

World Meteorological Organization

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WWW INFORMATION SYSTEM AND SERVICES; INCLUDING THE GLOBAL TELECOMMUNICATION SYSTEM AND DATA MANAGEMENT

SUMMARY

ACTION REQUIRED:

Congress is invited to provide directives and guidance regarding the future implementation of the GTS and Data Management Programmes, and of the WMO Information System.

REFERENCE:

Abridged Final Report with Resolutions and Recommendations of the Extraordinary Session 2006 of the Commission for Basic Systems (WMO-No. 1017)

CONTENT OF DOCUMENT:

Appendix for inclusion in the final report:

Draft text for inclusion in the general summary of Cg-XV

Appendix for information:

Cg-XV/Rep. 3.1.2: Progress/Activity Report

DRAFT TEXT FOR INCLUSION IN THE GENERAL SUMMARY OF Cg-XV

3.1.2 WWW INFORMATION SYSTEM AND SERVICES, INCLUDING THE GLOBAL TELECOMMUNICATION SYSTEM AND DATA MANAGEMENT (*agenda item 3.1.2*)

Global Telecommunication System (GTS)

3.1.2.1 Congress noted with satisfaction the significant progress made in the implementation of the GTS. The Improved MTN project (IMTN) implementation was nearly completed and had facilitated a progressive but rapid implementation of effective and reliable data-communication network services for the core GTS services; Congress expressed its great appreciation for the collaborative and fruitful efforts made by the NMHSs concerned that contributed to the upgrade of the overall GTS as well as to an effective building block for WIS. GTS links had been significantly improved in all Regional Meteorological Telecommunication Networks (RMTNs), although serious shortcomings persisted in some Regions at regional and national levels. Considerable progress was also made in the implementation of computer-based systems for GTS/GDPS functions in WWW centres through the introduction of cost-effective PC-based systems in several developing countries.

3.1.2.2 Congress was pleased that CBS continued to develop and update recommended practices and guidance on Information and Communication Technologies that have facilitated taking early benefit from the new opportunities by Members and regional associations, and attaining a more cost-effective GTS. Congress emphasized the importance of providing and sharing information, experience and advice between NMHSs on new information and communication techniques and services and it requested to further strengthen those activities in the future. Congress encouraged Members and regional associations, with the technical support of CBS, to pursue their fruitful efforts towards cost-effective upgrade of the GTS, while giving particular attention to the specific areas where the GTS was weak or deficient, particularly in developing regions and areas with adverse conditions. In that respect, Congress made a plea for resolute cooperative efforts to support the modernization of national data-collection of NMCs and RTHs systems in developing countries, in order to overcome the persisting shortcomings in national and regional data collection, particularly in parts of Region I.

3.1.2.3 Congress noted with appreciation that in several regions the RMTNs were being improved by the continued implementation of advanced data-communication network services, that had proven to be cost-effective, with a very high reliability and full security, a guaranteed quality of service and an easy connectivity and scalability. Congress noted that new and imaginative administration and financial arrangements and partnership were required to share and take full benefit from those new data-communication network services, and it invited NMHSs to be as flexible as possible in that regard, taking account of respective national policies.

3.1.2.4 Congress emphasized the prime importance of using relevant international industry standards and technology, which were providing better opportunities for considerable enhancements in the capacity, versatility and cost effectiveness of information systems and services. Use of international standards was also greatly facilitating effective cooperation assistance to developing countries. Congress also noted with appreciation the guidance for using the Internet developed by CBS on procedures and implementation options that would minimize the operational and security risks for NMHSs. It noted with appreciation the work that had been performed by CBS and requested to pursue the continuous review, update and further development and promotion of relevant recommended practices and guidance on information and communication technology.

3.1.2.5 Congress noted with satisfaction the extensive implementation and significant technological upgrades of satellite-based multipoint telecommunications systems that were

operating as integrated components of the GTS for the distribution of large volumes of information, in complement to the dedicated connections. Each WMO Region was completely covered by at least one satellite-based data-distribution system, and several systems were implemented at national or sub-regional level. Satellite-based systems using digital video broadcasting (DVB) or digital audio broadcasting (DAB) techniques, that were enabling a very cost-effective distribution of large volumes of data, were implemented or firmly planned in several Regions. Congress expressed its gratitude to all Members and organizations operating satellite-based meteorological data distribution systems for the benefit of all NMHSs.

3.1.2.6 Congress was pleased that CBS continued to further enhance operational procedures for the effective exchange of data, products and related metadata, including high priority information such as warnings. It noted with satisfaction the operational arrangements made for the effective support to Tsunami warning systems for the prompt distribution of warnings and the collection and exchange of sea level, deep-ocean tsunami detection and seismic data. Congress asked CBS to further review the exchange and routing mechanisms for messages and files on the GTS, with a view to WIS and with a view to improving exchange of high priority data and products in support of a virtual all hazards network within the WIS-GTS.

WMO Information System (WIS)

3.1.2.7 Congress recalled the Fourteenth Congress decision to establish an overarching WMO Information System (WIS) that would be used for the collection and sharing of information for all WMO and related international programmes. Congress recognized the good progress that has been made in demonstrating the technological solutions for WIS through pilots and prototypes projects, but noted that much work remained to be done before an operational version of WIS can be realised. It emphasized the need for adequate financial and human resources for the proper development of WIS and importantly, its introduction into operations, complementing and following up the considerable efforts made by a few Members. In this regard, it expressed satisfaction for the establishment of a WIS Trust Fund to facilitate potential financial donations from Members and Organizations for fostering the technical development and implementation of the key components of WIS.

3.1.2.8 Congress agreed that the WIS should provide three fundamental types of services to meet the different requirements, as follows:

- (a) Routine collection and dissemination service for time-critical and operation-critical data and products:
This service is based on real-time "push" mechanism including multicast and broadcast; it would be implemented essentially through dedicated telecommunication means providing a guaranteed quality of service;
- (b) Data Discovery, Access and Retrieval service:
This service is based on request/reply "pull" mechanism with relevant data management functions; it would be implemented essentially through the Internet;
- (c) Timely delivery service for data and products:
This service is based on delayed mode "push" mechanism; it would be implemented through a combination of dedicated telecommunication means and of public data-communication networks, especially the Internet.

3.1.2.9 Congress emphasized that the WIS implementation should build upon existing WMO information systems in a smooth and evolutionary process. It agreed that the WIS implementation plan has two parts that would be developed in parallel:

- (a) Part A: the continued consolidation and further improvements of the GTS for time-critical and operation-critical data, including its extension to meet operational requirements of WMO Programmes in addition to the World Weather Watch (including improved management of services);
- (b) Part B: an extension of the information services through flexible data discovery, access and retrieval services to authorized users, as well as flexible timely delivery services.

3.1.2.10 Congress also noted the WMO Integrated Global Data Dissemination Service (IGDDS) as one component of the WIS, which, as a system, is the exchange scheme of space-based observation data and products for WMO Programmes (see also agenda item 3.10).

3.1.2.11 Congress emphasized that the support and involvement of all NMHSs, including regional associations and technical commissions, in the WIS development was a crucial factor for ensuring a successful implementation and a shared ownership of the system. An important goal for the WIS had been facilitating a cost-effective access to and reception of WMO Programmes' data and products for NMHSs of developing countries and LDCs. Congress emphasized the need for a coordinated plan for building capacity in developing countries to enable them to participate in WIS, and the importance of involving developing countries' experts in the development work of WIS to take account of the realistic capabilities, opportunities and constraints for the participation of the NMHSs of the developing countries in the WIS.

3.1.2.12 Congress confirmed the leading role of CBS in the further development of the WIS, and noted with satisfaction that it had established several CBS/ISS Expert Teams to directly contribute to the WIS development. It re-affirmed that WIS was serving all WMO Programmes and confirmed the critical role of the Intercommission Coordination Group on the WMO Information System (ICG-WIS) as a coordination mechanism spanning across WMO Programmes and technical commissions, as well as across global and regional levels. It emphasized that significant further work was required from all the individual WMO Programmes and Regions, as well as through a common effort, to ensure the successful development and implementation of WIS. It agreed that the WIS activities should be supported through contributions from each Programme, which should be commensurate with their respective budgetary resources.

3.1.2.13 As the WIS was developing as a major component of all WMO Programmes, Congress emphasized the need for appropriate regulatory documentation including organization and recommended practices and procedures (e.g. a Manual on WIS) as well as an implementation plan and guidance material for facilitating the implementation by Member countries at global, regional and national levels. It tasked CBS, in collaboration with the ICG-WIS, to develop regulatory documentation in phases based on the validation of preliminary organisational, functional and operational design. Congress noted with appreciation that CBS, upon ICG-WIS recommendations, agreed upon procedures for the designation Global Information System Centres (GISC) and the Data Collection or Production Centres (DCPC), which were similar to the procedures that had been successfully used for RSMCs under the WWW Programme. Congress endorsed in principle these procedures that would eventually be included in regulatory documentation related to the WIS. It noted that the designation of DCPCs, which were based on the functions of centres, should also take due consideration of the geographical distribution and relevant zone of responsibility, in coordination with the relevant regional associations.

3.1.2.14 Congress noted and supported the main following milestones for the development and implementation of WIS, and urged all Members and the Secretary-General to identify the necessary resources for reaching the objectives:

- (a) Consolidate plans on development, governance and implementation of WIS: 2007-2008;

- (b) Develop WIS regulatory documentation and guidance material: 2007-2008;
- (c) Implementation of first operational GISC: 2008;
- (d) Implementation of other operational GISCs: 2009–2011;
- (e) Implementation of DCPCs, i.e. WIS interfaces at WMO programmes' centres: 2008-2011.

3.1.2.15 Congress emphasized that the WIS, as a system with essential data exchange and data management services, would have to play a core role in the GEOSS as an essential WMO contribution with respect to weather, water and climate data and products. In this regard, it invited GEO to consider WIS as a core contribution of WMO to the GEOSS.

WWW Data Management

3.1.2.16 Congress was pleased to note that a large number of WWW centres were participating in the annual global monitoring of WWW operations. The special MTN monitoring was providing complementary results on a quarterly basis enabling more detailed analysis. It was pleased that CBS continued to improve monitoring procedures and was implementing an integrated monitoring plan, and it agreed that efforts should be pursued to monitor all types, including binary forms, of data and products. Congress expressed its appreciation that Germany was providing, free of charge to WMO Members, a comprehensive PC-based monitoring software.

3.1.2.17 Congress was pleased that CBS developed and agreed upon, in coordination with other technical commissions, version 1.0 of the WMO core metadata profile of the ISO metadata standard, with a view to providing unambiguous description of data exchanged by all WMO Programmes. Noting the importance of ensuring the interoperability of information systems between the WMO Programmes and outside the WMO community, Congress requested all WMO Programmes to join their efforts with CBS in the further development of WMO metadata taking benefit of international standards, in particular the 19100 ISO series of geographic information standards, for defining, describing, exchanging and managing information within WIS. It welcomed the interaction with ISO in developing extensions to the current metadata standards to meet WMO Programmes' requirements (e.g. for time information). Congress stressed the need to assist NMHSs in implementing metadata generation and exchange, and requested CBS to develop recommended practices, procedures and guidelines for operation, including training.

3.1.2.18 Congress noted with satisfaction the continuous development of the WMO codes and code tables, in particular table-driven code forms (TDCF) FM 92 GRIB Edition 2, FM 94 BUFR and FM 95 CREX, in response to new and evolving requirements, such as the exchange of sea-level data for Tsunami warning systems, as well as new requirements from aeronautical meteorology.

3.1.2.19 Congress noted the slow implementation of the migration to TDCF, which began on 2 November 2005; it supported the initiative taken by CBS to increase the awareness of the benefit of the migration by the NMHSs. Congress urged all WMO Members and regional associations, with CBS guidance, to develop and implement plans for the migration as soon as feasible to meet the requirements of the rapidly evolving science and technology, including new observing systems' capabilities. Congress stressed the need of developing countries for assistance in implementing the migration in the form of guidance, encoder-decoder software, training, and pilot projects. Congress expressed appreciation that ECMWF and some WMO Members made encoding/decoding software available free of charge for WMO Members, including some remote assistance. It was pleased to note the training activities that had been carried out.

3.1.2.20 Congress noted the demand of the WMO user community for the use of modern industry standards for data representation, such as XML; it supported the initiative of CBS to assess, in coordination with other WMO Technical Commissions, the advantages, disadvantages and implications of different data representation systems (e.g. BUFR, CREX, XML, NetCDF, HDF) for their use in real time operational international exchanges between NMHSs and in transmission of information to users outside the NMHSs; emerging requirements from the aeronautical community were addressed in collaboration between CBS, CAeM and ICAO.

Radio frequencies for meteorological activities

3.1.2.21 Congress noted with satisfaction the current radio frequency allocations and regulatory provisions of the ITU Radio Regulations that were addressing requirements for meteorological and related environmental activities, through specific radiocommunication services (Meteorological Aids, Meteorological Satellite, Earth Exploration-Satellite - including passive remote sensing - and Radiolocation for weather and wind profiler radars). Noting the favourable outcome of the World Radiocommunication Conference 2003 (WRC-03) in that regard, Congress expressed its appreciation for the active preparation and participation of WMO, including CBS, NMHSs, meteorological satellite agencies and the WMO Secretariat, and for the ITU and its Member Administrations recognizing the prime importance of the relevant radio frequency allocations for meteorological and related environmental activities required for the safety of life and property, disaster prevention and mitigation, the protection of the environment, climate change studies and scientific research. It further expressed its satisfaction with the joint ITU/WMO publication *Handbook on Use of Radio Spectrum for Meteorology* and the WMO Workshop on Radio Frequencies for Meteorology (Geneva, February 2006).

3.1.2.22 Nonetheless, Congress stressed that the threat on the full range of radio frequency bands allocated for meteorological and related environmental systems was continuing with the increasing development and expansion of new commercial radiocommunication systems. Congress noted that the WRC-07 agenda included several items of serious importance for meteorology, related to meteorological satellites, meteorological radars and spaceborne passive remote sensing. Congress re-affirmed the crucial importance of suitable radio frequency bands for the operation of surface-based meteorological observing systems, including in particular radiosondes, weather radars, wind profiler radars, and of Meteorological and Research & Development satellites, including remote sensing, data collection and data distribution links. The utmost importance should be attached to ensuring absolute protection of the special bands allocated to space-borne passive sensing, which were a unique natural resource for atmospheric and Earth surface measurements that had an irreplaceable role for weather, water and climate operations (forecasts, warnings) and research.

3.1.2.23 Congress strongly urged Members to actively participate in radio frequency activities, especially the preparation of WRC issues, conducted by their national telecommunication administrations, by regional radiocommunication organizations (CEPT for Europe, APT for Asia-Pacific, CITEL for the Americas, PATU and the Arab League for Africa and the Middle East), and by the ITU. It urged Members to involve experts from their Meteorological Services in the work of the ITU Radiocommunication Sector (ITU-R), especially ITU-R Study Group 7 on Science Services and Conference Preparatory Meetings. It requested CBS to pursue the continuous review of regulatory and technical radio-frequency matters, and the Secretary-General to ensure that the active role of the Secretariat be pursued as a matter of high priority in coordinating and supporting radio frequency activities. Congress re-affirmed the prime importance of radio frequency matters for meteorological and related environmental operations and research, as stated in Resolution 3 (Cg-XIV).

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PROGRESS/ACTIVITY REPORT

SUMMARY

Reference: Cg-XV/Doc. 3.1.2

CONTENT OF DOCUMENT:

Appendix:

- Report on GTS, Data Management and WIS activities

REPORT ON GTS, DATA MANAGEMENT AND WIS ACTIVITIES

Status of implementation and operation of the GTS

1. Publication WMO-No. xxx (WWW - Twenty-second Status Report on the Implementation 2006) provides information on the status of implementation and operation of the GTS.

Data-communication systems and techniques

2. CBS-Ext.(06) endorsed a revised Attachment II-15 (Use of TCP/IP on the GTS) of the *Manual on the GTS*, including file naming procedures. The Internet was playing an increasing role for the exchange, access to and delivery of a wide range of data and products in complement to the GTS, and has a particular importance for developing countries and LDCs, as the only affordable telecommunication means. CBS-Ext.(06) revised and updated guidance material for the use of the Internet with minimized operational and security risks, and for the use of adequate ICT for NMHSs of developing countries (*Guide on Virtual Private Networks (VPN) via the Internet between GTS centres*, *Guide on Internet Practices*, *Guide on use of FTP and FTP servers at WWW centres*, *Guide on Information Technology Security (ITS) at WWW centres*)

GTS operation and information exchange

3. CBS-Ext.(06) reviewed the format of meteorological bulletins for improved operation and to meet new requirements, including for aeronautical meteorology. It agreed on GTS procedures for sea level data and deep-ocean tsunami detection data, seismic data and distribution of Tsunami warnings and related information. The GTS procedures for the exchange of seismic data in parametric form were currently used by some countries. Upgrades of the GTS-WIS may be agreed upon and implemented on a multi-lateral basis to accommodate the additional traffic of seismic waveform data (i.e. data from seismic sensors) that represent large volumes of data; GTS procedures were agreed upon to facilitate such implementation.

4. WMO, in coordination with UN/ISDR, UNESCO/IOC, and NMHSs have ensured the most effective use of the GTS for the support of the Interim Tsunami Advisory Information service and the Tsunami Warning System in the Indian Ocean. This support, which is implemented for the Pacific, would be extended to the Caribbean, Mediterranean and North Atlantic, within a multi-hazard Early Warning approach. Regional Telecommunication Hubs (RTHs) have ensured the efficient routing and distribution of "Tsunami Watch Information" messages, in particular towards NMCs in the Indian Ocean, and to satellite-based data distribution systems covering any part of the Indian Ocean. Tsunami Watch and Warning bulletins are exchanged on the GTS with the highest priority (Priority 1). CBS recognized the requirement for an end-to-end transmission within 2 minutes as being achievable and recommended for the GTS. This had already been proven on the MTN and some other GTS circuits.

WMO Information System

5. The Technical Conference on the WMO Information System (TECO-WIS, Seoul, 6-8 November 2006), immediately preceded CBS-Ext.(06). The TECO-WIS programme included an actual demonstration of the V-GISC and DCPC prototypes that supported the discovery and retrieval of datasets and associated metadata crosscutting different WMO Programmes from several NMSs and International Centres, including DWD, Météo-France, UK MetOffice, ECMWF, EUMETSAT, NCAR and NODC. TECO-WIS reviewed Metadata developments, Information and communication technology building blocks and Pilot & Prototype projects. The TECO-WIS programme also included presentations from various stakeholders, including CAS, CAgM and WMO NDPM Programmes, and from the Information & Communication Technology (ICT) Industry.

6. CBS-Ext.(06) noted with satisfaction the considerable efforts made by a few NMSs in the development of WIS pilot projects and prototypes, especially:

- WMO Core metadata Profile;
- RA VI VGISC project (Exeter, Offenbach, Toulouse);
- DCPCs prototypes including the ECMWF and EUMETSAT DCPC, also including the SIMDAT project;
- A DCPC prototype (World data centre, Obninsk) for JCOMM related data;
- An NCAR DCPC prototype.

7. CBS-Ext.(06) agreed upon recommended governance procedures in principle for the designation of the Global Information System Centres (GISC) and the Data Collection or Production Centres (DCPC) (see Annex to this paragraph). Technical commissions are expected to consider the potential DCPCs under their respective WMO Programmes, and to endorse their programmes' candidate DCPCs for submission to ICG-WIS, CBS and then the Executive Council.

8. CBS-Ext.(06) urged WMO Technical Commissions and other bodies representing the participating programmes to state their requirements for WIS services. Early identification of, and consultation with potential major users of WIS within the user community external to WMO, in particular within the International Disaster Risk Management community, was an important step towards ensuring that WIS would fully meet its objectives for the benefit of all Members.

WWW Data Management

9. About 90 WMO Member countries participated in the annual global monitoring of the operation of the WWW¹, and six in the Special MTN monitoring². Germany (DWD) developed a monitoring application on personal computer (METDATA Monitor); 58 WMO Members requested and downloaded the software, that was offered by Germany (DWD). An operational trial of the Integrated WWW Monitoring (IWM) was successfully carried out at RTH Dakar, using this software. CBS agreed to move from the test phase to a pre-operational phase of the IWM as from October 2007

10. In view of the migration to Table-Driven Code Forms (TDCF), CBS stressed the importance of monitoring data presented in BUFR code. CBS requested the OPAG-ISS to revise the procedures of the Integrated WWW Monitoring (IWM) with a view to starting the monitoring of the availability of BUFR/CREX reports at WWW centres during the IWM pre-operational phase.

11. ECMWF and some WMO Members made software for encoding/decoding BUFR and CREX available for WMO Members. The total number of countries, where at least one participant had been trained on TDCF, was 100 out of 183 countries. Regulations for reporting traditional observations data in Table Driven Code Forms (TDCF) were included in the *Manual on Codes*. Information on the migration is available from the WMO Server³.

12. CBS considered the difficulties slowing implementation of migration by the WMO Members. Developing countries needed the benefit of experience from more advanced countries.

¹ See ftp://www.wmo.int/GTS_monitoring/AGM/QM_AGM1.htm

² See ftp://www.wmo.int/GTS_monitoring/SMM/SMM1.htm

³ See <http://www.wmo.int/web/www/WMOCodes.html>

CBS requested the Coordination Team on migration to TDCF to prepare a letter to the WMO Members providing an outline of the main actions or tasks which should be considered and possibly undertaken, and a Migration Guidance document, to increase their awareness of the migration, including the benefits expected.

13. EC-LVIII had requested CBS to address the data representation requirements of the user community, in view of the demand for the use of modern industry standards, such as XML. CBS noted the emerging requirements from the aeronautical community, which should be addressed in collaboration with CAeM and ICAO. The Commission decided to establish an Expert Team within the OPAG-ISS for assessing advantages and disadvantages, including implications of different data representation systems (e.g. BUFR, CREX, XML, NetCDF, HDF) for use in real time operational international exchanges between NMHSs and in transmission of information to users outside the NMHSs. All WMO Technical Commissions should be invited to participate in this Ad-Hoc Expert Team.

Radio frequencies for meteorological activities

14. CBS-Ext.(06) noted with much appreciation the activities of the Steering Group on Radio-Frequency Coordination (SG-RFC) in the preparation of the forthcoming World Radiocommunication Conference 2007 (WRC-07, November 2007), and its active involvement at the regional level in safeguarding relevant radio frequency. A WRC-07 WMO's position document, developed by the SG-RFC, was submitted to relevant ITU-R groups and was distributed to WMO Members and relevant international organizations, with a view to facilitating an effective preparation of national WRC-07 positions favourable for the WMO related issues. A Workshop on Radio Frequencies for Meteorology was organized (Geneva, February 2006). The SG-RFC finalized the update of the joint ITU-WMO publication "*Handbook on use of radio spectrum for meteorology*" that would be an important reference documentation in preparation and for WRC-07. The SG-RFC activities were also an important contribution to the respective GEO task.

Annex to paragraph 7

Recommended Designation Procedures for GISCs and DCPCs

1. Designation Procedure for Global Information System Centres (GISC)

1.1 The procedure for the designation of GISCs consists of four steps, namely:

Statement of WIS requirements and acceptance by the programme bodies

The WMO Technical Commissions and other bodies representing the participating programmes state their requirements for WIS services and will review them periodically. The list of all relevant requirements will be compiled and regularly reviewed by the Inter-Commission Coordination Group on WIS (ICG/WIS) which reports through the president of CBS to EC.

Service offers by potential GISCs

The list of WIS requirements and functions as compiled by the ICG-WIS will be published to serve as a basis for offers to perform the required duties. Existing centres from the WMO basic systems may wish to apply for designation as GISC forming the core infrastructure of WIS. The service offer should include:

- A statement of compliance with the required WIS functions,
- A proposal for the area of responsibility for WIS data services, and a
- Formal commitment by the PR of the Member to provide such services on a routine basis.

The service offer should be addressed to WMO and will be submitted to the ICG-WIS, which will inform the president(s) of the regional association(s) concerned; the ICG-WIS will analyze the proposed services versus WIS requirements as well as the compliance to the required WIS/GISC functions and specifications, and will formulate a recommendation.

Demonstration of GISC capabilities

The candidate GISCs will be invited to demonstrate to CBS their capabilities to provide WIS services to the accredited users with the necessary reliability and quality. This refers to the real-time functions of data and product collection and dissemination as well as to non real-time services for requests. It should also include storage functions for the complete set of WIS data and products and relevant up-to-date metadata catalogues. The coordination functions with other GISCs and the planning of mutual back-up services should also be demonstrated. Furthermore, the adherence to WIS standards and relevant data exchange policies and access rights must be granted. A formal commitment and time schedule to implement the GISC and to provide GISC services in accordance with the offer will be given by the PR of the Member operating the candidate GISC. Upon acceptance of the demonstration of capabilities of the candidate GISC, CBS will formulate the recommendation for the GISC designation.

Designation of GISC

The Executive Council will consider for approval the ICG-WIS recommendation and CBS recommendation for the GISC designation; after the EC approval, the GISC will be included in the relevant WMO programme documentation.

2. Designation of Data Collection or Production Centres (DCPC)

2.1 There are a considerable number of centres that meet the functional specifications of a DCPC already, either partly or fully. These centres are natural candidates for integration under WIS. Many of these centres have been established under the WWW Programme and have been submitted for a formal acceptance process within CBS (e.g. the World Meteorological Centres (WMC), the Regional Telecommunication Hubs of the GTS (RTH) and the Regional/Specialized Meteorological Centres).

2.2 Apart from the operational WWW centres, there are many other centres that have been established under other WMO Programmes for the purpose of collecting programme related data or of providing products and making them available to NMHSs and other users in the form of real-time dissemination or non real-time data services. Most of the above centres and additional centres established under national responsibility have important contributions in the form of data and products to be included in WIS. Some are offering well-developed data management and data dissemination services which are of great interest to WIS.

In view of the fact that many programmes will be participating in WIS, there will be a large number of DCPC candidates. The ICG-WIS has to determine which centres should be integrated in WIS in which function. The total number of DCPCs, unlike the number of GISCs, has no, *a priori*, limitation, provided the GISCs are able to handle the synchronization and other communications with their attached DCPCs.

2.3 In view of the above, the procedure for the designation of DCPCs consists of three steps, namely:

Service offers by potential DCPCs

Since potential DCPCs functions would be undertaken by centres that have been established under the respective WMO Programmes, the relevant technical commissions are expected to consider the service offers by potential DCPCs (likely according to procedures similar to 1.1, second step above), and to endorse their programmes' candidate DCPCs.

The programmes' candidate DCPCs should then be submitted to the ICG-WIS; the ICG-WIS will analyze the compliance to the required WIS/DCPC functions and specifications, and will formulate a recommendation.

Demonstration of DCPC capabilities

As for candidate GISCs, the candidate DCPC will be invited to demonstrate to CBS their capabilities to provide WIS services in compliance with the DCPCs functions and responsibilities. This refers to the possible real-time functions of data and product dissemination as well as to non real-time services for requests. It should also include the provision of relevant up-to-date metadata catalogues. The coordination and synchronization functions with the associated GISC should also be demonstrated. Furthermore, the adherence to WIS standards and relevant data exchange policies and access rights must be granted. Upon acceptance of the demonstration of capabilities of the candidate DCPC, CBS will formulate the recommendation for the DCPC designation.

Designation of DCPC

The Executive Council will consider for approval the ICG-WIS recommendation and CBS recommendation for the DCPC designation; after the EC approval, the DCPC will be included in the relevant WMO programme documentation.
