An Empirical Model of the Fate of Organic Carbon in a Mangrove Forest Partly Affected by Anthropogenic Activity

By

John Machiwa & Rolf O. Hallberg

ABSTRACT

A model of biogeochemical and hydrological processes that drive organic carbon dynamics of a mangrove ecosystem has been developed. Tidal regime parameters as well as biological factors related to macrofauna and microbiota are described within the model. The model includes three sub-models, each representing a major form of organic carbon in the mangrove ecosystem; litter organic carbon, particulate organic carbon and dissolved organic carbon (DOC). Results from the model reveal that discharge of DOC to the adjacent ocean may be one of the dominant outputs of a mangrove forest. The model confirms the observed data that DOC accounts for 80% of total organic carbon export. In order to balance the standing crop of DOC in the marine fringe zone, the model suggested that 40% is removed in this zone by microorganisms as well as resident and tidal migrant fauna.

Keywords

Crabs; Dissolved organic carbon; Empirical model; Litter; Mangroves; Particulate organic carbon