Editorial

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As I start my first full year as Chair of the *Maritime Engineering* journal, the year already seems well established. I have been reflecting on how the journal has changed over the years and how it can still best reflect the interest of the readership and the rapidly changing field of maritime civil engineering and still remain relevant for engineers and scientists working in this field. Therefore, alongside the full paper category the journal panel is introducing a new category of short paper (3–4 pages in length) that will allow authors to bring new ideas, pioneering research, design guidance and best practice to the attention of the readership and broaden the range of topics covered in each issue. The papers will still be peer-reviewed, and with these shorter papers sitting alongside the full papers I hope to enliven the interest and debate within the journal and I encourage you to consider submission of your own contributions to its pages.

I believe these are exciting and challenging times in the field of estuarine, coastal and offshore engineering, operating within the context of a changing climate. My passion for this area of work has not waned since I was inspired as a student to enter this field of study as a young maritime civil engineer. The oceans are vital to achieving long-term sustainable development. They form a key part of our future energy requirements through rapidly developing renewable energy schemes. They continue to provide oil and gas as new fields are developed in deeper waters. They are conduits for telecommunications and power and provide the global highway for transporting goods between countries. However, with high urbanisation the sea has the potential to impact lives through coastal erosion and coastal flooding, and meeting these challenges in a sustainable manner is essential for longer-term development.

The field of ocean engineering, like many engineering subjects, is multidisciplinary, and includes naval architecture. In fact, naval architects would claim to be the second oldest profession, dating from when the first humans used logs as boats.

At times it is difficult to separate the science from the engineering in this field as both are aiming to achieve a clearer understanding of the oceans and how they interact with the environment as a whole, to engineer better ports, more sustainable coastal defences, better use of natural resources, recreational facilities and so on. However, whether as an engineer or scientist it is essential to inspire the future generation of talented and innovative young engineers and scientists to engage in this important engineering discipline.

Whilst research in the field of ocean engineering has advanced rapidly since the 1940s there is still a large degree of experiential design resulting in varying degrees of uncertainty in the solutions put forward. Some of this uncertainty is in response to the non-linear nature of the challenges being addressed; for example, scour development in cohesive and non-uniform soils is still an area of great uncertainty and remains a challenge for designing structurally efficient and effective foundations in the offshore marine environment. The uncertainty is made greater by the timescale required for scouring, effects such as sediment abrasion, pile installation impacts and operationally and environmentally induced dynamic motions. To address some of this uncertainty, the use of statistical methods has become both more commonplace and a powerful tool in ocean engineering. Combined with the development in computational power it has allowed for computational fluid dynamics (CFD) and numerical analysis to come of age and provide new insights in many aspects of maritime engineering.

In the current issue of the journal the paper by Gouldby *et al.* (2017) looks at flood risk analysis and the design of coastal structures, and the necessity to assess the joint probability of occurrence of extreme waves and water levels. Traditionally, methods have involved the application of joint probability contours, which, if incorrectly applied, can lead to the underestimation of flood risk and the under-design of coastal structures. Gouldby *et al.* propose a risk-based approach applying a

multivariate statistical model to analyse extreme offshore waves, wind and sea levels around the coast of England. The aim of the method is to define extremes of response variables directly, rather than the joint extremes of sea conditions, using a Monte Carlo simulation of extreme events. The approach is demonstrated by application to two structures on the south coast of England, but could be applied to any location globally.

Wang *et al.* (2017) investigate the effect of hydrodynamic loads from ocean waves on the strength of horizontal brace structures in semi-submersible platforms. Their analysis considers 15 different wave load cases, including seven used by the certifying bodies (the American Bureau of Shipping and Det Norske Veritas). The analysis was carried out using a finite-element (FE) model which was verified using results from physical modelling. One of the key findings from the study was that the eight wave load cases not used by the certifying bodies were found to have a significant effect on the strength of the horizontal bracing and thus should be considered when designing such structures.

I hope you find the first issue of the *Maritime Engineering* journal of 2017 of interest, and that you will be encouraged in contributing to its pages. There are exciting projects being designed and built, with many already operational, in addition to the research and development bringing novel solutions to complex problems in the maritime field. It would be good to see these reflected in the journal pages, whether as full papers or as short articles.

REFERENCES

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