

Editorial:**Bremen's activities in ICZM**

In cooperation with the province of 'Niedersachsen' the HanseCity of Bremen participates in the joint research project "Sustainable Economic Development in the estuarine region 'Weser-Jade' and 'Ems' through an integrated coastal zone management'. This project is carried out within the framework of a BMBF-funded research programme towards a sustainable coastal zone management.

The joint research project focuses on those three main topics of the economic development in the Jade-Weser region which in the near future will change the ecological, economic and social structures in the region as well as in the entire coastal zone:

Harbour - Mega-Projects
Offshore - Wind Energy Plants
Potential Marine Mining

Through the development of new methods and procedures for the realisation of an ICZM and the participation of stakeholders in government, industry and the private sector, the project will help to provide a basis for a sustainable economic development of the region. In the years to come the economic development of Bremen will depend on its competitive standing as a harbour location and its reaction to new maritime technologies. In addition to the planned extension of the container terminal in Bremerhaven (CT IV) and its participation in the Jade-Weser Port Bremen will react to new technological challenges, e.g. with the installation of a 'Co-ordination and Research Institution for Offshore-Technologies' which will strengthen the co-operation between science, research and industry.

The analysis of service potentials, employment and other economical effects generated through these

activities is probably only one and the simpler aspect. It will be more difficult to identify potential conflict areas and even more to determine strategies for solutions. The presently available tools for planning, management, decision making and realization are often not sufficient to achieve a project realization on a low conflict basis.

Therefore, another goal of the project will be to provide industry, science, politicians, decision makers and their bases with tools for a conflict free project realization within the framework of a sustainable development.

What a grand and sublime goal! Those who think it to be too ambitious can choose either of the two alternatives: They can follow the motto of 'muddling through' or, more on a historical path, follow the Frisian chieftains and settle their quarrels about land use on the battlefield. In the long run, an ICZM seems to offer the better alternative.

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Project News

(Note: More detailed information about the projects and the institutions involved as well as concerning reports and publications can be obtained through the GCERC/KFKI – website – English version: http://kfki.baw.de/Newsletter_28.0.html)

The project "Hydrodynamic load through wave overtopping on the landward slope of sea dikes" was successfully terminated in 2001 (h.oumeraci@tu-bs.de; schuettrumpf@hamburg.baw.de).

Impressum

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During the course of the co-operative project between the universities of Braunschweig and Essen valuable insight into the stability of sea dikes was gained. Damage to and failure of dikes through overtopping waves originated mostly on the landward slope during the last storm tides. Therefore, the investigation into the interaction between wave overtopping and the soil mechanical processes was particularly valuable. Extensive test series at almost prototype scale were carried out in the large wave flume (Großer Wellenkanal) at the Coastal Research Centre in Hannover.

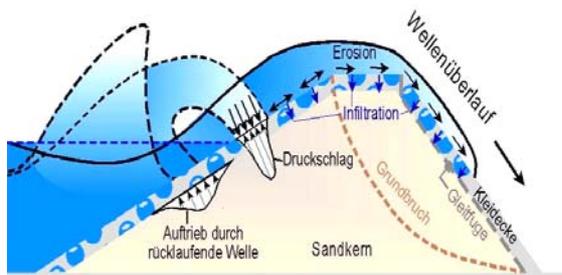


Fig. 1: Systematic sketch of wave run-up – breaking – overtopping

As a result of the investigations, models of the description of the hydrodynamic processes during overtopping but also of the infiltration and consequent erosion of various kinds of soil used for covering the sand core could be developed. For the first time, it will be possible to estimate the reaction of the soil to the dynamic load of overtopping waves. The joint project report by both universities points also out that there are still some research deficits indicating the necessity of further activities in this direction. The report (in German) is on loan through GCERC-library (<http://kfki.baw.de>).

First results are available from the project ' **Load on and design of wooden piles in coastal construction**' (03KIS23) – the so-called **Groyne-Project** (GCERC-newsletter reported in issue 01/2001).

Laboratory investigations into the transfer of vertical ice loads on piles resulted in forces a manifold of those obtained through the conventional calculation

procedures. Prior to that, pulling tests on piles in-situ had shown that a force calculated with existing formulae would not move the pile.

The transfer of wave induced pile oscillations into the ground and, consequently, a liquefaction of the soil could be proven through tests on a pile at Heiligendamm (Fig. 2). Investigations into the quantitative classification of acting and effective forces were hampered by extreme starting problems (destruction of the measurement array through construction activity). Simultaneous wave measurements in the field offshore and at the pile are being analysed to describe the load-reaction properties. Fig.3 shows the instrument array, Fig. 4 an analysis result of measured accelerations.



Fig. 2: Deviation of a pile in a groyne

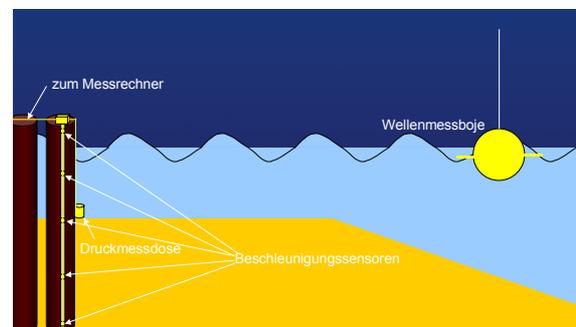


Fig 3.: Instrument array for monitoring the wave-induced pile oscillations

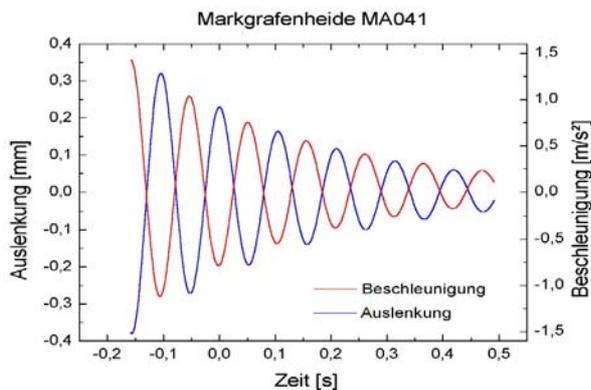


Fig. 4: Determination of the oscillation amplitude from measured accelerations

Morphological changes on the foreshore as being boundary conditions for the in-soil depth of the piles are being monitored by regular surveys and continuous photography.

The project leader is Prof. Dr.-Ing. S. Kohlhasse (soeren.kohlhasse@bau.uni-rostock.de); investigations continue to date. An interim report is available.

WaveScan

Some facts about the project **'WaveScan – Automated monitoring and modelling of surf zones on the basis of digital image sequences'** have been published in the GCERC-newsletter 1/2001. In the co-operative project of the Institute for Hydrodynamics and Electronic Calculations in Civil Engineering (ISEB) (schimmels@hydromech.uni-hannover.de) and the Institute for Photogrammetry and Geo-Information (IPI) (santel@ipi.uni-hannover.de) image processing techniques are used to determine the spatial and temporal distribution of the water surface in the surf zone with a high resolution. Data can be used to validate and further develop numerical models simulating processes in the nearshore region. The investigation area is the groyne field D1/E1 at the beach of Norderney, North Sea.

In co-operation with the Coastal Research Station Norderney (CRS) of the 'Niedersächsisches Landesamt für Ökologie (NLÖ), and the regional office Norden of the 'Niedersächsischer Landesbetrieb für

Wasserwirtschaft und Küstenschutz (NLWK)' two field campaigns were carried out in August 2002 and May 2003. For imagery data four digital video cameras were deployed.

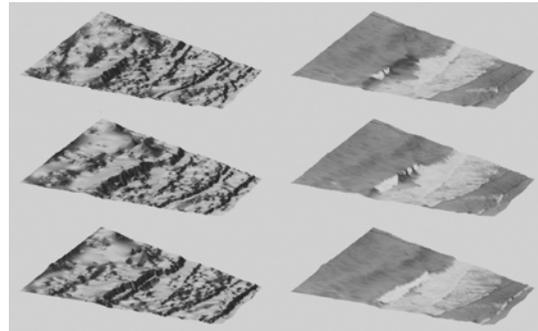


Fig. 5: Water surfaces calculated and superimposed with ortho-photos

Image processing with a digital image correlation resulted in a dynamic description of the water surface as $Z(X,Y,t)$. The analysis of an image sequence of 30 s observed during a field campaign 2002 at a frequency of 8 Hz was successfully concluded. Fig. 5 shows, on the left hand side, excerpts of three generated models of the image water surface at an interval of 1 s. On the right hand side ortho-photos were superimposed on the calculated surface.

Algorithms for of determination the water surface will be further developed with the goal to improve the implemented strategies. The generated data serve to improve models of the surf zone.

Sediments of the Wadden Sea: Sediment Inventory North-Frisian Wadden Sea

Under the leadership of the GKSS (eppel@gkss.de) the project **Sediment Inventory of the Wadden Sea (03KIS037)** has been set up to qualitatively and quantitatively investigate the post glacial sediment accumulation and its grain size distribution of the North Frisian wadden sea. The professional execution is with Dr. Ahrendt (kahrendt@iczm.de).

Geological development of the past 8,000 years is correlated with mean sea level changes at a higher resolution. Thereby, the geometry of the Holocene accumulation wedge, the vertical sequence and the

The project started in July 2002 for a period of 3 years. During the first year the three model components were tested and the coupling software was further developed. An interim report 2002-2003 is available. Project leader is the GKSS Research Centre Geesthacht (Dr. Dieter Eppel, Dr. Rolf Riethmüller, mailto: eppel@gkss.de; riethmueller@gkss.de). Field investigations are carried out with the support of the ALR Husum and Nationalparkamt Tönning.

News from the Headquarters

1. GCERC/KFKI Library on the net

For the last few weeks the GCERC Professional Library has been on the Internet. By typing <http://kfki.baw.de/webOPAC> present and potential users of the library can access the resources (books, reports, proceedings etc. on coastal engineering and environment). Search functions, based on Author, title and/ or key words permit a simple and an expert search. To most articles and publications key words in German and English have been attached. New users must acquire a user-ID by e-mail (kfki-bibliothek@hamburg.baw.de). Ordering books or other publications will then be directly possible over the net. After an update on the system within the next few weeks a user profile can be directly generated by the user.

The professional library of GCERC/KFKI holds a wide variety of publications, journals and conference proceedings (e.g. ICCE, COPEDEC; Coastal Sediments, Hydroinformatics etc.). Most items are obtained through publication exchange; however, some new books are also purchased on a relatively small budget.

New additions are advertised on a regular basis and a list is mailed to all interested clients. This will be done solely by e-mail in the future.

2. Logo-Competition

As indicated already in the last issue, Germany will host the International Conference on Coastal Engineering in Hamburg, Aug./Sept. 2008. The Local Organising Committee (LOC) met again in November and is already working on the preparations.

In the meantime, the LOGO competition has been closed. Seven suggestions have been sent in, and the LOC selected the winners. The winning LOGO is shown here:



All winners will be informed in due time.

3. Financial Support for participation in International Conferences

In the past GCERC/KFKI has financially supported staff members of its partner organisations to participate in national and international conferences. We have paid up to 50% of travel expenses under the condition that together with an active participation in the conference

- a paper on GCERC/KFKI research projects is presented,
- an official function at the conference is observed,
- the participant delivers a travel report which can be published in 'Die Küste' and
- submits the proceedings of the conference to the GCERC/KFKI library.

In anticipation of the ICCE'08 and ICCEs in 2004 (Lisbon) and 2006 (San Diego), but also for all other conferences and symposia in coastal engineering which serve to widen the horizon, create connections and cooperation with other countries and gain security on the international stage, particularly young colleagues are encouraged to participate. An application for funding should be submitted as soon as an abstract is sent in to the conference organisers. The LOC for 2008 expects a large contingent of German participants, as already experienced in 1978 when ICCE took place in Hamburg, too.

4. Issue 65 and 66 of 'Die Küste'

Special issues 65 and 66 (EAK2002 and Baltic Sea) were finished and can be purchased directly at the printer's or via the GCERC/KFKI Headquarters.

Conferences

- 30.03. - 24.04.2004: **40th International Seminar on Port Management, Delft, NL**
ihe@ihe.nl
- 01.04. - 02.04.2004: **Workshop Marine Sandwave and River Dune Dynamics (MARID)**
Enschede (NL)
<http://www.marid2004.utwente.nl/www.marid2004.utwente.nl>
- 05.04. - 16.04.2004: **15th International Seminar on Integrated Coastal Zone Management**
www.ihe.nl; mail: iczm@ihe.nl
- 26.04. - 28.04.2004: **International Conference on Hydraulics of Dams & River Structures**
Tehran, Iran
<http://hdrs.pwit.ac.ir>; mail: hdrs@pwit.ac.ir
- 30.05. - 03.06. 2004: **ICHE 2004, 2004 International Conference on Hydro-Science and Engineering, Brisbane, Australia**
www.ncche.olemiss.edu/iche2004
- 21.06. - 24.06.2004: **HYDROINFORMATICS 2004, Singapore**
<http://www.eng.nus.edu.sg/civil/Conf/HIC2004>
- 21.06. - 25.06.2004: **17th International Symposium on Ice**
Saint Petersburg, Russia
www.vniig.ru
- 23.06. - 25.06.2004: **River Flow 2004 - Second International Conference on Fluvial Hydraulics**
Naples, Italy
<http://www.riverflow2004.unina.it>; mail: riverflow2004@riverflow2004.unina.it
- 29.06. - 02.07.2004: **22nd IAHR Symposium on Hydraulic Machinery and Systems**
Stockholm, Sweden
<http://www.swedpower.se/IAHR2004>
- 19.09. - 24.09.2004: **ICCE'04 Lissabon**
<http://www.icce2004.org/>
- 17.04. - 20.04.2005: **1st International Conference on Coastal Conservation and Management,**
Algarve, Portugal,
<http://icccm2005.tripod.com/>