WORLD METEOROLOGICAL ORGANIZATION

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

THIRD MEETING
SYDNEY, 3 to 7 DECEMBER 2001

RA-V-PIW-3/Doc. 6(3)
(15.XI.2001)

ITEM: 6.2

ENGLISH ONLY

WWW COMPONENTS AND SUPPORT FUNCTIONS, INCLUDING REPORTS OF THE RAPPORTEURS/COORDINATOR

Global Telecommunication System (GTS)

(*Submitted by the Secretariat)*

Summary and purpose of document

This document contains the salient outcome, conclusions and recommendations from the Implementation Coordination Meeting on the GTS in Region V (Noumea, New Caledonia, 7-10 December 1999). It provides information the status of implementation and operation of the Regional Meteorological Telecommunication Network as well as proposed plans for its further development and upgrade.

Action proposed

The session is invited to note the information provided and, also considering the report of the Coordinator of the Sub-group on regional aspects of the GTS, to review and agree upon plans for the further development and improvement of the RMTN.

Annex I Status of implementation of the RMTN
Annex II Implementation plans for satellite-based systems in the South Pacific area

Review of the status of implementation and operation of the Regional Meteorological Telecommunication Network (RMTN)

1. The status of implementation of the RMTN in Region V is depicted in Annex I.

Point-to-point circuits

2. Significant progress has been made in the implementation of the GTS Point-to-point circuits of the RMTN since RA V-XII (Denpasar, 1998). The RMTN plan comprises circuits distributed as indicated in the table below:

	High speed (19.2 kb/s and above)	Medium-speed (1200 -9600 b/s)	Low-speed (50 -300 baud)	Not Operational (Not Implemented)	Total
MTN	1			0	1
Interregional	2+ 1**	2	1	1	7
Regional	4* + 3**	6		0	13
Total	7 + 4**	8	1	1	21

* circuits operated via Frame Relay services
** circuits operated through Internet

3. The plan for upgrades to RMTN point to point links and introduction of TCP/IP procedures as adopted by XII-RA V (Denpasar, 1998) was mostly implemented. TCP/IP, which is the recommended protocol for the GTS, was already introduced on most circuits of the RMTN. A Frame Relay network was implemented for linking WMC/RTH Melbourne and NMCs Jakarta and Singapore, and was the first operational FR network being part of the GTS. The Frame Relay network has proven to be a reliable, flexible and very cost-effective solution. Several additional circuits, Melbourne - Honiara, Honolulu - Guam, Honolulu - Pago-Pago and Honolulu - Micronesia that were not included in the RMTN, were playing an important role in the operation of the GTS in Region V.

4. Some GTS circuits are implemented through the Internet, which was complemented in some cases by an ISDN back-up which is activated when required. RTH Wellington also uses Internet for the collection of observational reports from several Pacific islands. The AFTN network also provides an essential complement to the RMTN for the collection and exchange of meteorological data in the South Pacific area.

Radio broadcasts

5. RTH Melbourne is operating two radio facsimile broadcasts from Darwin and Canberra. RTH Wellington is operating one radio facsimile broadcast from Auckland. NMC Honolulu is also operating a radio facsimile broadcast. These radio facsimile broadcasts are mainly used by maritime users. The two RTHs plan to continue operation of their radio facsimile broadcast until around the year 2002. The situation beyond that date is uncertain.

Satellite-based distribution systems

ISCS and SADIS

6. The International Satellite Communication System (ISCS) over the Pacific (GTS component) operated by USA was integrated into the RMTN as a regional complementary component of the GTS. Three virtual circuits (PVCs) for GTS data are available on the ISCS data distribution system over the Pacific (actually containing RA IV RMTN data) and have spare capacity to accommodate additional data and products, provided that the additional traffic would not interfere with the peak loads which occur when the GRIB WAFS products are transmitted (around 03-04 and 15-16 UTC). Half a dozen NMCs were currently equipped with an ISCS receiving station (VSAT and workstation) which could be potentially used as a complementary component of GTS point-to-point circuits. WMC/RTH Melbourne and RTH Wellington were also equipped. SADIS receiving stations are also implemented in the western part of the region in the framework of the WAFS.

Emergency Management Weather Information Network (EMWIN)

7. The EMWIN - Emergency Managers Weather Information Network uses a dedicated channel of the GOES satellites for the distribution of meteorological information related to emergency situations, including warnings. The Annex to this paragraph includes a detailed description of the EMWIN system and the status of implementation in Pacific countries. EMWIN systems were implemented in 18 Pacific countries, and additional installations are planned subject to funding in the future. The relatively low cost of the equipment, its simple installation, operation and maintenance had greatly facilitated its implementation, even in very small pacific islands. The EMWIN implementation has dramatically improved the distribution of meteorological information and warnings of vital importance for the Pacific countries. The ICM-GTS expressed its appreciation and grateful acknowledgements to the US National Weather Service, the European Union South Pacific Cyclone Warning Upgrade Project and the South Pacific Regional Environment Program (SPREP) for their support to the Pacific island states in making the EMWIN system available and in funding installation of receiving equipment.

GMS and GOES Data collection System

8. An increasing number of DCPs were implemented in Region V, that were transmitting via the GMS satellite, operated by Japan, or via the GOES satellite, operated by the USA. The DCP messages are relayed to Region V and the originating NMC via the GTS.

Data-communication networks and services (e.g. PSPDN, PSTN, INTERNET)

9. Several NMSs in the Region are regularly using Packet Switching Public Data Networks or the Public Switched Telephone Network and/or the Internet for receiving data and products from other GTS centres, as a complement to the GTS exchange.

Inmarsat and Coastal Radio stations

10. The Inmarsat system, and in particular Inmarsat C ship earth stations, is increasingly used for the collection of ship reports from voluntary observing ships; At the same time, the number of ship reports collected through the coastal radio stations is regularly decreasing. The Perth and Singapore Land Earth Station receive ship reports from Inmarsat C and A stations at no cost for ships. The Inmarsat C multipoint broadcast service 'SafetyNet' is used for the broadcast of marine forecasts and warnings to shipping on the high seas. Small Inmarsat M terminal earth stations were planned to be implemented in some centres as back-up communication systems.

Routeing catalogues

11. The two RTHs in the region were providing their routeing catalogue on their FTP server. The routeing catalogues are important for ensuring and monitoring the efficient GTS data exchange, and for the NMCs to easily access to the information on the availability of bulletins at RTHs.

Catalogue of meteorological bulletins (Vol. C)

12. WMC/RTH Melbourne is the responsible MTN centre for providing the part related to region V of the catalogue of meteorological bulletins in accordance with the new procedures and had implemented the necessary arrangements. The necessary co-ordination on bulletins headers and content was carried out between WMC/RTH Melbourne and NMCs in Region V; all RA V NMCs were invited to promptly notify any planned and actual changes of bulletins (header and content) to WMC/RTH Melbourne.

Telecommunication techniques and procedures

13. NMCs should fully comply with the agreed GTS procedures, in particular the format of GTS bulletins including the abbreviated heading line in order to ensure that the messages and observational reports are not rejected, and thus lost, by the automated computer facilities at RTHs.

14. An increasing number of centres were using TCP/IP protocols for national purposes and on GTS circuits. The use of TCP/IP also facilitates the replacement and upgrade of GTS systems as well as the introduction of PC-based systems for GTS/GDPS operation in NMCs. As all WWW centres would or had already implemented access to the Internet, adequate measures are essential to ensure an adequate level of security and protection of GTS/WWW systems and centres. Guidelines in this respect are available in the Manual on the GTS (Attachment II-15) and the WMO guide on Internet practices, and the CBS/OPAG on ISS is further developing guidance.

Implementation plan for the further development of the RMTN

15. The further development of the RMTN in RA V should have two main thrusts, upgrades to RMTN point to point links and fulfilment of the special communications requirements in the South Pacific. .

MTN circuits, inter-regional and regional circuits

16. The meeting recommended that the circuits Melbourne - Port Vila, Melbourne - Honiara, Honolulu - Guam, Honolulu - Pago-Pago, Honolulu - Micronesia and Pago-Pago - Apia be included in the RMTN. The importance of the interregional circuit Nadi -Washington, which is included in the RMTN plan, was also underlined in particular for facilitating the insertion of RSMC Nadi products and warnings into the ISCS and EMWIN; RSMC Nadi and WMC/RTH Washington were invited to consider its possible implementation. The meeting took also note of the Frame Relay links Toulouse - NMC Noumea and Toulouse - NMC Tahiti.

17. Noting the high cost-effectiveness of a Frame Relay network for the implementation of GTS links and the fruitful experience, NMCs, and in particular Manila, Kuala Lumpur, Nadi and Noumea were invited to consider the possibility of joining the current Frame Relay network established between Melbourne, Singapore and Jakarta.

Systems based on multipoint telecommunication services via satellite and radiobroadcasts

ISCS and EMWIN

18. The RA V WG-PIW Chair has established an ad hoc sub-group to coordinate the programme of WWW data and products to be transmitted on the Emergency Managers Weather Information Network (EMWIN) and on the GTS component of the International Satellite Communication System (ISCS). The ad-hoc sub-group is entrusted, in the framework of the RAV/WG-PIW terms of reference, with the co-ordination of the transmission programme of WWW data and products on the EMWIN and on the GTS component of the ISCS with a view to meeting RA V NMHSs requirements to the extent feasible. The ad-hoc sub-group carries out its work by correspondence, including E-mail, and consults RA V NMHSs

concerned on their requirements. The membership of the ad-hoc group includes Mr E. Young (USA), Region V Rapporteur on Data Management and Codes as Convenor, Mr M. Hassett (Australia), Region V Coordinator on the GTS, Mr L. Bale (Fiji) and Mr J. Fenix (USA), focal point of WMC/RTH Washington. The ad-hoc arrangements required for routing the data and products from Region V to WMC/RTH Washington for insertion in the ISCS and EMWIN could be easily implemented, taking benefit of the 64 kbit/s MTN circuits Melbourne-Tokyo-Washington and the inter-regional circuit Nadi-Washington, when implemented.

Meteorological satellite-based data collection system

19. Data Collection Platforms (DCPs) transmitting via the GMS satellite, operated by Japan, or via the GOES satellite, operated by the USA should be further implemented in Region V to improve data collection from observing stations, and also to insert data from small NMCs into the GTS.

Public satellite-based telecommunication systems

20. The Inmarsat international system of satellites provides high performance global satellite communication services. The Inmarsat-C small earth stations are very compact with a small antenna, would resist a cyclone and support two-way transmission of text and binary messages. They could be considered as one of the most efficient telecommunication system for application by islands in the South Pacific area, both for the collection of observational data and the distribution of a selection of products and warning. Unfortunately, the recurrent costs for transmission, which are based on the data volume, are quite high and may not be affordable by most of the small countries in the South Pacific. The Inmarsat M terminal earth stations are also efficient telecommunication systems for implementing a two-way GTS connection, either as a primary or back-up link.

Implementation plans for satellite-based systems in the South Pacific area

21. The meeting considered in detail the particular needs of several South Pacific countries, and developed the recommended implementation plan of satellite systems at these locations, which is included in Annex II.

Plans for radio-broadcasts

22. The ICM-MTN noted that the regional radio facsimile broadcast operated by the two RTHs may be discontinued beyond the year 2002. More effective telecommunication systems, including upgrades of the RMTN, the ISCS and EMWIN component, public satellite-based radiocommunication services such as Inmarsat and dial-in facsimile services with international access are expected to fully meet the user requirements at that time. The countries operating radio facsimile broadcast receiving systems were urged to plan suitable replacement systems to meet the need of maritime users, in the event that radio facsimile broadcast are closed down.

Supplementary telecommunication and data-communication services

23. The use of Public Data Networks and Public Switched Telephone Networks were cost-effective when the traffic is limited, depending upon the tariff policies of the national telecommunications providers involved. These services are efficient for complementing point-to-point GTS circuits, or even for establishing GTS links where leased circuits are not available or not cost-effective. The use of the Internet, complemented by appropriate back up (e.g. ISDN) where needed, could be an effective solution. It should be noted that telecommunication services, including the Internet and leased circuits services used for GTS and AFTN circuits, may be discontinued in a cyclone situation for islands in the South Pacific area, since satellite earth stations providing these services are switched off and place in a gale stow position.

Automation of centres

24. A wide range of GTS computer systems for NMCs and RTHs, including PC-based systems running under Windows NT, UNIX or LINUX, were available from various companies, and this situation was facilitating the automation of NMCs. The various components in an NMC or RTH, i.e. GTS circuits, national circuits, satellite earth station(s), data-processing equipment and the GTS computer system should be integrated through LAN interfaces. NMCs willing to implement automated GTS facilities and related equipment were encouraged to benefit from the experience gained by other centres, and to consult at least with their associated RTH before selecting any equipment.

Co-operation and Support Activities

25. The ICM-GTS recommended the following priorities for co-operation activities, including in particular VCP projects:

- Further implementation of EMWIN receiving systems;
- Further implementation of DCPs for upgrading observational data collection;
- Implementation of computer-based systems (e.g. PC-based) at small NMCs for GTS function as well as handling and display of data and products.

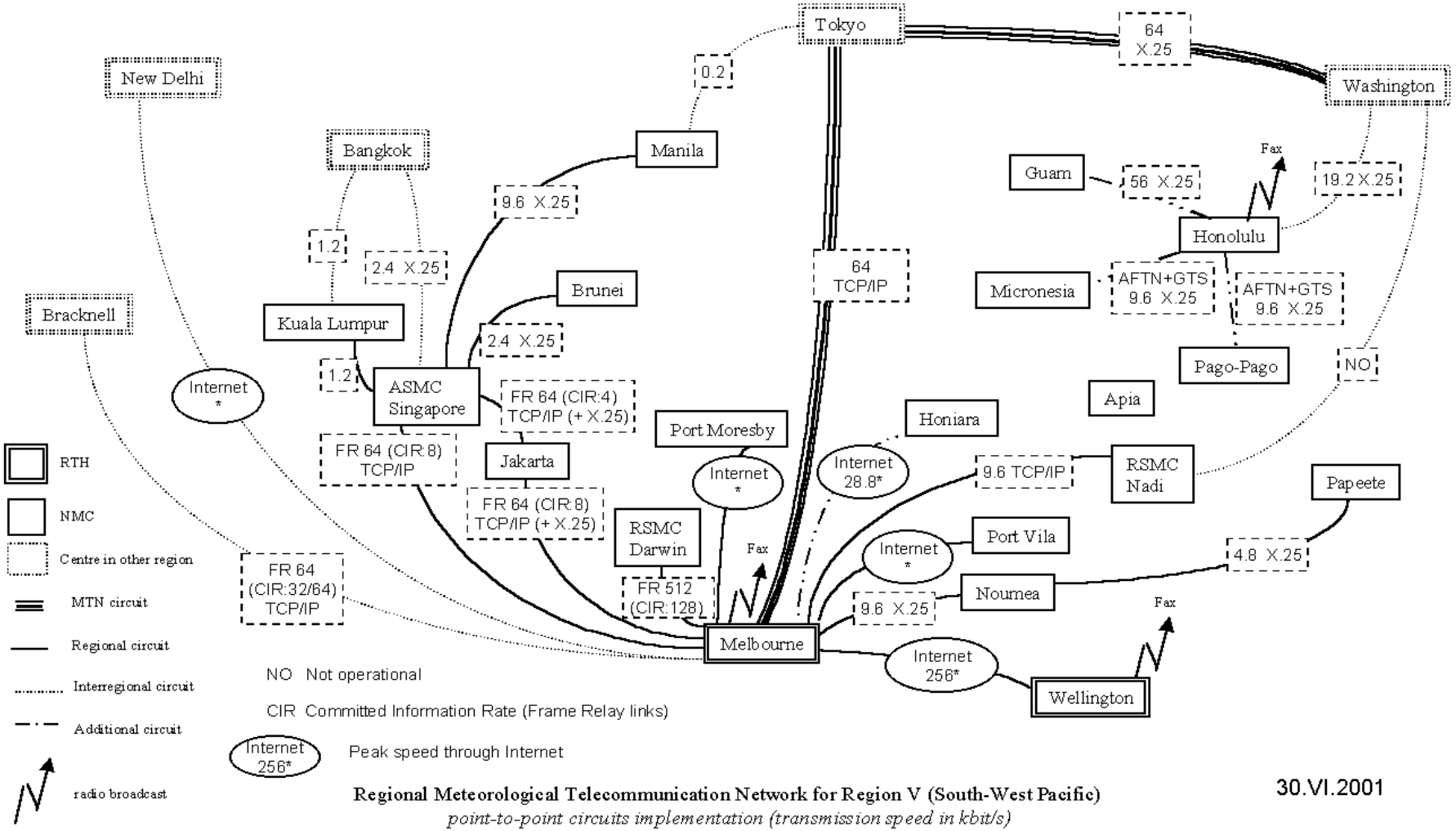
Radio-frequencies for meteorological activities

26. Meteorological radio frequencies for operation and research are facing a continuing threat as a result of the pressure on radio frequency bands from the increasing development and expansion of new radiocommunication systems, in particular from the Mobile-Satellite Service (MSS) industry. The World Radiocommunication Conference 2000 (Istanbul, May 2000) had a very favourable outcome as regards the several items of concern for meteorology. The active participation of WMO (several NMHSs, The CBS Steering Group on Radio-Frequency Coordination (SG-RFC) and the Secretariat) in the ITU preparatory activities was instrumental in ensuring that meteorological requirements were recognized and supported.

27. EC-LII re-emphasized the importance of continuing to defend the frequency allocations to meteorological systems and environmental satellites. The agenda of the next World Radiocommunication Conference (WRC-2003) includes items of importance for meteorology, including the band 1670-1690 MHz and it invited Members and the Secretariat to pursue their participation in the relevant ITU-R activities. CBS-XII underlined the importance of the participation of WMO representative(s) in ITU-R activities, on behalf of WMO Members which could not afford participation of their own experts.

28. The band 1670-1710 MHz is a main band for meteorological satellite operation worldwide and for radiosondes operation by many NMHSs in its lower part. The possible allocation of part of the band to the mobile-satellite service has been debated since 1992. WRC-2000 adopted a new resolution on sharing studies and possible allocations to the mobile-satellite service (MSS) in the 1-3 GHz range, including consideration of the band 1683-1690 MHz and the assessment, with the participation of WMO, of the current and future meteorological spectrum requirements. An MSS allocation may in particular hamper the development of GOES/GVAR and GMS/S-VISSR stations that are particularly important for Region V. Very tough discussions are taking place in the ITU-Radiocommunications at the moment, in which WMO is taking an active participation.

Annex I

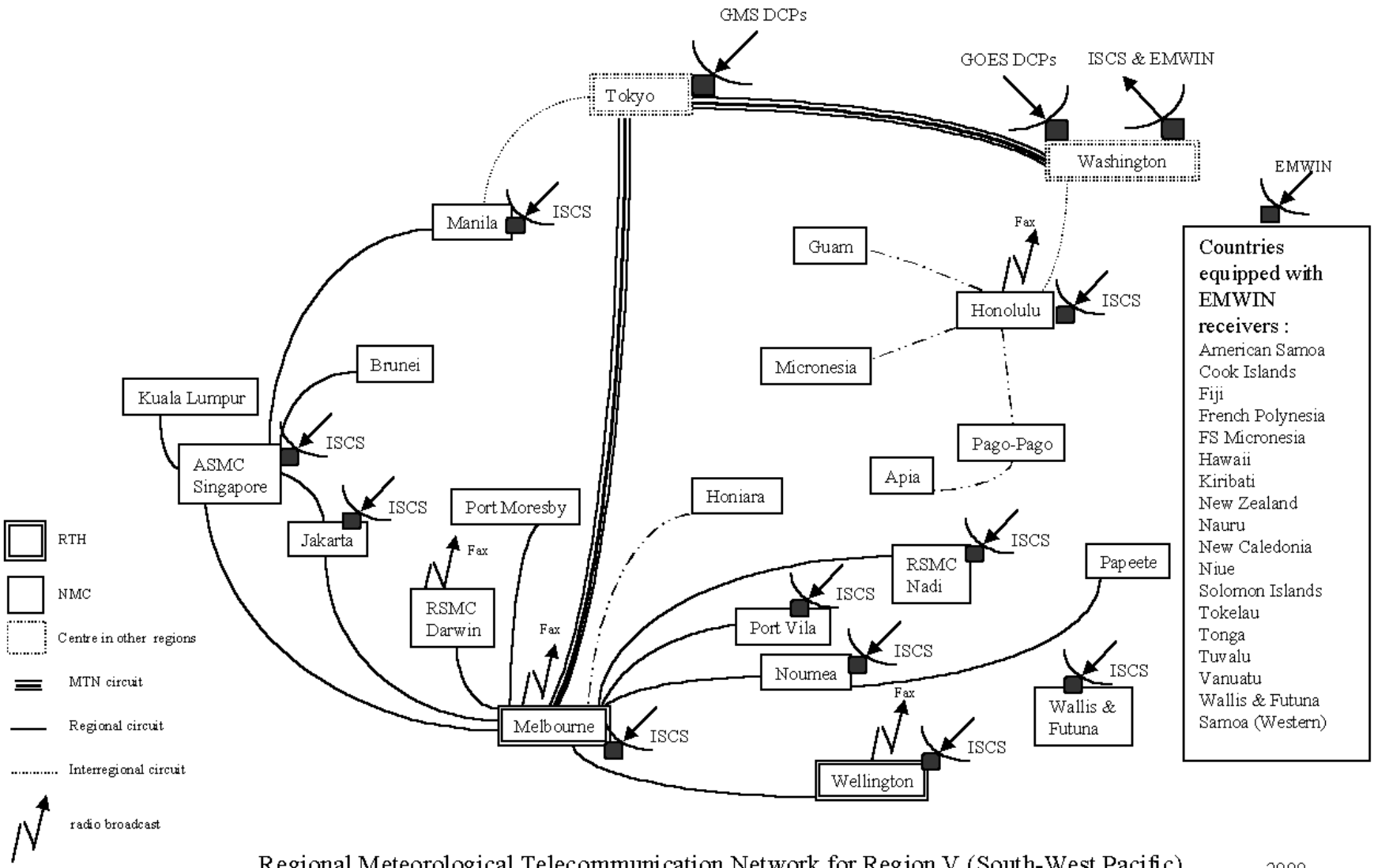


Regional Meteorological Telecommunication Network for Region V (South-West Pacific)

point-to-point circuits implementation (transmission speed in kbit/s)

30.VI.2001

Annex I



Regional Meteorological Telecommunication Network for Region V (South-West Pacific) 2000

Implementation of telecommunication systems via satellite (and radiobroadcasts)

Annex II

Implementation plans for satellite-based systems in the South Pacific area
(plans for point-point circuits are also mentioned where appropriate)

Country	Plans
American Samoa	Complete 56 K link and AFTN/GTS link between Apia and Pago Pago[1] Install additional EMWIN[2] and Mini EMWIN terminals[3]
Commonwealth of the Northern Mariana Islands	Install EMWIN and Mini EMWIN terminals[3]
Cook Islands	Switch local products onto the GTS for EMWIN broadcast Install DCP for manual data entry at Rarotonga[3] Install additional EMWIN and Mini EMWIN terminals[3] Install Inmarsat M communications system[3] Add DCP communications to AWSs[3] Install ISCS system[3] Install PDUS reception system for GOES imagery[3]
Federated States of Micronesia	Implement 3 GRIB display systems[2] Install additional EMWIN and Mini EMWIN terminals[3] Install 3 DCP for manual data entry[3] Install 3 PDUS reception systems for GMS imagery[3]
Fiji	Implement Frame Relay on circuit to Melbourne[2] Connect Nadi RSMC to the Nadi - Washington AFTN/GTS link[2] Switch products onto the GTS for EMWIN broadcast Install Inmarsat M communications system[2] Install Mini EMWIN terminals for remote locations[3]
French Polynesia	Switch products onto the GTS for EMWIN broadcast Install HRPT receiving system[2] Install Inmarsat M communications system[3] Install Mini EMWIN systems for remote locations[3]
Kiribati	Formalise use or ERL profiler DCP as a backup transmission system Install DCP systems for manual data entry at Betio[2] Install 2 AWS with DCP communications[3] Install Mini EMWIN terminals for remote locations[3]
Marshall Islands	Implement GRIB display system[2] Install DCP for manual data entry[3] Install additional EMWIN and Mini EMWIN terminals[3] Install PDUS reception system for GMS/GOES imagery[3]
Nauru	Implement DCP transmission of AWS, TEMP and PILOT data[1]
New Caledonia	Switch products onto the GTS for EMWIN and ISCS broadcast Implement cyclone warning graphics transmission to Vanuatu
Niue	Install Inmarsat M communications system[3] Install DCP with manual data entry[3]
Palau	Implement GRIB display system[2] Install DCP for manual data entry[3] Install EMWIN and Mini EMWIN terminals[3] Install PDUS reception system for GMS imagery[3]
Papua New Guinea	Major project (Balus Project) currently in progress[1]

Annex II

Samoa	Switch products onto the GTS for EMWIN broadcast Complete AFTN/GTS link between Apia and Pago Pago[1] Acquire and implement software systems for display of GRIB data[2] Install 2 DCP systems with manual data entry[3] Install Inmarsat M communications system[2] Install PDUS reception system for GOES imagery[3]
Solomon Islands	Switch products onto the GTS for EMWIN broadcast Install EMWIN terminal at Henderson Airport[3] Install DCP with manual data entry at National Met Centre[3] Install PDUS reception system for GMS imagery[3] Install Mini EMWIN terminals for remote locations[3]
Tokelau	Install 2 Mini EMWIN terminals[3]
Tonga	Implement dial-up internet e-mail access for Fua'amotu Airport[3] Install EMWIN systems at Vavau and Fua'amotu airports[3] Install DCP with manual data entry at Vava'a and Fua'amotu airports[3] Install Inmarsat M communications system[2] Install 1 AWS with DCP communications[3] Install Mini EMWIN terminals for remote locations[3] Install PDUS reception system for GOES imagery[3]
Tuvalu	Install Inmarsat M communications system[2] Install DCP with manual data entry at Funafuti[3] Install Mini EMWIN terminals for remote locations[3] Install 2 AWS with DCP communications[3]
Vanuatu	Implement Internet based circuit from Port Vila to Melbourne[2] Install Inmarsat M communications system[2] Install Mini EMWIN terminals for remote locations[3] Switch products onto the GTS for EMWIN broadcast Install PDUS reception system for GMS imagery[3] Install DCP systems for manual data entry (up to 6 locations) [3]
Wallis and Futuna	Acquire and implement software systems for display of ISCS data[2] Install Inmarsat M communications system [2]

Notes

1. Project already commenced
2. Project already funded
3. Project requires funding
   Mini EMWIN terminals should be developed.