Variability of the Sounding Datums Around Sri Lankan Coastline

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SUMMARY

Recently, there has been a growing concern on the blue economy and the necessity to manage the marine spaces in a more systematic and sustainable manner. Seamless spatial data across the land-sea boundary is essential in geo-spatial databases. The ocean depths are commonly referenced to Chart Datum (CD) which is usually a low water level such as the Lowest Astronomical Tide (LAT) while land heights are referenced to a the land vertical datum like Mean Sea Level (MSL) in most of the countries. This paper discusses the variability of the tidal datum around Srilankan coastline using six tidal stations. Here, one year continuous tidal data were obtained for the year 2017 and analysed using TOTIS tidal software. Computed MSL and LAT datums at each location were compared with the land survey datum. Analyzed results showed that the tide around Sri Lanka is mainly semi-diurnal to mixed semi-diurnal as the form factor varying from 0.2 to 0.5 and the tidal range around the country is varying between 0.4 to 0.6m. The largest tidal range observed at Colombo and the lowest was at Kalpitya. The difference between the land survey datum and the MSL on tide gauges were varying between 0.04m to 0.15m. The greatest variations observed at Colombo and Trincomalee, which were 0.15m and 0.14 m. The observed MSL and LAT variations were about 0.44 m at most of the stations while 0.36m and 0.34 m at Hambantota and Kalpitiya respectively. This indicates a slight variation between MSL and CD around the country. Finally, this information is very useful in generation of a separation model between land survey datum and hydrographic datum.

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