Dynamics of macrobenthos communities in soft bottom sediments following the Great East Japan Earthquake and tsunami

Professor, Waka Sato-Okoshi

Graduate School of Agricultural Science, Tohoku University

The ecological impacts of the 2011 Great East Japan Earthquake and tsunami and the following recolonization of the subtidal benthic community were examined by monthly pre- and post-quake field surveys that were conducted in Onagawa Bay from 2007 to 2020. Before the tsunami, the species composition in this benthic community was constant and was dominated by cirratulid and magelonid polychaetes. The density and biomass of benthos drastically decreased after the tsunami, and the polychaete community fluctuated during the 2 years after the natural disaster. In 2013, the community entered a new constant stage dominated by maldanids, which is different from the pre-quake community. After 2016, the community seemed to return to the pre-quake community with cirratulid polychaetes. However, after the serious hypoxia occurred in 2017, the community again changed but it returned to the pre-quake family composition. Today, the community structure of the species level is not the same as pre-quake, and the biomass has been observed in low level for a long time. We are now continuing our long-term monitoring survey to understand the effects of not only the natural disturbances but also the human restoration activities being conducted after the disturbances in macrobenthos communities in soft bottom sediments.