

## **Status of the dynamics in the Weligama Bay, Sri Lanka**

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Weligama bay is a semi enclosed bay, highly abundant with coral reefs and rock outcrops with the dimensions of ~2.9 and ~2.5 km length and width respectively. Polwathumodera river is the major discharge carrying heavy sediment loads during the Southwest monsoon. Severe erosion on the West bank of the bay and narrower access channel due to accumulation of sediments are the current burning issues for safe navigation.

Sedimentological status of the Weligama bay was studied by collecting sediments on vegetation, and the water levels; high water and low water. Comparison of sediment analysis data indicated that they are formed in diverse sedimentological environments. In association with the sediments from the high and the low water lines suggest that the sediments are derived in an outsource environment and deposited on the navigation channel. Further, the aggregation of coarse grained carbonated materials on the Kapparatota Point suggests that they have originated from offshore sources.

The results of hydrodynamic studies of the bay show strong current patterns Westward, with a speed of ~0.12 m/s. In addition, the results suggest that the intensity of the currents increases due to the impact of coral reefs and small islands in the inner bay. However, mechanism of heavy sediment formation and accretion is not yet scientifically explained. Though this study was mainly focused on hydrodynamics and the sedimentological status to explain the high sediment concentration on the navigation channel, further studies on bottom current behaviour are required to conclude the sedimentological status of the bay.

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