Distribution of phosphorus carbon nitrogen and biogenic silica in sediment from Kojima Bay, Seto Inland Sea.
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River mouth estuaries receives large quantities of terrestrial derived nutrients via rivers and it is an important pathway for which transported to the sea. It has significant alternations on sediment accumulated nutrient and recycled nutrient has bought impact on local nutrient balance and eutrophication events. In central Japan from 1960s, coastal land reclamation has increased the terrestrial nutrient discharge from reclaimed agriculture farmland, meanwhile, the artificial dam lake has increased the nutrient retention which may have changed the nutrient pattern in this area. Our objective is to clarify the nutrient distribution along the river mouth area from central Seto Inland Sea area, clarify the possible impacts on nutrient accumulation and recirculation from artificial dam construction.
Two cores were taken by piston sampler and 27 surface sediment samples were also collected from Kojima Bay and connected artificial Lake, samples were analyzed for nitrogen carbon phosphorus and biogenic silica. ^{137}Cs and ^{210}Pb activity were determined for sediment dating and calculation of sediment accumulation rate. Surface sediment shows higher level of nitrogen and carbon accumulated in brackish bay and high level of phosphorus in the lake. In both cores, carbon and nitrogen contents decreased with depth, suggests the decomposition and released to the overlying water. N:P molar ratio shows 4 times higher in Bay than the connected lake. This suggests large nitrogen and organic matter resources supplied from several main rivers, and the phosphorus is accumulated less efficiency than nitrogen and carbon in the brackish bay. core profiles shows phosphorus contents increased after 1950s, with two peaks at 1970s and 2000s, indicates the hypereutrophic event in 1970s and accumulation of recycled P in the surface oxide sediment. Nitrogen phosphorus and carbon shows significant different between two cores, in core from brackish Bay, N:P ratios increased from 12:1 at surface to 16:1 at around 20 cm, then gradually decreased to around 5:1, suggests that over time proportionately more phosphorus than nitrogen is released and transported out of sediments, hypereutrophic events in 1970s (21cm) increased nitrogen discharge and still remains a peak in the core record. On the other hand, core from artificial lake shows relatively low N:P ratio from 3:1 at surface increased to 8:1 at 60cm, suggests the phosphorus is more mobile than nitrogen in these sediment. The biogenic silica shows a low content level before 1950s at 40cm and comparably higher level at from 1950s to 1990s. After 1990s. The biogenic silica content shows a decreasing trend and remains at low level until 2009. This may infers that before the dam of Kojima lake is enclosed, The higher river flow before the dam constructed may have a dilution effect on the Bsi retention in this area because the sediment Bsi is mainly reflected the history of water soluble silica content and the aquatic primary productivity of phytoplankton(such as diatom). The terrestrial resources and the water flow affect the retention of biogenic silica in sediment. After the dam enclosed, the water environment became stable and it is easier for the biogenic stabilization. The heavy nutrient

inflow and eutrophication during 1970s leads to a boom of plankton, which may leads to a higher production of diatoms. It may result in the higher biogenic silica content in sediment during that time. After 1990s with the consumption of silica in the lake, decreased water soluble silica content decreased the production of diatoms and resources of biogenic silica. This may leads to the lower level of biogenic silica after 1990s.

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