ID: **P2.4-818** Type: **E-poster**

# of Backward Atmospheric Transport Modelling Localization Capability for Increased Xenon Sampling Frequency at Mount Schauinsland, Germany

Thursday, 22 June 2023 11:54 (1 minute)

Noble gas systems at International Monitoring System (IMS) radionuclide stations used to operate with 24 or 12 hours sampling time. The next generation noble gas systems utilize shorter sampling periods. At station RN33 on Mount Schauinsland, Germany, a SPALAX system with 24 hours sampling is operated by BfS. A Xenon International system with six hours sampling time was installed in parallel from July 2021 to April 2022. The main contributing emitter to elevated xenon activity concentrations at RN33 is the medical isotope production facility at Fleurus, Belgium. In a former study, backward ATM for SPALAX samples with Xe-133 activity concentrations above 2 mBq/m³ has shown that the majority of source-receptor sensitivity (SRS) fields coincides in the region around Fleurus and therefore indicates the presence of a repeating emitter. In this study we investigate how the increase in time resolution in sampling and ATM changes the location capability of backward ATM. For that, the Lagrangian Particle Dispersion model HYSPLIT (NOAA-ARL) is applied driven by ECMWF-ERA5 meteorological data in hourly resolution. As the Xenon International system also allows for additional detections particularly of Xe-135 and isomers, the sensitivity to unknown additional sources is potentially improved and analysed.

E-mail

ole.ross@bgr.de

Oral preference format

Promotional text

The gain of shorter xenon sampling periods for source attribution by atmospheric transport modelling is investigated.

Primary author: ROSS, J. Ole (Federal Institute for Geosciences and Natural Resources (BGR))

Co-authors: Ms BRANDER, Sofia (Federal Office for Radiation Protection (BFS)); Mr GAEBLER, Peter (Federal Institute for Geosciences and Natural Resources (BGR)); Mr BOLLHOFER, Andreas (Federal Office for Radiation Protection (BFS)); CERANNA, Lars (Federal Institute for Geosciences and Natural Resources (BGR))

Presenter: ROSS, J. Ole (Federal Institute for Geosciences and Natural Resources (BGR))

Session Classification: Lightning talks: P2.4

Track Classification: Theme 2. Events and Nuclear Test Sites: T2.4 Atmospheric and Subsurface Radionuclide Background and Dispersion