

Frequency of Radionuclides Reported in Remote Atmospheric Observations of Historic Nuclear Test Explosions

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The observation of atmospheric radionuclides that are associated with nuclear test explosions has a long history that started already in the 1940s. Over the decades of nuclear testing the methods were refined and mounted into the high-quality systems implemented in the International Monitoring System of the CTBTO. The project presented here is reviewing the publications about off-site monitoring of nuclear tests. In fact, many observations were done at large distances and often nuclear tests were detected at multiple locations, in general in the same hemisphere. Most publications are associated to tests that occurred in the atmosphere but observation of nuclear debris from venting of underground nuclear tests were also found. The frequency of radionuclides in remote atmospheric observations of historic nuclear test explosions is compared to several radionuclide lists considered for nuclear explosion monitoring to explore how these lists match the historic evidence. Suggestions are made how this data set is of value for validating and enhancing methods based on radionuclide analysis and related atmospheric transport simulations with the objective of identifying and characterizing the source of an event that is of relevance for atmospheric radioactivity monitoring for the Comprehensive Nuclear-Test-Ban Treaty.

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Promotional text

What can we learn from historic radionuclide observations in the atmosphere that are associated with nuclear test explosions? This presentation uses these data to check how well currently implemented methods for CTBT radioactivity monitoring match historic experience.

Oral preference format

in-person

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