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

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عدد المرفقات: 2 (متوافران بالإنكليزية فقط)

الموضوع: دورة تدريبية دولية بشأن تشغيل رادارات الطقس، سيول، جمهورية كوريا، 23 أيلول/ سبتمبر - 4 تشرين الأول/ أكتوبر 2019

الإجراء المطلوب: للعلم واتخاذ الإجراء المناسب، حسب الاقتضاء، **في موعد لا يتجاوز 23 آب/ أغسطس 2019**

تحية طيبة وبعد،

يسرّني أن أبلغكم أن مركز التدريب الإقليمي (RTC) بجمهورية كوريا سيستضيف "دورة تدريبية دولية بشأن تشغيل رادارات الطقس" في إدارة الأرصاد الجوية الكورية (KMA)، في الفترة 23 أيلول/ سبتمبر - 4 تشرين الأول/ أكتوبر 2019.

وتهدف الدورة إلى دعم القدرات البشرية المعنية بخدمات رادارات الطقس في المرافق الوطنية للأرصاد الجوية والهيدرولوجيا (NMHSs). وهذه الدورة موجهة للراصدين الجويين وفنيي الأرصاد الجوية والفنيين الهيدرولوجيين. وستتضمن الدورة جوانب نظرية عن رادارات الطقس وأجهزة وبرمجيات رادارات الطقس من أجل التطبيق في تقديم الخدمات للجمهور والأطراف المعنية. ويرد مزيد من المعلومات عن الدورة في المرفق الأول.

ويرجى من الحكومات أن تنظر في المساهمة في النفقات المتعلقة بمشاركة المرشحين، لا سيما تكاليف تذاكر السفر. لكن إن تعذر الأمر، فيمكن الإشارة في استمارة الترشيح إلى طلب مساعدة مالية. ويرجى من المرشحين المهتمين استيفاء استمارة ترشيح المشاركين الواردة في المرفق الثاني، وإعادتها مباشرة إلى إدارة الأرصاد الجوية الكورية (KMA) (nyyim@korea.kr) في موعد لا يتجاوز **23 آب/ أغسطس 2019**.

وأود أن أعرب عن تقديري لدعمكم المستمر لتعزيز برامج المنظمة (WMO) وأنشطتها.

وتفضلوا بقبول فائق الاحترام،

(و. تشانغ)
عن الأمين العام

إلى: الممثلين الدائمين لأعضاء المنظمة (أو مديري مرافق الأرصاد الجوية أو الأرصاد الجوية الهيدرولوجية)

صورة إلى: المستشارين الهيدرولوجيين للممثلين الدائمين في كل من الاتحاد الإقليمي الأول والاتحاد الإقليمي الثاني والاتحاد الإقليمي الخامس

Course Information

2019

International Training Course on Weather Radar Operation

September 23 ~ October 4, 2019

Korea Meteorological Administration (WMO RTC)

Seoul, Republic of Korea

CONTENTS

KMA Training Program

The Korea Meteorological Administration, KMA, is committed to protecting the life and property of the public from weather hazards, improving the quality of life and economy and strengthening international cooperation in global weather services. The KMA conducts observations and analysis of meteorological phenomena, earthquake events and climate change and provides weather forecasts, warnings, long-term predictions and industrial meteorological information. The KMA has recently been recognized as WMO Regional Training Centre (WMO RTC), WMO Lead Centre for Long Range Forecast & Multi Model Ensemble (WMO LC-LRFMME), the WMO World Calibration Centre for SF6 and the WMO Information Service (WIS) Global Information System Centre (GISC) Seoul with improved observation, information and communication technology, short and long range forecasting services and climate science.

To enhance the personnel capacity of the WMO member countries, the KMA has delivered various short term(two to four weeks) international training courses such as “Weather forecasting for operational meteorologist”, “ICT for meteorological services”, “Satellite data analysis”, and “Radar data analysis”. Other notable KMA-organized courses include “Workshop on meteorological disaster responsiveness for African countries” to improve countermeasures to high-impact weather and “Climate prediction expert course” for the acquisition of innovative techniques on climate prediction for operational use. And the Korea National Meteorological Satellite Center has been recognized as the Center of Excellence (CoE) since 2010 and delivering the advanced analysis course for enhancing knowledge and skill of products from various meteorological satellites. About 1014 persons from 91 countries from the whole world have participated in the KMA’s training courses since 1998.

Part I PROGRAM OVERVIEW

1. Title: International Training course on Weather Radar Operation

2. Duration: September 23(Monday) ~ October 4(Friday), 2019

3. Objectives

a) Strengthen human capabilities for weather radar services at NMHSs

b) Extend their understanding about weather radar theories and weather radar hardware and software for applications in delivering weather services to the public and stakeholders

c) Establish the weather radar network

4. Number of Participants

12 participants from NMHSs of the WMO members

5. Language: English only

6. Venue: WMO Regional Training Centre(RTC), Korea Meteorological Administration (KMA), Seoul, Republic of Korea

7. Qualification of Applicants:

- *Education Level:*
  Meteorologist, meteorological technician, hydrologist, or hydrological technician (WMO classification of personnel)
- *Position/Task:*
  Responsible for radar maintenance, operation, or analysis
- *Experience:*
  At least 2 years of relevant working experiences
- *Language:*
  To be proficient in English (If English is not the mother tongue, certificate of proficiency in English is requested.)
- *Participants have never attended KMA's training program over recent three years.*

8. Closing Date for Application: August 23, 2019

The completed nomination form with the signature of the PR of the relevant WMO Member should be returned to the KMA (E-mail: nyyim@korea.kr) with a copy for the WMO Secretariat no later than August 23, 2019.

9. Result of selected participants will be announced by August 27, 2019.

10. Country Report:

Final participants should submit their country report on general and weather radar services of their NMHS in MS PowerPoint or Word by September 15, 2019. If one country has more than two participants, only one report is to be submitted.

a) Details of Country Report Preparation

- **Current situation**

- Explain the general weather radar system in your country.
- Describe the current status of radar operation capacity, their main role, radar product and utilization for forecast.
- Analyze the strengths and weaknesses of radar operation at your organization.
- Describe major challenges and opportunities your country is facing.

- **Future direction and cooperation**

- Describe a realistic and practical suggestion based on the current situation
- Describe your expectation from the training course

- **Please specify the information on radar system infra (hardware, software) in your organization.**
- **Country Report should also include the topic you would like to discuss during the workshop.**

Part II PROGRAM CONTENTS

1. TENTATIVE PROGRAM MODULE

Module	Contents	Lecture	Practice (Discussion)	Study Visit
Module 1 Understanding of Korea & KMA	- Korea's Culture, Society and Language	√		- National Weather Center - ICT Center - National Earthquakes Center
	- Recent Developments and Future Plans of KMA	√		
	- Weather Observation Network in KMA	√		
Module 2 Weather Radar Observation	- Weather Radar Basics	√		- National Meteorological Satellite Center (NMSC) - National Meteorological Supercomputer Center - Radar test-bed - Radar station
	- Characteristics of Radar Observation, Raw Data and Product	√		
	- The Characteristic of Weather Radar System	√		
	- Weather Radar Signal Processing	√		
	- Weather Radar Technology	√		
Module 3 Weather Radar Operation	- Introduction of Weather Radar Operation	√		
	- Weather Radar Calibration and Verification	√	√	
	- Weather Radar Operation Software		√	
	- On-site Practice of Weather Radar Operation		√	
	- Centralized Remote Control System	√		
	- Data Processing and Analysis	√		
Module 4 Procurement and installation of Weather Radar equipment	- Procedures of Purchasing Weather Radar	√		
	- Procedures of Weather Radar set-up	√		
Cultural Experience	- Seoul City Tour - Field Trip			
Workshop	- Country Report Presentation - Action Learning - Action Plan Presentation			

Part III EXPENSES

1. FINANCIAL SUPPORT

It is requested that your governments consider contributing to the expenses related to the participation of their respective nominees, in particular the cost of air tickets. However, if this is not possible, requests for financial assistance can be indicated on the participants nomination form, and these will be considered within the limited funds available for the course.

2. INSURANCE

Participants will be provided with travel insurance for the period of the stay in the Republic of Korea with a minimal range of coverage.

3. ENTRY REQUIREMENTS

Foreigners wishing to enter the Republic of Korea should hold valid passports. Most visitors with confirmed round-trip tickets may stay for 15 days without a visa, although this does not apply to certain nationalities. Any visitors from countries with no diplomatic relations or no special visa exemption arrangements with the Republic of Korea should obtain an entry visa before entering the country. When uncertain as to the requirements for entry visa to the Republic of Korea, please contact your local Embassy or Consulate as soon as possible. For more information, please visit the website of the Ministry of Foreign Affairs of the Republic of Korea at http://www.mofa.go.kr/ENG/visa/application

Part IV USEFUL INFORMATION

1. TRAINING INSTITUTE

The Korea Meteorological Administration

The KMA is a governmental organization of the Republic of Korea under the Ministry of Environment (MOE). Its mission is defined to protect citizens' lives and properties from natural disasters and improve the commonwealth of the public in ways such as support for economic activities. In this regard, KMA undertakes the observation and analysis of meteorological phenomena on the ground, in the ocean, and in the atmosphere, while providing weather forecasts and warnings, and presents climate statistics and industrial-meteorological data. Furthermore, KMA exchanges meteorological data and information with domestic and foreign organizations, conducts research and technology development activities, and prompts international cooperation.

KMA's head administration consists of 1 administrator, 1 vice administrator, 5 director generals, 30 divisions, and 3 centers. Its subsidiaries include the National Institute of Meteorological Research (NIMR), 6 regional administrations, the National Meteorological Satellite Center, the Weather Radar Center, and the Korea Aviation Meteorological Agency. The total number of KMA staff is approximately 1,300.

KMA operates surface observation network consisting of 585 AWS sites, including 22 manned weather stations, an upper-air observation network consisting of 14 sites, a weather radar network with 11 sites, and a PM10 Asian Dust observation network with 29 sites. In addition, it operates 17 buoys, 9 AWS on lighthouses, 6 wave radars and 1 marine observation vessel for marine weather observation. KMA also manages the West Sea Integrated Oceanic Meteorological Observation Base Station in the West Sea, the Korea Global Atmosphere Watch Observatory, 65 seismic stations and 126 accelerometers.

The COmbined Meteorological Information System (COMIS) is KMA's system for collecting, processing, storing and disseminating the continuous flow of high-volume real-time data. This system enables the exchange of domestic and global (distributed via the Global Telecommunication System) surface, marine, upper-air, and satellite observations, all of which are used as initial data for numerical weather prediction models. A wide area network has been established to carry voice, video, alpha/numeric and graphic data.

Weather forecast products issued on a regular basis to support public activities include Digital Forecast, weekly forecasts, and 1- or 3-month outlooks. Warnings are issued to draw attention or

give notice when serious weather hazards are anticipated. Warning products include heavy rainfall, heavy snowfall, strong wind, wind wave, aridity, storm surge, seismic tsunami, cold wave, typhoon, Asian Dust, and excessive heat warnings, and are classified into advisories and warnings. The Digital Forecast service divides the southern half of the Korean Peninsula into approximately 3,500 sections, and provides detailed and quantitative 3-day forecasts in a variety of formats for 3-hour intervals. This digital service provides nationwide forecast at a resolution of 5km by 5km, for convenient use and customization by users.

KMA started operation of NWP models in 1989. The primary goal of KMA's weather forecast is to produce seamless forecasts from very-short range to seasonal scale as well as to provide user-oriented quantitative forecast. To achieve this goal, KMA is currently operating a global (GDAPS) and two regional (RDAPS and LDAPS) NWP systems, as well as ensemble prediction systems for global and local as main NWP systems. Various kinds of application models such as wave models, Asian-dust model, storm-surge and typhoon models, and statistical models are also being operated in KMA. The data assimilation system has also been upgraded from 3DVAR to 4DVAR since 2010. KMA introduced Unified Model (UM) as a GDAPS developed by UK Met Office. Moreover, based on future strategic plan, KMA has developed the Korea institute of atmospheric prediction system Integrated Model(KIM) as a next generation NWP model.

2. STUDY VISITS

Weather Radar Station

Korea has a total of 29 operational or planned weather radars overseeing radar observations to meet agency-specific mandates such as severe weather monitoring and forecasting, hydrological management and flood forecast, and military operation support. Of these, 12 are operated by KMA.

We will visit the radar test-bed at Yong-In where is far from 1 hour from Seoul.

※ **Please bring comfortable shoes for hiking for 40 minutes.**

National Meteorological Supercomputer Center

The weather forecast products that KMA provides go beyond merely predicting natural disasters and severe weather. They are being valued as critical elements that determine the nation's economic and socio-cultural conditions. KMA acquired its first supercomputer in 1999, second in 2004, third in 2009 and fourth in 2015. KMA also founded its national Supercomputer Center for Meteorology in the Ochang Science and Industry Complex in Cheongwon-gun, Chungcheong buk-do, to provide a stable operating base for its new supercomputer.

National Meteorological Satellite Center

National Meteorological Satellite Center (NMSC), which is located in Jincheon Gun about 70km southeast from Seoul, operate receiving and processing systems for foreign satellites, and the ground system of COMS(Communication, Ocean and Meteorological Satellite) that is the first geostationary meteorological satellite of Korea to be launched in 2010 and COMS data was serviced on April 2011. NMSC is also responsible for analysis, service of meteorological satellite data as well as research activities on remote sensing based on space.

3. REGULATIONS

- Participants should participate in the training to the best of their abilities
- Participants have certificate of completion if they attend over 80% of whole lectures
- Participants should refrain from engaging in political activity or any form of employment for profit or gain
- Participants should not extend the length of the training course or stay for personal convenience
- Participants are not permitted to change the flight schedule arranged by KMA for personal convenience
- Participants are to assume responsibility for any personal expenses incurred regardless of implementation of the course
- Participants are required to strictly observe the course schedule and abide by the rules and regulations stipulated by the Korean government in respect to the training course

4. CONTACTS

- **The Korea Meteorological Administration**
  - Program Coordinator: **Ms. Nayoung YIM**
  - Tel: (+82) -2-2181-0035
  - Fax: (+82) -2-2181-0029
  - E-mail: nyyim@korea.kr

Further information (e.g. schedule, accommodation, allowance) will be sent to the selected participants individually by e-mail.

Ref.: 18239/2019-L0 DRA/ETR

International Training Course on Weather Radar Operation

September 23 – October 4, 2019

Korea Meteorological Administration (WMO RTC)

Seoul, Republic of Korea

PARTICIPANT NOMINATION FORM

The Government of ..... nominates the following candidate as a participant in the above mentioned training course:

1. Family Name(Surname): .....
2. First Name(Given): .....
3. Middle Name: .....
4. Date of Birth: .....
5. Nationality: .....
6. Gender: ☐ Male ☐ Female
7. Passport Number and Place and Date of Issue: .....

   .....
8. Passport Expiry Date: .....
9. Do you need an entry visa for Korea? ☐ No ☐ Yes

   http://www.mofa.go.kr/ENG/visa/application
10. Organization: .....
11. E-mail: .....
12. Telephone No: .....
13. Fax No: .....
14. Official Address: .....

    .....
15. Qualifications (Certificates, Diplomas, Degrees, etc.):

    .....
16. Present Position and Brief Description of Duties: .....

    .....

    .....

.....

.....

17. Please indicate your English language skills:

	Excellent	Good	Fair	Poor	Nil
Speaking					
Reading					
Writing					
*Certificates(In case you have):					

18. The nominee has experiences on Weather Radar Operation and Maintenance:

☐ YES (how many years: .....) ☐ NO

The nominee has experiences on Weather Radar Product and Operational Application:

☐ YES (how many years: .....) ☐ NO

19. What do you wish to achieve by having your candidate participate in this course? .....

.....

.....

.....

20. We request financial assistance:

- Air Ticket: ☐ YES ☐ NO
- Daily Subsistence Allowance: ☐ YES ☐ NO

If YES, to whom you will request financial support?

.....

21. Name, address and phone number of a person to be notified in case of emergency: .....

.....

22. Name and Signature of Permanent Representative: .....

.....

23. Date: .....

Please complete and return this form no later than August 23, 2019 to:

Program Coordinator: Nayoung YIM (Ms.)
Education Planning Division
Korea Meteorological Administration
Tel.: +82 2 2181 0035 / E-mail: nyyim@korea.kr