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THE RELATIONSHIP BETWEEN STRATIGRAPHIC PATTERNS AND PALAEOCLIMATE CHANGE IN THE KALU GANGA (RIVER) BASIN IN SRI LANKA

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Quaternary sediments of Sri Lanka are distributed in river valleys as valley-filled deposits and floodplain deposits. The characteristics of this sediment, help reconstruct the past environmental conditions of the study region. The dominant mode of sediment transport deposition as well as the composition and stratigraphy reflect the prevailing environmental conditions. The past studies, although few in number, shed some light on the environmental change during the Quaternary period of Sri Lanka. The alluvial deposits bear evidence of past environmental conditions that prevailed in this region. Some past studies have shown that Sri Lanka experienced dry and wet phases in the climate in association with the glacial and inter-glacial periods respectively. These climatic events would have affected the sedimentation processes in the wet zone of Sri Lanka. The wet conditions were associated with the strong monsoonal circulation with higher rainfall, while dry periods with weakened monsoon conditions. These changes would have left their mark on the sedimentary record of the island, particularly the wet zone. The selected study area, the Kalu Ganga basin is famous for gem gravel and has a long history of gem mining. Gems are found in fluvial deposits as well as colluvium and material transported by mass movement from the upper catchment slope areas. The gravelly river bed loads are deposited in the river channel and in point bars as a single layer or as multiple layers where the river has undergone aggradation. The gem gravel is often overlain by finer sediment deposited by local streams. Gem mines provide a valuable opportunity to examine the stratigraphy and other environment characteristics of the fluvial sediments in this area and help identify environmental indicators such as erosion and weathering. The stratigraphic characteristics of the sediment of the upper, middle and lower regions of the Kalu Ganga basin were sampled and field observations were made. Research results brought out with important findings in relation to the stratigraphy of many sediments layers in the Kalu Ganga river basin. There is a spatial variation in the number and the depth of gem bearing sediment layers in the Kalu Ganga basin. Since the lake sediment layers are found in the lower catchment, it is assumed that there was paleoclimate changed in the Quaternary period.

Keywords: *Sediment layer, Deposition, Kalu Ganga, Stratigraphy, paleoclimate change*