



ID: P5.1-785

Type: E-poster

## Radionuclide Detection Variation in Europe: A Comparative Analysis Using RNToolkit

Thursday 11 September 2025 10:00 (1 hour)

This study examines the evolution of radionuclide detections over time at eight stations within the CTBTO IMS network: SEP63 and SEX63 (Stockholm, Sweden), RUP61 and RUX61 (Dubna, Russian Federation), DEP33 and DEX33 (Schauinsland, Germany), and NOP49 and NOX49 (Spitsbergen, Norway). Data covering the period of 2021 to 2024 were analysed and compared using the RNToolkit software. The assessment focused on identifying potential changes in radioactivity levels – encompassing particulates and noble gases – that could be attributed to human activities, nuclear incidents or changes in the atmospheric transport of radionuclides. Preliminary findings suggest that the observed increase in detected events may be linked to unintentional emissions from nuclear facilities or to the intensification of industrial and commercial nuclear activities in Europe. This study underscores the critical role of the CTBTO monitoring network in understanding the global environmental implications of anthropogenic activities. Additionally, it highlights the importance of enhancing detection capabilities of the IMS.

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**Session Classification:** P5.1 Synergies with Global Challenges

**Track Classification:** Theme 5. CTBT Science and Technology in the Global Context: T5.1 Synergies with Global Challenges