

The characteristics of sediment load from a coastal forested drainage basin and their agents

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The five coastal lagoons in the Tokachi region of southeastern Hokkaido open a few times per year to the Pacific Ocean. The openings affects water quality and deposits in the marine coastal region by discharging the lagoon water offshore. The Oikamanai River is a main river flowing into the Oikamanai Lagoon. The river basin is almost forested (ca. 88 % in area), from which the discharge and sediment load build up the ecosystem of the lagoon and its back marsh. The sand bar damming up the lagoon involves the gravelly confined aquifer of some thickness near the sea level. Such an internal sedimentary structure was probably constructed after the destruction of the sand bar by a previous mega tsunami (probably Keicho-Sanriku Tsumani in 1611). In order to explore how the suspended sediment discharges into the Oikamanai Lagoon, we obtained hourly time series of discharge, Q (m³/s), and suspended sediment concentration, C (mg/L), in the upper Oikamanai River. As a result, 50% of twenty Q vs C relations exhibited the counterclockwise hysteresis (i.e., the peak C is preceded by the peak Q). This suggests that the sediment source is located in the subsurface zone of the river basin.

Keywords: river sediment load, coastal region, forested river basin, hysteresis