

Secular change of sediment composition and its origin after 3.11 Great East Japan Earthquake in Onagawa Bay, Miyagi Prefecture

*Tomoaki Wakayama¹, Izumi Sakamoto¹, Yuka Yokoyama¹, Toyonobu Hujii², Akihiro Kijima²

1. Tokai University, 2. Tohoku University

On March 11, 2011, the Great East Japan Earthquake severely damaged Onagawa town, Oshika country, Miyagi Prefecture. The purpose of this study is to clarify the sediment characteristics of Onagawa Bay from before the earthquake to the present, and to understand sedimentation processes and their supply sources. Composition analysis and particle size analysis was carried out.

From the results of particle size analysis of surface sediments obtained at 41 sites around Onagawa Bay. The mud content was (1) 95% in Onagawa Port at the back of Onagawa Bay, (2) 20 to 70% in the central part of Bay, (3) 5 to 20% in the mouth of the bay, (4) less than 5% in the rock reef area of the mouth of the bay, (5) 25 to 55% in the offshore of the bay. The results show that from the inner part of the bay to the mouth of the bay, the sedimentary environment predominant in muddy sediments changes to the sedimentary environment predominant in sandy sediments.

In term of particle size distribution, fine-grained muddy parts gradually increase from Ogatsu Bay to Izushima In the central part of the bay, it has both particle properties near the bay mouth and near the Izushima Channel.

From the central part of Onagawa Bay to the offshore area, thin section of surface sediment were prepared at a total of 24 points. The composition of surface sediments showed that the ratio of biogenic detrital material was very high at 80-90% near the bay rock reef area and 50-70% in the central part of the bay. The proportion of biogenic clastics off the bay is 3% and 16%. It was found that the composition of the surface sediment in the sandy part changed greatly at the bay rock reef area.

The sediment environment in Onagawa Bay was predominantly sandy sediment before the earthquake, but changed drastically to muddy sediment after the earthquake. From the secular change from 2016 to 2019, it was confirmed that the mud content in the bay tended to decrease overall.

From the particle characteristics and composition of surface sediments in Onagawa Bay, it is inferred that silt supplied through the Izushima Channel and sand mainly containing biogenic clastics supplied from the bay mouth rock reef area are mixed and deposited.

Keywords: Onagawa Bay, sediment composition