Preface

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This special issue ‘Shallow Flows’ of the journal *Environmental Fluid Mechanics* contains a number of selected papers based on lectures presented at the 4th International Symposium on Shallow Flows (ISSF-4) that took place 26–28 June 2017 at Eindhoven University of Technology in The Netherlands. The ISSF meetings are organised every 5–6 years to gather scientists and engineers interested in understanding fundamental physical aspects of shallow flows as well as in applications of shallow flow principles in diverse areas including coastal and river engineering, geosciences, eco-hydrology and atmospheric dynamics. Natural and anthropogenic disasters such as floods, oil spills, mudslides, debris flows, turbidity currents are topics that are being studied with increasing attention, their modelling often based on shallow-water models.

A number of these topics were covered by the six plenary lectures presented at the ISSF-4 meeting, namely on tidal flushing, sediment transport and morphology, turbidity currents, hydraulics of shallow shear flows, flooding, and bio-morphological interactions. The regular, contributed lectures were arranged in sessions on gravity currents, surface waves, vortices and wakes, plumes, mixing layers, vegetation and roughness, effects of rotation and stratification, sediment transport, open-channel flows, measurement techniques, hydrology, semi-enclosed basins, and flooding. These presentations covered both numerical, analytical and experimental studies, both laboratory and field measurements, both studies of shallow flows in complicated, realistic configurations and generic laboratory modelling of these.

Compared to the previous symposia on shallow flows an increased attention for problems related to climatic change is observed. For example, storm water modelling and the modelling of flooding are topics that seem to be attracting more attention, with computational modelling often supported by data obtained from field measurements and from laboratory experiments.

This special issue contains papers based on a selection of the presentations given at the ISSF-4 meeting, including five of the keynote lectures. Although the contributions were written upon invitation, they were subjected to the usual reviewing process. The papers cover various aspects of shallow flows, and they provide an overview of recent results and insights obtained by researchers in this topical area.

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