BOOK OF ABSTRACTS

GEOMORPHIC RESPONSES TO NEXT CENTURY SEA-LEVEL RISE ALONG THE SÃO PAULO COAST AND ITS IMPLICATIONS TO COASTAL ZONE PLANNING[1]

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All the world's coastline will, in principle, be affected by sea-level rise during the next century. However, sea-level has been found to be rising at almost all long-term tide-gauges around the planet, which have yielded rising rates with most values concentrated around 1-2 mm/year during the past 100 years (1). On the Southern Brazilian coast sea-level rise estimated has been of 30 cm for the same period (2). The global warming (climatic and human-influences) is the main cause for this phenomenon. During the next 100 years (until year 2100) the projected global sea-level rise will be less than 100 cm, with a "best estimate" of 48-66 cm (1). Several investigators have discussed the existing evidences and the future impacts of present and future sea-level rises.

The State of São Paulo coast presents varied morphological characteristics, with a barrier-island and a lagoonal system (Ilha Comprida-Cananéia-Iguape) and broad coastal plains and beaches (Peruíbe to Praia Grande) in the Southern sector, a complex estuarine-lagoonal system in the central sector ("Baixada Santista"), and smaller coastal plains and beaches in the Northern sector (São Sebastião to Ubatuba). All these sectors show coastal erosion evidences, which are attributable to recent sea-level rise.

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The most significant impacts along São Paulo coast due to future-projected sea-level rise (considering tectonic stability), that can be expected are: shoreline recession caused by beach and dune erosion and inundation; increase of coastal flooding caused by storms through dune, barrier-island or backshore terrains overwash, and flooding in estuaries, lagoons and low-lands; saltwater intrusion into freshwater systems (rivers and aquifers), and consequent rising of groundwater tables and increasing salinities in the coastal ecosystems and flooding; increase of tidal flat and mangrove areas, with loss and deterioration of *restinga* terrains; changes in circulation patterns into lagoons and estuaries (increase in water depths, channels widths and salinities) and increase of lateral erosion of channels banks; increase of silting in channels near the shoreline; loss of man-used terrains (flooding risks) and consequent increase of habitational occupation on the *morros* (low mountains); damage to engineering works such as drainage and effluent disposal systems, and to older structures made to protect the shore against coastal erosion/flooding.

Consequently, to lessen these impacts it will be necessary to include some mitigation planning decisions such as: construction of new hard-engineering structures to protect the coast against erosion and flooding/inundation, beach nourishment and shoreline restoration to stabilize them; resetting of human coastal-activities.

Finally, predicting the extent, magnitude, and severity of sea-level rise and its effects on the shore and men-activities is full of incertainties, but planning for such economic and environmental impacts should be a high priority for all coastal countries.

REFERENCES

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