

Sub-bottom environmental change around the Sanriku coastal area after the 3.11 Tohoku Earthquake and tsunami.

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The recent 2011 Tohoku tsunami strongly affected the coastal area of the Pacific coast of Tohoku. Tokai University investigated the Tohoku coastal area as a part of Tohoku Ecosystem-Associated Marine Sciences (TEAMS). Our purpose will be to get the knowledge of distribution of rubble, bottom sediment environment and tsunami information in the coastal local area.

We researched using acoustic equipments (Multi narrow beam echo sounder : MNB, Sub bottom profiler : SBP and Side scan sonar : SSS), bottom sampler and ROV.

Some gigantic crescent marks were observed around shallow bottom area (-10m to -30m in depth) from the Toni and Okirai bay. These marks were estimated that they formed by erosion caused around the rubble at the down flow stage of tsunami. We are trying to observe these marks by MNB again for changing forms in a secular variation.

In the Hirota bay, NW-SE trending high reflector zone with 1.5km in length is formed at the front of the mouth of Kesen river, by SSS survey. We have also the bottom sediment sampling by grab sampler in 50m interval (total 100 samples), along the high reflector zone, on twice a year from 2012 to 2014. As the result of grain analysis for the bottom samples, gravels and coarse sand sediment consist the high reflector zone, and become coarse year by year. However, inner and central areas of the Hirota bay become fine. Large-scale restoration construction is developed at a coastal region around the Sanriku area. It's expected that the sea-bottom environment changes with these restoration construction.

Keywords: tsunami, sub-bottom environmental change