Wave conditions for coastal hazard management on the English Channel Coast

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Charnock Theatre, National Oceanography Centre
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Synopsis: A range of wave climate variables are required for coastal hazard management including assessment of storm events, forecasting, flood risk management, sediment transport, structure stability and overtopping. This necessitates derivation of wave climate data, commonly wave heights, periods and directions, which may include long-term extremes, morphological averages, and time series. Design and assessment conditions are generally derived from modelled wave data, at offshore locations. Data must subsequently be transformed to nearshore locations that are suitable for input to design and assessment tools. Common approaches to wave climate derivation will be discussed.

The Channel Coastal Observatory has developed a network of nearshore wave buoys since 2002; this has provided the opportunity to improve understanding of the reliability of modelled nearshore wave climates. Comparisons between measured and modelled wave data will be discussed. A series of significant differences will be highlighted, in context with the implications for coastal hazard management. Traditional approaches to design and assessment of coastal hazards and structures have relied on integrated parameters (Hs, Tz , q). Recent observations of wave climate have shown that these are inadequate to describe responses under bimodal wave conditions, which occur frequently in the English Channel. Limitations of the current design process will be highlighted and approaches to improve design methods discussed.

Prof. Andy Bradbury: is Director of the Channel Coastal Observatory, based at the National Oceanography Centre Southampton. His main technical areas of interest are in research, design and construction aspects of coastal engineering and shoreline management. Andy has acted as project manager on a number of large coastal engineering projects and has been responsible for the design and implementation of a large number of coastal process investigations, involving desk studies, monitoring programmes, data management systems, numerical and physical modelling. He has specialist knowledge and extensive experience of instrumentation and techniques for coastal and near-shore monitoring. Andy is responsible for the design and technical coordination of the National Network of Regional Coastal monitoring programmes. As visiting Professor at University of Southampton, Andy provides support to post graduate investigations in beach management and collaborates on innovative methods of the study of coastal processes, by providing technical input to a range of strategic research projects.