

the Quantification of Meteorological Uncertainties for the Global Scale Simulation of the Xe-133 Atmospheric Background

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To categorize radionuclide data from the International Monitoring System of the Comprehensive Nuclear-Test-Ban Treaty, the French National Data Center has developed, and has been using in operation for several years, an automated simulation of the industrial background. For all IMS noble gas stations, it calculates every day the expected Xe-133 activity concentrations due to industrial contributors. This provides valuable information for source attribution in case of detection. However, a systematic quantification of simulation uncertainties remains to be addressed, and is key to further improve categorization processes. In this context, the present study focuses on the use of ensemble data as provided by weather prediction centers to factor in meteorological uncertainties in the atmospheric transport calculations. Simulations of Xe-133 released from the IRE, a medical isotope production facility in Belgium for which emissions are monitored in real time, are conducted using US National Centers for Environmental Prediction meteorological ensemble data. Predicted activity concentrations resulting from this method are compared to measurements with the focus of showing the benefits of an ensemble approach for CTBT applications.

E-mail

sylvia.generoso@cea.fr

Promotional text

Benefits of ensemble data provided by weather prediction centers to quantify meteorological uncertainties in the prediction of Xe-133 levels at IMS stations, resulting from industrial activities.

Oral preference format

in-person

Primary author: GENEROSO, Sylvia (Commissariat à l'énergie atomique et aux énergies alternatives (CEA))

Co-authors: Mr ACHIM, Pascal (Commissariat à l'énergie atomique et aux énergies alternatives (CEA)); Ms MORIN, Mireille (Commissariat à l'énergie atomique et aux énergies alternatives (CEA)); Mr GROSS, Philippe (Commissariat à l'énergie atomique et aux énergies alternatives (CEA)); TOPIN, Sylvain (Commissariat à l'énergie atomique et aux énergies alternatives (CEA)); Mr DOUYSET, Guilhem (Commissariat à l'énergie atomique et aux énergies alternatives (CEA))

Presenter: GENEROSO, Sylvia (Commissariat à l'énergie atomique et aux énergies alternatives (CEA))

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