



**AGENDA ITEM 4: TECHNICAL REGULATIONS AND OTHER TECHNICAL DECISIONS**

**AGENDA ITEM 4.1: Decisions requiring approval by the Infrastructure Commission at this Virtual Session**

**AGENDA ITEM 4.1.1: *Standing Committee on Earth Observing Systems and Monitoring Networks (SC-ON)***

*[All amendments to this document have been made by Hong Kong, China]*

**GLOBAL CLIMATE OBSERVING SYSTEM**

**DRAFT DECISION**

**Draft Decision 4.1.1(4)/1 (INFCOM-1)**

**Development of a draft implementation plan for the GCOS Surface Reference Network**

**The Commission for Observation, Infrastructure and Information Systems decides**

- (1) to endorse the decision of the President of the Commission to establish the task team (TT-GSRN, see Terms of Reference in the annex to this Decision), to develop (i) a draft implementation plan for the GSRN, (ii) a proposal for management and governance structures of the GSRN, and (iii) a process for nominating and approving stations contributing to the GSRN and notes that the TT-GSRN will engage with SC-ON, SC-MINT and SC-IMT;
- (2) to request the Secretary-General to issue a call to Members for expressions of interest in hosting a GSRN Lead Centre to support the development and implementation of the GSRN; *[UK]*
- (3) to invite the GCOS Steering Committee to provide support to the task team and to consider with INFCOM the further integration of the GCOS networks into WIGOS;
- (4) to urge Members to nominate their relevant experts to contribute to the proposed mechanism and to consider offering to host a GSRN Lead Centre.
- (5) to request the president of INFCOM to report to the TCC for consideration and submission to the Executive Council once a draft implementation plan as well as proposals for the management and governance structures have been developed *[Germany]*

See the annex to the present decision for the terms of reference of the TT-GSRN.

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Decision justification:

The United Nations Framework Convention on Climate Change (UNFCCC) in Art. 4 1.(g) called for all parties to “promote and cooperate in scientific, technological, technical, socio-economic and other research, systematic observation and development of data archives related to the climate system and intended to further the understanding and to reduce or eliminate the remaining uncertainties regarding the causes, effects, magnitude and timing of climate change and the economic and social consequences of various response strategies”.

The architecture of the WMO Integrated Global Observing System (WIGOS) is defined as a tiered system composed of reference, baseline and comprehensive networks, and described in Appendix 2.1 of the *Manual on the WMO Integrated Global Observing System*, (WMO-No. 1160) and in section 5 of the *Guide to the WMO Integrated Global Observing System*, (WMO-No. 1165), where information from reference observations of high quality can be transferred to other observations and used to improve their quality and utility.

The paper entitled “*Towards a global land surface climate fiducial reference measurements network*” by Thorne et al., 2018, provides the background, rationale, metrological principles, and practical considerations regarding the implementation and operation of a stable and metrologically well-characterized global land surface climate fiducial reference network providing measurements to support, inter alia, adaptation decisions and monitoring and quantifying the effectiveness of internationally agreed mitigation steps.

Accordingly, the GCOS Steering Committee established a task team on the scope and level of interest in establishing a GCOS Surface Reference Network, in which experts from CIMO and CBS participated (for the full report see GCOS Surface Reference Network (GSRN): Justification, requirements, siting and instrumentation options, (GCOS-226).

After the establishment of the standing committees and the study groups of the commission, following draft Resolution 3/1 (INFCOM-1), which reflected the integration of the activities of the WMO-IOC-UNEP-ISC Global Climate Observing System (GCOS) into the work of the Commission, and, following the Rules of Procedure of the Technical Commissions, the President of the Commission established a task team (TT-GSRN) based on the terms of reference provided in the annex to this decision.

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Annex: 1

## **Annex to draft Decision 4.1.1(4)/1 (INFCOM-1)**

### **Terms of Reference of the Task Team on GSRN (TT-GSRN)**

#### **1. Background**

The Global Climate Observing System (GCOS) and the WMO Integrated Global Observing System (WIGOS) both recommend that networks should be part of a tiered system: reference, baseline and comprehensive (Manual on the WMO Integrated Global Observing System, appendix 2.1 (WMO-No. . 1160). Presently, for land surface meteorological observations, there exists baseline and comprehensive networks, but there is no reference network.

GCOS has been working since 2015 on establishing a GCOS Surface Reference Network (GSRN) that will deliver the reference component of the tiered system for surface

observations. A paper in the International Journal of Communication (IJOC), (Thorne et al., 2018) provides the scientific rationale. The relevant report GCOS-226 provides details on how it is presently envisaged to implement the GSRN and outlines the next steps required for the implementation of a GSRN. It calls for the establishment of a lead centre sufficiently resourced and empowered to manage the rollout of such a global network and an oversight group, comprising a broad range of scientific and technical experts that will provide guidance on the development of the GSRN and ensure integration with relevant activities.

## **2. Work plan**

The task team will be responsible for the initial implementation of the GSRN and as such shall undertake necessary activities to instigate the network as follows:

### **Network governance**

- (1) Establish an initial network governance and the organizational structure of the GSRN, including identifying the appropriate liaison with WMO and GCOS to ensure that GSRN operations are well aligned with their requirements;
- (2) Ensure that the GSRN is the reference component of a tiered system: reference, baseline and comprehensive networks for the land surface-based observing system component;
- (3) Develop provisions of the *Manual on the WMO Integrated Global Observing System*, (WMO-No. 1160) regarding the implementation of the GSRN;
- (4) Liaise with relevant groups and national and international bodies, including the International Bureau of Weights and Measures (BIPM), to ensure that the GSRN is fit for purpose, robust and has the required long-term commitment and management structures;
- (5) Develop ToR for the lead centre;
- (6) Report annually on progress to the GCOS Atmospheric Observation Panel for Climate (AOPC) and the GCOS Terrestrial Observation Panel for Climate (TOPC) at their panel meetings and, upon request, to any standing committee of the Infrastructure Commission;

### **Network initiation**

- (7) Define a work plan and milestones including an implementation plan for the establishment of the GSRN according to the guidance in GCOS-226, including a timeline;
- (8) Finalize and agree requirements for GSRN sites, including measurement protocols, data transmission and metadata retention and their integration into WMO-1160;
- (9) Develop guidelines for a pilot project that will include a small set of existing stations suitable for designation as GSRN sites;
- (10) Develop guidance on the certification process to be adopted for GSRN stations that aligns with the guidelines provided by the *Guide to Instruments and Methods of Observation*, (WMO-No. 8);
- (11) Develop a proposal for the initial composition of the GSRN, including a process for nomination, review and site certification;
- (12) Provide scientific, technical and management guidance to the lead centre, which will manage the overall work and evolution of the network, and which shall formally report to the GSRN Task Team.

### **3. Duration and final report**

The task team will be constituted for a period of 4 years after which it shall provide a substantive report on progress to date with recommendations around continuation options for GSRN including appropriate long-term governance options. This report shall be delivered to SC-ON.

### **4. Membership**

Membership shall consist of:

- Two co-chairs, one to be nominated and agreed by SC-ON and the other by SC-MINT;
- No more than 8 ordinary members to be selected for their diverse skill sets by the task team chairs with due regard to gender balance and regional association representation;
- Additional representatives to be nominated one each from the following stakeholders who shall serve in an ex-officio capacity but have equal membership standing:
  - Representatives of SC-ON, including representatives of the Joint Expert Team on Earth Observing System Design and Evolution (JET EOSDE), the Standing Committee on Measurements, Instrumentation and Traceability (SC-MINT), and the Standing Committee on Information Management and Technology (SC-IMT)
  - Representatives of AOPC and TOPC
  - A representative of BIPM
  - A representative of GRUAN (GCOS Reference Upper-Air Network)
  - A representative of GSN (GCOS Surface Network)
  - A representative of GCW (Global Cryosphere Watch)
  - A representative of the satellite community
  - The Director of the lead centre (once it has been constituted)
  - A representative of HMEI ([The Association of Hydro-Meteorological Equipment Industry](#))

### **5. Budget**

*TBC - but should permit at least one in-person meeting.*

### **6. Modalities of work**

The task team shall work primarily by remote means and be facilitated by GCOS and the INFCOM Secretariat in their activities. At least one face-to-face meeting shall be convened (budget permitting).

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