

## **Distributions and geochemical cycles of platinum in Otsuchi Bay, Japan after the tsunami in 2011**

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Otsuchi Bay is located at Pacific Ocean side of Iwate Prefecture in northern Japan. Immediately after the 2011 off the Pacific coast of Tohoku Earthquake occurred in March 11 2011, giant tsunami attacked this coastal area. Many coastal areas have been damaged catastrophically, then many of artificial materials on land are washed away by the tsunami. It is thought that coastal environments were affected by terrestrial materials, not only natural materials (e.g. soils, plants), but also artifacts on land. Recently, platinum has been used as industrial materials, for example automobile catalysis and anticancer drugs. Possibly, after the giant tsunami, industrial materials, containing platinum are affecting the estuarine environment of Otsuchi Bay. In this study we revealed distributions of dissolved platinum in waters at Otsuchi Bay after the tsunami, and traced their spatial and temporal variations. We discuss the variation of the platinum in Otsuchi Bay before and after the tsunami.

Seawater samples were collected from Otsuchi Bay in Iwate Prefecture. We collected seawater samples five times from May 2012 to May 2015. And we also collected river water which flow into Otsuchi Bay. For determine Pt concentration, we used isotope dilution method with an inductivity coupled plasma mass spectrometer (Suzuki et al., 2014).

Dissolved platinum concentrations ranged from 0.24 to 5.18 pmol/L in seawater and were higher than that of open ocean seawater. Pt concentrations in river water samples were below than the detection limit (0.015 pmol/L). The concentrations increased to-ward the bottom, which shows that dissolved platinum are supplied from the sea floor. Compared with the platinum concentrations in surface seawater before and after the tsunami, platinum concentrations were elevated in all the sampling points of Otsuchi Bay after the tsunami. Huge amounts of terrestrial materials, containing platinum, were transported from river water to the bay by the tsunami. After the lateral transportation, dissolved platinum is possibly released from the bottom sediments, containing terrestrial materials, at high salinity area.