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RA-V WORKING GROUP ON THE PLANNING
AND IMPLEMENTATION OF THE WWW

ITEM: 3

THIRD MEETING
SYDNEY, 3 to 7 DECEMBER 2001

ENGLISH ONLY

Decisions of XII-RA V, Cg-XIII, CBS-XII And EC-LIII

(Submitted by the Secretariat)

Summary and purpose of document

This document presents a brief summary of significant issues addressed to the World Weather Watch from the Regional Association, CBS and EC.

ACTION PROPOSED

The Working Group is invited to consider these issues during its discussion of its future work programme.

Excerpts from the report of the Fifty-third Executive Council

3.1.11 Regarding the possible impact the outcome of the redesign of the GOS may have on operations and funding of observing networks in developing countries, the Council noted proposals made by CBS which might ameliorate this impact. These proposals included joint arrangements by Members to operate observing stations, roving instrument maintenance teams and networking of weather Radars. Furthermore, data from the RBSNs could be supplemented if RSMCs with geographical specialisation could make available other data such as satellite imagery and derived products to NMHSs. It was also important to facilitate a wider availability of AMDAR data, to study the possibility of making data available from research satellites (e.g., QuikSCAT), and to develop further the telecommunication means that are necessary to enable NMCs to access the data. The Executive Council recognised that such improvement activities were not financially viable for many countries because of funding restraints. The Council supported the principle that some form of joint funding or cost-sharing mechanism could be a promising way to overcome the funding problems especially in developing countries, and recommended that CBS include consideration of joint funding, cost sharing and other innovative ways of funding in its deliberations.

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3.1.20 Regarding data representation, the Council noted that CBS had recognized that the self-description, flexibility and expandability of Table Driven Codes like BUFR and CREX would be the solution to the frequent demands of the rapidly evolving science and technology for representation of new data types and metadata. Table driven codes would also substantially contribute to improving data quantity and quality. The Council noted that CBS had considered a well coordinated phased approach that would comprise a progressive transition to the use of Table Driven Codes. The Council felt that such a transition to be successful would need to include support projects for training and decoding/encoding software distribution. The Council requested CBS to develop further this plan and to submit a report to its next session. The Council took note with appreciation of the proposal of several Members and of ECMWF to make available to all WMO Members encoder/decoder software for the WMO binary codes. The Council emphasized the need for training to prepare the NMHSs in time for the use of BUFR and CREX, as well as GRIB Edition 2. The Council welcomed the offer of the USA to help in providing and supporting training courses for this purpose.

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3.1.22 CBS had noted that advances in technology in all Regions, particularly Internet and World Wide Web facilities, could have a significant impact on the World Weather Watch and NMHSs. Improved technology provides an opportunity for Members to increase collaboration, reduce duplication of efforts, improve cost effectiveness and to enlarge their forecasting and prediction capabilities. These advances can be best utilized through their imaginative application to NMHSs requirements. The Council was thus pleased to note that CBS had appointed a Rapporteur on Innovative Collaboration and looked forward to being kept apprised of the Commission's progress in this area.

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6.1.7 The Council noted that rapid advances in communications and computing technology and the pace of the growth of the Internet were having dramatic impacts on the way the public and other users can access meteorological information. It agreed that among key issues to be addressed in bridging the so-called "digital divide", and which are crucial to the progress and continued development of national public weather services programmes are:

- (a) The demand for more accurate and timely, as well as visually attractive public weather services products, especially warnings, forecasts and information products;
- (b) The definition of the internal NMS standards relating to communications, computing, and dissemination;
- (c) The need to observe standards for the dissemination of public weather services products to the user community taking into account standards of operation in the fields of telecommunications, the mass media, the Internet and in direct computer to computer transfer;
- (d) Standards for international exchange of public weather services products with emphasis on the exchange of warnings, and greater use of the Internet.

The Council encouraged Members to take steps towards standardization by using existing opportunities for example, with regard to lead time definitions and use of probabilities of warnings. It requested that in further developing the Programme, the PWS expert teams, in collaboration with other CBS experts, give due attention to the above points.

Excerpts from the report of the twelfth session of CBS

6.1.31 The Commission recalled the deficiencies in the current RBSNs, the reasons for which ranged from financial considerations to telecommunications difficulties, in some countries linked to civil unrest or war situations. The Commission felt that some of the difficulties could be eased if measures taken in some regions could be adopted in other regions. Those included:

- (a) Joint arrangements by countries to operate observing stations;
- (b) Roving Instruments Maintenance Teams;
- (c) Weather radar networks.

6.1.32 The Commission also suggested that data from the RBSNs could be supplemented if centres such as RSMCs with geographical specialization could consider making available such other data as satellite imagery and derived products for their areas of responsibility (e.g. on a Web site) and AMDAR data, to assist Members who were experiencing difficulties in accessing that information.

6.1.33 The Commission also noted the valuable products available from research satellites. For instance, QuikSCAT was proving to be useful in many countries and its availability and use could be extended. Capacity building in the use of satellite data should include suit-able products from the research and development satellites.

6.1.34 The Commission further agreed that AWSs and buoys could be useful in many areas including inaccessible regions, where the limited observational package could provide significant inputs to weather models to produce improved forecasts. The fact that countries hosting such stations would most probably require external funding and maintenance support was not forgotten.

6.1.35 On the question of funding, the Commission agreed that the concept of national commitments of Member countries for providing observation data was of major importance for international cooperation. Such national commitments as were made for land-based observations (SYNOP, TEMP), should be continued also when redesigning the GOS. The Commission, nevertheless, felt that funding costs should not exceed the possibilities of individual Member countries. That should be particularly so when observations were of substantial value for international use (e.g. in unpopulated areas). In that context, some

funding mechanism aiming at a better balance between funding costs and national budgets could be beneficial for observing net-work operations. The basis for a funding mechanism could aim at covering the running costs. In that context, quality and reliability performance aspects could also be taken into consideration.

6.1.36 The Commission discussed the principle that some form of joint funding or cost-sharing mechanism could be a promising way forward to overcome that problem. Ultimately, all Members would benefit from a comprehensive and reliable network of observations. The Commission felt that the need for such a funding mechanism should be brought to the attention of the Executive Council (see also agenda item 7).

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6.1.53 The Commission took note of a proposal for criteria to assist in the selection of stations to be included in the RBSN. The criteria should be objective and be based upon, *inter alia*, spatial distribution as well as performance and availability of data confirmed by regular monitoring. It agreed that such criteria could be very useful. It therefore invited regional associations to consider the development of such criteria in order to ensure a more objective selection of RBSN stations within the Regions.

6.1.54 The Commission felt that the regional Rapporteurs on the GOS should be kept fully informed on the status of the performance of the RBSNs. It invited Members, possibly through designated focal points within each NMS, and the WMO Secretariat to advise the regional rapporteurs of any changes in the status of the RBSN in their respective Regions.

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6.1.63 The Commission recalled that the fifty-second session of the Executive Council had urged CBS to continue and enhance coordination efforts with GCOS on the implementation of the GSN and GUAN and reiterated that monitoring the performance of the GCOS networks in each WMO Region should be carried out by CBS in collaboration with appropriate regional Working Groups on Planning and Implementation of the WWW. The Commission felt that implementation of that task would be more effective if the reports produced by monitoring centres for GUAN and GSN could be made available to the regional Rapporteurs on the GOS via Internet or by other means. The results of monitoring, particularly with reference to individual stations, would be very helpful to the rapporteurs in carrying out a survey of "silent" stations or of stations providing insufficient numbers of CLIMAT or CLIMAT TEMP reports, to identify problems and to propose remedial action.

6.1.64 The Commission urged Members to continue and, where possible, to strengthen their support for the implementation of the GSN and GUAN, noting that those backbone networks which met the goals of GCOS could also provide benefits for many other objectives.

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6.1.71 The Commission noted that although the basic idea to have the network of CLIMAT reporting stations identical to the RBSN might have been defensible, practice showed that it did not help to improve the availability of CLIMAT reports. The Commission had been informed of the proposal made by the Working Group on Planning and Implementation of the WWW in Region II to establish by Resolution 4 (XII-RA II) — Regional Basic Climatological Network in Region II, a so-called RBCN. That network should include GSN and GUAN stations supplemented by other CLIMAT and CLIMAT TEMP reporting stations needed to meet regional requirements as requested by Thirteenth Congress. The Commission also noted the responsibility of CCI for activities relating to the coordination of general requirements for observations, data collection and supply for all components of the WCP, as well as for the identification of best practices relating to collection. It thus endorsed collaboration with CCI on matters regarding climate networks. The Commission felt that Resolution 4 (XII-RA II) would

provide a valuable justification for maintaining a minimum number of CLIMAT reporting stations, and the list of stations given in the annex to this resolution could serve as a target list for WWW monitoring. The Commission noted that RA II, at its twelfth session, had established an RBCN within the Region, and that the matter would also be discussed at the forthcoming session of RA IV.

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6.3.26 To assure the coordinated implementation of initial procedures for making EPS products available, the Commission endorsed the following action plan:

- (a) The CBS Newsletter should be used as a means to publicize Web sites where information on ensemble forecasting and products were available. Centres making available EPS products were invited to inform the Secretariat of the relevant URL;
- (b) As a first step, and starting immediately, regional associations were invited to refine EPS requirements and initial individual requests from NMHSs and interested EPS running centres should be acted upon;
- (c) The WMO Secretariat should plan to hold regional workshops focusing on EPS training under the appropriate WMO Programme;
- (d) Create under OPAG/DPFS an Expert Team on EPS with the work programme as given under agenda item 9.

6.3.27 The Commission, when considering the availability and use of NWP guidance on the occurrence of severe weather, noted that user requirements would vary depending on the expertise and capabilities of different centres. It further noted that not every centre would be able to run their own NWP system although a number of centres had been successful in doing so over the past few years. It felt that centres planning to set up their own NWP system should:

- (a) Undertake a feasibility study so that the shortcomings could be addressed. The shortcomings might include the initial and ongoing cost of hardware and software, telecommunications cost, maintenance cost, human resources and scientific capability;
- (b) Contact one of the lead centres for initial and boundary conditions, as appropriate.

It should be realized by the centres that that was a long-term commitment and that it would take years to establish.

6.3.28 The Commission noted that some centres had the capabilities to do post processing. Those centres did receive the GRIB data but might not be able to exploit the use of that data to their benefit yet. They were encouraged to develop value-added products adapted to their local needs. Other centres that did not have those capabilities should be encouraged to strive for that solution. It should be realized that it would take time to set up such a system as well.

6.3.29 It encouraged centres that had only static display systems to upgrade to a post-processing system because static display had several limitations. If the centre stayed dependent on those static displays, the following was recommended:

- (a) The special products needed to forecast severe weather must be requested by the individual NMC. An agreement by RSMCs to provide NWP guidance already existed and Members were encouraged to utilize the products made available;
- (b) The centre providing diagnostic products relevant to severe weather, based on NWP, would not take into account local conditions. The centre that used those calculated indices must be aware that those products were solely NWP-based with no human intervention or quality control. Those products should therefore be carefully evaluated;
- (c) Diagnostic products relevant to severe weather might need to be adapted to local

conditions, following evaluation and case studies. Examples of diagnostics products were noted by CBS-Ext.(98);

(d) The specialized centres should then monitor requests and provide the special products agreed upon.

6.3.30 The regional associations were invited to address the above requirements where appropriate. The Commission encouraged exchange visits of forecasters from centres that dealt with forecasting of severe weather. The Commission was informed that in the case of RA VI, the ECMWF was developing and implementing an operational medium-range severe weather programme for the benefit of the Members of the Region and other Regions, as appropriate.

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8.13 The Commission recalled that much emphasis was put by CBS-Ext.(98) on improving and strengthening the links to the regional associations through ensuring their greater involvement in planning, implementation and coordination of the WWW and, most importantly, through an improved mechanism for providing feedback to CBS. The Commission felt that much progress had been achieved through the arrangements implemented, which included:

- (a) The ICTs focusing on implementation issues of the regions;
- (b) The membership of the regional rapporteurs on the WWW component programmes in the corresponding ICTs (who were thus able to present early the regional views on emerging WWW implementation aspects);
- (c) The inclusion of two experts from the regions in the ICTs of their choice as a capacity building measure;
- (d) The regular (since CBS-XI) participation of the chairpersons of the Regional Working Groups on Planning and Implementation of the WWW in sessions of CBS (who were thus able to present the views of their Region on all activities of CBS).

The Commission re-emphasized the importance of the involvement and the active participation of experts from developing countries in the ETs and ICTs of each OPAG. The Commission also felt that the technical conferences held in conjunction with sessions of CBS had, *inter alia*, helped more developing countries from all regions to participate in the session of the Commission.

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9.3 The Commission confirmed the principles for the role and composition of the ETs and ICTs of the OPAGs, as defined in Resolution 2 (CBS-Ext(98)) — Working structure of CBS, taking into account the adjustments agreed by the Commission under agenda item 8. It noted that the composition of the ICT membership, which included the chairpersons of the ETs of the corresponding OPAG and the relevant regional rapporteurs as *ex officio* members, ensured a balanced regional representation. It also re-affirmed the importance that each regional association nominate two experts for inclusion in the ICT membership for capacity building, in consultation with the chairpersons of the regional Working Groups on Planning and Implementation of the WWW. The Commission agreed upon the following criteria for the selection of experts for the respective membership of the ETs:

- (a) Expertise shall be the prime criteria. The expertise required included the expertise on the relevant technology, but also the expertise related to the feasibility, constraints and impact of the introduction and operation of new proposed techniques, taking account of the various environment and capabilities of NMSs. Experts from developing countries or countries with economies-in-transition might in particular provide the latter expertise;
- (b) The optimum number of experts in any ET should be in the range five to seven, taking into

account both the working efficiency and the financial support for meetings. Experts from relevant international organizations were supplementary experts;

(c) The balance or diversity of regional representation might be difficult to achieve but should be taken into consideration, provided that the above criteria could be met.

Excerpts from the report of the Thirteenth World Meteorological Congress

3.1.0.12 Congress noted with satisfaction the continuing increase in the availability of data produced by other components of the GOS such as Aircraft Meteorological Data Relay (AMDAR) System, drifting and moored buoys, radar and wind-profilers. In view of the marked concentration in the AMDAR data available over Australia, Europe, North America and the North Atlantic, Congress stressed that attention should be focussed on data-sparse areas and in particular the NMSs in the developing countries should have access to real time wind and temperature data. Congress welcomed the initiative by the AMDAR Panel to conduct a pilot project in Southern Africa.

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3.1.0.16 Congress was pleased to note the complementary strategies of CBS and the regional associations for development and implementation of the GTS. These strategies assimilated new opportunities in telecommunication techniques and services, with a view to attaining a more cost-effective GTS, while taking into account the telecommunications infrastructure and cost available in various areas. Congress noted with appreciation the various events that were implemented for providing information and advice to Members on these new data-communication techniques and services, and it requested the Secretary-General to pursue these activities in the future.

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3.1.0.18 Congress was pleased to note the rapid development of the RMTNs. In Region IV, the two-way satellite-based RMTN was fully operational. Region VI was modernizing the RMTN by implementing a commercially-provided managed network service, which was expected to be operational by the end of 1999 in most of the Region. Region III had just started a similar project. In Region I, sub-regional satellite-based networks, such as SATCOM coordinated by ASECNA, covering the western and central part of Africa and complemented by satellite-based telecommunications and leased circuits in other parts, were upgrading the RMTN. In Regions II and V, a combination of medium or high-speed circuits, as well as Public Data-communication Networks were used to improve the RMTNs. Congress encouraged Members and the Regional Associations, with the technical support of CBS, to pursue their fruitful efforts towards cost-effective upgrade of the GTS, while giving particular attention to the specific areas where the GTS is weak or deficient, particularly in developing regions and areas with adverse conditions.

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3.1.0.20 Congress noted that while past deployment of Data Collection Platforms (DCPs) had not been entirely successful, advances in technology had made newer systems much more reliable. It encouraged Members and donors to utilize these systems, while keeping in mind that they be deployed in a manner that ensures that observational data collected via DCPs is successfully transmitted and made available to the WWW system.

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3.1.0.34 The ever increasing consequences of severe weather events and their associated impact around the globe has emphasized the need for meteorological Services to enhance capacity and skills to monitor and predict severe weather. Congress noted that CBS was studying the extension of NWP output to provide more explicit guidance on the occurrence of severe weather. It invited regional associations to review their requirements and available capacity with

a view to implementing relevant regional procedures on the basis of CBS developed approaches for model output products as forecast guidance on the occurrence of severe weather.

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3.8.0.5 Congress noted with satisfaction the improvements in the level of implementation of the scientific and technical programmes of WMO in Member countries. However, it noted with concern the inadequacies that exist in the networks of observations, in particular, upper-air networks; telecommunications; data-processing facilities; and information technology in some other Member countries. It recognized the usefulness of introducing new technology such as Emergency Management Weather Information Network (EMWIN) in the South-West Pacific Region and Internet to help solve the problems of the collection and transmission of meteorological data and products. In this connection, Congress requested the Secretary-General to continue to provide the necessary support, as appropriate, to the Members concerned. It also requested the Secretary-General to continue to assist Members in addressing their Y2K problem.

Excerpts from the report of the twelfth session of RA V

4.2.4 During the revision and updating of the RBSN, the Association took into account the global and regional requirements, as well as the comments of the Rapporteur on Regional Aspects of the GOS on the main deficiencies in the network, and attempted to strike a balance between the "ideal" network and what was realistically possible. In adopting Resolution 2 (XII-RA V), containing the revised regional basic synoptic network, the Association recognized that the distribution of stations could still be improved and that there were still areas where the number of stations was far from sufficient. The Association therefore requested the Working Group on Planning and Implementation of the WWW in RA V to continue to study the design of the network and propose improvements thereto.

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4.2.16 The Association requested its Rapporteur on Regional Aspects of the Global Observing System to investigate, in consultation with relevant Permanent Representatives with WMO, all meteorological data acquisition systems in data-sparse areas of the Region operated by an agency other than the NMS of the country concerned. The rapporteur should list all known non-NMS observing systems in the data-sparse areas of the Region and for each should comment on the exposure of the station, its data processing and data dissemination. He should make recommendations on how those observations might be used to augment the RBSN and propose ways of identifying those non-NMS stations in a manner that would distinguish them from NMS stations.

4.2.17 The session noted that instruments to measure ocean swells, perhaps on moored buoys, would be very useful for providing short-term forecasts of damaging swells, particularly for small Pacific island countries, and requested its Rapporteur on Regional Aspects of the Global Observing System to review that issue further.

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4.3.17 The Association requested its Working Group on Planning and Implementation of the WWW in Region V to coordinate the programme of WWW data and products to be transmitted on the EMWIN and on the GTS component of the ISCS with a view to meeting NMHSs requirements to the extent feasible.

4.3.18 The Association requested its Subgroup on Regional Aspects of the GTS to study the use of managed data-communication network services for implementing the RA V RMTN, including the administrative, financial and operational aspects. It endorsed the establishment of

an ad hoc group consisting of Messrs M. Hassett (Australia), T. S. Wong (Singapore) and K. Alder (New Zealand) to study the matter, with due consultation with the Members of the Region. It also requested the subgroup to investigate regional operational aspects of the use of the Internet for the exchange of meteorological information.

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10.8 The Association noted the important role of bilateral and multilateral assistance in strengthening and developing the NMHSs in the Region and expressed its appreciation for that assistance. The Association requested Members to keep the WMO Secretariat informed of such types of assistance. In that respect, the Association noted with satisfaction Australia's contribution, through Aus AID and the Bureau of Meteorology, to support meteorological services in the Region. The Association also noted with satisfaction the cooperation that existed between WMO and other regional organizations, such as SPREP and ASEAN, and requested the Secretary-General to take the necessary measures to ensure that such cooperation continued in the future and that due account was taken of ongoing projects and programmes in the Region, such as the tropical cyclone project funded by the European Union.