

Report from the Rapporteur on Regional Aspects of the Global Observing System

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1. General comments on the status of the GOS in RA-V

The Regional Basic Synoptic Network (RBSN)

The number of SYNOP reports received from RA-V during the 2000 monitoring period decreased slightly from 1008 per day in 1999 to 1001 in 2000 while the number of TEMP reports showed a slight increase from 106 per day in 1999 to 108 in 2000. Both SYNOP and TEMP reports over the Indonesian region showed decreases on the previous year. Figures for the 2001 monitoring should be available by the time of the meeting.

The number of SYNOP reports in 1998 was 857 per day. The considerable increase in the number of SYNOP observations is due mainly to the commencement of Australian standard hour bulletins based on AWS observations. The exclusion of reports at non-standard hours continues to affect the numbers counted for New Zealand and Papua New Guinea.

Space-based Systems

The space-based sub-system of the Global Observing System has continued to provide valuable data, products and services to WMO Members in RA-V with both geostationary and polar-orbiting satellites.

Although beyond its design life, GMS-5 continues to operate well. The spatial extent of the images and a reduced frequency of images were implemented on 4 July as precautionary measures. The scheduled replacement MTSAT-1R is currently scheduled to be launched in early 2003. The maintenance of Meteosat-5 at 63 degrees East has enhanced the coverage over the Indian Ocean region to complement INSAT and provides very useful imagery for those countries in the west of Region V.

Following the launch of Feng-yun 2B in June 2000 excellent imagery was provided giving enhancement and support of the coverage of meteorological satellites over Indian Ocean longitudes. However some problems have been encountered since early in 2001. China is committed to an ongoing meteorological satellite program which will be a major contribution to WMO Members in Region V.

Polar orbiting satellites also play a key role in the GOS. Data from the Advanced TOVS instrument (ATOVS) on NOAA-16 is now complementing that from NOAA-15 in providing microwave temperature soundings under cloudy conditions with comparable accuracy to that available from infrared measurements for clear conditions. This upgrade of the sounding capabilities represents a significant advance particularly for the southern hemisphere.

Problems with the HIRS instrument on NOAA-15 led to some loss of satellite soundings during July and August 2000. Revised procedures have been implemented by NESDIS to provide retrievals based on AMSU data alone if HIRS data are not available.

Information on parameters such as rain rate and liquid water content from the ATOVS, SSM/I and TRMM microwave instruments are available on several Web sites and could be used by NMHSs in the region. Some of these new parameters are particularly relevant for tropical regions.

China's FY-1 polar orbiter program is also providing valuable data. FY-1c carries a 10-channel radiometer giving high resolution imagery for meteorological and oceanographic applications. Also in the Region a number of sites are receiving MODIS data (Moderate-resolution Imaging Spectrometer, 36 channels) from the research Terra satellite and although these data require considerable resources for reception and processing, work is aimed at development of new algorithms and applications which will ultimately be used operationally and especially when the NOAA series is replaced.

Satellite measurements of surface wind speed and direction from the SeaWinds instrument on QuikSCAT instrument are being used more widely in operational meteorology and are proving a very valuable resource. The observations provide impressive detail on the structure of weather systems over oceanic areas. Scatterometer data from European Research Satellite (ERS) ceased early in 2001.

In January 2001 the Australian Bureau of Meteorology hosted the Third Meeting on Asia-Pacific Satellite Data Exchange and Utilisation (APSDEU-3). The meeting considered means of exchanging, promoting, enhancing and utilising a broad range of satellite data in the Asia-Pacific region. Participants included NMHSs and agencies like NOAA/NESDIS and NASDA. The proceedings of the meeting, held in Melbourne, are available. Country reports on satellite activities covered exchange, data format and communications issues, fostering improved integration of satellite data with other observational data types and data assimilation into Numerical Weather Prediction (NWP) models. Plans were shared on satellite systems relevant to the Region and many scientists described new techniques for satellite data applications. Recommendations from the meeting included investigation of sharing of data sets via Internet or GTS exchange e.g. near real time SSM/I data, Level 1C ATOVS data.

The next APSDEU meetings were tentatively planned for early 2002 in Tokyo, hosted by JMA and 2003 in Beijing hosted by the China Meteorological Administration.

The Bureau of Meteorology is planning to host a second Asia-Pacific Satellite Applications Training Seminar (APSATS-2002) in May 2002 with WMO, JMA, CMA and the Bureau as co-sponsors. This should be a major event utilising the latest technologies in training and learning and should contribute to enhancing the application and utilisation of satellite data in the Region, in line with WMO's Education and Training Strategy. As with the last APSATS (held in Melbourne in 1996) international lecturers, trainers and presenters will be a major feature of the two-week event.

Many countries in the Region continue to be extremely active in radio frequency matters to protect ongoing operations of Member States in areas such as satellite transmission, radiosondes, radar, profilers and AWSs. There are ongoing pressures for sharing or use of radiofrequency bands which have been previously used by the international meteorological and related communities. Some of the key fora include the CBS Steering Group on Radio Frequency Coordination, the International Telecommunications Union Working Party 7C and the World Radio-communication Conference (WRC).

Marine observations

RA V continues to play an active role in the drifting buoy program. Graeme Brough from Australia is the Chair of the Drifting Buoy Cooperation Panel (DBCP) and Graeme Jones from

Australia is Chair of the Drifting Buoy Panel for the Indian Ocean (DBPIO).

The XBT network continues to operate successfully. Ten Argo floats have been deployed in the Indian Ocean between Australia and Indonesia by Australia's government research agency CSIRO. The data from the floats are distributed in TESAC code on the GTS in near real-time.

A new activity has been the commencement of Automated Shipboard Aerological Programme (ASAP) observations in the southern hemisphere. ASAP is an established WMO marine programme providing upper air soundings at sea. Initial discussions commenced in 1999 between WMO and the Bureau, MSNZ and SAWB to explore the possibility of implementing an ASAP in the Southern Hemisphere. Entitled the Worldwide Recurring ASAP Project (WRAP), it will provide the opportunity for routine upper air soundings en-route from Europe -- Cape of Good Hope -- Australia -- New Zealand -- Cape Horn -- Brazil -- Europe. WRAP commenced in April 2001 with the M.V. Palliser Bay (call sign GWAN) operating out of the UK and providing twice daily upper air soundings. A study conducted in the Australian Bureau of Meteorology showed that the upper air soundings from this vessel had significant impact on numerical analyses, similar in magnitude to reports from isolated island stations in southern mid-latitudes.

Year 2000

As in other regions the Year 2000 transition passed relatively smoothly and there was no detectable reduction in the number of observations from RA-V distributed on the GTS. The Y2K arrangements established within WMO functioned well, including the Y2K Situation Centre in Melbourne covering Region V and part of Region II. ECMWF established a very useful Web site to report on data monitoring. This site continues as a routine service from ECMWF.

2. Activities

Attendance at ICT meeting

I attended the meeting of the Implementation Coordination Team on the Global Observing System (WMO CBS Open Programme Area Group on Integrated Observing Systems) held in Geneva from 11-15 September 2000. Dr Moch. Rifangi of the Indonesian Meteorological and Geophysical Agency also attended as an additional representative and reported on the meteorological observation network in Indonesia.

This was the first meeting of the ICT under the new CBS arrangements. The team is comprised mainly of the rapporteurs on regional aspects of the GOS with some representation from observations related panels. The meeting served to consolidate the role of these rapporteurs in monitoring and promoting the improvement of the observational networks, particularly the RBSN and increasingly the GCOS components. Several WMO Secretariat members and a representative from EUMETSAT also attended. The AMDAR Technical Coordinator (Jeff Stickland) attended the meeting and made a very valuable contribution, especially with the promotion of AMDAR as a key component of the Integrated Observing System.

Many of the recommendations discussed at the meeting were considered by CBS X-II and appear in the report of that Session.

At the meeting it was noted that AMDAR reports were not even being processed by many developing countries despite their general availability and usefulness in providing either profiles or over-flight information. Steps were taken at the meeting to help resolve issues with participating members. It was suggested that a geographically based collective of AMDAR reports would make them more usable. This has now been implemented

Mr Bill Westermeyer from the GCOS Secretariat also attended part of the meeting. This participation was also useful in developing contacts between the nuts and bolts real-time

people and the developing climate network area. The respective roles of the existing CBS and the developing GCOS structures and functions are obviously developing and need coordination.

The need to maintain the performance of the RBSN as the back-bone of the GOS was affirmed. Greater involvement of the Regional Rapporteurs in monitoring and reviewing the RBSN was encouraged. Changes to the RBSN are generally being made on a national basis rather than regionally. CBS-XII endorsed the suggestion that rapporteurs on the GOS be advised by Members of changes in the status of the RBSN. Several RA-V countries have already notified me of recent changes in their networks as part of their notification to the President of RA V.

Some criteria for definition of the RBSN adopted although these are more relevant in areas such as Europe where there is an abundance of eligible stations. They may require some adaptation for RA-V.

The performance of the GOS in meeting climate needs was addressed from several viewpoints. Issues of poor preparation of CLIMAT messages were considered and measures suggested to tackle the systematic problems noted. However, the reports from the newly functioning GSN Monitoring Centres, established by CBS, were already proving beneficial in improving performance. Some specific problems for RA V were followed up.

It was also recognised that the station metadata information contained in Publication No. 9 Vol. A is deficient in several ways for climate needs. A review of the contents was proposed. The limitations in the WMO index numbers are also to be considered.

The requirements of the RBSN and the climate network have diverged, especially with the GSN requirements. It was recommended that CBS encourage Regional Associations to establish Regional Baseline Climate Networks to include GSN and GUAN stations supplemented by other CLIMAT and CLIMAT TEMP reporting stations needed to meet regional requirements.

The potential impact on developing countries of the redesign of the GOS was also discussed, and the approaches of the Expert Team dealing with the redesign of the GOS were reviewed.

Several measures to ease difficulties were suggested including:

- Joint management by countries to operate observing networks
- Roving maintenance teams
- Joint weather radar networks
- RSMCs making satellite and other data available on a central site, including data from research satellites such as QuikSCAT
- Improved availability of and access to AMDAR data.

The meeting also considered the general issue of joint funding or a cost-sharing mechanism to cover running costs of observational networks, particularly in developing countries. The general principle has subsequently been endorsed by CBS-XII and EC-LIII..

Activities of the CBS Open Program Area Group(OPAG) on Integrated Observing Systems

This OPAG has been very active under the chairmanship of Dr James Purdom. Detailed reports from meetings of teams within this OPAG and an overall report from the Chair have been made available on the WMO web server. Dr Purdom was re-appointed as Chair of the OPAG at CBS-XII. The Expert Team on Observational Data Requirements and the Redesign of the GOS was re-established. This team has a very significant task, and it is important that the Regional Association be aware of its progress and contribute to its deliberations. Members are invited to be active in the work of the OPAG by raising with the

Chair of the OPAG, the leaders of the teams or through me in my role as Rapporteur.

3. Follow-up on action items from XII-RA V

(a) review and propose improvements to RBSN (4.2.4)

XII-RA V had noted that there were still areas where the distribution of stations could be improved. The monitoring statistics show that while the number of SYNOP reports has improved over the past two years, the total number is lower than in 1994 and only about 63% of the required number. The number of TEMP reports has increased slightly in recent years, but again is only about 60% of "required". There are large areas of few reports.

CBS-XII noted that objective criteria for the selection of the RBSN would be useful and both CBS and EC-LIII invited the Regional Associations to consider the development of such criteria, based on factors such as spatial distribution, performance and availability of data as confirmed by the regular monitoring. RA-VI had developed criteria which allowed a balance between performance and distance from the nearest RBSN station. Within RA-VI with some areas of dense coverage the issue appears to be removing from the RBSN stations which are not meeting performance targets while suitable nearby stations not in the RBSN would be more suitable alternatives. This is not such a problem in RA V where lack of observations is the main concern. However, we could examine the criteria developed for RA VI, and other regions, for their applicability to our region.

(b) augmentation of the RBSN with non-NMS observations (4.2.16)

There has been no significant progress on this item. I would appreciate advice from the Working Group on the best way to proceed. Such information may have already been collected for exercises such as SPREP. If not surveys to NMSs in the region may be the best approach.

The previous Working Group meeting in 1998 suggested the Atmospheric radiation Measurement (ARM) network. However, the sites at Momote on Manus Island (PNG) and Nauru have already been included as WMO stations, and the new site of Darwin is already in the RBSN.

(c) review of instruments for measuring swell (4.2.17)

The Bureau of Meteorology has recently commenced a program of installing waverider buoys which record and report observations of wave motion such as height and period. Details of specifications, installation requirements and costs will be provided at the meeting.

4. Action items from CBS-XII (not covered above)

(a) Changes to improve the effectiveness of Weather Reporting (WMO-No.9, Vol. A), used to provide metadata on the GOS and as a station dictionary in many centres.

CBS has appointed a rapporteur on the improvement of Volume A to consider aspects such as:

- Limitations of the index numbers
- The impact for climate users on reusing numbers
- Precision of location information
- History of station changes
- Need for station elevations
- Linking information from the Lead Monitoring Centres on observation performance to improve the currency of the contents.

The rapporteur has prepared a draft report on which I have made comment. A revised report is now available. Comments are being requested from the Focal Points on observations in NMSs.

(b) CBS-XII noted the need for closer collaboration between Rapporteurs on the GOS and those on Marine Meteorological Services as the Joint Commission on Marine Meteorology establishes its operations. It recommended that this function be included in the terms of reference of the Rapporteurs.

(c) GCOS

The Commission noted the importance of strengthening GCOS and recommended a more active role for the regional Rapporteurs on the GOS (such as through reviewing the reports from the GUAN and GSN Monitoring Centres and following up missing CLIMAT or CLIMAT TEMP reports).

GCOS activities with special relevance to RA-V have been the GCOS Pacific Island Regional Implementation Workshop held in Samoa in August 2000 and a Pacific GCOS Action Plan Workshop held in Honolulu in October 2001. The aim of these workshops is to prepare an Action Plan to improve GCOS in the region. Many of the problems and issues of the GOS are common to GCOS, including the problems in the preparation and distribution of CLIMAT and CLIMAT TEMP messages. The number of CLIMAT messages in RA-V improved during 2000, but is still only about 60% of the potential number. The combined attention of climate and more real-time users should assist in identifying and solving problems.

Some concerns have been expressed in GCOS meetings on possible trends in the redesign of the GOS, such as the use of AWSs and the potential impact of adaptive networks on climate requirements. These concerns need to be noted by the OPAG on IOS, and particularly its Expert Team on Observational Data Requirements and Redesign of the GOS.