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

WEATHER CLIMATE WATER
TEMPS CLIMAT EAU

Secrétariat
7 bis, avenue de la Paix – Case postale 2300
CH 1211 Genève 2 – Suisse
Tél.: +41 (0) 22 730 81 11
Fax: +41 (0) 22 730 81 81
wmo@wmo.int – public.wmo.int

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附件： 3（仅以英文提供）

主题： WMO、印度尼西亚气象、气候和地球物理局(BMKG)以及全球大气监视网(GAW)关于温室气体测量的上手培训

需要采取的行动： 供参考并酌情采取行动

尊敬的先生/女士，

为支持各国家气象水文部门(NMHS)空气质量服务方面的能力发展，在印度尼西亚气象、气候和地球物理局(BMKG)的大力支持下，WMO 教育培训办公室与 WMO 科学与创新司合作，设计了一个实施 WMO 温室气体(GHG)测量能力方法的培训课程。

培训课程将使全球大气观测站（GAW）的操作人员以及来自 WMO 第二区域协会(亚洲)（二区协）和第五区域协会（五区协）投身于气候变化和温室气体监测的初入职科学家、研究人员和专业人员掌握实用技能和知识，使之能够按照 GAW 的最佳做法，操作并维护 GHG 测量仪器，收集、提交并分析数据，以更好地应对气候变化的挑战。

课程将采用混合式学习方法，结合为两个阶段：在线阶段和现场阶段(针对入选学员)。在线阶段将于 2024 年 6 月 25 至 7 月 11 日举行，为期三周。入选学员将继续在现场阶段学习，该阶段将于 2024 年 9 月 30 日至 10 月 4 日在印度尼西亚西苏门答腊（West Sumatra）武吉丁（Bukitting）的武吉科托塔邦（Bukit Kototabang）GAW 站进行。本通函附件 I 和附件 II 简要介绍了该课程、其形式、预期学习成果和将获得的资格。

请提交一份针对有意向、有资格候选人的申请表(附件 III)，以供考虑。所有申请将由 WMO 科学与创新司和教育培训办公室共同审查。在线阶段欢迎区域内人员踊跃申请，而现场阶段的筛选将基于竞争，并优先考虑在 GAW 工作的人员。

致： WMO 第二、五区域协会会员常任代表

抄送：水文顾问

请感兴趣的二、五区协国家候选人先提交申请，于 **2024 年 6 月 10 日**前将填妥的申请表(附件 III)连同相关附件发送至 WMO 科学与创新司(smoreno@wmo.int)，并抄送教育培训办公室(tra@wmo.int)。此日期之后收到的申请将不予考虑。

关于面对面阶段，WMO 将通知并联系在线阶段选出的成功学员，以准备差旅后勤事宜。随后，入选候选人将收到一份资助申请表(RFA)，供其于 **2024 年 8 月 1 日**前填妥并连同入选通知函和护照复印件一并发回 WMO。此日期之后收到的 RFA 将不予考虑。

请注意，我们鼓励会员支付其学员参加在印度尼西亚武吉科托塔邦举行的现场阶段的费用，同时，WMO 准备支持来自二、五区协入选会员的一名学员，并优先支持从事 GHG 测量运行的人员。

我谨借此机会向您确保我对支持胜任力发展的能力发展相关活动的不变承诺，并感谢您在这项工作中的一贯合作。

谨上

席列斯特·绍罗教授
秘书长

THE INDONESIAN AGENCY FOR METEOROLOGY, CLIMATOLOGY AND GEOPHYSICS (BMKG)

1	Host Member	Indonesia
2	Host institution(s)	The Indonesian Agency for Meteorology, Climatology and Geophysics (BMKG)
3	Website	www.bmkg.go.id
4	Location(city) of institution(s)	Jakarta, Indonesia
5	Address of institution	Jl. Angkasa I No. 2 Kemayoran, Jakarta Pusat, DKI Jakarta, Indonesia 10720
7	Course type	Blended Learning: - Online phase - In-person phase (for selected participants)
8	Main course content	For the online programme: • Understand the principles of the greenhouse effect, the significance and importance of measuring GHGs, and the factors driving climate change; • Understand the stages of the WMO GAW programme, traceability and calibration scales, data treatment and data submission to the World Data Centre on Greenhouse Gases (WDCGG) and other initiatives like IG3IS and G3W for comprehensive GHG monitoring awareness; • Understand measurement techniques for GHGs (CO_2, CH_4, N_2O), as well as the calibration and maintenance; • Understand the importance of quality assurance and quality control in GHG monitoring; • Apply the GAWSIS/OSCAR metadata update; • Demonstrate GHG basic data processing, analyse, and visualization. For the in-person programme • Apply the GHG measurement principles (including spectroscopic and remote sensing techniques), calibration and maintenance, ensuring traceability, safety in field measurements, and the application of GAW quality assurance and quality control (QA/QC) protocols; • Apply GHG data processing and analysis, data visualization, and presentation under the QA/QC procedures; • Apply the data treatment, as well as timely and accurate data submission to WDCGG (and other initiatives like IG3IS and G3W) for comprehensive GHG monitoring awareness.
9	Duration of study	- Online phase: 3 weeks (25 June to 11 July 2024) - In-person phase: 1 week (30 September to 4 October 2024)

10	Course start date	- Online phase: 25 June 2024 - In-person phase: 30 September 2024
11	Target Region and Members	English speaking countries among RA II and RA V
12	Basic requirements	Relevant areas of competence: • Climate science, environmental science, geography, Earth sciences, or a related field (such as chemistry and physics); • Basic skills of data, methods, and tools/ instruments for GHG operation; • Basic Skills of computer programming languages (particularly R) and Geographic Information Systems (GIS); • Good skills in English reading, written and spoken (language comprehension).
13	Language	English
14	Number of awards	- Online phase: Up to 50 participants - In-person phase: Up to 15 selected participants
15	Application form	Mandatory
16	Admission from institution	Mandatory
17	Application closing date	WMO: For the online course selection 10 June 2024 For the in-person course: 1 August 2024, For the completion of documents: 15 August 2024
18	Document to send to WMO after selection process	Request for Financial Assistance (RFA)
19	Contact information	smoreno@wmo.int copy to tra@wmo.int

THE INDONESIAN AGENCY FOR METEOROLOGY, CLIMATOLOGY AND GEOPHYSICS

WMO-BMKG-GAW HANDS-ON TRAINING ON GREENHOUSE GAS MEASUREMENTS

Course description

The WMO-BMKG-GAW Hands-on Training in Greenhouse Gases Measurement is a blended course that is organized by the WMO Education and Training Office in collaboration with the WMO Science and Innovation Department, and with the kind support of the Indonesian Agency for Meteorology, Climatology and Geophysics (BMKG). The online phase will be conducted in the WMO ETRP Moodle platform, while the in-person programme will take place in the mountainous area of GAW Station in Bukit Kototabang, Bukittingi, West Sumatra in Indonesia.

The course is organized to provide participants with the comprehensive understanding about the greenhouse effect, the significance and importance of measuring GHGs and the WMO Programme in GHG measurement as well as calibration, and maintenance principles. Participants will also learn how to apply basic GHG data processing, analysis, and visualization for effective data presentation. Moreover, the in-person phase aims to provide participants with the practical skills in how to measure safely and accurately GHG in a GAW station, following GAW QA/QC procedures and timely submitting the data to the World Data Centre on Greenhouse Gases (WDCGG).

In addition, the training programme will include:

(1) Hands-on training of GHG monitoring which will equip participants with practical skills and knowledge enabling them to operate and maintain the GHG measurement instruments as well as to collect, submit and analyse data to better address the challenges of climate change;

(2) The action plan activities (to ensuring the application of the knowledge and skills resulted from the training in their home country).

Course format

This will be a blended learning course. The online course will run from 25 June to 11 July 2024 in the WMO ETRP Moodle platform. The in-person programme will be delivered in the classroom in the BMKG GAW Station in Kototabang, Bukittinggi, West Sumatra Indonesia, from 30 September to 4 October 2024, for selected participants.

For best results, students must show satisfactory attendance, progress, and timely and satisfactory completion of online tasks/quizzes as per submission deadlines. Only up to 15 successful participants from the previous online course who working in a GAW Station or are involved in GHG measurement operation could be selected. They are recommended to bring their own laptop and prepare the identification of the challenges of GHG measurement in their country.

Expected Learning outcomes

By the end of the course, the students will have successfully achieved the following outcomes:

A. For the online programme:

1. Understand the principles of the greenhouse effect, the significance and importance of measuring GHGs, and the factors driving climate change.
2. Understand the stages of the WMO GAW programme, traceability and calibration scales, data treatment and data submission to WDCGG and other initiatives like IG3IS and G3W for comprehensive GHG monitoring awareness.
3. Understand measurement techniques for GHGs (CO_2, CH_4, N_2O), as well as the calibration and maintenance.
4. Understand the importance of quality assurance and quality control in GHG monitoring.
5. Apply the GAWSIS/OSCAR metadata update.
6. Demonstrate GHG basic data processing, analysis, and visualization.

B. For the in-person programme

1. Apply the GHG measurement principles (including spectroscopic and remote sensing techniques), calibration and maintenance, ensuring traceability, safety in field measurements, and the application of GAW quality assurance and quality control (QA/QC) protocols.
2. Apply GHG data processing and analysis, data visualization, and presentation under the QA/QC procedures.
3. Apply the data treatment, as well as timely and accurate data submission to WDCGG (and other initiatives like IG3IS and G3W) for comprehensive GHG monitoring awareness.

Competencies attained and certificates issued

After successful completion of the course, the candidates will receive a certificate stating the underpinning skills that support the WMO competency implementation in GHG measurement.

Target audience

Operators of Global Atmospheric Watch (GAW) Stations, and early-career scientists, researchers, and professionals who are passionate about climate change and GHG monitoring from RA II (Asia) and RA V (South-West Pacific).

Instructors

Trainers from WMO, BMKG, and the World Calibration Centre for Surface Ozone, Carbon Monoxide, Methane and Carbon Dioxide (WCC-Empa) will be the instructors for the course. Additional content experts will be brought in for specific portions/subjects of the course.

Working language

The course will be conducted in English. No translation in other languages is offered.

Entry requirements

- Involvement in GHG Measurements operation
- Having relevant background such as climate science, environmental science, geography, Earth sciences, or a related field (such as chemistry and physics)
- Basic skills of data, methods, and tools/ instrument for GHG operation
- Basic Skills of computer programming languages (particularly R) and Geographic Information Systems (GIS)
- Good skills in English reading, written and spoken (language comprehension)

All this needs to be verified by proof of CV and qualifications.

Work experience: relevant work experience in GHG measurement is preferred in face-to-face phase.

Useful resources in preparing for the course

A laptop or desktop computer with Microsoft Office or equivalent (Word processor, PowerPoint Presentation etc.) good memory capacity and storage (an external storage is advised). A good and stable connection with sufficient bandwidth. A laptop would be preferable as it can be used during the face-to-face phase.

Procedure for application

The application must include:

- A letter of motivation in English limited to 200 words;
- A CV;
- Relevant certified qualifications;
- Signed nomination letter from relevant the Permanent Representatives.

All applications will be handled according to the protection of private information requirements.

Application for consideration should be sent to: smoreno@wmo.int and tra@wmo.int

Clearly mark the subject of the email as: ***GAW Hands-on Training on Greenhouse Gas Measurements***.

Deadline for application: **10 June 2024**

Deadline for submission of the Request for Financial Assistance (RFA) form with a copy of the admission letter and passport is **1 August 2024**

Only successful applications will be notified by email by WMO.

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APPLICATION FORM

WMO-BMKG-GAW HANDS-ON TRAINING ON GREENHOUSE GAS MEASUREMENTS

ONLINE AND IN-PERSON, BUKIT KOTOTABANG, INDONESIA

25 June to 11 July 2024 (online) and 30 September to 4 October 2024 (in-person)

Note: Please read the notes and instructions on the last page before completing this application form

A. PERSONAL	
1. First name	
2. Surname	
3. Country	
4. Date of birth *(DD/MM/YYYY)*	
5. Gender	M / F
6. Passport number	
7. Passport validity	
8. Do you have a disability	Yes / No
If yes, please specify	
9. Permanent home address	
(number, street, postal code, town)	
10. Telephone *(mobile)*	
11. Email	
12. Professional contact	
Name	
Telephone *(office)*	
Professional links	
13. If you are selected for the in-person phase, would you request financial assistance to participate in the course? Yes / No	

B. GENERAL

1. Give details of working experience in GHG Measurement Operation

Name of organization	Starting and end date	Brief description of role and responsibilities	Reason for leaving

2. Write a brief statement setting out clearly why you have chosen this course and how you intend to use it after graduation

I declare that to the best of my knowledge all the information in this form is true and correct.

Signature _____ Date _____

C. PERMANENT REPRESENTATIVE ENDORSEMENT

Signature _____ Date _____

Notes and instructions

Please read these notes and instructions carefully before completing this application form. Be sure to read every section and that the information you provide is accurate.

1. Applications received after the date of **10 June 2024** will not be considered;

2. Applications received without the endorsement of the Permanent Representative will not be considered;

3. Incomplete application forms will not be considered;

4. Closing dates for the application dates are published and will be strictly adhered to;

5. A copy of the passport must be included in the application for the in-person phase;

6. Successful candidates will be contacted by email. Please ensure that your contact details are correct and clearly written.