

## REVIEW

**Mechanics of Coastal Sediment Transport.** By J. FREDSOE & R. DEIGAARD. World Scientific, 1992. 369 pp. \$28 (paperback).

**Coastal Bottom Boundary Layers and Sediment Transport.** By P. NIELSEN. World Scientific, 1992. 324 pp. \$28 (paperback).

Books are like buses. You wait for ages and then two come along together. The two books in this case are both from World Scientific and form part of their Advanced Series on Ocean Engineering.

The stated aim of the book by Fredsoe & Deigaard is to describe the physical processes of coastal sediment transport and how to represent them in mathematical models. The first half of the book is concerned with the motion of the fluid: wave theory, bottom boundary layers, waves in the surf zone and wave-driven currents. The second half covers sediment transport: chapter 7 outlines the basic concepts of sediment transport, chapter 8 is concerned with sediment suspension, followed by chapters on wave- and current-generated bedforms. Finally, the last two chapters deal with cross-shore and longshore transport and bed profile and coastline development.

The book is very well-written. Basic ideas are outlined in a straightforward manner and more complex topics are dealt with in the form of worked examples. At no point is the mathematics beyond anyone with a first degree in engineering but familiarity with basic hydraulics and wave mechanics would be an advantage. Both authors have in the past made many major contributions to this field and it is, consequently, hardly surprising that there is a strong emphasis on North-European research literature. However, many would argue that this merely corrects a previous imbalance in the opposite direction.

Nielsen, too, is a highly respected researcher with many years of practical experience. His book concentrates particularly on the problem of sediment transport and familiarity with basic wave mechanics and hydraulics is assumed. Chapter 1 deals with bottom boundary layers and chapter 2 with sediment transport by waves and currents. Then there are chapters on bedforms and sediment suspension. Finally, there is a chapter on sediment transport models with particular emphasis on cross-shore and longshore transport. These are all areas where Nielsen has made significant contributions himself and, of course, his book reflects his ideas. Although some of these ideas are controversial, all are highly innovative and thought-provoking. This is also a well-written book. Mathematics is kept to a minimum and there are a number of helpful worked examples.

In conclusion, these are both very fine books. Despite their apparently over-lapping subject matter they are distinctly different in emphasis. At the risk of upsetting all three authors, this difference might be summarized by saying that Fredsoe & Deigaard's book probably represents the current majority view on mathematical modelling of coastal sediment transport whereas Nielsen's book describes what may well be the majority view in ten years time. In the reviewer's opinion both are essential reading for anyone interested in this field. Fortunately, unlike buses, it is not necessary to choose either one or the other.

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