Japan Geoscience Union Meeting 2013
(May 19-24 2013 at Makuhari, Chiba, Japan)

AAS24-02 Room:105 Time:May 20 14:35-14:50

Numerical simulation of I-131 concentration emitted from FDNPP using regional model

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Huge amount of radiunuclides has been emitted from the Fukushima Daiichi NPP after the 2011 Tohoku earthquake, but the spacio-temporal variation of atmospheric Iodine-131 is still uncertain. Iodine-131 is quite important radionuclides especially for the inhalation, so the reproduction of its spacio-temporal variation is quite useful. For this purpose, we have conducted numerical simulation of Iodine-131 using a regional chemical transport model WRF/Chem which is slightly modified to treat radionuclides' transport, dispersion, and deposition. The emission scenario is taken from the estimation of Chino and Katata. The results shows that the spacial distribution of accumulated concentration of Iodine-131 at the lowest layer of the model is quite different from that of accumulated deposition. The difference seems to be caused by the effect of precipitation, which is quite important removal process from the atmosphere.

Keywords: radionuclides, atmospheric chemistry, material transport, chemical transport model