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OPAG on Integrated Observing Systems

Rapporteur on GCOS Matters

(Submitted by the Secretariat)

Summary and purpose of document

This document provides information on the replacement of the OPAG/IOS Rapporteur on GCOS Matters.

DISCUSSION

1. To carry out its two-year work programme, CBS-Ext.(02) reviewed and adapted, as necessary, the terms of reference and tasks of the Expert Teams and Rapporteurs of each OPAG that were established by CBS-XII. The specific tasks in complement or adjustment of the current terms of reference of Expert Teams and Rapporteurs, or revised terms of reference, as appropriate, were identified. In particular, with respect to the Rapporteur on GCOS Matters, the Commission formulated the following:

- *To follow up, in coordination with the Secretariat, the establishment on a trial basis of the CBS Lead Centres for GCOS (GSN and GUAN) data and to establish working contact with national Points of Contact (POC).*

The Commission requested each OPAG chairperson to ensure that the specific tasks be adequately addressed. It further requested its Management Group to keep under review the work programme and make arrangements, as necessary, upon proposals of OPAG chairpersons.

2. On 10 December 2002, the PR of Germany informed that Mr Stefan Rösner, CBS/IOS Rapporteur on GCOS matters, would no longer be able to fulfil this position. Mr Rösner, during the short period of his services as rapporteur, provided a valuable input to improve the coordination between GCOS and CBS activities. Among his many activities was the organization of the 1st CBS/GCOS Expert Meeting on Coordination of the GSN and GUAN (Offenbach, May 2002), which formulated several essential recommendations approved by CBS-Ext.(02). A summary of Rapporteur's activities is presented in the Annex to this document.

3. According to preliminary indications, none of the institutions most actively involved in GCOS matters relating to CBS activities (NCDC, JMA, ECMWF, and DWD) seems to be in a position to take over functions of the CBS/IOS Rapporteur. One of the possibility would be to seek for the support from other GCOS focal points newly established in Europe by Switzerland, France, The Netherlands, United Kingdom and Sweden.

4. The MG is invited to consider the above information and decide upon a replacement within OPAG/IOS, as appropriate.

Status of GSN and GUAN

(Report given by the CBS-OPAG-IOS Rapporteur for GCOS matters, Mr S. Rösner)

1. Background

At the time being two GCOS atmospheric network have been established: the GCOS Upper Air network (GUAN, 150 stations) and the GCOS Surface Network (GSN, 969 stations). For both GCOS atmospheric networks monitoring centres have been designated at CBS-XI. The GUAN performance is monitored by the European Centre for Medium Range Weather Forecast (ECMWF), and the GSN is monitored jointly by the Japan Meteorological Agency (JMA) and the Deutscher Wetterdienst (DWD). The monitoring centres provide reports on the monitoring results on a regular basis.

The GCOS/WCRP Atmospheric Observation Panel for Climate (AOPC) has established an Advisory Group for GSN and GUAN (AOPC AGG) which carefully reviews the design of the networks following monitoring results and changes proposed by WMO Members. A "Manual on the GCOS Surface and Upper-Air Networks: GSN and GUAN" (GCOS-73) has been published, inter alia to provide guidance for operators of GSN- and GUAN-stations.

2. Monitoring the GUAN at ECMWF and the Met Office Hadley Centre

Monitoring activities are currently occurring at both ECMWF and the Hadley Centre providing reports on quality and receipt of daily TEMP and PILOT observations, and receipt of monthly CLIMAT TEMP data respectively.

The GUAN monitoring at ECMWF is part of the Global Monitoring carried out on a monthly basis. For the upper air network vertical statistics are computed daily and accumulated on a monthly basis for four cycles (00, 06, 12, 18 UTC).

A review of the year 2001 shows that the amount of GUAN reports received at ECMWF increased for the northern hemisphere at 00 and 12 UTC, compared to those received in 2000. At 06 and 18 UTC the reception rates increased since summer 1999. In the Tropics there is a decreasing trend for the reports at 00 UTC and an increase for the reports at 12 UTC, whereas in the Southern Hemisphere a decreasing trend in the number of reports received at 00 and 12 UTC can be noticed during the last year. As for QC the main concern is about Asian stations, the Consolidated list of suspect UA stations (geopotential) show a heavy cluster of GUAN stations in Asia. In the case of wind, the GUAN stations on the consolidated list are mostly located in the Tropics.

The ECMWF has developed a web page to support GUAN monitoring¹. The GUAN web page is updated every third day of the month. It displays upper air reception for three different parameters (temperature, wind and humidity), five different levels (700, 300, 100, 50 and 10 hPa) and ten different areas (Europe, North Atlantic, Africa, North America, South America, Siberia, Northeast Asia, South Asia, Australia and Antarctica) plus a global summary. All charts show the station id and the number of received data and gross errors at 00, 06, 12 and 18 UTC). The exception is the summary charts; these charts show the percentage of available data at 00/12 UTC using a colour code for five different categories ranging from 0% to 100%.

As concerns GUAN, for the 9 months June 2001 - March 2002:

- 50% are operating satisfactorily, whilst 13% provide acceptable observations.
- The number of stations lacking wind data having reduced to 3, the termination of Omega no longer seems significant.

The Met Office Hadley Centre is undertaking a number of activities as contributions to GUAN. A GUAN web site at Hadley Centre² has been in place since 2000. The web site is linked to GCOS, NCDC, and ECMWF allowing GUAN users to access all relevant information. Routine monitoring of

¹ <http://www.ecmwf.int/products/forecasts/d/charts/monitoring/guan>

² <http://www.met-office.gov.uk/research/hadleycentre/guan/index.html>

CLIMAT TEMP is conducted at the Hadley Centre including creation of an enhanced GUAN temperature database. Reception maps of monthly data are presented on the GUAN web.

3. Monitoring the GSN at the Japan Meteorological Agency and the Deutscher Wetterdienst

The JMA and the DWD run the GSN Monitoring Centre (GSNMC). For this purpose both centres collect and analyse the monthly CLIMAT messages received from the GSN stations via the GTS of WMO, using identical software for analysing. The routine monitoring of the GSN started in January 2000.

The basic GSN monitoring results are published in biannual monitoring reports which are available on the GSNMC homepage³ for download. The GSN data set, which consists of the GSN CLIMATs, the format quality information and quality information on precipitation and temperature data is sent regularly to the Word Data Centre A for Meteorology (WDC-A) and is made available as a rolling 12-months archive on the GSNMC homepage as well.

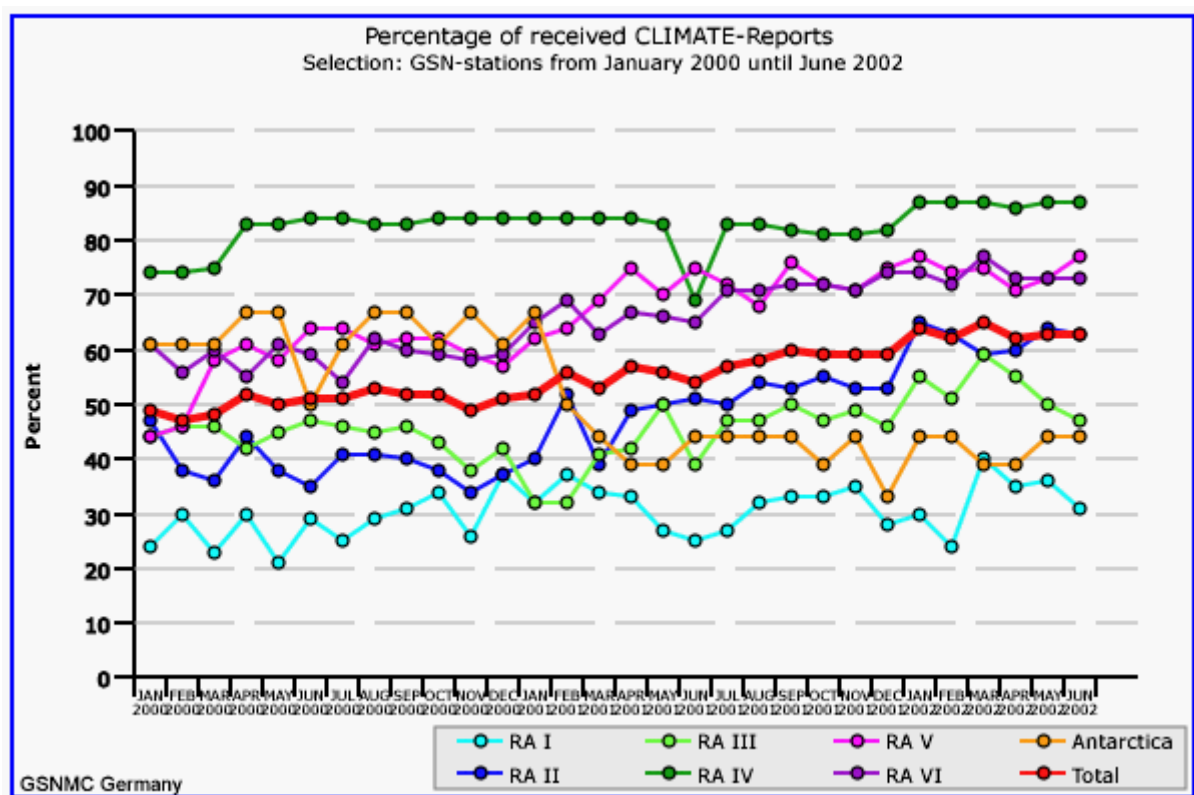


Fig. 1: availability of CLIMAT-messages from GSN-stations for different WMO RAs for the period January 2000 to June 2002.

The overall availability of monthly CLIMAT messages from GSN-stations has improved since start of monitoring. However there are big differences in the performance between the WMO RAs. It must be noted that in the Antarctica the reception rate dropped from about 69 % to as low as 40 % by April 2001 (Fig.1).

With regard to monitoring the quality of monthly precipitation amount and monthly mean temperature the following results have been found:

1. For many stations these variables are not available (35-40 %).
2. More than 50 % of the GSN stations report these two variables correctly.

³ <http://www.gsnmc.dwd.de>

3. 3-5 % of the precipitation or temperature data flagged during the automatic QC procedure pass manual control without change.
4. About 2 % of the precipitation data, and less than 0,5 % of the temperature data reported which have been flagged during the automatic QC procedure need to be manually corrected.
5. Only in a few cases even manual correction was impossible, and data had to be deleted.

At DWD CLIMAT messages from several countries are received regularly via email. A procedure to make these messages available on the GTS and for the GSN monitoring is now being implemented at JMA and DWD.

The DWD is planning to provide GSNMC results on the GSNMC web site in near real time.

4. CBS/GCOS Expert Meeting on the GSN and GUAN

The first CBS/GCOS Expert Meeting on Co-ordination of the GSN and GUAN (EMCGG-1) was held at the DWD Headquarters in Offenbach from 15 to 17 May 2002. The meeting considered the major GCOS activities to implement and support GSN and GUAN. The meeting also heard reports from the GUAN and GSN Monitoring Centres about their activities and results.

The EM noted that a 'Manual on the GCOS Surface and Upper-Air Networks: GSN and GUAN (Version 1.0)' was published (GCOS-73). Results of a review of the performance of GSN and GUAN with respect to the requirements listed in GCOS-73 have been presented. According to this 26 % of the GSN- and about 50 % of the GUAN-stations are meeting the requirements of data transfer and CLIMAT and CLIMAT-TEMP provision. With regard to GSN for 314 the historical data have been submitted to the GSN Archive Centre WDC-A for Meteorology.

In addition the EM discussed the possibility of establishing CBS Lead Centres for GCOS Data.

5. Recommendations from the EMC GG-1

The Expert Meeting on the GSN and GUAN, proposes that the following actions be taken to improve the quality and quantity of data available for the Global Climate Observing System.

- Rec. 1 Recognizing the target requirement to reach 5 hpa height for GUAN stations, recommends that the GUAN MC include an indication of those stations which were reaching that target in its published performance results.
- Rec. 2 Recalling that the GCOS MCs may request re-transmission of missing CLIMAT and/or CLIMAT TEMP messages through the GTS, encourages them to make use of this procedure for getting all the data to the maximum extent.
- Rec. 3 Recommended that simple PC software should be made available to NMHSs for encoding and formatting national monthly data into CLIMAT and CLIMAT TEMP reports.
- Rec. 4 Recommends that the GSN and GUAN Monitoring and Analysis Centres collaborate with the GCOS Archive to ensure that all relevant data and metadata that they have obtained or developed from all sources is provided to the archive to ensure that the archive has, and makes available to users, the most complete and reliable data sets possible.
- Rec. 5 Recommends that the GCOS Monitoring Centres, Analysis Centres and Archives harmonize the categories used to determine and present performance results to the extent possible. It suggested in particular that the following categories be considered:

Category:	1	2	3	4	5	6
Performance (%):	100	76-99	51-75	26-50	1-25	0

Rec. 6 Recommends that appropriate action be taken to ensure that all RBCN CLIMAT and CLIMAT TEMP messages are tagged for global distribution and that deficiencies be brought to the attention of the RTHs.

Rec. 7 Recognising the difficulties encountered in bringing results of monitoring the GSN and GUAN networks to the attention of station operators in order that remedial action could be taken in a timely manner, recommends that CBS Lead Centres for GCOS Data be established, on a trial basis, to facilitate the exchange of this information directly with the NMSs involved. These Lead Centres would have the Proposed Terms of Reference as presented in Table 1.

TABLE 1:

Proposed Terms of Reference for CBS Lead Centres for GCOS Data
<ul style="list-style-type: none"> • Evaluate the monitoring results of the GCOS Monitoring and Analysis Centres;
<ul style="list-style-type: none"> • Co-ordinate activities with other GCOS Centres and/or other centres as appropriate;
<ul style="list-style-type: none"> • Liaise with nominated Points of Contact for GCOS data to improve data availability and quality;
<ul style="list-style-type: none"> • Monitor and report to CBS and GCOS on action taken and progress achieved;
<ul style="list-style-type: none"> • Maintain the list of Points of Contact in co-operation with WMO Secretariat.

Further recommends the nomination of Points of Contact by each of the NMSs who could be contacted directly by the Lead Centres and who would be tasked by the PR to follow up with appropriate action within the NMHS concerned. Proposed Terms of Reference for the POCs are given in Table 2.

TABLE 2:

Proposed Terms of Reference for Points of Contact for GSN and GUAN
<ul style="list-style-type: none"> • Liaise within the NMHS on GSN and GUAN issues related to data availability and quality;
<ul style="list-style-type: none"> • Inform Lead Centres on current and potential problems that might impact data availability and quality;
<ul style="list-style-type: none"> • Respond to requests from CBS Lead Centres for GCOS Data regarding data availability and quality.

Rec. 8 Notes with appreciation the offer, subject to final confirmation, of the GSNMC (DWD and JMA) and the GSN/GUAN Analysis Centre (NCDC) to carry out the function of CBS Lead Centre for GCOS Data on a trial basis and recommends implementation of this responsibility.

Rec. 9 Recommends that all performance results from the GCOS Monitoring and Analysis Centres be made available without restrictions via their respective Web sites and other appropriate mechanisms.

Rec. 10 Notes with appreciation the ambitious plans of the GSNMC for making performance results readily available to all users through interactive access to the GSNMC Web site and strongly encourages the DWD and JMA to continue their activities in this regard at the highest possible level.

Rec. 11 Notes with appreciation the progress being made in identifying the detailed status of a number of underperforming GSN and GUAN stations through efforts being supported through the US NWS and encouraged the continuation of these efforts to improve the availability and quality of GSN and GUAN data.

Rec. 12 Recognizes the urgent need for overall coordination of GSN and GUAN implementation activities and strongly encourages the establishment of a project office dedicated to this task.

Rec. 13 Recognizes the need for a single, centrally maintained list of GSN and GUAN stations and welcomes the activities currently being carried out toward this end.

Rec. 14 Notes the substantial progress achieved through the expert meeting and recommends that such meetings be continued in the future.
