The Environmental Emergency Response for WMO members in Regional Association II (Asia)

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ATM products will be made available upon requests by Delegate Authorities of WMO Members and/or IAEA. Products are provided only to the pre-registered operational NMHS contact point of each member.

Introduction

After the accident at the Chernobyl nuclear power plant in April 1986, the Commission for Basic System (CBS) of the World Meteorological Organization (WMO) had series of discussions, and decided to launch the atmospheric transport modelling (ATM) service for the environmental emergency response (EER) to serve broad interest in the atmospheric dispersion of the toxic radiological materials. National Meteorological and Hydrological Services (NMHS) in China, Japan, and Russian Federation were appointed as the Regional Specialised Meteorological Centres for ATM (RSMCs-ATM) for the Regional Association II (RA II: Asia) at the 49th session of the WMO executive council (EC-49) and started their service on 1 July 1997. The centres are named as RSMC Beijing (China), RSMC Obninsk (Russian Federation), and RSMC Tokyo (Japan).

What is EER?

Under the environmental emergency response (EER) framework, RSMCs-ATM provide their ATM forecast products to designated recipients in response to requests by the International Atomic Energy Agency (IAEA) or WMO Member States within the region of responsibility. For RA II, RSMCs Beijing, Obninsk, and Tokyo take this role operationally. ATM forecasts are made available within three hours following requests received by RSMCs.

Note that WMO Members can request RSMCs-ATM only through the pre-registered person known as the Delegated Authority (DA) for each Member State. The ATM forecast products are distributed by RMSCs only to the pre-registered operational NMHS contact point of each Member by email (preferable) or fax. As of May 2014, 28 out of 35 Members in RA II already appointed DAs, and 22 members had registered their operational NMHS contact points. The DA of the Member can send a request to RSMCs, and the IAEA can also requests RSMCs to distribute information to Members in their region of responsibility.

For more details, please refer to the Manual on the Global Data-processing and Forecasting System Volume I (the Manual on the GDPFS: WMO-No.485), and the WMO ERA web pages.

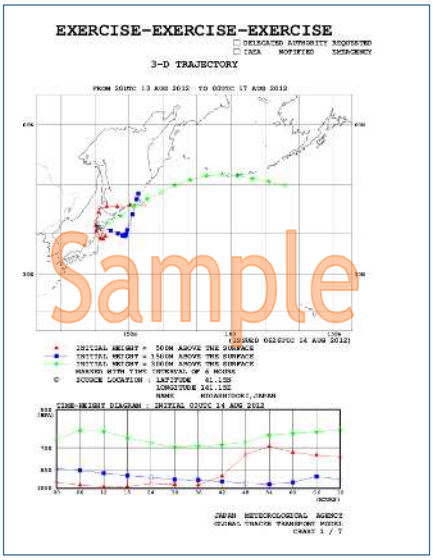

Figure 1 Trajectory

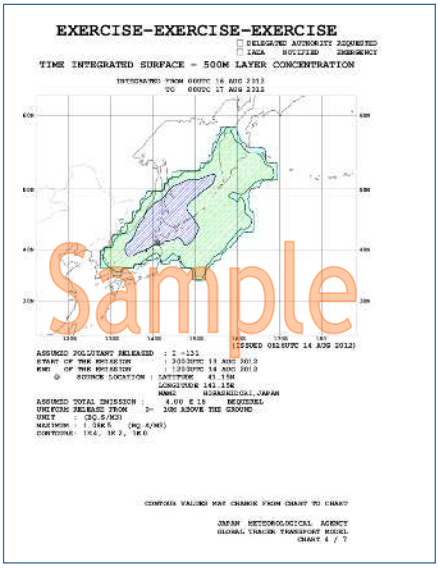

Figure 2 Airborne Concentrations

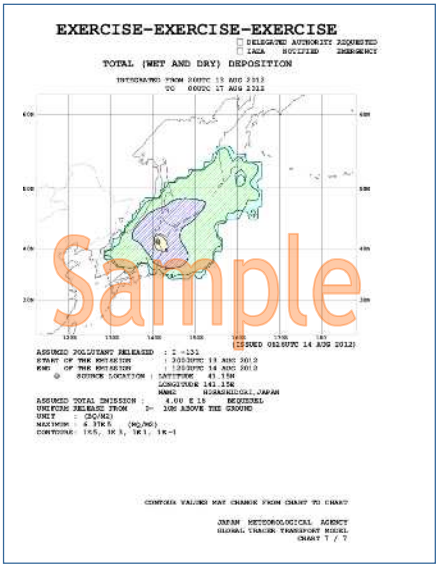

Figure 3 Depositions

ATM Forecast Products

The standard set of ATM forecast products for EER is defined in Appendix II-7 of the Manual on the GDPFS, and consists of seven charts and a concise statement on weather and atmospheric dispersion forecasts. Charts show forecasts of three dimensional wind flow trajectory, time integrated airborne concentrations, and depositions on the surface.

1. Trajectory (Figure 1)

   Trajectories of three tracers released 500, 1500, and 3000m above surface at the source location are shown in the single chart. The tracers are released at the start release time, and move along the wind stream without considering disturbance by atmospheric diffusion, viscosity or turbulence. Forecasts are shown up to 72 hours after the forecast initial time. The time sequence for the height of each tracer is also shown in the same chart.

2. Airborne Concentrations (Figure 2)

   The chart shows distribution of a 24-hour integration of concentration for the radioactive material. The value shown in the figure is the average between surface and 500m above it. The distributions for the periods up to 24, 48, and 72 hours after the forecast initial time are presented in three individual charts. The results are shown in the charts using the unit of Bq s/m^3, and the unit of Bq s/m^3 corresponds to the number of radiological decays per m^3 in the atmosphere for the specified 24-hour period.

3. Depositions (Figure 3)

   The chart shows a distribution of the radioactive material amount accumulated on the surface. The depositing processes on the surface are classified into two categories: dry and wet depositions. Scavenging by rain is generally taken into account as part of the wet deposition. The chart shows total amount of deposition through both processes since the start release time. Three charts at 24, 48, and 72 hours after the forecast initial time are presented. The deposition amount is shown using the unit of Bq / m^2, which corresponds to the number of radiological decays taking place per m^2 at the surface per second.

4. Joint Statement on weather and ATM forecasts

   A concise plain text description on weather conditions and on atmospheric dispersion forecasts of the radioactive material is prepared and presented for each request. RSMCs Beijing, Obninsk, and Tokyo jointly work on this statement. The statement basically includes a synopsis of the current situation and forecasts for meteorological conditions (500hPa troughs and ridges, upper and surface wind, and precipitation), and the results from the ATM models (their differences and similarities).

Request Form

The DAs of WMO Members need to use the request form below, taken from the Manual on the GDPFS, to request support from RSMCs. The first section needs to be fully completed. If not, RSMCs will ask the DA to provide the necessary information by email or fax. Items in the second section are necessary for preparation of ATM products. But if there is insufficient information, the default values (see the Manual on the GDPFS, Appendix II-7) will be used to derive the ATM products. Note that the RSMCs will forward the requests by DAs to IAEA to help IAEA investigate status of nuclear emergencies in accordance with the coordination procedure between WMO and IAEA.

Environmental Emergency Response Alert
Request for WMO RSMC Support by Delegated Authority

This form should be sent by fax to the RSMC. At the same time, the Delegated Authority must immediately call the RSMC to confirm the transmission of this Request for RSMC Support.

(This section must be completed in full)

STATUS: Nuclear (EVENT OR EXERCISE) Date/Time of Request: 1200UTC 14/Aug./2012 (UTC)

NAME OF DELEGATED AUTHORITY: Head, Office of International Affairs

COUNTRY: Japan

DELEGATED AUTHORITY TELEPHONE/FAX NUMBERS: (XX) X XXXX XXXX (Tel.)
(XX) X XXXX XXXX (Fax)

REPLY TELEPHONE/FAX NUMBERS FOR NMS OF REQUESTING COUNTRY: (XX) X XXXX XXXX (Tel.)
(XX) X XXXX XXXX (Fax)

NAME OF RELEASE SITE: Higashidoori, Japan (facility and place)

GEOGRAPHICAL LOCATION OF RELEASE: 41.15N, 141.15E (lat./long. decimal degrees "N or S; E or W")

(essential accident information for model simulation - if not available, model will execute with standard default values)

RELEASE CHARACTERISTICS:

START OF RELEASE: 2000UTC 13/Aug./2012 (date/time, UTC)

DURATION: (hours), or end of release 1200UTC 14/Aug./2012 (date/time, UTC)

RADIONUCLIDE SPECIES: I-131

TOTAL RELEASE QUANTITY: $4x10^{16}$ (Becquerel)

OR POLLUTANT RELEASE RATE: (Becquerel/hour)

EFFECTIVE HEIGHT OF RELEASE: surface: yes or

stack height: (m), or

aloft: top (m), base (m)

(helpful information for improved simulation)

SITE ELEVATION: 13 (m)

LOCAL METEOROLOGICAL CONDITIONS NEAR ACCIDENT:

Cloudy with weak southwesterly wind (1-3m/s) near surface at 1200UTC 14 Aug. 2012.

(wind speed and direction/weather/cloudiness, etc.)

OTHER INFORMATION:

Unknown

(nature of accident, cause, fire explosion, controlled release, foreseeable development, normal activity, projected conditions, etc)

(to be completed by RSMC)

DATE/TIME OF RECEIPT OF REQUEST: .....(UTC)

DATE/TIME OF RETURN CONFIRMATION OF RECEIPT:.....(UTC)

Note: All times in UTC

GTS/WIS Message WNXX01 IAEA

According to the framework agreed by WMO and IAEA on early notification of nuclear accidents, IAEA informs WMO of the status of emergencies. RTH Offenbach (the German Weather Service, DWD) will disseminate IAEA's messages on the GTS/WIS in the form of an alphanumeric bulletin in plain-text English using the header WNXX01 IAEA. This is for global distribution to all the NMHSs regardless where incidents take place and whether they can affect each individual Regional Association or not.

Summary

RSMCs in RA II started their EER service in 1997. ATM forecast charts and a concise statement on weather and ATM forecasts are provided to IAEA and WMO Members. RSMCs accept request by DAs and IAEA, and send products to the pre-registered operational NMHS contact points. The standard set of EER products comprises trajectory, airborne concentration, and deposition charts. DAs need to use the request form in the Manual on the GDPFS, and should fully complete the first section of the form. GTS/WIS messages are globally broadcasted by RTH Offenbach to inform WMO Members of the nuclear accident status.

Frequently Asked Questions

Q) How can we register or update information on the Delegated Authority and the operational NMHS contact for EER?

A) Please contact the DPFS office of the WMO secretariat (see the contact information on this page).

Q) What kind of information is required to register DA and operational contact for EER?

A) Names (and / or Titles) of the DA and of the operational NMHS contact, organization name, email address and / or fax and phone numbers.

Q) Do NMHSs need to contact RSMCs upon receipt of the ATM products and/or GTS/WIS message with heading WNXX01 IAEA?

A) No. An acknowledgement would be sufficient.

Q) Can the EER information be made available for national purposes by NMHSs?

A) Yes. In most States, the NMHSs are not the primary organizations to take the responsibility for the radiological disaster prevention and mitigation. The NMHSs can provide RSMC products to the appropriate agencies in the State, and assist them with the interpretation and explanation of the ATM products in the appropriate language(s) of the State. This is important to avoid misuse and misinterpretation of RSMC products.

Reference and Contact Information

WMO 2010 Edition - Update in 2013: Manual on the Global Data-processing and Forecasting System Volume I - Global Aspects (WMO-No.485)

https://www.wmo.int/pages/prog/www/DPFS/Manual/GDPFS-Manual.html

WMO ERA Web page

http://www.wmo.int/pages/prog/www/DPFSERA/EmergencyResp.html

http://www.wmo.int/pages/prog/www/DPFSERA/delegated_authorities.htm (the list of DAs)

http://www.wmo.int/pages/prog/www/DPFSERA/nmhs_operations.htm (the list of operational NMHS contact points)

WMO Technical Document No.778: Documentation on RSMC Support for Environmental Emergency Response (targeted for meteorologists at NMHSs)

http://www.wmo.int/pages/prog/www/DPFSERA/td778.html

WMO Secretariat Contact Information

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