

Lynch, D.R. and Davies, A.M., (eds.), 1995. **Quantitative Skill Assessment for Coastal Ocean Models**, Coastal and Estuarine Studies, Washington, D.C.: American Geophysical Union, Volume 47, 510 p. \$70.00.

This book addresses one of the fundamental difficulties associated with the numerical modeling of complex coastal ocean processes, that of demonstrating that model results are acceptably descriptive of the physical system for which they were formulated to simulate. Acceptability is stressed because model accuracy or skill is a function of the intended use of model results. For example, some applications require only a qualitative representation of the flow regime in order to demonstrate how a specific modification to a flow domain may impact surface elevations, currents, contaminant transport, or some other flow related variable. Other applications require more accurate estimates of flow variables. Examples include storm surge elevation and duration estimates required for input to storm protection design criteria. In all applications however, the modeler must establish some degree of model skill by demonstrating the ability of the numerical model to represent the physical system.

The validation of a computational model requires some measure of comparison of model results to comparable prototype data. This validation process is accomplished through application of techniques ranging from qualitative to quantitative. This range of approaches is due to not only the purpose of the computational study but also to the fact that prototype data are usually neither spatially nor temporally adequate for a rigorous validation effort. Therefore, no definitive criteria or procedure is available to demonstrate the skill of a given model. Each application is different and comparisons vary from application to application.

The goal of this book is to address the subject of skill assessment of coastal and ocean model simulations. The goal was effectively accomplished by presenting a variety of approaches used to demonstrate skill through a wide range of computational model applications. The book does not attempt to impose or define some "standard skill procedure" which should be required of all models but presents a variety of examples reflecting different approaches to skill analysis. The result is a compendium of computational model applications of coastal and ocean process models in which a variety of techniques used by the various authors are presented to demonstrate that their model/models realistically represent the physical system/systems for which they are intended to simulate.

Editors Daniel Lynch and Alan Davies present a well balanced selection of contributions by recognized international modelers representing the broad interests of government, academia, engineering, and research. The book contains 19 chapters describing detailed applications involving many topics relevant to the coastal and open ocean modeling community. Subjects include case studies involving grid resolution applications and requirements, boundary condition considerations, transport modeling, tidal and wind driven circulation, storm surge propagation, air-sea interaction, and barotropic and baroclinic flow fields. All chapters presented in this book have been prepared by modelers who have a sub-

stantial amount of experience in the modeling of their representative topics. As such, each chapter represents a state-of-the-art application of computational models to important coastal and ocean problems. A comprehensive list of references follows each chapter.

Skill testing of computational models is a difficult and time consuming problem which is essential if the results of a particular model are to be accepted by both peers and clients. The separate chapters of this book describe skill testing procedures which have been successfully used to demonstrate the ability of each model to represent the process or processes of interest. Skill assessment techniques range from time series comparisons to domain pattern analysis. Drawbacks and strengths of different procedures are discussed in detail in the various chapters. For the coastal and ocean modeler, relevant sections of this book provide excellent sources of skill approaches which can be used to demonstrate skill of their models.

The editors have succeeded in providing a cross section of modeling examples from which all coastal and ocean modeling applications can benefit. They have stressed the strengths and weaknesses of computational models as a whole but place each type of model in its proper perspective, *i.e.*, "(1) every simulation has some intrinsic value, and (2) every simulation has serious drawbacks". Therefore, useful information can be gleaned from all properly formulated models, however, the limitations of the model need to be recognized. Relevant computational model theory, implementation, and skill testing procedures defined in the chapters of this book provide the reader with a means of identifying the values and drawbacks of models in general and may be used to better present the strengths and weaknesses of their own applications.

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Viles, H. and Spencer, T., 1995. **Coastal Problems: Geomorphology, Ecology, and Society at the Coast**, London: Edward Arnold, 350p. \$31.95. ISBN 0-340-53197-5 (paper).

The dynamic environment of the coastline, which is shaped by the interplay among geomorphological, biological, and marine processes, is increasingly affected by anthropogenic activities, as growing populations occupy the coastal zone. *Coastal Problems: Geomorphology, Ecology, and Society at the Coast*, by H. Viles and T. Spencer examines changes induced by both natural forces and human exploitation of the coastal environment. The book is organized into several sections. The first two chapters provide an overview of the formative biogeophysical processes of the coastal zone: the plate tectonic setting, wave action, tides, storms and storm surges, natural climate variability (e.g. El Nino-Southern Oscillation [ENSO] events), sea level rise, and the role of coastal ecosystems. Chapters 3-7 cover different coastal environments, such as