

# RSMC Obninsk report of activities for 2011

## Executive Summary

The most important activities of RSMC Obninsk in 2011 was to provide the IAEA with the standard RSMC EER products according to the Agency's requests for support related to the 11 March 2011 accident at Fukushima NPP in Japan. 42 calculations were carried out by RSMC Obninsk to predict effects of possible transboundary transfer of radioactivity from the accident NPP. Additionally, RSMC Obninsk performed 423 inverse modelling calculations in response to 41 requests of the Provisional Technical Secretariat (PTS) of the Comprehensive Test Ban Treaty Organization (CTBTO). In July 2011 a communication test between RSMC Obninsk and all NMHS of RA-II was conducted.

### 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. Emergency operations and information on dissemination of products

The standard RSMC EER products and Joint Statements were transmitted by fax and uploaded to the common web pages of websites of RSMC Washington, Montreal, Melbourne, Toulouse, Tokyo, Beijing and Obninsk.

### 4. Exercises and routine tests

#### Quarterly Tests:

RSMC Obninsk participated in tests conducted by IAEA. Table 1 contains summary information on these tests.

Month	Initiated by	WMO Regional Associations
February 17	IAEA	V
May 19	IAEA	I and VI
August 18	IAEA	II (cancelled)
November 17	IAEA	IV

*Table 1: RSMC tests for 2011*

### 5. Operational issues and challenges:

The problems were mainly associated with fax transmission. Not all of the messages reached the intended addressee; most of the recipients did not confirm the receipt of information. We find it best to use more up-to-date means of communication.

### 6. 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.

#### **7. Plans for 2012:**

- 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.

#### **References**

WMO, 2008: 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>