

Seasonal variations of organic matter in Lake Kiba, Japan during 2014-2015

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Lake Kiba has been facing to organic pollution over twenty years. This study aims to understand dynamic of organic matter in Lake Kiba through a year. Water samples were monthly collected at a central site of the lake in a period of 2014-2015. We also collected water samples at four sites in the transect of lake. The water samples were filtered with GF/F filters and measured for the concentration of organic carbon and nitrogen in dissolved and particulate forms. Suspended solids were collected from 60 L of the surface lake water samples by using continuous-flow centrifugation. Characteristics of dissolved organic matter were determined by three dimensional excitation emission matrix spectra.

Dissolved organic carbon (DOC) concentration ranged from 0.96 mg/L and 3.29 mg/L, which characterized high value from May to October in a year (2.1-3.29 mg/L). Particulate organic carbon (POC) concentration increased from April to September 2015, especially 5.0 mg/L in July, 2015. Both the DOC, and POC concentration reached high concentration during spring and summer. The pH of water samples also shows similar variation pattern. In contract, dissolved nitrogen concentration got higher value (0.37-0.5 mg/L) during winter and fall. There is a positive relationship between relative fluorescence intensity of humic-like substances (an excitation wavelength of 320 nm and emission wavelength of 430 nm) and the DOC concentration with correlation factor of 0.93. These results suggested that the increase in DOC and POC concentrations are affected by the activity of phytoplankton in the lake.