

Preface

The tradition of special issues of the *Proceedings of the Estonian Academy of Sciences* dedicated to oceanography, meteorology and coastal engineering started seven years ago, at the turn of the millennium. The major host for such issues has been the *Engineering* series. From 2008, it has been published under the title *Estonian Journal of Engineering*, but it covers the same range of problems and is run by the same scientific team.

The topics of the issues have always addressed hot problems that touch, to some extent, the whole Estonian community. In 2001 the special issue was dedicated to hydrodynamical and geological studies of the possible harbour sites in Saaremaa. Already this first attempt had a great success: its principal authors received the Estonian Science Award in 2002. A couple of years later, in 2003, the special issue reported the main results of wave studies in the Tallinn Bay area. This research highlighted an extended range of problems connected with the extremely intense ship traffic in this area. In addition to identification and partial quantification of the influence of ship wakes on beaches of Tallinn Bay, the results formed one of the starting points of further research into solitonic ship wakes, which culminated with the Baltic Assembly Science Award a few years later.

Starting from 2004, the baton of special issues on marine sciences has been carried further by the *Biology–Ecology* series, which has mostly concentrated on studies of the functioning of marine ecosystems. This initiative vividly demonstrates the strength and activity of the marine science community in Estonia.

The development of physical aspects of marine and coastal sciences in Estonia was pushed forward by an explosively increasing number of international contacts in the middle of the first decade of the new century. Among these, the ongoing BALTEX initiative (an international programme to investigate water and energy cycles in the Baltic Sea drainage basin), FP5 project PAPA, directed towards establishing the Baltic Operational Oceanographic System, and FP6 network SEAMOCS, focussed on wave problems, have probably had the greatest impact. Several high-level meetings, organized in Estonia in the framework of the listed initiatives, provided a perfect opportunity to present the strongest sides of Estonian marine science. In addition to triggering further research in the cutting edge of marine and coastal sciences, these meetings fostered cooperation between different scientific groups in Estonia as well as international cooperation.

A good example of cross-discipline cooperation is the BALTEX initiative, which comprises meteorological, hydrological and oceanographic research and promotes developing interdisciplinary contacts and networks. The Fifth Study Conference on BALTEX, jointly organized by the Marine Systems Institute at Tallinn Technical University, Estonian Maritime Academy, Estonian Meteorological and Hydrological Institute and GKSS Research Centre Geesthacht, took place at Kuressaare in June 2007. This event attracted more than 150 scientists from all over Europe. On top of its scientific value, the conference inspired many authors to submit their contributions to the special

issue on oceanography, meteorology and coastal engineering, published in September 2007.

In October 2007, the small village of Palmse, at the heart of the first national park in Estonia, became a meeting place of three international networks, wholly or partially focussing on marine sciences. The engine for this event was the SEAMOCS research and training network “Applied stochastic models for ocean engineering, climate and safe transportation”, funded by the European Commission. The SEAMOCS initiative joins meteorology, climatology, mathematical statistics and nonlinear mechanics with ocean and coastal engineering. The project is aimed at the exchange of ideas, training and research. Cooperation with the sister CENS-CMA project (twinning of Centre of Excellence in Nonlinear Studies, Institute of Cybernetics and Centre of Excellence in Mathematics for Applications, University of Oslo) and a French–Estonian–Russian Eco-NET network “Wave–current interaction in coastal environment” attracted more than 50 experts in different aspects of theoretical and applied wave matters and some distinguished experts on climatology and meteorology. This event became a fruitful forum for discussions in the field of climate change, determination of extreme wave heights and coastal processes. In addition, the present special issue on oceanography, meteorology and coastal engineering was largely triggered by activities connected to or initiated at this meeting.

The spirit of these interdisciplinary initiatives is explicitly reflected in the present issue where the majority of the contributions either directly or implicitly address different aspects of climate. Another focus of the studies is the dynamics of single waves and transient ship-induced wave groups in shallow environments. A combined experimental and numerical study into classical oceanography completes the issue.

Internationalization of research becomes evident through changes in the list of authors. While all the authors of the first two of the described special issues of *Engineering* were Estonian scientists and only one paper in the 2007 issue was written in cooperation with two Finnish scientists, the present issue contains only two papers written exclusively by Estonian authors. There are leading authors from Norway and Russia and a contributing author from Denmark. Such a widening of the pool of contributors to the *Estonian Journal of Engineering* vividly demonstrates the increasing international interest in the Baltic Sea studies.

In the light of the above, it seems to have become a rule that either an extensive observation period or an international meeting drives a new special issue of the *Estonian Journal of Engineering* on oceanography, meteorology and coastal engineering. In May 2008, US/EU-Baltic International Symposium took place in Tallinn. The topics were ocean observations, ecosystem-based management and operational forecasting. Participants from more than 20 countries presented over 120 papers. We look forward with confidence that the rule of triggering marine research by international events will lead to the next special issue in 2009.

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