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**Seminarium Zakładu Energetyki Jądrowej i Analiz Środowiska (UZ3)
Departament Badań Układów Złożonych (DUZ)**

Wtorek: **09.11.2021**
11:30

dr Piotr Kopka

**Probabilistic inverse model for identification of atmospheric contamination
source in an continental-scale based on the 106-Ru 2017 event**

Abstract:

In October 2017, a lot of European countries reported atmospheric detections of ruthenium 106-Ru. In many scientific papers, probable locations of the sources of 106-Ru agent in the atmosphere have been considered. Based on airborne concentration measurements and chemical assumptions, it is possible to assume that the release occurred in the Southern Urals region in the Russian Federation. Such reconstruction requires determining the set of source parameters and is defined by the Source Term Estimation (STE) field in the Continental scale. We present the Bayesian framework able to identify the source of the large scale airborne contaminant. The proposed model utilizes the adjusted two-stage inverse problem methodology. To increase the correctness of the estimated source location the prior distribution was assumed based on fastbackward model (HYSPLIT) calculations. Then to obtain posterior distribution the performed probabilistic calculations involved propagation of radionuclides from places with high probability values by the advance forward model (JRODOS-MATCH). The dedicated inverse model and Approximate Bayesian Computation (ABC) algorithm enhanced the estimation of the posterior distributions of contamination source parameters and reduced the number of computationally costly forward model runs.

Serdecznie zapraszamy
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