

Composition and Terms of Reference for the Working Group on GRUAN

May 2023

Introduction

This document describes the structure and Terms of Reference (ToR) for the GRUAN Working Group (WG), updated in May 2023. These Terms of Reference will be subject to periodic review by AOPC in liaison with the Co-chairs of the Working Group and the Lead Centre.

Background

The GCOS/WCRP Atmospheric Observation Panel for Climate (AOPC¹) Working Group on GRUAN (WG-GRUAN) was established in 2006 in recognition of the importance of initiating reference-quality observations of vertical profiles of essential climate variables from the surface into the stratosphere to enhance monitoring and understanding of climate variability and change.

The 2004 GCOS Implementation Plan identified the establishment of a reference-quality network as “a very high priority”. Subsequent Implementation plans in 2010, 2016 and 2022 reaffirmed the importance of full deployment and long-term operation of GRUAN.

Since 2008, the German Meteorological Service, Deutscher Wetterdienst (DWD), have been hosting the GRUAN Lead Centre, consisting of scientific and secretarial support at their Lindenberg Observatory to oversee day-to-day operations of the network. Involvement of WMO in GRUAN operations occurs through representatives from relevant WMO Technical Commissions as ex-officio members on the WG-GRUAN. The ongoing high-level aims of GRUAN are primarily specified within a GRUAN Implementation Plan ([link](#)). Previous implementation plans are as follows: GCOS-134 (2009-2012), GCOS-165 (2013-2017) and GCOS-215 (2017-2021).

It is the Working Group’s responsibility to facilitate this implementation, liaising with other groups and national and international bodies to ensure that an eventual GRUAN is fit for purpose, robust and has the required long-term commitment and management structures. The WG-GRUAN also provides guidance to the GRUAN Lead Centre. The WG-GRUAN membership consists of a broad range of scientific and technical experts who contribute expert oversight and support to GRUAN development and operations.

The AOPC, supported by the GCOS Secretariat, and guided by the GCOS Steering Committee, provides direction and oversight of GRUAN. The WG-GRUAN provides direct guidance on the operation of GRUAN and is supported by specific GRUAN Task Teams. The GRUAN Scientific Coordination Group (SCG) guides the initiation and undertaking of specific research projects in support of GRUAN operations. The day-to-day management and coordination of the network, including training and ensuring the archival and dissemination of GRUAN data, is the responsibility of the GRUAN Lead Centre. An organizational structure for GRUAN as a whole is given in Figure 1.

¹ All acronyms are defined in a glossary at the end of the document.

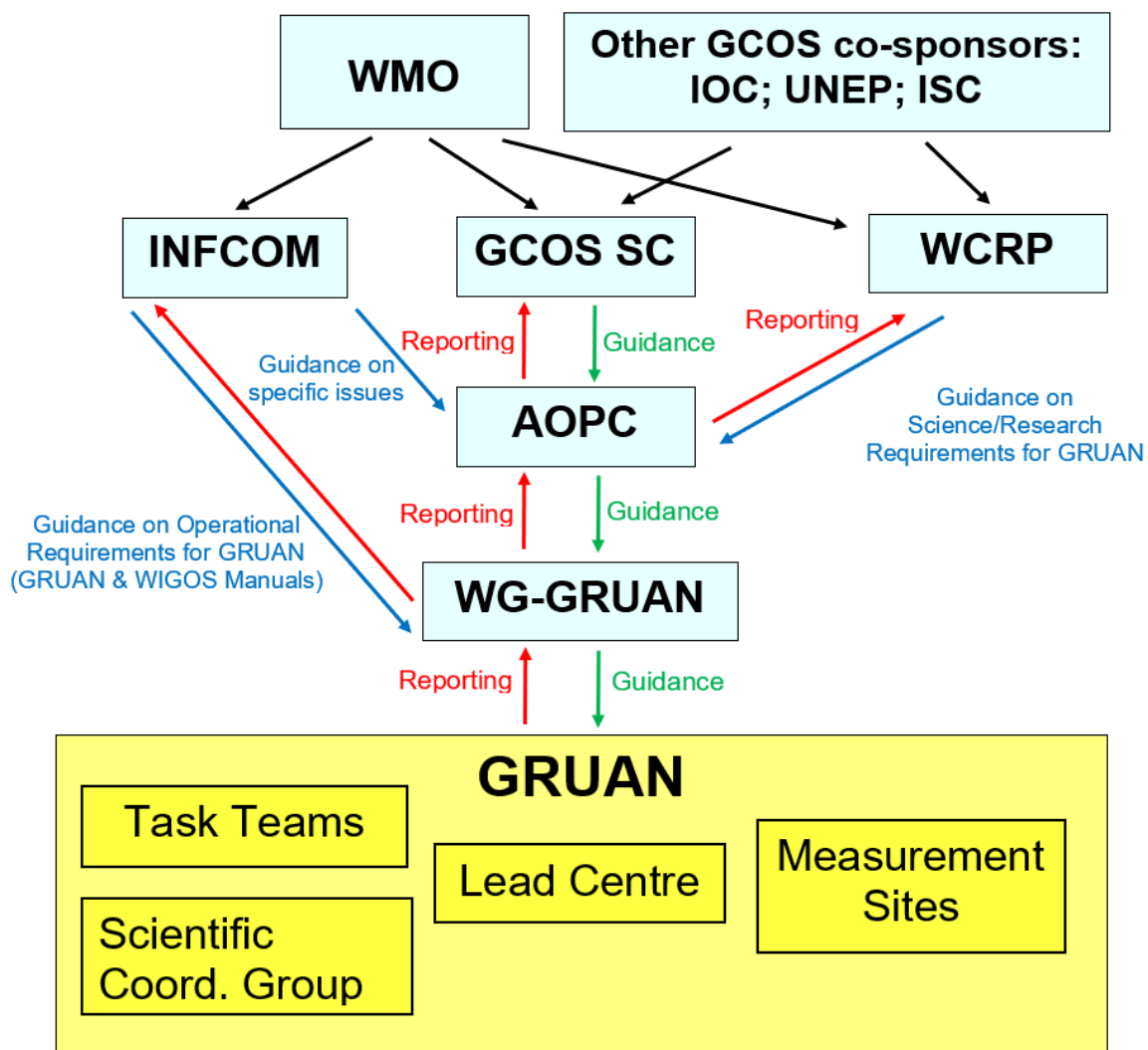


Figure 1. Schematic outline of the structure of GRUAN

Notes:

1. AOPC identifies scientific and research requirements for GRUAN, while WMO/INFCOM identifies operational requirements.

Working group roles and responsibilities

The WG-GRUAN has a range of roles and responsibilities that have been arranged under broad categories that reflect the core facets of its work.

1.1. Purpose

- To provide scientific, technical and management oversight of the operations of the GRUAN Lead Centre, which will manage the overall work and evolution of the network, and which shall formally report to the WG-GRUAN at least twice a year;
- To define roles and responsibilities of the GRUAN Lead Centre and, as deemed appropriate, other centres, for data management, quality monitoring, analysis and capacity development purposes;

- To initiate, approve, manage and dissolve, as appropriate, task teams established to undertake specific activities in support of GRUAN;
- To encourage and support the research activities of GRUAN and appoint the GRUAN Science Coordinators;
- To ensure that GRUAN operations are well aligned with the goals and directions of GCOS through liaison with the AOPC;
- To ensure that GRUAN operations are well aligned with WMO goals and directions through the representatives of WMO Technical Commissions;
- To regularly produce implementation plans.

1.2. Membership

The structure is built on the idea that every position has a purpose – there would be no ‘general’ WG members. People hold WG positions to fulfil specific needs of the WG. Most of these positions connect the WG to allied organisations and/or communities with vested interests in GRUAN’s activities. This includes connections to the GRUAN Task Teams.

The Working Group comprises 22 members i.e. all positions marked in yellow in Figure 2. This includes:

- Three principals: two GRUAN co-chairs and the Head of the Lead Centre
- Two Science Coordinators leading the Science Coordination Group
- Two co-chairs from each of the five Task Teams:
 - Radiosonde
 - Sites
 - Ground-based
 - Satellite
 - GNSS-PW
- A person identified as the liaison for each of the following stakeholder communities:
 - Statistics
 - Satellite
 - WIGOS metadata
 - Metrology
 - SHADOZ & NDACC
 - ARM
 - GAW

Notes:

- These roles within the WG are position specific, rather than person specific. For example, if the current Statistics liaison were to leave the WG, a replacement for that specific role would need to be found;
- The people in the positions that connect the WG to external communities are responsible for liaising and/or working with external communities as indicated with outgoing arrows in Figure 2;
- Ex-officio members (shown in pink in Figure 2), while not formally part of the WG, are welcome to attend, and shall be invited to, every WG call and every Implementation Coordination Meeting (ICM). They are included by virtue of the organisations that they represent (as indicated by the incoming arrows in Figure 2), and, for all intents and purposes, they would act as members of the WG. They may nominate proxies for any WG calls and/or ICMs they are not able to attend in person. There are currently 9 organisations identified;
- Co-chair positions are for one 4-year period. Additional terms require a 2/3 majority support of both AOPC and the formal WG members. Replacements should be staggered by

2 years so that both co-chairs do not change at the same time. Co-chairs may continue to be involved in the WG by taking up some other position within the WG. Six months before a co-chair position becomes vacant, the WG shall propose nominees to fill the vacant position to the AOPC co-chairs. The AOPC co-chairs shall then appoint, from that pool of nominees, and in consultation with the remaining co-chair, a replacement for the out-going co-chair;

- Science Coordinators positions are for one 4-year period. Additional terms require the support of the WG co-chairs and 2/3 of WG members. Replacements should be staggered by 2 years so that both Science Coordinators do not change at the same time. Six months before such a science coordinator position becomes vacant, the WG co-chairs will call for expressions of interest for the position to be filled and, together with the remaining science coordinator, will identify a replacement;
- Task team co-chair positions are for one 4-year period. Additional terms require the support of the WG co-chairs and at least 2/3 of task team members. Replacements should be staggered by 2 years so that both co-chairs do not change at the same time. Six months before a Task Team co-chair position becomes vacant, the WG co-chairs will call for expressions of interest for these positions to be filled and, together with the remaining co-chair, will identify a replacement;
- The seven remaining WG positions, that link the WG to key external communities, are for one 4-year period with possible extensions to additional 4-year periods at the discretion of AOPC and WG co-chairs. Six months before such positions become vacant, the WG co-chairs will call for expressions of interest for these positions to be filled and, together with the incumbent, will identify replacements;
- In seeking to fill vacant positions, every effort shall be made to ensure regional, gender and age balance, as well as capitalizing on opportunities for succession planning, in the composition of the WG.

Responsibilities of the WG co-chairs are to:

- Coordinate tasks with the other co-chair and Head of Lead Centre;
- Together with the GCOS Secretariat, the Lead Centre and local hosts, plan annual Implementation and Coordination Meetings (ICMs);
- Together with the Working Group and Task Teams oversee the development and revision of GRUAN Implementation Plans;
- Coordinate GRUAN representation at annual meetings of the Atmospheric Observation Panel for Climate (AOPC);
- Enhance communication between GRUAN and its various end-user communities;
- Liaise with GRUAN task teams to progress the development required to bring new GRUAN data products online;
- Oversee the preparation of relevant documentation, including technical documents, reports and international peer reviewed literature.;
- Oversee the certification process of GRUAN sites;
- Oversee succession planning for Working Group members and Task Team co-chairs;
- Oversee the auditing for compliance of GRUAN sites with GRUAN operating protocols;
- Promote GRUAN at the national and international level in order to encourage the support of GRUAN (role as "GRUAN ambassador").

Responsibilities of the Head of the Lead Centre are to:

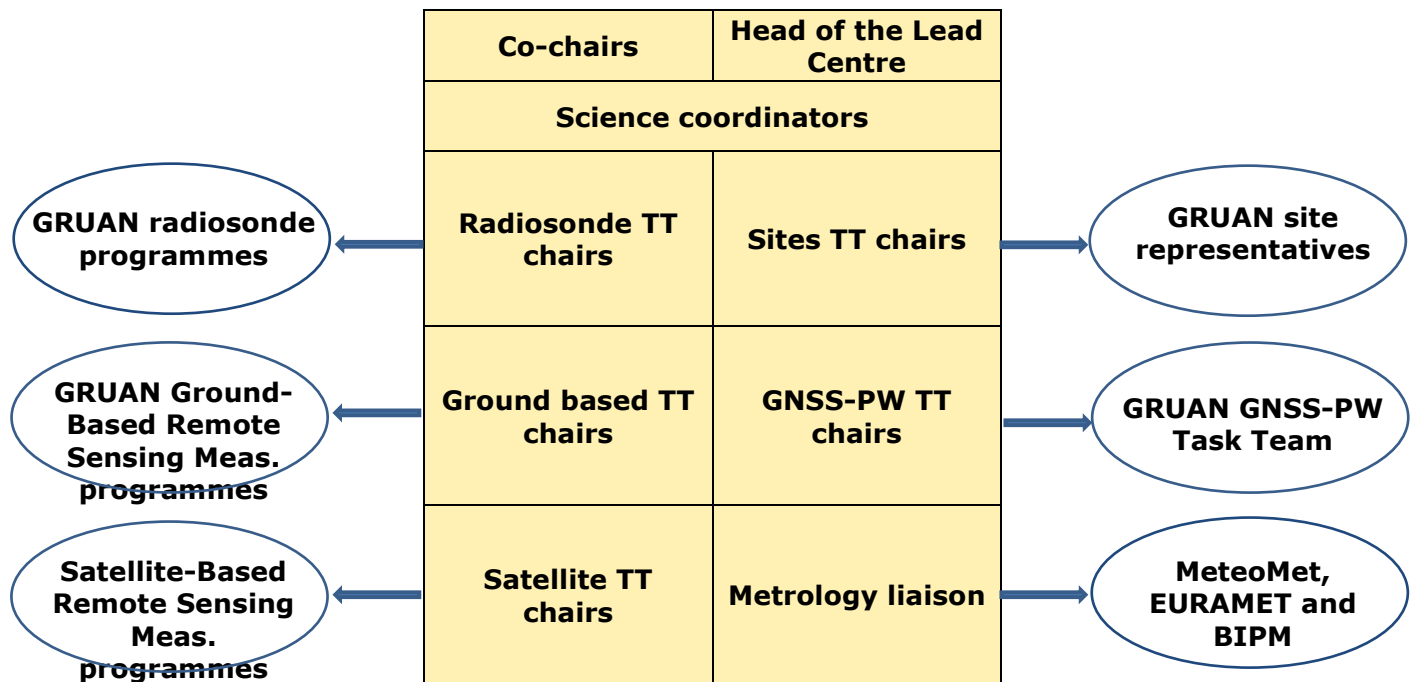
- Partake in regular calls with the WG co-chairs to discuss progress and planning;
- Chair on a rotating basis with the co-chairs the WG calls;
- Help to plan and execute the annual ICM meetings;

- Report to WG issues of operational relevance including network health and expansion;
- Ensure provision of Lead Centre recommendations on all site certification, audit and GRUAN data product applications prior to consideration by the Working Group;
- Ensure timeliness and completeness of GRUAN website;
- Liaise with GCOS and WMO as required.

Responsibilities of the Science Coordinators are to:

- Establish and oversee the GRUAN Scientific Coordination Group (SCG) by ensuring contributions from GRUAN scientists and by selected scientists from outside the GRUAN community;
- Provide and update the description of the SCG mission and scope of work;
- Coordinate the assignment of tasks to specific SCG members;
- Monitoring progress in the assessment of scientific topics, identified by the SCG, related to the usage of GRUAN Data Products (GDPs) and the consistency among different GDPs;
- Liaise with GRUAN Task Teams to transfer relevant knowledge and encourage collaborative scientific activities across the GRUAN community;
- Oversee funding opportunities of interest for the GRUAN community and coordinate proposal initiation with the support of the GCOS Sec and the co-chairs;
- Work with the liaison representatives to engage with external GRUAN user communities to identify relevant scientific activities and challenges.

The Task Team co-chairs TOR are detailed in the individual TOR of the Task Teams.



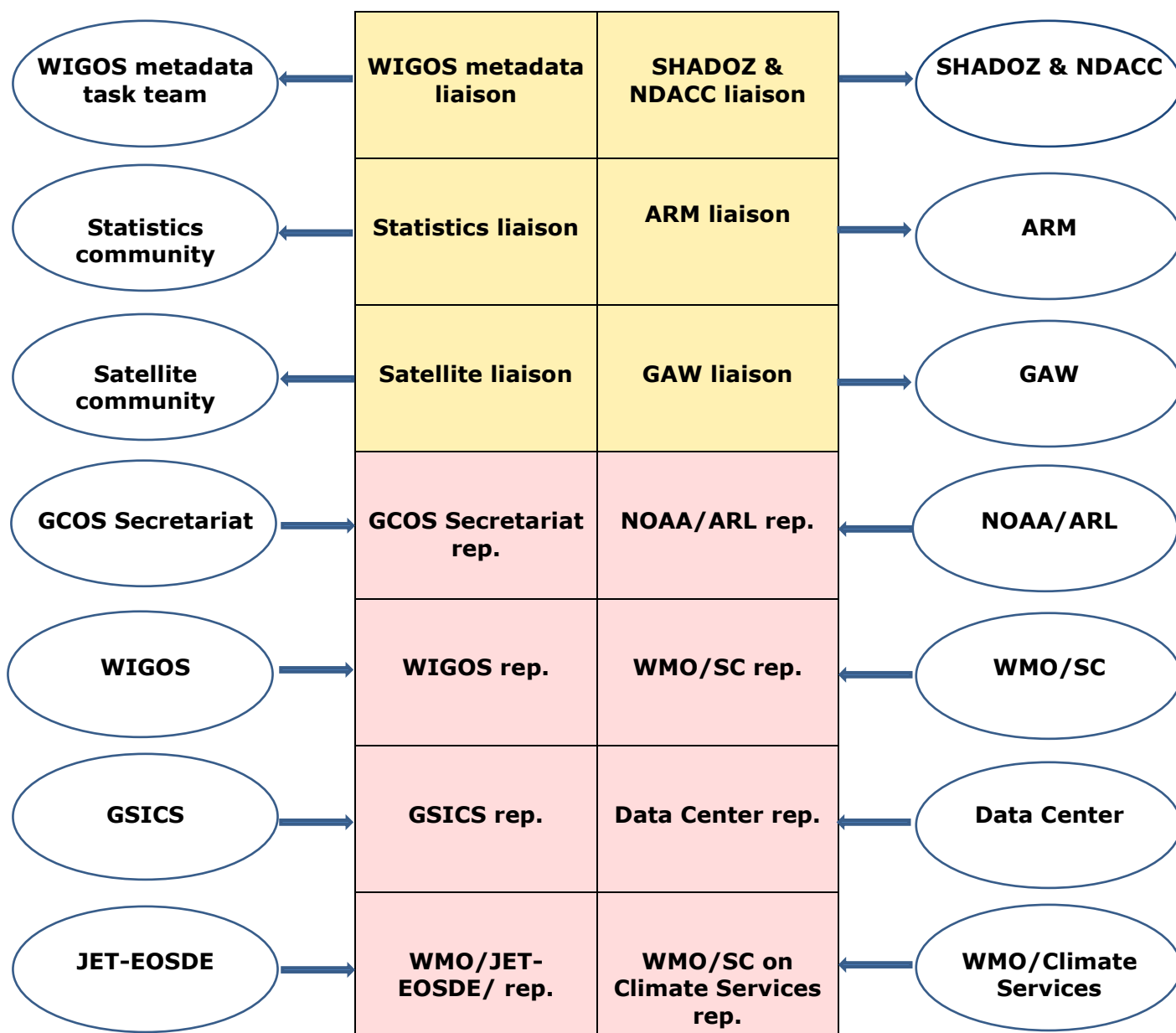


Figure 2. A graphical representation of the composition of the WG group.

1.3. Site selection, assessment, and certification

- To define essential and desirable requirements of GRUAN sites in terms of operational principles, the collection of metadata, assessment of measurement uncertainties, data management, variables addressed, and instrumentation. Develop these requirements in consultation with other relevant observing programmes, make them publicly available, and periodically reassess their validity;
- To certify sites based on (i) information submitted by the site, (ii) an assessment made by the Lead Centre, and (iii) potentially on-site assessment by WG and/or Lead Centre members, against the set of requirements. Periodically reassess/audit sites against these requirements;

- To decide on the composition of GRUAN, including the selection of sites. This should be done in consultation with AOPC and other advisory bodies as appropriate.

1.4. Advocacy and outreach

- To work with relevant agencies and programmes to define and promote GRUAN for long-term upper-air reference observations of a range of specific variables, and to make optimal use of existing and planned infrastructure within the WMO Global Observing System. This includes inter-alia, working with the WIGOS Project Office as a WIGOS pilot project; the WMO Space Programme, INFCOM/SC-ON and INFCOM/SC-MINT on satellite and radiosonde calibration and validation issues, including reference instrumentation and metadata;
- To provide for appropriate communication and outreach activities (through activities such as conferences, making connections with other programmes, organizing special conference sessions on GRUAN etc.);
- To work with strategic partner organizations and projects as specified from time to time inter-alia by AOPC, in annual Implementation and Coordination Meetings or in the GRUAN Implementation Plan;
- WG-GRUAN members should actively work to attract funding in support of WG activities.

1.5. Mode of operation

- The WG-GRUAN co-chairs convene regular calls with the Lead Centre staff to discuss progress and topics related to the ongoing functioning of GRUAN;
- The WG-GRUAN will generally correspond by e-mail and teleconferences to be undertaken every other month, and take advantage of relevant workshops and conferences to hold meetings (in addition to meeting at the time of ICMs). Additional meetings will be convened by the Chair(s) upon demand, in consultation with the GCOS Secretariat and GRUAN partner institutions.

Glossary

AOPC	Atmospheric Observation Panel for Climate
ARM	The Atmospheric Radiation Measurement
BIPM	International Bureau of Weights and Measures
DWD	Deutscher Wetterdienst
EURAMET	The European Association of National Metrology Institutes
GAW	The Global Atmosphere Watch
GCOS	Global Climate Observing System
GCOS-SC	GCOS Steering Committee
GNSS-PW	Global Navigation Satellite Systems (GNSS) precipitable water
GRUAN	GCOS Reference Upper Air Network
GDPs	GRUAN Data Products
GSICS	Global Space-based Inter-Calibration System
ICM	Implementation - Coordination Meeting
ICS	International Council for Science
INFCOM	WMO Infrastructure Commission
IOC	Intergovernmental Oceanographic Commission
JET-EOSDE	Joint Expert Team on Earth Observing System Design and Evolution
MeteoMet	Metrology for Meteorology
NDACC	Network for the Detection of Atmospheric Composition Change
NOAA/ARL	National Oceanic and Atmospheric Administration Air Resources Laboratory
NWP	Numerical Weather Prediction
UNEP	United Nations Environment Programme
SCG	GRUAN Scientific Coordination Group
SC	Standing Committee
WCRP	World Climate Research Programme
WIGOS	WMO Integrated Global Observing System
WMO	World Meteorological Organization
