

# of Methods for Characterizing CTBT-Relevant Radionuclide Events Based on Data from the Temporary High Density Network Formed by the International Monitoring System Noble System JPX38 and the two Transportable Radioxenon Measurement Systems

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Since 2008, the CTBTO has been conducting temporary radioxenon measurement campaigns using transportable systems. These campaigns are focused on improving the performance of the verification system as described in the Treaty. In 2017, the Government of Japan made a voluntary contribution to boost CTBTO capabilities to detect nuclear explosions. In early 2018, two transportable noble gas systems were deployed in Japan where they form, together with the International Monitoring System (IMS) system JPX38, a high density network. As of today a few thousand samples have been measured by the two transportable systems. Measurement spectra are automatically sent to the International Data Centre, processed in a non-operational database and reviewed with focus on the four CTBT-relevant xenon isotopes. Reviewed data are used to improve methods and methodologies for understanding the radioxenon background that are applicable to any IMS noble gas system. Possible sources regions (PSR) and evolution consistency of isotopic ratios in samples collected by the systems forming the high density network were estimated first, and the impact on isotopic ratio consistency and on both standard and consistency specific PSRs was investigated. Further applications include isotopic ratio screening, Xe-135 observations, and enhancements of concentration estimates from known sources.

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## Promotional text

Radioxenon measurement are ongoing in different locations in Japan with CTBTO transportable systems complementing the IMS system JPX38. This work demonstrates how these measurements help refine our understanding of the background and further developing analysis methods.

## Oral preference format

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