

Computation of Luni-tidal interval in East and West coasts of Sri Lanka

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Luni-tidal interval is the time lag between the moon transit time over a particular meridian and the immediate high/low tide occurrence. Usually, this interval spatially varies due to the nature of the coastal configuration, bathymetry and various other oceanographic conditions. Apart from that, luni-tidal interval temporally varies at a location due to the relative position of the moon. Because of having different bathymetric and oceanographic alignments in East and West coasts of Sri Lanka, Colombo and Trincomalee ports exhibit a completely opposite tidal pattern which is almost a 180 degree phase out. For example, when Colombo experiences high tides, Trincomalee experiences low tides and vice versa. This leads to completely different luni-tidal intervals in Colombo and Trincomalee. In this study, luni-tidal intervals for Colombo and Trincomalee were analyzed by using 2017 tidal data. The average luni-tidal intervals computed at Colombo and Trincomalee are 4.8 h and 7.7 h, respectively. However, the actual transit time difference of the moon at Trincomalee and Colombo is just 5-6 minutes. Therefore, the reasons for this nearly 3 hour luni-tidal gap were explored in this study. Here, the main diurnal components (K1 & O1) are not showing much variation in the phase between Colombo and Trincomalee while the main semi-diurnal components M2 & S2 are showing nearly 180 phase shift. This is due to the two amphidromic points situated in the Indian Ocean around Sri Lanka.

Keywords: luni-tidal interval, tide, tidal analysis

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