

**WMO OMM**

World Meteorological Organization
Organisation météorologique mondiale
Organización Meteorológica Mundial
Всемирная метеорологическая организация
المنظمة العالمية للأرصاد الجوية
世界气象组织

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7 November 2023

Annex: 1 (available in English only)

Subject: Training Workshop on “Calibration of Meteorological Instruments and Uncertainty Calculation” for Members of WMO Regional Association I, Cairo, Egypt, 11–13 December 2023

Action required: Nomination of expert by no later than **14 November 2023**

Dear Sir/Madam,

I am pleased to inform you that the World Meteorological Organization (WMO) is organizing a Training Workshop on “Calibration of Meteorological Instruments and Uncertainty Calculation” for Members of WMO Regional Association I (RA I). The training workshop will be held in English at the Regional Instrumentation Centre (RIC) Cairo, from 11 to 13 December 2023.

The workshop will be followed by a one-day Regional Instrument Centre Consultation Workshop, on 14 December 2023 that will focus on strengthening collaboration between RICs, identifying the main challenges faced by RICs in supporting the Members of their Region, identifying possible ways to strengthen their support, and/or envisage other strategies to improve the quality of observations.

The Training Workshop on Calibration of Meteorological Instruments and Uncertainty Calculation aims to improve the skills of participants of Members of RA I which already have calibration laboratories, in particular related to the understanding of measurement uncertainty.

The training workshop will cover general topics such as metrology in meteorology, terminology and vocabularies and will focus particularly on calibration procedures and computation of calibration uncertainties for temperature, pressure and humidity sensors. It will also deal with the calibration practices and uncertainty computation related to precipitation and wind sensors in a simpler manner.

The [annex](#) contains the preliminary programme for the course, which will last three days and will comprise theoretical lessons and practical exercises on uncertainty budget computation. Most of the course will take place in a classroom. Arrangements will be made for visits to the RIC Cairo laboratories, providing an opportunity to contextualize the lectures within the laboratory environment.

Each participant is invited to bring to the workshop the documentation of the instrument calibration procedures in use in his/her laboratory and, if available, an example of uncertainty calculation for one of the variables measured in his or her laboratory. At the end of the course, the expert you designate should in turn carry out a training activity at a national level and report the results to the WMO Secretariat.

To: Permanent Representatives of Members of Regional Association I

cc: Hydrological Advisers of Members of Regional Association I

I would therefore ask you to nominate an English-speaking expert to take part in this course, preferably a staff member of your calibration laboratory, with an in-depth knowledge of the laboratory procedures who can also transfer the knowledge acquired from the course to other staff members.

I should be grateful if the nomination of your expert(s) includes the following details: First Name, Family Name, Job Title, Institution, Email address. Nominations should be sent to the WMO Secretariat (WMOsecretariat@wmo.int) at your earliest convenience, but no later than **14 November 2023**. For representatives of RICs, it is expected that your expert will remain for the dedicated RIC Consultation Workshop.

Resources permitting, the workshop will also be opened to representatives from RICs from other Regional Associations.

Participants, when nominated, are kindly requested to complete a Nomination Form online ([available here](#)).

Limited funds are available for the support of one expert nominated by each country. Financial assistance from WMO will be considered if requested.

Regarding insurance coverage for non-staff members, may I draw your attention to the following:

"Non-staff members of WMO who are authorized to travel at the Organization's expense and/or who are receiving a DSA from WMO must ensure they are fully responsible for expenses incurred in the event of death, illness or injury during official travel and attendance at meetings on behalf of the Organization. They are, therefore, fully responsible for arranging life, health, accident, as well as any other forms of insurance with an adequate level of coverage for the duration of such meetings and events.

WMO liability is limited to the performance of services or attendance at a meeting on behalf of the Organization, is covered by an injury and illness benefit insurance which provides a limited coverage for medical, emergency and supplementary official travel expenses."

Once an expert from your country has been designated, we will contact the expert directly to make any additional arrangements and forward them the Financial Assistance Form and Visa Application form (if needed).

Please note that WMO will only fund one expert per country. If more than one expert is nominated and wishes to attend the training workshop, they must agree to cover their own expenses

Yours faithfully,



Dr Wenjian Zhang
for the Secretary-General

**Tentative Programme of the Training Workshop on
"Calibration of Meteorological Instruments and Uncertainty Calculation"
for Members of WMO Regional Association I in Cairo, Egypt.**

Ref.: 23303/2023-1.6 I/ONM

- General principles of metrology
 - Metrology in meteorology
 - Measurement terminology and the vocabulary of metrology
 - Introduction to measurement uncertainty
 - Calibration of thermometers – procedures and related uncertainty budgets
 - Calibration of pressure sensors – procedures and related uncertainty budgets
 - Calibration of relative humidity sensors – procedures and related uncertainty budgets
 - Calibration of precipitation gauges – procedures and related uncertainty budgets
 - Calibration of wind sensors – procedures and related uncertainty budgets
 - Exercises related to computation of uncertainty budgets
 - Visit to RIC Cairo
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