



ID: O2.1-677

Type: Oral

of radionuclide source location exercise for the automatic data fusion tool at the CTBTO

The data fusion automatic pipeline at the CTBTO aims to provide the most complete summary of signals observed by the International Monitoring System (IMS) by linking event information formed from seismic, hydroacoustic and infrasound (SHI) detections with radionuclide detections. The sensitivity of an IMS station sampling period to a possible release location is estimated using backward atmospheric transport modeling (ATM) using time-inverted winds. The data fusion algorithm forms matches between SHI events and the field of regard produced by ATM simulations. Due to the large time scales and wide geographic spread of most fields of regard, the algorithm results in many potential matches, making further analysis difficult. An improvement to the data fusion automatic pipeline at the CTBTO has been proposed which has the goal of focusing fusion results on those of higher probability of radionuclide release. An exercise has been organized to gather inputs on methods to accomplish this goal with corresponding tests based on synthetic events and metrics by which methods are evaluated. This presentation demonstrates the methodologies of the exercise through application on a subset of possible algorithms. Results will show the output of the evaluation and comparison between algorithms.

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Session Classification: O2.1 Characterization of Treaty-Relevant Events

Track Classification: Theme 2. Monitoring events and Nuclear Test Sites: T2.1 Characterization of Treaty-Relevant Events