of the policies confronting the professional in this area. The limited analysis addressing competing and conflicting uses of the marine environment and the near absence of integrated analysis makes it less valuable as a general reference on U.S. marine policy during the latter part of the 20th century.

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Port and Ocean Engineering Under Arctic Conditions, W.M. Sackinger and M.O. Jeffries, (eds.). The Geophysical Institute, University of Alaska, Fairbanks, 1988. Volume I, 763p., $95; Volume II, 124p, $24; Volume III, 707 p., $90 (No ISBN given).

The decade 1977-1987 brought an intensive set of engineering and scientific advancements in the Arctic, motivated by the promise of Arctic petroleum, and a newly-recognised public need for understanding of the Arctic environment as part of a global system. This three-volume book provides a full-breadth overview of recent observations, combined with current theory, computer modeling, and laboratory simulation. It contains 131 refereed papers that are an outgrowth of an historic symposium of the same name held in Fairbanks, Alaska. This hardbound edition is an indispensible compendium of data and current theory for the Arctic engineer and polar researcher, and acts as a major step in assimilating the results of a decade of engineering research into a future strategy for rational and selective Arctic devleopment.

Civil and mechanical engineers, ocean engineers, oceanographers, meteorologists, physicists, geographers, mathematicians, geophysicists, geotechnical engineers, marine biologists, and environmental scientists make up the 254 professionals who contributed to the three-volume set. Published a year after the meeting, the papers retain the significance of a decade of research while giving the authors time to polish and reflect upon their manuscripts and the comments elicited at the meeting. The general organization of Volumes I and III cover sea ice properties, ice morphology, sea ice remote sensing, climate, and forecasting, ice dynamics, ice/structure interaction, icebreaking vessels, Arctic materials, steel/concrete composite structural systems, spray ice, Arctic port design and construction, and Arctic/offshore database. Papers from a special symposium on noise and marine mammals are presented in Volume II, organized by J. L. Imm and S.D. Treacy. The editors have produced a set of handsome archival-quality volumes, with many color illustrations and photographs generiously spread throughout the papers, an an elegant selection of supplemental color photographs in the opening pages of the third volume.

Port and Ocean Engineering Under Arctic Conditions is an extremely valuable contribution to the engineering community, and will undoubtedly stand as an historic landmark and guide to our future Arctic engineering endeavors.

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Late Quaternary, Sea-Level Changes and Crustal Movements in the British Isles, I. Shennan, (Ed.), 1989. *Journal of Quaternary Science,* Vol. 4, No. 1, pp. 1–89. Longman, Harlow, Essex CM20 2JE, UK, $61.00 (£30.00), ISSN 0267-8179.

This special issue of the JQS contains a series of original research articles, representing recent developments in sea-level research in the United Kingdom. It is the final contribution of the UK working group, one of the largest national groups of the IGCP Project 200 'Late Quaternary sea-level changes: measurement, correlation and future applicants', which came to an end in 1988. This issue includes, after an introduction chapter, a paper on Ireland, one on the Norfolk coast, four on Scotland and a review covering all Great Britain. It will be useful certainly to researchers and students interested in Quaternary processes, especially sea-level changes and isostatic movements, in coastal geomorphology, sedimentology and paleogeography, and in the British Islands.

In Ireland, Carter *et al.* discuss, with the help of new data, the regional differences in relative sea-level change which have occurred around

the island during the Holocene: an inexorable rise between 0.6 and 1.6 mm/yr in the south and the southwest, though at a rate decreasing in the last 2500 years, and a wide oscillation, probably isostatically-controlled, in the north, decreasing in amplitude from east to west.

On the North Norfolk coast, Funnel and Pearson have recognized in bore hole samples, from comparisons with the present intertidal deposits in the same area, nine distinct sedimentary environments.

In Scotland, buried and surface fossil beaches, reported by Fifth and Haggard in the Moray Firth area, are interpreted with the help of published data and used to construct a new band of relative sea-level change. Fossil marine deposits may however correspond also to short-lived events, like those corresponding to two tidal surges, 8800 and 8500 years ago, recognized by Cullingford *et al.* in the Lower Strathearn, or to a tsunami, identified from a sand layer 7000 years old by Long *et al.* in eastern Scotland. The fourth paper on Scotland is devoted to a comparison by Haggart of the patterns and rates of isostatic uplift indicated by various sea-level curves and methodologies.

Last but not least, Shennan uses over 400 sea-level index points to update the rates of crustal movements in Great Britain since 8800 yr BP. These are summarized in Figure 1 (see below), which has been constructed with the help of many members of the UK working group and will certainly be useful for comparisons with the present trends of relative sea-level change and for the refinement of global isostatic models.

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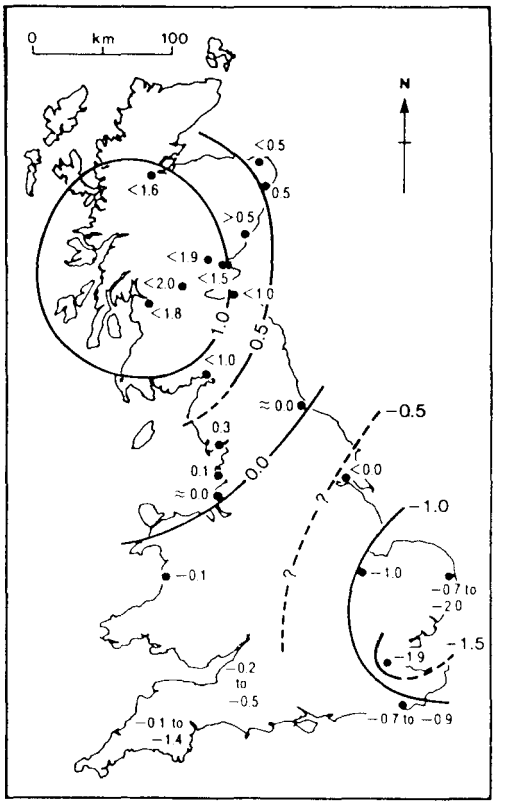

Figure 1. Map of estimated current rates (mm/yr) of crustal movement in Great Britain, according to Shennan (1989, Figure 9).

Coastal Management, Proceedings of a Conference organized by the Maritime Engineering Board of the Institution of Civil Engineers. Thomas Telford, London, 1989, 307 p., UK£52.00, ISBN 0-7277-1502-X.

Coastal management clearly means different things to different people. For some it means exercising as much control over the shoreline as possible. For others it means trying to adjust and live within the constraints of coastal change. This book is largely concerned with the former, but there are examples of the latter, epitomising how engineers in Britain are prepared to embrace 'softer' ecological solutions, if and when it is expedient to do so.

Some browsers will be disappointed immediately. The book is overwhelmingly based on the UK experience and the material in many of the chapters (despite general titles) is parochial. Thus "Beach Management," far from being an indepth survey of global managerial approaches to clastic shorelines is an unreferenced tour of a few beaches in East Sussex and Kent. Similarly "Marine Resources" is actually a slight essay on the ownership and legislative framework pertaining in the United Kingdom. Many professionals will find the almost anec-