WORLD METEOROLOGICAL ORGANIZATION

WORLD WEATHER WATCH

REGIONAL ASSOCIATION I
WORKING GROUP ON PLANNING AND IMPLEMENTATION OF THE WWW

(Fourth Session)

FINAL REPORT

CAIRO, 19-23 MARCH 2001

RA I WORKING GROUP ON PLANNING AND IMPLEMENTATION OF THE WWW
FOURTH SESSION

(Cairo, 19-23 March 2001)

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7. CLOSURE OF THE SESSION

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1. OPENING OF THE SESSION (agenda item 1)

1.1 At the kind invitation of the Government of Egypt, the fourth session of the Working Group on Planning and Implementation of WWW in RA I was held at the Egyptian Meteorological Authority facilities in Cairo. The session was called to order at 10.00 a.m. on Monday, 19 March 2001, by Mr William Nyakwada (Kenya), Chairman of the Working Group on Planning and Implementation of the World Weather Watch (WWW) in Region I.

1.2 Mr Nyakwada, in his capacity as Chairman of the Working Group, welcomed all those attending the opening ceremony of the session. He expressed appreciation to the Government of Egypt for kindly inviting the working group to hold its session in Cairo and to the Egyptian Meteorological Authority for availing us the excellent conference facilities to the session. He reminded the session the high responsibility that the region had bestowed on the group and assured the session his confidence in achieving the intended objectives. Mr Nyakwada emphasised the need for improved data availability from the region especially at that moment when the provision of services was taking a global approach. He noted that the visibility of NMHSs was critical and can only be achieved through quality output services that can only be achieved with data.

1.3 On behalf of Professor G.O.P. Obasi, Secretary-General of WMO, Mr D. Schiessl, Director of the World Weather Watch Basic Systems Department of the WMO Secretariat, thanked Dr A.M. Rebba, Permanent Representative of Egypt with WMO and Chairman of the Board of Directors, Egyptian Meteorological Authority, for finding time in his busy schedule to address the fourth session of the working group. He also thanked the Government of Egypt for hosting the session and for the excellent arrangements and facilities. He indicated the meeting would review the progress made in the implementation of the regional components of WWW. It would identify deficiencies and develop a strategy to address deficiencies. He noted that the session will have to respond to decisions and guidance given by the Thirteenth WMO Congress, the Executive Council and the last session of the Association in developing its conclusions and recommendations. Mr Schiessl expressed his thanks to the Chairman and core members of the group for their contribution to the work of the group.

1.4 Dr A.M Rebba, Permanent Representative of Egypt with WMO and Chairman of the Board of Directors, Egyptian Meteorological Authority, warmly welcomed the participants. He conveyed to the session greetings from his Excellency Dr Ibrahim El-Domeiry, Minister of Transport. Dr Rebba noted that the results of meeting was very important in the field of meteorology and its applications and would reflect directly to many fields, in particular, construction and housing planning, agriculture, environmental pollution studies, scientific research and tourism. Dr Rebba thanked WMO for according them the opportunity of hosting the meeting in Cairo, invited the session participants to the celebration of the WMO day and declared the session officially opened.

2. ORGANIZATION OF THE SESSION (agenda item 2)

2.1 Adoption of the agenda (agenda item 2.1)

The session adopted the agenda as given in the beginning of the report.

2.2 Other organizational questions (agenda item 2.2)

2.2.1 The session agreed on its working hours. There were 24 participants from 12 countries, ACMAD, ASECNA, and WMO. The list of participants is shown at the beginning of the report.

3. REPORT OF THE CHAIRMAN OF THE WORKING GROUP (agenda item 3)

3.1 The session noted the report of the Chairman, which gave an account of the status of relevant co-ordination activities and strategies developed to address WWW capacity building issues as part of the work of the Working Group for the period 1999 to 2000. He acknowledged the work accomplished by Mr K. Essendi, the previous chairman. He noted that the region faced many challenges as a result of the rapid technological developments. Issues raised in the report are addressed under relevant agenda items.

4. CONSIDERATION OF THE DECISIONS OF THE TWELFTH SESSION OF RA I, THERTEENTH CONGRESS CBS-XII AND EC-LII INCLUDING REQUIREMENTS FOR WWW SUPPORT TO OTHER PROGRAMMES (agenda item 4)

4.1 The working group focussed its work in response to the specific major tasks which XII-RA I agreed should receive priority. These were further design and monitoring of the implementation and operation of the regional basic synoptic network (RSBN), review of regional telecommunication networks and monitoring their implementation and operation, monitoring the status of implementation and operation of regional Data-processing Centres, emerging centres and National Meteorological centres, including pilot projects on computerization. Others were further development of regional data management functions, including regional data representation and codes and development of regional practices and monitoring of implementation and operation of PWS in the region.

4.2 The session was informed and took note of Cg-XIII, CBS-XII and EC-LII decisions and guidance. It took action under the relevant agenda items of the session on the following relevant issues addressed to the Regional Association.

- To address concern regarding low availability of upper air data.

- To pursue efforts towards cost-effective upgrade of the GTS in particular in areas where it was weak or deficient.

- To review potential areas where GDPS could contribute in the provision and use of environmental quality monitoring and prediction products (air quality modelling, air pollution, prediction of stratospheric ozone, ultraviolet-B index products).

- Implementation plan for the Improved MTN Project in phase II include RTHs Dakar, Nairobi, Algiers, and Cairo who are urged to begin implementation discussions as soon as possible so that real progress could be done.

- To refine EPS requirements and that initially individual request from NMHSs and interested EPS running centres be acted upon and regional workshops to explain the EPS approach.

- Assuring availability and use of NWP guidance on the occurrence of severe weather at NMHSs through:

    - creating or developing further GDPS facilities;
    - developing more expertize;
    - assessing NMC training needs for severe weather forecasts;
    - conducting research on their own local severe weather.

- To consider regional views on long-range forecasting infrastructure.
- Consider forecasts broadcast by international media organizations

- Consider cross border exchange of warnings,

5. WWW COMPONENTS, SUPPORT FUNCTIONS, AND STATUS OF IMPLEMENTATION AND OPERATIONS INCLUDING REPORTS BY THE RAPPORTEURS/CO-ORDINATOR

5.1 Status of the operation of the world weather watch

2000 Annual Global Monitoring of the WWW

5.1.1 The session noted with concern the low availability of observational data as evidenced by the condensed summary of the analysis of the results of the 2000 annual global monitoring of the operation of the WWW based on responses from 21 RA I Members and the Special MTN monitoring (SMM) is given in the Table below:

Type of data	Reports received from 1 to 15 October 2000 at MTN centres	Reports expected to be prepared*
SYNOP	49% (SMM 52%)	88%
Part A of TEMP	31%	48%
CLIMAT	26%	62%
CLIMAT TEMP	33%	64%

Note: the percentages are calculated with the RBSN as the reference
* At stations implemented according to WMO-No. 9, Vol. A (July 2000)

5.1.2. Clearly the availability of observational data from Region I is not satisfactory. From detailed information presented to the session it was noted that the availability of reports was not homogeneous within the Region. In this connection the meeting noted:

- No SYNOP reports were received from Angola, Burundi, Djibouti, Eritrea, Ethiopia, Guinea Bissau, Lesotho, Liberia, Sao Tome and Principe, and Sierra Leone. Less than 20 per cent of the expected SYNOP reports were received from Botswana, Democratic Republic of the Congo, Equatorial Guinea, Gambia, Ghana, Guinea, Malawi, Mozambique, Somalia, United Republic of Tanzania, and Zambia. Less than 50 per cent of the expected SYNOP reports were received from Bouvet Island, Cameroon, Chad, Congo, Diego Garcia, Nigeria, Rwanda, Seychelles, Uganda, and Western Sahara.

- No TEMP reports were received from Angola, Democratic Republic of the Congo, Eritrea, Ethiopia, Ghana, Liberia, Malawi, Mozambique, Nigeria, Uganda, United Republic of Tanzania, Seychelles, Somalia, and Zimbabwe. Less than 20 per cent of the expected TEMP reports were received from Botswana, Central African Republic, Chad, Diego Garcia, Libyan Arab Republic, Mauritius, Sudan, and Zambia. Less than 50 per cent of the expected TEMP reports were received from Ascension Island, Burkina Faso, Cape Verde, French Islands between 30^0 and 60^0, Gabon, Kenya, Mali, Mauritania, South Africa, and St Helena Island.

5.1.3 The session recommended that the Association urges all Members and, in particular, those mentioned above to spare no efforts and resources and take emergency measures in re-activating their observational activities, data collection and regional and global dissemination programmes for the benefit of their national meteorological services and WMO programmes.

5.1.4 There was no significant change during that period except for slight increase in the availability of SYNOP and TEMP reports that can be noted in the period 1998 – 2000 compared to the period 1996 – 1997. As regards the timeliness of the reception on the MTN, 40, 46 and 49 per cent of the required SYNOP reports were available within one hour, two and six hours,

respectively, after the time of observation. Likewise 25 and 31 per cent of the required TEMP reports were available within two and twelve hours, respectively, after the time of observation.

5.1.5 Several stations from which SYNOP and/or TEMP reports were received, although these stations were not indicated as implemented in Volume A of WMO Publication No. 9 were also noted and recommended their inclusion in Volume A and in the RBSN where appropriate.

5.1.6 The meeting recommended that the monitoring procedures and related processing of results be revised to reflect actual state of daily real-time operational implementation not with standing the stated regional requirements (e.g. where a Member notifies that only one RAOB ascent is made, monitoring statistics should be made on the availability of that ascent)

5.2 Observing System, including satellite activities

5.2.1 The session noted with satisfaction the report of M. Saloum (Niger), the Rapporteur on Regional aspects of GOS, which summarized the situation with regard to regional aspects of the Global Observing System in Africa, in particular concerning the implementation of the RBSN, in-situ observing systems and climatological observations.

5.2.2 The session noted that of the 122 silent RBSN stations 83% belong to the national component of countries at war or experiencing civil unrest (Angola, Democratic Republic of the Congo, Guinea Bissau, Liberia, Sierra Leone, and Somalia). However, the study also showed that the implementation of surface observation programmes at RBSN stations had improved noticeably in a number of countries, especially those in northern Africa, the ASECNA member States, and southern Africa. The study revealed that a reception rate at MTN of 60% to 94% indicated that the station produced the SYNOPs but experienced telecommunication data collection problems between 0000 and 0600 UTC. Reception rates below 50% indicate serious problems with transmission over the HF/SSB and incomplete and irregular observation programme associated with cuts in observing personnel. Suspended or closed observation programmes were mainly due to war or social upheaval. A non-operational GTS link between NMC Addis Ababa and RTH Nairobi was also identified as cause for non-availability of data (Possible solutions were discussed under item 5.3).

5.2.3 The session noted that 42 of the 93 upper air stations are silent leading to large gaps in central and eastern Africa, with some gaps also in western Africa (Ghana, Nigeria, and northern Mali), northern Africa (central and southern Algeria, Libya, southern Egypt, Sudan, etc.) and southern Africa (northern and western sectors). The lack of or poor operations of Radiosondes Observing System (RAOB) stations could be attributed to shortages of the necessary equipment and high cost of consumables, associated with the budgetary constraints and maintenance problems encountered by NMSs in RAI.

5.2.4 The session requested the GOS regional rapporteur to be fully informed of the state of operation of the national components of the RBSN. It recommended that the Regional Associations urge Members to nominate focal points within each NMS who will inform the rapporteur and the Secretariat of all changes occurring in the national observing network with a view to timely updating of the RBSN and Volume A.

5.2.5 The session was informed that there are some large-scale projects studying atmosphere-ocean interaction with participation by a number of African countries, notably, PIRATA (Pilot Research Moored Array in the Tropical Atlantic) which includes scientists from Cape Verde, Côte d'Ivoire, Guinea, Mauritania, Morocco and Senegal. Another is WIOMAP (Western Indian Ocean Marine Applications Project), which includes the riparian Members of the western Indian Ocean, namely the Comoros, Kenya, Madagascar, Mozambique, Réunion, Seychelles, Somalia, South Africa, and the United Republic of Tanzania.

5.2.6 To assure cross-programme co-ordination between CBS and JCOMM on maritime

observing systems implementation programme at regional oceanic basin level, it is recommended that the regional rapporteurs for GOS and that for maritime meteorological services interact and co-ordinate their work closely.

5.2.7 The session invited the Rapporteur on GOS to monitor the GCOS networks using reports produced by the GSN and GUAN monitoring centres as recommended by CBS X-II. It was noted that these reports could be made available via the Internet or other means.

Regional Basic Synoptic Network

5.2.8 The session agreed that a more objective criteria for inclusion of stations is necessary taking into account spatial distribution and availability of data according to monitoring results. Also the frequency of the observational programmes and related performance depend on the presence of sufficient observers.

5.2.9 The two types of requirements and characteristics considered in the proposal for inclusion or exclusion of a station in the RBSN are:

- The target requirements TRQ's are defined in accordance with the requirements in the Manual on Global Observing System. These could be regarded as the level of performance that should be aimed at for all stations. The minimum requirements MRQ's form the criteria for inclusion or exclusion.

- Target requirements (TRQ's) refer to the desired characteristics of the network of stations.

- Minimum requirements (MRQ's) refer to the threshold characteristics which are decisive for the inclusion or exclusion of a station.

- Filling Gaps requirement (FLG's) refer to an isolated station candidate for filling a gap in areas with no station; this requirement is related to spatial distribution (the programme created by Mr Daan is appropriated to allow a station (operational or not) to meet that requirement.

5.2.10 In the annex to this paragraph, examples of TRQ's and MRQ's for RBSN stations their classification and spatial distribution are indicated.

5.2.11 The session reviewed the proposal for a revised RBSN in Region I developed by the Rapporteur based on the above objective criteria and recommended the revise RBSN list as given in the Appendix B (EXCEL format) for consideration and adoption by RA I.

Regional Basic Climatological Network (RBCN)

5.2.12 The session noted that CBS-XII reviewed the definition of networks of CLIMAT and CLIMAT TEMP and concluded that although the basic idea to have the network of CLIMAT reporting stations identical to the RBSN's may have been defendable, practice showed that it did help to improve availability of CLIMAT reports. It felt that establishment of a Regional Basic Climatological Network (RBCN) would provide a valuable justification for maintaining a minimum number of CLIMAT reporting stations. Taking into account similar practice of two Regional Associations and CBS recommendations the session reviewed the proposed list of stations developed by the rapporteur using agreed principles and density criteria. It recommended the list of RBCN in RA I given in the Appendix C (EXCEL format) for consideration and approval by the Regional Association through a specific resolution.

Availability of Aircraft Reports

5.2.13 Three airlines, South African Airways , Air Namibia, and Air Mauritius are participating in the only AMDAR programme in Africa. The degraded state of the network of upper air stations in Africa very much increase the need for Members to urge their national airlines to join in providing AMDAR data since they would be one of the major beneficiaries of improved quality of forecasts. In order to do so, they are invited to submit requests for assistance to the AMDAR Panel through the WMO Secretariat.

Space-based Sub-system

5.2.14 According to recent information from the WMO Secretariat, several of the region's meteorological offices possess the satellite image reception equipment. Percentage of Members with equipment was APT 80%, HRPT 25%, WEFAX 82% and HR 34%. With implementation of the MSG two factors will come into play in Africa. First the conversion of the low-resolution analogue services called APT from the polar-orbiting satellites and WEFAX from the geostationary satellites to new digital services called LRPT and LRIT, respectively. The new digital services will provide more capabilities than exists from the high-resolution data of the present satellite systems now in orbit. In fact, the new LRPT and LRIT services could contain most of observations and products required by a NMHS. The second factor that will contribute to a major impact within NMHSs in the Region will be the installation of high-resolution receivers in most all NMHSs. This will be accomplished by the Preparation to Utilize Meteosat Second Generation in Africa (PUMA) Project. EUMETSAT's second generation of Meteosats, due to enter service in 2002-2005, will provide NMHSs with an order of magnitude more data and the PUMA Project will ensure that the latest receiving and processing systems will be available throughout the Region. Africa will then be amongst the best-equipped Regions throughout the world. It is essential that all Members of the Association prepare relevant human resources to efficiently exploit these new facilities.

5.3 Global Telecommunication System (GTS)

5.3.1 The session noted with satisfaction the report of M. Sonko, (Senegal) the Coordinator of the Subgroup on Regional Aspects of the GTS. The report noted the activities conducted by the sub group and the state of implementation and operations of meteorological telecommunications in RA I, including recommendations to address identified gaps.

National Meteorological Telecommunication Networks

5.3.2 Some very serious gaps persist in terms of data collection at national level, as revealed by spot checks and deferred checks on the operation of the GTS(see item 5.2). The reasons for the telecommunications problems are as follows:

- Total or partial lack of the equipment needed for national data collection;
- Breakdown or obsolescence of the equipment used for national data collection;
- Use of inefficient techniques;
- Under-automation of NMCs;
- Ineffective connections or no connections between NMCs and the relevant RTH; and
- Failure to adhere strictly to the GTS operating procedures at NMCs, etc.

Point-to-point circuits

5.3.3 The meeting reviewed and updated the information concerning the status of implementation of the GTS circuits in Region I. Relevant details of the circuits are given in the diagram included in the Annex to this paragraph.

5.3.4 The RMTN plan comprises 88 circuits distributed as indicated in the table below:

	High speed (above 9.6 kb/s)	Medium-speed (1200 -9600 b/s)	Low-speed (50-300 baud)	Not implemented / not operational	Total
MTN	1	4	1	0	6
Interregional	3	3	6	0	12
Regional	15	12+3	19+2	19	70
Total	19	22	28	19	88
Status in October 1998	*6*	*18*	*41*	*22*	*87*

5.3.5 The RMTN plan comprises 88 circuits of which 69 have been implemented and are in operation. Of these 69 operational circuits, there are:

(i) The six circuits on the MTN: One circuit operates at 64 kbit/s (Nairobi-Offenbach), four circuits are leased telephone-type circuits (Algiers-Toulouse, Nairobi-Cairo, Dakar-Toulouse and Cairo-Moscow) operate at medium speed (9.6 or 4.8 kbit/s) using X.25 protocol. One circuit operates at low speed (Cairo-New Delhi).

(ii) The twelve interregional circuits: Three are digital circuits at 64 kbit/s (Casablanca-Toulouse, Nairobi-Toulouse and Pretoria-Washington), three are telephone-type at medium speed (Algiers-Madrid, Niamey-Toulouse and Tunis-Toulouse). The other 6 interregional circuits are low speed telegraphic circuits.

(iii) Fifty-one regional circuits: Fifteen circuits are operating at high speed (19.2 to 64 kbit/s) and twelve circuits operate at medium speed; The three circuits Nairobi-Niamey, Nairobi-Algiers and Nairobi-St Denis are not physically implemented, but medium speed virtual circuits are established via RTH Toulouse. Nineteen circuits are still operating at low speed (50-100 baud) and two are operated through METEOSAT DCPs. In the case of sixteen circuits that are not implemented and three are not operational, the NMCs concerned exchange meteorological traffic over AFTN circuits as back-up operational arrangements with the RTH or another NMC.

5.3.6 The session noted that in addition to the gaps noted in national message collection, the following problems have been noted:

5.3.7 Many main regional circuits and regional circuits have not entered into service or require improvement: Algiers/Dakar, Algiers/Cairo, Algiers/Niamey, Algiers/Casablanca, Lusaka/Pretoria, Tripoli/Alger, Tripoli/Cairo, Dakar/Bissau, Pretoria/Luanda, Dakar/Freetown, Dakar/Monrovia, Dakar/Lagos, Niamey/Accra, Brazzaville/Kinshasa, Dakar/Banjul, Dakar/Sal, Nairobi/Kigali, Nairobi/Bujumbura, Lusaka/Harare. Many NMCs are still not automated.

5.3.8 The session noted with appreciation the very significant improvement in the implementation of the RMTN since the twelfth session of RA I (October 1998). Several GTS circuits had been upgraded to medium/high speed via leased lines or public data networks. Several regional circuits operate at high speed via leased circuits with RTH Nairobi or via Public Data Network services with RTH Pretoria. Several regional circuits in the western and central part of Africa were upgraded from low speed to high speed through the implementation of the satellite-based network SATCOM co-ordinated by ASECNA. There was significant progress in the introduction of the data communication TCP/IP protocol, in compliance with CBS recommendations.

5.3.9 The session was informed of complimentary data communication internet means implemented in the South West Indian Ocean to address current GTS gaps in that subregion as given in the diagram included in the Annex to this paragraph. The meeting noted with appreciation the offer of RMSC La Reunion (France) to receive Ethiopia data via e-mail and inject them to GTS and to provide Internet/GTS interface guidelines software for this purpose to other interested centres in the region. It was noted that while use of Internet to address urgent shortcomings, the Internet is not part of the GTS and measures must be taken to ensure the appropriate security at the interface stage with the GTS.

5.3.10 With regard to Regional Circuit Brazzaville-Kinshasa the session was informed that action was in progress to implement the upgrade. NMC Morocco noting that it operates the inter regional circuit Casablanca-Toulouse at 64 kb/s therefore expressed the need to upgrade to high speed the Dakar-Casablanca regional circuit. The session invited Morocco, Senegal/ASECNA to enter into discussions for implementation. Egypt informed the session on the current non-operational status of the Algiers-Cairo link. To address this deficiency Egypt proposed the possibility of establishing a virtual link to Algiers via Toulouse. This solution should be studied bilaterally as a matter of priority. The session requested WMO to facilitate consultations between the RTHs concerned with a view to resolving of the problem.

Radio broadcasts

5.3.11 Three RTHs (Nairobi, Dakar, and Pretoria) are operating radio facsimile and Radio Teletype (RTT) broadcasts. The session emphasized that HF radio broadcasts have high recurrent costs for their operation and maintenance and a limited efficiency. In view of these high recurrent costs and the aging equipment, several RTHs have already reduced the number of transmitting frequencies and are planning to phase-out their HF radiobroadcasts in the near future. Noting the progress made in the implementation of the RMTN, the session confirmed the plan to phase out HF radio broadcasts. It urged NMCs still relying on the reception of HF broadcasts to implement more effective telecommunications means, with possible cooperation assistance. Centers operating HF broadcasts should also identify the remaining users and assist them in identifying other means for receiving information.

Satellite-based distribution systems

5.3.12 Satellite-based data-distribution systems play a crucial role as components of the RMTN in the Region.

METEOSAT DCP and MDD systems

5.3.13 The Data Collection System (DCS), including also the DCP Data Retransmission System (DRS), and the Meteorological Data Distribution (MDD) system, which are currently provided via Meteosat-7 were integrated into the RMTN as a complementary means for the national collection of observational data and for the distribution of observational data and processed information from RTH/RSMCs. The session noted that, in addition to the DCPs already in operation, a large number of new DCPs are being implemented in the framework of the HYCOS programme. These DCPs provide both hydrological and meteorological data. The session stressed the crucial importance of the DCS and MDD services for all NMHSs in Africa. It noted with appreciation that several products generated by African RSMCs, ACMAD and DMCs were included in the MDD programmes of transmission. In the framework of the EUMETSAT programme for Meteosat Second Generation (MSG), the current MDD and DRS services will be replaced by the fully digital LRIT and HRIT transmissions, while the DCS will be maintained and further extended.

SADIS

5.3.14 SADIS terminals are already installed or will be installed in most countries of Region I. The satellite facilities operated by UK (UKSF) which support SADIS, the ICAO satellite-based distribution system for meteorological products for civil aviation, will also support a planned WWW information programme. Although the UKSF WWW information programme is mainly aimed at meeting Region II requirements, it would provide a useful complement to WWW centres in Region I.

RETIM and FAX-E

5.3.15 France and Germany are operating satellite-based distribution system called RETIM and FAX-E respectively, which also cover the northern part of Region I. The services are provided via the EUTELSAT II satellite.

The Internet

5.3.16 An increasing number of NMHSs are being equipped with access to Internet, which provides considerable advantages in a wide range of activities, including the working and coordination arrangements in the framework of regional WWW, CBS and other WMO programmes.

RTHs and NMCs

5.3.17 All the RTHs in the Region are automated. The session was pleased to note that an increasing number of NMCs have been automated, taking benefit from available, affordable and maintainable technologies based on PCs and the TCP/IP stack of data communication protocols. The session underlined that the rapid development in the field of Information and Communication Technology was providing better opportunities for modernising National Meteorological Centres. The automation of NMCs, besides improving the GTS/GDPS functions, also provides a good foundation for the further development of NMHSs.

General status

5.3.18 Despite very significant improvements in the implementation and operation of the various components of the RMTN, the session underlined that there were still serious shortcomings in the GTS in some parts of Africa, at the regional and national level. General telecommunication infrastructure and services were in fast development including the Internet, but still at costs that were difficult to afford by several NMHSs. The remedial actions to overcome the shortcoming at short and longer term are addressed under agenda item 6.

Radio-frequencies for Meteorological Activities

5.3.19 The session noted with appreciation the very favourable outcome of the World Radiocommunication Conference 2000 as regards the several items of concern for meteorology. The active participation of WMO in the ITU preparatory activities was instrumental in ensuring that meteorological requirements were recognized and supported. Meteorological requirements in the band 401-406 MHz for meteorological aids (radiosondes) and meteorological satellite operation were acknowledged for the foreseeable future, and current allocations were not changed in the band 1670-1710 MHz, which is a main band for meteorological satellite operation world-wide and in its lower part for radiosondes operation by many NMHSs. The allocations to spaceborne passive remote sensing of increasing importance for meteorology in the frequency range 71-275 GHz were re-organized to meet present and foreseeable future requirements, taking into account technological and scientific advances. The S band (2700-2900 MHz) that is used worldwide by meteorological radars, was not retained by WRC-2000 as a band for the IMT-2000 operation (third generation of mobile phones). However, the issue may be reconsidered by WRC-2006.

5.3.20 The pressure on radio frequency bands would however continue with the increasing development and expansion of new radiocommunication systems. EC-LII re-emphasized the importance of continuing to defend the frequency allocations to meteorological systems and environmental satellites. The session was informed that the preliminary agenda for the next World Radiocommunication Conference (WRC-2003) included items of importance for meteorology, including the band 1683-1690 MHz, and it noted that CBS and the Secretariat are pursuing their participation in the relevant ITU-R activities. The session stressed the importance that WMO continue informing the NMHSs on the question, and that the NMHSs co-ordinate these issues with their national telecommunication administration.

5.4 Data-processing and Forecasting Systems (DPFS)

5.4.1 The session noted with satisfaction the report of A. Cherifi (Morocco), the Rapporteur on Regional aspects of GDPS, which identified regional priority requirements for application and use of GDPS products and proposed possible approaches, which will facilitate ways and means of addressing the identified requirements.

5.4.2 The session noted that there is visible improvement in the field of Numerical Weather Prediction (NWP) in RA I, however, not all National Meteorological Centres (NMCs) run NWP models. The resolution and the forecast skill scores of short-range NWP outputs are gradually improving keeping pace with progress in the data assimilation of a-synoptic observations and the physical parameterization. Some countries are embarking on developing and implementing short-range NWP models in operational phase, and/or are equipped with system for processing meteorological information and graphic representation of numerical products disseminated from RSMCs or WMCs. The interests of many other countries are the continuous and reliable receptions as well as a presentation, in an easily readable form, of meteorological data and forecast products, especially during severe weather events.

5.4.3 The session identified three areas of international co-operation, which need to be addressed taking into account the rapid changes taking place in the GDPS environment:

- Some countries in the region need to build data processing and forecasting capacity and contribute more to the application of GDPS products to the socio-economic sectors ;

- Some countries in the region need to make more effective use and benefit from NWP products. So they should develop a future vision based on identifying the user needs and promoting awareness of the potentials of the NMHS services;

- A technological gap exists between countries active in the field of NWP with those not active in the field while some who are not yet equipped with appropriate data processing and forecasting systems to perform the basic mission of an NMC need to build their capacity;

5.4.4 The session noted and emphasised the need for strong collaboration in research and development among centres institutions and universities active in the field of NWP. In this connection the meeting agreed that major centres in the region with NWP capability be encouraged to provide leadership in developing and implementing collaborative NWP activities.

5.4.5 The session considered that with the products of global and regional NWP models available within the region and the prospect that such product can be accessible to most if not all members, individual NMCs in the region would achieve great benefits by:

- focussing on developing the application of NWP products in short-range forecasting and nowcasting.

- concentrating on post-processing and generating value-added products using tools such as Model Output Statistics (MOS).

- using NWP model outputs through locally applied diagnostic tools and objective statistical techniques to derive weather parameters not directly predictable by the NWP models.

5.4.6 It was agreed that future or immediate needs could be grouped following the state of economy and development and the climate of each country. These general requirements for many countries in RAI are:

- equipment for implementation of GDPS functions;

- technical support for building operational capabilities in NWP models and pre/post processing;

- workshops or training for exchange of information on software development and NWP applications;

- provision of long range prediction and seasonal outlook with a verification system to monitor their reliability and improve their accuracy ;

- more grid point value data or boundary conditions data generated from global models for centres;

- developing and implementing fine mesh limited area models.

5.4.7 The session expressed its appreciation for the assistance and co-operation, of centres such as NCEP and Météo-France, already offered to some members in the region. It was hoped that these centres and others would extend their support to more members in the region.

5.4.8 To enhance the region’s capacity to improve the application of NWP products, it was

considered necessary:

- to draw the attention of members in the region to the benefits of ensemble prediction. However, as there was little experience in the region, education and training about the interpretation and application of ensemble prediction products were highly required;

- to co-ordinate the exchange of air dispersion models products during incidents of widespread forest fires and transport of pollutant ;

- to accelerate the application of grid point values data in services to industry and socio-economic sectors by holding frequently international symposiums and workshops.

5.4.9 The session emphasized that the successful development and implementation of application of NWP products depend on the availability of technical expertise in the use of hardware as well as software development and maintenance within an individual centre. Therefore, there is a need for the region to intensify training programme that should be in the usual form of workshops and courses.

5.4.10 The session considered Long-range forecasting infrastructure issues and agreed that the region should participate actively and make its views known through experts from the region designated in the CBS Task team on infrastructure for Long-range Forecasting and the Inter-Commission Task Team on regional climate centres.

5.5 Data Management (DM)

5.5.1 The session noted with satisfaction the report of Mr S. Sillayo (United Republic of Tanzania) who replaced G. Shayo (United Republic of Tanzania) as the Rapporteur on Regional aspects of Data representation and Codes, which considered the evolution of data representation forms in WMO and proposed actions in taking into account specific situations in RA I, especially in the field of training.

5.5.2 The session noted with satisfaction that the number of NMHSs within Region I that are connected to the Internet has continued to increase over the past few years. A survey on Internet connectivity conducted in late 1998 can be compared with information gathered in late 2000. As of late 2000, 37 NMHSs in the Region (70%) were known to have connections to the Internet, an increase of 35% over the past two years. Ten NMHSs (20%) operate Web servers, an increase of nearly 20% since 1998. The connection speeds of the NMHSs in the Region are given in the annex to this paragraph.

Data representation and Codes

5.5.3 The sesion noted that CBS agreed to milestones leading to a plan for the migration to Table Driven Codes and the gradual phasing out of traditional character codes:

- As from November 2002, in a voluntary and experimental manner, some data producers may transmit, in real time observations in BUFR or CREX (and also in traditional alphanumeric codes, i.e. double dissemination, if the voluntary experimental users request this).

- CBS-Ext. (2002) to review the migration process and consider a detailed plan for elimination of all traditional WMO Code forms for observations and retaining only Table Driven Codes: FM 94 BUFR and FM 95 CREX.

5.5.4 CBS recognized that provision of and support for encoding and decoding software for the Table Driven Code forms was an indispensable part of any migration plan. It considered that a

successful migration to Table Driven Codes would depend on several supporting projects, new measures and assistance to Member Countries. These would have to include information dissemination, training, software distribution and possible assistance in implementation.

5.5.5 Region I needs basic training on coding and decoding of BUFR and CREX - There is need for training materials and experts on this coding procedure. The training should be done in two stages and at two levels:

LEVEL I: Training of Trainers (at Regional training centres in relevant languages as appropriate).

LEVEL II: Training at national level done by the national experts trained at Level I.

After training at national level has been accomplished, experimental exchange of data in the new formats will then be done bilaterally or regionally.

5.5.6 WMO/Donor funding will be needed to accomplish training at Level I. However, individual countries should meet the cost of accomplishing training at Level II and the experimental exchange of data in the table formats. WMO is expected to co-ordinate the training of trainers and the supply and distribution of training materials for Level I and II and co-ordinate the acquisition of standard software for encoding/decoding of BUFR and CREX in developing countries of RA I and elsewhere.

Pilot Project to Evaluate the Feasibility of the Unidata Internet Data Distribution (IDD) System

5.5.7 The group noted that CBS twelfth session (Geneva, December 2000) considered a proposal for future WMO information systems developed by the Inter-programme Task Team on Future WMO Information Systems. It was further noted that it was suggested that the most straightforward way to test the feasibility of the proposal would be to examine successful implementations of promising new technologies by those outside of the WMO community and to undertake pilot projects which utilize critical aspects of these new technologies. Examples of technologies that show promise for upgrading the capability of the “store-and-forward” GTS include, among others, the Unidata Internet Data Distribution (IDD) system, IP multicast and the new http “smart download” functionality.

5.5.8 The session considered information on the way to test the feasibility of the future WMO information system proposals and discussed the objectives that such a pilot project involving the Region should address and its duration. The session supported the pilot project to evaluate the Unidata Internet Data Distribution System. It was noted that DMCs need to send and receive information and data not distributed on the GTS. It discussed possible participation of volunteering centres, and considered that the DMCs would be suitable candidates. RSMC La Reunion, NMCs Addis Ababa, Casablanca, Entebbe, offered their candidature. With regards to funding aspects it was noted that the secretariat might consider appropriate financial arrangements to assist some centres to participate.

5.6 Public Weather Services (PWS)

5.6.1 The Session expressed its appreciation of the report of Mr Michael de Villiers (South Africa) the Rapporteur on Regional Aspects of Public Weather Services. The meeting noted with satisfaction the efforts, activities and evident progress in the Region during the inter-sessional period to advance the mandate of the PWS Programme. Furthermore, the session endorsed the vision expressed for the future work and implementation plan, and proposed that high priority should be given in the Region to:

- Assisting Members to strengthen and improve their national public weather services and

products, especially in support of the safety of life and property and national development, through capacity building and knowledge transfer;

- Assisting Members to keep abreast of new technologies and harness them for product design and improvement, and effective presentation and dissemination, thereby improving their status and enhancing their visibility;

- Continuing to provide guidance to Members in assessing user needs and in developing their skills to plan and implement mechanisms for forecasts and warnings verification, as well as user-based service evaluation;

- Providing guidance to Members on the development of arrangements and agreements for cross-border exchange of forecasts and warnings;

- Assisting Members to strengthen partnerships for better co-operation and co-ordination with local and national disaster management community, the media and the private sector; and

- Assisting Members to work on issues related to the international media, in particular, developing partnership between the NMSs and representatives of the international media.

Future public weather services issues for the Region

5.6.2 The session emphasized that the programme must continue to give the highest priority to assisting Members to further strengthen and improve their national public weather services and products, particularly those in support of safety of life and protection of property. In addition, NMSs need to demonstrate effectively the relevance of their services to national development, since by so doing they will improve their status and enhance their visibility. A major thrust of the PWS Programme will be the continued strong emphasis on capacity building and knowledge transfer.

5.6.3 Greater emphasis has to be placed on the rapidly evolving needs of NMSs to deliver public weather services in the new technological environment, and on-going guidance must be provided, especially to smaller services and those in developing countries, to assist them to keep pace with technological developments. For example, to be able to deliver graphical meteorological products and services efficiently and effectively, NMS staff have to be provided with appropriate specialised training in technical aspects of relevant production and communication systems and design, as well as media presentation skills.

5.6.4 The WMO global survey mentioned in paragraph 9 identifies areas of deficiencies in the national public weather services programmes of Members in RAI. There is clear indication that activities requiring urgent attention include public education and awareness, staff training, cross-border exchange of warnings, product development, relationships with the media and emergency management, and performance evaluation.

Conclusions

5.6.5 Members of the Region must strive for continued improvement of their national public weather services programmes. The way forward is to emphasise a strong user-focused service provision and delivery. Continuing assistance is required in many areas including:

- Improving relationships and coordination with emergency management;
- Developing programmes for forecast verification and user-based service evaluation;
- Forging and improving partnership with the media;
- Developing local and regional arrangements and agreements for cross-border exchange of forecasts and warnings;
- Capacity building to provide more efficient and meaningful public weather services;
- Programmes for public education and awareness; and
- Effective presentation and dissemination of public weather products.

5.7 Operational Information Service (OIS)

5.7.1 The session noted with apprecation that WMO Publications 9 and 47 are maintained on data bases operated on PCs, enabling the Secretariat to maintain and update the data on a near-real-time basis, as soon as updated information is notified to the Secretariat, and to provide much greater flexibility for dissemination.

5.7.2 Pub. 9 Volumes A and C1, Publication 47, and the RBSN lists are available on the Internet via the WMO home page at the following site: http://www.wmo.ch/web/ddbs/publicat.html

5.7.3 Volumes A and C1 are updated weekly and the updated data is made available every Monday via the Internet. Data from all the above publications is also available via FTP from:

Pub.9-Volume A:	ftp://www.wmo.ch/wmo-ddbs/Pub9volAyymmdd.flatfile
Pub.9-Volume C1:	ftp://www.wmo.ch/wmo-ddbs/Pub9volCyymmdd.flatfile
Publication 47:	ftp://www.wmo.ch/wmo-dbs/Pub47.ships.yymmdd.data
RBSN lists:	ftp://www.wmo.ch/wmo-ddbs/rbsn.rax

5.7.4 The information is also available in printed form and Members can request it through e-mail (PWOI@www.wmo.ch) or by fax. In addition access to the expanded diskette service and printed editions has been improved by eliminating long delays. For rapid access by those subscribers who have the required facilities, the WWW Operational Newsletter is also available on the Internet at the following site: http://www.wmo.ch/web/ddbs/jen/Newsletters/index.html

5.7.5 With regards to measures to improve the accuracy of Volume it noted CSB-XII action inviting Members to designate focal points in NMSs. The focal points are authorized to inform the WMO Secretariat directly on changes. IT also noted the CBS appointment of a Rapporteur on Improvement of Volume A to work closely with lead centres and the WMO Secretariat to develop measures for improvement of the utility of the Publication. Members of RA I should collaborate in these actions.

6. STRATEGIC PLAN FOR IMPLEMENTATION AND OPERATION OF ENHANCED NMHSs BASIC SYSTEMS FACILITIES in RA I (Agenda item 6)

6.1 The session considered the outline proposals that could contribute to the development of a strategic plan for the improvement of the Global Observing System in Region I (Africa). It considered and reviewed the proposed Regional Meteorological Data-Communication Strategy and proposed GTS rehabilitation and capacity building projects required to urgently address the most significant implementation shortcomings which were identified by the Coordination Meeting on the GTS strategy in Africa (Geneva, November 2000). It also considered and reviewed proposed GDPS enhancement and capacity building projects needed to address significant gaps in operational implementation of the Data-processing and Forecasting Systems in RA I. The session had at its disposal the technical options of World Weather Watch Basic Systems at NMCs in RA I prepared by E. Nyoni (United Republic of Tanzania), WMO consultant. On the basis of these proposals and taking into account technical possibilities in the region, the session consolidated and recommended the strategic plan for implementation and operation of enhanced NMHSs basic systems facilities in RA I given in the Appendix A to this report.

6.2 The ACMAD RANET 2000 initiative for RA I was presented by Mr M.S. Boulahya, Director General of ACMAD. The session supported this approach as one way forward in addressing the digital divide and empowering the NMHSs in Africa to deliver their products/services to the rural communities in Africa (at the weather observing stations level). The session also considered that ACMAD should further the implementation of this RANET 2000 initiatives and establish a user discussion group with focal point at every NMHS, using e-mail/Web Technology-facilities to develop the needed global content and build capacity for local content, when and where required.

7. CLOSURE OF THE SESSION (agenda item 7)

The session was closed on Friday 23 March 2001.

Annex to paragraph 5.2.10

Examples of TRQ's and MRQ's for RBSN stations, their classification and spatial distribution criteria

	TRQ Surface	**MRQ Surface**	**TRQ Upper Air**	**MRQ Upper Air**
Parameters	pressure temperature wind humidity weather visibility cloud cover cloud base	pressure temperature wind (not for buoys) humidity(not for buoys)	Pressure/geopotential temperature wind humidity	Pressure/ geopotential temperature wind humidity
Level	Surface	Surface	Up to 10 hPa	Up to 10 hPa
Observations at main hours	4	3	2 (at 00 an 12)	1(at 00 an 12)
Observations at main and intermediate hours (3-hourly)	8	5	-	-
Availability of data	100%	50%	100%	50%

Classification of Station

- Stations are classified according to their performance with reference to the above requirements:
- OK classification is assigned to stations meeting all TRQ's.
- IP classification (incomplete programme) is assigned to stations meeting all MRQ's.
- BC classification (below criteria) is assigned to operational stations not meeting all MRQ's.
- NO classification (not operating) is assigned to silent stations.

Spatial Distribution

The spatial distribution is considered as follows:

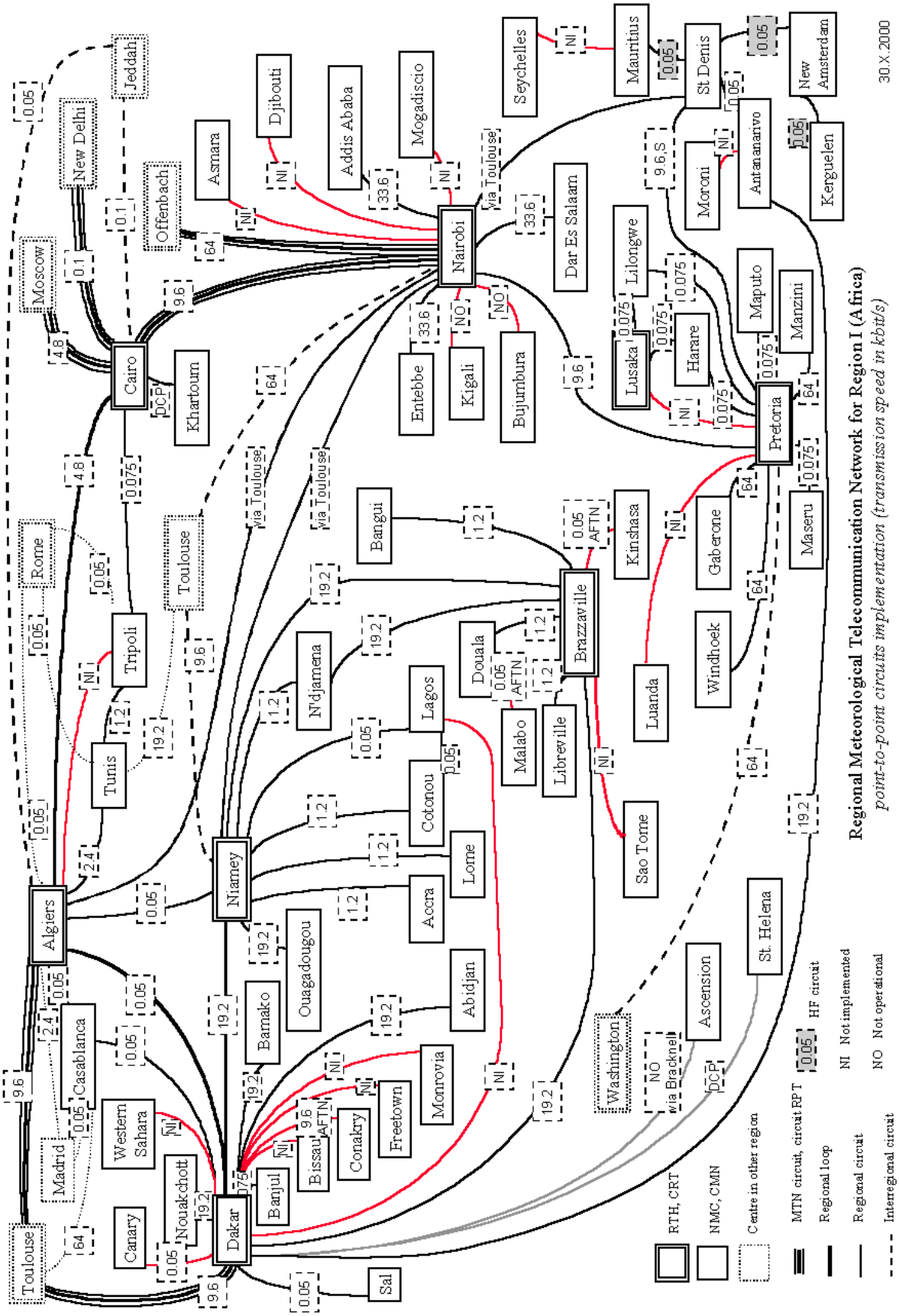
- FG stations are acceptable to fill void area according to Mr Daan criteria i.e. an isolated station outside the circular zone of influence covered by a reference station (OK or IP classification). The radius of the zone is R=D/sqr2 with D being the horizontal resolution of the proposed RBSN;
- OK stations are acceptable if at a distance of at least 60 km from the nearest current network (CN);

- IP stations are acceptable if at a distance of at least 90 km from the nearest current network station (CN);

- GSN and GUAN station;

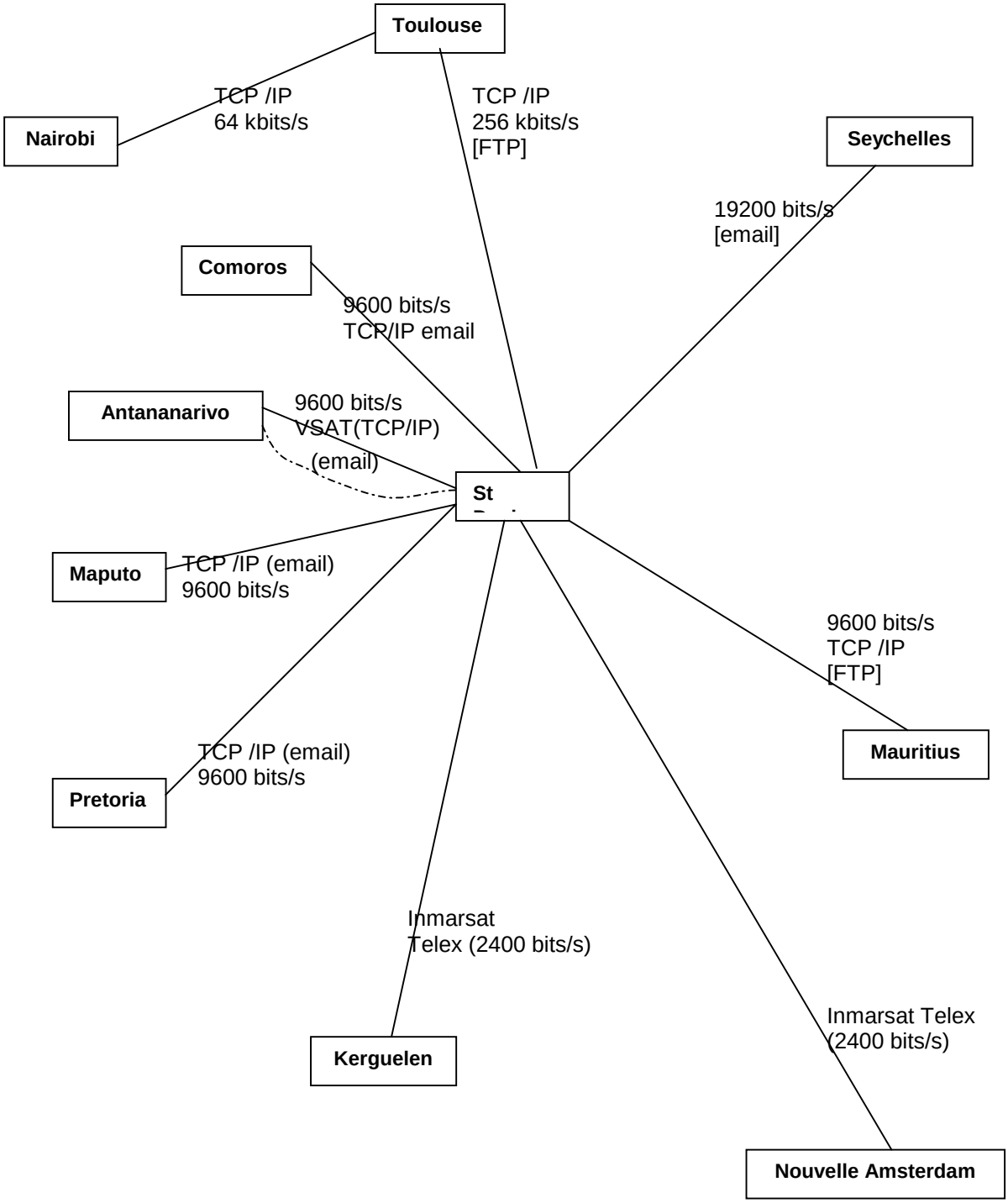
- BC stations and NO stations are not acceptable as network stations.

Annex to paragraph 5.5.3



Annex to paragraph 5.3.9

Data communication Internet means implemented in the Southwest Indian Ocean to address curret GTS gaps



Annex to paragraph 5.5.2