

**WORLD METEOROLOGICAL ORGANIZATION
&
GLOBAL CLIMATE OBSERVING SYSTEM**

GCOS-156

**CBS LEAD CENTERS FOR GCOS
COORDINATION MEETING**

Third SESSION

(Hamburg, Germany, 11-13 October 2011)

FINAL REPORT

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WMO General Regulations 42 and 43

Regulation 42

Recommendations of working groups shall have no status within the Organization until they have been approved by the responsible constituent body. In the case of joint working groups, the recommendations must be concurred with by the presidents of the constituent bodies concerned before being submitted to the designated constituent body.

Regulation 43

In the case of a recommendation made by a working group between sessions of the responsible constituent body, either in a session of a working group or by correspondence, the president of the body may, as an exceptional measure, approve the recommendation on behalf of the constituent body when the matter is, in his opinion, urgent, and does not appear to imply new obligations for Members. He may then submit this recommendation for adoption by the Executive Council or to the President of the Organization for action in accordance with Regulation 9(5).

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EXECUTIVE SUMMARY

The CBS Lead Centers for GCOS (CBS-LC-GCOS) Coordination Meeting was held at the Regional Office of the German Weather Service in Hamburg, Germany, from 11 to 13 October 2011. Unfortunately because of last minute visa problems the representatives from Mozambique and from Iran could not participate.

The Coordination Meeting considered reports from individual Lead Centers' activities, GCOS Monitoring Centers and of the GCOS Archive Center, it reviewed their activities, results of monitoring performance reports and updated of their Terms of Reference to include all RBCN stations in their terms of reference. It also reviewed the status of metadata collection, GCOS Technical Documents No.144 and 127, the Implementation Plan for the evolution of the global observing systems (EGOS-IP) and the current status of GTS/WIS. The Coordination Meeting also made proposals to CBS Implementation Coordination Meeting on Integrated Observing Systems (ICT-IOS) and CBS-XV (2012).

The Coordination Meeting agreed on a number of [recommendations](#) that will be channeled to various WMO and GCOS bodies through the WMO and GCOS Secretariats.

GENERAL SUMMARY

1. OPENING OF THE SESSION

1.1. The CBS Lead Centers for GCOS (CBS-LC-GCOS) Coordination Meeting was held at the Regional Office of the German Weather Service in Hamburg, Germany, from 11 to 13 October 2011.

1.2. The meeting was opened by Ms. Gudrun Rosenhagen, the Director of the Regional Office. Dr Rosenhagen expressed her appreciation to the CBS Lead Centers for GCOS for their important contributions to GCOS and welcomed participants to Hamburg.

1.3. Dr Miroslav Ondráš, WMO Secretariat highlighted the role of CBS-LC-GCOS play in ensuring availability and quality of climate data that is an important aspect of the two WMO's high priorities, namely the Global Framework for Climate Services (GFCS) and the WMO Integrated Global Observing System (WIGOS).

1.4. Ms Christiana Lefebvre was elected the chairperson of the coordination meeting.

1.5. The Coordination Meeting adopted the [Agenda](#) for the meeting, which is reproduced at the beginning of this report.

1.6. The list of participants is given in [Annex I](#).

2. REVIEW OF CBS-LC-GCOS-2 RECOMMENDATIONS

2.1. The Coordination Meeting reviewed the recommendations from the Second meeting held in Geneva in November 2009. Most had been implemented or were discussed further during the Coordination Meeting. Some were carried over as [recommendations](#) from the present meeting

3. RESENT DECISIONS OF WMO CONSTITUENT BODIES AND GCOS

3.1. Dr Ondráš informed the Coordination Meeting on the relevant decisions of CBS-Ext.(2010), CIMO-XV (2010), EC-LXII (2010), Cg-XVI (2011) as well as recent Sessions of RA I, III and V.

3.2. These, among others, included:

- a) Siting Classification Surface Observing Stations on Land, adopted by CIMO-XV, and requested by CBS to be promoted to a joint WMO and ISO standard. The Commission also recommends that the guidelines for the implementation of the Classification;
- b) Steps taken for the development of the new Implementation Plan for the evolution of the global observing systems;
- c) Approval of the Antarctic Observing System (AntON);
- d) Update of the *Manual on the Global Observing System* (WMO-No. 544), Volume II - Regional Aspects - The Antarctic and the regional Aspects of RA I, III and V;
- e) Status of the implementation of the WMO Information System (WIS) and approval of the Manual on WIS;
- f) Decisions on implementation of GFCS and WIGOS;
- g) Updated lists of the RBCNs of RA I, III and V.

3.3. Mr Thigpen informed the Coordination Meeting on the relevant decisions of the GCOS Atmospheric Panel on Climate Change (AOPC) and GCOS Steering Committee (GCOS-SC), such

as preparations for the World Weather Records on a yearly basis rather than on a 10 year cycle and request to the CBS Lead Centers for their input.

4. UPDATE FROM GCOS SECRETARIAT

4.1 Dr Richter provided an overview of some of the main GCOS activities. She indicated her strong support of the CBS Lead Centers and described them as the “engine” for improving the quality of the observations.

4.2 Mr. Thigpen provided feedback from the last AGG/AOPC meeting. The AOPC is very hesitant to delete silent stations and would prefer that they be rehabilitated if at all possible. Further the AOPC urge that members prepare and send CLIMAT reports from all RBCN stations as they are supposed to and further encourages members to expand the RBCN to include as many stations as possible. At the next AGG/AOPC, the matter of the new site classification guide will be discussed as will the need for monitoring of atmospheric pressure by the monitoring centers. The Lead Centers should be informed of the reports from the AOPC meetings.

5. REPORTS FROM CBS LEAD CENTERS

5.1. Detailed presentations were made by the representatives of CBS-LC-GCOS.

5.2. Germany gave a very detailed report as they are also a monitoring center. It was noted and discussed that some member countries do not include sunshine duration in the CLIMAT reports. The representative from the US noted that the AWS used by the US does not have a sunshine sensor and so they cannot report. The US representative will bring the matter for discussion in the US. In addition, Germany noted format problems with BUFR coded messages which will be referred to the appropriate WMO working group.

5.3. Chile raised the issue of stations within the networks, especially the GSN that should possibly be removed as they do not report regularly. Further he raised the issue of difficulties contacting GCOS Focal Points.

5.4. The US, also a monitoring center agreed that they would increase the content of their performance reports to include all of the RBCN. This will assist the other L/C as the scope of responsibility increases to include all of the RBCN.

5.5. Morocco noted a big decrease in overall CLIMAT reports associated with the conflicts in the region, especially in Sudan and in Libya. Reports from Gabon are on the GTS but do not show up at NCDC. This will be investigated. (as of early November this problem is corrected-RKT)

5.6. Japan noted that most of the monitoring reports are not re processed after late data arrives which then reflects a lower level of performance. The monitoring centers are requested to revise their operating procedures so that late data will be reflected in the on line reports. The also note the problem of poor response from GCOS focal Points.

5.7. Australia described the capabilities used by BOM for the preparation of CLIMAT reports. NIWA, part of the New Zealand Weather Service offered to create the CLIMAT reports for many countries in the region, but the member countries did accept this approach. Thus it appears that a CLIMAT preparation workshop in the region should be organized to address this deficiency.

5.8. The British Antarctic Survey raised several issues including that many long term observing stations are at risk because of the current financial crisis. He reiterated the need for GSN quality reports from the NWP centers.

6. REPORT FROM SWISS NATIONAL FOCAL POINT

6.1. Dr Joerg Klausen informed on the Swiss GCOS Office and National Climate Observing System (GCOS Switzerland). Basic roles of GCOS Switzerland is to look after legal issues, observing networks, long time series and importance for GCOS, international integration and assessment of future prospects.

6.2. He noted that many of the current performance reports are not always consistent with each other. This problem has existed for a long time and some progress has been made in reconciling reports. Some stations, for example do not appear in various NCDC reports of historical data but the data are known to exist. He also noted that soil moisture is an ECV but no GCOS network is defined. This should be brought up at the next AOPC meeting.

7. REPORT FROM GCOS ARCHIVE CENTER

7.1 Mr. Jay Lawrimore, the representative of the NOAA National Climatic Data Center (NCDC) that serves also as the GCOS Archive Center reported on the activities of the center.

7.2 He reported that NCDC is now receiving historical data directly from several member countries such as Australia directly from their server and several others have sent data to them. he reiterated the need for daily climate reports. He also noted that Global Historic Climatology Network (GHCN) has been revised and that version 3.00 is now available.

8. REPORT FROM GCOS MONITORING CENTERS

8.1. Ms Lefebvre along with several members of her staff from DWD provided a report of the GCOS Monitoring Centres run by DWD and JMA. Changes have been made at DWD and soon the Scalable Vector Graphics (SVG) function will work with all browsers. This has been a limitation discussed at several previous meeting as the performance reports could only be viewed using Internet Explorer.

8.2. DWD indicated that it may have difficulty because of resource limitations to expand all of their performance reports to include all stations in the RBCN.

8.3. DWD did indicate however that they would prepare a report of GSN observations that appear to be inconsistent meteorologically. This should help Lead Centres identify poor quality observations. In the discussion, NCDC also indicated that they might be able to produce some form of "quality" report.

8.4. JMA and DWD still do not receive the same number CLIMAT reports although the differences have gotten smaller. JMA and DWD are asked to prepare a list of reports that are received by one center but not the other so that the GTS routing issues can be resolved.

8.5. Ms Lefebvre along with several of her staff demonstrated the quality control of CLIMAT data at DWD and pointed to some significant errors, e.g. concerning the month-year identifier.

8.6. Mr Richter introduced the monitoring list of received CLIMAT bulletins performed by RTH Offenbach and informed about recent progress resolving GTS/WIS issues (including bulletin spraying, Internet gateways, routing of bulletins, etc.).

9. REVIEW OF PERFORMANCE REPORTS

9.1 Mr Thigpen informed on the requirements for performance reports. OGIMET has been linked to the performance reports section of the GCOS/GOSIC web page and the EXCEL report produced by DWD will soon be linked.

10. REVIEW OF META DATA REQUIREMENTS

10.1. Lead Centers were informed that the guidelines for metadata discussed at previous meetings has in fact been prepared and published as an annex in GCOS-73. The annex was reviewed and Lead Centers are requested to begin working through National focal points to collect that information about GUAN and GSN stations. It is noted that NCDC has abandoned efforts on the previous version of its metadata management system and that a new approach will be defined. Following extensive discussion it was agreed that a sample spreadsheet will be developed by NCDC and the GCOS Secretariat. This spreadsheet could then be sent to Focal Points with a

request to complete as much as possible as a beginning. The groups also discussed setting targets for this activity. Perhaps something like X% completed within the next 2 years. This target should be developed before the draft spreadsheet is sent out.

11. ITEMS FOR DISCUSSIONS

11.1. As planned several items were discussed by the Lead Centres. The performance of the lead centers varies considerable. In some cases it appears that the Lead Center does not have its management's concurrence to expend the time needed to be a Lead Center. There was extensive discussion of possibly implementing performance measures for the Lead Centres or in providing some form of feed back to the manager of the function. In general most centers do not believe that performance measures would be useful. No conclusions were reached.

11.2. The possible establishment of additional Lead Centers was discussed. In some areas, notably Africa, the Lead Centers have more "problem" stations than in some regions that cover the more developed countries. There is some feeling that additional Lead Centers would address this problem. Following extensive discussions the general conclusion is that no additional centers should be established at this time and that instead, more effort on the part of the GCOS Secretariat to improve the functioning of the Lead Centers is the better approach. To achieve this, the Secretariat is asked to provide additional training and support to the Lead Centers especially those in Africa.

12. NEXT MEETING

12.1. The next meeting will be held in Santiago, Chile, in September 2013 at the kind invitation of the Lead Center from Chile.

13. CLOSURE OF THE SESSION

13.1. The session closed on Thursday, 13 October 2011 at 16 hours.

Status of RECOMMENDATIONS from CBS-LC-GCOS-1 & CBS-LC-GCOS-2

1. CBS-LC-GCOS requested NCDC to modify the format of its performance reports to include the country name, and to distinguish between reports received on the GTS and those received by other means. **Action: NCDC partly done**
2. CBS-LC-GCOS requested monitoring centres to modify their performance reports to provide more detail, including the station numbers with faulty reports and specific details of the quality control issues. **Action: DWD & JMA** (DWD could have this in place for January 2010.) **partly done**
3. CBS-LC-GCOS requested that effort should be made in the future so that the monitoring products can be made available in platform independent format. It was agreed that whilst it was helpful to have a cut-off for monitoring of the 20th of the present month, when older data was portrayed it should include all available data. JMA was monitoring data that came in after this cut-off. **Action: DWD & JMA, Not done**
4. CBS-LC-GCOS noted that ECMWF (and also some other centres e.g. Melbourne) also carried out quality monitoring of upper air reports and they should be asked if they could provide this additional information to the lead centres. **Action: GCOS Secretariat Not done**
- ~~5. CBS-LC-GCOS discussed the possible extension of their monitoring work to include the RBCN stations. It recognized that this could involve significant extra work, and agreed that priority should be given to the GSN stations, with monitoring of the non-GSN being undertaken as resources allowed. This will be reflected in the Terms of Reference of the Lead Centres. **Action: all Lead Centres Done**~~
6. CBS-LC-GCOS also requested Secretariat to consider a single focal point covering RBCN, RBSN, GSN, GUAN and Vol. A. **Action: WMO Secretariat, CBS Not done**
- ~~7. CBS-LC-GCOS also discussed a few GSN stations that had not been included in the Lead Centres areas of responsibility and made appropriate assignments (see [Annex III](#)). **Action: WMO Secretariat to notify CBS Done**~~
8. Referring to a letter by GCOS Secretariat to all PRs asking them to send hourly data (SYNOPS) to NCDC, CBS-LC-GCOS noted that recovery of historic data was also important (as demonstrated by GCOS and SCAR resolutions), and asked the lead centres to use their contacts with focal points to request submission of missing archival data to NCDC and other data centres. In addition to checking for missing hourly data, they should also check for missing CLIMAT reports on the NCDC performance reports and submit them via email to gcos.ncdc@noaa.gov when possible. **Action: Lead Centres Some progress**
9. Some GCOS stations, both surface and upper air are silent due to lack of funding. WMO Member countries may be willing to provide assistance to funding such stations. CBS-LC-GCOS considered that provision of funding for digitization of historic data was also important Where historic data exists in paper form only it can be sent to NCDC, either as hard copy or digital images for digitization, although there is a limited budget for digitization at NCDC. **Action: GCOS secretariat to consider funding for digitization of historic data when seeking sponsors. It was proposed to look for funding for GSN sites at a national level. Not done**
10. CBS-LC-GCOS noted that whilst impact studies on the effectiveness of individual GUAN stations had been carried out, nothing similar was available for GSN stations. The group

requested the AOPC to investigate the possibility of a tool to determine the most important sites, which could also be used to decide location of GRUAN sites. **Action AOPC, Not done**

~~11. CBS-LC-GCOS noted a common theme concerning failure of GTS routing at RTHs. It requested that they should publish the actual routing tables that they are currently using, on the Internet as a tool to assist the Lead Centres in locating where CLIMAT reports were going missing. It noted that RTH Melbourne had a policy of forwarding all SYNOP, TEMP and CLIMAT reports that it received and encouraged all other RTHs to follow suit. **Action: WMO Secretariat to inform RTHs, Done**~~

12. Noting that the EURO4M project aimed to improve input data for reanalysis, the CBS-LC-GCOS requested that its steering committee should consider providing as an output a measure of quality for the GSN and GUAN stations. **Action: GCOS Secretariat, EURO4M steering committee, Not done**

13. CBS-LC-GCOS noted that it can help support at station level if the stations receive recognition of their work, and can be part of the community. It was informed that certificates had been prepared for all stations, but in many cases these had got no further than the PRs. Another set of certificates was in preparation, which would be sent to the national GCOS focal points for distribution. CBS-LC-GCOS requested to keep the stations involved on a more regular basis, and to provide them with feedback when required. **Partly done**

Action: GCOS Secretariat, Lead Centres, National focal points

14. A BUFR template for the CLIMAT code was available on the WMO web page and it was recommended that all data should be transmitted using this template. Some expansion of the template was needed, in particular there was a requirement for:

- An indicator to indicate a provisional report derived from data available on the GTS.
- A table to provide daily maximum and minimum values.

Action: WMO Secretariat, CBS, Ondras-Shimazaki-Shanklin-Cervena

~~15. Concern was expressed that full climate data was not available for some GSN and GUAN stations. Since climate change is of such potential impact on the public, data demonstrating its reality should be in the public domain. Through the GCOS Secretariat the group would like to encourage world leaders to commit to making such data freely and publicly available, and to provide funding to fully implement the GCOS observing network. **Action: GCOS Secretariat Done**~~

16. The formal route of the WMO asking PRs to nominate focal points was not working in some cases. CBS-LC-GCOS needed local points of contact to work with, and suggested that it should assist the Secretariat in establishing focal points through personal contact from the Lead Centres. **Action: Lead Centres, WMO Secretariat Partly done**

~~17. CBS-LC-GCOS noted that some bulletins contained NIL= reports from silent or closed stations. It recommended that NIL reports should only be used for active stations that had not yet produced a report for the month. **Action: RTH or bulletin compilers, WMO Secretariat, Done**~~

~~18. Some Lead Centres gave regular feedback to all the focal points in their respective areas. CBS-LC-GCOS recommended this as excellent practice and suggested sending such feedback every couple of months. It was also thought helpful to send a copy of GCOS-127 to focal points that were having problems with data format. There is some additional guidance on best practice on the WMO OIS web page at <http://www.wmo.int/pages/prog/www/ois/ois-home.htm> **Action: Lead Centres, Done**~~

19. Noting that there were differences in the availability of CLIMAT messages between the JMA, DWD and NCDC, the CBS-LC-GCOS recommended that it would be useful to have a single site that held all the reports. NCDC was the GCOS archive centre, so that JMA and DWD should ensure that all reports were copied to the NCDC at the end of each month. It was noted that the global maps showing receipt of CLIMAT messages were valuable, and JMA, DWD and NCDC were asked if they could all produce maps in a similar format. **Action: JMA, DWD and NCDC, Partly done**
- ~~20. Noting that there were a number of silent stations in the GSN, CBS-LC-GCOS considered that it was essential for them to be replaced by active stations, unless there was some prospect of the station being restored. Although the GCOS Secretariat should make a formal request, the Lead Centres were well placed to assess potential replacements. **Action: Lead Centres and GCOS Secretariat, Done**~~
21. CBS-LC-GCOS noted that there was an active community that was eager to obtain monthly means as soon as possible after the end of the month, either for climate research, or for issues of public awareness (e.g. record values). For some stations quality control was carried out by a single individual, which on occasion led to delays in message production. Best practice was for the message to be compiled on station, and for them to get the message out by the 5th of the month. A corrected version could be sent later if necessary. The group was also informed that the AOPC had recommended inclusion of parts 3 and 4 in all messages, and that this should include snow depth. **Action: AOPC to advise if this is correct procedure. Lead Centres to contact stations on need for parts 3 and 4, Not done**
22. CBS-LC-GCOS noted that none of the monitoring centres had been requested to monitor the quality of pressure reports in CLIMAT messages and that this was not being done. **Action: AOPC to note, GCOS Secretariat to do an action**
- ~~23. CBS-LC-GCOS noted that the AOPC had made a number of recommendations in its report, but that these had not been communicated to the Lead Centres. GCOS Secretariat was requested to ensure that any such reports were distributed. **Action: GCOS Secretariat, Done**~~
- ~~24. Lead Centres mentioned web sites that they used to help them in their monitoring. The Secretariat would like to place any such links on the GOSIC web page and requested notification of the urls. **Action: GCOS Secretariat and the Lead Centres, Done**~~
- ~~25. CBS-LC-GCOS discussed issues associated with the GTS and its monitoring by the WMO. It suggested that it would be helpful to have Washington included in the quarterly monitoring, as many CLIMAT bulletins are routed through the RTH. It noted that routing problems currently experienced here might be eliminated as the WIS developed. It recommended that persistently silent stations should be identified in the WMO monitoring, but that they should be excluded from the performance statistics. It was noted that WMO No 9 Vol. C1 contained errors, for example entire countries omitted and out of date focal points. **Action: WMO Secretariat, Done**~~
- ~~26. Noting that use of the WIS and access to GISC was essential for the function of the Lead Centres they requested CBS to nominate them as DCPCs. **Action: GCOS Secretariat to propose to CBS, Done**~~
- ~~27. Metadata was an important part of establishing the quality of measurements from stations. Such data should include appropriate photographs. The CBS-LC-GCOS discussed requirements for metadata and agreed that a simple form was desirable. **Action: GCOS Secretariat to produce a draft by February and the Lead Centres to give feedback by the end of March. Lead Centres to provide a copy to GCOS Secretariat of what they currently use, Done**~~

- ~~28. It was agreed to place the annual reports of the Lead Centres on the GCOS web page. It was recommended that the reports should cover the calendar year and submitted to the GCOS Secretariat in February. **Action: GCOS Secretariat and Lead Centres, Done**~~
- ~~29. The Secretariat noted that it prepared (automatically) monthly emails for the focal points, and could include information or requests from the Lead Centres. CBS-LC-GCOS agreed that this was a useful service and suggested that such information or requests could be put on the web page, with an automated note directing focal points to it. **Action: GCOS Secretariat and Lead Centres, Done**~~

Recommendations from CBS-LC-GCOS-3

1. The GSN Monitoring Centers are requested to revise their performance reports by re-running them after late arriving data comes in so that the performance reports more accurately reflect the actual receipt of CLIMAT reports.
2. The GCOS Secretariat is urged to send a letter to operators of stations with long term historical records, especially those in the Antarctic region, to encourage them to maintain the operation of the stations even in light of the current world wide financial crisis. There is concern that some of these stations might be closed.
3. Numerical Weather Processing centers are requested to provide routine data quality reports of the meteorological quality of the reports from GSN stations. Such reports are provided for the GUAN stations.
4. The relevant WMO expert teams are requested to consider whether there is any real value in the implementation of TDCF such as BUFR for reports such as the current SYNOP and CLIMAT.
5. Soil moisture is one on the GCOS ECV's but there is no data network defined. The matter should be referred to the AOPC.
6. The GCOS Implementation Project Manager is reminded to send revised metadata information to NCDC following stations renovations.
7. In order to resolve data routing issues on the GTS, the monitoring centers at JMA and DWD are requested to prepare a list on stations that are received at one center but not at the other. This will permit a more rapid resolution of the GTS routing problems.
8. In order to address the meteorological 'quality' of GSN reports both NCDC and DWD are requested to consider the preparation of routine reports from their data processing activities that would identify "inconsistent" reports from GSN stations.
9. The CBS-LC-GCOS believe that a letter addressed to their "management" from the GCOS Secretariat describing the revisions to the Terms of Reference and including an encouragement to allow sufficient time for the conduct of the duties of this important responsibility would be very useful. Such a letter should have the endorsement of the AOPC.
10. The CBS-LC-GCOS believe that the new personnel from Mozambique and Morocco Lead Centres should receive familiarization/training from the GCOS Secretariat. This could be done through a short visit to the GCOS Secretariat.
11. The Lead Center from NCDC reiterated the need for daily climate reports. The CBS-LC-GCOS suggests this be brought to the attention of the AOPC again. The current request for this daily data from operating countries has not resulted in a large increase in daily data arriving at the archive.

**REVISED TERMS OF REFERENCE
OF THE CBS LEAD CENTERS FOR GCOS FOR SUBMISSION TO CBS-XIV**

REVISED TERMS OF REFERENCE OF THE CBS LEAD CENTERS FOR GCOS
(*Proposal of CBS-LC-GCOS-3 to be submitted to CBS-XV, Malaysia, autumn 2012*)

In support of the Global Framework for Climate Services, especially by improving quality and sustainability of climate data, the Lead Centres for GCOS will:

1. Diagnose problems in the **Regional Basic Climatological Networks (RBCNs) and the Antarctic Observing Network (AntON)**, with the emphasis on the GSN and GUAN, by using the **available** monitoring reports, such as those produced by the GCOS Monitoring and Analysis Centers **and major WMO NWP Centres**;
2. Liaise with nominated National Focal Points for GCOS and related Climatological Data, and other responsible officials, to **rectify identified problems so as to** improve data and meta data availability and quality;
3. Coordinate activities with other GCOS Centers and/or other **WMO C**enters as appropriate;
4. ~~Monitor and r~~Report to CBS and GCOS on actions taken, progress achieved, concerns and recommendations on a yearly basis in a time frame that corresponds to planned AOPC and CBS meetings;
5. Assist AOPC in the **revisions design** of GSN and GUAN **and Regions in the design of RBCNs/AntON stations**;
6. Assist the WMO Secretariat in maintaining the list of National Focal Points for GCOS and related Climatological Data.

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AREAS OF RESPONSIBILITIES OF THE CBS LEAD CENTERS FOR GCOS
(Proposal of CBS-LC-GCOS-3 to be submitted to CBS-XV, Malaysia, autumn 2012)

- **Morocco (RA I)** is responsible for ~~GSN and GUAN S~~ stations in: Algeria, Benin, Burkina Faso, Cameroon, Cape Verde, Central African Republic, Chad, Congo, **Comoros Island**, Côte d'Ivoire, Egypt, Gabon, Ghana, Gambia, Guinea, Guinea Bissau, Guinea Equatorial, Liberia, Libyan Arab Jamahiriya, Madagascar, Mali, Niger, Nigeria, Mauritania, Morocco, Senegal, Sierra Leone, Sao Tome and Principe, Sudan, Togo, Tunisia.
- **Mozambique (RA I)** is responsible for ~~GSN and GUAN S~~ stations in: Angola, Botswana, Burundi, Canary Island, ~~Comoros Island~~, Democratic Republic of the Congo, Djibouti, Eritrea, Ethiopia, Kenya, Lesotho, Malawi, Mauritius, Mozambique, Namibia, the Ocean Islands (St. Helena Island, Ascension Island, Martin de Vivies, Iles Crozet, Iles Kerguelen), Rwanda, Seychelles, Somalia, South Africa, Swaziland, Uganda, United Republic of Tanzania, Zambia, Zimbabwe.
- **Iran (RA II and part of RA VI)** is responsible for ~~GSN and GUAN S~~ stations in: Afghanistan, Armenia, Azerbaijan, Bahrain, India, Iran, Jordan, Kazakhstan, Kyrgyzstan, Maldives, Nepal, Oman, Pakistan, Qatar, Russian Federation, Saudi Arabia, Sri Lanka, Syria, Tajikistan, Turkey, United Arab Emirates, Yemen.
- **Japan (RA II)** is responsible for ~~GSN and GUAN S~~ stations in: Brunei, Cambodia, China, Hong Kong China, Japan, Laos, Malaysia, Mongolia, Myanmar, Philippines, Republic of Korea, Singapore, Thailand, Vietnam.
- **Chile (RA III)** is responsible for all ~~GSN and GUAN S~~ stations in RA III.
- **USA (RA IV)** is responsible for most ~~GSN and GUAN S~~ stations in RA IV plus Hawaii.
- **Australia (RA V)** is responsible for most **stations in** RA V, except those countries noted for Japan and Hawaii (USA).
- **Germany (RA VI)** is responsible for most **stations in** RA VI, except those countries noted for Iran.
- **UK (British Antarctic Survey)** is responsible for ~~all GSN and GUAN~~ stations in Antarctica.

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LIST OF PARTICIPANTS

AUSTRALIA Mr Kevin SMITH	National Climate Centre Bureau of Meteorology P.O. Box 1289 MELBOURNE Victoria 3001 Australia Tel.: +613 9669 4079 Fax. +613 9669 4760 Mobile. 0421022316 E-mail: k.c.smith@bom.gov.au GCOS_Lead_Centre_RAV@bom.gov.au
CHILE Mr Gaston TORRES	Head of Climatology Direccion Meteorologica de Chile Avenida Portales 3450 Estación Central Santiago de Chile Santiago Chile Tel.: +562 4364519 / +562 4364503 Fax. +562 6814902 E-mail. gtorres@meteochile.cl
GERMANY Dr Andreas BECKER	Head Precipitation Monitoring Unit and Global Precipitation Climatology Centre (GPCC) Deutscher Wetterdienst Frankfurter Str. 135 63067 Offenbach Germany Tel.: +49 69 8062 2900 Fax: +49 69 8062 3987 E-mail: Andreas.Becker@dwd.de
GERMANY Ms Christiana LEFEBVRE	Senior Meteorologist Deutscher Wetterdienst Bernhard Nocht-Str. 76 20359 Hamburg Germany Tel.: +49 40 6690 1460 Fax: +49 40 6690 1499 E-mail: christiana.lefebvre@dwd.de
GERMANY Mr Bernd RICHTER	Head, Data Traffic Management WMO RTH ICAO SADIS DWDSAT Frankfurter Str. 135 63067 Offenbach Germany Tel.: +49 69 8062 2559 Fax: +49 69 8062 3559 E-mail: Bernd.Richter@dwd.de

GERMANY Mr Udo SCHNEIDER	Head of GSNMC Germany Focal Point for GCOS and related climatological data (RBCN) Deutscher Wetterdienst, Abt KU4 Hydrometeorologie Frankfurter Str. 135 63067 Offenbach a Main Germany Tel.: +49 69 8082 2766 Fax: +49 69 8062 3987 E-mail: udo.schneider@dwd.de
JAPAN Mr Takafumi UMEDA	GSN Monitoring Centre and CBS Lead Center for GCOS Data Climate Prediction Division Global Environment and Marine Department Japan Meteorological Agency 1-3-4 Otemachi, Chiyoda-ku 100-8122 Tokyo Japan Tel.: +813 3211 4966 Fax: +813 3211 2032 E-mail: t_umeda@met.kishou.go.jp
MOROCCO Mr Feddoul EL OUAZZANY	Chef de service Banque de Données et Système d'Information Climatologique Centre d'Applications Climatologiques Direction de la Météorologie Nationale (DMN) B.P. 8106 Casablanca Morocco Tél. Professionnel: +2126 61 34 97 63 Tél. Bureau: +2125 22 65 49 01 Fax: +2125 22 91 37 E-mail: ouazzany@gmail.com
SWITZERLAND Dr Joerg KLAUSEN	Climate Division, Swiss GCOS Office Federal Office of Meteorology and Climatology MeteoSwiss Federal Department of Home Affairs (FDHA) Kraehbuehlstrasse 58 P.O. Box 514, CH-8044 ZURICH Switzerland Tel.: Fax: +41 44 256 9278 E-mail: joerg.klausen@meteoswiss.ch
UNITED KINGDOM Mr Jonathan SHANKLIN	Head of Meteorology and Ozone Monitoring Unit British Antarctic Survey Madingley Road Cambridge CB3 0ET United Kingdom Tel.: +44 1223 24 14 82 Fax: +44 1223 22 12 79 E-mail: J.Shanklin@bas.ac.uk

USA Mr Jay LAWRIMORE	Chief, Ingest and Analysis Branch NOAA National Climate Data Center Federal Building, Room 514 151 Patton Avenue Asheville, NC 28801-5001 USA Tel.: +1 828 271 4750 Fax: +1 828 271 4022 E-mail: Jay.Lawrimore@noaa.gov
WMO Secretariat	
Dr Miroslav ONDRAS	Chief, WMO Observing Systems Division Observing and Information Systems Department World Meteorological Organization (WMO) 7 bis, avenue de la Paix CH-1211 Geneva Switzerland Tel.: +41 22 730 8409 Fax: +41 22 730 8021 E-mail: MOndras@wmo.int
CGOS Secretariat	
Dr Carolin RICHTER	Director, GCOS Secretariat c/o WMO, P.O. Box 2300 1211 GENEVA 2, Switzerland Tel.: +41 22 730 8275 Fax: +41 22 730 8052 E-mail: CRichter@wmo.int
Mr Richard K. THIGPEN	GCOS Implementation Project Manager GCOS Secretariat Tel: +41 22 730 8068 Fax: +41 22 730 8052 E-mail: RThigpen@wmo.int