WORLD METEOROLOGICAL ORGANIZATION

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COMMISSION FOR BASIC SYSTEMS
OPEN PROGRAMMME AREA GROUP ON
INTEGRATED OBSERVING SYSTEMS

INTER PROGRAMME EXPERT TEAM ON OBSERVING SYSTEM DESIGN AND EVOLUTION (IPET-OSDE)
First Session

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REVIEW OF OTHER ACTIVITIES RELATED TO IPET-OSDE AND OPAG-IOS

DEVELOPING USER REQUIREMENTS FOR OBSERVATIONS AND A SOG FOR GFCS

(Submitted by the Secretariat)

SUMMARY AND PURPOSE OF DOCUMENT

The document reflects on how observational requirements for the GFCS have been taken into account in Statements of Guidance (SoG).

ACTION PROPOSED

The Meeting is invited to note the information contained in this document when discussing how it organises its work and formulates its recommendations.

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DISCUSSION

1. The Extraordinary Session of the World Meteorological Congress, held for the first time in the history of WMO in 2012, adopted the draft implementation plan of the Global Framework for Climate Services (GFCS) through its Resolution 1 (Cg-Ext.(2012). The Implementation Plan was subsequently approved by the First Session of the Intergovernmental Board on Climate Services (IBCS-1) in july 2013, which called for its immediate implementation.

2. To address the entire value chain for the production and application of climate services, the GFCS consists of the following five components or pillars. Implementation of these components would allow the development of the required capacities to respond to the needs for tailored climate services in the four initial priority areas of the GFCS (agriculture and food security, water, health and disaster risk reduction):

- *The User Interface Platform* — to provide ways for climate services users and providers to interact to identify needs and capacities and improve the effectiveness of the Framework and its climate services;
- *The Climate Services Information System* — to produce and distribute climate data, products and information according to the needs of users and to agreed standards;
- *Observations and Monitoring* – to generate the necessary data for climate services according to agreed standards;
- *Research, Modelling and Prediction* — to harness science capabilities and results and develop appropriate tools to meet the needs of climate services;
- *Capacity Development* — to support the systematic development of the institutions, infrastructure and human resources needed for effective climate services.

3. The major gaps and deficiencies in the observations as they relate to the GFCS are identified in the Annex on Observations and Monitoring of the Implementation Plan of the GFCS, as follows:

- Shortcomings in atmospheric observations that include non-reporting by some climate stations (due to inability to sustain observational networks, lack of training and capability, inadequate communication systems or other factors), limited space and surface-based remote sensing capabilities, and the absence of operational monitoring of some important air quality, radiation, and other variables;
- Weaknesses in observational coverage of important oceanographic variables that include incomplete moored buoy networks for monitoring ocean currents, mass flux, ocean salinity, and sea ice parameters; uncertainties regarding the continuity of satellite monitoring programs such as microwave sensing, high precision altimetry, and Light Detection and Ranging (LIDAR) and Synthetic Aperture Radar (SAR) coverage of sea ice parameters;
- Gaps in terrestrial observing networks, such as for river discharge, ground water, lake levels, permafrost, glaciers and ice caps; the absence of designated networks for soil moisture, Leaf Area Index (LAI), Fraction of Absorbed Photo-

synthetically Active Radiation (FAPAR) and above ground biomass; and uncertainty regarding the continuity of satellite missions that monitor land cover;

- Need for complementary biological, environmental, and socio-economic data (e.g., records of disease incidence, crop yield, energy demand, and disaster losses) to enable the production of indices and other products that assist user communities in planning and management;
- Data policies and information infrastructures that need to be enhanced to improve data management as well as access to historical observational and other relevant data and derived products;
- Continuing need to improve local, regional, and global monitoring systems to enhance efficiency and improve data management, including careful attention to minimizing data losses and inhomogeneities when observational systems change or are upgraded;
- Need to rescue, digitize, and develop (e.g., time series quality control and homogenization) historical climate and sectorial user data that are currently held in perishable paper formats or available only on obsolete or degrading media, and placing re-analysis, which is a substantial technical as well as scientific undertaking, on a firmer operational footing.

4. To address the above gaps and shortcoming, particularly with respect to network design, it is needed to design networks based on requirements to address user needs for climate services as well as the requirements from the research, modelling and prediction pillars of the GFCS to advance knowledge of the climate system, its predictability and impacts of climate variability and chance.

5. In the view to develop recommendations for networks design, the IPET-OSDE1 meeting is invited to consider the gaps indentified in the observations and monitoring and the research, modelling and prediction Annexes of the GFCS. Key considerations in this regard should be integration and interoperability of various observing systems.

6. Currently only the Statement of Guidance for Climate Services (other aspects - CCl) specifically attempts to address data needs for the GFCS, while GCOS has addressed data requirements for the GFCS through a workshop on Observations for Adaptation to Climate Variability and Change, which considered observation requirements for adaptation, linking these with the needs of the GFCS. Thus, there is need for the other application areas to consider the data requirements for the GFCS in their Statements of Guidance. The Observations and Monitoring Annex of the Implementation Plan of the GFCS[1] and the report of the GCOS workshop on Observations for Adaptation to Climate Variability[2] and Change provide relevant information.

1 ftp://ftp.wmo.int/Documents/gfcs/ImplementationPlan/
2 http://www.wmo.int/pages/prog/gcos/Publications/gcos-166.pdf