

**ESTIMATED TOTAL STOCKS OF SEDIMENT CARBON IN RELATION TO
STRATIGRAPHY UNDERLYING THE MANGROVE FORESTS OF SAWI BAY**

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ABSTRACT

Total carbon distribution was measured both horizontally and vertically along a transect from a paddy field and a coconut plantation seaward across several mangrove forest zones. Seaward from the paddy field and plantation, carbon concentrations and redox potential declined but pH increased, reflecting the influence of differences in tidal inundation frequency. Geologic profiles indicated three different changes to the depositional environment, leading to the vertical formation of a mangrove mud layer, a shell-dominated sand layer and a mud layer. Carbon content in the mangrove mud layer was 2.7 to 8.3% highest among the three layers. Total carbon content (to basement rock at 8.5m depth) was estimated at 1,208 tC ha⁻¹. The organic-rich mangrove mud layer was formed in association with development of the mangrove forests. However, carbon stored in the shell-dominated sand layer and the mud layer may have been supplied from other sources influenced by sea-level change. When sea-level was low, the shell-dominated sand layer was probably formed at the shoreface and the mud layer was formed offshore when sea-level was high. Our results indicate that the mangroves of Sawi Bay are storage sites for sediment carbon.