Editorial

Kevin Burgess

CH2M HILL, Swindon, UK

Welcome to the March 2014 issue of *Maritime Engineering*. In this issue we have four papers covering a range of topics that will be of interest to practising engineers and researchers alike. Areas covered include coastal cliffs, beaches and waves, discussing future management, modelling and forecasting.

The first paper, on the impact of hard coastal defences on the erosion of soft cliffs (Brown *et al.*, 2014), discusses the impact defences can have on neighbouring erodible shorelines, the mechanisms by which this occurs and management responses to it.

It is a good reminder of the need to consider whether coastal management decisions for today could in fact create further problems that future generations of engineers will be forced to deal with. It is now two decades since *Strategy for Flood and Coastal Defence in England and Wales* (MAFF, 1993) was published, directing a more holistic and longer-term approach to coastal defence planning and management. Since that time we have seen the establishment of shoreline management plans around the whole coastline of England and Wales, and the development of other tools and knowledge bases such as Futurecoast (Defra, 2002) to inform engineers and planners on the best methods to help deal with the issues presented in this paper.

Brown *et al.*'s paper is, however, timely as we are going through a period where more parochial approaches to coastal defence could re-emerge, which would exacerbate the issues discussed therein. It is also timely as it allows attention to be brought to the recent call for papers for the next in the series of ICE's own Coastal Management conference which will take place in 2015. This is a key forum every 4 years for debating these issues and finding solutions, as evidenced from the proceedings of previous events (see, for example, McInnes (2003), Schofield (2012)).

The next paper, by Kemp and Brampton (2014), looks at a beach scheme providing coastal defence on the UK south coast. It describes how numerical modelling has been applied to plan, assess and refine the scheme to provide cost savings and amenity and aesthetic benefits over and above those originally envisaged. This is a helpful illustration of how modelling can be a cost-effective investment in the context of the whole-scheme costs. The paper is focused on the use of beach plan-shape modelling to optimise the extent and arrangement of control structures to manage that beach. It

makes important points about having an early understanding of the performance criteria for the scheme, and thus the need to identify in advance what outputs from the model are to be used and optimised. It also makes a case for giving greater consideration to the impacts of climate change on wave direction, and the value of using sensitivity testing to inform decisions on the preferred scheme.

Continuing with the beach theme, the third paper, by Reeve and Horrillo-Caraballo (2014), presents the application of a new technique to predict beach response. With considerable investment going into maintaining and re-nourishing beaches to provide coastal defence, good prediction of beach response is essential. Many beach prediction models have limitations, so this paper reports on the testing of a new statistical approach, canonical correlation analysis (CCA), linking beach profiles and offshore wave conditions to identify the patterns of behaviour between these two separate variables.

Although the paper describes the application for just a single site, the results are encouraging and give confidence that the CCA technique could be applicable as an engineering tool to a wide range of coastal areas where wave and beach profile records are available. The approach presented here has the potential to provide an economic means of forecasting beach levels, which could be highly beneficial for beach management and flood-risk planning.

The last paper in this issue presents useful research undertaken into the forecasting of wave energy using artificial neural networks, in this instance applied to an area of the Caspian Sea (Hadadpour *et al.*, 2014). As wave power becomes developed more extensively, the topic is an important one. This paper provides the non-specialist with a very clear description of how artificial neural networks are created and in this case how they can be used to help determine the suitability of locations for deployment of wave energy devices. Like the previous paper, this is an approach that has potential for wider geographic application and therefore should be of interest to those involved in this field.

Finally, discussion on any of the papers or articles that appear in *Maritime Engineering* would be welcomed, a feature that has declined over time and one that the editorial panel are keen to revive. To discuss any paper, please e-mail up to 500 words to the editor at journals@ice.org.uk. Your contribution will be

forwarded to the author(s) for a reply and, if considered appropriate by the editorial panel, will be published as discussion in a future issue of this journal.

REFERENCES

- Brown S, Barton ME and Nicholls RJ (2014) Shoreline response of eroding soft cliffs due to hard defences. *Proceedings of the Institution of Civil Engineers – Maritime Engineering* **167(1)**: 3–14, <http://dx.doi.org/10.1680/maen.11.00026>.
- Defra (Department for Environment, Food & Rural Affairs) (2002) *Futurecoast: Predicting the Future Coastal Evolution of England and Wales*. Halcrow, Swindon, UK.
- Hadadpour S, Etemad-Shahidi A and Kamranzad B (2014) Wave energy forecasting using artificial neural networks in the Caspian Sea. *Proceedings of the Institution of Civil Engineers – Maritime Engineering* **167(1)**: 42–52, <http://dx.doi.org/10.1680/maen.13.00004>.
- Kemp J and Brampton A (2014) Planning and modelling of a beach improvement scheme, Poole, UK. *Proceedings of the Institution of Civil Engineers – Maritime Engineering* **167(1)**: 15–28, <http://dx.doi.org/10.1680/maen.12.00024>.
- MAFF (Ministry of Agriculture, Fisheries and Food) (1993) *Strategy for Flood and Coastal Defence in England and Wales*. Flood and Coastal Defence Division, MAFF, London, UK.
- McInnes RG (ed.) (2003) *International Conference on Coastal Management 2003*. Thomas Telford, London, UK.
- Reeve DE and Horrillo-Caraballo JM (2014) Linking regional wave conditions to local beach profile change. *Proceedings of the Institution of Civil Engineers – Maritime Engineering* **167(1)**: 29–41, <http://dx.doi.org/10.1680/maen.2012.00001>.
- Schofield A (ed.) (2012) *Innovative Coastal Zone Management: Sustainable Engineering for a Dynamic Coast*. ICE Publishing, London, UK.