Chapter 9. All of the relevant material in these Chapters is competently handled and the author continues to prefer physical arguments to empirical correlations. Thus Shields is presented in Chapter 4, but only after a detailed analysis of grain threshold forces. Again Chapter 7 explains the transport equations of Meyer-Peter and Muller, Yalin and Ackers and White alongside Einstein and Bagnold. In each of these Chapters the theory is followed by comprehensive references to coastal and estuarine field measurements.

The remaining Chapters of the book attempt to apply the preceeding, process-orientated approach to models of coastal environments and Dyer has chosen threefold division: Estaurine Sedimentation (Chapter 9), Beach Processes (Chapter 11) and the rest which is entitled Coastal Sedimentation (Chapter 10). Chapter 9 is similar to Dyer's earlier book and deals with currents and sedimentation patterns within a traditional classification system. Chapter 10 covers modern marine bedforms with sections on furrows, sand waves, mega-ripples and sand banks, and it is pleasing to see that the analysis of the latter is included in terms of Coriolis and the Rossby Number. The last Chapter, on beaches, contains descriptive discussions of shallow water wave theory, a more detailed section on edge waves and associated beach features, a summary of the work on longshore currents and sand transport, and three short sections on shore normal processes and features. Here, as in the two preceeding Chapters, it is a shame that the book does not place its earlier detail on processes into the appropriate environmental context. For example page 191 in the Sediment Transport Rate Chapter covers the latest work on shore normal transport functions and yet page 310 in the beaches Chapter resorts to the rather dated Null Point Hypothesis in a section headed Onshore-Offshore Transport.

In conclusion, and upon rereading *Coastal and Estuarine Sediment Dynamics* for this review, the impression is of a well-written review of the existing literature which is aimed at the final year or postgraduate level. The mathematical content is well explained and one is never left with that feeling of equations plucked from the air. The comfortable confidence of the book is only disturbed when occasionally, and quite abruptly, the reader is tempted along a new and as yet unresolved research avenue, which awaits another Sedimentation Group and another time, and that, I think, was Dyer's intention.

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GENESIS, by HANS HANSON, 1987, Doctoral thesis, Technical University of Lund, Sweden, 1987 200 p.

GENESIS is a one-line model system for simulation of shoreline changes including a number of physical features like the effects of breakwaters, shore-parallel as well as perpendicular, groins, sea walls and artificial nourishment. GENESIS was developed to serve as an engineering tool to provide insights in the development and control of shoreline changes including the effects of coastal structures.

At its present stage of development GENESIS requires calibration and verification by data for the development of at least two sections of shorelines covering the area in question in order to provide a reliable prediction of future evolutions.

The author covers a wide area of practical interest to coastal engineering planning. Even if the results may be qualitative rather than quantitative their importance definitely is that they provide a basis for comparisons, thereby for guidance of planning considering a number of alternative suggestions.

Results, however, depend upon the validity of their assumptions and as pointed out by the author more than once the applied littoral drift formulae are sensitive to breaker angles and a number of other wave data. This includes wave angle-and time series-sequences. Sensitivity analysies *per se* are dealt with in Chapter 6 which also includes subsections on groin permeability, the influence of grain sizes, the beach berm height and the "depth of closure" of the sea/land interaction.

The author openly admits shortcomings like the lack of consideration to sea walls' hydraulic influence on beach stability including local scour which may happen in front of them. No distinction is made between the various degrees of reflection caused by sea walls or revetments.

A precise determination of the influence of groin permeability is not possible at this time. The main usefulness of GENESIS without doubt lies in the prediction of shoreline evolutions in general with or without shore structures. The geometry of the development of pile of nourishment material is also discussed. So is the development of simple type river delta. The difference between analytical and explicit/implicit modelling is examined. The main advantage of the implicit scheme is that it is stable for almost any value of the "stability ratio", as defined by the author. At the same time the implicit method is more complex than the explicit.

With respect to analytical solutions it is concluded that the linearization of the sand transport equation upon which analytical solutions are based, produces only small errors, if the angle of approach is kept within the order of 30 degrees. The problem in all cases is the development of refraction with changes in the shoreline.

The author is quite self-critical. It is, therefore, difficult to argue his presentation with him. There is no consideration to the influence of ocean currents or to factors like grain size distribution along the profile or to bottom friction as function of waves and grain sizes. The review of earlier or related works does not go back beyond Pelnard-Considere, 1956. Works in France and in Scandinavia on shoreline evolution as well as rational principles on profile evaluation before P-C, 1956, and 25 years before Dean, 1977, are not noted. Earlier and recent works in Holland on profile development nearshore and recent works in Denmark on drift dependency of slope angle are not mentioned. References are somewhat "americanized". Some are given without being mentioned in the text. The large descriptive contributions by coastal geologists and geographers in France, USA and USSR is not acknowledged. These criticisms are however, relatively small "negatives" compared to the positive and practical approach to improvement of prediction techniques as suggested by the author. His thesis is very useful for further development in a number of practical ways and it emphasizes strongly the need for more detailed basic studies.

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BOOKS RECEIVED

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