Seasonal water temperature at coral reef on the East and West Coast, Sri Lanka

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Ocean warming has an impounding impact on the coastal sensitive ecosystems, especially on the coral reefs. Persistent raise in temperature for a longer period causes stress on the coral reefs than diurnal or shorter fluctuations. This study is intended to assess the temporal and spatial temperature variability at two coral reef hot spots, located on the East and West coasts. Automatic temperature recorders, preset to collect data at one hour intervals were deployed at Pigeon Island and Bar Reef at 5 m depth during 2018-2019. In addition, temperature data at 10 m depth was collected at Bar Reef in 2018. Annual water temperature fluctuation at 5 m depth is ~5 °C. Water temperature rises through the inter monsoon and reach highest values at the end of May and October, just prior to the Southwest and Northeast monsoons respectively. The maximum temperature in 2018 and 2019 were 31.1 °C and 32.31 °C, recorded in May just prior to the onset of Southwest monsoon. The lowest temperature 26.1 °C was recorded in January at the end of the Northeast monsoon. The temperature fluctuations during the study period at Bar reef and Pigeon Island are identical except during the first inter monsoon. The temperature variation between the 5 and 10 m depth vary by ~0.1 °C, except for two shorter periods, extending about a week, once at the end of May and the other at the beginning of October, that is just prior to the onset of the Southwest and Northeast monsoon respectively. During May the lower layer is warmer by almost 1 °C, while in October lower layer is ~1.5 °C cooler. The temperature fluctuation shows close correlation with the fortnightly tide, revealing stronger stratification during the neap. The shorter events of stratification are critical periods for sensitive coral habitats, since during these events temperature of the upper layer could easily be heated up.

Keyword: temperature variation, coral reef, monsoon

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