



Characterization of organic matter source in the sediment of Lake Soyang, in view of land uses.

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Stable isotope analysis is applied to surface and core sediment from artificial deep reservoir Soyang, Korea for the identification of sources of organic matters. Carbon and nitrogen stable isotopes of POM(>20 μ m), the soils of forest area and alpine agriculture area were also analyzed as estimated sources. $\delta^{13}\text{C}$ of surface sediment were -26.88~-26.28‰. $\delta^{15}\text{N}$ were increased from downstream to upstream(2.5~4.63‰). C/N ratio at downstream were 8~10, and 16~22 at upstream. These results indicate that dominance input of the terrestrial organic matters in upstream area. It might be caused by huge delivery of the soil and terrestrial higher plant residue through the turbid current runoff from alpine agriculture area. In contrast, surface sediment of downstream relatively seems to be influenced by algal organic matter. In core sediment collected from the central area of downstream near by a dam, $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ of below 15cm were around -26‰ and 3‰ respectively. However, above the 15cm, $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ trend were increased up to -24.6‰, 5.8‰ respectively. These results demonstrate that forest origin organic matter could be dominant below the 15cm. However, turbid current input has been increased due to the enlarged alpine agriculture area since 1990s. Therefore the soil organic matter derived from alpine agriculture regions should be predominant in the upper sediment of the core. Consequently, in this study, organic matter distribution and its origin in Lake Soyang can be clarified using carbon and nitrogen stable isotope values in additional to lipid biomarker analysis.