



3rd Annual Conference

INTERNATIONAL GEOLOGICAL CORRELATION PROGRAMME

of

(IGCP) Project 396

Continental Shelves in the Quaternary

26 - 31 October, 1998

ABSTRACTS

National Institute of Oceanography

(Council of Scientific Industrial Research)

Dona Paula, Goa. 403 004. India

PALAEO SEA-LEVEL CHANGES: EVIDENCE FROM WESTERN CONTINENTAL SHELF OF SRI LANKA

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Over geologic time, sea level may change by hundreds of meters owing to the advance and retreat of glaciers. Such changes are termed eustatic changes. Measurements of such changes are difficult because of the influence of complex tectonic and isostatic uplift and land subsidence. However, these changes affect coastal ecosystems as well as the socio-economic conditions of coastal dwellers. A continental shelf is a generally shallow, flat and submerged portion of a land mass, extending to a point of steep descent in the ocean floor. Former fluvial and coastal processes that once drowned at the continental edge influence continental shelves.

Sea level indicators are important for the consideration of sea-level fluctuations within the context of the geological development of an area. Accordingly, in the recent past, coastal barrier sands, beach rock, inland coral and shell deposits have been used to discuss the Holocene sea-level changes in Sri Lanka. Bathymetric charts found to have been very significant in the study of submerged relief of a continental shelf.

The submerged peneplain (western continental shelves of Sri Lanka) which ends at a depth of 100 fathom (Ca. 180 m) and which extends 8 - 12 km from the coastline is characterized by the remains of channels of larger rivers and submerged forests. Sand sized particles, 2 - 0.067 mm in diameter and composed of lithogenic and biogenic carbonates are predominant. Most shelf sediments had been deposited in shallow water during the last low stand of sea level and recent sediments are found accumulated only in near shore areas and on the continental slope.

An examination of bathymetric charts of the western continental shelf of Sri Lanka reveals submarine canyons, deep valley bottoms and dissected features which are very significant. It is possible to infer that these features were created by the present large rivers of western Sri Lanka, which once flowed through the submerged peneplain during the LGM. The end of the last glacial stage (around 12,000 B.P.) resulted in a massive and rapid rise of sea level. The sea level rose to its present level some 5,000 - 6,000 years ago and has since fluctuated within 3 meters of its present level including two or more conspicuous stands at 1.5 - 2.0 m above present level some 2,000 - 3,000 B.P., and gradually achieved the present configuration at the river mouths and the coastline.