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The distribution map of radiation levels by grid survey in Fukushima prefecture

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Grid radioactive survey was performed to obtain sufficient information for the fast estimation of dynamism of radionuclides released from the Fukushima Daiichi Nuclear Power Plant following a dysfunction of the cooling systems caused by the Tohoku - Pacific earthquake and subsequent tsunami. The surveys were performed between March 25th and March 31st, 2011 at 372 locations in each 2 km grids of areas deemed critical within the 20-70 km range of the nuclear power plant. Measurements were conducted by surveyors who were standing at the edge of asphalt-paved roads while holding detectors aligned parallel to the road approximately one meter above ground level.

Two areas with higher rates are shown evidently on the map. One extends northwestward in a narrow angle over 20-30 km from the nuclear power plant with rates above 0.02 mSv/h. This distribution is found to be consistent with the model prediction by SPEEDI and aerial monitoring USDOE. Another area, which extends from Koriyama city to Fukushima city, is located between west of the Abukuma mountain district and east of the Ou mountain district with rates around 0.002-0.004 mSv/h. The distribution of this area is not consistent with model prediction or aerial monitoring. These two higher rates areas look to be contentious. However, relatively lower dose area extends between these higher dose areas, east of Fukushima city.

The present result clarified extensive and detailed distribution of radiation levels on the affected areas, and will contribute to politics providing basic information to verify the model prediction of dynamism of radionuclides, to assess the effect of radionuclides to human, other living things, or soil conditions, which are crucial for aquaculture or livestock industry.

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Keywords: radiation level, distribution map, grid survey, Fukushima Daiichi Nuclear Power Plant, the Tohoku - Pacific earthquake