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atmospheric dispersion analysis of radionuclides released from the Fukushima Daiichi Nuclear Power Plant

We analyzed hemispherical atmospheric dispersion of Cs-137 released from the Fukushima Daiichi Nuclear Power Plant (FDNPP) due to the accident in March 2011, by comparing simulations with observation data from CTBT International Monitoring Systems. We used WSPEEDI-II (Worldwide version of System for Prediction of Environmental Emergency Dose Information version II), which consists of the atmospheric dynamic model WRF and particle dispersion model GEARN, developed by Japan Atomic Energy Agency for atmospheric dispersion simulations. It was shown in our simulations that calculated Cs-137 concentrations generally agreed well with the measurements. By using atmospheric dispersion simulations with limited release period, we investigated release time of Cs-137 observed at CTBT stations. It was found that the Cs-137 released from March 12 to 14 was dispersed almost all over the northern hemisphere and the most of Cs-137 observed in Europe is due to the release during this period. Meanwhile, the Cs-137 released from March 17 to 19 mainly reached around the Pacific Islands area and the West Coast of the USA. These results might be useful for re-estimation of the release amount of Cs-137 from the FDNPP.

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