7 (ii),	delete "(31 ft)" and "or feet"
Page I - A - 1 - 26 :	Note 7 (vi),	replace "30 nautical miles" by "50 to 60 km"
	Note 8 (i),	delete "(31 ft)" and "or feet"
Page I - A - 1 - 29 :	Note 2 (a),	replace "20 knots" by "10 metres per second"
	Note 2 (b),	replace "15 knots" by "7.5 metres per second"
Page I - A - 1 - 51 :	Note 10 (ii),	replace "60 knots or 100 km/hour" by "30 metres per second"
Page I - A - 1 - 57 :	Note 10 (ii),	delete "(9,000 feet)"
Page I - A - 1 - 63 :	Note 2,	delete "(30,000 feet)"
Page I - A - 1 - 64 :	Note 10 (ii),	delete "(9,000 feet)"

Part A-2 : Meaning of symbolic words and groups

Page I - A - 2 - 3	WAVES	delete "(31 feet)"
Page I - A - 2 - 4	00200	replace "200 knots" by "200 metres per second"
	55555	delete "altitudes are in decametres"

Parts A-3 : Specifications of symbolic letters and A-4 : Specifications of code figures (code tables)

In the third column the amendments given under(1) concern the specifications of symbolic letters (Part A-3) and those under(2) concern the specifications of the code figures or the code tables (Part A-4).

Symbol	Code	
a_3	0264	(1) Delete "and indicating the unit used." (2) (i) Delete 7, 8, 9 and relevant specifications (ii) Delete "and indicating the unit used" in the specifications
$d_w d_w$		(1) Note (2), delete the equivalents in feet
e_1	1062	(2) (i) Code figure 0 - and note - delete twice "or hundreds of geopotential feet" (ii) Code figure 8 replace knots by metres per second

F	1100	No changes is recommended for this table as it will more probably be amended by CMM at its fourth session.
ff f_hf_h f_sf_s f_tf_t f_of_o f_1f_1 f_2f_2 ... f_nf_n		(1) Replace knots by metres per second (In the symbolic letters f will be replaced by F when the metres per second will be introduced)
H_w	1555	(1) Delete equivalents in feet (2) Delete equivalents in feet in code figures and notes
HH	1577	(2) (i) Delete equivalents in feet in the Notes (1), (3) and (4) (ii) Delete equivalents in feet in the table
H_tH_t		(1) Delete "or hundreds of geopotential feet"
$H_bH_bH_b$ $H_tH_tH_t$		(1) Delete "or hundreds of feet"
$H_zH_zH_zH_z$		(1) (i) Amend to read "Altitude of significant point in decametre" (ii) Delete Notes (1) and (2)
h_ah_a		(1) Delete "or tens of geopotential feet"
h_sh_s		(1) Delete the equivalents in feet in Note (2)
h_1h_1 ... h_nh_n		(1) Delete "or hundreds of geopotential feet"
hhh		(1) Delete "or tens of geopotential feet"
i_1	1841	(2) Delete code figures 1, 2, 3, 5 and 6 and the relevant specifications
i_2	1863	(2) Replace "nautical miles" by "kilometres"
i_3	1864	(2) $90DP_wH_w$ - delete equivalents in feet
PPP		(1) Delete "or tens of geopotential feet" in the specification and in Note 2 (c)
r	3600	(2) Develop a new table in km corresponding approximately to the distances presently given in nautical miles
S	3700	(2) Delete the approximate equivalents in feet

S_1 S_2		(1) Maintain for the time being the statute miles, as this code will be reconsidered by the working groups
TT		(1) (i) Delete "or Fahrenheit" in the specification (ii) Delete the parts of Notes (1) and (2) concerning the degree Fahrenheit
T_dT_d		(1) Delete "or Fahrenheit" in the specification
T_sT_s		(1) (i) Delete "or whole degrees Fahrenheit" in the specification (ii) Delete the second sentence of Note (1)
t_L	4013	(2) Delete the equivalent (feet) from the Table
V	4300	(2) Delete the equivalent (yards and nautical miles) from the Table
VV	4377	(2) Delete the equivalent (yards and statute miles) from the Table and Notes (1) and (3)
v_s	4451	(2) Add the equivalents in km/h
W_1	4562	(2) Delete the equivalents (nautical miles) from the specifications of code figures 0, 3 and 4
$x_2x_2x_2$	4892	(2) Delete "or hundreds of geopotential feet" from the specifications of code figures 111 and 666
$x_3x_3x_3$	4892	

A N N E X VIII

Annex to Recommendation 8 (CSM-III)

NOTES IN VOLUME B

Part A

SUGGESTED FORMAT

FM 17 Cloud report from land station

MONT $N'C'H'H'C_t$

The code name MONT, added at the end of SYNOP report, indicates that the following group or groups deal with clouds having bases below station level.

Regulations

II. 17. 1 The code name MONT shall precede cloud reports in code form FM 17.

II. 17. 2 A MONT report shall be added at the end of the SYNOP FM 11.A which refers to the same time of observation.

II. 17. 3 Clouds with tops below station level shall be reported only by the MONT group and any coexistent clouds with bases above the station level shall be reported in the SYNOP group $N_hC_LhC_MC_H$.

II. 17. 4 C_L clouds with bases below and tops above station level shall be reported in both $N_hC_LhC_MM_H$ and MONT $N'C'H'H'C_t$ provided that the station is out of cloud sufficiently frequently to enable the various features to be recognized. In this case :

(a) N_h corresponds with N' and C_L with C' while h shall be coded as /.

(b) Other C_L clouds present with tops below station level shall be reported in a second MONT group.

(c) Other C_L clouds present with bases above station level shall be reported in plain language after the MONT group (s).

II. 17. 5 If the station is in almost continuous cloud the group $N_hC_LhC_MC_H$ shall be reported as 9 ////, the MONT group omitted, and ww encoded in the forty decade or higher.

Part B

INTRODUCTION TO PART A, CHAPTER I, VOL. B, WMO PUBLICATION No. 9

STATUS OF NOTES

The words "shall" and "should" in Part A, Chapter I, Volume B, in its present form, have only their dictionary meaning and have no regulatory character (Introduction to Technical Regulations.)

Many of the present notes in this part necessarily form integral parts of the relevant code forms and, as such, basically have the status of standard practices. On the other hand, some material in these notes does not have this status.

In due course these notes will be edited and rewritten to separate the standard practices from the other material. In the meantime Members are urged to treat the notes broadly as standard practices except where the sense shows this to be obviously unnecessary. Members are not required to lodge formal deviations from the notes in their present form but, where national practices do not conform with Part A, Members concerned are urged to inform the Secretary-General of WMO for the benefit of other Members.

As Part A is progressively revised, all standard practices will be clearly indicated using the accepted typographical and wording conventions and, at that time, formal deviations will be required from Members not complying.

A N N E X IX

Annex to Recommendation 21 (CSM-III)

NOTES CONCERNING TEMP AND TEMP SHIP CODE FORMS

Part A

REVISION OF FM 35.B - TEMP

Revise the FM number and the notes under FM 35.B to conform to the following :

FM 35.C Upper-level pressure, temperature, humidity and wind report from land station

NOTES :

(1) The code name TEMP refers to an upper-air report from a land station. The word TEMP is not transmitted as part of the report.

(2) The code form is divided into a number of sections :

Number	Indicator group	Contents
1	-----	Data for standard isobaric surfaces
2	55555	Data for significant levels with respect to temperature and/or humidity
3	66666	Data for significant levels with respect to temperature
4	77777	Data for significant levels with respect to wind
5	88888	Data for significant points on the wind ascent curve
6	22222	Visual observations during an aircraft sounding
7	33333	Reserved for regional use for reporting observed wind differences between selected standard levels and thickness layers
8	44444	Wind data at the standard isobaric surfaces
9	01010	Cloud data
10	111AA	Maximum wind data
11	111AA	Tropopause data

(3) Parts of TEMP

(i) TEMP reports shall be prepared in three parts: A, B and C. (See table on page 133)

(ii) Parts A and B of a TEMP report shall be transmitted either together or as two separate messages.

(iii) Part C of a TEMP report shall be transmitted as a separate message, divorced from Parts A and B.

(4) (i) Part A of a TEMP report shall begin with the group M_iM_i IIiii.

(ii) Part A of a TEMP report shall be confined to data up to and including the 100 mb level.

(iii) Part A of a TEMP report shall contain Sections 1, 11 and 10, in so far as data are available.

(iv) TEMP reports prepared for international exchanges shall always include Part A.

(5) Part B

(i) Part B of a TEMP report shall begin with the groups M_iM_iGG IIiii.

(ii) Part B of a TEMP report shall be confined to data up to and including the 100 mb level.

(iii) Part B of a TEMP report shall contain a selection of Sections 2, 3, 4, 5, 6, 7, 8 and 9.

(6) Part C

(i) Part C of a TEMP report shall begin with the groups M_iM_iGG IIiii.

(ii) Part C of a TEMP report shall contain data above 100 mb.

(iii) Part C of a TEMP report shall contain :

(a) Sections 1, 10 and 11 in so far as data are available.

(b) A selection of Sections 2, 3, 4, 5, 6, 7 and 8.

(7) Section 1

(i) Section 1 shall be used to report the geopotential, temperature, dew-point temperature, and wind data for the standard isobaric surfaces of 1,000, 850, 700, 500, 400, 300, 200, 150, 100 and, whenever reported, the 70, 50, 30, 20 and 10 mb surfaces. If data for only one standard isobaric surface above 100 mb are included in Section 1 for international exchange, they should be for the 50 mb surface. If data for only two standard isobaric surfaces above 100 mb are transmitted, they should be for the 50 and 30 mb surfaces.

(ii) Whenever it is desired to extrapolate a sounding for the computation of the geopotential at a standard isobaric surface the following rules shall apply:

(a) Extrapolation is permissible if, and only if, the pressure difference between the minimum pressure of the sounding and the isobaric surface for which the extrapolated value is being computed does not exceed 1/4 of the pressure to which extrapolation is desired, provided the extrapolation does not extend through a pressure interval exceeding 25 mb.

(b) For the purpose of geopotential calculation, and for this purpose only, the sounding will be extrapolated, using two points only of the sounding curve on a log p, T-diagram, namely that at the minimum pressure reached by the sounding and that at the pressure given by the sum of this minimum pressure and the pressure difference, mentioned in (a) above.

(8) Copy Note (5) of Volume B, page I-A-1-36.

(9) Copy Note (6) of Volume B, page I-A-1-36.

(10) Copy first three lines of Note (7) of Volume B, page I-A-1-36. Replace lines 4 to 7, inclusive, of Note (7) by the following :

The criteria for determining significant levels for international exchange are based on the premise that the significant data alone should make it possible to reconstruct the actual temperature and relative humidity sounding within the limits of the criteria specified. Significant levels are selected as follows :

(a) Surface level, highest level of sounding and tropopauses.

(b) Bases and tops of inversions and isothermal layers which are at least 20 mb thick or are characterized by a substantial change in relative humidity provided that the base of the layer occurs below the 300 mb level or below the first tropopause, whichever is higher.

(c) Levels which are necessary to ensure that the temperature obtained by linear interpolation (on a T - log p or essentially similar diagram) between adjacent significant levels shall not depart from the observed temperature by more than 1°C below the 300 mb level or the first tropopause, whichever is reached first, and by more than 2°C above this level.

(d) Levels which are necessary to ensure that relative humidity obtained by linear interpolation between adjacent significant levels shall not depart by more than 15 per cent from the observed value. (The criterion of 15 per cent refers to an amount of relative humidity and NOT to a percentage of the observed value; e.g., if the observed value is 50 per cent the interpolated value would lie between 35 per cent and 65 per cent.)

(11) When a significant level and a standard isobaric surface coincide, data for that level shall be reported in both Section 1 and Sections 2, 3 or 5, as appropriate.

(12) When a significant level is transmitted as a result of the criteria specified in paragraphs 10(a) through 10(d), both temperature and humidity data shall be included in the coded report whenever these data are available and required by the Section of TEMP being used.

(13) Levels determined according to the criteria given in paragraphs 10(c) and 10(d), should, in so far as possible, be the actual levels at which prominent changes occur in the lapse rates of temperature or humidity.

(14) Copy Note (8) of Volume B, page I-A-1-36.

(15) Copy Note (9) of Volume B, page I-A-1-36.

(16) Copy Note (10) of Volume B, page I-A-1-36.

(17) Copy Note (11) of Volume B, page I-A-1-36.

(18) Copy Note (12) of Volume B, page I-A-1-36.

(19) Copy Note (13) of Volume B, page I-A-1-36.

(20) Copa Note (14) of Volume B, page I-A-1-36.

(21) Copy Note (15) of Volume B, page I-A-1-37.

(22) Copy Note (16) of Volume B, page I-A-1-37.

(23) Copy Note (17) of Volume B, page I-A-1-37.

(24) Use of bracketed groups
Delete Note (19) (i) of Volume B, page I-A-1-37.

(i) Copy Note (19) (ii) of Volume B, page I-A-1-37.

(ii) Copy Note (19) (iii) ($T_1T_1T_{d1}T_{d1}T_{x1}$) - See Note (8) above.

(iii) Copy Note (19) (iv) of Volume B, page I-A-1-37.

(25) Copy Note (2) under FM 35.B, page I-A-1-37, i.e., "Additional groups or supplementary information".

(i) Copy Note (20) (i) of Volume B, page I-A-1-37.

(ii) Copy Note (20) (ii) of Volume B, page I-A-1-37 as given, except for changing (II)iii to IIiii in the third line.

Present Note (21) on page I-A-1-37 is deleted.

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* *

Part B

COMPOSITION OF TEMP, TEMP SHIP, PILOT AND PILOT SHIP MESSAGES

		TEMP			PILOT		
		Sections included	M_iM_i		Sections included	M_iM_i	
			Land	Ship		Land	Ship
Below 100 mb (inclusive)	Part A (International exchange)	1, 11, 10 (Mandatory)	TT IIiii	WW $YQL_aL_aL_a$ $L_oL_oL_oGG$	4, 5 (Mandatory)	PPGG IIiii	LL $YQL_aL_aL_a$ $L_oL_oL_oGG$
	Part B (Regional or international exchange)	2, 3, 4, 5, 6, 7, 8, 9 (Suitable selection)	TTGG IIiii	WW $YQL_aL_aL_a$ $L_oL_oL_oGG$	1, 2, 3 (Suitable selection)	PP IIiii	LL $YQL_aL_aL_a$ $L_oL_oL_oGG$
Over 100 mb	Part C (Optional)	1, 11, 10 (Mandatory) + 2, 3, 4, 5, 6, 7, 8 (Suitable selection)	VVGG IIiii	YY $YQL_aL_aL_a$ $L_oL_oL_oGG$	4, 5 (Mandatory) + 1, 2, 3 (Suitable selection)	QQGG IIiii	MM $YQL_aL_aL_a$ $L_oL_oL_oGG$

Part C

REVISION OF FM 36.B - TEMP SHIP

Revise the FM number and the Notes under FM 36.B to conform to the following :

FM 36.C Upper level pressure, temperature, humidity and wind report from a ship.

(1) The code name TEMP SHIP refers to an upper air report from a SHIP station. The word TEMP SHIP is not transmitted as part of the report.

(2) See Note (2) under TEMP FM 35.C.

(3) Parts of TEMP SHIP

(i) TEMP SHIP reports shall be prepared in three parts : A, B and C.

(ii) Parts A and B of a TEMP SHIP report shall be transmitted either together or as two separate messages.

(iii) Part C of a TEMP SHIP report shall be transmitted as a separate message, divorced from Parts A and B.

(4) Part A

(i) Part A of a TEMP SHIP report shall begin with the groups M_iM_i $YQL_aL_aL_a$ $L_oL_oL_oGG$.

(ii) Part A of a TEMP SHIP report shall be confined to data up to and including the 100 mb level.

(iii) Part A of a TEMP SHIP report shall contain Sections 1, 11 and 10 in so far as data are available.

(iv) TEMP SHIP reports prepared for international exchanges shall always include Part A.

(5) Part B

(i) Part B of a TEMP SHIP report shall begin with the groups M_iM_i $YQL_aL_aL_a$ $L_oL_oL_oGG$.

(ii) Part B of a TEMP SHIP report shall be confined to data up to and including the 100 mb level.

(iii) Part B of a TEMP SHIP report shall contain a selection of Sections 2, 3, 4, 5, 6, 7, 8 and 9.

(6) Part C

(i) Part C of a TEMP SHIP report shall begin with the groups M_iM_i $YQL_aL_aL_a$ $L_oL_oL_oGG$.

(ii) Part C of a TEMP SHIP report shall contain data above 100 mb.

(iii) Part C of a TEMP SHIP report shall contain :

(a) Sections 1, 11 and 10 in so far as data are available.

(b) A selection of Sections 2, 3, 4, 5, 6, 7 and 8.

(7) See Note (7) under TEMP FM 35.C.

(8) Copy Note (3) of Volume B, page I-A-1-39.

(9) See Notes (9), (10), (11), (12), (13), (14), (15), (16), (17), (18), (19), (20), (21), (22) and (23) under TEMP.

(10) Use of nracketed groups.

(i) See Note (24) (i) under TEMP FM 35.C.

(ii) "($T_1T_1T_{d1}T_{d1}T_{x1}$) - See Note (8) above."

(iii) See Note (24) (iii) under FM 35.C.

(11) Additional groups or supplementary information.

(i) See Note (25) (i) under TEMP FM 35.C.

(ii) Copy Note (6) (ii) under TEMP SHIP FM 36.B, page I-A-1-39.

(12) The ship's position verification group (i.e., $MMMU_{L_a}U_{L_o}$) will always be added at the end of Section 1.

Part D

SPECIFICATIONS OF SYMBOLIC LETTERS - CHANGES

Amend to read :

h_1h_1
...
h_nh_n Geopotential of the level in geopotential decametres.
(FM 35.C, FM 36.C)

Note 1 (unchanged)

Amend

$h_1h_1h_1$
$h_2h_2h_2$
...
$h_nh_nh_n$ Geopotential of the standard isobaric surfaces P_1P_1, P_2P_2, ... P_nP_n in geopotential metres and geopotential decametres.
(FM 35.C, FM 36.C)

(1) Geopotentials of surfaces below sea level are reported by adding 500 to the absolute value of the geopotential.

(2) The geopotential is reported in whole geopotential metres up to, but not including, 500 mb and in geopotential decametres at 500 mb and higher.

Amend

P_1P_1
P_2P_2 Pressure, in tens of millibars, of the standard isobaric surfaces (1000 mb = 00).
... (FM 35.C, FM 36.C)
P_nP_n

Insert

Under D (Direction of surface wind), Note (1) as follows :

(1) When Section 1 is included in Part C (i.e., above 100 mb) of either FM 32.C or FM 33.C, a solidus (/) is reported for D.

Under f_a, Note (1) as follows :

(1) When Section 1 is included in Part C (i.e., above 100 mb) of either FM 32.C or FM 33.C, a solidus (/) is reported for f_a.

M_iM_i Message identifier letters. (Code . . . . .)

FM 32.C, FM 33.C, FM 35.C, FM 36.C)

M_iM_i Message identifier letters for upper air reports

Code letters	Report
LL	PILOT SHIP, Part(s) A and/or B
MM	PILOT SHIP, Part C
PP	PILOT , Part(s) A and/or B
QQ	PILOT , Part C

Code letters	Report
TT	TEMP , Part(s) A and/or B
VV	TEMP , Part C
WW	TEMP SHIP, Part(s) A and/or B
YY	TEMP SHIP, Part C

Delete

Delete the specifications for code figures 66, 77, 88 and 99 of Code 0177.

ANNEX X

Annex to Recommendation 22 (CSM-III)

NOTES CONCERNING PILOT AND PILOT SHIP CODE FORMS

Part A

REVISION OF FM 32.B - PILOT

Revise the FM number and the notes under FM 32.B to conform to the following :

FM 32.C Upper wind report from land station.

NOTES :

(1) The code name PILOT refers to an upper-wind report from a land station, and is not transmitted as part of the report.

(2) The code form is divided into a number of sections :

Number	Indicator group	Contents
1	-----	Data for selected levels
2	88888	Wind vector differences
3	55555	Significant changes
4	44444	Data for levels approximating altitudes of standard isobaric surfaces
5	111AA	Maximum wind data

(3) Parts of PILOT

(i) PILOT reports shall be prepared in three parts : A, B and C. (See table on page 133)

(ii) Parts A and B of a PILOT report shall be transmitted either together or as two separate messages.

(iii) Part C of a PILOT report shall be transmitted as a separate message, divorced from parts A and B.

(4) Part A

(i) Part A of a PILOT report shall begin with the group M_iM_iGG IIiii.

(ii) Part A of a PILOT report shall be confined to data up to and including the 100 mb level.

(iii) Part A of a PILOT report shall contain Sections 4 and 5 in so far as data are available.

(iv) PILOT reports prepared for international exchanges shall always include part A.

(5) Part B

(i) Part B of a PILOT report shall begin with the groups M_iM_i IIiii.

(ii) Part B of a PILOT report shall be confined to data up to and including the 100 mb level.

(iii) Part B of a PILOT report shall contain a selection of Sections 1, 2 and 3.

(6) Part C

(i) Part C of a PILOT report shall begin with the groups M_iM_iGG IIiii.

(ii) Part C of a PILOT report shall contain data above 100 mb.

(iii) Part C of a PILOT report shall contain :

(a) Sections 4 and 5 in so far as data are available.

(b) Selection of Sections 1, 2 and 3.

(7) Section 1 is used to report winds at successive levels.

(8) Copy Note (3) under FM 32.B, page I-A-1-32 of Volume B

(9) Copy Note (4) under FM 32.B, page I-A-1-32 of Volume B

(10) Copy Note (5) under FM 32.B, page I-A-1-32 of Volume B

(11) Copy Note (6) under FM 32.B, page I-A-1-32 of Volume B

(12) Copy Note (7) under FM 32.B, page I-A-1-33 of Volume B

(13) Use of Section 4

(i) Section 4 shall be used to report winds at levels approximating to the standard isobaric surfaces of 850, 700, 500, 400, 300, 200, 150, 100 and whenever reported the 70, 50, 30, 20 and 10 mb surfaces.

Note (1) : If data for only one standard isobaric surface above 100 mb are included in Section 4 for international exchange, they should be for the 50 mb surface. If data for only two standard isobaric surfaces above 100 mb are transmitted, they should be for the 50 and 30 mb surfaces.

Note (2) : The standard isobaric surfaces are indicated by the group indicator figures (a) 8, 7, 5, 4, 3, 2, /, 1 and (b) 7, 5, 3, 2, 1.

(ii) Altitudes constituting the best approximations to the standard isobaric surfaces shall be determined regionally.

(14) Copy Note (9) under FM 32.B, page I-A-1-33 of Volume B.

Part B

REVISION OF FM 33.B - PILOT SHIP

Revise the FM number and the notes under FM 33.B to conform to the following :

FM 33.C Upper-wind report from ship.

NOTES :

(1) The code name PILOT SHIP refers to an upper-wind report from a ship station. The words PILOT SHIP are not transmitted as part of the report.

(2) See Note (2) under PILOT.

(3) Parts of PILOT SHIP

(i) PILOT SHIP reports shall be prepared in three parts : A, B and C. (See table page 133)

(ii) Parts A and B of a PILOT SHIP report shall be transmitted either together or as two separate messages.

(iii) Part C of a PILOT SHIP report shall be transmitted as a separate message, divorced from Parts A and B.

(4) Part A

(i) Part A of a PILOT SHIP report shall begin with the groups M_iM_i $YQL_aL_aL_a$ $L_oL_oL_oGG$.

(ii) Part A of a PILOT SHIP report shall be confined to data up to and including the 100 mb level.

(iii) Part A of a PILOT SHIP report shall contain Sections 4 and 5 in so far as data are available.

(iv) PILOT SHIP reports prepared for international exchanges shall always include Part A.

(5) Part B

(i) Part B of a PILOT SHIP report shall begin with the groups M_iM_i $YQL_aL_aL_a$ $L_oL_oL_oGG$.

(ii) Part B of a PILOT SHIP report shall be confined to data up to and including the 100 mb level.

(iii) Part B of PILOT SHIP report shall contain a selection of Sections 1, 2 and 3.

(6) Part C

(i) Part C of a PILOT SHIP report shall begin with the groups M_iM_i $YQL_aL_aL_a$ $L_oL_oL_oGG$.

(ii) Part C of a PILOT SHIP report shall contain data above 100 mb.

(iii) Part C of a PILOT SHIP report shall contain :

(a) Sections 4 and 5 in so far as data are available.

(b) Selection of Sections 1, 2 and 3.

(7) See Notes (7), (8), (9), (10), (11), (12), (13) and (14) under PILOT FM 32.C.

(8) The ship's position verification group (i.e., $MMMU_{La}U_{Lo}$) will always be added at the end of Section 4.

A N N E X XI

Annex to Recommendation 37 (CSM-III)

REVISED CLIMAT TEMP AND CLIMAT TEMP SHIP CODE FORMS AND EXPLANATORY NOTES

Part A

FM 75.C REPORT OF MONTHLY AEROLOGICAL MEANS FROM LAND STATIONS

CLIMAT TEMP	IIiii	$\overline{P_o P_o P_o P_o T_o}$	$\overline{T_o T_o T_{do} T_{do} T_{do}}$	$\overline{r_f d_v d_v f_v f_v}$
		$\overline{HHHHT}$	$\overline{TTT_d T_d T_d}$	$\overline{r_f d_v d_v f_v f_v}$
		$\overline{HHHHT}$	$\overline{TTT_d T_d T_d}$	$\overline{r_f d_v d_v f_v f_v}$
		.....	.....	.....
		.....	.....	..... etc.

N O T E : The code name CLIMAT TEMP prefixed to a message indicates that it is a report or collection of reports of monthly aerological mean values from a land station. In a group of such reports the code name is used only in the heading of the collective.

Regulations

II - 75 - (1) - The code name CLIMAT TEMP shall be included either as a prefix to each report transmitted separately or in the heading of the collective in case of such reports.

II - 75 - (2) - The broadcast of monthly mean values of the upper-air element shall include information for station level and for the isobaric surfaces of 850; 700; 500; 300; 200; 150; 100; 50 and 30 mb, if available.

II - 75 - (3) - The mean values of surface pressure, surface temperature, surface dew-point and surface wind shall be the monthly mean values at the time of release of the radiosonde.

II - 75 - (4) - Monthly aerological means, in the above form, shall be broadcast as soon as possible after the end of the month to which they refer and not later than the fifth day of the next following month.

II - 75 - (5) - The mean vector wind group shall be included in the message for all the isobaric surfaces reported in the message.

*

* *

Part B

FM 76.C REPORT OF MONTHLY AEROLOGICAL MEANS FROM OCEAN WEATHER STATIONS

CLIMAT TEMP SHIP	$9QL_aL_aL_a$	$L_oL_oL_o99$	$\overline{P_oP_oP_oP_oT_o}$	$\overline{T_oT_odoTdodo}$	$\overline{r_fd_fd_ff_fv}$
			$\overline{HHHHT}$	$\overline{TTT_dT_dT_d}$	$\overline{r_fd_fd_ff_fv}$
			.....	.....	.....
			.....	.....	..... etc.

N O T E : The code name CLIMAT TEMP SHIP prefixed to a message indicates that it is a report or collection of reports of monthly aerological mean values from an ocean weather station. In a group of such reports the code name is used only in the heading of the collective.

Regulations

II - 76 - (1) - The code name CLIMAT TEMP SHIP shall be included either as a prefix to each report transmitted separately or in the heading of the collective in the case of such reports.

II - 76 - (2), (3) and (4) - See Regulations II - 75 (2), (3) and (4) under CLIMAT TEMP FM 75.C.

ANNEX XII

Annex to Recommendation 45 (CSM-III)

AMENDMENTS TO TECHNICAL REGULATIONS CONCERNING DEFINITION OF BROADCASTS

1. In Technical Regulations, Chapter 1 - Definitions :

1.1 Delete entries relative to :

1.1.1 Continental broadcast
1.1.2 Meteorological broadcast
1.1.3 Meteorological transmission
1.1.4 Subcontinental broadcast
1.1.5 Territorial broadcast
1.1.6 Collective transmission

1.2 Insert, as appropriate alphabetically, the following definitions :

1.2.1 Hemisphere exchange centre. A communication centre which collects from its zone of responsibility, exchanges with adjacent centres and disseminates as required within its zone of responsibility selected meteorological information, thus made available on a hemispheric scale.

1.2.2 Meteorological transmission. Communication of meteorological information by either of the following systems :

(a) Point-to-point radio or line communication established between specific stations.

(b) Broadcast - Communication by radio intended for reception at any point within a specified area.

1.2.3 Hemisphere broadcast. A broadcast intended for reception within the zone of responsibility of a hemisphere exchange centre of selected meteorological information available on a hemispheric scale.

1.2.4 Regional broadcast. A broadcast, intended for reception within an inter-regionally agreed area, of a selection, of meteorological information from one regional and from limited adjacent areas.

1.2.5 Subregional broadcast. A broadcast, intended for reception throughout a region and in limited adjacent areas, of a selection of meteorological information from a portion of a region and from limited adjacent areas.

1.2.6 Territorial broadcast. A broadcast containing the meteorological information from the territory or territories of one or more Members and intended for reception within the area of origin of the information and at one or more designated subregional centres and, if possible, at the appropriate regional broadcast centre.

2. In Technical Regulations, Chapter 6 - Meteorological Telecommunications :

2.1 In paragraph 6.1.1.5 amend "Radiotelegraphic" to read "Telegraphic"

2.2 In paragraph 6.1.1.6 amend "radiotelegraphic" to read "Morse"

2.3 Add new paragraph 6.1.1.13 as follows :

Members making meteorological transmission should adhere to the practices and procedures supplementing the Technical Regulations and contained in WMO Publication No. 9.TP.4, Vol. C, Chapter I, Parts III and IV.

2.4 In paragraph 6.2.2.1, between "working" and "frequencies" insert "(transmission and reception)"

2.5 Insert new paragraph 6.3.1 with text as below and renumber existing paragraph with initial figures 6.3 accordingly. New text :

6.3.1

Hemisphere exchanges

6.3.1.1

A Member which has accepted responsibility to operate a hemisphere exchange centre shall ensure that at least twice each day it shall :

6.3.1.1.1

Collect from its zone of responsibility :

(a) A representative selection of reports of synoptic observations.

(b) A representative selection of summarized reports of upper-air synoptic observations.

(c) Other meteorological data, as agreed.

6.3.1.1.2

Exchange with adjacent centres by point-to-point communications the information from its zone of responsibility and that of similar centres responsible for other zones.

6.3.1.1.3

Disseminate information as required (by hemisphere broadcast or other means) throughout its zone of responsibility.

6.3.1.2

There should be :

(a) In the northern hemisphere, five hemisphere exchange centres, viz. Offenbach, Moscow, New Delhi, Tokyo and New York, and

(b) In the southern hemisphere, three hemisphere exchange centres, viz. Nairobi, Melbourne and Rio de Janeiro/Brazilia/

6.3.1.3

The time schedules and order of contents in hemisphere exchanges should follow the general plan established for that purpose.

N O T E : Details of this plan are given in the Guide to Meteorological Telecommunications (Part II, Chapter I, Volume C, Publication No. 9.TP.4).

6.3.2

Regional Broadcasts

6.3.2.1

A Member which has accepted responsibility for making a regional broadcast shall ensure that this broadcast includes at least :

(a) An inter-regionally agreed selection of reports of surface and upper-air synoptic stations.

(b) Analyses and forecasts as inter-regionally agreed.

(c) Other meteorological information, as inter-regionally agreed.

6.3.2.2

The time schedules and order of contents in regional broadcasts should follow the general plan established for that purpose.

N O T E : Details of this plan are given in the Guide to Meteorological Telecommunications (Part II, Chapter I, Volume C, Publication No. 9.TP.4).

A N N E X XIII

Annex to Recommendation 49 (CSM-III)

AMENDMENT TO WMO PUBLICATION No. 9, VOLUME C, CHAPTER I, PART III, PARAGRAPHS 7 AND 8

1. Composition of bulletins

A meteorological bulletin transmitted by teleprinter or radio-teleprinter is composed of :

- a starting line
- an abbreviated heading
- a text
- end of transmission signals.

2. Starting line

On all circuits and as the first line of each bulletin a starting line is to be used.

2.1 The starting line shall consist of one line and shall immediately precede the line of the abbreviated heading.

2.2 The first group in the starting line shall be the start-of bulletin signal, which shall take the form ZCZC.

2.3 Bulletin identification and supplementary instructions (optional); these shall be in the starting line and follow the start-of bulletin signal.

2.4 The necessity for the content and form of bulletin identification and supplementary instructions are a matter for bilateral, regional or inter-regional agreement.

2.5 The starting line shall be completed by five "space" signals (signal 31) plus one "letter shift" signal (signal No. 29).

3. Abbreviated heading

The abbreviated heading is composed of the groups: TTAA(i) CCCC(k) YYGGgg

3.1 TTAA(i)

TT : Data designator (see Table A)

AA : Geographical designator (see Table B)

i : Number used, when necessary, to differentiate two or more bulletins of similar content from the same geographical area (same TTAA).

Note 1 The group TTAA(i) specifies the content of the bulletin. It corresponds to an agreed list of station reports, of which station numbers shall be published in the schedule of WMO Publication No. 9, Volume C. Members shall notify the WMO Secretariat of all changes to such lists.

Note 2 When the number (i) is used, the first bulletin shall be numbered 1, the second 2, etc.

3.2 CCCC

International 4-letter location indicator of the station originating or compiling the bulletin.

Note : ICAO indicators will be used whenever possible.

3.3 (k)

k : Letter used, when required, to indicate a particular function of a bulletin.

The following letters shall be used to indicate the date-exchange system to which the bulletin belongs.

N : Northern hemisphere exchange

S : Southern hemisphere exchange

A : Transmission from Europe to North America

The use of other letters is a matter for regional or inter-regional agreement.

3.4 YYGGgg

International date-time group.

YY : Day of month.

GGgg : For observational messages - time of observation in GMT for forecasts and analyses - actual or forecast - scheduled time of issue in GMT; for other messages - time of origin in GMT.

3.5 When it is necessary to indicate that other than a regular bulletin is being transmitted, a special 3-letter indicator shall be added after the date-time group and on the same line.

The following indicators will be used :

PDW : Priority delayed weather reports

RTD : Routine delayed weather reports

COR : Correction bulletin

AMD : Amendment bulletin

Other 3-letter indicators may be used by regional or inter-regional agreement.

General note

The groups TTAA(i), CCCC(k) and YYGGgg shall be transmitted without spacing between adjacent characters.

4. Text

The text of the bulletin should preferably contain individual messages (single station reports) in one code form only but provision is made, and may be used, in the code for TT for transmission of reports in more than one code form.

4.1 The text of a bulletin shall be transmitted in consecutive lines and shall begin on the first line after the abbreviated heading.

4.2 The first line of the text shall consist of the symbolic name of the code form used (e.g.: SYNOP,...), or by any term which can be used as a title. Current aerological

reports, e.g., TEMP, PILOT, will not be preceded by code names, provision for recognition of these code forms being made within the respective codes.

4.3 Each individual report shall start at the beginning of a new line.

4.4 Message Separation Signal. Each individual report and successive parts A, B and C of current aerological reports shall be terminated by one signal No. 22 (figure case position) of the International Telegraph Alphabet No. 2. This will follow the last figure of the last group of each report with no intervening space. The various sections of current aerological reports will be immediately preceded by alignment function only (see 6 below). Additionally, Parts A and B of aerological reports shall be separated by eight-letter shift signals in cases when they together form one single message.

4.5 Whenever practicable, and unless there exist special provisions to the contrary, the text of a meteorological message shall be transmitted in such a manner that full use is made of the capacity of a teleprinter line (69 characters per line).

4.6 When a bulletin is composed of messages referring to stations with the same block number II, the station index number may be reduced to iii. In this case, groups 999II shall be inserted on separate lines immediately preceding the messages to which they apply.

4.7 When reports are not available for inclusion in a scheduled bulletin, NIL shall follow the appropriate abbreviated heading of the bulletin.

5. End-of-transmission signals

End-of-transmission signals are used for insuring page-feed and tape-feed.

5.1 End-of-transmission signals consist of the sequence of the following telegraphic signals :

1 "Letters shift" (Signal No. 29)
2 "Carriage return" (Signal No. 27)
8 "Line feed" (Signal No. 28)
4 N (Signal No. 14, letter case)
12 "Letters shift" (Signal No. 29)

Note : Separation-of-bulletin signals are composed of :

end-of-transmission signals
alignment function preceding the next bulletin (see 6).

6. Alignment function

The alignment function ensures correct placement in the page copy of teleprinters of the components of bulletins and consists of the following telegraphic signals :

2 "Carriage return" (Signal No. 27)
1 "Line feed" (Signal No. 28)

6.1 The alignment signal shall be transmitted before :

- the starting line
- the abbreviated heading
- each line of the text.

7. Procedures for correction

7.1 Errors made and immediately detected during the preparation of a tape shall be

corrected by back spacing the tape, where possible, and eliminating the error by over-punching the incorrect portion with "letter shift" (Signal No. 29).

7.2 Where equipment is incapable of back spacing, corrections shall be made immediately by making the error sign : letter E (Signal No. 5) and "Space" (Signal No. 31) repeated alternately three times, transmitting the last correct word or group, and then continuing with the tape preparation.

7.3 When the error is detected too late for an immediate correction, a correction line shall be inserted at the end of the bulletin. The correction line is of the form :

COR llww followed by the corrected group or series of groups.

ll : Number of the line containing the first group of the incorrect series or the incorrect group.

Note : Line No. 1 is the first line following the abbreviated heading.

ww : Number of the incorrect group or the first group of the incorrect series.

Note : 00 means that the whole line is to be corrected.

7.4 When an error is detected after transmission, correction shall be made by means of a new bulletin, the abbreviated heading of which is followed by the indicator COR. The text consists of the correction line edited as indicated under 7.3.

NOTE : Although not favoured for computers, 7.3 and 7.4 above are essential to synopticians.

*

* *

TABLE A

DATA DESIGNATORS

Surface data	S	
SYNOP main hours		SM
SYNOP intermediate hours		SI
SYNOP non-standard hours		SN
AERO hourly and half-hourly		SA
MMMMM/BBBBB/SPESH		SP
SHIP		SH
SFAZI/SFLOC/SFAZU		SF
Radar reports		SD
Seismograph earthquake reports		SE
Microseismograph reports		SG
River and special service reports		SR
Miscellaneous		SX
Supplementary airways weather reports		SW
Upper-air data	U	
PILOT		UP
TEMP (complete or first part)		US
MESRAN (complete or first part)		UL
ABTOP		UB
RECCO		UR
AIREP		UA
Combined pilot-balloon and rawin reports		UC
Maximum wind		UM
Tropopause		UO
Vector wind differences		UV
Rawin		UW
Miscellaneous		UX
Climatic data	C	
CLIMAT		CS
CLIMAT SHIP		CH
NACLI - CLINP - SPCLI - CLISA - INCLI		CO
CLIMAT TEMP		CU
CLIMAT TEMP SHIP		CE
Analyses	A	
IAC - ICC FLEET surface		AS
IAC - upper air		AU
Convective analyses		AC
Thickness analyses		AH
Zonal wind analyses		AL
Weather summaries		AP
Three hourly analyses		AT
Vertical motion analyses		AV
Wind analyses		AW

Miscellaneous	AX
Zonal analyses (hemispheric)	AZ
Nephanalyses	AN

Forecasts	F
IAC - IAC FLEET surface	FS
IAC upper air	FU
TAFOR	FT
TAF	FC
ARFOR	FA
ROFOR	FR
FIFOR	FI
HIARF - HIROF - IFIF	FH
MAFOR	FZ
Aviation forecasts	FB
Extended forecasts	FE
Radio warning service (radio propagation forecasts)	FG
Temperature extreme forecasts	FM
Operational forecasts	FO
Public forecasts	FP
Miscellaneous	FS
Winter sports forecasts with data	FW

Warning	W
Hurricane warnings	WH
SIGMET	WS
Tropical cyclone (typhoon) warning	WT
Warnings (other)	WO

TABLE B

GEOGRAPHICAL INDICATOR

Same as Table B now in effect, except the addition of the following indicators :

BQ	Baltic Sea area
XX	For use when other designators are not appropriate

TABLE C

METEOROLOGICAL BULLETIN FORMAT FOR TRANSMISSION BY TELEPRINTER OR RADIOTELEPRINTER

≪≡↓ ZCZC (→ WSY ↑025)* →→→→→↓

≪≡↓ SMCN ↑1 → ↓ KIDL → ↑201200

≪≡↓ SYNOP

≪≡↑ 99972

≪≡ 810 →·····→·····→·····→·····→·····→ϕ

⋮

≪≡ 832 →·····→·····→·····→·····→·····→ϕ↓

≪≡≡≡≡≡≡≡≡≡ NNNN ↓↓↓↓↓↓↓↓↓↓↓

LEGEND :

≪	Carriage return (signal 27)
≡	Line feed (signal 28)
→	Space (signal 31)
↓	Letter shift (signal 29)
↑	Figure shift (signal 30)
ϕ	Signal No. 22 (figure case position) of the International Telegraph Alphabet No. 2. (In many cases printed as " = ".)

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* The use, contents and form of bulletin identification and supplementary instructions are subject to bilateral regional and inter-regional agreements. The above is therefore only an example.

A N N E X XIV

Annex to Recommendation 50 (CSM-III)

SPECIFICATIONS FOR RADIO TELEPRINTER EQUIPMENT

1. Taking due note of the fact that it is too early to standardize the actual values of frequency shift and that the values of frequency shift employed should be the lowest compatible with the highest telegraph speed regularly used, the difference between the two frequencies corresponding to the MARK and SPACE elements, for systems operating between about 2.5 Mc/s and 30 Mc/s, should be 400 c/s if practicable. The value of frequency shift chosen should, if possible, be maintained within $\pm$ 3 per cent of its nominal value.

2. Pending a definite recommendation by the International Radio Consultative Committee, the radio frequency associated with the marking element should be higher than that associated with the spacing element.

NOTES :

1. The definitions of "marking" and "spacing" are those contained in the International Telegraph Consultative Committee List of Essential Telecommunication Terms (Yellow Book) - i.e. the "marking" signal corresponds to the "stop" element.

2. The standard modulation rate should be 50 bauds.

3. The nominal duration of the transmitting cycle should be at least 7.4 units (preferably 7.5),the stop element lasting for at least 1.4 units (preferably 1.5).

4. The International Telegraph Alphabet No. 2 should be used.

5. The maximum number of characters which the textual line of page printing apparatus may contain should be fixed at 69.

6. The overall distortion of the teleprinter signal, as monitored at the output of the radio transmitter or in its immediate vicinity should not exceed 10 per cent.

A N N E X XV

Annex to Recommendation 51 (CSM-III)

COLLECTION, EXCHANGE AND DISSEMINATION OF NORTHERN HEMISPHERE DATA

1. Five centres are responsible for the handling of data needed for the construction of northern hemisphere synoptic charts. Namely :

(a) Moscow
(b) New Delhi
(c) Tokyo
(d) New York
(e) Offenbach

These centres are known as northern hemisphere exchange centres (NHEC).

2. The functions of these centres are :

(a) Collecting the required information from within an area assigned to it and which will be designated as its "zone of responsibility";

(b) Transmitting the collected information to adjacent centres which will relay the bulletins to other northern hemisphere exchange centres; and

(c) Dissemination of the northern hemisphere data it receives from other centres, together with those from its own zone, for use by recipients within its own zone of responsibility, as agreed.

3. The zones of responsibility for each centre are indicated by the boundary lines on the diagram reproduced as Appendix I to this annex.

4. The centres (NHEC's) mentioned in paragraph 1 above are required to be interconnected, by one duplex point-to-point teleprinter circuit. Generally speaking the diagram reproduced in Appendix III to this annex illustrates the interconnexion; changes may, however, be made as decided by centres, or by the Regions concerned when relays are involved, provided the efficiency of the exchange is not impaired. In the event that it is found necessary to supplement the circuit by an additional circuit, or circuits, between certain centres, action should be initiated by Members concerned or by the Regions in which the centres are situated. Relay centres are also shown. The directions of flow of traffic are indicated by arrows. Figures give the number of the centre whose reports will be carried.

5. Reports to be exchanged under this scheme are to be SYNOP, SHIP reports and upper-air summaries for 00, and 12 hours GMT. The individual stations from which reports are required are listed in Appendix II. If it is possible, SYNOP reports for 06 and 18 hours GMT and other data may be added as agreed by the Commission.

6. Arrangements for the expeditious collection of the necessary data are required to be made by the Region in which a particular centre is located, and by inter-regional agreement in cases where collection from stations outside the Region is involved.

7. The Region in which a NHEC is located is responsible for arranging for details regarding the dissemination of northern hemisphere data for the benefit of recipients within the appropriate zone of responsibility as required. Bilateral or multilateral action should be taken in cases where other Regions are concerned.

8. Since the efficiency of the exchange of the northern hemisphere data is dependent upon the reliability of individual circuits between centres, it is of paramount importance that the Member Regions concerned shall make every endeavour to secure that the best possible means of communication are provided between centres. Continuous study of this matter should be undertaken by the CSM Working Group on Telecommunications.

For this purpose monthly records of the circuit performance should be kept and exchanged between northern hemisphere centres with a copy to the chairman of the CSM Working Group on Telecommunications and relay centres.

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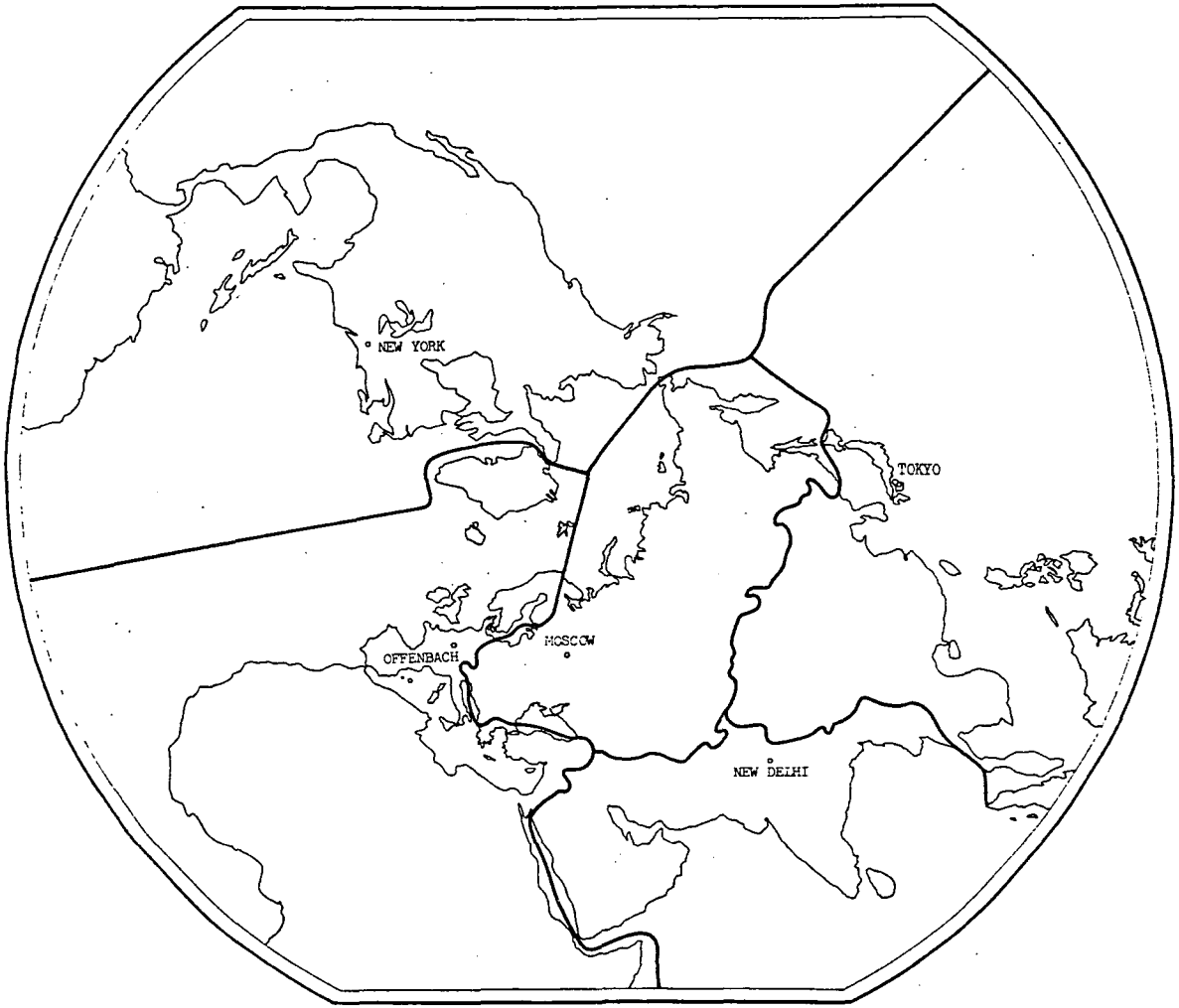
* *

APPENDIX I

Block numbers of countries falling in the areas indicated in Appendix I



Centres	Block numbers of countries
OFFENBACH	01, 02, 03, 04, 06, 07, 08, 10 (Partly), 16, 17, 40 (Partly), 60, 61, 62, 63, 64, 65.
MOSCOW	10 (Partly), 11, 12, 13, 15, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38.
NEW YORK	70, 72, 74, 76, 78, 80, 81, 82, 91 (Partly).
NEW DELHI	40 (Partly), 41, 42, 43, 48 (Partly).
TOKYO	45, 46, 47, 48 (Partly), 91 (Partly), 96, 97, 98.

APPENDIX II

List of stations whose data are included in the northern hemisphere exchanges

I. List of surface stations for the construction of northern hemisphere synoptic charts

12 99901 : 001 005 026 030 055 062 098 105 203 262 415 482

12 02 : 052 057 062 069 077 084 090 095 836 897 911 935

15 03 : 005 026 091 100 171 263 302 334 395 590 772 804 917 953 976

21 04 : 005 018 063 077 082 202 210 212 220 230 250 260 280 310 320 330 340 350 360 380 390

6 06 : 011 081 180 230 447 620

16 07 : 015 110 130 149 150 180 190 240 460 480 510 630 650 690 747 761

23 08 : 001 023 160 181 221 261 285 306 314 391 488 495 503 506 509 515 521 536 538 575 583 589 594

7 10 : 147 185 203 (202) 338 384 438 866

3 11 : 036 518 782

6 12 : 295 330 375 695 840 882

6 13 : 128 274 334 462 483 615

5 15 : 120 310 420 552 614

20 16 : 059 105 158 190 239 261 310 320 350 420 470 560 597 620 (622) 641 687 716 743 749 754

14 17 026 038 060 112 124 128 196 200 219 244 300 350 606 022

10 20 : 046 069 087 274 292 353 667 674 744 891

9 21 : 358 432 504 647 802 824 946 965 982

10 22 : 113 165 235 522 550 583 768 802 820 887

22 23 : 022 074 146 205 219 256 330 383 418 472 552 585 631 711 804 849 884 891 921 933 955 966

19 24 : 105 125 143 266 329 343 382 507 561 629 641 671 688 738 817 908 944 959 966

15 25 : 123 173 248 399 400 551 563 594 621 677 703 821 913 954 956

9 26 : 038 063 258 298 422 629 702 781 850

8 27 : 037 196 271 553 595 612 703 947

11 28 : 064 225 275 440 493 661 679 698 722 900 952

99929 : 231 263 282 574 612 634 698 838 865

30 : 054 230 309 372 393 433 521 554 636 673 692 710 758 802 823
879 935 949 965

31 : 004 088 137 168 300 329 369 416 510 532 707 735 829 873 909 960

32 : 061 098 150 165 195 217 411 509 564 611 618

33 : 008 041 345 393 658 791 815 837 910 946

34 : 009 172 336 391 500 560 731 824 866 880

35 : 078 108 121 133 229 358 394 416 663 700 746 796 925

36 : 003 061 177 428 498 665 729 870 982

37 : 018 054 235 260 549 575 789 985

38 : 001 062 178 198 232 262 341 388 392 457 507 613 656 687 696 750
836 880 895 927 954 971

40 : 001 007 045 100 180 191 199 356 357 362 373 395 427 449 460 477 564
575 586 597 621 642 648 676 688 706 712 718 738 745 754 767 769 800
812 809 821 831 841 845 848 856 875 940 948 980

41 : 530 598 620 640 660 675 712 715 756 765 768 780 858 917 940 941

42 : 103 111 165 182 189 314 (312) 339 348 361 379 398 410 (411) 475 543
559 591 623 634 647 704 754 779 809 840 867 875 886 909 971 (970) 977

43 : 003 (013) 014 041 063 128 149 181 193 201 237 279 283 296 314 329
333 344 351 (353) 369 371 395 400 418 466 497

45 : 005

46 : 692 751 752 761 810

47 : 008 014 041 058 105 108 115 146 159 184 401 406 426 430 582 585 598
600 604 636 662 678 744 750 778 807 816 827 891 898 909 927 936 945
963

48: 008 042 062 074 078 080 094 096 108 110 112 327 351 381 400 407 431
455 480 500 565 568 601 615 620 647 657 665 674 694 820 838 848 855
860 877 900 918 930 940 948 966 972 985 991

50 : 527 557 564 632 727 745 756 915 949 953 963 978

51 : 156 288 334 463 644 709 777 931

52 : 203 267 418 533 576 818 856 889

53 : 068 276 336 391 463 502 546 593 673 698 723 845 863

54 : 012 026 094 102 135 161 208 218 324 342 377 423 471 497 511 534 616
662 823 843 857

55 : 299 591 773

56 : 046 116 146 182 294 444 462 671 739 964 985

21 92257 : 006 036 067 083 237 265 297 411 447 461 494 515 633 679 745 799 816 866 902 957 993

22 ◦58 : 027 040 102 221 238 251 314 367 424 457 472 477 527 606 633 659 666 715 737 847 921 927

13 ◦59 : 023 082 134 265 287 293 316 417 431 663 758 948 981

29 60 : 015 030 096 115 150 155 230 250 360 390 490 525 545 555 571 580 590 600 606 608 625 640 655 670 675 680 715 735 765

34 61 : 017 024 049 052 075 090 096 202 219 223 230 240 257 265 290 297 401 415 421 442 450 600 630 641 687 695 809 816 820 866 886 891 931 934

35 62 : 002 010 016 019 053 055 063 131 161 271 306 318 333 366 387 405 414 417 420 432 462 600 640 641 660 680 721 730 760 770 771 772 840 880 941

16 63 : 021 043 170 225 230 240 250 260 331 403 450 471 533 612 630 705

36 64 : 005 014 015 034 040 062 074 459 460 500 510 556 600 610 650 654 656 658 659 660 661 700 701 705 706 750 751 753 754 756 860 870 893 901 910 950

23 65 : 001 019 073 082 145 229 243 250 257 306 333 335 387 408 411 432 443 503 539 548 555 578 592

23 70 : 026 086 133 200 218 219 222 231 261 273 296 308 316 326 350 360 361 365 381 388 398 414 454

153 72 : 202 206 208 211 219 220 222 226 232 235 240 242 248 250 251 259 265 270 274 278 280 290 304 308 310 317 326 327 334 340 344 353 363 365 374 386 394 405 413 423 429 440 445 451 458 469 476 486 488 494 503 506 518 520 528 532 534 537 547 553 562 572 576 578 583 597 600 603 606 624 627 630 645 654 662 677 681 693 705 707 709 712 718 726 734 735 738 743 747 749 753 764 768 773 775 785 793 800 803 809 811 814 815 816 826 828 831 836 841 848 852 860 863 867 869 870 872 877 891 895 896 897 898 900 904 905 906 907 908 909 910 913 914 915 916 917 918 920 923 924 925 926 932 934 936 938 940 945 946 949 953 964 965

9 74 : 043 051 072 074 082 088 090 098 123

24 76 : 050 151 160 225 255 342 382 405 412 458 499 548 556 573 581 644 648 679 692 695 741 805 833 903

24 78 : 016 073 095 119 325 355 367 383 397 439 486 501 526 584 663 730 741 762 806 866 897 954 970 988

14 80 : 022 062 110 308 336 402 405 408 409 410 411 412 413 414

3 81 : 002 225 405

29 ◦91 : 030 066 115 131 155 165 182 190 203 212 217 232 245 250 275 285 334 348 356 366 376 408 413 489 601 610 700 901 931

8 ◦96 : 011 035 145 413 441 465 491 509

4 ◦97 : 008 014 404 450

13 99998 : 135 223 (232) 333 (329) 429 431 (433) 444 538 (637) 550 (548) 618 653 (748) 741 754 836 (830)

-- Stationary meteorological ships A B C D E I J K M N P V T

-- Arctic floating stations

-- Merchant ships

II. List of upper-air stations for the construction of northern hemisphere synoptic charts

6 01 : 001 028 152 241 384 415

5 02 : 062 077 084 836 963

9 03 : 005 026 170 322 496 774 808 917 953

7 04 : 018 202 220 270 310 (320) 340 360

5 06 : 011 180 260 447 610

7 07 : 110 145 180 480 510 645 761

8 08 : 001 221 302 495 509 521 536 594

8 10 : 035 184 202 338 393 513 739 866

3 11 : 035 518 934

3 12 : 374 425 843

3 13 : 130 276 334

3 15 : 120 420 614

9 16 : 044 080 242 320 420 560 596 622 716

5 17 : 030 062 130 220 606

8 20 : 046 069 274 292 353 674 744 891

7 21 : 358 432 504 647 824 965 982

5 22 : 113 165 522 550 820

13 23 : 022 074 146 205 330 418 472 552 804 884 921 933 955

10 24 : 125 266 343 507 641 688 817 908 944 959

10 25 : 123 173 399 551 563 594 677 703 913 954

8 26 : 063 258 298 422 629 702 781 850

6 27 : 037 196 553 595 612 947

6 28 : 275 440 698 722 900 952

6 29 : 231 282 574 612 634 698

6 30 : 230 554 692 710 758 935

9 31 : 004 088 168 329 369 510 735 909 960

7 32 : 061 150 195 217 389 540 618

6 33 : 345 393 658 815 837 946

7 34 : 009 139 172 300 560 731 858

7 35 : 108 121 229 394 700 746 796

3 36 : 003 177 870

6 37 : 018 054 260 549 789 985

11 38 : 062 392 413 457 507 613 687 750 836 880 954

10 40 : 007 100 181 427 597 648 689 754 841 948

7 41 : 530 640 661 756 780 917 941

7 42 : 182 339 410 475 647 809 867

8 43 : 003 149 279 296 333 371 466

1 45 : 004

2 46 : 697 747

19 47 : 058 122 187 401 412 420 582 590 600 646 678 744 778 807 827 909 931 945 963 1918

8 48 : 097 327 455 568 694 819 855 900

3 50 : 527 557 953

7 51 : 076 431 463 644 709 777 828

10 52 : 203 267 323 418 533 681 (652) 818 836 866 889

7 53 : 068 463 513 546 614 (915) 772 845

13 54 : 102 135 161 218 292 337 342 374 497 515 662 823 857

2 55 : 299 591

11 56 : 096 (080) 137 146 (029) 294 492 571 691 739 778 964 989

13 57 : 036 083 127 447 (328) 461 494 515 679 745 816 957 972 993

9 58 : 027 203 238(321) 367 606 633 666 725 847

457

59 : 134 211 265 287 316 431 758 981

60 : 119 390 571 625 680

61 : 052 290 401 642 832 931

62 : 011 062 306 378 414 721

63 : 705

64 : 005 650 700 870 910

65 : 046 201 578

70 : 026 086 133 200 219 231 261 273 308 316 326 350 361 398 414 454

72 : 202 206 208 211 221 226 232 235 240 248 250 251 253 259 265 270 274
290 304 308 311 317 327 340 353 363 365 386 392 405 429 445 451 456
469 476 486 493 506 518 520 528 532 545 553 562 572 576 583 597 600
606 637 645 655 662 681 694 712 722 734 747 764 768 775 785 793 798
807 811 815 816 826 836 848 867 879 896 906 907 909 913 915 917 918
924 926 934 938 945 964 968

74 : 043 051 072 074 081 082 090 109 486

76 : 458 644 679 692

78 : 016 063 076 089 118 325 355 367 383 397 467 501 526 806 897 970 988

80 : 001 401

91 : 066 115 131 165 217 245 250 275 285 334 348 366 376 408
413 485

96 : 035

97 : 014

98 : 327 645 836

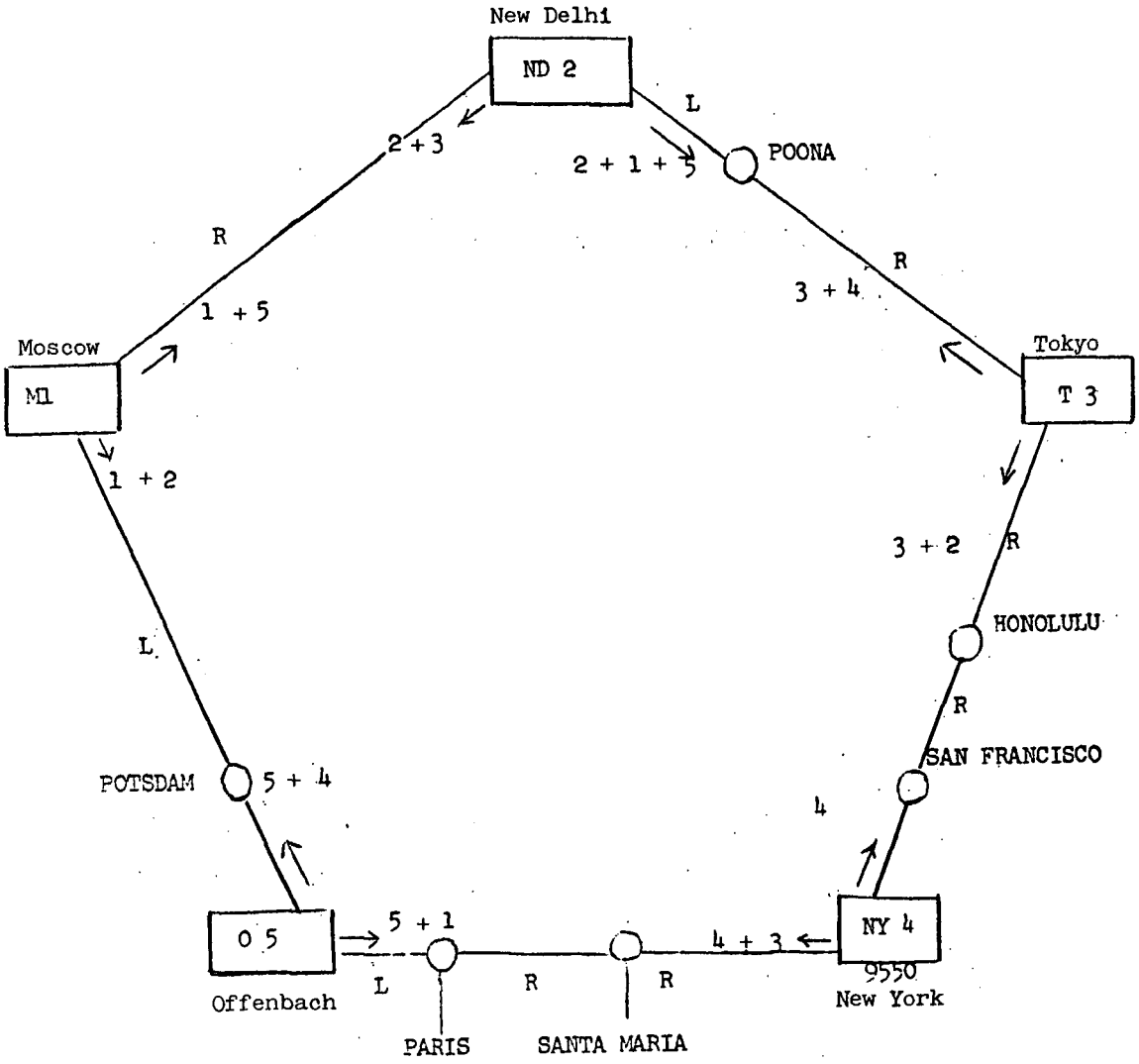
-- Stationary meteorological ships A B C D E I J K M N P V T

-- Arctic floating stations

-- Merchant ships

APPENDIX III

Plan of exchange of meteorological data in northern hemisphere



Legend :

R : Radioteletype circuit
L : Landline circuit

ANNEX XVI

Annex to Recommendation 52 (CSM-III)

COLLECTION, EXCHANGE AND DISSEMINATION OF SOUTHERN HEMISPHERE DATA

1. Three centres are required to be responsible for the handling of data needed for the construction of southern hemisphere synoptic charts.

2. Each centre must be capable of :

(a) Collecting the required information from within the area assigned to it and designated as its zone of responsibility (see Appendix I);

(b) Transmitting the information to the adjacent centres;

(c) Re-disseminating the southern hemisphere data it receives from other centres together with those from its own zone for use by recipients within its own zone of responsibility as required.

3. The following centres are designated as Southern Hemisphere Exchange Centres (SHECs):

(1)

(1) Brasilia*
(2) Nairobi
(3) Melbourne

4. The zones of responsibility for each centre are indicated by the boundary lines indicated in Appendix I. The provisional lists of stations from which data will be exchanged are given in Appendix II.

5. The SHECs mentioned in paragraph 3 above are required to be interconnected by at least one duplex point-to-point teleprinter circuit and by at least one facsimile circuit. In the interests of efficiency relay centres will be necessary; it is suggested that the relay centre between Nairobi and Melbourne be at Singapore and that the relay centre between Melbourne and Brasilia should preferably be in the area of Tahiti. Other relay centres may be set up if proved necessary.

6. Consideration may be given to the use of commercial or aeronautical channels when these offer economic alternatives to the setting up of an independent meteorological network.

7. Meteorological reports of the Antarctic region will be included in the southern hemisphere exchange by the SHEC at Melbourne.

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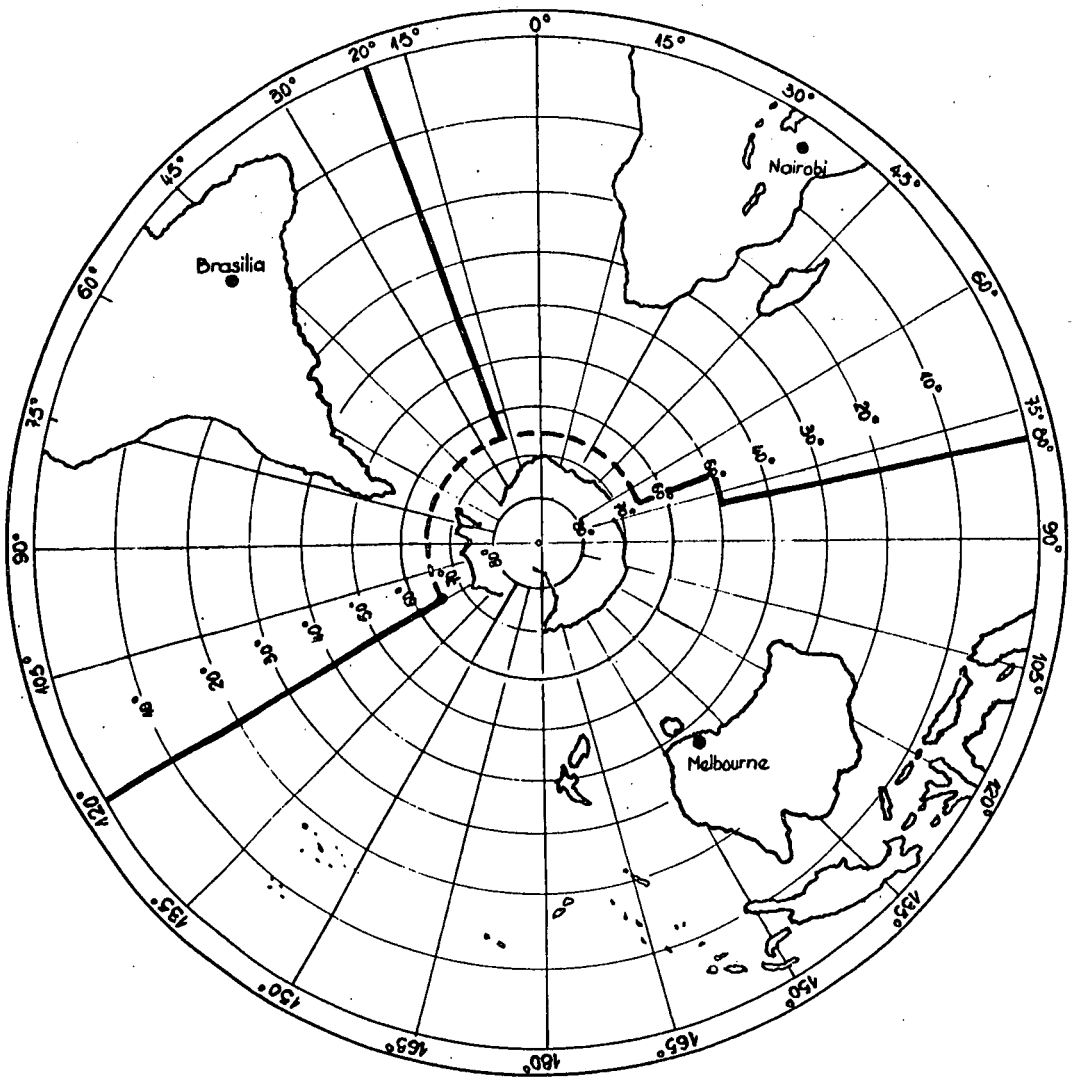
* Until a centre can be made fully operational at Brasilia, the existing Rio de Janeiro station should be used.

APPENDIX I

Zones of responsibility of SHEC



APPENDIX II

Provisional list of surface and upper air stations for the construction of southern hemisphere synoptic charts

	Surface	Regional Association V Network
94:	014, 027, 035, 044, 085, 129, 132, 175, 185, 203, 212, 214, 234, 240, 255, 267, 277, 283, 287, 294, 299, 300, 305, 312, 317, 326, 333, 335, 340, 344, 363, 367, 372, 374, 389, 388, 403, 439, 461, 476, 480, 492, 510, 515, 530, 578, 601, 610, 637, 640, 646, 659, 653, 666, 672, 690, 693, 703, 728, 767, 776, 791, 800, 804, 821, 827, 842, 851, 861, 864, 893, 907, 926, 933, 940, 953, 967, 968, 975, 983, 986, 995, 996, 998.	
93:	003, 011, 025, 112, 185, 198, 308, 372, 401, 434, 516, 506, 598, 614, 708, 780, 806, 844, 896, 944, 986, 997, 998.	
91:	488, 489, 501, 503, 507, 517, 526, 530, 533, 543, 551, 554, 558, 562, 568, 577, 579, 582, 587, 590, 591, 592, 596, 601, 610, 623, 629, 631, 636, 643, 648, 650, 652, 659, 660, 678, 680, 690, 691, 693, 697, 699, 700, 705, 710, 720, 724, 728, 753, 759, 762, 765, 776, 780, 784, 788, 800, 804, 808, 811, 822, 826, 830, 840, 843, 902, 920, 925, 927, 928, 930, 931, 934, 938, 940, 941, 942, 943, 947, 948, 949, 950, 954, 958, 960.	
96:	163, 171, 179, 195, 221, 237, 249, 253, 295, 581, 583, 633, 645, 685, 737, 743, 781, 805, 839, 853, 925, 933, 973, 987, 995, 996,	
97:	072, 096, 100, 146, 180, 230, 340, 372, 390, 395, 502, 530, 560, 652, 698, 724, 760, 780, 796, 810, 876, 900, 980.	
89:	009, 022, 043, 125, 153, 162, 511, 522, 532, 571, 592, 596, 601, 606, 611, 664, 665, 671.	
61:	996, 998.	
95:	502.	

Merchant ships

	Upper Air	Regional Association V Network
94:	014, 027, 035, 044, 085, 120, 175, 203, 212, 234, 287, 294, 299, 300, 305, 312, 326, 335, 367, 380, 403, 430, 461, 476, 510, 578, 610, 637, 646, 653, 659, 672, 693, 776, 791, 821, 864, 865, 907, 926, 968, 975, 986, 995, 996, 998.	
93:	011, 112, 291, 308, 401, 417, 434, 545, 614, 780, 844, 882, 944, 997.	
91:	488, 489, 517, 530, 554, 558, 577, 582, 590, 592, 610, 643, 650, 680, 700, 762, 788, 830, 843, 902, 930, 938, 939, 940, 943, 950, 958.	

96: 163, 171, 195, 221, 237, 249, 253, 295, 583, 633, 645, 685, 743, 745, 781, 801, 805, 839, 853, 881, 925, 933, 947, 995, 996.

97: 146, 180, 230, 340, 372, 390, 502, 560, 686, 690, 724, 760, 810, 900, 980.

89: 009, 022, 043, 125, 153, 162, 522, 532, 571, 592, 606, 611, 644, 671.

95: 502.

61: 996, 998.

Surface Regional Association I Network

61: 900, 901, 931, 934, 967, 974, 986, 988, 990

63: 602, 612, 619, 624, 630, 658, 661, 671, 676, 682, 684, 686, 694, 702, 705, 708, 714, 723, 726, 729, 733, 737, 740, 756, 766, 772, 788, 790, 793, 801, 816, 820, 832, 844, 862, 866, 887, 894, 895, 932, 962, 971 980.

64: 005, 014, 015, 016, 034, 040, 056, 062, 076, 115, 126, 146, 155, 175, 202, 210, 222, 235, 276, 282, 285, 315, 334, 360, 400, 401, 450, 453, 454, 456, 458, 459, 460, 500, 501, 503, 550, 552, 553, 600, 601, 603, 650, 654, 656, 658, 661, 700, 701, 705, 750, 751, 753, 756, 810, 851, 860, 870, 893, 900, 901, 910, 911, 920, 931, 950, 960, 962, 971, 974.

66: 104, 130, 140, 152, 160, 215, 226, 240, 285, 305, 318, 325, 390, 410, 422, 447.

67: 001, 005, 009, 025, 027, 036, 095, 109, 117, 143, 150, 161, 197, 198, 199, 215, 241, 261, 283, 285, 297, 309, 315, 323, 341, 475, 485, 561, 587, 633, 661, 673, 693, 743, 775, 781, 861, 867, 965, 983, 991.

68: 006, 012, 024, 032, 104, 110, 116, 148, 174, 262, 286, 300, 312, 328, 338, 352, 372, 408, 424, 438, 442, 478, 496, 512, 550, 588, 618, 630, 648, 674, 728, 816, 818, 828, 842, 858, 906, 920, 928, 994.

Merchant ships

Upper Air Network

63: 260, 450, 705, 740, 894.
64: 005, 076, 210, 360, 501, 650, 655, 700, 910.
66: 160, 285, 422.
67: 009, 085, 197, 198, 241, 341, 775.
68: 032, 110, 262, 406, 442, 588, 816, 906, 994.

Surface and Pilot Reports are required from Farquhar and Aldabra Islands.

SYNOP Surface Regional Association III

82 - 106-113-191-212-243-280-331-397-400-401-425-533-562-571-578-598-640-686-704-765-825-861-898-930-979-986-994.

83 - 064-096-236-238-248-262-361-377-386-393-398-423-483-498-512-552-577-587-611-618-642-648-650-698-702-722-738-743-766-781-782-821-826-842-860-897-912-927-936-967-995.

84 - 008-045-129-170-235-377-390-435-452-501-554-564-631-658-686-691-752.

85 - 043-141-184-201-207-223-245-315-365-268-406-442-461-469-486-579-585-683-732-801-834-862-892-889-915-930-936-986-995.

86 - 024-083-217-297-350-360-460-565-580-595.

87 - 047-078-120-157-178-217-257-312-393-418-344-436-480-497-512-534-576-596-602-612-623-642-692-715-748-765-774-784-790-828-812-860-880-898-909-926-934-938

88 - 890-903-934-938-940-952-959-968

Upper Air U

TEMP

82: 400 - 898
83: 377 - 650 - 746 - 967
84: 129 - 631
85: 442 - 543 - 801
87: 344 - 576 - 715 - 860

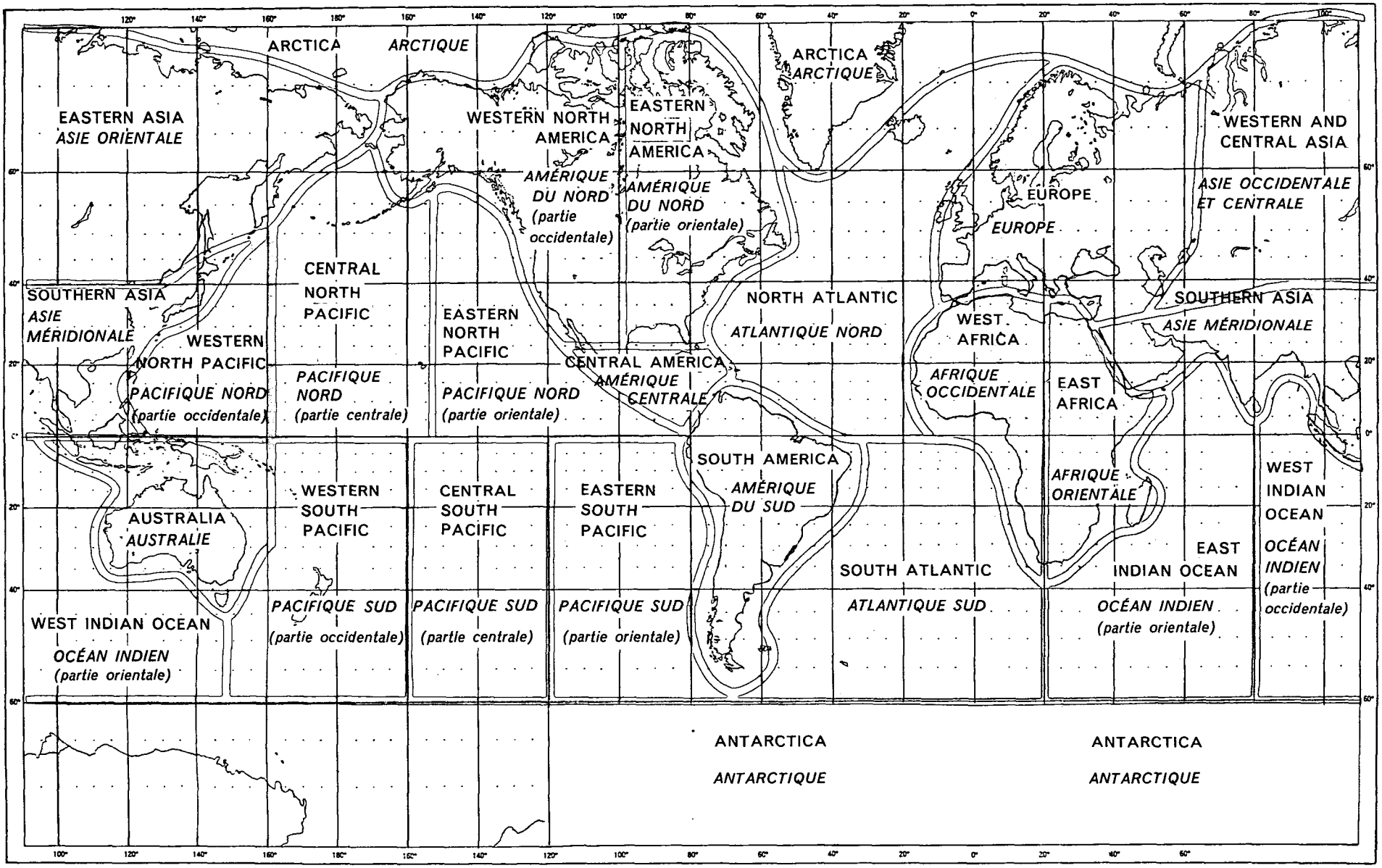
Merchant ships.

ANNEX XVII / ANNEXE XVII

Annex to Resolution 56 (CSM-III) / Annexe à la résolution 56 (CMS-III)

AREAS OF SATELLITE COVERAGE

ZONES AUXQUELLES SE RAPPORTENT LES RENSEIGNEMENTS RECUEILLIS PAR DES SATELLITES ARTIFICIELS



A N N E X XVIII

Annex to Recommendation 65 (CSM-III)

ADDITIONS AND AMENDMENTS TO THE PROVISIONAL GUIDE TO THE PREPARATION OF SYNOPTIC WEATHER CHARTS AND DIAGRAMS (EXCLUDING EDITORIAL AMENDMENTS)

(1) A new paragraph 1.16 is added :

1.1.6 Standardization of maps for facsimile transmissions :

1.1.6.1 The standard projections and scales in paragraphs 1.1.1 and 1.1.2 apply also to documents prepared for facsimile transmissions.

1.1.6.2 Synoptic weather maps and charts prepared for transmission by facsimile include the following features :

(a) Geographical outlines of minimum detail necessary for orientation purposes with coastlines interrupted where station data are to be plotted;

(b) Selected meridians and parallels printed in double thickness (boldface) for orientation purposes;

(c) Map references required only for convenience in the entering of data, e.g., index numbers, 1° intersections of latitude and longitude, station circles, etc., be printed in non-photo blue;

(d) Letters and figures of a size compatible with resolution characteristics of the transmission system(s) over which the charts are to be transmitted.

(2) Data (page 3) :

X is to be used as the basic plotting symbol.

(3) The plotting model for synoptic surface observations (page 4) :

1. Model 2 is deleted.

2. Amendment of Model 1 :

(a) The symbol (w) is deleted;

(b) T_sT_s is replaced by $T_sT_s/TwTw$.

(4) Symbols for N (page 4) :

The lower line in the table and "M" in the upper line are deleted.

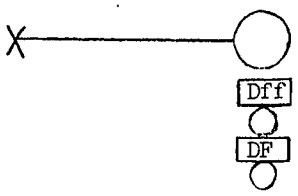
(5) Missing wind data (page 6) :

A third model is proposed to replace the models given in paragraph 1.2.2.2.

Missing wind speed

Missing wind direction

Missing wind direction and speed



Missing wind direction is indicated by the letter D followed by the reported wind speed in figures.

Missing wind direction and speed are indicated by the letters DF. These indications are inserted directly over the station circle, under the position of the C_M cloud, and within a frame in order to avoid confusion with PPP.

A calm is indicated by a circle drawn around the station circle (○).

(6) Symbols for present weather ww (page 6) :

Symbols for ww = 11 : ⁼⁼

ww = 12 : ⁼⁼

(7) Symbols for W (page 7) :

The lower line of the table and symbols for 0, 1 and 2 in the upper line are deleted.

Plotting W = 0, 1 and 2 is optional. If plotted, the symbols for W = 0, 1 and 2 should be the same as for N = 0, 4 and 7 respectively.

(8) a (page 10) :

The symbol for 4 is deleted from the table but made optional by a note. Plus and minus signs optional.

(9) T_mT_m (page 10) :

is replaced by the letters T_wT_w.

(10) RR (page 11) :

No universal plotting method is given. However, a reference to the plotting model on page 4 should be included.

(11) s (page 12) :

The plotting method is deleted but reference is made to the plotting model on page 4.

(12) Standard isobaric surfaces (pages 12 and 13) :

(a) 150, 70, 50, 30, 20 and 10 mb are added.

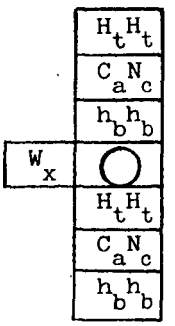
(b) Paragraph 1.2.3.1, lines 4 and 5, to read :

Services should prepare or have available charts for at least four of the five following standard isobaric surfaces : 850, 700, 500, 300 and 200 mb.

(13) Models for supplementary data on upper-air charts (page 14) :

Model C is deleted

Model D is amended :



Model D

(14) Isotach charts (page 17) :

Model 2 is deleted.

(15) Plotting model for tropopause charts :

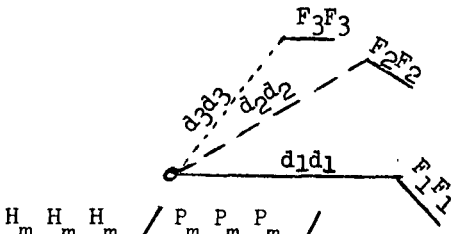
D_{tn}	$(\theta_n\theta_n\theta_n)$	$T_{dp_n}T_{dp_n}$	$T_{p_n}T_{p_n}$	Z_b	$P_{t_n}P_{t_n}P_{t_n}$	$H_{t_n}H_{t_n}$	S_{t_n}
D_{t2}	$(\theta_2\theta_2\theta_2)$	$T_{dp2}T_{dp2}$	$T_{p_2}T_{p_2}$		$P_{t_2}P_{t_2}P_{t_2}$	$H_{t_2}H_{t_2}$	S_{t_2}
D_{t3}	$(\theta_1\theta_1\theta_1)$	$T_{dp_1}T_{dp_1}$	$T_{p_1}T_{p_1}$	d_bd_b	$P_{t_1}P_{t_1}P_{t_1}$	$H_{t_1}H_{t_1}$	S_{t_1}

F_bF_b

Instead of the dew point $T_{dp}T_{dp}$ the dew-point depression D_pD_p may be plotted.
The wind is plotted with a solid shaft for the first (lowest) tropopause, with a "dashed" shaft for the second and a "dotted" shaft for the third.

(16) Plotting models for maximum wind charts (to be inserted on page 18) :

Model 1



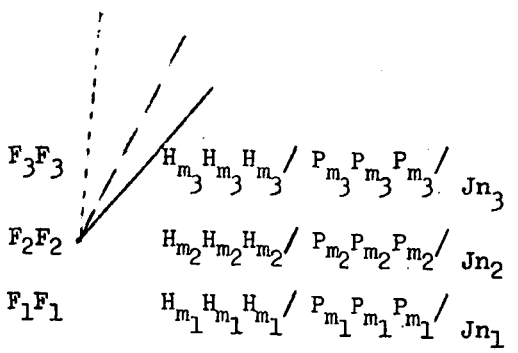
$H_{m_3}H_{m_3}H_{m_3}/\ P_{m_3}P_{m_3}P_{m_3}/\ Jn_3$

$H_{m_2}H_{m_2}H_{m_2}/\ P_{m_2}P_{m_2}P_{m_2}/\ Jn_2$

$H_{m_1}H_{m_1}H_{m_1}/\ P_{m_1}P_{m_1}P_{m_1}/\ Jn_1$

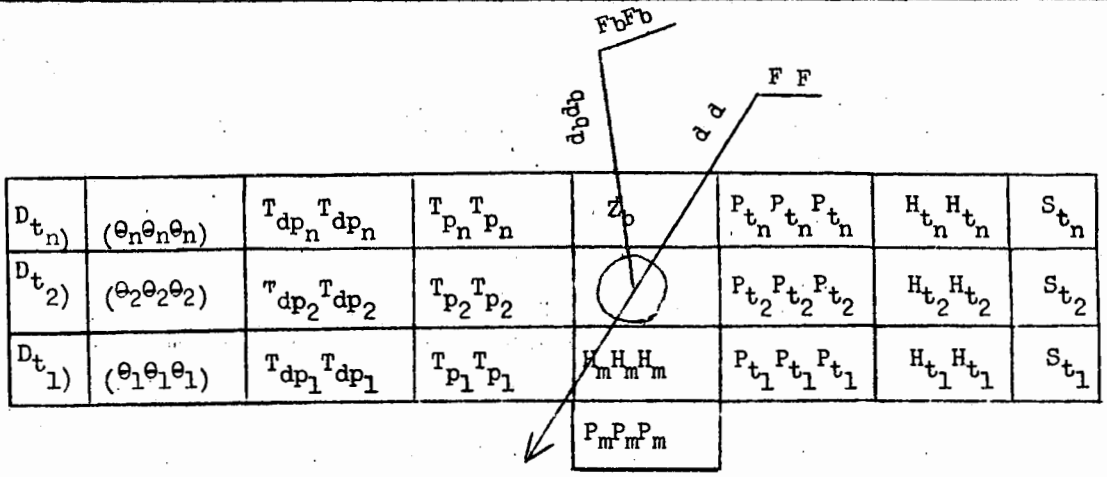
Model 2

Model 3



Models 1 and 3 provide for plotting of several maximum winds for the same station.

(18) A combined plotting model for tropopause and maximum wind (to be inserted after (17)):



The wind is plotted for the lowest tropopause and one maximum only. Instead of the dew point $T_{dp}T_{dp}$ the dew-point depression D_pD_p may be plotted.

(19) Plotting of meteorological reconnaissance flight observations coded in FM 41.B (pages 25-31) :

This whole paragraph (1.6.1) is deleted following the deletion of FM 41.B as an international code.

(20) Plotting of aircraft meteorological observations coded in FM 42.B (pages 31-34) :

This whole paragraph (1.6.2) is deleted following the deletion of FM 42.B.

(21) Plotting radar reports (pages 37-38) :

This paragraph (1.7) is deleted.

(22) Symbols for fronts and allied phenomena (pages 41-42) :

Amendments (according to numbering in the provisional guide)

	Term	Symbol	
		Monochromatic	Polychromatic
1.	No change	no change	no change
2.	No change	no change	no change
3.	No change	▲ . ▲	no change
4.	No change	▲ ≠ ▲	no change
5.	No change	no change	no change
6.	No change	no change	no change
7.	No change	◗ . ◗	no change
8.	No change	◗ ≠ ◗	no change
9.	No change	no change	no change
10.	No change	no change	no change
11.	------	deleted	------
12.	No change	no change	no change
13.	No change	no change	no change
14.	No change	◗▼ . ◗▼	no change
15.	No change	◗▼ ≠ ◗▼	no change
16.	------	deleted	------
17.	------	deleted	------
18.	------	deleted	------

19.	Symbol and definition deleted		
20.	No change	no change	no change
21.	No change	no change	no change
22.	No change	no change	(symbol unchanged (colour: orange
23.	No change	no change	no change
24.	Symbol and definition deleted		
25.	No change	no change	no change
26.	No change	no change	no change

(23) Pressure centres (page 44) :

Paragraph 2.2.1.3 :

The first seven lines to be substituted by :

The location of a pressure centre may be indicated by a cross X. To indicate the nature of the centre, a capital letter appropriate to the language of the country is entered.

(24) Intervals of isohypses of absolute and relative topography (pages 45 and 46) :

Either 40 gpm (80, 20, and 10 when appropriate) or 60 gpm (120, 30 and 15 when appropriate)
(paragraphs 2.2.2.2 and 2.2.2.6).

(25) Height centres (page 46) :

Same as (23) above.

(26) Isotachs (page 46) :

(a) The intervals should be 20 kts (40, 10 and 5 when appropriate).

(b) Centres of regions of minimum and maximum speed may be marked according to national practice. On the maximum wind chart, however, the maximum should be marked by a "J" followed by the estimated maximum speed, e.g., J_{120}.

(27) Isotherms (page 46) :

Intervals of isotherms :

Either 5°C (10°C and 2.5°C when appropriate) or 2°C (1° when appropriate).

(28) Pressure centres and height centres on charts for facsimile transmission (to be inserted in the Guide) :

The nature of the centre should be indicated by an arrowhead in the direction of the circulation, on the innermost isobar (isohypse).

RECOMMENDATIONS OF THE COMMISSION FOR SYNOPTIC METEOROLOGY
ADOPTED PRIOR ITS THIRD SESSION AND MAINTAINED IN FORCE

Rec. 30 (CSM-II) - SYMBOLIC WORDS AND LETTER GROUPS

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING :

(1) A substantial desire for uniformity in the development of symbolic words and letter groups;

(2) The wide-spread use of a number of such words and groups of varying length;

CONSIDERS that it would be undesirable to make any changes in the existing symbolic words and letter groups; and

RECOMMENDS that when new symbolic words and letter groups are developed wherever possible they (a) be pronounceable, (b) give self evident indication of the nature of the report,and (c) consist of five letters.

Rec. 35 (CSM-II) - METEOROLOGICAL BROADCASTS BY RADIO-TELEPRINTER

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

CONSIDERING that the transmission and reception of figures by radio-teleprinter results in greater speed and economy of man-power as compared with handspeed Morse;

NOTING Technical Regulation 6.1.1.10;

RECOMMENDS :

(1) That as soon as possible but not later than the end of 1962 transmission of continental and subcontinental broadcasts be made by radio-teleprinter;

(2) That each regional association be requested :

(a) To deal with the problems involved in the cessation of Morse broadcasts when radio-teleprinter transmissions are introduced at each of its continental and subcontinental broadcast centres; and

(b) To consider whether radio-teleprinter transmissions could be introduced instead of Morse for any other types of broadcasts in its Region.

Rec. 36 (CSM-II) - METEOROLOGICAL BROADCASTS BY FACSIMILE

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING Technical Regulation 6.1.1.10;

CONSIDERING :

(1) That facsimile is an expeditious method of transmitting diagrams, which reduces considerably the processing of data (and therefore saves time and man-power) as compared with transmitting cipher characteristics of diagrams by teleprinter;

(2) That it is desirable to gain further experience of facsimile transmission of meteorological data (in the form of coded data, plotted data and diagrams);

RECOMMENDS :

(1) That transmission of analyses and prognostic charts from those centres responsible for master analyses be made by facsimile;

(2) That facsimile transmission of coded data, plotted data and diagrams be made in periods not used for facsimile transmission of master analyses and prognostic charts;

(3) That regional associations be requested to develop programmes of facsimile transmission for special and territorial broadcasts, taking into consideration the transmissions mentioned under (1) and (2) above.

Rec. 37 (CSM-II) - POSSIBLE COMBINATION OF FACSIMILE AND RADIO-TELEPRINTER BROADCASTS

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

CONSIDERING :

(1) The present congested state of the radio spectrum, particularly in the HF band, and the consequent need to make the best possible use of frequencies utilized for meteorological transmissions;

(2) That, because direct frequency modulation of the radio carrier is the preferred type of modulation for both meteorological facsimile and radio-teleprinter transmissions, it is technically possible to utilize under certain circumstances the same transmission system for both radio-teleprinter and facsimile transmissions;

RECOMMENDS that, where the quantity of information does not justify the separate operation of full-time radio-teleprinter and facsimile transmissions, the two systems be operated wherever possible, on a time and frequency sharing basis.

Rec. 53 (CSM-II) - ECONOMY OF COMMUNICATIONS

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING the general need to speed up meteorological communications; and

CONSIDERING that one aspect of this problem is the suppression of redundant data from broadcasts;

RECOMMENDS that regional associations be instructed to make a study of the information that is being exchanged regionally and inter-regionally with a view to suppressing the unnecessary transmission of data with particular reference to relays of data which originated outside the Region and may not be required for onward relay in their entirety.

Rec. 73 (CSM-II) - WORLD CLIMATIC ATLASES

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING the provisional generalized list of parameters for maps of the free atmosphere prepared by the Working Group of the Executive Committee on Climatic Atlases;

CONSIDERING that until the map scales, projections, etc. are finalized detailed comment is inappropriate;

RECOMMENDS :

(1) That the provisional generalized list of parameters for maps of the free atmosphere be regarded as satisfactory for synoptic purposes with the addition of one item to Group III to read :

(iv) Extreme positions of the thickness lines by months;

(2) That if all the maps are not produced simultaneously the priority be :

(i) Group I;

(ii) Item (iv) of Group III;

(iii) Group II;

(iv) Items (i), (ii) and (iii) of Group III.

Rec. 74 (CSM-II) - INDEX NUMBERS FOR STATIONS MAKING OBSERVATIONS IN PHYSICAL METEOROLOGY

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING :

(1) The decision of the ninth session of the Executive Committee to instruct the Secretary-General to prepare a system of index numbers for stations making observations in physical meteorology; and

(2) The request of the Secretary-General for comments from the Commission for Synoptic Meteorology;

RECOMMENDS :

(1) That the method suggested by the Secretary-General of identifying stations, making observations in physical meteorology, does not appear appropriate, as it would lead to a multiplicity of numbers for any station taking observations in several branches of physical meteorology;

(2) That index numbers, based on the international system of index numbers as prescribed by Technical Regulation 2.4.1.1 be assigned to those stations from which observations in physical meteorology are transmitted for international use on telecommunication system;

(3) For those stations taking observations in physical meteorology not covered by paragraph (2) above, and which may exchange their data internationally by mail, an appropriate method of producing a system of identifiers appears to be that, in which station name abbreviations or numbers corresponding to $QL_{a_1}L_{a_2}L_{a_3}L_{o_1}L_{o_2}L_{o_3}$ are used. The final choice could be made on a regional or a national basis; any system should however be so designed that no confusion is possible with the existing international index numbers.

Rec. 84 (CSM-II) - REQUIREMENTS IN RESPECT OF UPPER-AIR INFORMATION

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING :

(1) Resolution 8 (CAe-II);

(2) The requirements of international civil aviation for high-level forecasts;

(3) Recent developments in synoptic meteorology, which necessitate the obtaining of information from increasingly higher levels;

RECOMMENDS :

(1) That Members make the necessary arrangements so that their upper-air observations regularly reach at least the 100 mb level;

(2) That, in addition, Members make every effort so that in upper-air observations the highest possible level above that of 100 mb be attained;

(3) That the Commission for Instruments and Methods of Observation be informed of the need for instrumentation, which would make it possible to obtain regularly upper-air information from levels considerably above that of 100 mb, at least to 10 mb.

Rec. 88 (CSM-II) - ASSISTANCE TO THE COMMISSION FOR SYNOPTIC METEOROLOGY

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING :

(1) General Regulations 142 and 145(8);

(2) The many problems which the Commission for Synoptic Meteorology has to solve or develop between sessions and the heavy agenda with which each session of the Commission is faced;

(3) The unduly heavy task which consequently befalls the president of the Commission for Synoptic Meteorology;

CONSIDERING :

(1) That the president of the Commission for Synoptic Meteorology and the chairmen and members of the working groups of that commission can only devote a part of their time to the work of the World Meteorological Organization;

(2) That the work of the commission and its working groups would be greatly facilitated and consequently speeded up if the Secretariat could conduct enquiries and prepare reports to a greater extent than has been possible in the past;

(3) That various publications in the field of activities of the Commission for Synoptic Meteorology could be prepared by the Secretariat;

RECOMMENDS that the Executive Committee study the difficulties encountered in the effective functioning of the Commission for Synoptic Meteorology with a view to alleviating them as soon as possible.

Rec. 90 (61-CSM) - ASSISTANCE FOR THE ESTABLISHMENT OF A SOUTHERN HEMISPHERE EXCHANGE SYSTEM WITH INTERCONNEXION WITH THE NORTHERN HOURS SYSTEM

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

CONSIDERING :

(1) That great importance of speedy establishment of centres for the exchange of surface and upper-air information for the construction of meteorological charts covering the whole of the southern hemisphere;

(2) That the speedy establishment of such centres is necessary in order to facilitate the exchange of meteorological data on a global basis;

(3) That technical and/or financial assistance is required to implement the plan as set out in Recommendation 9 (II-CSM/WGT) in its annex and appendices;

RECOMMENDS that the Executive Committee as a matter of urgency take all necessary action concerning the provision of technical and/or financial assistance for the establishment of the southern hemisphere exchange system.

Rec. 91 (61-CSM) - INTERNATIONAL DISTRIBUTION OF METEOROLOGICAL DATA COLLECTED BY ARTIFICIAL SATELLITES

THE COMMISSION FOR SYNOPTIC METEOROLOGY,

NOTING :

(1) The report of the second meeting of the Panel of Experts of the Executive Committee on Artificial Satellites;

(2) The offer of the United States Meteorological Service to make available the artificial satellite information in coded form (NEPH ANALYSES);

CONSIDERING :

(1) That there are many areas from which little or no meteorological information is available;

(2) That it is frequently difficult to detect the development of major weather systems in these areas;

RECOMMENDS :

(1) That urgent action be taken to arrange for the transmission of coded NEPH ANALYSES on the northern hemisphere exchange network and for redissemination as regionally agreed;

(2) That, until the southern hemisphere exchange network is implemented, and as an interim measure that urgent action be taken by Regions I, III, V to accomplish dissemination within their Regions of this information, as available by broadcast or point-to-point transmissions (from the northern hemisphere), as follows :

(i) To Region V via Honolulu;

(ii) To Region III via Miami;

(iii) To Region I via Offenbach.

LIST OF DOCUMENTS

Doc. No.	Title	Agenda item	Submitted by
1	Provisional agenda Rev.1	3	-
2	Explanatory memorandum to the provisional agenda Add. 1, 2 and 3	1.3	-
3	Desirability of maintaining a separate Commission for Instruments and Methods of Observation Add.1	16	Secretary-General
4	Density of ships' observations - Revision of paragraphs 2.2.1.7 and 2.2.1.8 of the Technical Regulations	9.3	Secretary-General
5	Definition of "Lightship station" for inclusion in the Technical Regulations	9.6	Secretary-General
6	Standardization of maps and diagrams for facsimile transmissions Add.1	11.3	Secretary-General
7	Clarification of certain terms used in the definition of Sigmet information	12	Secretary-General
8	Improvement of dissemination of ships' reports - Amendment of the Technical Regulations Add.1	10.4	Secretary-General
9	Code forms for land/sea and sea/land exchanges: Revision of paragraphs 5.1.1.2 and 5.1.1.1 of the Technical Regulations	8.1	Secretary-General
10	Report of the Executive Committee Working Group on the Beaufort Scale	8.3	Secretary-General
11	Specification of synoptic stations as "Basic" and "Supplementary" in Volume A of WMO Publication No.9.TP.4	9.2	Secretary-General

Doc. No.	Title	Agenda item	Submitted by
12	Scientific lectures in the field of the Commission	17	President, CSM
13	Report of the Working Group on Pressure Reduction Methods Add.1, Corr.1	6.2	Chairman
14	Final report of the CSM Working Group on the Definition of Terms used to Describe the Intensity of Meteorological Phenomena Add.1	6.1	Chairman
15	Standards required for meteorological observations in the field of synoptic meteorology	7.1	Vice-president, CSM
16	Review of Publication No. 9. TP.4, Volume C, Chapter I, Introduction	10.2	Secretary-General
17	Definition of standard time of observation for inclusion in the Technical Regulations	9.4	Secretary-General
18	Working Group on Telecommunications Add.1 and 2	6.5	Chairman
19	Meteorological qualifications and training	14	Secretary-General
20	Report of the chairman of the CSM Working Group on Code Problems (December 1961)	6.3	Chairman
21	Standards required for meteorological observations in the field of synoptic meteorology	7.1	President, CSM
22	Definition of basic surface synoptic networks	9.1	Secretary-General
23	Actual time of upper-air synoptic observations - Revision of paragraphs 4.2.1.2 and 4.2.1.3 of the Technical Regulations	9.5	Secretary-General
24	Automatic weather stations Add.1	9.7	Secretary-General
25	Visibility	7.2	Secretary-General

Doc. No.	Title	Agenda item	Submitted by
26	Report of the Working Group on the Guide to Synoptic Meteorological Practices	6.7	Chairman
27	Standard levels	7.5	Finland
28	Final report of the second session of the CSM Working Group on Telecommunications (Paris, April 1961)	6.5	President, CSM
29	Final report of the CSM Working Group on the Forecasting of Hail, Turbulence in Clear Air and in Cloud, Icing and Dense Cirrostratus Clouds	6.9	President, CSM
30	Working Group on the synoptic use of meteorological data from artificial satellites	6.8	Provisional chairman
31	Technical Regulations	15	President, CSM
32	Standard isobaric surfaces (70, 50, 30, 20 and 10 mb) - Amendment to Technical Regulations	7.5	United States
33	Transmission of non-meteorological messages on WMO channels	10.1	Secretary-General
34	Training of personnel engaged in meteorological telecommunications	10.3	Secretary-General
35	Report of the Working Group on Networks	6.4	Chairman
36	Responsibility for the preparation and dissemination of reports of monthly means for oceanic areas	22.1	Secretary-General
37	Routine exchange of 5-day means computations of grid point value	11.6.1, 11.6.2	Secretary-General
38	Standard isobaric surfaces Corr.1	7.5	Secretary-General
39	Draft plan for world-wide dissemination of radioactivity data	22.2	Secretary-General
40	Radio frequency bands allocated to meteorological aids service	10.5	Secretary-General
41	Criteria for determination of significant levels for international exchange	11.7	Secretary-General

Doc. No.	Title	Agenda item	Submitted by
42	Report of the president of the Commission	5	President of the Commission
43	Report of the Working Group on Isotherm Analysis and Isotherm, Stream-Line and Isotach Prognostic Techniques in the Tropics	6.6	Chairman
44	Improvement of Dissemination of Ships' Reports - Amendment of the Technical Regulations	10.4	President, CSM
45	Codes for surface observations	8.4.2	President, CSM
46	Analysis codes	8.4.4	President, CSM
47	Codes for maritime purposes	8.4.5	President, CSM
48	Standards required for meteorological observations in the field of synoptic meteorology	7.1	Secretary-General
49	Definition of gust	7.3	Secretary-General
50	Decision taken by the Working Group on Pressure Reduction Methods	7.7	Secretary-General
51	Reporting of H_SH_S when the height of base of cloud is not discernible	8.4.2	India
52	Ocean wave reports	8.4.5	India
53	Codes for aeronautical purposes	8.4.6	Secretary-General
54	Codes for climatological purposes	8.4.7	Secretary-General
55	Plan of exchange of meteorological data in the northern hemisphere	10.6.8	Federal Republic of Germany
56	Implementation of universal standard practice for coding TEMP and PILOT messages	8.4.3	Sweden
57	Plan of exchange of meteorological data in the northern hemisphere	10.6.8 (2)	Chairman, Working Group on Telecommunications
58	Organization of the exchange of meteorological data within the southern hemisphere with connexion with the northern hemisphere exchange system	10.6.9	Secretary-General

Doc. No.	Title	Agenda item	Submitted by
59	Study of recommendations of the third meeting of the ICAO MOTNE Panel which were submitted to WMO for examination	10.7	Secretary-General
60	Numerical analysis and forecasting	11.5.1 11.5.2, 11.5.3	Secretary-General
61	Technical Regulations	15	Secretary-General
62	Criteria for reporting squalls	7.4	Secretary-General
63	The synoptic code in the tropics	8.4.1	Federation of Rhodesia and Nyasaland
64	Uniformity of procedures for transmission of meteorological data	10.6.5, 10.6.6	Chairman
65	Organization of the exchange of meteorological data in the southern hemisphere	10.6.9	Chairman, Working Group on Telecommunications
66	Equipment for the detection and automatic correction of errors in radio-teleprinter transmission	10.6.16	Chairman
67	Standardization of meteorological transmissions by facsimile - Equipment characteristics	10.6.17	Chairman, Working Group on Telecommunications
68	Reference surfaces for upper-air analyses in tropical areas - Revision of paragraphs 7.4.1.1 and 7.4.1.3 of the Technical Regulations	11.1	Secretary-General
69	Verification of forecasts	11.4	Secretary-General
70	Extended and long-range forecasting	11.6	France
71	Format of tsunami warnings and relevant seismic information	22.3	Secretary-General
72	Plan of exchange of meteorological data in the northern hemisphere	10.6.8	Federal Republic of Germany
73	Questions arising from the report of the Working Group on Isotherm Analysis and Isotherm, Stream-Line and Isotach Prognostic Techniques in the Tropics	11.9	President, CSM

Doc. No.	Title	Agenda item	Submitted by
74	Routing of ships by means of extended weather forecasting	13	Secretary-General
75	Coding wwW	8.4.2	U.S.S.R.
76	International distribution of meteorological data collected by artificial satellites	10.6.12	Secretary-General
77	Uniformity of procedures for transmission of meteorological data	10.6.5, 10.6.6	Chairman
78	Units used in international exchange of meteorological reports	8.2	Secretary-General
79	Codes for other purposes - Codes for ground radar weather observations	8.4.8	Secretary-General
80	Codes for surface observations - Transmission of precipitation data	8.4.2	Secretary-General
81	Review of recommendations and resolutions concerning the field of synoptic meteorology	19	Secretary-General
82	Report of the CSM Working Group on the Synoptic use of Meteorological Data from Artificial Satellites	6.8	Chairman
83	Plan of exchange of meteorological data in the northern hemisphere	10.6.8	Japan
84	Plan of exchange of meteorological data in the northern hemisphere - Circuit performances	10.6.8	Japan
85	Codes for aeronautical purposes CSM/WG Codes/WP Item 11.2 : Self-evident forms of messages	8.4.6	Japan
86	Codes for maritime purposes	8.4.5	Japan
87	Codes for upper-air observations	8.4.3	Japan
88	Codes for surface observations	8.4.2	Japan
89	Improvement of dissemination of ships' reports	10.4	Japan

Doc. No.	Title	Agenda item	Submitted by
90	Routine exchange of 5-day means - Computation of grid point values Corr.	11.6.1, 11.6.2	Japan
91	Transmission of non-meteorological message on WMO channels	10.1	Japan
92	Pressure reduction	7.7	Canada
93	Codes for surface observations - Words in plain language intended to specify past weather in SYNOP and SHIP messages	8.4.2	French delegation
94	Codes for surface observations - Code 0900 (E - State of the ground)	8.4.2	French delegation
95	Technical Regulations	15	Sweden
96	The problem of definition of dust haze, mist and fog	7.9	President, CSM, and Mr. L. Dufour
97	Technical Regulations - Definitions	15	United Kingdom
98	Inclusion in the Technical Regulations of an appropriate paragraph concerning the preparation of surface charts	11.2, 15	President, CSM
99	Code matters arising from the third session of RA I	8.4, 8.4.1, 8.4.2	President, CSM
100	Experimental international meteorological facsimile broadcast	10.6.18, 10.6.12	United States of America
101	Scientific lectures in the field of the Commission	17 (2)	President, CSM
201/P	Definition of basic surface synoptic network	9.1	Chairman, Committee C
202/P	Specification of synoptic stations as "Basic" and "Supplementary" in Volume A of WMO Publication No. 9	9.2	Chairman, Committee C
203/P	Report of Committee B	10.1	Chairman, Committee B
204/P	Density of ships' observations	9.3	Chairman, Committee C

Doc. No.	Title	Agenda item	Submitted by
205/P	Definition of standard time of observation for inclusion in the Technical Regulations	9.4	Chairman, Committee C
206/P	Definition of "lightship station" for inclusion in the Technical Regulations	9.6	Chairman, Committee C
207/P	Automatic Weather Stations	9.7	Chairman, Committee C
208/P	Definition of gust	7.3	Chairman, Committee C
209/P	Visibility	7.2	Chairman, Committee C
210/P	Time of upper-air synoptic observations	9.5	Chairman, Committee C
211/P	General matters Corr.1	8.4.1	Chairman, Committee A
212/P	Specifications for radio-teleprinter equipment	10.6.7	Chairman, Committee B
213/P	Character for indicating missing information in meteorological bulletins	10.6.4	Chairman, Committee B
214/P	Training of personnel engaged in meteorological telecommunications	10.3	Chairman, Committee B
215/P	Radio frequency bands allocated to meteorological aids service	10.5	Chairman, Committee B
216/P	Feasibility of using higher teleprinter modulation rates	10.6.3	Chairman, Committee B
217/P	Provisions of aeronautical fixed services (AFS)- Exclusively for basic meteorological traffic	10.6.10	Chairman, Committee B
218/P	Analysis Code Rev. 1	8.4.4	Chairman, Committee A
219/P	Working Group on the Definition of Terms Used to Describe the Intensity of Meteorological Phenomena	6.1	Chairman, Committee C
220/P	Establishment of working groups	18	Chairman, Committee B
221/P	Standard isobaric surfaces	7.5	Chairman, Committee C

Doc. No.	Title	Agenda item	Submitted by
222/P	Reference surfaces for upper-air analyses in tropical areas - Revision of paragraphs 7.4.1.1 and 7.4.1.3 of the Technical Regulations	11.1	Chairman, Committee C
223/P	Second Report of Committee A - General matters	8.4.1	Chairman, Committee A
224/P	Code forms for land/sea and sea/land exchanges- Revision of paragraphs 5.1.1.2 and 5.1.1.1 of the Technical Regulations	8.1	Chairman, Committee A
225/P	Definition of broadcasts	10.6.1	Chairman, Committee B
226/P	Notification of modifications in methods of transmission Add.1	10.6.11	Chairman, Committee B
227/P	Desirability of maintaining a separate Commission for Instruments and Methods of Observation	16	Chairman, Committee C
228/P	Responsibility for the preparation and dissemination of monthly means for oceanic areas	22.1	Chairman, Committee C
229/P	Draft recommendation - Units for wind speed	8.2	Chairman, Committee A
	Corr.1 Amendment to draft recommendation - Units for wind speed	8.2	U.S.S.R. and France
230/P	Co-ordination of telecommunications matters and assistance of the Secretariat	10.6.15	Chairman, Committee B
231/P	Equipment for the detection and correction of errors in RTT transmissions	10.6.16	Chairman, Committee B
232/P	Report of Committee C	6.6	Chairman, Committee C
233/P	Decisions taken by the Working Group on Pressure Reduction Methods-References	7.7	Chairman, Committee C
234/P	Verification of forecasts	11.4	Chairman, Committee C
235/P	Improvement of dissemination of ships' reports - Amendment of the Technical Regulations	10.4	Chairman, Committee B

Doc. No.	Title	Agenda item	Submitted by
236/P	Working Group on Networks	6.4	Chairman, Committee C
237/P	Clarification of certain terms used in the definition of Sigmet information	12	Chairman, Committee C
238/P	Report of the Executive Committee Working Group on the Beaufort Scale	8.3	Chairman, Committee A
239/P	Working Group on Pressure Reduction Methods	6.2	Chairman, Committee C
240/P	Routing of ships by means of extended weather forecasting	13	Chairman, Committee C
241/P	Codes for climatological purposes	8.4.7	Chairman, Committee A
242/P	Protection of meteorological broadcasts Corr. App.	10.6.2	Chairman, Committee B
243/P	Third report of Committee A - General matters	8.4.1	Chairman, Committee A
244/P	Codes for surface observations	8.4.2	Chairman, Committee A
245/P	Codes for maritime purposes	8.4.5	Chairman, Committee A
246/P	Working Group on Code Problems - Working Group on the Guide to Synoptic Meteorological Practices	6.3, 6.7	Chairman, Committee A
247/P	Meteorological qualifications and training Rev. 1	14	Chairman, Committee C
248/P	Organization for the exchange of meteorological data by facsimile	10.6.18	Chairman, Committee B
249/P	Working Group on Telecommunications	6.5	Chairman, Committee B
250/P	Uniformity of procedures for transmission of meteorological data	10.6.5	Chairman, Committee B
251/P	Study of procedures necessitated by the use of automatic apparatus for transmission and for numerical processing of meteorological data	10.6.6	Chairman, Committee B

Doc. No.	Title	Agenda item	Submitted by
252/P	Organization of the exchange of meteorological data within the southern hemisphere with connexions with the northern hemisphere exchange system	10.6.9	Chairman, Committee B
253/P	International distribution of meteorological data collected by artificial satellites	10.6.12	Chairman, Committee B
254/P	Abbreviated headings for amended forecasts for aviation	10.6.13	Chairman, Committee B
255/P	Standardization of meteorological transmissions by facsimile - Equipment characteristics	10.6.17	Chairman, Committee B
256/P	Problems relating to inter-regional exchanges of basic meteorological data	10.6.19	Chairman, Committee B
258/P	Review of Publication No. 9, Volume C, Chapter I, Introduction	10.2	Chairman, Committee B
259/P	Study of recommendations of the third meeting of the ICAO MOTNE Panel which were submitted to WMO for examination	10.7	Chairman, Committee B
260/P	Plan of exchange of meteorological data in the northern hemisphere	10.6.8	Chairman, Committee B
261/P	Codes for surface observations	8.4.2	Chairman, Committee A
262/P	General matters	8.4.1	Chairman, Committee A
263/P	Codes for maritime purposes	8.4.5	Chairman, Committee A
264/P	Working Group on the Synoptic Use of Meteorological Data from Artificial Satellites	6.8	Chairman, Committee C
265/P	Standards required for meteorological observations in the field of synoptic meteorology	7.1	Chairman, Committee C
266/P	Codes for surface observations	8.4.2	Chairman, Committee A
267/P	Codes for surface observations	8.4.2	Chairman, Committee A
268/P	Codes for aeronautical purposes	8.4.6	Chairman, Committee A

Doc. No.	Title	Agenda item	Submitted by
269/P	Questions arising from the report of the Working Group on Networks	9.8	Chairman, Committee C
270/P	Inclusion in the Technical Regulations of an appropriate paragraph concerning the preparation of surface charts	11.2	Chairman, Committee C
271/P	Criteria for determination of significant levels for international exchange	11.7	Chairman, Committee C
272/P	Questions arising from the report of the Working Group on Isotherm Analysis and Isotherm, Stream-Line and Isotach Prognostic Techniques in the Tropics	11.9	Chairman, Committee C
273/P	Organization for the exchange of hemispheric data Add.1	10.6.14	Chairman, Committee B
274/P	Criteria for reporting squalls	7.4	Chairman, Committee C
275/P	Standardization of maps and diagrams for facsimile transmission	11.3	Chairman, Committee C
276/P	Numerical analysis and forecasting	11.5, 11.5.1, 11.5.2, 11.5.3	Chairman, Committee C
277/P	Decisions taken by the Working Group on the Definition of Terms Used to Describe the Intensity of Meteorological Phenomena	7.6	Chairman, Committee C
278/P	Extended and long-range forecasting - Routine exchange of five-day means - Computation of grid-point values	11.6, 11.6.1, 11.6.2	Chairman, Committee C
279/P	Decision taken by the Working Group on the Synoptic Use of Meteorological Data from Artificial Satellites	7.8	Chairman, Committee C
280/P	Codes for upper-air observations Add.1	8.4.3	Chairman, Committee A
281/P	Technical Regulations	15	Chairman, Committee C
282/P	Establishment of a Working Group on Codes	8.4.1	Chairman, Committee A

Doc. No.	Title	Agenda item	Submitted by
283/P	Codes for surface observations	8.4.2	Chairman, Committee A
284/P	Codes for upper-air observations	8.4.3	Chairman, Committee A
285/P	Analysis codes	8.4.4	Chairman, Committee A
286/P	Codes for aeronautical purposes	8.4.6	Chairman, Committee A
287/P	Notes in Volume B concerning amended forecasts for aviation	8.4.6	Chairman, Committee A
288/P	Units used in international exchanges of meteorological reports	8.2	Chairman, Committee A
289/P	Codes for maritime purposes	8.4.5	Chairman, Committee A
290/P	Codes for surface observations Rev. 1	8.4.2	Chairman, Committee A
291/P	Codes for upper-air observations Corr.1, Add. 1	8.4.3	Chairman, Committee A
292/P	Discussion of the draft provisional Guide to the Preparation of Synoptic Weather Charts and Diagrams	11.8	Chairman, Committee A
293/P	Implementation of universal standard practice for coding TEMP and PILOT messages	8.4.3	Chairman, Committee A
294/P	Codes for maritime purposes	8.4.5	Chairman, Committee A
295/P	Units for wind speed	8.2	Chairman, Committee A
296/P	The problem of definition of dust haze, mist and fog	7.9	Chairman, Committee A
297	Codes for other purposes	8.4.8	Chairman, Committee A
298/P	Report of the ad hoc Committee on previous CSM decisions	19	Chairman, ad hoc Committee
299	Format of tsunami warnings and relevant seismic information	23.3	Chairman, Committee A

W O R L D M E T E O R O L O G I C A L O R G A N I Z A T I O N

Publication WMO - No. 122.RP.50

COMMISSION FOR SYNOPTIC METEOROLOGY

Abridged Final Report of the Third Session, Washington, 26 March-19 April 1962

C o r r i g e n d u m

Page 14 - 8.4.2.7 - line 6 - read : and related code forms ....

Page 25 - 10. - last line - read : 5 (CSM-III) instead of 51 (CSM-III)

Page 26 - 10.4 - line 19 - read : a ship's report shall

Page 29 - 10.6.4 - line 6 - read : ... the use of "/" (the figure....

Page 36 - 10.7 - line 9 - read : use of the solidus "/" instead of ....

Page 65 - line 4 from the top - add : (FM 11.A, FM 21.A, FM 22.A, FM 35.B, FM 36.B)

Page 72 - (d) - line 3 - read : "yyyyy" instead of "$QL_aL_aL_oL_o$"

Page 73 - first line - read : Code 1063

- APPENDIX - lines 9 and 10 - replace group $000G_pG_p$ by $000g_pg_p$

Page 77 - lines 11 and 12 - read :

(1) That code forms FM 33.B and FM 36.B be amended by the addition in Sections 4 and 1 respectively of a final group $MMMU_{La}U_{Lo}$,

Page 79 - second line from the bottom - read : "Forecast lowest mean sea level...."

Page 80 - FM 56.B Area forecast - line 3 - third group - read : $5BP_BP_BP_T$

Page 84 - (iii) - read : $\overline{P_oP_oP_oP_o}$ for $P_oP_oP_oP_o$

- (iv) - r_f - second line - add at the end : (Code ....)

- (vi) - read :

$\overline{T_{do}T_{do}T_{do}}$ Mean monthly dew-point surface temperature in tenths....

Page 92 - lines 9 and 12 - read : .... solidus "/" (figures case position....

Page 93 - line 5 - read :

(3) That the International Telegraph Consultative Committee (CCIT)...

Page 94 - line 14 from the top - end of the line - read : "also" instead of "and"

- line 7 from the bottom - read :

(3) That the efficiency....

Page 97 - Rec. 56 (CSM-III) - line 7 - read :

(2) That the offer of the United States to identify....

Page 101 - last line - read : 4.5 per cent $\pm$ 0.5 per cent....

Page 104 - lines 14 and 19 - read : "assigned" instead of "allocated" and "allotted"

Page 110 - Rec. 72 (CSM-III) - line 2 of the title - read : PARAGRAPH 7.4.1.2 ....

Page 113 - read : C Upper-air observations (by radiosonde and rawinsonde) instead of B Upper-air observations ....

Page 115 - line 2 - read : Annex to paragraph 10.6.14 of ....

Page 119 - REGION VI - complete to read :

(a) With respect to exchanges between RA IV and RA VI, some improvement has been made in the means utilized for these exchanges, particularly through the duplexing of the channels reserved for routing meteorological data over the link by radioteleprinter between New York - Santa Maria and Paris. However...

Page 121 - (f) - last line - read : paragraph 9.1 and Rec. 27, general summary, paragraph 8.4.4.1).

Page 130 - insert between lines 2 and 3 : "(4) Part A" and cancel (4) before (1)

Page 131 - lines 2, 3, 4 and 5 from the bottom - replace I-A-1-36 by I-A-1-37

Page 132 - (25) - read : Copy Note (20)....

Pages 140 and 141 - replace (five times) $\overline{r_f d_v d_v f_v f_v}$ by $r_f \overline{d_v d_v f_v f_v}$

Page 146 - 3.4 - read :

GGgg : For observational messages - time of observation in GMT;
For forecasts and analyses - actual or forecast scheduled time of issue in GMT;
For other messages - time of origin in GMT

Page 151 - line 4 - replace by new text : « ≡ ↓ SMCN ↑ 1 → ↓ KIDL → A → ↑ 201200

Page 154 - line 3 - read : that the Members and Regions....

Page 169 - (1) - read : A new paragraph 1.1.6 is added :

- (2) - first line - read : Missing data (page 3) :
- (3) - last line - read : (b) $T_S T_S$ is replaced by $T_S T_S / T_W T_W$

Page 171 - (15) - first column - read : (D_{tn}) - (D_{t2}) - (D_{t1})

- (16) - Models 1 and 3 - replace (6 times) "J" by "j" in the jn symbols

Page 172 - first line - replace (18) by (17) and read : ...(to be inserted on page 20) :

- first column of plotting model - read : (D_{tn}) - (D_{t2}) - (D_{t1})

Pages 172 and 173 - renumber (19), (20) ..... (28) to read : (18), (19) .... (27)

January 1963

W O R L D M E T E O R O L O G I C A L O R G A N I Z A T I O N

Supplement to WMO Publication No. 122.RP.50

Abridged Final Report of the Third Session of the

Commission for Synoptic Meteorology

Decisions of the Executive Committee on the

Abridged Final Report of the Third Session of the

Commission for Synoptic Meteorology

This document is a supplement to WMO Publication No. 122.RP.50 - Abridged Final Report of the Third Session of the Commission for Synoptic Meteorology and should be considered as a guide to the status of the decisions adopted at that session.

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A. DECISIONS RECORDED IN THE GENERAL SUMMARY OF THE WORK OF EC-XIV

5.12.3 Recommendation 6 (CSM-III) calls for consultation with other bodies including ICAO. The Secretary-General was requested to prepare a consolidated report for Fourth Congress giving both the outcome of the above-mentioned consultations and information on the state of implementation of Resolution 30 (Cg-III).

5.12.4 While approving Recommendation 8 (CSM-III), the Committee agreed that it was too early to decide whether it will, in practice, be possible to separate the present notes on the use of codes in Part A, Chapter I, Volume B, Publication No. 9.TP.4, into two classes only, i.e. Standard practices, and Notes. The Committee's approval of this recommendation was therefore given on the understanding that, if the CSM Working Group on Codes found it necessary, the introduction of a third class - Recommended practices - could be proposed to Fourth Congress.

5.12.6 With regard to Recommendation 64 (CSM-III), the Committee agreed by its Resolution 38 (EC-XIV) to establish a Joint Working Group on Numerical Prediction between CAe and CSM. With reference to General Regulation 35, the Committee decided that the Joint Working Group should report to CAe with the understanding that any report of the work of the group should also be made available to the President of CSM. In this connexion reference was also made to General Regulation 39 which requires that the recommendations of this group must be concurred in by the presidents of both CAe and CSM before being submitted to the Commission for Aerology.

5.12.7 The Committee also decided to record the following comments and decisions on various items contained in the general summary of the work of the third session of the Commission for Synoptic Meteorology :

Paragraph 10.1 - The Committee agreed to invite the presidents of regional associations to study the feasibility of disseminating, over meteorological telecommunication channels, the satellite movement information as requested by the Committee for Space Research.

Paragraph 10.5 - The Executive Committee decided to request the Secretary-General to inform Members of the frequency requirements for "meteorological aid services" with a view to obtaining the support of the national delegations at the next ITU Radio Conference to defend this WMO requirement, and to keep the necessary contact with ITU on this matter.

Paragraph 11.4 - The Committee considered that it was highly desirable to introduce some measures of standardization in methods of forecast verification. While noting that CSM-III had concluded that it was premature to attempt international standardization of verification methods, the Executive Committee decided to request the president of CSM to arrange for the next session of his Commission to study the matter further and perhaps establish a working group to deal with the subject. It supported the CSM request that the Secretary-General should arrange for summarization in a suitable form of the available information and of such supplementary information as he may collect, and to distribute it to Members.

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B. RESOLUTIONS

Res. 33 (EC-XIV) - REPORT OF THE THIRD SESSION OF THE COMMISSION FOR SYNOPTIC METEOROLOGY

THE EXECUTIVE COMMITTEE,

HAVING CONSIDERED the report of the third session of the Commission for Synoptic Meteorology,

DECIDES :

(1) To note the report,

(2) To note without comments the resolutions adopted by the third session of the Commission for Synoptic Meteorology,

(3) To embody the substance of the following recommendations in resolutions of the Executive Committee as indicated :

(a) Recommendations 1, 2 (paragraph 2), 7 (paragraphs 1 and 2), 9, 10, 12, 13, 15 to 28 inclusive, 29 (paragraphs 1 to 3) and 30 to 36 (CSM-III) inclusive, in Resolution 34 (EC-XIV);

(b) Recommendations 48 to 52 inclusive, 59, 60 and 61 (CSM-III) in Resolution 35 (EC-XIV);

(c) Recommendation 56 (CSM-III) in Resolution 36 (EC-XIV);

(d) Recommendation 62 (CSM-III) in Resolution 37 (EC-XIV);

(e) Recommendation 64 (CSM-III) in Resolution 38 (EC-XIV);

(4) To take action as follows on the remaining paragraphs of the above recommendations and on the other recommendations :

Recommendation 2 - Standard isobaric surfaces (Amendments to the Technical Regulations)

Notes paragraph (1) under RECOMMENDS and directs the Secretary-General to include the substance of this paragraph in a consolidated document on amendments to the Technical Regulations to be submitted to Fourth Congress (For action on paragraph (2) see DECIDES (3) a).

Recommendation 3 - Pressure reduction methods

(a) Approves this recommendation,

(b) Requests Members and presidents of regional associations to arrange for the necessary studies to be carried out,

(c) Directs the Secretary-General to prepare the requested report for the fourth session of CSM and publish the report of the Working Group on Pressure Reduction Methods as a WMO Technical Note.

Recommendation 4 - Increasing the synoptic use of data from artificial satellites

(a) Approves this recommendation,

(b) Invites the Permanent Representative of the USA to undertake the preparation of the text of the Technical Note,

(c) Directs the Secretary-General :

(i) To publish the Technical Note on the synoptic use of meteorological satellite data,

(ii) To endeavour to organize seminars on the synoptic use of meteorological satellite data, taking into account the desirability of outside financial support.

Recommendation 5 - Amendments to the Technical Regulations (paragraphs 5.1.1.1 and 5.1.1.2)

Notes the recommendation and directs the Secretary-General to include the substance of this recommendation in a consolidated document on amendments to the Technical Regulations to be submitted to Fourth Congress.

Recommendation 6 - Units for wind speed

(a) Notes the recommendation and requests the presidents of CMM and CAeM to arrange for an examination of this recommendation by their respective Commissions and to report to Fourth Congress,

(b) Directs the Secretary-General :

(i) To discuss this recommendation with the Secretary-General of ICAO with a view towards universal adoption of metres/sec as the unit for reporting surface and upper-air wind speeds in international exchanges, and

(ii) To report the results to Fourth Congress for consideration.

Recommendation 7 - Changes to be made in the Technical Regulations and Volume B as a consequence of Resolution 30 (Cg-III)

Notes paragraph (3) under RECOMMENDS and directs the Secretary-General to include the substance of this paragraph in the consolidated document on amendments to the Technical Regulations to be submitted to Fourth Congress (For action on paragraphs (1) and (2) see DECIDES (3) a.)

Recommendation 8 - Notes in Volume B

(a) Approves paragraphs (1) and (2) under RECOMMENDS and leaves it to the Secretary-General to decide on the form of assistance the Secretariat will provide to the CSM Working Group on Codes,

(b) Notes paragraph (4) under RECOMMENDS and requests the president of CAeM to arrange that the matter be considered by the next simultaneous session of CAeM and ICAO MET DIV,

(c) Approves paragraph (3) under RECOMMENDS for insertion in Volume B of WMO Publication No. 9.TP.4.

Recommendation 11 - Publication of obsolete codes

Approves this recommendation and directs the Secretary-General:

(i) To study the need of research workers for information on old codes,

(ii) To study the best manner of making the required information available, and

(iii) To submit proposals to a subsequent session of the Executive Committee.

Recommendation 14 - Assistance to the Working Group on Codes

Approves this recommendation and includes provision for the engagement of a code expert for 1963 in the supplementary estimates to be submitted to Members on the understanding that the possible continuation of the work would be considered by Fourth Congress.

Recommendation 29 - Ship position verifying group

Requests the president of CMM to take appropriate action on RECOMMENDS (4) in consultation with the president of CCl in relation to RECOMMENDS (5), and submit a report to the president of CSM (for action on paragraphs (1), (2) and (3) see DECIDES (3) a.)

Recommendation 37 - Inclusion of surface and wind data in CLIMAT TEMP reports

Notes this recommendation and refers it to the president of CCl for consultation with members of his commission on the desirability of applying the provision of this recommendation, without restriction, to all aerological stations.

Recommendation 38 - Amendments to Technical Regulations concerning basic land stations

Notes the recommendation and directs the Secretary-General to include the substance of it in the consolidated document on amendments to the Technical Regulations to be submitted to Fourth Congress.

Recommendation 39 - Revised definition of basic synoptic network

Approves the following definition of basic synoptic network :

"The basic synoptic network within each World Meteorological Organization region is the network of stations, including the observational programmes, which the regional association recommends that its Members establish and maintain. This network is to be composed of the stations, with specified observational programmes, which are considered a minimum regional requirement to permit Members to fulfil their responsibilities in the application of meteorology as recognized by the regional association."

Recommendation 40 - Amendments to the Technical Regulations (paragraphs 2.2.1.6, 2.2.1.7 and 2.2.1.8) - Density of reports in oceanic areas

Recommendation 41 - The definition of standard time of observation for inclusion in the Technical Regulations

Recommendation 42 - Amendments to Technical Regulations concerning actual time of upper-air synoptic observations

Notes these recommendations and directs the Secretary-General to include the substance of them in a consolidated document on amendments to the Technical Regulations to be submitted to Fourth Congress.

Recommendation 43 - Special arrangements for facilitating the work of the Working Group on Networks

(a) Approves paragraph (1) of this recommendation, on the understanding that the financing of the meeting of the network group in 1963 should be given second priority;

(b) Directs the Secretary-General :

(i) To submit to Fourth Congress the proposal in RECOMMENDS (2);

(ii) To invite ICAO to submit the required information as indicated under RECOMMENDS (4);

(iii) To obtain from the chairman of the CSM working group further details on the information needed by the group, as indicated in RECOMMENDS (5), and to attempt to receive this information from Members;

(c) Requests the president of CIMO to arrange for the computation of the systematic errors and standard deviations of radiosonde observations as detailed in RECOMMENDS (3).

Recommendation 44 - Amendments to Technical Regulations concerning ships' reports

Notes this recommendation and directs the Secretary-General to include the substance of it in the consolidated document on

amendments to the Technical Regulations to be submitted to Fourth Congress together with the proposed amendments contained in Recommendation 6 (CMM-III).

Recommendation 45 - Amendments to Technical Regulations concerning definition of broadcasts

Recommendation 46 - Amendments to Technical Regulations concerning meteorological radio transmissions

Notes these recommendations and directs the Secretary-General to include the substance of them in the consolidated document on amendments to the Technical Regulations to be submitted to Fourth Congress.

Recommendation 47 - Use of high modulation rate apparatus for the international exchange of meteorological data

Approves this recommendation for action by Members and regional associations.

Recommendation 53 - Provision of channels for the exchange of basic meteorological data by multiplexing RTT channels of the AFTN

Approves this recommendation and directs the Secretary-General to communicate it to Members, in order that they may consider its possible application on a national scale, or through bilateral arrangements.

Recommendation 54 - Amendments to Technical Regulations - Notification of modifications in methods of transmissions

Recommendation 55 - Notification of changes in the operation of meteorological radio transmissions

Notes these recommendations and requests the Secretary-General to include the substance of them in the consolidated document on amendments to the Technical Regulations to be submitted to Fourth Congress.

Recommendation 57 - Organization of the exchange of hemispheric data

(a) Approves this recommendation,

(b) Directs the Secretary-General :

(i) To assist RA I, II and III in the study of their requirements for hemispheric exchanges;

(ii) To follow the progress by Members concerned on the substance of paragraph (2) under RECOMMENDS and to include its substance in Chapter I of Volume C of Publication No. 9.TP.4.

Recommendation 58 - Co-ordination of telecommunication matters and assistance of the Secretariat

(a) Notes this recommendation,

(b) Decides to leave the question of financing of meetings of working groups and of attendance of a Secretariat member at meetings of Telecommunications Working Groups, as outlined in RECOMMENDS (1) (a) and (b), to the discretion of the President of WMO and the Secretary-General, on the understanding that the Secretariat attendance at working groups' meetings of RA I, II and III and of CSM should be given priority;

(c) Directs the Secretary-General to prepare for Fourth Congress a detailed study of the policy and financial implications of the requests contained in paragraphs 2 (a), (b) and (3) under RECOMMENDS.

Recommendation 63 - Revision of paragraphs 7.4.1.1 and 7.4.1.3 of the Technical Regulations

Notes the recommendation and directs the Secretary-General to include the substance of it in the consolidated document on amendments to the Technical Regulations to be submitted to Fourth Congress, together with the following alternative text :

"7.4.1.3

Members should prepare or have available upper-air charts for the 200 mb surface as well as for at least three of the four following standard isobaric surfaces 850, 700, 500 and 300 mb."

Recommendation 65 - Adoption of a Guide to the Preparation of Synoptic Weather Charts and Diagrams

Approves the recommendation and directs the Secretary-General to arrange for this guide to be published as soon as practicable.

Recommendation 66 - Methods of analysis and prognosis in the tropics

(a) Approves this recommendation,

Directs the Secretary-General to carry out the necessary inquiries with Members concerned regarding their methods of analysis and prognosis in the tropics.

Recommendation 67 - Amendments to the Technical Regulations (Appendix E, Symbols for present weather)

Recommendation 68 - Amendments to the Technical Regulations (Appendix E, Part II, Analysis on weather charts)

Recommendation 69 - Amendment to the definition of the term "Forecast" in Chapter I of the Technical Regulations

Recommendation 70 - Inclusion in the Technical Regulations of an appropriate reference concerning preparation of surface charts

Recommendation 71 - Definition of the term "Dropsonde"

Recommendation 72 - Inclusion of 150 mb as a standard isobaric surface (amendment to paragraph 7.4.1.2 of the Technical Regulations)

Recommendation 73 - Amendments to the Technical Regulations (Appendix E)

Notes these recommendations and directs the Secretary-General to include the substance of them in the consolidated document on amendments to the Technical Regulations to be submitted to Fourth Congress.

Recommendation 74 - Revision of resolutions of the Executive Committee based on previous recommendations of the Commission for Synoptic Meteorology

Taken into consideration under agenda item 3.8.*

DIRECTS the Secretary-General to inform all concerned.

NOTE : This resolution replaces Resolution 21 (EC-X) which is no longer in force.

Res. 34 (EC-XIV) - MODIFICATIONS TO THE INTERNATIONAL METEOROLOGICAL CODES, SPECIFICATIONS AND DESCRIPTIVE TERMS AND INSTRUCTIONS CONCERNING METHODS OF CODING

THE EXECUTIVE COMMITTEE,

NOTING Recommendations 1, 2, 7, 9, 10, 12, 13 and 15 to 36 (CSM-III) inclusive,

CONSIDERING the need for bringing the universal meteorological forms of messages and codes up to date as proposed by the Commission for Synoptic Meteorology;

DECIDES :

(1) To adopt Recommendation 1, paragraph (2) of Recommendation 2, Recommendations 10, 12, 15 to 27, paragraphs (1), (2) and (3) of Recommendation 29, and Recommendations 30 to 36 (CSM-III) inclusive,

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* See Resolution 48 (EC-XIV) attached

(2) To adopt paragraphs (1) and (2) under RECOMMENDS of Recommendation 7 (CSM-III) with the exception of the proposed changes of knots into metres per second which require consideration by Fourth Congress,

(3) To endorse the approval already given by the President of WMO on behalf of the Executive Committee to Recommendation 28 (CSM-III),

(4) That, as a matter of principle, all future code changes should be introduced on 1 January, except when special or urgent requirements justify a departure from this principle,

(5) That the amendments resulting from the above recommendations shall come into force on 1 January 1964;

DIRECTS the Secretary-General :

(1) To make any necessary minor changes in these amendments in consultation with the president of the Commission for Synoptic Meteorology,

(2) To amend Volume B in accordance with Recommendation 12 (CSM-III) regarding the replacement of "X" by "/" in the meteorological figure codes,

(3) To publish and distribute not later than 30 October 1963 the new code decisions in Volume B, WMO Publication No. 9.TP.4,

(4) To inform all concerned of this resolution at an early date and, in doing so, to send a circular letter with advance copies of the amendments as approved by the Executive Committee,

(5) To carry out fact-finding action with Members on the implementation of Recommendations 7, 15 and 20 (CSM-III).

Res. 35 (EC-XIV) - ORGANIZATION AND OPERATION OF INTERNATIONAL TELECOMMUNICATION CHANNELS MAINTAINED FOR THE EXCHANGE OF BASIC METEOROLOGICAL DATA

THE EXECUTIVE COMMITTEE,

NOTING Recommendations 48 to 52 inclusive, 59, 60 and 61 (CSM-III);

CONSIDERING the need for bringing the organization and operation of international meteorological telecommunication channels up to date, as proposed by the Commission for Synoptic Meteorology,

DECIDES :

(1) To adopt Recommendations 48, 49, 50, 52, 59 and 61 (CSM-III);

(2) To approve Recommendation 51 (CSM-III) subject to the following change : in paragraph 5 of the annex to the recommendation, replace last four words by the following : "after consultation with the president of CSM";

(3) To approve Recommendation 60 (CSM-III) with the exception of its paragraph 9.7 - Precision of Signals - which is referred back to the president of CSM for reconsideration by the CSM Working Group on Facsimile Equipment Standardization.

(4) That the new decisions resulting from the above recommendations will come into force on 1 January 1964;

DIRECTS the Secretary-General :

(1) To make any necessary minor changes in this material in consultation with the president of the Commission for Synoptic Meteorology;

(2) To publish and distribute not later than 30 October 1963 the new telecommunication decisions in Chapter 1 of Volume C, WMO Publication No. 9.TP.4;

(3) To inform all concerned of this resolution at an early date and, in doing so, to send a circular letter with advance copies of the changes, as approved by the Executive Committee;

(4) To advise Members concerned on the possibilities and the procedures to be followed in order to obtain the help of technical assistance experts, if they so wish, for the expeditious implementation of the southern hemisphere exchange scheme, as detailed in Recommendation 52 (CSM-III).

Res. 36 (EC-XIV) - REGIONAL DISSEMINATION OF CODED NEPHANALYSES

THE EXECUTIVE COMMITTEE,

NOTING :

(1) Recommendation 56 (CSM-III),

(2) The difficulties being experienced by regional associations in the dissemination of meteorological information available from artificial satellites due to lack of transmission time on regional circuits;

(3) The offer of the United States to identify the area covered by each Nephanalysis to enable selective distribution to be made in those regions where full distribution is not possible;

URGES Members concerned to arrange that :

(1) Wherever possible, all meteorological satellite information should be disseminated within the regions;

(2) Where full dissemination is not possible, this information be disseminated on a selective basis so as to provide at least the information of immediate interest to the region concerned;

DIRECTS the Secretary-General to publish the map in the annex to this resolution,* which identifies the respective areas of satellite coverage in WMO Publication No. 9.TP.4, Volume C.

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* See the Annex at the end of the Supplement

Res. 37 (EC-XIV) - ORGANIZATION FOR THE EXCHANGE OF METEOROLOGICAL INFORMATION BY FACSIMILE

THE EXECUTIVE COMMITTEE,

NOTING :

(1) Recommendation 62 (CSM-III),

(2) That facsimile exchanges are being carried out in certain regions in accordance with regional associations' decisions,

(3) The existence of certain inter-regional requirements for exchanges by facsimile,

(4) That facsimile exchanges have already been established in some areas on an ad hoc basis,

(5) That no co-ordinated inter-regional exchange exists at present;

CONSIDERING :

(1) The conclusions of CSM on the synoptic use of meteorological data from artificial satellites which :

(a) Recognized the inadequacy of existing telecommunication systems to handle the present and expected volume of data available from artificial satellites, and

(b) Agreed that as long as meteorological telecommunication circuits do not permit the transmission of photographs, the dissemination of Nephanalyses via facsimile is considered most suitable,

(2) The growing requirement for exchange by facsimile of analyses and forecasts for various purposes,

(3) The desirability of exchange by facsimile of the processed data from electronic computers;

REQUESTS the regional associations to inform the Secretary-General of detailed requirements for the inter-regional exchange of meteorological information by facsimile;

URGES regional associations and Members to maintain existing and establish new inter-regional facsimile exchanges as requirements become known;

REQUESTS :

(1) The president of CSM, through its Working Group on Telecommunications to co-ordinate inter-regional exchanges of meteorological information by facsimile, as necessary;

(2) The Secretary-General to obtain from the presidents of regional associations a statement of requirements not later than 28 February 1963.

Res. 38 (EC-XIV) - JOINT WORKING GROUP ON NUMERICAL PREDICTION

THE EXECUTIVE COMMITTEE,

NOTING :

(1) Resolution 1 (CAe-III) and Recommendation 64 (CSM-III),

(2) Regulations 34, 35 and 39 of the General Regulations,

DECIDES :

(1) To establish a Joint Working Group on Numerical Prediction between CAe and CSM with the following terms of reference :

(a) To monitor and facilitate the exchange of research information, computation procedures and results of calculations,

(b) To select situations of special meteorological interest (cyclogenesis, blocking, etc.) to serve as standard situations for testing prediction models,

(c) To co-ordinate details of the preparation of data and analyses of test cases,

(d) To select in advance test days for the automatic exchange of forecasts,

(e) To express its view on the relationship between the accuracy of initial analysis and frequency and accuracy of observations, and on network requirements of numerical prediction and analysis for surface and upper-air networks of stations,

(f) To formulate requirements regarding (i) the use of codes, telecommunications, and telecommunications procedures for numerical prediction purposes, (ii) the acceptable time delay for reception of the various categories of information used for numerical prediction purposes;

(2) To invite the following individuals to serve on the working group

B.R. Döös (Chairman)
E.M. Dobrishman
A. Eliassen
K.H. Hinkelman
F.G. Schuman
One member designated by the
Permanent Representative of Japan

(3) That the joint working group shall report to the president of CAe :

(a) On its conclusions regarding point (f) of its terms of reference by 1 January 1964;

(b) On its overall activities not later than six months before the fourth session of the Commission for Aerology;

(4) That the joint working group shall serve until the fourth session of both the Commission for Synoptic Meteorology and the Commission for Aerology.

Res. 48 (EC-XIV) - REVISION OF PREVIOUS EXECUTIVE COMMITTEE RESOLUTIONS

THE EXECUTIVE COMMITTEE,

NOTING :

(1) Regulation 123 of the General Regulations, concerning the revision of Executive Committee resolutions,

(2) Regulation 20 of the Rules of Procedure of the Executive Committee on the same subject,

(3) Resolution 29 (EC-XIII),

(4) Resolution 47 (III-RA I),

(5) Recommendations 24 (CAe-III), 12 (CIMO-III) and 74 (CSM-III);

HAVING EXAMINED once again its previous resolutions still in force,

DECIDES :

(1) To keep in force the following resolutions :

(EC-II)	7, 48
(EC-III)	4, 19
(EC-IV)	35, 38
(EC-V)	20, 22
(EC-VIII)	2, 3, 24, 28
(EC-IX)	9, 20, 21, 22, 23, 25, 26, 27, 30, 45
(EC-X)	2, 20, 24, 29, 30, 31, 32
(EC-XI)	1, 8, 11, 12, 13, 14, 16, 25
(EC-XII)	2, 3, 4, 6, 8, 12, 13, 15, 22, 23, 24, 25, 28, 30, 34
(EC-XIII)	6, 7, 9, 10, 12, 13, 14, 15, 16, 17, 18, 21, 23, 26, 27, 28, 30

(2) To keep in force, only until 31 December 1962, Resolutions 31 and 32 (EC-XII), 24 and 25 (EC-XIII);

(3) Not to keep in force the other resolutions adopted before its fourteenth session.

NOTE : This resolution replaces Resolution 29 (EC-XIII) which is no longer in force.

Annex to Resolution 36 (EC-XIV) / Annexe à la résolution 36 (EC-XIV)

AREAS OF SATELLITE COVERAGE

ZONES AUXQUELLES SE RAPPORTENT LES RENSEIGNEMENTS RECUEILLIS PAR DES SATELLITES ARTIFICIELS