

RSMC Beijing report of Activities for 2017

Executive Summary

Primary activities at RSMC Beijing for 2017 consisted of communication tests, a global exercise ConvEx-3 conducted by WMO and IAEA and the environmental emergency response for the sixth nuclear test of North Korea. ConvEx-3 evaluation report of RSMC Beijing is be finished and submitted. In addition, RSMC Beijing provided atmospheric backtracking products for the Provisional Technical Secretariat (PTS) of the Comprehensive Test Ban Treaty Organization (CTBTO).

1. Introduction

The National Meteorological Centre (NMC of China Meteorological Administration) is designated by the WMO as the Beijing Regional Specialized Meteorological Centre (RSMC) for the provision of atmospheric transport modelling in case of an environmental Emergency Response. The primary regions of responsibility are WMO Regional Associations (RA) II. RSMC Beijing performs its functions jointly with RSMC Tokyo and RSMC Obninsk when requested by the IAEA or member states of WMO Regional Association II (RA-II). In addition to emergency response, RSMC Beijing contributes global reverse modelling support to the CTBTO's verification system.

2. Operational Contact Information

National Meteorological Centre (NMC)
China Meteorological Administration
No.46, Zhongguancun Nandajie
Haidian District, Beijing
China, 100081

Business contact: Dr. Song Zhenxin

Tel : 86 10 68400477

Fax : 86 10 68407469

Email: songzx@cma.gov.cn

Operational contact (24 hours): Shift supervisor (Li Sheng and Da Li)

Tel : 86 10 5899 5818

Fax : 86 10 6840 7469; 86 10 6217 2956

Email : rsmc@cma.gov.cn; shenglilily@gmail.com

3. Responses and information on dissemination of products

i. Exercises (ConvEx-3 2017)

June 21 and 22 – RSMC Beijing participated in the ConvEx-3 exercise. This exercises included three requests and lasted 36 hours. The release site was PARKS NPP,

Hungary, and real-time meteorological field was considered. RSMC Beijing received IAEA faxed requests for transport and dispersion modelling of radionuclide in support of the exercise. Additionally, RSMC Beijing as the chief leader in this exercise 2017 completed the joint statements with RSMC Obninsk and Tokyo. There has been good cooperation between us and other RSMCs. After the exercise, the complete ToA products of this exercise were produced and submitted to other RSMCs.

ii. Dissemination of products

Transport model graphical products and joint statements are posted to secure joint web pages, and faxed to relevant RSMCs and NMHSs.

In addition to the other RSMCs, the following NMHSs are in our fax lists:

Bahrain
Bangladesh
Democratic People's Republic of Korea
Hong Kong, China
India
Iran, Islamic Republic of
Iraq
Republic of Yemen
Japan
Kazakhstan
Kyrgyzstan
Macao
Mongolia
Myanmar
Oman
Pakistan
Qatar
Republic of Korea
Saudi Arabia
Sri Lanka
Tajikistan
Thailand
Turkmenistan
United Arab Emirates
Uzbekistan
Viet Nam

The failure rate of products fax transmission was increased compared with 2016. During the exercises, only 8 out of 28 fax transmissions to NMHSs were failed, and 6 out of 28 e-mail transmissions to NMHSs were failed. Meanwhile, 5 out of 28 NMHSs have changed their delegate authors or contact information.

The successful fax transmissions were as following:

BAHRAIN
DEMOCRATIC PEOPLE'S REPUBLIC OF KOREA
HONG KONG, CHINA
INDIA
REPUBLIC OF YEMEN
JAPAN
MACAO
MONGOLIA
OMAN
PAKISTAN
QATAR, State of
KOREA, Republic of
SRI LANKA
KAZAKHSTAN
KYRGYSTAN
SAUDI ARABIA
TAJIKISTAN
TURKMENISTAN
UNITED ARAB EMIRATES
RUSSIAN FEDERATION
State of KUWAIT

iii. Response to requests by CTBTO-PTS

There were a total of 5 requests from the Provisional Technical Secretariat of the Comprehensive Test Ban Treaty Organization. The products were supplied to CTBTO within a few hours after the receiving of the requests.

iv. Response to the sixth nuclear of North Korea

In September 3 03:30 (UTC), 2017, the sixth nuclear test of Democratic People's Republic of Korea (North Korea) was conducted at 21km ENE of Sungjibaegam, North Korea. This nuclear explosion was estimated by M 6.3 and the explosive equivalent (kilotons) was estimated by 250kt. A series of nuclear emergency response products from RSMC Beijing were produced and be submitted to Chinese government department, which played an important role in guiding the nuclide radiation monitoring of aircraft.

4. Routine operations

Quarterly Tests:

The quarterly test of RA II was be cancelled, since there was no a Member State which was willing to host the exercise which was planned at November 21, 2017.

Continuous Development of the ToA products:

After the ConvEx-3, RSMC Beijing completed the three relative ToA products for three different requests, which based on the continuous development from 2015.

5. Operational issues and challenges:

- The mainly failures caused by technical failures in transmission of faxes and e-mails. information is fully reflected in the results of communication test and IAEA exercise..
- The quarterly test of RA II was be cancelled, since there was no a Member State which is willing to host the exercise. Is it possible for IAEA/WMO prepare an alternative lists after the consent of Member States in advance? If there is a special case, IAEA/WMO can choose one from the alternate list as the exercise object.

6. Summary and status of the operational atmospheric transport and dispersion models

The operational Environmental Emergency Response (EER) system, in RSMC Beijing, is currently based on the Hybrid Single-Particle Lagrangian Integrated Trajectories (HYSPLIT4) Atmospheric Transport Model, developed at the NOAA Air Resources Laboratory. HYSPLIT4 is driven by meteorological input resulting from the operational numerical weather prediction system GRAPES_GFS global model and the GRAPES_MESO medium model. The GRAPES_GFS replaced T639L60 as the global operational numerical weather prediction system, which is funded and developed by China Meteorological Administration, which has obvious advantages in the troposphere forecast, including precipitation and 2m temperature compared with T639L60.

The system is available for running on demand and produce forecast trajectories, concentrations (or exposures) and depositions for nuclear accident, volcanic ash, smoke and other episodes. For most initial responses to requests for nuclear EER products the input to HYSPLIT is provided by the GRAPES_GFS (approximately 0.25°x0.25° horizontal resolution, 60 levels in vertical) global system.

7. Plans for 2018:

- RSMC Beijing will continue to develop the atmospheric dispersion techniques at higher resolutions and the visualization technique of atmospheric dispersion products.
- Develop a new EERs operational system.
- Utilize GRAPES_GFS to IAEA and CTBTO exercise and carry out the evaluation of atmospheric dispersion forecast under GRAPES_GFS.

References

Draxler R.R, and Hess G.D., 1998. An overview of the HYSPLIT_4 modeling system for trajectories, dispersion, and deposition. Australian Meteorological Magazine 47, 295-308.

WMO, 2014: Documentation on RSMC Support for Environmental Emergency Response.

WMO-TD/No.778.

Available online at <http://www.wmo.int/pages/prog/www/DPFSERA/td778.html>