



# WMO OMM

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

## 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 – www.wmo.int

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Subject: International Training Course on Weather Forecasting for Operational Meteorologists, from 6 to 24 February 2017, Seoul, Republic of Korea

Action required: For information and appropriate action, as necessary

Dear Sir/Madam,

I have the pleasure to inform you that the Korea Meteorological Administration (KMA) will host an International Training Course on Weather Forecasting for Operational Meteorologists from 6 to 24 February 2017 at the WMO Regional Training Centre in Republic of Korea for ten participants from National Meteorological and Hydrological Services (NHMSs) of WMO Regional Association I (Africa), Regional Association II (Asia), and Regional Association V (South-West Pacific).

The course aims at strengthening meteorological skills and extending their understanding in delivering weather services to the public and stakeholders. It will be designed for junior level meteorologists with at least two years of experience in weather forecasting. It will include lectures and case studies on weather forecasting; weather service; field trip; and action learning for action planning for participating Members.

It is requested that 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 Participant Nomination Form. Enclosed are the Course Information (Annex 1) and Participant Nomination Form (Annex 2).

Interested candidates are requested to complete the attached Nomination Form, (Annex 2), which should be endorsed by the Permanent Representative of the respective country with WMO and sent directly to the KMA (e-mail: [nyyim@korea.kr](mailto:nyyim@korea.kr) or Fax: +82 2 2181 0569) as soon as possible but not later than **3 January 2017**.

Yours faithfully,

(W. Zhang)  
for the Secretary-General

To: Permanent Representatives of Members of Regional Association I (AFR-790)  
Permanent Representatives of Members of Regional Association II (ASE-650)  
Permanent Representatives of Members of Regional Association V (PSW-454)

cc: Hydrological Advisers to Permanent Representatives

# **Training Course on Weather Forecasting for Operational Meteorologists**

6-24 February 2017

Korea Meteorological Administration

Seoul, Republic of Korea

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## ***KMA Training Programme***

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 meteorologists", "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. The Korea National Meteorological Satellite Center has also 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 745 persons from 71 countries from around the world have participated in the KMA's training courses since 1998.

## **Part I**

## **PROGRAMME OVERVIEW**

**1. Title: Weather Forecasting for Operational Meteorologists**

**2. Duration: 6 February (Monday) ~ 24 February (Friday) 2017**

**3. Objectives**

- a) Strengthen meteorological skills needed to analyse observation data, numerical weather prediction products, and satellite & radar images;
- b) Extend their understanding in delivering weather services to the public and stakeholders.

**4. Number of Participants**

10 participants from NMHSs of WMO Members

**5. Language: English only**

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

**7. Qualifications of Applicants:**

- a) Participants should be meteorologists with at least two years of experience in weather forecasting;
- b) Participants should be expected to work in the related field for at least two years after the end of the programme;
- c) Participants should not have attended KMA's training programme during the past three years;
- d) Participants should have sufficient command of both written and spoken English. (If English is not the mother tongue, certificate of proficiency in English is requested.)

**8. Closing Date for Application: 3 January 2017**

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](mailto:nyyim@korea.kr)) with a copy for the WMO Secretariat no later than 3 January 2017.

**9. Result of selected participants will be announced by 9 January 2017.**

**10. Country Report:**

Final participants should submit their country report on general and weather forecast services of their NMHS in MS PowerPoint or Word to [nyyim@korea.kr](mailto:nyyim@korea.kr) by

27 January 2017. If one country has more than two participants, only one report is to be submitted.

***Details of Country Report Preparation***

- **Current situation**
  - Explain the general weather forecast system in your country
  - Describe the current status of forecasters' capacity and their main role
  - Analyze the strengths and weaknesses of forecast system at your organization
  - Explain the operational NWP model (atmosphere, marine)
  - 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 NWP infra (hardware, software) in your organization**
- **Country Report should also include the topic you would like to discuss during the workshop**

**Part II****PROGRAMME CONTENTS****1. TENTATIVE PROGRAMME MODULE**

Module	Contents	Lecture	Practice (Discussion)	Study Visit
<b>Module 1</b> Understanding of Korea & KMA	- Korea's culture, society and language	✓		- National Weather Center - Information and Communication Center - National Earthquakes Center
	- Recent developments and future plans of KMA	✓		
	- Global needs for weather forecasters	✓		
	- Role of weather forecaster		✓	
<b>Module 2</b> Weather Forecasting	- Synoptic analysis		✓	- National Meteorological Satellite Center (NMSC) - National Meteorological Supercomputer Center
	- NWP weather chart analysis	✓		
	- Mid-term forecast		✓	
	- Advanced weather forecasting system		✓	
	- Weather observation	✓		
	- Radar data quality control techniques	✓		
	- Case study on radar data analysis		✓	
	- Radar QPE (Quantitative Precipitation Estimation) techniques	✓		
	- Application to forecast of satellite data	✓		
	- Meteorological satellite image analysis		✓	
	- Meteorological satellite data in now-casting and Very Short-Range Forecasting		✓	
	- Global/Regional/Local NWP Model	✓		
	- Statistical Model	✓		
<b>Module 3</b> Weather Service	- Type of weather service & delivery	✓		- Korea Meteorological Industry Promotion Agency
	- Forecasting & warning service	✓		
	- High Impact forecasts	✓		
	- Marine Meteorological Service	✓		
<b>Cultural Experience</b>	- Seoul city tour - Field trip			
<b>Workshop</b>	- 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 a 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 forecasts. 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 models, 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 the UK Met Office. Moreover, based on the 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**

### **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**

The National Meteorological Satellite Center (NMSC), which is located in Jincheon Gun about 70km southeast from Seoul, operates 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.

### **Korea Meteorological Industry Promotion Agency**

The Korea Meteorological Industry Promotion Agency (KMIPA) is a specialized organization to promote the national meteorological industry since it was designated as a government organization in January 2013. KMIPA creates a synergy through bridging the R&D and industry promotion through conversions of meteorology and other industries by providing value added meteorological information. Furthermore, KMIPA also builds a foundation for sound business environment for both domestic and global markets by providing a customized meteorological information service.

### 3. REGULATIONS

- Participants should participate in the training to the best of their abilities
- Participants will receive a certificate of completion if they attend over 80% of the 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 reasons
- Participants are not permitted to change the flight schedule arranged by KMA for personal reasons
- 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**

- Programme Coordinator: **Ms Nayoung YIM**
- Tel: (+82) -2-2181-0574
- Fax: (+82) -2-2181-0569
- E-mail: [nyyim@korea.kr](mailto:nyyim@korea.kr)

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

**International Training Course on Weather Forecasting for Operational Meteorologist**

6-24 February 2017  
Korea Meteorological Administration  
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 (if you have any):					

18. The nominee has experiences on weather forecasting:

☐ YES (how many years: ) ☐ NO

The nominee has experiences on using NWP products in forecasting:

☐ YES (how many years: ) ☐ NO

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

.....

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.....

20. We request financial assistance:

▪ Air Ticket: ☐ YES ☐ NO

▪ Daily Subsistence Allowance: ☐ YES ☐ NO

If YES, to whom you will request financial support?

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

.....

.....

22. Name and Signature of Permanent Representative:

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23. Date: -----

**Please complete and return this form no later than 3 January 2017 to:**

Programme Coordinator: Nayoung YIM (Ms)  
Education and Training Division  
Korea Meteorological Administration  
Tel.: +82 2 2181 0574

E-mail: [nyyim@korea.kr](mailto:nyyim@korea.kr)

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