ID: **P2.4-563** Type: **e-Poster**

Xe-133 concentrations at IMS noble-gas-stations, using operational stack emission data from the medical isotope production facility of Fleurus

Wednesday 30 June 2021 11:45 (15 minutes)

The National Institute For Radioelements (IRE), located at Fleurus in Belgium, is an important emitter of radioactive xenon into the atmosphere. These emissions are not harmful to the environment, but can interfere with the very sensitive noble gas detection stations that are part of the verification regime of the Comprehensive Nuclear-Test-Ban Treaty Organization. Radioxenon stack emission data from civilian nuclear facilities, combined with atmospheric transport modelling, can help to discriminate real events (radioactive xenon detections that originate from a nuclear explosion) from false alarms (radioactive xenon detections that originate from a civilian nuclear facility).In this presentation, we will present the additive value of using the STAX data from the Fleurus site in near real time xenon forecasts in order to show its capability to model the radioactive xenon background on the CTBTO noble gas stations. We will use the Lagrangian particle dispersion model Flexpart to calculate the transport and dispersion of Xe-133, using numerical weather prediction data from the European Centre for Medium-Range Weather Forecasts. Radioxenon activity concentration time series will be presented. The results will be compared with observations of the International Monitoring System and statistical scores will be calculated.

Promotional text

The simulation of Xenon-133 in near real-time, using STAX data, will improve our understanding of the xenon background in an operational context.

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Session Classification: T2.4 e-poster session

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