



Long- range transport of Xe-133 emissions under convective and non-convective conditions.

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The International Monitoring System (IMS) developed by the Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO) is a global system of monitoring stations, using four complementary technologies: seismic, hydroacoustic, infrasound and radionuclide. Data from all stations, belonging to IMS, are collected and transmitted to the International Data Centre (IDC) in Vienna, Austria. The radionuclide network comprises 80 stations, of which more than 60 are certified. The aim of radionuclide stations is a global monitoring of radioactive aerosols and radioactive noble gases, in particular xenon isotopes, supported by the atmospheric transport modeling (ATM).

The aim of this study is to investigate the long-range transport of Xe-133 emissions under convective and non-convective conditions. For that purpose a series of 14 days forward simulations was conducted using the Lagrangian Particle Diffusion Model FLEXPART, designed for calculating the long-range and mesoscale dispersion of air pollution from point sources.

The release point was at the ANSTO facility in Australia. The geographical localization to some extent justifies the assumption that the only source of Xe-133 observed at the neighbouring stations, comes from the ANSTO facility. In the simulations the analysed wind data provided by the European Centre for Medium-Range Weather Forecasts (ECMWF) were used with the spatial resolution of 0.5 degree.

Studies have been performed to link Xe-133 emissions with detections at the IMS stations supported by the ATM, and to assess the impact of atmospheric convection on non-detections at the IMS stations. The results of quantitative and qualitative comparison will be presented.