NEW EVIDENCE OF HOLOCENE SEA LEVEL CHANGES IN SRI LANKA

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The Holocene Epoch is an interglacial period within the Pleistocene. It is a time of vital significance to geomorphologists because during this period (10,000-year duration) many recent soils and landscapes have been evolved. `Post-Glacial' and `Recent' are alternative terms for Holocene but the date of commencement differs from region to region according to the time at which the ice-sheets disappeared. Most of the Quaternary research groups favour the lower boundary of the Holocene i.e.; some time about 10,500-10,000 B.P. The sea level at this time was about 35 or 40 metres below the present level. The term `Flandrian Transgression' denotes commencement of the rapid rise of global sea level in about 10,000 B.P. It has led to the submergence of large tracts of the continental shelf which had formerly been dry land. Some scientists established the mid-Holocene relative sea-level curves far above the present level, based on radiometric datings from widespread marine fossils.

The area between the ten fathom (18m) and one hundred fathom (180 m) isobaths in Sri Lanka is a drowned extension of a peneplain. It is evident that different types of geomorphic features such as low-lying ridges, terraces, dunes, stream channels and coastal forests have developed on this area due to the global rise of the sea level since the last glacial maximum (18,000 B.P.). The sequential development of coral reefs and sandstone reefs (beachrock) also reveal that there has been climatic stabilization during their formation. Based on 14C datings of in situ emerged and buried corals collected from the southwest and south coasts of Sri Lanka, the author earlier identified two different age groups viz: 6170±70 - 5100±70 and 3210±70 - 2330±60 B.P., connected to Holocene high sea levels. The ages of buried coral deposits at Akurala (southwest coast) vary between 6110±80 and 5560±70 B.P. This indicates that these corals thrived in inland bays/lagoons following the Flandrian (post-glacial) transgression. Sometimes, this can be correlated with the `Climatic Optimum' (8200-5300 B.P.) in the Holocene Epoch.

In this paper, the author describes another episode of high sea level around 4850±70 - 4330±60 B.P. using 14C datings of buried corals at Madihe on the south coast. When comparing the ages and the heights of dated samples with present mean low water spring level it can be concluded that at that time the Holocene sea level reached 1.5 metres or more higher than the present mean sea-level. The stratigraphic sequences of the coral quarries and all these datings show that high sea levels occurred as a result of eustatic rather than tectonic

movements. 14C dating from marine shell deposits along the southern coast also help us to surmise that the minor coastal progradations occurred around 5000 B.P., 3700 B.P. and 2000 B.P. Historical sources reveal that large sea waves destroyed the west coast around 2200 B.P. Such destruction was probably due to the action of seismically generated sea-waves on the sea-floor of the Indian Ocean. Furthermore, beachrock shoals in the inter-tidal zone as well as emerged beachrock along the present coastline record the sequences of still-stands which followed minor oscillations after the climatic optimum.