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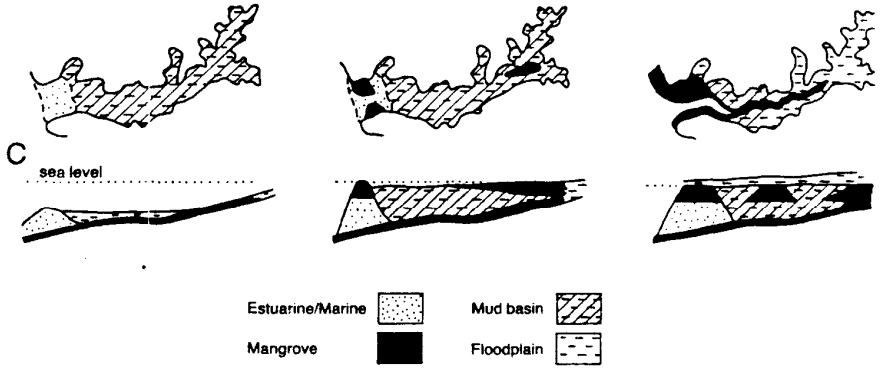
EXTENDED ABSTRACTS
LIST OF PARTICIPANTS

IGCP PROJECT 274

Coastal evolution in the Quaternary



COAST AND SHELF EVOLUTION OF SRI LANKA IN THE QUATERNAY

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The island of Sri Lanka can be divided into two main morphological regions: the coastal lowland and the erosional surface. The coastal lowlands with an elevation ranging from present shoreline to 30 m, consist of different types of landforms which had been developed in the Quaternary. These landforms have been formed by a combination of marine, aeolian, fluvial and biogenic processes. Exposed raised marine and estuary fossil deposits particularly coral, oyster shell and crab shell deposits occur upto 3 to 4 km inland from the present shore in several localities in the Puttalam, Hambantota and Trincomalee districts. Further, 14C dates from buried and raised coral reef patches on the southwest and south coasts confirm that the sea level was 1 m or more higher than the present level between 6170±70 and 5350±50 yr B.P. Similarly, 14C dates from fossil shell Veneridae of raised coastal embayments, dry lagoon floors, coastal hilly areas and sand dunes in Hambantota district (south coast) indicate that a coastal progradation had occurred since Late Holocene.

The configuration and the bottom features of the continental shelf of Sri Lanka indicate that the area between the ten fathom (20 m approx.) and one hundred fathom (180 m) isobars is a drowned extension of the land and can be considered as a submerged peneplain. The continental shelf around Sri Lanka is narrowest in the south, moderately wide, off the west coast north of Galle and in the southeast and relatively narrow off

most of the east coast. The shelf becomes wider significantly in the north and northwest areas (Fig. 1). Evidences of sunken forests, submerged channels of some larger rivers and well-marked submerged beachrock and coral reefs at different levels on the continental shelf prove that there have been oscillation of sea level.

The oldest accumulations on the coastal lowlands have been called 'plateau deposits' and consist typically of two strata. The upper stratum of the plateau deposits consists of 'red earth' free of stony content and the lower stratum consists of gravel. It is suggested that the red earth formation has been deposited by aeolian processes. Archeological sites of the coastal lowlands showed that the implements of early stone-age (Paleolithic) man were overlain by these deposits.

It is inferred that these features have been formed following the lowering of sea level of the last glacial maximum (Late Würm) and during the Early Holocene. In those days, the climatic conditions caused the rivers to fill their valleys and discharge their loads over the submerged peneplain and coastal lowlands. It is very difficult to compare such changes morphologically and chronologically, with that of the recorded evidence of many other continental shelves due to the absence of detailed large scale bathymetric charts around Sri Lanka and the lack of facilities for collection of samples and radiometric datings. Therefore, the author hopes to conduct further research in these areas as a contribution to the project IGCP-274. Such work is invaluable for effective conservation, exploitation and management of inland and nearshore Quaternary deposits.

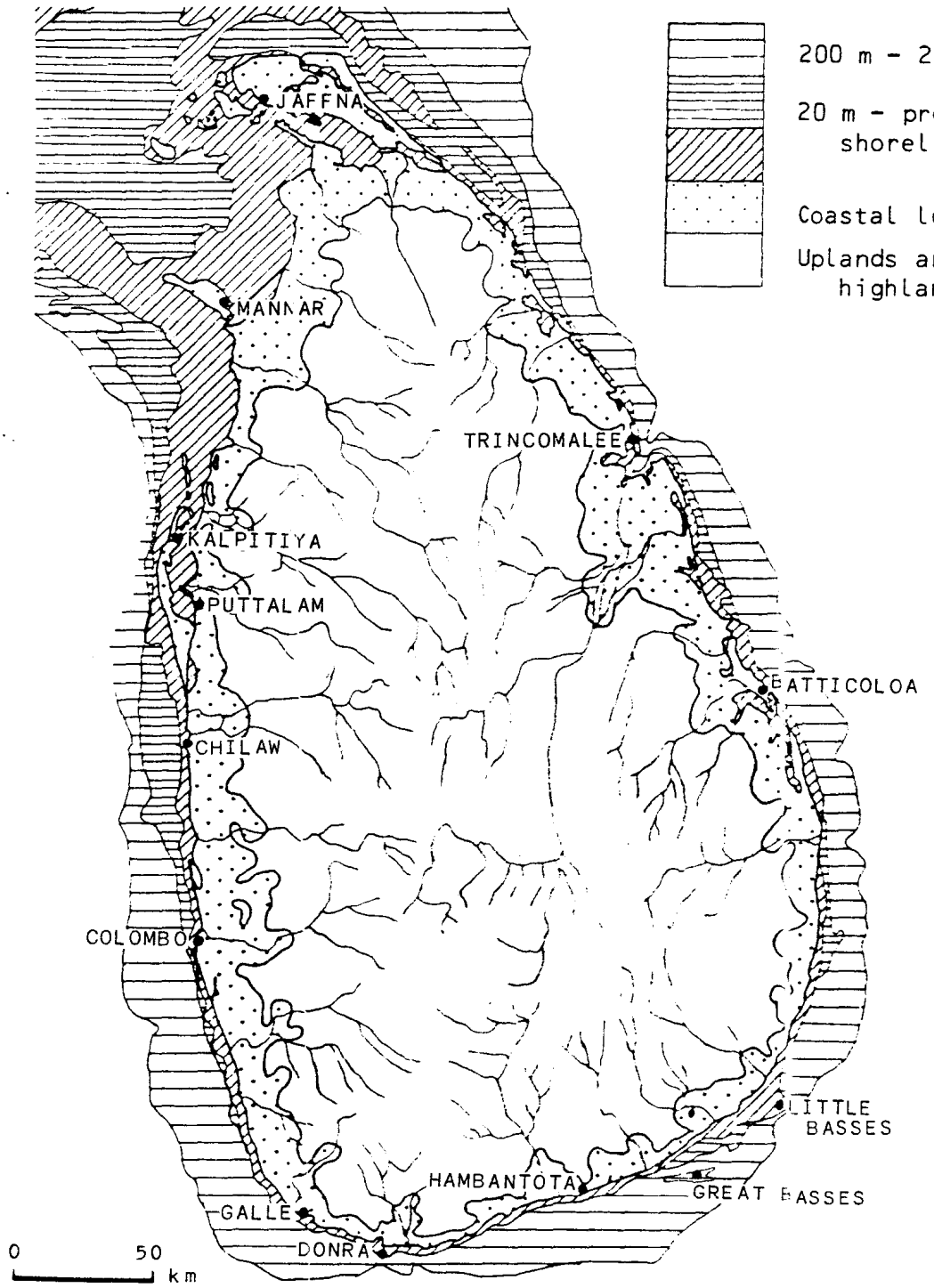

Fig. 1. The map shows the extent of coastal lowlands and continental shelf of Sri Lanka. The coastal lowlands consist of different coastal landforms in the Quaternary. Evidences of submerged marine terraces, sunken forests and various biogenic materials (> 70% $CaCO_3$) exist in several localities between present shoreline and 20 m isobar while Submerged channels of some larger rivers occur in the area between 200 m - 20 m.