

Modeling productivity in lower trophic levels in Otsuchi Bay, northeast of Japan, using a nested OGCM with a biogeochemical component

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Otsuchi Bay is located on the northeast coast of Honshu Island, Japan, where was extensively damaged by the huge tsunamis caused by the 2011 off the Pacific coast of Tohoku Earthquake. Motivated by how the biogeochemical circumstance and fishery resource recover, some observations have been conducted in the bay, but those have not been enough because of several restrictions and human resources. Aimed at filling the observational shortage and the acquirement of some information about physical and low trophic fields, a modeling approach has been discussed. Using a triply-nested OGCM and a downscaling method, the authors succeeded to reproduce seasonal variability of the circulation in the bay, and also showed a seasonality of the water exchange mechanism between the bay and the open ocean (Sakamoto et al. 2017). In order to know the low trophic processes in the bay, a numerical simulation using a nested OGCM with a NPZD model is conducted. The OGCM is an improved version of Sakamoto et al' s (2017) model, and the NPZD one is based on Nagata and Hasumi (2014). In this poster, our modeling strategy and some results will be presented. The final goal of this study is to perform hindcasting simulations of the bay with realistic boundary conditions, that are the river runoff, the atmospheric forcings, and the open ocean states.

Keywords: downscaling, nest-modeling, NPZD model