

Abstract

Precise estimation of concentration is required for suspended organic matters (phytoplankton, zooplankton, and detritus) to perform the improvement in calculations of chemicals in sea area. The seasonal variations of plankton concentration in Tokyo Bay were simulated using a size-based ecosystem model.

Concentration of marine microorganism was simulated for three species of phytoplankton, two species of zooplankton, and the marine bacteria with the considerations of the dominant species in zoo- and phyto-plankton, their size, and the prey-predator relationships based on the plankton data obtained from June 1995 to April 1996 in Tokyo Bay. The calculation results of zooplankton concentration are higher than the observation data. For the improvement of the model, a juvenile and medusae were added this model as zooplankton feeder. The calculation results of zooplankton concentration agreed fairly well with observed data. The predation rate for juvenile and medusae were estimated with approximately $0.31 \text{ mgC} \cdot \text{day}^{-1} \cdot \text{m}^{-3}$ and $6.99 \text{ mgC} \cdot \text{day}^{-1} \cdot \text{m}^{-3}$ respectively. The present study showed that zooplankton concentration depends on predation of medusa above juvenile in Tokyo Bay.