

the Possible Source Region from Atmospheric Transport Modelling Adapted to the Evolution Consistency of Isotopic Ratios Measured in the International Monitoring System Radionuclide Network

Thursday, 22 June 2023 11:16 (1 minute)

In the International Data Centre radionuclide pipeline, noble gas samples from the International Monitoring System (IMS) radionuclide stations are processed and categorized. The combination of multiple isotope observations of Level C plus prior/post Level B samples close enough in time, at one or more IMS radionuclide stations, forms decisive input for isotopic ratio analysis as these episodes may show consistency in the isotopic ratio evolution of at least two isotopes in a pair. For atmospheric transport modelling, these multi-sample episodes form the starting point to deterministically link the air masses to a certain release through correlation computations yielding the so-called possible source region (PSR). By combining PSR products with isotopic ratio analyses, a better association of radioxenon detections with their release location and release time is aimed for. We present case studies that investigate the comparison of two approaches to compute the PSR. The standard PSR approach utilizes all samples (Level B and C) in a fixed timeframe relevant for a specific scenario, whereas an alternate approach might use a curated group of samples selected for consistent isotopic ratio evolution only.

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Promotional text

Can a customized possible source region be both accurate and flexible for sample episodes utilizing only the critical samples required for the consistency of isotopic ratio evolution?

Oral preference format

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Session Classification: Lightning talks: P2.4

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