

RSMC Toulouse Activity Report for 2018

Executive Summary

Primary activities for 2018 consisted of the Regional Specialized Meteorological Centre (RSMC) tests, quarterly IAEA tests and regular monthly tests and incremental updates and improvements to the response procedures, software, and to the joint RSMC secure web pages, which are used for communicating transport model products to National Meteorological and Hydrological Services (NMHS) and between RSMCs.

RSMC Toulouse received – both operational and planned - requests for inverse modelling support from the Provisional Technical Secretariat (PTS) of the Comprehensive Test Ban Treaty Organization (CTBTO).

Modelling capacities have been improved with GRIB2 new output format and tests on a higher horizontal resolution.

1. Main activities during 2018

Météo-France is designated by the WMO as the Regional Specialized Meteorological Centre (RSMC) for the provision of atmospheric transport modelling in case of an environmental Emergency Response. The regions of responsibility are WMO Regional Associations (RA) I & VI which encompasses Europe, Ukraine, the Russian Federation and Africa. This responsibility is shared with RSMC Exeter.

Météo-France National Forecast Centre operates 24 hours a day, 7 days a week and has the responsibility of providing forecasts for the spread of pollutants (nuclear, chemical). The service consists on an immediate delivery of meteorological observation data, followed by forecast and modelling dispersion products. In case of a nuclear accident, national meteorological services could « request for RSMC support ».

In addition to emergency response, RSMC Toulouse contributes global inverse modelling support to the CTBTO verification system

2. Operational Contact Information

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3. Responses and information on dissemination of products

Models used

Two models may be used, according to the needs :

- the global **MOCAGE** model coupled with the French atmospheric global model ARPEGE or with the European ECMWF global model. Standard outputs are available 20 minutes after launch, for a three days or more forecast. MOCAGE offers the possibility of computing retro-trajectories for CTBTO. The resolution is 0.5° for 47 vertical levels (with a meteorological input including up to 28 vertical levels)
- the local **PERLE** high resolution dispersion model system. with 3 possibilities of meteorological coupling :
 - AROME model up to 2,5 km resolution covering France (native resolution of 1,3 km)
 - ARPEGE/MESO-NH covering Europe
 - ECMWF/MESO-NH global cover.

The LPDM diffusion model is used. First outputs are available 15 minutes after launch. The forecast is run up to 24 hours. Since sept. 2017, the output resolution is 1 km, for a 100km*100km domain and 4 km for a 500km*500 km (the previous domains were 60km*60km and 240km*240km).

Products are disseminated either by fax, email, on internet (mirror web sites of Toulouse RSMC, with a specific external link created for each new event)

The presentation of RSMC Toulouse is available on

<http://www.meteorologie.eu.org/CMC>

Participation in international inverse dispersion modelling events and exercises with CTBTO

In 2018 RSMC Toulouse has received occasional requests for both real and exercise scenarios from the Provisional Technical Secretariat of the Comprehensive Test Ban Treaty Organisation (CTBTO). These were all responded to within the expected timescale

Routine operations

Quarterly exercises: RSMC Toulouse took part in the different quarterly exercise planned by IAEA. Graphics were posted to the relevant RSMC mirrored websites, as well as to the IAEA and to NMSs within RA I and RA VI

In addition, RSMC Toulouse has been responding to the monthly tests hold by RSMCs Melbourne, Montreal and Washington by running dispersion models and sending output onto the mirrored RSMC web pages.

4. Significant operational or technical changes in 2018

- Development of a new GUI for launching dispersion models
- MOCAGE :
 - Now operational : 15min step ; unique 0,5° resolution is used for the global domain
 - Development of products for non-nuclear emergency response activity
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- PERLE :
 - Tests on using Flexpart and preparation of a specific meteo FLEXPART version for high resolution AROME model

5. Plans for 2019-2020 :

Developments and studies

- MOCAGE:
 - High resolution in operations : operational possibility of using a nested domain of 40°X40° with a higher resolution : 0.1° for ARPEGE-MOCAGE and 0.125° for IFS-MOCAGE, both for the atmospheric and the ATDM models (in oper) (early 2019)- New plots for high resolution will be made available
- PERLE :
 - Operational version of PERLE using FLEXPART
- Non-nuclear RSMC : the plots will be available end of March- new GUI for launching dispersion models in operations : will be operational in 2019 Semester 1 ; Meteo-France is ready to contribute to an exercise if it is organized by ET-ERA.
- TCM : feasibility has been checked, and developments may start in 2020 if the need is confirmed (it won't turn operational in 2020)

International exercises

- RSMC Toulouse will take part in all IAEA or WMO emergencies requests, tests and exercises, and in all CTBTO requests.
- RSMC Toulouse will participate to the monthly test hold by RSMC Washington/Melbourne/Montreal.