World Meteorological Organization

WMO Integrated Global Observing System
WIGOS NEWSLETTER

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1. Outcomes of the Regional Association II WIGOS Workshop, Beijing, China, 6-8 November 2018

A WMO Regional Association II (RA II) WIGOS Workshop was held in Beijing, China, from 6 to 8 November 2018, at the kind invitation of the government of the People's Republic of China and it was hosted by the China Meteorological Administration (CMA). The goals of the workshop were: to raise awareness of WIGOS, to showcase the latest WIGOS developments, such as those going on at CMA and at the Japan Meteorological Agency (JMA) and to further progress on establishing Regional WIGOS Centres (RWC) in RAII.

Representatives from seventeen Members of RA II and from one Member of RA V, as well as the EUMETNET (the network of European National Meteorological Services) Observations Programme Manager (Germany), participated at the Workshop which was organized in five sessions: 1-WIGOS Introduction, 2-National presentations, 3-Regional WIGOS Center, 4-CMA presentations, 5–Summary and closing. The major outcomes from the Workshop are summarized in the following conclusions and recommendations:

- Both Members and Regional Telecommunication Hubs (RTHs) to use draft material for the Global Basic Observing Network (GBON) as guide for exchange of observations and strive for compliance;
- Members to develop their national WIGOS implementation plans, as an important document that can be used to drive development projects;
- Members to participate in the experiment with the European Centre for Medium-range Weather Forecasts (ECMWF) on the exchange of binary (BUFR) reports with WIGOS Station Identifiers (WSI);
- Members to use the OSCAR/Surface Resources Portal and join monthly Webinars for online training;
- Members to be aware of the plans of RWCs in the Region and to be prepared to engage and to actively work with one of the RWC once established;
- Members interested in operating a RWC to become familiarized with the "Technical Guidelines for Regional WIGOS Centres on the WDQMS";
- RA II to establish a coordination body with representation from each of the interested Members (China, Japan, India, Saudi Arabia);
- To include regional coordination of Radio-frequencies protection as optional function of RWCs;
- Permanent Representatives (PR) to nominate WIGOS and OSCAR/Surface National Focal Points;
- Secretariat to work with development agencies to limit the number of uncoordinated development projects, which tend to lead to non-integrate systems;
- To urgently arrange training sessions in OSCAR/Surface and WIGOS in RA II;
- Secretariat to provide support to India and Saudi Arabia regarding proposals for RWC pilots;
- Secretariat to work with China and Japan towards having their pilot projects for RWCs initiated;
- Secretariat to develop guidance on how to engage with RWC and on the process to adhere to them.

Participants at the RA II WIGOS Workshop, 6-8 November 2018, Beijing, China

2. Outcomes of the Workshop on Regional WIGOS Centres in RA III, 16-17 November 2018, Santiago, Chile

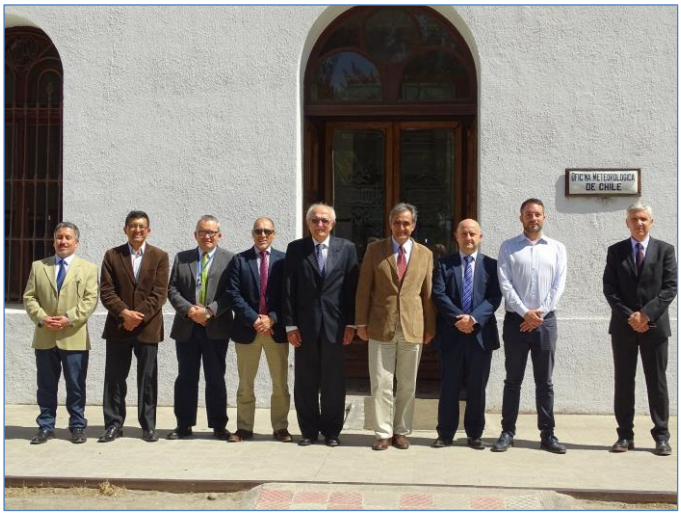
The Workshop on Regional WIGOS Centres (RWC) in Regional Association III (RA III) was held in Santiago, Chile, from 16 to 17 November 2018, at the kind invitation of the government of Chile and it was hosted by the National Meteorological Service of Chile (Dirección Meteorológica de Chile - DMC) and co-organized by WMO Secretariat. The goals of the Workshop were: to discuss the details of the RA III RWC project and proposal, to discuss the relevant technical aspects and to prepare the discussions on WIGOS and on RWC at RA III Regional Conference (RECO-17), 19-20 November 2018, Santiago, Chile.

The members of the Task Team on RWC in RA III that was established by the RA III Working Group on Infrastructure and Technological Development (WG-ITD/RA III), representing Argentina, Brazil, Chile and Peru, attended the Workshop. The session was opened by the PR of Chile, Dr Guillermo Navarro.

The participants identified the main WIGOS challenges in RA III (see below) and agreed on recommendations to address them for consideration and further discussion at the RECO-17, particularly on establishing and operating a RWC in RA III in pilot mode. The Workshop was very useful for the clarification of various issues related to the RWCs.

- difficulties with Metadata update in OSCAR/Surface;
- poor data availability and/or quality in some regions;
- few knowledge about implementation of WSI;
- slow progress with development of the Regional Basic Observing Network (RBON);
- national observation strategy and national WIGOS Implementation Plans (N-WIPs) to be developed;
- few technical expertise at NMHS for the WIGOS/WIS;
- lack of resources/expertise to produce BUFR.

The solutions for the above issues and challenges include: establishing Regional WIGOS Centres; adoption of the GBON draft provisions; development of a RBON pilot project in RA III; and regular training programmes on WIGOS/WIS technical themes.



Participants at Workshop on RA III RWCs, 16-17 Nov 2018, Santiago Chile

3. Innovation in Hydrology – Operationalizing low-cost observation technologies

The WMO Global Hydrometry Support Facility (WMO HydroHub) launched an Innovation Call for Operational Hydrometry to approach the fundamental conflict between innovative technologies and sustainable operations — while operations rely on years of experience with mature technologies, innovation always comes with a certain risk of failure.

An award of 100k CHF was offered to operationalize a fit-for-use hydrometry solution, i.e. making it fit-for-purpose for operations at a National Service. Applicants were challenged to propose a solution, give reasons for lack of uptake and provide a work plan to fix them. Proposals were evaluated by potential reduction in Total-Cost-of-Ownership, sustainable operation, upscaling, and incentives for the provision of local manufacturing and secondary services.

The innovation project was awarded to Northern Widget LLC in Minnesota (USA) who will work directly with the NMHS in Bhutan in 2019 to operationalize a low-cost data logger and water level sensor. All software, hardware, designs and documentation are published under open source share-alike licenses to encourage reuse. A colleague from Afghanistan will be present in Bhutan to facilitate knowledge transfer to Afghanistan, after translation of the manufacturing and training document into the local languages Dari and Pashto.

A reduction in operations and maintenance (O&M) cost (procurement, maintenance, repair, data transfer) and the scalability of the project's deliverables should be evident when the project concludes in October 2019. Mid- and long term impact is expected through:

1. sustained operations at the NMHS of Afghanistan and Bhutan,
2. scaling to other development projects of WMO or other organizations, and
3. other NMHSs that decide to implement the solution themselves, in collaboration with local manufacturers and service providers and independent of foreign aid.

Earth-observation data is the backbone for evidence-based decision-making in many sectors. Unfortunately, O&M of observation networks are costly and national budgets to finance observations are globally decreasing. Part of the solution is to cut cost by taking advantage of readily available innovative technologies but uptake at National Services is low. Increasing uptake is a great opportunity!

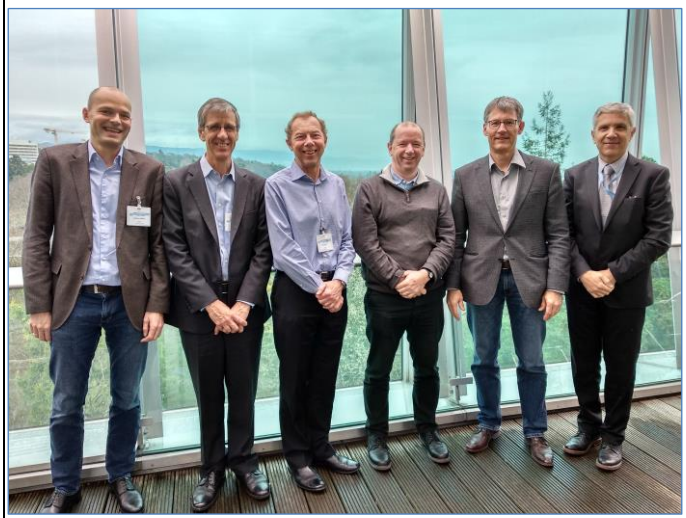
More information on the project will be available on the WMO HydroHub website at http://hydrohub.wmo.int

WMO HydroHub

4. Outcomes of the Sessions of the Task Teams on OSCAR Development (26-28 November 2018) and on WIGOS Metadata (28-30 November 2018), Geneva, Switzerland

The first session of the ICG-WIGOS Task Team on OSCAR Development (TT-OD-1) and the seventh session of the Task Team on WIGOS Metadata (TT-WMD-7) were held back-to-back and partially jointly, in Geneva, Switzerland, from 26-28 November 2018 (TT-OD-1) and from 28-30 November 2018 (TT-WMD-7).

The TT-WDM-7 discussed and agreed on the changes to the WIGOS Metadata Standard (WMDS, WMO-No. 1192), including the relaxation of several metadata elements' obligations, provided contributions to the new draft edition of the Manual on WIGOS (WMO-No. 1160) and further developed and updated most of the WMDS code tables. The session also discussed the major issues and challenges of TT-WMD, including its membership, the evolution and future maintenance of the WMDS and code tables, the cooperation mechanisms across various teams with related work, and also a reliable system for online cooperative document versioning - GitHub agreed to be used. The session agreed on its conclusions, actions and recommendations addressed to ICG-WIGOS (below):
- To review the ToRs and membership of TT-WMD particularly regarding marine and climate representatives;
- To keep both teams TT-OD and TT-WMD active and working together;
- to discuss the evolution of OSCAR/Space and to communicate the plans for its maintenance and evolution;
- to coordinate with WIS and other WMO teams on the harmonization of vocabularies across and code tables;
- to nominate representatives from ABO and from JCOMM to contribute to the work on the WIGOS Metadata Representation via Task Team on WMDR of the IPET-DD;
- to allow GCW, GAW and other communities to manage metadata directly, instead of going through the PRs which is an obstacle for the scientific community to provide metadata; This concerns inter alia, WSIs and authorization of contacts for OSCAR/Surface.



Participants at TT-WMD-7, 28-30 November 2018, Geneva, Switzerland

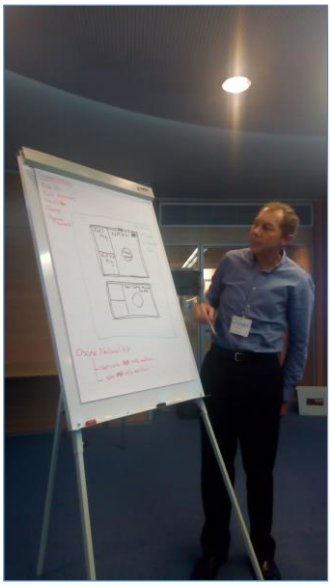
The TT-OD-1 was jointly chaired by Mr Simon Gilbert (United Kingdom) and Mr Thinesh Sornalingam (Canada), the two Co-chairs of TT-OD.

The session reviewed and prioritized the terms of reference of TT-OD and it also reviewed the existing OSCAR development project implementation plan and project status. The team identified the usability of OSCAR/Surface and monitoring metrics about content and user activity on the platform as the items with the highest priority. In its constituting session, the team also discussed how to best work with other key OSCAR stakeholders, the ICG-WIGOS Task Team on WIGOS Metadata and the OSCAR Project Team.

The team agreed that the most important functions for the 2019 development cycle should be: first, the development of a templating system for commonly used station classes, to facilitate the input of metadata; Second, to link OSCAR/Surface to the WDQMS in such a way that the initial transfer of quantitative metrics could be gradually complemented by qualitative and timeliness measures, as suitable indicators are developed. Third, to implement quality control metrics that allow to better understand the quality of metadata in the system and user activity to facilitate usability improvements in the user interface. Fourth, to consider if implementation of mass operations for commonly performed tasks, such as closing a station or changing its dates, could improve the current workflows.

The team is looking forward to the further development of OSCAR in 2019 and to including the community into the development process.

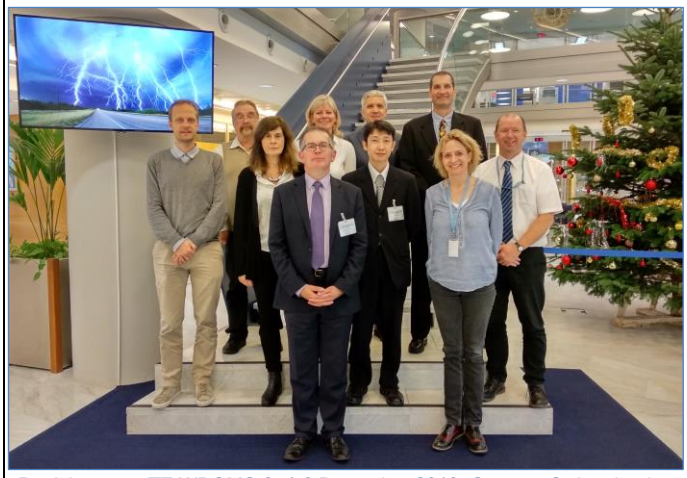
Mr Karl Monnik (Australia), member of TT-OD during discussions from 26-28 November 2018, Geneva, Switzerland



5. Outcomes of the 3rd Session of the Task Team on WIGOS Data Quality Monitoring System, 4-6 December 2018, Geneva, Switzerland

The third session of the ICG-WIGOS Task Team on WIGOS Data Quality Monitoring System (TT-WDQMS-3) was held from 4-6 December 2018, in Geneva, Switzerland.

The TT-WDQMS-3 reviewed the WDQMS concept and its functions, discussed the status of development of the WDQMS pilot project with global NWP centres, as well as of the WDQMS Webtool; It also discussed the implementation of RWCs and the need for further development of the operational tools and ensuring interoperability across the various systems, including OSCAR/Surface. The session reflected on the challenges and perspectives of integrating WDQMS functions from all WIGOS observing components, especially from the non-GOS components and from the space-based observations.



Participants at TT-WDQMS-3, 4-6 December 2018, Geneva, Switzerland

The session agreed on its conclusions, actions and recommendations addressed to ICG-WIGOS (below):
- to consider the need for capacity building activities in the near future, in support of establishing RWCs;
- to discuss and define a vision for the WDQMS in the long-term, within the context of the whole WIGOS;
- to refresh/review the ToRs of TT-WDQMS;
- It was agreed that Members establishing RWCs should provide input for the development of the Webtool;
- to advise on the future evolution of WDQMS, such as on the flexibility needed to integrate WIS monitoring, as well as on data licencing issues to be taken into account;
- there should be mechanisms to allow the exchange of monitoring information across various RWCs;
- the Global Space-based Inter-Calibration System (GSICS) to map their results against user requirements, e.g. GCOS, to allow future integration with WDQMS;
- recognizing that the quality results are not mature enough for OSCAR/Surface, a dedicated workshop is suggested to be organized in a near future to discuss this, involving NWP and observations experts;
- representatives from GAW, GCW, WHOS to engage with TT-WDQMS, towards progressing with the integration – for WHOS there is an opportunity to engage with the La Plata project in RA III, as a demonstration project, taking into account that the hydrological and the meteorological communities are already working together in the region.

6. Outcomes of the RA I WIGOS Workshop on AWS Networks, 19-21 November 2018, Windhoek, Namibia

The WMO RA I WIGOS Workshop on Automatic Weather Station (AWS) networks – "Strengthening and modernizing observing systems in Africa" - was co-organized by the Namibia Meteorological Service and the WMO Secretariat, in Windhoek, Namibia, from 19 to 21 November 2018. The working languages were English and French, with two-way interpretation being provided.

The main workshop theme was "Design, specification, procurement, installation and operation of Automatic Weather Station (AWS) networks in Africa; facing the challenge of introducing new and potentially transformative technologies and integrating their observations into the daily work of NMHSs and their WMO partners".

The objectives of the Workshop were:
1) To assist Members with the implementation of AWS networks in accordance with WMO Technical Regulations and best practices; 2) To share AWS experiences, lessons learned and best practices; 3) To increase regional awareness of WIGOS tools (OSCAR/Surface and WDQMS) and WIGOS guidance material relevant to AWS networks; 4) To facilitate a dialog between WMO, the NMHSs and donor organizations interested in strengthening observation networks in support of weather and climate service delivery in Africa; 5) To provide recommendations to WMO, international development community (organizations) and RA I Members.

Participants at RA I Workshop on AWS networks 19-21 November 2018, Windhoek, Namibia

The Workshop was dedicated to NMHS surface observing system managers and National WIGOS Focal Points of RA I Members. Representatives from donor organizations such as the World Bank, and of partner organizations operating AWS networks in RA I, for example, the Climate Risk and Early Warning Systems initiative (CREWS), the HIGHWAY project (High impact Weather lAke sYstem) and the Trans-African HydroMeteorological Observatory (TAHMO), were also invited. Fifty-four participants from fifty RA I Members participated in the Workshop.

The programme and all presentations are available at: http://www.wmo.int/pages/prog/www/WIGOS-WIS/meetings/RA-I_AWS_Namibia-Nov2018/RA-I_WIGOS-Workshop-Programme.html and also reproduced in Annex II to the Workshop's Final Report.

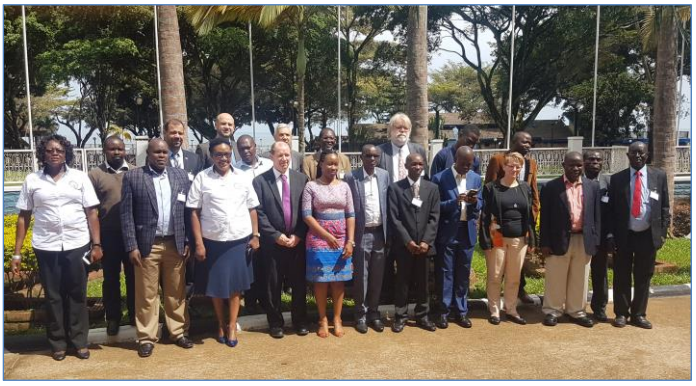
A set of recommendations to the WMO Secretariat, to the African Ministerial Conference on Meteorology (AMCOMET), to WMO RA I, and to the international development communities was developed; They are also reproduced in the Final Report that is available at http://www.wmo.int/pages/prog/www/WIGOS-WIS/meetings.html.

7. Outcomes of the GCOS-WIGOS-UNFCCC-Copernicus-GFCS Workshop on Improving observations to support climate policy, adaptation and mitigation in East Africa, 31 October-2 November 2018, Entebbe, Uganda

The value chain from observations to climate services in many developing countries is still deficient and often, the lack of data hinders effective adaptation to climate change or even to current climate conditions. In order to improve the observational networks and provide a forum to discuss observation needs for adaption, the 45th session of the Subsidiary Body for Scientific and Technological Advice (SBSTA) of the United Nations Framework Convention on Climate Change (UNFCCC) mandated GCOS (Global Climate Observing System) to hold regional workshops. According to the different needs of each region or sub-region, the workshops are tailored specifically to improve regional observing networks to support and enhance adaptation. Therefore GCOS, together with WIGOS, Copernicus (the European Union programme for environmental monitoring), GFCS (Global Framework for Climate Services), and in collaboration with UNFCCC, held a regional Workshop from 31 October to 2 November 2018 in Entebbe, Uganda, that covered East Africa. The focus on East Africa allowed to align the workshop with the HIGHWAY project, an initiative to strengthen the regional WIGOS infrastructure.

23 Participants from NMHSs, UNFCCC focal points and members of regional organizations from Burundi, Kenya, Rwanda, Uganda and Tanzania participated in the workshop, with the aim of determining how to improve the collection and the international distribution of national data. In order to showcase the strong dependency of effective climate services on observation data, the Copernicus provided hands-on training on climate services using their Climate Data Store. Finally, the participants agreed on the following key messages from the workshop, and a regional plan to improve observations in East Africa is being finalised.

• Recognition that most of the value of sustained, systematic meteorological observations can only be realised at a national level if they are reported and exchanged internationally, so allowing to improvements in local weather prediction and national seasonal forecasts of temperature and precipitation.
• Many stations in the five countries of the region are not fully reporting as needed by international centres for global numerical weather prediction and reanalysis. Currently, in RA I, only about 10% of the surface and 20% of the radiosonde stations meet this need.
• The accuracy of climate services and planning climate policy and adaptation depends on the quality and quantity of the observations.
• The proposed WMO Global Basic Observation Network (GBON) requirements - hourly data for surface stations and 12 hours data for upper air stations - will allow NWP and reanalysis centres to meet the regional needs
• The workshop recognised the support of governments in the region for observations, but further and sustained support is needed for the required long-term sustainability. The outline of a regional plan to improve the sustainability of observations in East Africa was developed, covering:
  i. Planning to ensure the sustainability of systems and staff including training and mentoring;
  ii. Calibration and maintenance policies,
  iii. Meeting the observational needs of international centres for global NWP and reanalysis centres,
  iv. Building on the benefits of the HIGHWAY project around Lake Victoria,
  v. Support for regional collaboration to build technical and operational capabilities.



Participants at GCOS-WIGOS-UNFCCC-Copernicus-GFCS Workshop in East Africa, 31 October-2 November 2018, Entebbe, Uganda

8. WIGOS Related Events/Meetings

8.1 Recent Events/Meetings

- ☞ GCOS-WIGOS-UNFCCC-Copernicus-GFCS Workshop on Improving observations to support climate policy, adaptation and mitigation in East Africa, 31 October-2 November 2018, Entebbe, Uganda
- ☞ WMO RA II WIGOS Workshop, 6-8 November 2018, Beijing, China
- ☞ School of Atmospheric Measurements in Latin America and the Caribbean: Atmospheric Particles and Reactive Gases (SAMLAC), 12-17 November 2018, Puerto Rico
- ☞ First IG3IS (Integrated Global Greenhouse Gas Information System) Symposium 13-15 November, Geneva, Switzerland
- ☞ Workshop for Regional WIGOS Centres in Regional Association III, 16-17 November 2018, Santiago, Chile
- ☞ SDS-WAS Asian node SC meeting, 18-22 November 2018, Tokyo, Japan
- ☞ RA I WIGOS Workshop on AWS Networks, 19-21 November 2018, Windhoek, Namibia
- ☞ Regional Conference (RECO) 19-20 November and 17th Session of Regional Association III, 21-23 November 2018, Santiago, Chile

☞ Sixth Session of the GCW Steering Group (reduced) - Pre-operational Phase Planning meeting - 26-28 November, 2018, Davos, Switzerland

☞ First Session of the ICG-WIGOS Task Team on OSCAR Development (TT-OD-1), 26-28 November 2018, Geneva, Switzerland

☞ Seventh Session of the ICG-WIGOS Task Team on WIGOS Metadata (TT-WMD-7), 28-30 November 2018, Geneva, Switzerland

☞ IPET-OSDE Workshop on OSCAR/Requirements 3-4 December 2018, Geneva, Switzerland

☞ Third Session of the ICG-WIGOS Task Team on WIGOS Data Quality Monitoring System (TT-WDQMS-3), 4-6 December 2018, Geneva, Switzerland

☞ IATA-WMO Regional Workshop on AMDAR for South America, 5-6 December 2018, Buenos Aires, Argentina

☞ CBS Task Team on the IATA-WMO Collaboration on AMDAR (TT-IWCA), 21-23 January 2019, Geneva, Switzerland

☞ HIGHWAY Project Steering Committee Meeting, 22-24 January 2019, Geneva, Switzerland

☞ Eight session of the Inter-commission Coordination Group on WIGOS, 24-26 January 2019, Geneva, Switzerland

8.2 Coming Events/Meetings

☞ Technical Workshop on Enhancing ocean observations and research, and the free exchange of data, to foster services for the safety of life and property, 5-6 February 2019, Geneva, Switzerland

☞ WMO Role in the Architecture for Climate Monitoring from Space, 6 February 2019, and 14th Meeting of the Sustained, Coordinated Processing of Environmental Satellite Data for Climate Monitoring Executive Panel (SCOPE-CM-14), 7-8 February, Geneva, Switzerland

☞ The fifth meeting of the Inter-Programme Expert Team on Satellite Utilization and Products (IPET-SUP-5), 11-13 February 2019, Geneva, Switzerland

☞ Meeting of the Expert Team on Telecommunications Infrastructure (ET-CTS), 11-15 February 2019, Buenos Aires, Argentina

☞ Extraordinary Session of the Commission for Hydrology (CHy-Ext.(2019)), 13-14 February 2019, Geneva, Switzerland

☞ TOPC Task Team Global Climate Observations for Adaptation, 13-21 February 2019, Geneva, Switzerland

☞ Planning meeting for the Upper Air Instrument Intercomparison 2021, 19-21 February, Payerne, Switzerland

☞ Regional Conference of RA I-17 (RECO), 18-19 February 2019 and Fourth Session of the African Ministerial Conference on Meteorology (AMCOMET-4), 20-21 February 2019, Cairo, Egypt

☞ The Seventeenth session of the Regional Association I (RAI-17), 21-23 February 2019, Cairo, Egypt

☞ Regional 2019 Latin American Dobson Intercomparison Campaign, 4-22 March 2019, Buenos Aires, Argentina

☞ Steering Group on Radio Frequency Coordination (SG-RFC), 5-7 March 2019, Toulouse, France

☞ RA II WIGOS Workshop – Regional WIGOS Centres (RWCs) and its services for Members, 6-9 March 2019, Tokyo, Japan

☞ MOXXI 2019 International Conference "Innovation in Hydrometry: Overcoming Barriers to Operationalization", 11-13 March 2019, New York City, USA

☞ Joint meeting of the CBS Expert Team on WMO Information System Centres (ET-WISC) and Task Team on Data Centres (TT-DC), (2019 Joint ET-WISC-TT-DC), 12-15 March 2019, Beijing, China

☞ GCOS Joint Panels Meeting, 8th Session of the WCRP Data Advisory Council, WG Climate, 18-22 March 2019, Marrakesh, Morocco

☞ Symposium on "The Unexpected Increase in Emissions of Ozone-Depleting CFC-11", 25-27 March 2019, Vienna, Austria

☞ 10th Meeting of the Ship Observations Team (SOT-10), 1-4 April 2019, Hong Kong, China

☞ Thirty-sixth training session of the Global Amosphere Watch Training and Education Centre (GAWTEC 36), 1-12 April 2019, Zugpspitze, Germany

☞ Tenth session of the JCOMM Observations Coordination Group (OCG-10), 8-11 April 2019, Jakarta, Indonesia

☞ Third Meeting of the Inter-Programme Expert Team on Codes Maintenance (IPET-CM-3), 15-19 April 2019, Marrakech, Morocco

☞ 47th Session of the Coordination Group for Meteorological Satellites (CGMS-47), 19-24 May 2019, Sochi, Russian Federation

☞ OceanObs'19 Conference, 16-20 September 2019, Honolulu, Hawaii, USA