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Transport Modelling Assessing Chances to Detect Radionuclides Released from the Known DPRK Test Site

Forward simulations of the atmospheric dispersion from sites of particular interest are regularly performed at BGR, the German NDC. Since 2012 four forecasts per day are performed with the Lagrangian Particle Dispersion Model HYSPLIT (NOAA) and GFS (NCEP) meteorological data for potential releases from the known DPRK test site. The forecasts are used to assess the plume propagation patterns and to predict which IMS RN stations could become sensitive in case of an event. The simulated concentrations at IMS radionuclide stations in the region are analysed for the whole set of more than 5000 simulations. Seasonal variations of the detection chances are investigated. The results are compared with the operational SRS fields provided by the International Data Center in backward mode. In addition, for RN 38,Takasaki (Japan) backtracking simulations with ECMWF analysis data in 0.2° horizontal resolution are performed for selected samples in order to determine the source regions of the most dominant background detections. Furthermore a special focus lies on the time periods following the announced nuclear test explosions in January and September 2016.

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