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atmpspheric transport modelling coincidence localization of single sources and repeating emitters

In the framework of CTBT monitoring the application of atmospheric Lagrangian Particle Dispersion Models is well established to confine source regions of radionuclide detections. For that Source Receptor Sensitivity (SRS) fields are regularly calculated in backward mode for air samples. Various localization approaches for combining SRS fields for detections at multiple stations caused by an assumed single source in space and time were introduced over the last decade. Especially a simple additive coincidence approach overlapping SRS fields for multiple detections has shown to be quite promising in several test cases. This method was expanded to evaluate source regions of repeating radioxenon detections at single stations. The simulated source regions of air samples with elevated xenon-133 activity concentrations are stacked in space in order to evaluate a region of potential common origin. Examples from recent years are shown for different IMS radionuclide stations. Especially highlighted is the potential source area of recent radixenon activity concetration peaks at the German station RN33, Schauinsland, which is operated by BfS.

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