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Oil dispersion and status of planktonic organisms in Koggala Lagoon

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Abstract

Bangladesh merchant vessel, Amaanat Shah is sunken on 8th September 2006, 9 nm away at 90 m depth off southern coast. This incident caused the oil spill off Koggala coast and entered into Koggala Lagoon. Aim of this paper is to understand the oil dispersion and status of planktonic community of the Koggala Lagoon due to oil spill comparing with previous data. The oil dispersion in narrow tidal inlets like Koggala Lagoon is mainly driven by surface currents, where surface wind drag dispersion is relatively low. Estuary Lake Computer Model (ELCOM) along with lagrangian partial tracking method is used to study oil dispersion simulations into the lagoon at different tidal times. The net oil accumulation inside the lagoon is also estimated due to the residual currents. The planktonic organisms are studied in 2004-2005 in the lagoon and compared with status of plankton community after oil spill.

The model simulations reveals oil dispersion into the lagoon is relatively large in the eastside. Abundance and diversity of zooplankton is comparatively low where the oil is accumulated, particularly in the eastside of the Madolduwa. Chlorophyll-a content also has decreased up to 1.5 mg m^{-3} at the same area. High chlorophyll-a content of 3.5 mg m^{-3} was observed at the lagoon mouth as recorded in 2004 September.

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