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Cesium and Iodine Aerosol Characterization in North America

The Fukushima Reactor accident generated a large data set of global radionuclide observations. The frequent observations of xenon, cesium and iodine isotopes provided an opportunity to examine the performance of atmospheric transport and dispersion models driven by numerical weather prediction models, in particular, the important mechanisms of in-cloud scavenging, precipitation, deposition and iodine phase conversions in long range models. Previous studies have investigated these phenomena over short range, but this is the first time a global, coordinated surveillance system including non-scavenged noble gas have been available. Since particle size distributions are very different at long range, the parameterization of the deposition and phase change parameters is important for accurate atmospheric modelling, particularly in a Comprehensive Nuclear-Test-Ban Treaty (CTBT) context. The atmospheric removal time and results of modelling the deposition and airborne activity of cesium and iodine concentrations are presented for North America and compared with the actual measurements.

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