

Hydrodynamics and suspended sediment transport at tidal inlets of Salut Mengkabong Lagoon, Sabah, Malaysia

Abstract

Salut-Mengkabong Lagoon is located at the west coast of Sabah facing the South China Sea. At the bay side of the main inlet the lagoon splits into Salut and Mengkabong Channels. Sediment dynamics at the inlets of the lagoon have recently received considerable attention. But any direct measurement of hydrodynamics and sediment flux are yet to be well documented. This study covers the field measurements of current velocity, water flux, suspended sediment concentration and sediment flux across the three transects (main inlet, Salut entrance and Mengkabong entrance) during typical spring and neap tidal cycles in southwest monsoon and northeast monsoon. Temporal variations and time-averaged values of measured parameters are discussed. The inlets of Salut-Mengkabong Lagoon are found to be ebb-dominated. The time-averaged velocities during spring tidal measurements are found to be higher in the main inlet followed by Mengkabong entrance and Salut entrance. Suspended sediment concentration and sediment fluxes are substantially higher in spring tidal cycles compared to the same in neap tidal cycles. During spring tidal cycles, ebb tidal sediment fluxes are higher than the flood tidal fluxes. The ebb dominated flux across the main inlet led to the large ebb shoal.