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Editorial

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This issue of *Water Management* contains four papers that present academic research findings. Each research topic employs modelling – either mathematical or physical – to support their conclusions. Three of the papers present different aspects of river hydraulics, sediment transport, bank side obstructions within a floodplain and catchment flood routing. The fourth paper develops friction loss correction factors applicable to irrigation systems.

The first paper (Cao *et al.*, 2012) builds on the wealth of historic research into sediment transport both in the UK and worldwide. The international group of research organisations and authors directly compare the performance of one-dimensional capacity and non-capacity fluvial sediment transport models for cases of bed load and suspended sediment transportation. The authors conclude that for bed load sediment transport rates, the difference between capacity and non-capacity models is essentially negligible even under highly unsteady flows. For suspended sediment transport however, the considerable differences between the two models suggest that capacity models for sediment transport are not generally justified and that non-capacity models should be used. The output from the research is advice for model selection for a specific engineering project as well as the mechanisms to be incorporated into models.

The second paper (Keshavarzi and Esfahani, 2012) investigates the effects of vertical cylindrical rods on the structure of turbulent flow in a rectangular compound open channel that simulates a floodplain. Although not specifically identified by the authors, this simulates in a simplified way the presence of mature trees along a riverbank. Like the first paper, there has been considerable historic research into compound channels (1980–2000). The objective of the tests was to investigate the frequency of velocity fluctuations in three-dimensions and thereby the contribution probability of bursting events to the Reynolds shear stress at the edge of the floodplain. The results and conclusions suggest that maximum sediment entrainment occurs where the obstruction is on the riverbank and the minimum entrainment occurs where the rods are located close to the riverbank. The results of the work, applicable to narrow rivers requiring bank protection, are potentially interesting but the topic does need further investigation because of the implications for current bank protection management.

The third paper (Akbari and Barati, 2012) addresses the subject of flood routing in unmanaged catchments where inflow and rainfall data may not have been recorded, only the discharge data. The paper develops a sensitivity analysis model for flood routing parameters and describes the application of the approach to two rivers and the sensitivity of input data on the outputs for a third river. The simulation results indicate good agreement with the observed data. The conclusions of the sensitivity analysis modelling suggest potentially predictable relationships between catchment parameters, but sometimes analyses such as this are necessary to validate modelling assumptions. With wider validation this modelling approach could be applied to engineering projects.

The final paper (Soleimani and Mirzaei, 2012) develops a methodology for calculating correction factors for friction losses in pipework for sprinkler and drip irrigation systems with multiple outlets. It recognises that the reduction in discharge leads to reduction in pressure losses through reduced friction losses. The paper suggests that the approach estimates friction losses to be less than if calculated by other methods, but that the differences are very small and will decrease with increased numbers of outlets. With the use of Hazen-Williams and the size of the differences, the approach will benefit from validation by field trials. The key conclusion of the paper is that the correction factors for friction losses are simpler and easier to use than other methods.

The four papers all conclude with suggested applications of the research findings or recommendations where further research is required. This is to be commended. The value of research is the knowledge transfer combined with the practical application, development and implementation of the conclusions of the research. Research findings will only be adopted by water management practitioners – clients, stakeholders, designers and constructors – if a research finding results in a more effective, efficient and sustainable (triple bottom line) solution to a problem. Equally researchers need the feedback that their research is relevant and practically applicable, including that the outcome of full scale use of the development validates the theoretical research, scale model or pilot study findings. Similarly practising engineers need feedback on what works in practice and the sharing of knowledge on new ideas and design approaches. We need more papers on real projects and the practical application of research. Up to a point this feedback is taking place, but I challenge water management practitioners to prepare equivalent papers that describe practical examples of the application of research findings. I recognise that papers are prepared for different purposes and that there are less incentives for engineering professionals to draft technical papers than academics, but the research communities need the feedback to better understand both the performance of the output from their research and areas of uncertainty where new research would be beneficial.

All four papers are informative and thought-provoking. As always, the editorial team would be pleased to receive comments on this issue and previous issues or comments related to water management generally.

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