IS THERE A LONGSHORE DRIFT CONVERGENCE ON CENTRAL PADRE ISLAND, TEXAS?

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ABSTRACT

The existence of a convergence of longshore drift in the vicinity of central Padre Island has been postulated by several workers. Support for this hypothesis has been obtained from a detailed study of shell distribution on Padre Island beaches integrated with a study of the actual nearshore currents with drift bottles and theoretical predictions of longshore currents from Corpus Christi wind records.

Three sedimentologic provinces occur on central Padre Island: a northen province, a southern province, and a transition zone between them. The northern province has a finer grain size mode and a heavy mineral suite characteristic of rivers and Pleistocene deposits to the north. The coarser grain size mode and the heavy mineral suite of the Rio Grande characterize the southern province. Central Padre Island is unique on the Texas coast in having a high percentage (10-80%) of shell material in the beach sediment. On the basis of the distribution of this shell material, the writer has distinguished a southern province, a northern province, and a transition zone all of which correspond closely with the terrigenous provinces described above. Thus three separate sedimentary parameters indicate the sediment along Padre Island is being transported from southern and northern sources to be mixed in a central transition zone.

Although the study is incomplete, the close correlation between drift bottle paths and local winds suggests that the latter may be used to determine the current direction and perhaps velocity. This analysis of the local wind system suggests that there is a net annual convergence of longshore drift in the vicinity of the sedimentologic transition zone on central Padre Island. The net annual convergence is probably responsible for the distribution of the sediments of central Padre Island into three transitional sedimentologic provinces.