

Atmospheric Transport Modeling (ATM): Forecasting the Potential Contribution of Isotope Production Facilities on Xenon Activity Concentrations at DEX33, Schauinsland

For both operational daily information on expected radioactive xenon background levels and the fast evaluation of possible sources for real detections at DEX33, an automatically running ATM forecasting and back-tracking system is set up at the German NDC (BGR, Hannover) in close cooperation with Federal Office for Radiation Protection (BfS, Freiburg). The station operator and radionuclide experts at BfS are notified by automatic messages on predicted sensitivities and SRS analysis results. The automatic system runs on a UNIX server retrieving Meteorological NCEP forecast and analysis data in 0.5 degree horizontal resolution as soon as available. Right after that, the basic HYSPLIT runs start automatically including forward runs with emissions at Fleurus, Belgium, and Chalk River, Canada, as well as backward runs from DEX33 following the classical Source-Receptor-Sensitivity approach. The predicted possible concentrations are compared with actual radio-xenon occurrences and evaluated. Additionally, differences between forward and backward calculated sensitivity are systematically studied. Furthermore, a comparison with SRS-fields provided by the IDC is planned as a second step after a longer period of data will have been collected. The results shall facilitate a more comprehensive understanding of the radioxenon background situation in Central Europe.

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