# Extracts from the Abridged Report on the Fifteenth Session of CBS

## Presidents Report

### WIS

(r) WIS became operational early in 2012, with the publishing of the first edition of the Manual on WIS and designation of its first centres. Five GISCs (Beijing, Offenbach, Tokyo, Exeter and Toulouse) are designated and operational. Two GISCs (Melbourne, and Seoul) had been audited by CBS and formally designated by EC-64, and Brasilia and Tehran will be audited by CBS soon. Additionally, 18 DCPCs are also designated;

(s) IPET-DRC has actively maintained, developed and refined the Table Driven Code Forms and their associated tables, making effective use of the Fast Track and Between Sessions approval procedures to meet the needs of WMO Programmes;

(t) IPET-DRC developed a “universal station identifier” methodology. The Commission will now develop procedures for assigning these;

(u) The WMO Core Metadata Profile Version 1.2 was approved and will be published in the Manual on WIS including Fast Track change procedures;

(v) An initial version of a WMO Logical Data Model to support an XML standard that can support aviation has been developed;

(w) The Commission has updates for the “Guide on IT Security” and the “Guide for Virtual Private Networks (VPN) via the Internet between GTS centres”;

(x) Migration of the GTS to IP has been completed;

### WIGOS

(xi) EC-64 approved the WIGOS Framework Implementation Plan (WIP). There is risk that resource limitations will extend some implementation activities beyond the fifteenth financial period;

(z) Significant effort was put into the Implementation Plan for the Evolution of Global Observing Systems (EGOS-IP). Its adoption will be an important contribution to WIGOS and improved observing capabilities to support Members;

(aa) The Commission is working to strengthen regional working groups dealing with observing systems to address shortcomings in regional networks and increase observation availability;

(bb) The nine CBS Lead Centres for GCOS working with the GCOS Implementation Manager made remarkable improvement in CLIMAT reports received at the GCOS Archive Centre. GCOS Surface Network reports received increased to over 80 per cent globally. GCOS Upper-air Network stations meeting minimum performance have also increased;

(cc) Implementation of the GCOS Reference Upper-Air Network (GRUAN) has progressed and GRUAN data has been flowing through NOAA’s National Climatic Data Centre (NCDC) to users since summer 2011;

(dd) Transition of the AMDAR programme into the WMO WWW Programme is progressing;

(ee) The Turkish State Meteorological Service (TSMS) led, and other Members collaborated in establishing and operating the WMO Weather Radar Database. The Commission appreciated TSMS’s commitment to maintain this vital operational tool noting 49 Members have registered their weather radars and respective metadata;

### Priorities

3.2 The following priorities for the work of CBS in the next intersessional period were approved by EC-64:

(a) Further implementation of the World Weather Watch Programme in accordance with Resolution 1 (Cg-XVI) – “World Weather Watch Programme for 2012–2015” as the basic WMO Programme on which all other Programmes of the Organization depend and which provides the basis for the operations of National Meteorological and Hydrological Services;

(b) Implementation of the WMO Integrated Global Observing System (WIGOS). Make recommendations to EC-65 regarding the WIGOS Implementation Plan paying attention to available resources to match the implementation period;

(c) Further implementation of the WMO Information System (WIS) and strengthening of the GTS/WIS operational coordination;

(d) Development of the Severe Weather Forecasting Demonstration Project (SWFDP), forecast verification activities, and Extended- and Long-Range Forecasting;

(e) Support to capacity development for Public Weather Services;

(f) Support to the Disaster Risk Reduction Programme;

(g) Support to the implementation of the Global Framework for Climate Services (GFSC);

(h) Support to the development of the Quality Management Framework.

## Global Framework for Climate Services

4.1.3 The Commission reviewed the second order draft Implementation Plan for the GFCS (http://www.wmo.int/pages/gfcs/office/2ndOrderDraft.php) and noted that CBS will have important contributions to make to aspects of the **User Interface Platform**, **Climate Service Information System** and **Observations and Monitoring** pillars of GFCS as well as to its **capacity development** initiatives.

### CBS Contribution to the Climate Services Information System

4.1.6 The GFCS Climate Services Information System lists requirements that can be served by two important functional capabilities that are coordinated by CBS: (1) an information exchange system, whose requirements can be met in many aspects by WIS; and, (2) a data processing and product generation capability, whose requirements can at least partially be met by the GDPFS.

#### Communications

4.1.7 With respect to the mechanisms for exchange, communication and dissemination of climate data and products, the required technologies available for exchanging climate data and information (including the Internet and mobile telecommunications) are improving at a rapid pace and are being exploited by, among others, the WIS. The Commission noted that Congress expected that the WMO Information System (WIS) could serve as a key dissemination mechanism under GFCS to avoid duplicating existing institutions and efforts as much as possible. However there are considerable weaknesses in the implementation and exploitation of the data communications systems in several parts of the world, particularly in developing countries, that need to be addressed under the GFCS. Furthermore, the Commission recognized that enhancement of WIS might be required, as appropriate, to accommodate the potential greater scope of GFCS data and products and/or to utilize them in agreement with specific data policies.

#### Data Processing

4.1.9 CBS, working closely with CCl, will need to assist NMSs up-dating their methods and tools, hardware and software, so that they can achieve sustainable, operational preparation of climate products. Furthermore, to meet specific needs within countries and sectors, these methods and tools need to be adapted to users’ priorities at national and local scales, and supported by strong provider-user cooperation.

4.1.11 The Commission encouraged the experts involved in the OPAGs on DPFS and ISS to monitor development of the GFCS Climate Services Information System and to support its work, where possible.

#### Contributions to the Observations and Monitoring Pillar

4.1.12 The Commission noted that climate observations consist of in-situ measurements taken on land, on oceans and in the atmosphere, with increasing use of automated observation systems, and, in recent decades, satellite data which contribute very significantly to climate datasets and are the only way to provide a global coverage of some parameters. The Commission further noted that the vast majority of all climate data currently available for the generation of climate services were collected according to standards, and under arrangements put in place, by CBS. Often these arrangements and standards were designed with the needs of the weather services in mind; the challenge for CBS is have WIGOS address climate and weather requirements in an optimum way.

4.1.13 The Commission agreed that one fundamental activity it is undertaking that will give support to the GFCS is the ongoing work to address the significant shortcomings in the quality, frequency, reliability and accuracy of reporting from many stations to national and international centres, and in particular reducing the network gaps and number of “silent” stations. While the Commission, through the OPAG on IOS is constantly working to improve the meteorological data coverage of the globe, it encouraged the IOS to pay particular attention to the requirements of the GFCS as they are developed.

4.1.14 The Commission noted that climate services require the observational data to be assembled in standardized formats, subjected to quality control and accompanied by metadata describing the history of the observing site, details of the instrumentation used there over its lifetime, the calibration history and the environmental changes in the site’s surroundings. The Commission considered that while not all data collected through arrangements coordinated by CBS will be to the precision ideally required for climate change detection, the key for CBS is to know, and record in a standard form, the precision to which the different types of observation have been taken, and to support the collection, storage and exchange of these observation-related metadata.

4.1.15 The Commission noted that in addition to the use of meteorological data, the provision of a full set of climate services requires access to social and economic data so that climate impacts and vulnerabilities can be understood, and so that predictions concerning anthropogenic climate change can be improved. For example, those concerned with the climate aspects of disaster risk reduction require climatologies of extreme weather events that cause disasters and also substantial socio-economic data so that they can combine them with climate data to understand and cope with the impacts of extreme events. The Commission agreed that it could greatly assist GFCS by bringing a standardized approach of NMSs to the analysis and recording of extreme hydrometeorological events in national databases, and by supporting the international exchange and validation of these data.

4.1.16 The Commission encouraged the experts involved in the OPAG on IOS to monitor development of the GFCS Observations and Monitoring pillar and to support its work where possible.

#### CBS Support for Capacity Development undertaken through GFCS

4.1.17 The Commission noted that the draft Implementation Plan for GFCS proposes a range of capacity development projects, funded through donor mechanisms to support the further development of the four pillars. These projects would be focused on the developing countries and offer the prospect for an increase in the capacity of members to collect, store, utilize and exchange meteorological data for the benefit of national, as well as regional and global service users. The Commission encouraged experts in each of its OPAGs to support these initiatives to the extent possible.

#### Monitoring and Reporting

4.2.55 The Commission noted the request of EC-64 for consideration of a single progress report on WMO observing systems under the identity of WIGOS, and the request for a clearer indication of the extent of compliance with the WMO regulatory material, and for a clearer indication of progress achieved against the various implementation plans of WMO’s component observing systems. The Commission agreed to develop options for responding to these requests, in consultation with the Secretariat.

## Collaboration with GEO

4.2.56 The Commission noted that the EC-64 reviewed the Cg-XVI discussion regarding the Group on Earth Observations (GEO) and its Global Earth Observation System of Systems (GEOSS), reaffirming that WMO engagement is to be based on mutual benefit that maximizes synergies and avoids duplication. CBS noted that strong linkages exist between GEOSS and the WMO Integrated Global Observing System (WIGOS). In addition, it noted that very good linkages exist between WIS and the GEOSS Common Infrastructure (GCI).

4.2.57 CBS noted some benefits to the WMO from participating in GEOSS and agreed that, to date, the specific benefits of cooperation with GEO for WMO Members have not been fully realized. In this regard, WMO’s future participation in GEO should increase benefits to WMO Members. The CBS supported continued GEO focus on improving observations and encouraged that GEO continue to enhance efforts to fulfil this mandate.

## WMO Space Programme

### Satellite instrument calibration and inter-calibration (GSICS)

4.2.60 The Commission emphasized the importance of satellite instrument calibration and inter-calibration to ensure interoperability of space-based measurements throughout the spacebased component of WIGOS. In this regard, it welcomed the progress made within the Global Space-based Inter-calibration System GSICS (http://gsics.wmo.int) in establishing globally agreed best practices and procedures for improved on-orbit calibration, and making calibration corrections routinely available through the online GSICS product portal. It invited GSICS members to bring these products to an operational stage and to incorporate GSICS calibration information into their near-real time Level 1 data dissemination streams.

### Direct readout frequencies

4.2.61 The Commission noted that several satellite operators are now considering to use the X-Band (specifically the 7750–7900 MHz frequency range) for direct readout from future generations of polar-orbiting systems, rather than the L-Band (specifically the 1675–1710 MHz frequency range) because future high-resolution instruments will generate high data rates that cannot be accommodated in lower frequency transmissions. Furthermore, progress in radiocommunication techniques renders X-Band receiving equipment more affordable than it used to be. The Commission acknowledged that for users the consequence of direct readout services being available in X–Band, in comparison to the L-Band, can be summarized as follows:

(a) Access to higher data rate services (order of magnitude 100 Mb/s instead of 10 Mb/s), which is necessary for full data access at full resolution;

(b) Need to use a higher-class antenna and receiving chain;

(c) Higher sensitivity to rain, requiring appropriate margins in the link budget, especially for inter-tropical latitudes;

(d) Higher risk of interfering sources: the X-Band is shared with fixed terrestrial communication services, and the possibility of interference has to be evaluated on a case by case basis for each site. It is essential to register the receiving site and frequency with the national radio frequency regulator for the intended operation, in order to claim a protection area.

4.2.62 The Commission recalled the current WMO requirement for maintaining two parallel direct broadcast services: a high data rate stream, containing full resolution data, and a low data rate stream, containing a subset of data (e.g. selected channels, lossy compressed data). In this regard, while the high data rate stream is likely to be in X-Band in the future, the low data rate stream is expected to be in L-Band. The Commission was informed on the outcome of the survey sent to all Members in July 2012 (<http://www.surveymonkey.com/s/wmolbandxbandsurvey2012>) with a view to re-assess this requirement, upon request from the Coordination Group for Meteorological Satellites (CGMS).

4.2.63 The Commission recommended to WMO Members to plan for receiving high data rate Direct Readout services from future polar-orbiting satellites in X-Band. It stressed the need to register receiving stations with their national authorities. It also recommended to satellite operators to implement Direct Readout in both X-Band and L-Band, since L-Band should provide weather resilient back-up and enable an affordable access to low data rate streams. It further recommended that satellite operators supplement the Direct Readout with near-real time retransmission of key datasets on regional broadcast services (such as EUMETCast or CMACast), where appropriate.

## 4.3 Decisions for the Open Programme Area Group on Information Systems and Services, including the WMO Information System (agenda item 4.3)

### Amendments to the Manual on the WMO Information System (WMO-No. 1060)

4.3.1 The Commission thanked the Chair of OPAG-ISS, Mr H. Ichijo (Japan) for his report, and the experts who contributed to the activities of OPAG-ISS. The Commission noted with satisfaction that the new functionality of WIS became operational from the end of January 2012 supported by GISCs Beijing, Offenbach and Tokyo. It noted that GISCs Exeter and Toulouse went operational in mid-June 2012 and that GISCs Melbourne and Seoul had been successfully audited prior to EC-64. The commission noted that GISC Moscow would be ready for audit before the end of 2012. It expressed its appreciation to all centres and expert teams that had contributed to the

## The Guide to the WMO Information System (WMO-No. 1061)

4.3.5 The Commission recalled the need stated by Cg-XVI for additional components of the Guide to WIS including a “best practices for metadata management” and appropriate training material. The Commission also noted the recommendation of OPAG-ISS to publish the guide and that the components still under development relating to the management of metadata, be made available in draft form on the WMO Web. In this way, WIS centres will have earlier access to available guidance, while providing feedback on the guidance material for eventual publication in the Guide to WIS. It recalled the request from Congress that the Guide to WIS should also be made available in all official WMO languages. The Commission adopted Resolution 1 (CBS-15) –Guide to the WMO Information System (WMO-No. 1061).

## Amendments to Manual on the GTS annexed Guides

### Guides on Information and Communication Technologies Security

4.3.6 The Commission noted the repeated emphasis from the Executive Council and Congress on ensuring WMO information systems, especially with the use of the Internet, are secure. It expressed its appreciation to the OPAG-ISS for monitoring security issues and practices related to Information and Communication Technologies and endorsed the recommended changes proposed by OPAG-ISS on IT Security and the use of Virtual Private Networking. The Commission adopted Resolution 2 (CBS-15) – Amendments to the Guide on Information Technology Security and adopted Resolution 3 (CBS-15) – Amendments to the Guide for Virtual Private Networks (VPN) via the Internet between GTS centres. It further highlighted the need for identifying annexes to the Manual on the GTS as official WMO publications and emphasized that such annexes should be provided with a formal WMO publication number.

4.3.7 The Commission noted that the migration of the GTS to IP is now effectively complete and that guidance material related to the use of IPv4 and associated addresses are now fully incorporated into the Manual on the GTS Attachment II-15. It agreed that maintaining separate guides on use of IP in the GTS and on provisional arrangements are no longer necessary. The Commission adopted Resolution 4 (CBS-15) – Removal of the guides to The Use of TCP/IP on the GTS and Provisional Arrangement for the Use of IP Addresses over the GTS.

4.3.8 The Commission further highlighted that many Members are now being required to prepare for implementation of IPv6 and noting that OPAG-ISS has already committed to providing guidance for the use of IPv6 in the WIS, it encouraged Members with experience in implementing IPv6 to support the OPAG-ISS in this activity.

### Review of the Manual on the GTS Volume II

4.3.9 The Commission noted the progress of reviews of the Manual on the GTS Volume II in RA I and RA II. It agreed that it was inappropriate to maintain the Manual on the GTS Volume II in its present form and requested the OPAG-ISS to monitor the reviews by RA I and RA II of the Manual on the GTS Volume II, and to make recommendations to the CBS Management Group on how to proceed for all Regions. It also requested the OPAG-ISS to investigate ways of monitoring and displaying the status of WIS circuits including those registered as GTS circuits in a timely and authoritative manner.

## WIS Information Management

### Management of Table Driven Code Forms (TDCF)

4.3.10 The Commission noted that amendments to the Manual on Codes (WMO-No. 306) were implemented five times during the intersessional period of the CBS (December 2010–August 2012) using the new procedures; the new fast-track procedure (three times) and the procedure for adoption between CBS sessions (twice). It encouraged this approach to be used for non-controversial decisions in other areas of the business of the Commission.

4.3.11 The Commission recognized that the successful procedures for managing to the Table Driven Code Forms could be further improved, and so agreed to adopt Recommendation 9 (CBS-15) – Amendments to the Manual on Codes (WMO-No. 306), Introduction chapter of Volumes I.1 and I.2.

4.3.12 The Commission reviewed the decision by the CBS-XIII to withdraw BUFR edition 3 and CREX edition 1 on the first Tuesday of November 2012. It agreed that BUFR 3 and CREX 1 should be removed from the Manual on Codes (WMO-No. 306), and requested that the Secretary-General ensure that the definitions were retained on the WMO Website so that archived data could still be referenced.

4.3.13 The Commission noted that the exchange of information in BUFR Edition 3 (for specific purposes such as aviation) and CREX Edition 1 would continue beyond November 2012, but also encouraged Members to convert to software that can handle the later Editions. To clarify which centre originates data in bulletins that are converted to Table Driven Code Forms by another centre, the Commission adopted Recommendation 10 (CBS-15) – Amendments to the Manual on the Global Telecommunication System (WMO-No. 386), Volume I, Part II.

4.3.14 The Commission reminded Members that they should use the latest versions of tables;

### Role of Focal Points for codes and data representation matters

4.3.15 The Commission noted that the fast track procedure for changes to the TDCF has placed greater responsibility on the national focal points for codes and data representation matters. It agreed on the terms of reference for these focal points given in Annex IV to the present report, and authorized the CBS Management Group to maintain these and to produce formal Terms of Reference for other national focal points to clarify their roles. The Commission requested Members to draw the attention of their focal points to these terms of reference.

### Changes to OPMET Traditional Alphanumeric Code Forms

4.3.16 The Commission noted amendments to the aeronautical codes (METAR, SPECI and TAF) in the Manual on Codes consequential to the Amendment 76 to ICAO Annex 3 and the Amendment 37 to Annex 15. The Amendments to ICAO Annexes 3 and 15 will be reviewed by ICAO Air Navigation Commission (ANC) in November 2012 and finally approved by ICAO Council in February or March 2013. ICAO’s timetable for implementation on 14 November 2013 could not be met if CBS were to wait for the ICAO Council decision before consulting Members. The Commission agreed to the principle that Members could be consulted once the changes had been recommended by the ICAO Air Navigation Commission (ANC); this would allow time for the procedure for adoption between sessions to be completed.

### Station Identifiers

4.3.17 The Commission noted that many Members and WMO Programmes were experiencing difficulties in obtaining station identifiers and that this was leading to observations not being exchanged. It recognized that this was the consequence of limitations of the Traditional Alphanumeric Codes (TAC), and recalled that a reason for implementing the TDCF was the cost and risk of making changes to the TAC. It agreed that it was not possible to solve the problem using the TAC. The Commission also noted that IPET-DRC had proposed a “universal station identifier” within the TDCF. It requested the CBS Management Group to prepare a procedure for assigning “universal station identifiers” and to make a recommendation to EC between sessions using the consultation method for changes to codes between sessions.

### Migration to Table Driven Code Forms

4.3.18 Noting the intention to exchange all information in TDCF (other than OPMET) from November 2012 (CBS-Ext.(10), paragraph 4.3.14), and to cease parallel exchange in both TDCF and TAC formats by November 2014, the Commission thanked those Members that were assisting other Members in the migration, and reminded Members of the WMO Software Registry that contains software than can help with migration. It emphasized that Members need to consider their observing and forecasting procedures when planning for migration.

4.3.19 The Commission strongly encouraged all Members to complete migration. There are many demands for exchanging information that cannot be met by the TAC. Members unable to handle TDCF would not have access to these additional sources of information.

### WMO Core Metadata Profile

4.3.20 The Commission noted that EC-64 had approved version 1.2 of the WMO Core Metadata Profile, but that further changes were required so that the WIS Discovery Metadata could meet the operational requirements from WIS. It adopted Recommendation 8 (CBS-15) – Amendments to the Manual on the WMO Information System (WMO-No. 1060).

4.3.21 The Commission asked Members operating GISCs to note the expected timetable for major changes to the WMO Core Profile. Versions that would need software changes were anticipated in 2014 and 2020, but the actual timing will depend on when the base ISO 19115 standard is updated.

### Future data representation methods, including aviation XML

4.3.22 The Commission noted the initial development of an initial WMO Logical Data Model to support creation of an XML standard that ICAO will be able to use for exchanging meteorological information. It agreed that the “namespace” used to describe the components of the WMO Logical Data Model should be “metce” (Modéle pour l’Échange des informations sue le Temps, le Climate et l’Eau). It also noted Resolution 13 (EC-64) that defined how responsibilities for defining components of XML would be shared between WMO and organizations with which it cooperates. The Commission requested the OPAG-ISS to work with ICAO to complete the initial version of the WMO Logical Data Model and the XML representation of meteorological information with the ICAO community, and to participate in ICAO’s trial use of XML. The Commission also requested that the OPAG-ISS further develop the WMO Logical Data Model to support emerging requirements for data exchange such as WIGOS and GFCS. The Commission emphasized the importance of consistency between the TDCF and the WMO Logical Data Model, and requested the OPAG-ISS to investigate automating the derivation of TDCF Templates from the WMO Logical Data Model reflecting the existing practice whereby XML Schema are derived from a Logical Data Model.

4.3.23 The Commission noted the requirement to publish terminology and definitions developed for TDCF as web-accessible resources in order to provide keyword thesauri for WIS DAR Metadata records and to support ICAO’s trial use of XML for exchanging meteorological information. The Commission requested that OPAG-ISS proceed with implementation of a response to this requirement on a timescale commensurate with ICAO’s needs.

## Quantitative Monitoring of the WWW

4.3.24 The Commission thanked the eleven RTHs on the MTN that had participated in the Integrated WWW Monitoring in 2011, and the centres that had provided additional information as part of the Special MTN Monitoring. It encouraged all Members consider the analyses of the monitoring information that is produced by the RTHs and the Secretariat.

4.3.25 Noting that exchange of information in TAC is scheduled to finish in November 2014, the Commission noted that the monitoring showed that the volume of data available in TDCF is increasing, but it was also concerned at the slow progress in some areas. It stressed the importance of up to date and representative monitoring statistics to the success of migration. It was also concerned about the low availability of observations in some areas, even in Traditional Alphanumeric Codes, particularly within Region I.

4.3.26 With a greater variety of data being exchanged through the WIS, the Commission agreed that the current WWW monitoring has to evolve. The Commission agreed Recommendation 11 (CBS-15) – Quantitative monitoring of the WMO Information System that updates the Manual on WIS (WMO-No. 1060) to clarify the requirements for monitoring.

4.3.27 To support these changes to the Manual on WIS, the Commission requested OPAGISS to prepare an effective plan for monitoring the WIS by October 2013, and to invite designated GISCs and DCPCs to participate in pre-operational implementation to test its effectiveness, and to report progress to CBS-Ext.(14).

## 4.4 Decisions for the Open Programme Area Group on Data-Processing and Forecasting System (agenda item 4.4)

4.4.2 The Commission agreed that the GDPFS, including ERA, is a critical component of the end-to-end Basic Systems (from observation to service delivery) across multi-scale (space and time), which consists of a global forecasting operational infrastructure operated by Members that greatly contributes to their national warning programmes. In this context, the Commission affirmed that the GDPFS contributes to many of the WMO’s high priorities: (i) through the Severe Weather Forecasting Demonstration Project (SWFDP) and the use of Ensemble Prediction Systems (EPS) for predicting severe and high-impact weather that contribute to Disaster Risk Reduction and Capacity Development; (ii) through a network of centres that carry out global monthly and seasonal forecasts that are essential for the Climate Services Information System (CSIS) of the Global Framework for Climate Services (GFCS); (iii) through the use of applications of NWP/EPS such as atmospheric transport and dispersion modelling for environmental emergency response activities (ERA), thereby contributing to Disaster Risk Reduction; and (iv) through the provision of benefits to other socio-economic sectors, including aviation, agriculture, and marine safety.

### Severe Weather Forecasting Demonstration Project (SWFDP)

4.4.3 While the scope of the GDPFS spans the production of day-to-day weather forecasts, the Commission recalled that Cg-XVI agreed that priority should be given to forecasting severe and high-impact weather and related-phenomena over a wide-range of forecast scales, including through the implementation of the Severe Weather Forecasting Demonstration Project (SWFDP) in all WMO Regions. Recognizing the great impact of this Project in assisting WMO Members to deliver effective warning services through improved forecasting capabilities, using the "Cascading Forecasting Process", the Commission reinforced its strong support to the SWFDP.

4.4.4 While significant benefits have already accrued from the SWFDP, either in implementation or in development in five regions (Southern Africa, South Pacific, Eastern Africa, Southeast Asia and Bay of Bengal – Regional Subproject Implementation Plans available on the WMO web site at http://www.wmo.int/pages/prog/www/CBS-Reports/DPFS-index.html), the Commission noted that some participating countries have experienced difficulties to effectively participate in the SWFDP, and therefore recommended the development of country-specific implementation plans within the SWFDP, addressing their gaps and weaknesses, to facilitate the participation of least-capacity NMHSs, including those from least developed countries and small island developing States. These plans should include a review of current levels of services, training requirements and outputs, and stakeholders’ engagement, with a view to ensuring on-going sustainability of projects.

4.4.5 While noting that the SWFDP is targeted to all WMO Regions, the Commission noted that RA III had not as yet engaged in the Project. The Commission noted that RA III had decided for the development of its severe weather warning system involving initially four countries (Brazil, Argentina, Uruguay and Paraguay), using its regional resources and tools. Noting that there were plans to expand this system to the remaining countries in RA III, the Commission stressed that the SWFDP could have an important role to play in that Region in complementing its regional efforts, and recommended that new opportunities for partnership be explored.

4.4.6 The Commission recalled that Cg-XVI approved a vision for the SWFDP as an end-to-end cross-programme collaborative activity led by the GDPFS. While recognizing that the SWFDP should engage all WMO Programmes that concern the real-time prediction of hydrometeorological hazards (from observations, to information exchange, to delivery of services, education and training, and to the transfer of relevant promising research outputs into operations), the Commission stressed the importance to move SWFDP forward with a phased approach; starting with manageable elements, first focusing on most important severe weather identified by the participating countries for protection of life and property, and expand the scope, including crossprogramme activities (e.g. flood forecasting), in phases 3 and 4 of the project. However, recalling that EC-64 urged that as a part of SWFDP regional projects, consideration be given to collecting and conveying the requirements for the Basic Systems, including WIGOS and WIS, in the participating countries, the Commission agreed that these elements should be addressed together with aspects related to severe weather forecasting and warning services in the initial phases of the project.

4.4.7 The Commission acknowledged the importance of the continued project-critical support from advanced global centres that provided NWP and satellite-based products, and the equally project-critical roles played by the regional centres. The Commission recognized the substantial amount of human resources devoted to the project by the leading regional centres and acknowledged that resource constraints in regional centres must be taken into consideration when planning the project especially in latter phases, in order to ensure a transition to sustainable operations. The Commission commended all these centres for their enthusiastic participation in SWFDP regional projects thus far, and strongly encouraged them to continue these efforts. The Commission also encouraged the Steering Group of the SWFDP to assist the efficient conduct of training activities, e.g. by sharing training materials on the fundamental subjects, in order to make effective and maximum use of limited resources.

4.4.8 The Commission noted the inadequate resources available for supporting existing and setting up of new regional projects. Noting the main results of the study on resource requirements for ensuring effective implementation and long-term sustainability of the benefits gained with the SWFDP (see Annex V to the present report), which was carried out following the request by EC-64, the Commission recommended the establishment of a Severe Weather Forecasting Development Project (SWFDP) Office and of a Trust Fund for the SWFDP, and adopted Recommendation 12 (CBS-15) – Establishment of the Severe Weather Forecasting Development Project Office.

Operational Weather Forecasting Process and Support

Further Development and Evolution of the Global Data-processing and Forecasting System (GDPFS)

4.4.9 The Commission agreed that, similarly to the WIGOS and WIS, the Global Dataprocessing and Forecasting System (GDPFS) is an all-encompassing system focusing on the improvement of all WMO data-processing and forecasting systems, including those coordinated by CBS, jointly with other technical commissions and/or WMO Programmes, as well as other international organizations. It further agreed that the GDPFS fosters the orderly evolution of the present WMO data-processing and forecasting systems into an integrated, comprehensive and coordinated system. The GDPFS is the basis for the operational provision of accurate, reliable and timely weather, climate, water and related environmental forecasts and products by all WMO operated meteorological centres, and would therefore satisfy, in a cost-effective and sustainable manner, the evolving data-processing and forecasting requirements of WMO Members.

4.4.10 The Commission encouraged centres running global models to consider providing boundary conditions to NMCs running Limited Area Models (LAMs). Recalling the request by Cg-XVI to the Secretary-General and CBS to develop a strategy to assist Members in the implementation of improved high-resolution regional NWP (including data assimilation and boundary condition aspects), and the subsequent recommendations by EC-64, the Commission requested the OPAG on DPFS to establish a task team for a limited time period to develop such a strategy for consideration by the next CBS session.

4.4.11 The Commission encouraged RSMCs and RCCs running models to ensure dissemination of the products to NMHSs of countries covered by their models’ footprint.

## Decisions of the Commission with respect to the OPAG/PWS

(e) To emphasize that multi-hazard, multi-scale early warning systems need to be embedded within an operational end-to-end service delivery framework, to be applied for preparing and delivering warnings through PWS programmes and channels of NMHSs. The Commission recognized that many Members were already pursuing a multi-hazard approach, and encouraged Members to consider such an integrated approach in the future. In this context, the Commission requested WMO to consider assisting NMHSs to build their capacity on preparing and delivering multi-hazard warnings;

(f) To establish a “Competency Framework for Public Weather Services (PWS)/Weather Forecasters and Advisors” and approve Resolution 5 (CBS-15) – Competency Framework for Public Weather Services Forecasters and Advisors, that contributes to the high priority area of capacity development;

(g) To review the guidance material for NMHSs on developing multi-hazard impact-based information and warning services (see Annex VI to the present report), contributing to disaster reduction and mitigation. The Commission further decided, in collaboration with relevant CBS OPAGs, to elaborate this material, recognizing the challenges of impactbased forecast services as well as national circumstances as regards the responsibilities of NMHSs and existing task sharing in national risk management, and enrich it with examples and best practices of impact-based forecast and warning services, before it would be widely available to all NMHSs;

(h) To strongly encourage the engagement of Members in: (i) the “WMO Register of Alerting Authorities” initiative, using the PWS guide “Administrative Procedure for Registering WMO Alerting Identifiers (PWS-20, WMO/TD-No. 1556)”; and (ii) adopting the Common Alerting Protocol (CAP) technology for communicating alerts. The Register is an important tool towards achieving a “single official voice” status for NMHSs in issuing weather warnings;

(j) To further strengthen the PWS component of the SWFDP to enhance the delivery of high quality warning and forecast services to users and thus ensure the full realization of the benefits of all current and future SWFDP projects. The Commission also supported the application of CAP in the SWFDP to improve the delivery of warning services;

(m) That the OPAG/PWS contribute to the implementation of the follow up actions and application of the results of the World EXPO 2010 Nowcasting Services (WENS) Demonstration Project, whose objective had included the demonstration of enhanced Multi-Hazard Early Warning Systems (MHEWS) through nowcasting applications;

(n) That the OPAG/PWS closely collaborate with the OPAG on DPFS within the framework of the CBS Task Team on the Provision of Operational Meteorological Assistance to Humanitarian Agencies, incorporating the legacy of the Task Team on Meteorological Services for Improved Humanitarian Planning and Response, which had been established by CBS-XIV under the responsibility of the OPAG/PWS (see 4.5.16).

### WWIS and Severe Weather Information Service (SWIC)

4.5.9 The Commission noted that WWIS was now available in ten language versions as follows, with host Members in brackets: Arabic (Oman), Chinese (China), English (Hong Kong, China), French (France), German (Germany), Italian (Italy), Polish (Poland), Russian (Russian Federation), Portuguese (Portugal), and Spanish (Spain), and that the number of cities for which forecasts were provided had increased to 1,611.

## Social and Economic Applications of PWS

4.5.10 The Commission strongly supported the work of the OPAG and the PWS Programme in assisting Members with the assessment and demonstration of the socio-economic benefits of the services provided by NMHSs and re-iterated the urgent need for developing methodologies for this purpose. It supported the collaboration of WMO with the World Bank to compile and publish an authoritative joint WMO-World Bank document on methodologies for assessment of such socioeconomic benefits. It noted that EC-64 (Geneva, 25 June–3 July 2012) had similarly requested the production of such a document and the implementation of pilot projects on socio-economic benefits of meteorological and hydrological services, as well as the collection and analysis of the outcomes and lessons learnt. On this basis, the Commission encouraged the development of an authoritative assessment report on meteorological service benefits, at an appropriate stage.

4.5.11 The Commission expressed satisfaction that the PWS Socio-economic Benefits Website (www.wmo.int/socioec), which had recently been revamped, continued to be a valuable resource for decision-support tools and case studies.

## 5. WORKING STRUCTURE AND WORK PROGRAMME OF THE COMMISSION

### 5.1 Future work programme of the Commission

5.1.2 With a view to making the necessary arrangements for efficiently carrying out the various tasks under the agreed work programme and the corresponding activities, the Commission agreed to establish teams as well as rapporteurs within each of the OPAGs and to allocate them tasks as given in Annex VII to the present report.

5.1.3 The list of chairs, co-chairs, rapporteurs and CBS representatives, who were designated by the Commission, is given in Annex VIII to the present report.

5.1.4 The Commission requested the CBS Management Group to establish the membership of the ICTs and the ETs of each OPAG. It invited the chairs of the OPAGs and respective teams, in cooperation with the Secretariat, to develop targets for deliverables, and adequate working mechanisms to ensure that all experts could actively participate and contribute to the work programme and assist the respective teams.

### 5.2 Working structure of the Commission (agenda item 5.2)

5.2.1 The Commission decided to re-establish the four Open Programme Area Groups (OPAGs) on Integrated Observing Systems, on Information Systems and Services, on Data Processing and Forecasting Systems, and on Public Weather Services. It also decided to appoint a Coordinator on Disaster Risk Reduction, a Coordinator on Capacity Development and a Coordinator on GEO/GEOSS activities related to WMO. It further decided to re-establish the Interprogramme Coordination Team on Space Weather. The Commission adopted Resolution 7 (CBS-15) – Open Programme Area Groups of the Commission for Basic Systems.

5.2.2 The Commission decided to re-establish the CBS Management Group by adopting Resolution 8 (CBS-15) – Commission for Basic Systems Management Group.

5.2.3 The Commission also agreed that task teams may be established, as required, within each of the OPAGs to address specific tasks included in its work plan. These task teams could include experts in any of the CBS expert teams. Between sessions, OPAG chairs can propose the formation and terms of reference of these teams for the president to endorse.

5.2.4 The Commission noted the use of information technology by many of the teams to avoid the need for travel and encouraged all OPAGs to exploit the technology whenever possible.

5.2.5 The Commission noted the discussion on the possibility of changing the name of CBS to include the word “Services” and recalled that the EC WG SOP Task Group on Continuous Improvement of Processes and Practices was charged with identifying mechanisms for improving the effectiveness and efficiency of WMO, including the constituent bodies. The Commission requested the EC WG SOP to consider the implications of changing the name of CBS and provide guidance to the Commission at its next session.

## 8. REPORT ON THE TECHNICAL CONFERENCE

8.1 The Commission welcomed the report, contained in Annex XI to the present report, on the Technical Conference (TECO) on WIGOS and Valuing Systems and Services, held on 12–13 September 2012 in Jakarta, embedded within CBS-15. The Commission thanked the presenters for their informative presentations and welcomed the active participation that they stimulated amongst those in attendance on the issues of significant relevance to its work.

# RESOLUTIONS ADOPTED BY THE SESSION

### Resolution 1 (CBS-15) - Guide to the WMO Information System (WMO-No. 1061);

### Resolution 2 (CBS-15) - Amendments to the Guide on Information Technology Security;

### Resolution 3 (CBS-15) – Amendments to the Guide for Virtual Private Networks (VPN) Via the Internet between GTS Centres;

### Resolution 4 (CBS-15) - Removal of the Guides to the Use of TCP/IP on the GTS and Provisional Arrangement for the Use of IP Addresses over the GTS;

# RECOMMENDATIONS ADOPTED BY THE SESSION

### Recommendation 1 (CBS-15) - Implementation and Sustainability of the Database of Observation Requirements and Observing Capabilities;

### Recommendation 8 (CBS-15) - Amendments to the Manual on the WMO Information System (WMO-No. 1060);

### Recommendation 9 (CBS-15) - Amendments to the Manual on Codes (WMO-No. 306), Introduction Chapter of Volumes I.1 and I.2;

### Recommendation 10 (CBS-15) - Amendments to the Manual on the Global Telecommunication System (WMO-No. 386), Volume I, Part II;

### Recommendation 11 (CBS-15) - quantitative Monitoring of the WMO Information System

# ANNEXES to the main CBS report

* ANNEX IV - Annex to paragraph 4.3.15 of the general summary TERMS OF REFERENCE FOR NATIONAL FOCAL POINTS FOR CODES AND DATA REPRESENTATION
* ANNEX VII - Annex to paragraph 5.1.2 of the general summary TERMS OF REFERENCE FOR TEAMS AND RAPPORTEURS OF OPEN PROGRAMME AREA GROUPS
* ANNEX VIII - Annex to paragraph 5.1.3 of the general summary DESIGNATION OF CHAIRS, CO-CHAIRS, RAPPORTEURS AND COMMISSION FOR BASIC SYSTEMS REPRESENTATIVES
* ANNEX IX - Annex to paragraph 6.1 of the general summary REVIEW OF PREVIOUS RESOLUTIONS AND RECOMMENDATIONS OF THE COMMISSION THAT REMAIN IN FORCE

## References

* Abridged final report with resolutions and recommendations, Fifteenth Session CBS. (WMO No. 1101) - ftp://ftp.wmo.int/Documents/PublicWeb/mainweb/meetings/cbodies/governance/tc\_reports/english/pdf/1101\_en.pdf

## Recommended Text

The meeting reviewed the extracts from the “Abridged Final Report with Resolutions and Recommendations, Fifteenth Session CBS”. (WMO No. 1101). It noted that Resolutions 1, 2 3 and 4 directly related to WIS, in the form of approval to updates to the Guide to WIS and Guides to VPN and IT Security, along with removal of Guides to the use of TCP/IP on the GTS and Provisional Arrangement for the use of IP Addresses over the GTS. It further noted the Recommendations 8, 9, 10 and 11 relating to the Manuals on WIS, GTS and Codes were subsequently approved by EC-65. All updates approved in the Report on CBS 15 are to be available by the end of 2013

The meeting noted that several issues identified in the CBS report were relevant to the work of ET-WISC and that these will be addressed under the relevant agenda items.

--------------------