

Future Earth and SIMSEA: A Case Study in Sukumo Bay, Japan

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Marginal seas in South and East Asia have one of the highest marine biodiversity in the world oceans. However, marine environment in the marginal seas has recently become at risk under increasing pressure from surrounding countries. Since little efforts had been made to addressing marine environmental issues based on scientific finding, ICSU/RCAP launched international research alliance, called “Sustainability Initiative in the Marginal Seas of South and East Asia (SIMSEA)”, contributing to Future Earth program as one of its regional activities in Asia. Under the SIMSEA framework, we established international research network among natural and social scientists involving marine environmental researches, and exchanged research outcomes and ideas to prioritize research targets in the marginal seas. For example, the island countries like Philippines claim necessity of integrated coastal management for sea level rise and tidal surge associated with climate variation and change, whereas the countries like Indonesia, which highly depend on fishery activity, stress importance of sustainable ocean monitoring for ocean warming and acidification due to human-induced CO₂ increase.

In Japan, we conducted one case study on the integrated coastal management by co-working with local stakeholders. As one of the highest marine biodiversity areas, Sukumo Bay in Kochi Prefecture was selected, because it has experienced steady ocean degradation due to frequent occurrence of red tide and accelerating loss of seagrass. Under these circumstances, local stakeholders and researchers performed ocean health check-up and have been monitoring ocean condition. Also, local fishery cooperative and JAMSTEC co-developed ocean forecast system called SUKUMO500, in which high-resolution (200 m) ocean temperature and current information are provided every one hour via JAMSTEC website. The forecast information was experimentally used not only by local fishermen, but by coastal guard officials during emergency removal of ship oil from a small cargo ship sank near Sukumo Bay. In exchange of the forecast information, local stakeholders provide local observation data on regular basis to validate the ocean forecast. Through this mutual interaction between local stakeholders and researchers, the integrated coastal management is now developing and will contribute to advancing the SIMSEA activity and hence the Future Earth program.

Keywords: SIMSEA, Integrated Coastal Management, Sukumo Bay