

Paper Number: 4298

What kind of disturbances did the March 11, 2011 Tohoku Earthquake and Tsunamis leave in the continental margin ecosystems? : Lessons from five years monitoring research

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On March 11, 2011, a huge earthquake with M9.0 took place at the Japan Trench area off Northeast Japan. Vigorous disturbances of marine environment and ecosystems took place at coastal areas where huge tsunamis swept sediments and organisms away from the coastal areas to deeper oceans. The distributional pattern of sediments and organisms in coves and bays has strongly changed after the tsunami. Marine ecosystems in Northeast Japan were totally disturbed and damaged. Scientists from Tohoku University, Tokyo University and JAMSTEC started to monitor how much the marine ecosystem was disturbed and how it may recover. A research team, named Tohoku Ecosystem-Associated Marine Sciences, continually makes research on marine ecosystems as part of a ten year monitoring project since 2011.

The year 2016, makes it five years since the Earthquake and Tsunami occurred. What happened to the marine ecosystem in the Tohoku area during these years? Water column ecosystems are rather easy to recover from disturbances. Sea weed communities were damaged, but, it gradually recovers. On the other hand sediment community is slow and does not recover, as sediment distribution is different from before the earthquake and tsunami.

Most difficulties are scars in human minds. We, scientists, try to share scientific activities and results with local peoples including fishermen and local governments for better understanding of both oceanic conditions and marine resources. Disaster risk reduction should accelerate with resilience of community structure. However, mental resilience is the most effective way to recover human activities in the damaged areas.

