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Clarification of relationship between nutrient loading and biological productivity in coastal area by ecosystem model

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Recently, the total volume control of COD loading from continental areas to coastal areas that is generally regarded as a barometer of eutrophication produce an effect for water quality improvement. On the other hands, the reduction in biological productivity caused by concentration reduction of nutrient was pointed out. We face the limit of control policies due to build the suitable interaction between continental areas and coastal areas.

Due to understand the interaction between nutrients loading and biological productivity, the investigation how nutrients provide any biological populations and fish catch is effective. The circulation pathway of nutrients is complex web of interactions, for example, relationship between among biological populations (prey-predator relationship, competitive relationship et. al.) or indirect interaction web (extinction of predator caused by anoxic water, et. al.). The ecosystem response to decrease or increase in nutrient loading is complex.

In this report, we apply ecosystem-model which include fishery product (laver culture, clam) to around Kako-river (*Harima-nada*, *Seto-Inland-Sea*, *Japan*). We quantified responses of material circulation to decrease or increase in continental loading by using this model. The biological productivity is responding to decrease or increase in nutrient loading is varying with the structure of material circulation networks.

Keywords: ecosystem model, nutrient loading, material circulation, productivity, Harima-Nada