

Impact of the regional climate on the transport of radioactive materials

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Radioactive materials, which are released from Fukushima-Daiichi nuclear power plants (FDUPP) in March 2011, is transported to Kanto and Tohoku areas. From many previous studies, the transport process of the radioactive materials has been clear. However the relation between the regional climate and transport process still is not sufficient to reveal. We investigated the mechanism of the transport to Kanto area using a regional model considering the regional climate in March. From the results, it is found that the radioactive materials, which are observed on 21th March 2011, is transported by the northeasterly in the lower layer from FDUPP to Kanto area. Generally, the northeasterly often forms corresponding to the low pressure system and the stationary front, which often form along the southern coastal area of Kanto area and causes the warm front with southerly warm wind. It is found that the cold air of the northeasterly is formed by cold air surges accompany with winter monsoon and moves to south corresponding to the temperature gradient in meridional direction near the surface. Therefore the northeasterly also has the property of gravity current. The wind field could be greatly influenced by the local temperature distribution because the cold air surges are often found in the off-shore of the Fukushima Prefecture. We will report the detailed transport process by numerical experiences applying the past events.

Keywords: Radioactive materials, Regional climate, Regional model