

Spreading of Radioactive Cesium off Joban coast through Large River Discharge

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A hydrographic observation was conducted off the Joban coast during September 7 to 12, 2011 (six months after the 2011 Great East Japan Earthquake), using a CTD profiler and a ship-mounted ADCP (R/V Tansei-Maruk cruise KT-11-22). At the same time, water-samplings for radioactive cesium measurements were conducted at a depth of 10 m. The radioactivity of cesium (¹³⁴Cs and ¹³⁷Cs) was measured for the AMP/Cs compound using gamma-ray spectrometry at the Low Level Radioactivity Laboratory of Kanazawa University. There was a negative correlation between the radioactive cesium and salinity in the sea surface (at the depth of 10 m), indicating more radioactive cesium was included in less saline water. Abundant freshwater is discharged from three large rivers (Tone, Naka, and Kuji Rivers) into the observational area. What is important is that several days before the observation, there was extremely heavy rainfall in the upper reaches of the rivers, which resulted in that discharge of the Tone River exceeded 2000 m³/s on September 4. Therefore, it was suggested that the highly concentrated radioactive cesium in the sea surface originated from the land through the rivers. Moreover, it was shown that spreading of the river water and radioactive cesium is strongly influenced by the Kuroshio Current.

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