

Improvement of Water Quality and Sediment Quality by Sand Cover and Dredging Methods in Osaka Bay

Han, Dongjin.¹, Nakatsuji, Keiji.²

1. Hydro-soft Technology Institute Co,Ltd., Osaka, Japan 2. Osaka University

Sand capping and dredging are one of the effective measures to improve sediment quality in coastal areas.

In present study, the variations of water quality and sediment quality were examined when sand capping or dredging is conducted.

The model used in present study, deals with water-sediment interactions in terms of sedimentation of organic detritus from the pelagic zone into the benthic zone and release of nutrients in the reverse direction.

The concentration of nutrients in sediments, pore water and the release rate of nutrients from the sediments were analyzed. The data of bottom sediments of Osaka Bay were used for initial conditions of the model. And nutrients load from land and boundary conditions of the model were season-adjusted.

This model has been applied to predict the cut-off effects of inorganic phosphorus release rate and inorganic nitrogen release rate by dredging or sand capping of the sediment. And also the change of water quality by sediment improving was analyzed.

According to the result, the case of 50cm sand capping is more effective than the case of 50cm dredging for improving water quality and sediment quality.