NEWS

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RA:dOst
Regional Adaptation Strategies for the German Baltic Sea Coast

Workshop: Coastal Change as a Challenge for Society, Culture, and Spatial Planning

Various RADOST partners and other coastal stakeholders discussed coastal change as a social and cultural issue as well as the implications for land-use planning at Hamburg's Ministry of Urban Development and Environment on 10 January 2012. At the center of the discussion was the topic of spatial planning and how the instrument of Integrated Coastal Zone Management (ICZM) can be applied to climate change adaptation along the Baltic coast.

That communities are important actors in the implementation of climate change adaptation measures has long been recognized, and the experience of the RADOST project confirmed this once again. Therefore, how communities can be won over to cooperate constructively in climate adaptation projects is an important question. One message that came out of the discussion is that cooperation could be made easier by

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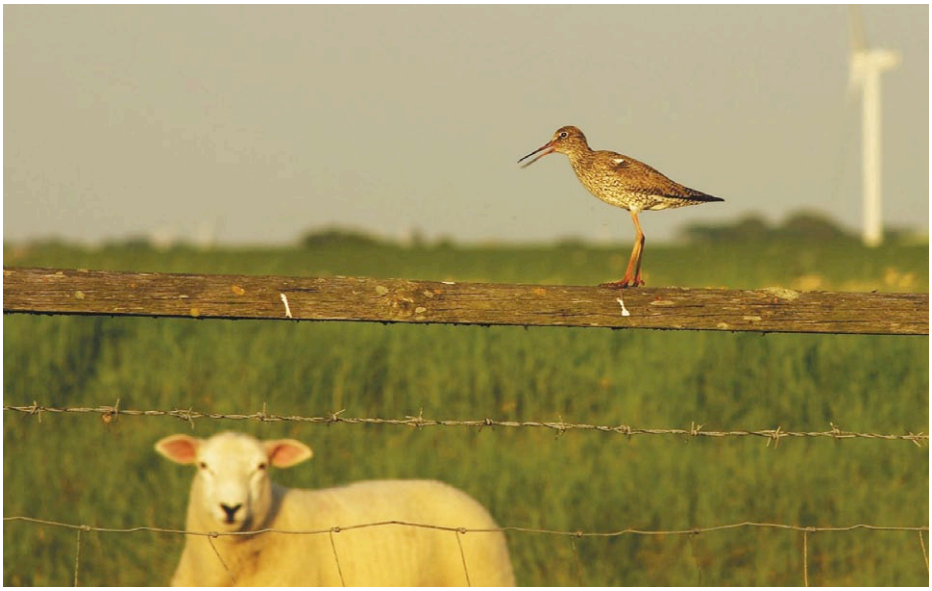

RADOST in Exchange with Coastal Planners in the USA

An important part of the RADOST project, in addition to creating regional adaptation strategies with citizens on the ground, is the exchange of positive experiences in the implementation of climate change adaptation measures in geographically similar regions not only in Europe but all over the world. The "Social Coast Forum" of the USA's National Oceanic and Atmospheric Administration (NOAA) was the first in a series of activities with which RADOST, through its coordinating institution, Ecologic Institute, will intensify the exchange with regions on the east coast of the United States and in the Chesapeake Bay.

…to be continued on page 5

Content

Regional Activities

Workshop: Coastal Change as a Challenge for Society, Culture, and Spatial Planning 1

RADOST on Tour: Baltic Sea Coast 2100 – On the Way to Regional Climate Adaptation 2

Monitoring the Environmental Conditions in the Nearshore Area 3

National Activities

Outstanding Climate Adaptation 4

International Activities

RADOST in Exchange with Coastal Planners in the USA 1/5

Short Film on Climate Change Adaptation in Germany, Poland, and the Baltic States 4

Publications

Analyses of the Perception of Climate Change Along the German Baltic Sea Coast 6

RADOST Studies on Artificial Reefs 6

Events 8

Announcement:

RADOST on Tour: Baltic Sea Coast 2100 – On the Way to Regional Climate Adaptation

The RADOST project is going on tour! Under the title "Baltic Sea Coast 2100 – On the Way to Regional Climate Adaptation," project staff and network partners of RADOST will spend 10 – 20 September 2012 presenting and discussing recent research findings about regional climate adaptation in various stations throughout Schleswig-Holstein and Mecklenburg-Western Pomerania.

Ten visits to federal state-level authorities and other regional institutions will allow for in-depth exchange of project results with the relevant experts of these institutions. In addition, public evening events (including in Kiel, Lübeck, Rostock, and Zingst), will be held to present local insights about climate change and its expected impacts by 2100 to all interested. On this occasion, the RADOST team also hopes to discuss the adaptation measures developed within the project with a broad audience.

RA:dOst
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More information about the tour, in addition to registration options for individual stations, will soon be available here:
www.klimzug-radost.de/RADOST_Tour_2012

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clearly delineating all of the proposed benefits of the project for the community. Representatives from some specific communities also made it clear that vulnerability assessments at regional and local levels would be helpful. The research findings should also be aligned with regional circumstances. The implementation of climate change adaptation measures is not only lacking due to financial constraints; in certain areas, there is a lack of awareness of the importance of climate change adaptation, while others have the knowledge to take action but lack the experience to put this knowledge into action.

The concept of Integrated Coastal Zone Management (ICZM) came up repeatedly in the discussion. It was acknowledged that a concrete definition of ICZM is still not available. Furthermore, this "soft" instrument cannot – as opposed to formalized planning processes – provide a clear, binding indication of who is responsible for which tasks and their implementation. This makes ICZM difficult to apply in local and regional settings because the delegation of these responsibilities is lacking. At the same time, it is clear that alternative planning processes are necessary to win acceptance from local communities, especially in the area of coastal protection measures. ICZM has the potential to help reconcile the concerns of various actors and address the uncertainties associated with climate change in a credible way. In this context, a project funded by the Federal Environment Agency was pointed out, which will explore the possibilities of ICZM and spatial planning for promoting sustainable management of coastal resources that integrates climate change mitigation and adaptation concerns. Synergies with RADOST are obvious, since the project will be based on case studies including examples from the Kiel Fjord and the Bay of Lübeck as well as from the City of Greifswald. At Greifswald, renewable energy systems will be at the center of discussion, and tourism and coastal protection in communities like Strande and Kellenhusen will likely be the main topic at the Kiel Fjord and the Bay of Lübeck.

As one conclusion from the workshop, it was stated that the challenges posed to land-use planning by a changing climate should receive even stronger consideration in future RADOST activities.

Monitoring the Environmental Conditions in the Nearshore Area

The State Agency for Agriculture and Environment of Central Mecklenburg (StALU MM) constructed and brought into service a series of measurement devices (a measurement chain) in June 2011 in cooperation with the University of Rostock, Department of Hydraulic Engineering. It will allow the RADOST project to gather further information about the hydrodynamics of sandy coastlines, as the measurement devices allow for the recording of incremental changes in mean values of water levels, sea state, currents, and morphology.

The incoming sea state at the transitional area between the deep and shallow waters is being measured using a directional wave-measuring buoy (Directional Waverider DWR-G7) from the firm Datawell. This device is outfitted with a GPS-based measurement system and, for the purposes of this research, has been placed where the water reaches a depth of 10 meters. There are two possible channels for data transmission: a high-frequency connection and a GSM connection.

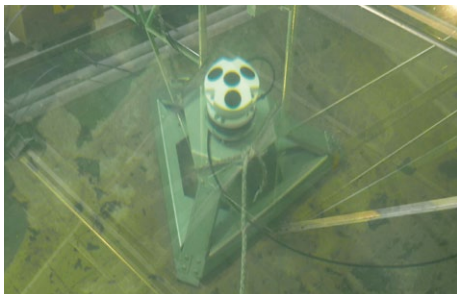
In the connected surf zone, four AWAC-AST profilers from the firm Nortek have been installed at regular intervals up to 5 meters deep in the water. These devices utilize acoustic measurement systems to capture the vertical composition of the current as well as the local sea state. Meanwhile, they also report the water level, sea state information, and current parameters with high time resolution. Underwater cables keep the probes supplied with electricity and transfer the data to the research station situated in the dune area on land.

This is the first time that morphological changes, along with the forces causing them, are being recorded regularly in such short time intervals along the German Baltic Sea coast. Responsibility for maintaining the devices lies with StALU MM in order to ensure the continuation of the data collection after the end of the RADOST project.

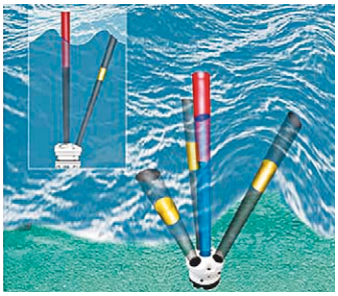
Land station

Control box for data reception

Measuring chain consisting of 4 AWAC profilers

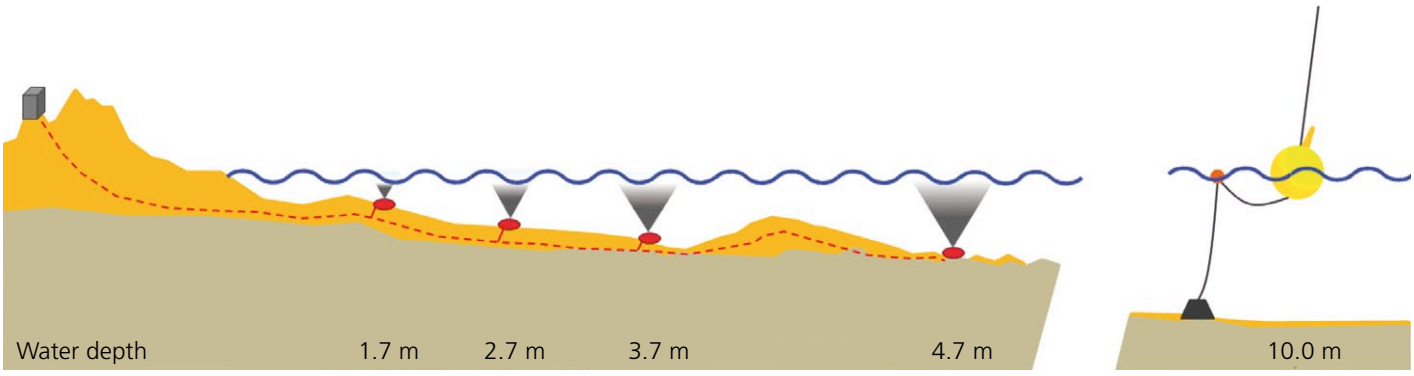


AWAC profiler with equipment rack



Acoustic Surface Tracking (AST)

Waverider buoy



National/International Activities

Outstanding Climate Adaptation

RADOST was recently awarded a spot among the "365 Landmarks in the Land of Ideas," along with six other German regions that are instituting climate adaptation measures. The model regions of the research program "KLIMZUG – Managing Climate Change in the Regions for the Future" are among the "Selected Landmarks 2012" that are being recognized by the "Germany – Land of Ideas" initiative of the Federal Government and German business community. The jury has thus acknowledged the innovative approach of RADOST and the other KLIMZUG projects that attempts to involve regional stakeholders in all steps of research design and implementation, starting at the very beginning of the process.

Germany
Land of Ideas

Selected Landmark 2012

KLIMZUG
climate change in regions

Short Film on Climate Change Adaptation in Germany, Poland, and the Baltic States

This short film features different perceptions, approaches, and solutions regarding climate change adaptation in Germany, Poland, and the Baltic States. The footage was recorded during a workshop series in Szczecin, Gdansk, Klaipeda, and Riga in October 2011 (see RADOST Newsletter 3/2011). In the film, scientists and local stakeholders from Germany, Poland, Lithuania, Latvia, and Estonia comment on climate change and climate adaptation. Local problems and solutions in the different countries are described, and the advantages of an international exchange of experience are emphasized. The workshops were organized as a cooperation of the RADOST project with BALTADAPT and Circum Mare Balticum (Regional availability of climate knowledge in the Baltic Sea region).

www.klimzug-radost.de/en/cmb/en

RADOST Project Leader Grit Martinez (Ecologic Institute) was named Adjunct Associate Professor at the Marine Laboratory of Duke University in Beaufort and began her guest appointment there in February 2012.

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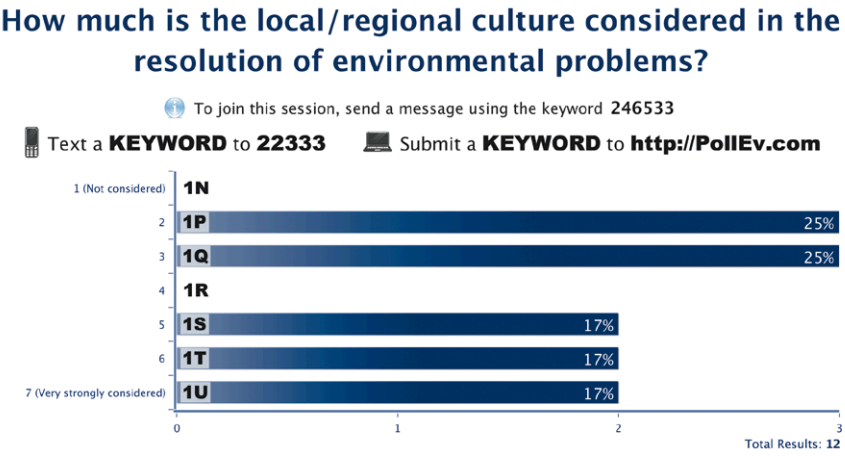
On the occasion of the Social Coast Forum (www.csc.noaa.gov/socialcoastforum), more than 200 coastal planners, social scientists, and representatives of industry met from 14-16 February 2012 in Charleston, South Carolina. Hosted by the Coastal Services Center of the NOAA (National Oceanic and Atmospheric Administration) of the United States, the event was just organized for the first time but will take place every two years in the future.

This platform provided RADOST with an opportunity to exchange views with the forum's participants about culturally dominant attitudes and perceptions in the coastal regions of the USA and the Baltic Sea region. As part of the workshop "Ask the Audience: Climate Change and Cross-Cultural Coastal Zone Management: Knowledge for Action in the U.S. and Europe," internet-based software was used to collect and discuss questions about coastal attitudes and their influence on the implementation of adaptation measures. The participants agreed that cultural imprints determine actors' strategies and influence their behavior in concrete situations. Therefore, it is essential to take these factors into account in order to successfully plan and implement adaptation measures.

The Vice Mayor of Broward County (Florida), Kristin Jacobs, was also represented at the Social Coast Forum and discussed the relevance of concrete adaptation measures in flood-threatened Florida in her opening remarks. Although the State of Florida is generally recognized as a hotbed of "climate skeptic" activity, Broward County has managed, during Kristin Jacobs' many years as County Commissioner, to make itself be heard at the state and national level. Recently, a regional adaptation strategy was completed in Broward County, which is part of the greater Miami area and, with 1.7 million residents, ranks 18th according to inhabitants among more than 3,000 counties and county-equivalents in the US (see also www.broward.org/NaturalResources/ClimateChange).

Respondent taking part in a survey via cell phone

RADOST hopes to continually extend the exchange with communities, regional coastal planners, and representatives of civil society in the USA. In addition to planned workshops in cooperation with regional planning associations in Maryland and North Carolina, a meeting is scheduled for early March in Washington, DC with representatives from the recently created "Adaptation Group" of the NOAA. The program also includes in-depth discussions with local decision makers, including with Vice Mayor Kristin Jacobs, and surveys of representatives from politics, administrations, and civil society. Questions centrals to this dialogue are:



Which difficulties do players in the US have to overcome? What adaptation approaches are already in use? How can regions in the US and the Baltic Sea area learn from one another? These international activities of the RADOST project are being carried out in cooperation with the Nicholas School of the Environment and Earth Sciences at Duke University in North Carolina.

Additional meetings with regional (political) decision makers will take place in the coastal states of Maryland and North Carolina in March and April 2012. More information will be provided in the next RADOST newsletter.

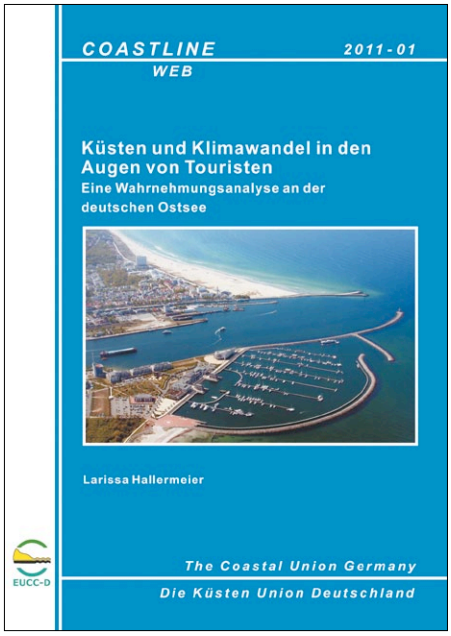
Publications

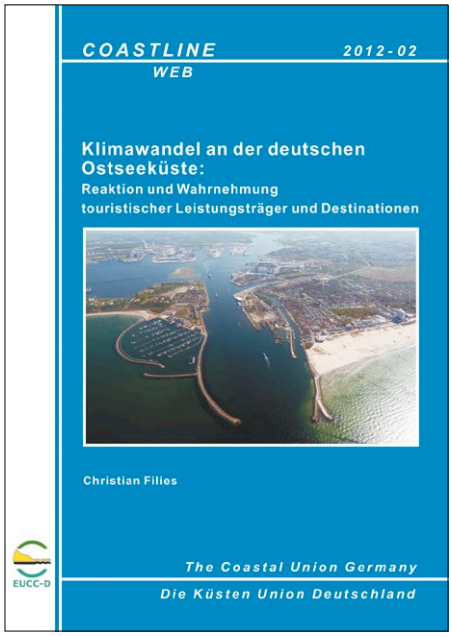
Tourism and Beach Management: Analyses of the Perception of Climate Change along the German Baltic Sea Coast

As part of the RADOST focus topic "Tourism and Beach Management," two academic theses have been completed that investigate not only tourists' but also the tourism industry's perceptions of climate change.

The study "Küsten und Klimawandel in den Augen von Touristen: Eine Wahrnehmungsanalyse an der deutschen Ostsee" ("Coast and climate change – an analysis of tourists' perception at the German Baltic coast" – L. Hallermeier, 2011) begins by investigating the climate change impacts on the German Baltic Sea coast that are relevant for tourism. A quantitative survey of guests of various beach areas in the focus area Rostock collected the guests' perceptions of phenomena and changes along the seashore, which later served as the analytical basis of the report and were related to the visitors' levels of knowledge. Based on the results, the report presents recommendations for beach management at touristic destinations that may be incorporated in future climate change adaptation strategies.

The study "Klimawandel an der deutschen Ostseeküste: Reaktion und Wahrnehmung touristischer Leistungsträger und Destinationen" ("Climate change at the German Baltic coastline – Response and perception of tourism stakeholders and destinations" – C. Filies, 2012) analyzes the implications of climate change for the tourism industry along the German Baltic Sea coast. The author conducted qualitative interviews with experts from various sectors of the tourism industry about how decision makers along the Baltic Sea coast of Mecklenburg-Western Pomerania and Schleswig-Holstein include climate change-induced changes in their strategic considerations and future planning. As a conclusion, the author develops possible guiding principles for the tourism sector of the German Baltic Sea coast to prepare itself to adapt to future climate changes.





Both studies appear in the new online series Coastline Web, which is edited by the RADOST partner EUCC – The Coastal Union Germany. It serves to publish monographs about coasts and seas and specializes in the publication of bachelor's, master's, and diploma theses as well as current research results in both English and German.
More information can be found at:
www.eucc-d.de/coastline-web.html

RADOST Studies on Artificial Reefs

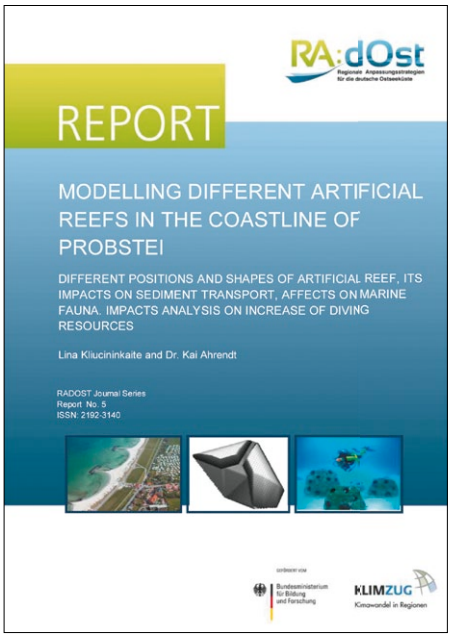
Many conventional coastal protection methods have the potential to adequately solve certain local erosion problems, but, at the same time, may lead to a number of undesirable effects. One of the best ways to protect a beach is to emulate natural regulating mechanisms. Previous studies have shown that offshore submerged reefs can provide natural shoreline stabilization by breaking and dissipating waves. Such structures are potential tools for protecting and restoring beaches and marine habitats, creating fishing grounds, or even generating surfing waves for that stimulate tourism.

The master's thesis "Modelling different artificial reefs in the coastline of Probstei" contributing to the RADOST implementation project, "Innovative methods for climate change adaptation through coastal protection – Focus area Bay of Kiel," aimed to provide an integrated design and identify the most suitable submerged coastal engineering alternatives for the Probstei coastline, particularly for the Heidkate, Kalifornien, and Brasilien beaches.

The chosen locations are popular recreational spots and are nowadays increasingly threatened by a higher frequency of storms, increased wave heights attacking the coast, and rising water levels due to climate change. In order to preserve and maintain this coastal zone, ten different alternatives, including surfing reefs, a shore-parallel breakwater, and Reef Balls breakwaters were examined in this case study.

Publications

Based on the results of several numeric models, different alternatives are suggested for the different locations, indicating that each location needs an individual solution to react to climate change. The report also gives a short introduction to the history and classification of the discussed structures, together with selected examples worldwide.



The full report is available for download at:
www.klimzug-radost.de/Report5/Artificial_Reefs

Climate change will affect not only beach dynamics but also areas such as tourism and ecosystem development along the German Baltic Sea coastline. It is therefore important to combine land-use goals such as coastal protection, the creation of diving areas, and habitat protection with each other. As part of the Bay of Kiel Climate Alliance's project "ZukunftsManagement Strand" ("Future Beach Management"), a feasibility study entitled "Protecting coasts, creating diving areas and improving habitats through multifunctional structures in the foreshore" was carried out to determine to what extent artificial reefs can achieve these various goals.

Five alternative options for the construction of so called "artificial reefs" were identified for the inner nearshore area of the Probstei coast in Schleswig-Holstein. They are comprised of geotextiles, Reef Balls, and combinations of the two. Sediment transport and changes resulting from the installation of these reefs have been forecasted using numerical models. Results indicate that effects vary from case to case and that combined uses are only possible to a certain degree. Four of these options were primarily designed as coastal protection measures, while another was intended to serve the improvement of underwater habitats in the first place. Only one of these – a combination of geotextiles and Reef Balls on the Kalifornien coast – shows promise for coastal protection while additionally creating a new marine habitat that is also suitable as a diving area. The other alternatives can be useful for supporting diving tourism but cannot provide enough coastal protection to justify the investment costs.

The study from Dr. Kai Ahrendt from the Kiel-based Company for Environment and Coast was supported through the "Lust op dat Meer" ("Come Enjoy the Sea") competition, which was held by the Ministry of the Interior of Schleswig-Holstein with support from the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety and the Federal Environment Agency. It was also related to the RADOST implementation projects "Bay of Kiel Climate Alliance" and "Innovative methods for climate change adaptation through coastal protection – focus area Bay of Kiel."

The complete report "ZUKUNFTSMANAGEMENT STRAND: Ko-Nutzung von Küstenschutz, Tauchpfaden und Habitatverbesserung durch Baumaßnahmen im Vorstrandbereich" is available at:
www.klimzug-radost.de/Report6/Zum-Strand

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RA:dOst
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Events

Baltic Sea Youth Session
22–25 April 2012, Berlin, Germany
www.eyp.de/foren/balticseayouthsession

10th Baltic Sea NGO Forum
23–25 April 2012, Berlin, Germany
www.bsngoforum.org

AG GIS Coast, 21st Annual Meeting
26–28 April 2012, Wartin (Brandenburg), Germany
www.gis-kueste.de

Coastal Cities Summit 2012
30 April–3 May 2012, St. Petersburg, USA
www.coastalcities-ioi.org

European Maritime Day
21–22 May 2012, Gothenburg, Sweden
www.ec.europa.eu/maritimeaffairs/maritimeday/index_en.htm

3rd International Conference on Progress in Marine Conservation in Europe 2012
18–22 June 2012, Stralsund, Germany
www.bfn.de/habitatmare/de/tagungen-progress-in-marine-conservation-in-europe-2012.php

Summer School: Challenges in Changing Coastal Seas
5–19 July 2012, Sylt, Germany
www.awi.de/en/institute/courses_and_visiting_scientists/wadden_sea_station_sylt

Second Nordic International Conference on Climate Change Adaptation
29–31 August 2012, Helsinki, Finland
www.nordicadaptation2012.net

BACC II Conference - BALTEX Assessment of Climate Change for the Baltic Sea Basin 2009-2014
6–7 September 2012, Tallinn, Estonia
www.baltex-research.eu/BACC2/tallinn2012

RADOST on Tour: On the Way to Regional Climate Adaptation
10–20 September 2012, Schleswig-Holstein and Mecklenburg-Vorpommern, Germany
www.klimzug-radost.de/RADOST_Tour_2012

Barriers to Adaptation to Climate Change
18–21 September 2012, Berlin, Germany
www.climate-chameleon.de

2nd Regional Conference on Climate Adaptation in the Coastal Region
8–9 November, Bremerhaven, Germany
www.umwelt.bremen.de/regionalkonferenz2012

Littoral 2012 | Coasts of Tomorrow
27–29 November 2012, Oostende, Belgium
www.littoral2012.eu

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Photos
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Page 5 NOAA Coastal Services Center, Hansje Gold-Krueck

Berlin, March 2012

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Helmholtz-Zentrum Geesthacht Zentrum für Material- und Küstenforschung
HSW Ingenieurbüro Gesellschaft für Energie und Umwelt mbH
IfAÖ
IGB
Leibniz Institute for Baltic Sea Research Warnemünde IOW
IÖW Institut für ökologische Wirtschaftsforschung
Landesbetrieb für Küstenschutz, Nationalpark und Meeresschutz Schleswig-Holstein
Landesamt für Landwirtschaft, Umwelt und ländliche Räume Schleswig-Holstein
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