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Surface pathway of radioactive plume of TEPCO Fukushima NPP1 released 134Cs and 137Cs

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134Cs and 137Cs were released to the North Pacific Ocean by two major likely pathways, direct discharge from the Fukushima NPP1 accident site and atmospheric deposition off Honshu Islands of Japan, east and northeast of the site. High density observations of 134Cs and 137Cs in the surface water were carried out by 17 cruises of cargo ships and several research vessel cruises since March 2011 till March 2012. Main body of radioactive surface plume of which activity was exceed 10 Bq m-3 had been travelling along 40 ºN, and reached International Date Line on March 2012 one year after the accident. A feature was that the radioactive plume was confined along 40 ºN when the plume reached International Date Line. A zonal speed of the radioactive plume was estimated to be about 8 cm s-1 which was consistent with zonal speeds derived by Argo floats and satellite observations at the region.