

FOREWORD

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The 30th annual international symposium of the 'Estuarine and Coastal Sciences Association' (ECSA) was held in Hamburg, Germany, from 10 to 13 August 2000. The symposium was organised by the University of Hamburg on behalf of ECSA and it represented the Association's first symposium in Germany. The symposium was sponsored by the Ministry of Education and Research (Bundesministerium für Bildung und Forschung, BMBF) of the Federal Republic of Germany, and by the German Society for Limnology (Deutsche Gesellschaft für Limnologie). The organisers and the Association thank each of these organisations for their support in making the symposium successful and the Association is immensely indebted to the local organisers for their considerable work throughout all stages of the symposium and the publication of these proceedings.

The Symposium was planned to provide a forum for presentation and discussion of ongoing research into many aspects of climate change, especially those reflected in changes to the coast, wetlands and their component habitats. The discussions in particular considered the cause and consequences of relative sea-level rise, a major threat in low-lying areas of northern Europe and worldwide and thus of concern to all coastal states. The discussions therefore had to include geographic considerations of climate change and an assessment of past and present records of change, against which future changes can be judged. They illustrate the need for an understanding of morphological and hydrodynamical features in relation to coastal change, including coastal protection and large-scale effects such as storm surges. Following from the discussion of these overarching physical changes, there is a need to assess their repercussions for biological changes and their effects on the health and integrity of the natural system. Finally, given that scientific information is neither obtained nor used in a vacuum, the discussions included management aspects, which indicated the need for the use of scientific information by social scientists and economists, environmental managers and lawyers.

The papers presented at the symposium and those published in this volume reflect the range of studies currently undertaken. They represent the widely-adopted 'DPSIR' approach, whereby we identify: (1) the 'Drivers' of change, e.g. wide-scale causes such as global warming; (2) the 'Pressures' on the system, e.g. changes in temperature, tidal height and hydrodynamics; (3) the 'Status' of features of the estuarine and coastal systems as a reflection of changes brought about by such causes, e.g. the amount and nature of different habitats; (4) the 'Impact & Indicators' of change at all levels of the biological system, e.g. historical data on water levels, frequency of storm surges, number of species; and finally (5) the 'Responses' that can be made by society, using management, legislative and administrative tools, to such drivers and pressures as a means of controlling or at least accommodating those changes.

It is axiomatic that in order to understand the consequences of climate change within estuarine and coastal systems, it is necessary to understand both physical and chemical relationships and features. This includes not just the hydrodynamics of an area, which will dictate the nature of the system, but also larger-scale changes in climate, storm conditions, etc. The proceedings here indicate that studies on these topics are required as a precursor to understanding and then predicting the biological repercussions of climate change. Again, it is only when undesirable consequences of climate change occur that the general public, politicians and environmental managers become aware of the causes. As shown here, those undesirable consequences have far reaching implications for all users and uses of marine and estuarine waters.

Above all, the symposium and this resulting collection of papers indicate the need for a multi-/cross-disciplinary approach to the study of climate change in dynamic systems such as estuaries and coasts. Hence, that study calls for hydrographers, chemists and biologists to collaborate with environmental managers, social scientists and environmental economists and lawyers. With this in mind, the Association aims to bring together all these types of workers in coasts and estuaries, an aim in which the symposium succeeded.

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The Estuarine and Coastal Sciences Association (ECSA) is a direct continuation of the 'Estuarine and Brackish-water Sciences Association' (EBSA), founded in 1971. The Association is the major European focus for the communication of research and scholarship in estuarine and coastal marine science—membership is open to all who are interested, whether from Europe or elsewhere. The Association holds local meetings and annual symposia both within Europe and further afield, and produces proceedings of these symposia as well as other publications, such as its newsletter, the 'Bulletin'. It has an associated journal 'Estuarine,

Coastal and Shelf Science', under the guidance of the Association's Editor Dr Donald McLusky, which is available at greatly reduced rates to its members. ECSA has links to the 'Estuarine Research Federation' in the US and thus has contact with the wider global estuarine and coastal community. Details of the Association's activities can be found on the ECSA website (<http://www.ecsa.ac.uk>) and membership and other enquiries should be directed to: Dr P. C. Head, North West Water Ltd, Dawson House, Great Sankey, Warrington, WA5 3LW, UK (E-mail: peter.head@nww.co.uk).