

WMO's Role in Nuclear Emergency Response and Cooperation with CTBTO

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INTRODUCTION AND MAIN RESULTS

This presentation outlines the global working arrangements between the CTBTO and the World Meteorological Organization (WMO) through WMO Integrated Processing and Prediction System Designated Centres (WIPPS-DCs) for nuclear emergency response. It focuses on the provision of backward transport and dispersion products in cases of anomalous radionuclide measurements detected by the International Monitoring System and also explains plans to enhance collaboration.

Global working arrangement between WMO and CTBTO

Under the cooperation agreement between the Preparatory Commission for the CTBTO and WMO, which came into effect on 23 May 2003, the Provisional Technical Secretariat (PTS) is responsible for notifying the relevant parties whenever anomalous radionuclide measurements are detected in the International Monitoring System. Specifically, the PTS informs WMO Integrated Processing and Prediction System Designated Centres (WIPPS-DCs) that provide atmospheric backward transport and dispersion products, as well as the WMO Secretariat. Notifications are sent via email and include the coordinates of the requested stations along with the start and end times of the measurements. To maintain confidentiality, the details of the measurement scenario itself are not disclosed.



Map showing the location of ten WIPPS-DCs for Numerical Emergency Responses as of September 2025

WMO Support for CTBTO: Backward Transport and Dispersion Products

Request process: CTBTO PTS sends an email to all WIPPS-DCs to initiate support.

WIPPS-DCs' responsibilities:

- Respond with completed form to PTS within 3 hours.
- Perform standardized backward transport and dispersion simulations for all requested measurements.
- Upload results to a secure FTP server within 24 hours, following the specified format.

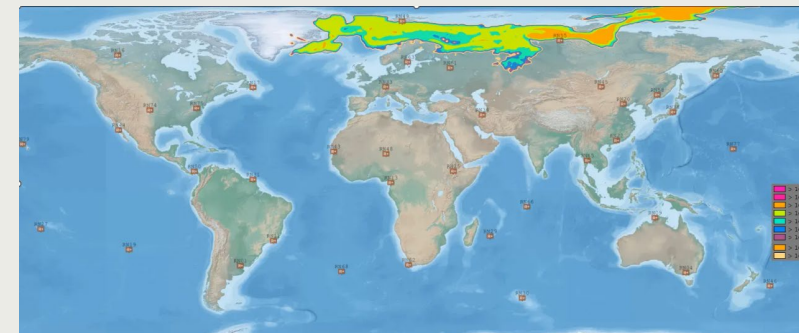
Simulation specifications:

- Assume release of 1.3×10^{15} Bq tracer, constant rate, no deposition/decay, surface–30 m, from measurement stop to start.
- Output: tracer concentrations (Bq m^{-3}) on global $0.5^\circ \times 0.5^\circ$ grid, 1-hour resolution and average, surface–30 m.
- Run backward in time up to 30 days before request date/time.

PTS's responsibility:

- Request support only for anomalous radionuclide events or system tests.
- Follow up with RSMCs if no confirmation is received within 3 hours.
- Conduct regular system tests (announced or unannounced).
- Share test results with all RSMCs via website.
- Issue a cancellation notice if a request is withdrawn.

Products



Map showing the location of WIPPS-DCs for Numerical Emergency Responses as of 25 September 2025.

Further collaboration

Some WIPPS-DCs have been providing higher-resolution products in time and space to the CTBTO since September 2024. WMO plans to extend this provision to all WIPPS-DCs by the end of December 2025. WMO and CTBTO are also considering regular exercises to ensure that operational staff and product-provision procedures in both organizations are sufficiently prepared to respond to real events, as Level 5 events occur only infrequently.

