

problems and solutions associated with this important and fragile zone.

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Advances in Berthing and Mooring of Ships and Offshore Structures, E. Bratteland, 1988, University of Trondheim, Trondheim (Norway), 500p., \$93.50.

Increased ship sizes, resulting in berths being built and operated at more exposed locations, together with advances in cargo handling and loading—unloading systems have increasingly focused on safety, operational requirements and reduction of frequencies and consequences of accidents. The problems addressed in this volume (NATO ASI SERIES E 146) are twofold related to ships: When berthing the ship with resulting impact, and conditions while the ship is moored at berth. The scope of this ASI and the resulting volume was to present recent advances in berthing and mooring of ships and mooring of offshore platforms, as well as vessels at buoys or storage vessels. Theoretical aspects and models as well as practical applications were dealt with.

Ongoing developments in this field include: Low recoiling fenders, fenders with varying (step) stiffness, use of tension mooring systems, increased emphasis on instrumentation, monitoring and adjustment of fenders and mooring during operation, a more integrated approach to the design of mooring, fenders and berth structures etc.

Although considerable advances have been made in the system approach to berthing and mooring, there are many problems that remain to be solved for proper modelling such as, for example, more reliable hydrodynamic and mechanical inputs and criteria, as well as knowledge on structural characteristics and environmental forces. Further advances are possible by coupling developments in mathematical modelling with realtime measurements and micro-computer technology. Existing information and models should be made available to every-day users and designers in a format that can be easily understood and readily applied to practical situations.

Further developments in integrated design, probabilistic approach and criteria to be

applied are suggested. Cooperative research by existing international organizations is encouraged on mathematical and physical models, full scale measurements and development of new concepts.

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Fjords: Processes and Products, J.P.M. Syvitski, D.C. Burrell and J.N. Skei, 1987, Springer Verlag, Berlin, DM195, 379p., ISBN 3-540-96342-1.

Fjords are coastal environments with a unique combination of physical, biological and chemical characteristics which creates estuarine systems with notable extremes of rugged topography and fragile ecology. World attention has been drawn recently to the tragic oil spill in a fjord (Valdez Arm) in southeast Alaska underlining the necessity of strict environmental management of these areas which have a low capacity for recovery from such disasters. Cold temperatures, slow flushing time and fragile biota in fjords combine to produce an environment that can not easily return to normal after a catastrophic event.

Fjords: Processes and Products is a comprehensive text aimed at earth science research professionals and upper-level students. The authors draw on a wealth of data and personal experience gathered during their careers, as well as information from over 1000 references in published literature. They have divided the book into 3 sections: (1) introduction, (2) processes and products and (3) implications and applications. The treatment is even and the authors clearly have made an attempt to present a balanced picture of fjords in terms of subject matter and geography. All fjord coastlines of the world are included, except for Antarctica, as little is known or published on the 1000 km fjord coastline of the Antarctic Peninsula. The book is written from a geological point of view with emphasis on the importance of physical characteristics such as fjord geometry, sediment input, fjord circulation and mass movement on biota, biochemical processes and general ecology.

The book is well illustrated with maps and figures drawn in a uniform style. Original and published data are provided throughout in support of the text. Some minor factors detract