

ROLE OF PAST SEA LEVEL FLUCTUATIONS IN SHAPING THE DESTINY OF ANCIENT COASTAL CITIES: LESSONS FOR THE FUTURE

Rajiv Nigam

National Institute of Oceanography

Dona Paula, Goa-403004

It is important to understand sea level fluctuations in the past to assess accurately the magnitude of suspected future rise in sea level due to global warming. In order to obtain knowledge of about past changes in relative sea levels, two fold strategy should be followed, i.e. (i) when sea level higher than today (for such records, coastal areas may be explored for erosion or depositional features), and (ii) when sea levels lower than today (for such records, sea bottom sediments may be explored for shoreline movements or depth variations). Based on informations derived by following the above approach, we produced the updated curve for late Pleistocene-Holocene sea level fluctuations. We have succeeded in demonstrating that, as compared to present, sea level was lower by ~100 m about 14,500 years BP, and ~60 m about 10,000 years BP. During the last 10,000 years, three major episodes of sea level fluctuations were also reported. Similarly, there are evidences that sea level was higher than present ~6000 years before present.

With the help of sea level curve and foraminiferal (exclusively marine microfossils) occurrence it was conclusively proved that the rectangular structure at Lothal (a Harappan Settlement, near Ahmadabad) was a dockyard (first Naval dock yard of the world as claimed by archaeologists) and not a fresh water storage tank. Recently, with the help of this sea level curve, we have explained the discovery of Neolithic settlements (at 30-40 m water depth) in Gulf of Khambhat - the oldest civilization site known to man particularly in Indian subcontinent. Similarly this sea level curve also explain the possibility of Ram Setu due to lower sea level ~7100 BP (The time of Lord Ram's birth assigned by group of researchers through star position of birth time and Planetarium soft ware).

The above examples clearly indicate that sea level fluctuations played an important role in shaping the destiny of ancient cities in coastal areas. The understanding

developed, about the signatures of the past sea levels helped to demonstrate that it is in public interest to respect implementation of coastal zone management plans of the country. At the same time mangroves and other coastal vegetations and sand dunes should be preserved as natural barrier against the ferries of the nature.