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RESOLVING HOLOCENE SEA LEVEL CHANGES IN COASTAL SEDIMENTS USING GROUND PENETRATION RADAR (GPR) METHOD

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Sea level have fluctuated throughout the geological history, intermittently inundating or retreating coastal plains. Analysis on changes of such sea level oscillations recorded in the coastal plains are important to predict future global sea level trends. Inland coral is one of the most reliable proxy which provide clear evidence for Holocene sea level change, since corals thrive in many low- latitude coastal environments, in the intertidal zone. Several inland coral beds and beach rock submerged by surface soil layers existing in southern coastal belt of Sri Lanka can be used to identify paleo-sea level height and paleo-coastal position of the area. GPR survey along selected traverses in Walgama area in Matara district were carried out to identify the extension and the distribution of the submerged coral beds. Digital Elevation Modal (DEM) created using Light Detection and Ranging (LiDAR) data was used to identify the coastal geomorphology and to infer the paleo-sea level height and paleo-coastal position. Processed GPR images indicate that the submerged coral beds and beach rock extend up to 0.5 km towards inland and approximately 1.0 - 3.5 m in depth. These results were confirmed in the field by using observations made at the wells and abandoned coral mining pits in the vicinity. Further, GPR survey indicates that these submerged coral beds do not extend as a continuous bed, however they appear as pockets. Using the developed DEM, the paleo sea level was identified existing along the 5 m contour line. For further confirmation, cross sectional profile sampling and measuring dielectric properties are needed to be carried out in addition to constructing a detailed map combined with chemical data as the next step of the research.

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