



## REPORTS OF MEETINGS

### The Pioneer Fringe of Coastal Process Studies

As an adjunct to our meeting of many members of SCOR Working Group 89 on "Sea Level and Erosion of the World's Coastlines", an International Coastal Colloquium was held at the University of Waikato, on May 5th, 1994. The objective of the International Coastal Colloquium was to review specialised topics considered to be on the "pioneer fringe" of coastal research.

Paul Komar (Oregon State University, Corvallis) presented the issue of the origin of beach bars. He reviewed the work of Sunamura and the model of the breakpoint bar using regular waves, and raised the question of how to generate multiple bars. Other hypotheses reviewed included a possible origin from wave reflection, which raises the problem of the relationship of reflected wave lengths to the spacing of the bar crests. A further question considered the role of infragravity and standing edge waves and their relationship to crescentic bars. He summed up by suggesting that perhaps different mechanisms may apply in difficult coastal locations.

Dr. Bob Dean (University of Florida, Gainesville) presented a paper on equilibrium beach profiles and the significance of sand size for beach nourishment. He referred to the example of South Tampa Bay where sand from the seaward edge of the ebb tidal delta was finer than the natural beach grain size and the beach nourishment failed. In principle beach fill equilibrates in 3-5 years, but for the Tampa Bay project some 220 m<sup>3</sup>/m of beach were added to the profile and despite only very slight difference in grain size, the nourishment failed, and ended up with no additional dry beach width. It is clear that coarser sediments are better placed closer to shore if one wants to obtain a greater dry beach width. In discussion, the question was raised as to whether ebb tidal deltas should be sources for beach renourishment or should they be "off limits"?

Dr. Kerry Black (Victorian Institute of Marine Sciences, Melbourne) presented a paper involving work on the Australian Bass Strait continental shelf relating to sea temperatures and effect of

large bedforms attenuating the wave spectrum. He also reported sediment transport experiments using underwater video cameras and electromagnetic current meters on beaches, presenting results indicating a close relationship between the predicted and recorded sediment concentration under waves. The data showed that most sediment transport was associated with infragravity time-scales of 30 second periods. He presented the results of a numerical model suggesting that once a beach bar is formed it becomes self sustaining and that an important factor is at what point after the passage of a wave sediment plume rises, as this determines whether the sand will move offshore or onshore.

Dr. M. Baba (Marine Sciences Division, Centre for Earth Science Studies, Trivandrum) discussed coastal erosion over 300 km of the South Indian coast, which had been investigated from remote sensing methods. Some spectacular sea-walls, locally known as "China walls" were built along the coast as coastal protection, but off-shore were many mud banks. He showed how the remote sensing qualitative data at a broad scale was a useful analytical and management tool. Coastal zones in India are quite densely occupied in the beach zone, and there may be itinerant human populations of squatters. For management purposes he is recommending a 500 metre buffer zone along parts of the coast.

Dr. Terry Hume (National Institute of Water and Atmosphere, Hamilton) presented a paper on a sand-starved coast on an active margin setting and a digital terrain model of part of the Bay of Plenty coast of New Zealand. This bathymetric model correlated with various shelf sand facies, in particular an inner shelf fine-sand facies and a seawards medium-to-coarse sand facies associated with large shelf transverse sand-waves. Investigations are continuing as to the nature, mobility and origin of the sand-waves, as well as their mode of formation.

Dr. Willem de Lange (The University of Waikato, Hamilton) presented a paper on the use-



Figure 1. Major participants of the New Zealand International Coastal Colloquium investigating the coastal erosion and sea-wall failure at Waihi Beach, Bay of Plenty, New Zealand. Dr. Willem de Lange, Dr. Terry Healy (University of Waikato), Dr. Paul Komar (Oregon State University), Dr. M. Baba (Centre for Earth Science Studies), Dr. Bob Dean (University of Florida), Dr. Kerry Black (Victoria Institute of Marine Sciences) and Scott Stevens ('gofer' for the occasion). Most of the above are members of SCOR Working Group '89 on Sea Level and Erosion of the World's Coast Lines.

fulness and refinements of the Hallermeier Limits for near-shore sand transport based upon the considerable recent studies undertaken by the University of Waikato Marine Geosciences Group on sand dredge soil dispersion and beach renourishment from off-shore Port of Tauranga, in New Zealand's Bay of Plenty. Here some six million  $m^3$  have been dumped in recent years. He demonstrated the importance of the density effect for different mineral constituents of varying grain sizes. In this particular environment the sediment is made up of widely differing minerals from titanomagnetite (SG. = 4.5) to pumice glass (SG. = 1.2). It was emphasised that for best understanding of dredge material behaviour there is a need for investigation of the geomechanical properties of materials, which needs to address the conditions under which the stability of the material on the sea-floor fails.

Dr. Rob Bell (National Institute of Water and Atmosphere, Hamilton) presented a paper on the tidal recordings and storm surges around the New Zealand coast from detailed analysis of the available tide gauges. Maximum storm surge heights were recorded as only of the order of 83 cm, with an average storm surge of 40 cm. Durations lasted from 1–5 days. With some seasonality effect there is likely to be higher storm surge influences in autumn.

The International Coastal Colloquium was held to be a most successful meeting for participants and the large number of graduate students who attended.

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