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Introduction

Prompt release of nuclear tests show unique isotopic ratios that nuclear installations cannot create. For this purpose IDC products apply several screening flags based on isotopic radioxenon activity ratios (Gorlon et al, 2017). How do prompt release signature compose? Do they "stick out" with their special isotopic ratios? This paper demonstrates the observations of fresh and aged isotopes 135Xe, 133MXe, 1 observations from CAX05 (Canada) and Jakarta (Indonesia) both close to isotope production facilities to understand and differentiate individual sources from the Fukushima accident, e.g. the observation at station JPX38 on April 7-9, 2013 which was consistent to be associated with the delayed release of the DPRK2013.



Conclusions and beyond

One of the principal considerations in nuclear explosion monitoring is to consider the radioxenon isotopic ratios from each possible sources and how the sources of individual radioxenon observations might be discriminated from each other. The whole observations at IMS stations related to the Fukushima accident are well demonstrations for understanding and differentiating these sources.

References

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How can we use atmospheric radioxenon observations related to the Daiichi nuclear power plant accident at Fukushima to better understand IMS observations?

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Compared the 131mXe and 133Xe observation at station JPX38 on April 7-9, 2013 to the "Fukushima accident" observation (Fig. 4a and Fig. 4b), it is separated from the "Fukushima accident" observation and shows a delayed release with the ratio of 131mXe to 133Xe, 0.24. This observation was no known associated nuclear reactor release nearby and is a reasonable accumulation that might be an open release indicates the detonation time about 53 days ago of the DPRK 3rd underground nuclear test (Fig.5) (Ringbom, et al.).

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Figure 4.a. Grouped observation of 131mXe and 133Xe at station JPX38



Figure 4.b. (Description)



Figure 5. Timeline of isotopic activity ratio of 131mXe and 133Xe resulting from fission zero time and marked with its observation values related to the Fukushima accident and the DPRK2013.