

Background Estimation Tool: Better Discrimination of CTBT-relevant Events Against the Radioxenon Background

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Radionuclide emissions from worldwide nuclear facilities are frequently observed by the CTBT noble gas network. These ever-present and highly variable emissions of the four radioxenon isotopes relevant for CTBT monitoring weaken the abilities of global monitoring of nuclear explosions. This multifaceted problem requires a substantive approach to determining the key steps for distinguishing for each International Monitoring System sample whether the observation can be explained by known sources, or whether it possibly contains a contribution from a nuclear explosion. For this purpose, the Xenon Background Estimation Tool (XeBET) is being developed. XeBET aims to deliver an aggregation of scientifically-developed ideas into a software prototype that subsequently may be used for expert technical analysis once demonstrated and agreed upon. Ideas considered in XeBET are built on atmospheric transport modelling and radionuclide statistical expertise from assessments in previous multilevel and multidisciplinary scientific investigations. This presentation discusses XeBET's current status of ideas and prototyping and assesses the challenges ahead for 2023 and beyond.

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Promotional text

In an ever-present and highly variable radioxenon background, which weakens the nuclear explosion monitoring capability, can an IMS observation be explained by known sources or may it possibly contain a contribution from a nuclear explosion?

Oral preference format

in-person

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