



The Migration Characteristics of Radioactive Aerosol from the Fukushima Nuclear Accident in China

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As a result of the Fukushima Nuclear Accident (FUNA), lots of radioactive materials were released and transported to the world. In order to assess the impacts caused by the FUNA to China, the transport pathways of aerosols arrived in China were studied in detail. The analysis data were mainly collected from the national nuclear security administration of China from 31st, March to 22nd, April 2011. The air mass trajectory figures plotted by the NOAA HYSPLIT MODEL were used to explain the aerosols' movements. Heilongjiang was the first province to report on the detection of ¹³¹I in its aerosol samples on 26th, March 2011 in China. The maximum of ¹³¹I was reported to be 8.01mBq/m³ in Jilin Province on 4th April. However, the highest activities of ¹³⁷Cs and ¹³⁴Cs were found to be 1.55mBq/m³ and 1.43mBq/m³ respectively in Xinjiang Province on 8th April. In addition, the statistical ratios of ¹³¹I/¹³⁷Cs and ¹³⁴Cs/¹³⁷Cs were 0-26.43 with an average of 2.57 and 0-1.8 with an average of 0.34. Based on the relationships of radionuclides' activities in aerosol between different cities (e.g. Beijing and Liaoning, Beijing and Xinjiang), using canonical correlation analysis, five routes of transmission reaching the mainland were summarized: a. from the Arctic Pole, b. from the North America, c. from the India Peninsula and India Ocean, d. from the Western Pacific Ocean and Japan, e. comprehensive influences between different cities of China. Moreover, some important meteorological factors influencing the aerosols' transportation, such as the global monsoon, rainfall, and wind direction, were also discussed.