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# Sea Level Changes and Coastal Sandy Ridges and Reefs of Southern Hainan Island, China

ZHANG YONGZHAN

*The Key Laboratory of Coast and Island Development of Ministry of Education, China, Nanjing University*

Hainan Island is composed of Paleozoic-Mesozoic joined geological "terranes", some of Gondwana origin. It has a highly indented coastline with promontories and embayments localized and dissected by NE-SW, NW-SE and EW oriented normal faults. To the north, basaltic eruptions have occurred during the Quaternary and some large deltas have developed. The coastal zone of southern Hainan Island is characterized by terraced bedrock hills backed by high mountains, a relatively narrow sandy coastal plain, a highly indented promontory and embayment coastline, and a shallow offshore area. The embayments consist of (1) drowned valleys, dictated by NE-SW trending fault system to become the tide inlet embayment, bounded by steep bedrock hills and only locally receiving sediments, (2) embayments filled by alluvial-deltaic deposits with relatively flat coastline, and (3) embayment covered by sands of coastal beach ridges/barriers and associated elongated lagoons. During the Quaternary the area has experienced isostatic and eustatic movements associated with neotectonics and climatic changes. Such history is recorded by the terraces at various altitudes and by a series of sandy coastal ridges (bars, barriers, tomboli) and fringing reefs. Early Pleistocene highstands are indicated by a series of raised, highly weathered sandy coastal ridges. These older ridges located in the head of the ancient bedrock embayment, and they are hardly to be numerically dated by conventional means. The Holocene shore features (coastal sand ridges and emerged reef platforms) can instead be readily $^{14}C$ dated. The indication is that during the last major postglacial transgression, conditions favorable for development of siliciclastic coastal bar/barriers and carbonate reefs started about 8000a ($^{14}C$ years ago). There is also indication that at about 5-6000a the relative sea level was approximately 2-5m higher than the present that probably dues to the combined effect of later sea-level drop and local differential land uplift.

Keywords: southern Hainan Island; sea level changes; sandy ridges; coral reef