

# **RSMC Obninsk report of activities for 2015**

## **Executive Summary**

Primary activities for 2015 consisted of the RSMC exercises conducted by IAEA and incremental updates and improvements to the response procedures. In addition, enhancements have been made to the RSMC job procedures and software, as well as improvements in the underlying dispersion model used. The Provisional Technical Secretariat (PTS) of the Comprehensive Test Ban Treaty Organization (CTBTO) made both operational and planned requests for inverse modelling support by RSMC Obninsk from March to May and in October and November.

### **1. Introduction**

The Federal Environmental Emergency Response Centre of Roshydromet (FEERC of Roshydromet) is designated by the WMO as the Obninsk Regional Specialized Meteorological Centre (RSMC) for the provision of atmospheric transport model products for environmental emergency response. The region of responsibility is WMO Regional Association (RA) II, which encompasses Asia. RSMC Obninsk performs its functions jointly with RSMC Tokyo and RSMC Beijing in WMO RA II. In addition to emergency response, RSMC Obninsk contributes global inverse modelling support to the CTBTO.

### **2. Operational Contact Information**

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### **3. Exercises and routine tests**

#### **Quarterly Tests:**

Quarterly test was conducted in February.

#### **ConvEx-2b:**

RSMC Obninsk participated in ConvEx-2b exercise conducted by IAEA on 25-27 August 2015. During the exercise, the draft of Joint Statement was sent to RSMC Tokyo (chief RSMC in RA II) and the standard RSMC EER products were uploaded to the common web pages of websites of RSMC Washington, Montreal, Melbourne, Toulouse, Tokyo, Beijing and Obninsk.

Also transport model graphical products were sent by fax to NMHSs of the countries of RA-II.

Only 20 from 28 National Meteorological Services, registered in RA II, were available for fax-transfer standard products. Most of the recipients did not confirm the receipt of information.

#### **Communication test:**

A communication test in RAI1 of the member countries was conducted by RSMC Obninsk in July 2015. Test requests were sent to Asia 28 members. The test results showed that: among Asia 28 members, a total of 10 countries responded by e-mail or fax (representing 34%), 25 of which can be reached by e-mail (89%), and 18 of which can be reached by fax (64%), and the contact information of 3 countries has been updated.

### **4. Summary and status of the operational atmospheric transport and dispersion models**

At present, the following models of regional and global atmospheric transport are used:

- The trajectory model generates a map with a set of 3-D trajectories of air masses starting at specified heights above ground level.
- The STADIUM (STochastic Atmospheric Diffusion Model) is used for modeling atmospheric transport and dispersion of pollutants (radioactive or chemical) over medium and long ranges of distances. The STADIUM is based on Lagrangian approach with turbulent dispersion simulated by a random walk technique (Monte-Carlo method). Such an approach allows applying modern parameterizations for turbulent dispersion and deposition processes. Deposition including both wet and dry deposition is computed using a deposition velocity for the dry component of the removal process and in-cloud and below-cloud removal rates for the wet deposition. The model allows considering the essential features associated with instability and non-uniformity of the atmospheric boundary layer, spatial heterogeneity of the underlying surface.

The STADIUM provides a set of spatial-temporal fields of air concentration and deposition (dry and wet) of pollutants.

## **5. Plans for 2016:**

- Continue the work with all RSMCs on using the common web page and posting their products on the RSMC mirrored Web sites.
- Improve contacts with NMHSs in WMO RA II.
- Learn to use new software for running atmospheric transport model calculations.

## **References**

WMO, 2011: 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>