Chapter 12

COMPUTATIONS OF LONGSHORE CURRENTS

by

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ABSTRACT

This article introduces the longshore current computations based on theories published under the title "Longshore Currents and Longshore Troughs" (Bruun, 1963). Two approaches are used to formulate the longshore current velocities for a beach profile with one bar under the following assumptions: (1) that longshore current is evenly distributed (or a mean can be taken) along the depth; (2) that the solitary wave theory is applicable for waves in the surf zone; (3) that the statistical wave-height distribution for a deep water wave spectrum with a single narrow band of frequencies can be used near the shore, and (4) that the depth over the bar crest, D_{cr}, equal $0.8H_{b(1/3)}$. Breaking wave height $H_{b(1/3)}$ is designated to be the actual height equal to $H_{1/3}$ (significant wave height).

Diagrams have been constructed for both approaches for beach profiles with one bar, from which longshore current velocities caused by various wave-breaking conditions can be read directly. As for longshore currents along the beach with a multibar system, fifteen diagrams covering a great variety of wave-breaking conditions are provided for obtaining longshore current velocities in different troughs.

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