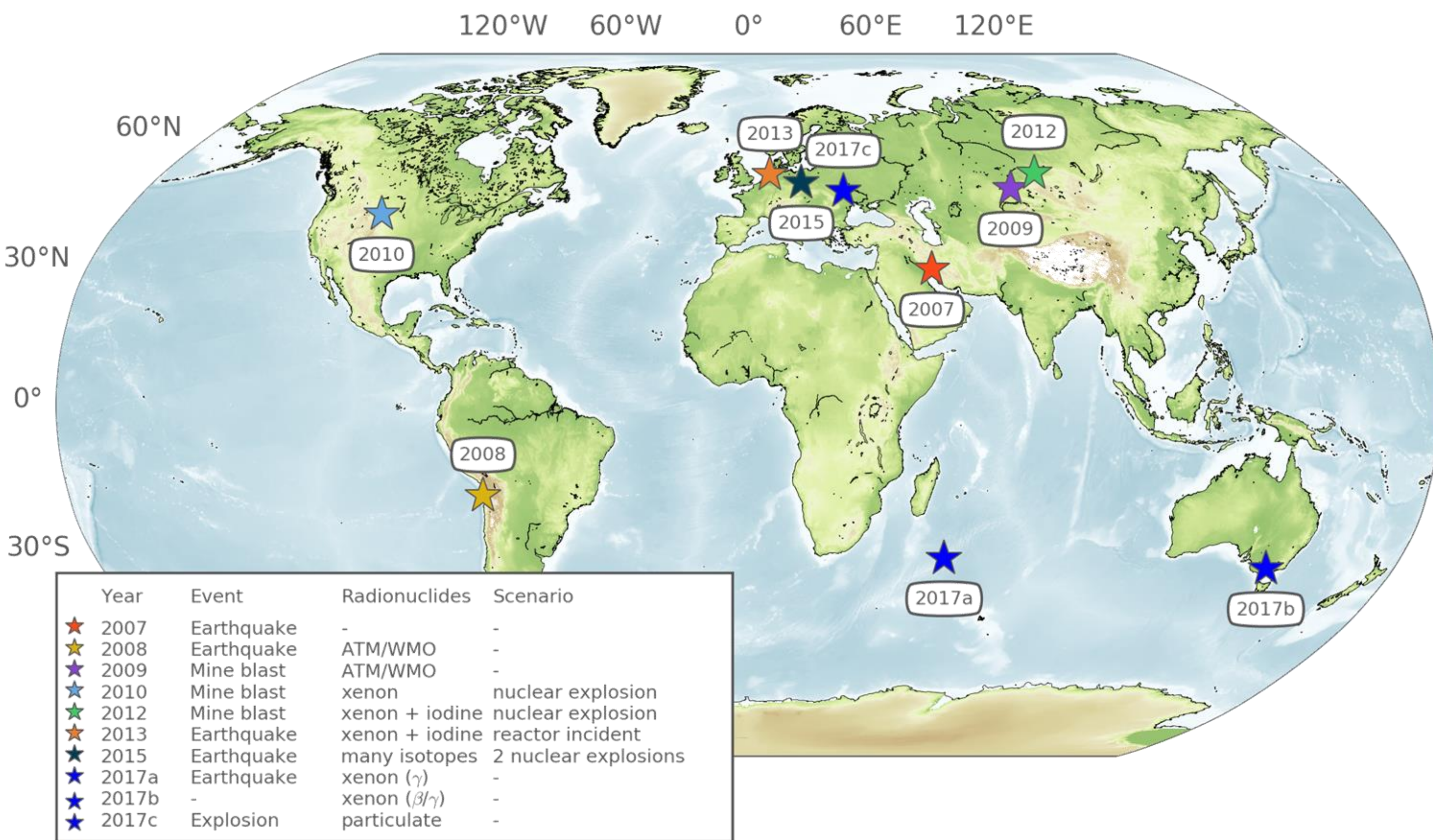




History of NDC Preparedness Exercises



Recent NPE were usually based on real waveform events, often explosions, which were combined with a fictitious radionuclide scenario. The hypothetical radionuclide activity concentrations at IMS stations are generated by forward Atmospheric Transport Modelling.

Features of NPE 2017

- NPE2017 based on new approach compared to previous NPEs
- focusses on recent background detections of the four IMS technologies.
- exercise is dealing with the hypothetical bridging between radionuclide detections and waveform events.
- Starting point of each NPE2017 tasks are selected real radionuclide detections, Level C or Level 5.
- identification of the real source of radionuclide background emissions which were generating not necessarily required
- enhancing use of real IMS data / IDC products
- encouraging awareness for background events
- no artificial/simulated data

Responses to NPE 2017 and outlook to future NPE

Results

Several presentations on NPE 2017 at NDC Workshop in Algiers
 Very positive feedback
 Pure background NPE are limited as there are no nuclear explosions



Upcoming NPEs

The German NDC offers organizational support (distribution, communication)

The upcoming NPE scenario is designed by Italian experts supported by German NDC

Contributions to further NPE scenarios are very welcome, please contact

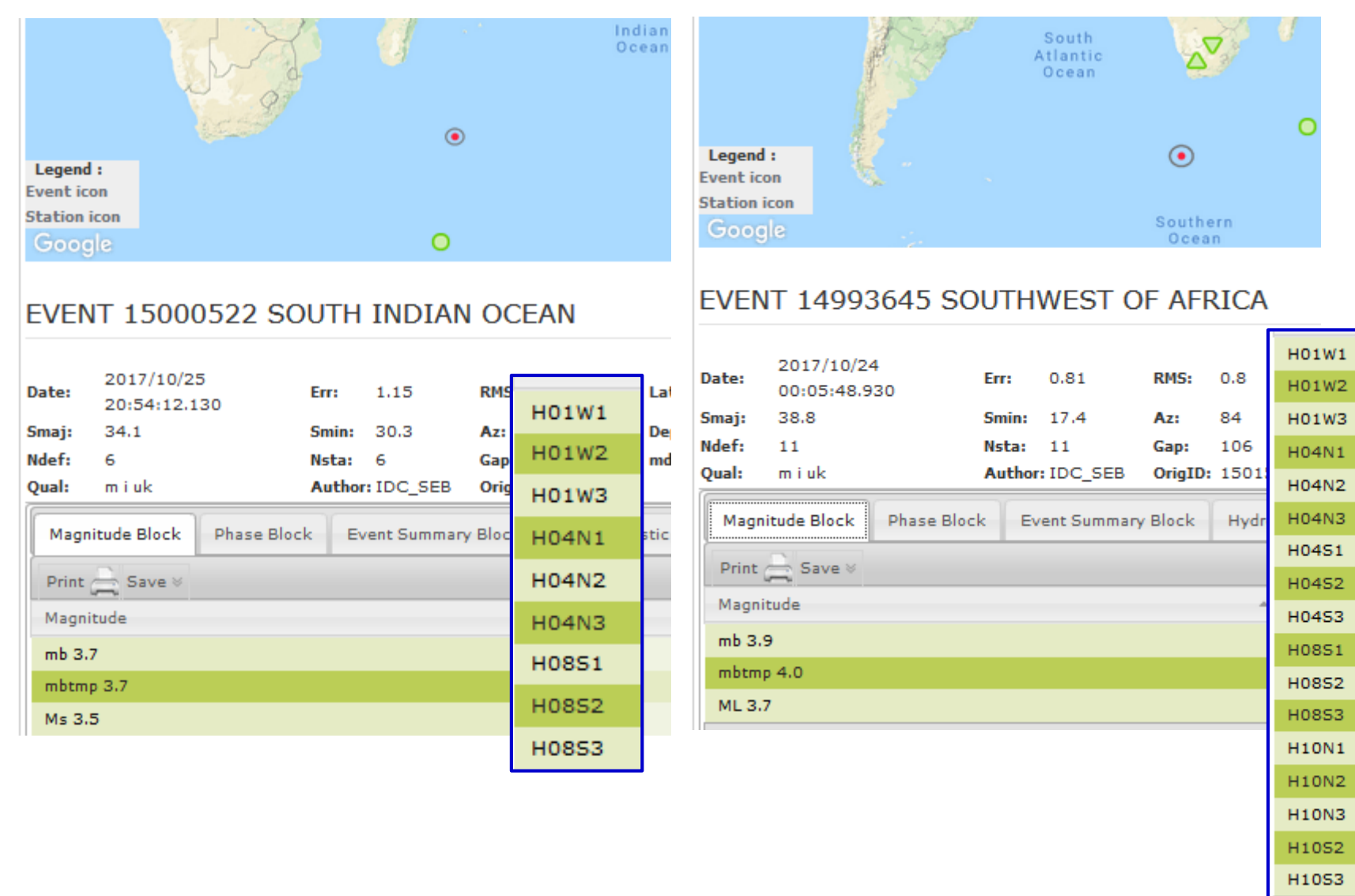
deu-npe@sdac.hannover.bgr.de

The three independent tasks of NPE 2017 – no fictitious scenario, but examples from real IMS data pointing to several background events covering all technologies

Task A

4 Level C detections at FRX29 end of Oct 2017.

Task to search for an SHI Event with H-phase arrivals at at least three hydroacoustic stations in the source region.

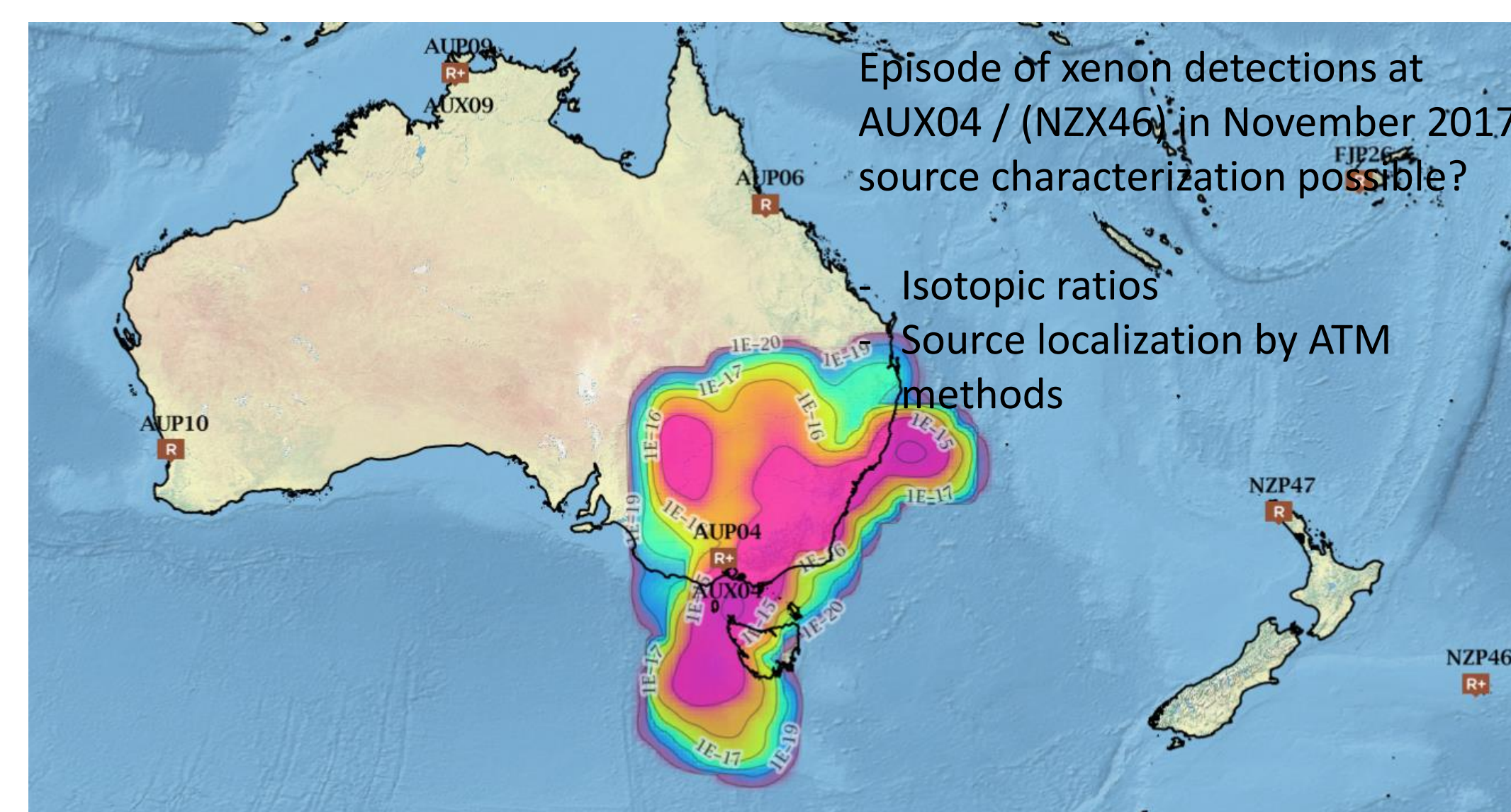


Task A: Noble Gas (gamma) / Hydro-acoustics

Please, consider the three samples of the noble gas system of the station RN29 with collection stops from 2017/10/29 23:00 UTC to 2017/10/31 23:00 UTC. They are categorized as Level C.

In a next step, we are asking you to search for waveform events in the possible source region – regardless of the real radionuclide source. Please, focus on those events with associated hydro-acoustic phases from at least three different stations. How would the event location and its accuracy change, if only hydro-acoustic phases are used for localization?

Task B



Task B: Noble Gas (beta-gamma) / Atmospheric Transport Modelling

Please note, that there were regular occurrences of radionuclide detections categorized as Level C at the stations RN04 and RN46 in November 2017. Is it possible to characterise the source by the analysis of isotopic ratios? How accurate could the source region be confined using atmospheric transport modelling without knowledge about a prominent regional background emitter of radionuclides?

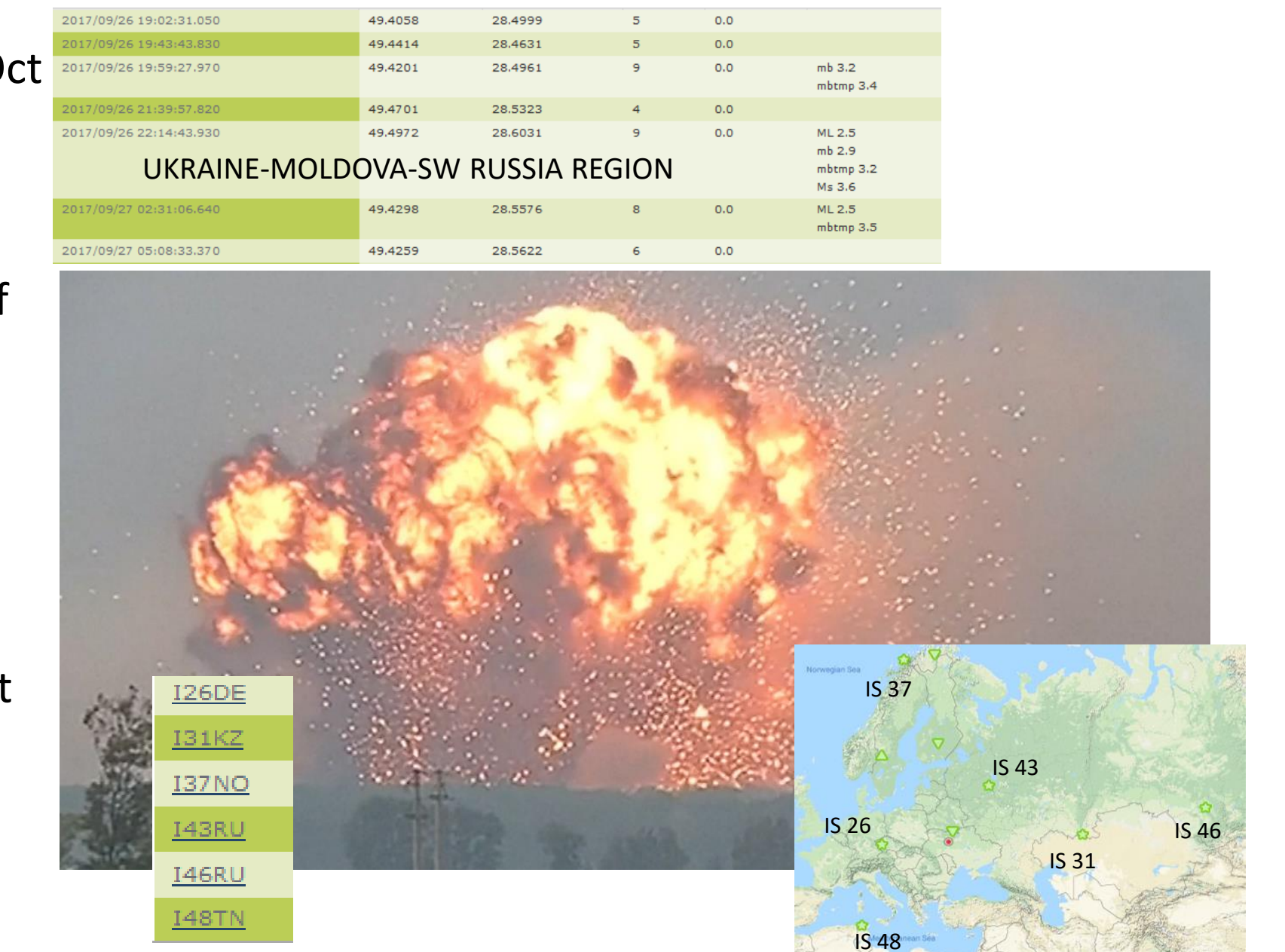
Task C

Level 5 Detection at SEP63 early Oct 2017

Finding the real source of the ruthenium was not in the scope of the exercise

SHI Event with Infrasound phases (and some seismic phases) in the source region

Signals from strongest explosion at 26 Sep 19:59 were registered at 6 IMS Infrasound stations.



Task C: Particulate Radionuclides / Infrasound / Seismic analysis

We have seen, that the particulate sample at RN63 with collection stop 2017/10/02 08:41 UTC is categorized as Level 5. Although the identification of the real source of the detected isotopes is beyond the scope of the NPE 2017 and the CTBT framework, we would like to ask you to search independently for recent seismo-acoustic events, which might have occurred in the field of regard of the Level 5 samples and – if possible - to analyse the infrasound and seismic signatures.