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| **World Meteorological Organization**  **Commission for Instruments and Methods of Observation**  **Joint Session of the Expert Team on Operational In Situ Technologies (ET-OIST) and the Expert Team on Developments in In Situ Technologies (ET-DIST)** Geneva, Switzerland, 21-23 June 2017 | **CIMO/ET-A1-A2/Doc. 1.2(2)** |
| Submitted by: The Secretariat  19.05.2017 |

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# explanatory memorandum

1. **Organization of the Session**
   1. **Opening of the Session**

The first joint Session of the CIMO Expert Team on Operational In Situ Technologies (ET-OIST) and the CIMO Expert Team on Developments in In Situ Technologies (ET-DIST) will open at 09:00 hours on Wednesday, 21 June 2017, at the WMO Secretariat in Geneva, Switzerland.

* 1. **Adoption of the Agenda**

The provisional agenda will be submitted to the Session for adoption.

* 1. **Working Arrangements**

The Meeting will agree on details concerning the organization of its work, including working hours. The documentation and meeting will be conducted in English only.

It is expected that some agenda items (1, 2, 3, 4, 5, 7, 9, 10, 11) will be addressed in plenary, and some of them will be followed up in break-out groups, while others will be addressed in break-out groups of ET-OIST (4, 8.1, 8.2) and of ET-DIST (6, 7, 8.3, 8.4).

1. **Reports of the Chairpersons**
   1. **Chairperson of ET-A1**

The Chairperson of ET-OIST will present a report on the activities carried out by the expert team since CIMO-16.

* 1. **Chairperson of ET-A2**

The Chairperson of ET-DIST will present a report on the activities carried out by the expert team since CIMO-16.

1. **Relevant decisions of the CIMO Management Group, THE WMO Executive Council and relevant updates on the wigos development**

The meeting will be informed about the relevant outcomes of the Fourteenth Session of the CIMO Management Group, which was held in Offenbach, Germany, from 4 to 8 April 2016, and of the Sixty-ninth Session of the WMO Executive Council, held in Geneva from 10 to 17 May 2017. The meeting will also be informed about the current status of the development of the WMO Integrated Global Observing System (WIGOS). The meeting will be invited to consider how it can provide support to the implementation of these decisions and more generally to WIGOS.

1. **Siting and sustained performance classifications for observing stations on land**

The Siting Classification for Observing Stations on Land was published as a common WMO-ISO standard. Several Members have implemented it and some of them have identified some limitations of the classification. Experts having implement WMO(ISO) Siting Classification for Observing Stations on Land will be invited to join the discussion by teleconference.

* 1. **Review of experience of Members with the siting classification**

Experiences made by Members with the implementation of the siting classification, including some preliminary results of the Meteomet experiment on this topic, will be presented to the meeting. The meeting will be invited to review these experiences, and the studies made at ascertaining the uncertainties linked with each class and to determine whether changes to the classification should be proposed, and if so to develop an update for the siting classification.

* 1. **Guidance material on implementation of siting classification**

A need for further work in implementing the classification in a consistent manner was recognized by CIMO-16. Following this outcome, a document titled as Guidance on implementation of siting classification will be submitted to the meeting for a discussion. The meeting will be invited to identify and agree on the following steps towards its finalization and publication.

* 1. **Sustained performance classification for observing stations on land**

The meeting will be presented with an update of the draft sustained performance classification for observing stations on land and will be invited to review and assess its maturity, and to decide on the steps required to finalize this document towards its formal approval by CIMO-17.

1. **Transitioning to MODERN AND automated measurements**

It is expected that part or all of this agenda item could be addressed jointly with the CBS Expert Team on Surface-based Observing Technologies that is being held in parallel to the joint meeting and for which guidance on AWS is also very relevant.

* 1. **Guidelines on economical alternatives to AWSs**

The meeting will be presented with a document that provides an assessment of the performances of economical alternatives to AWSs. The meeting will be invited to review it, and make recommendations towards its finalization and publication as an IOM report, if appropriate.

* 1. **Guidance for replacement of mercury-based and obsolete instruments (from ET-OpMet)**

The meeting will be informed, via webex, about the status of development of a document on Guidance for replacement of mercury-based and obsolete instruments, being developed within the CIMO Expert Team on Operational Metrology (ET-OpMet). The meeting will be invited to contribute to its development, if appropriate.

* 1. **Training modules on migration**

WMO Members, in particular from developing countries, require guidance material to support them in the transition to automated observations, based on best practices from Members having gone through the automation of their observing system(s). At the occasion of TECO-2016, it was recognized that a lot of guidance material on transition from obsolete (manual) measurements to modern (automated) measurements already exists, but that Members are facing a problem with its implementation. ET-OIST has therefore proposed to develop a concept of training modules on migration. A draft of training courses will be presented to the meeting for a review and further improvement.

* 1. **Automation of cloud observations**

A guidance document, comprising best practices and instrumentation on automatic cloud type and amount observations, will be presented to the meeting for a review and discussion. The meeting will also be invited to discuss how to establish traceability of such observations to the recognized standards.

* 1. **Update of WMO guidance material on AWSs**

The meeting will be invited to address the update of WMO guidance material on AWSs. A proposal for the update of the CIMO Guide chapter on AWSs will be presented to the meeting. The meeting will then be invited to identify topics that are currently not properly covered by the WMO guidance material, or that are outdated, and agree on timelines to develop relevant material to ensure Members have timely access to it.

1. **Use of environmentally friendly radiosondes**

The meeting will be invited to discuss a proposed WMO position on the use of environmentally friendly radiosondes and to agree on the recommendation that should be submitted to CIMO MG for approval.

1. **Review of current and emerging technologies and update of the CIMO Guide**

Tasked experts from ET-DIST will be invited to provide a short summary on their findings on performance of new in situ technologies, particularly in relation to: upper air measurement technologies; surface T, P, RH measurement technologies; wind measurement technologies, precipitation measurement technologies, AWSs (including low cost AWSs); clouds, visibility and PWD measurement technologies; trace gas measurement technologies, individual lightning sensors and soil moisture measurements technologies. It is expected that, with respect to their finding, the experts propose update of the relevant CIMO Guide chapters. Also, a proposal for an update of the CIMO Guide related to the measurement of snow will be presented to the meeting.

1. **Other ET-OIST and ET-DIST activities**
   1. **Guidelines on combining information from composite observing systems**

One key focus of WIGOS is the added value that can be obtained by combining observations made by various systems to meet user requirements for a specific observational product. In this context, there is a need to identify those types of composite observations that can be standardized within WIGOS, and to develop guidance material on them. In this regards, the meeting will be invited to review and finalize the document titled as Guidelines on combining information from composite observing systems, and to decide about appropriate form for its publication (either as an IOM report or as a part in the CIMO Guide).

* 1. **Wind reporting issue**

At the 16th Session of CIMO (St. Petersburg, Russian Federation, 2014) a request was made to clarify several aspects related to the measurement and reporting of wind. In the CIMO Guide (WMO-No. 8) the reporting resolution of wind direction is 1°, while required measurement uncertainty is 5°. ICAO enables to use multiple anemometers for wind reporting in METAR, while this is not the case for SYNOP. In this regards, the meeting should consider: whether the algorithm adopted by ICAO could be used for CIMO, how to deal with wind reporting from ships and oil rigs, how to introduce a correction formula for different heights and how to enable flexibility in BUFR coding. The meeting will be invited to address those aspects.

* 1. **Framework for instrument performance monitoring**

Instrument performance monitoring is of a high importance in ensuring sustained quality of observations. A framework for instrument performance monitoring, developed based on the different national practices, will be presented to the meeting for a review and discussion.

* 1. **Guidelines for instruments and measurement infrastructure in extreme environment**

As available documentation on instrument design and experiences related to extreme weather is still limited, CIMO-16 tasked ET-DIST to develop Guidelines for instruments and measurement practice in extreme environments. The meeting will be invited to review a submitted document and to advise on the way to finalize it towards its incorporation into the CIMO Guide.

1. **CIMO-GCW collaboration**

The meeting will be informed on the outcomes of the CIMO-GCW collaborative workshop, scheduled from 19 to 20 June 2017 in Geneva. Potentials for strengthening the collaboration between CIMO and GCW, particularly with respect to the task 10 of ET-OIST WorkPlan and tasks 3 and 4 of ET-DIST WorkPlan, will be discussed.

1. **Other Business**

Under this agenda item, the meeting will be invited to consider any other issue brought forward by participants at the meeting.

1. **Closure of the Session**

The Session is tentatively scheduled to close around 17:00 on Friday 23 June 2017.

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