Welcome to the
Sino-German Symposium
„Challenges and Perspectives in Coastal and Marine Sustainability-“

September 16 – 18, 2015
Bremen University, Bremen, Germany

The Symposium is implemented by the Center for Sino-German Cooperation in Marine Sciences, with contributions from the University of Bremen, the Leibniz Center for Tropical Marine Ecology (ZMT), the Ocean University of China, the University of Kiel (CAU), and the Helmholtz Centre for Ocean Research Kiel (GEOMAR) and is financed by the Sino-German Center for Research Promotion (CDZ) in Beijing.
## Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Map</td>
<td>3</td>
</tr>
<tr>
<td>Program</td>
<td>4</td>
</tr>
<tr>
<td>German Participants’ Profiles and abstracts</td>
<td>8</td>
</tr>
<tr>
<td>Chinese Participants’ Profiles and abstracts</td>
<td>42</td>
</tr>
<tr>
<td>Third-Party Participants’ Profiles and abstracts</td>
<td>64</td>
</tr>
<tr>
<td>Contact information</td>
<td>70</td>
</tr>
<tr>
<td>General information</td>
<td>73</td>
</tr>
<tr>
<td>Notice</td>
<td>75</td>
</tr>
<tr>
<td>Notes</td>
<td>76</td>
</tr>
</tbody>
</table>
The symposium will be held at the Leibniz Center for Tropical Marine Ecology (Bremen), located close to the tram stop "Universität/NW1"; it is a 5 min walk through the park to ZMT.

Leibniz Center for Tropical Marine Ecology
Fahrenheitstr. 6
28359 Bremen
# Program

## Tuesday 15 September

Arrival

## Wednesday 16 September

<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker</th>
<th>Title</th>
<th>Institution</th>
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</thead>
<tbody>
<tr>
<td>09:30</td>
<td>Opening Ceremony</td>
<td>Welcome at Major Hall</td>
<td><strong>FROHMADER Andrea</strong> – Chancellery of the Bremen senate, international relations</td>
<td><strong>Prof. Dr. NOTHOLT Justus</strong> – Director of SGMS University of Bremen</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>Prof. Dr. CHEN Xueen</strong> – Director of SGMS, Ocean University of China</td>
<td><strong>ZHU Jin</strong>, Director of Konfuzius Institute Bremen</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Including guided tour through the Major Hall of Bremen, Group photo</td>
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<tr>
<td>12:00</td>
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<td>REGISTRATION</td>
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<tr>
<td>12:30</td>
<td></td>
<td>LUNCH BREAK</td>
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### Session: Interactions between coastal & marine regions and the atmosphere

**Session chair: Dr. LEHMANN Ralph**

<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker</th>
<th>Title</th>
<th>Institution</th>
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</thead>
<tbody>
<tr>
<td>13:30</td>
<td>Prof. Dr. NOTHOLT Justus</td>
<td>Application of Remote sensing to study the earth climate and its variability</td>
<td>University of Bremen, Institute of Environmental Physics</td>
</tr>
<tr>
<td>13:55</td>
<td>Prof. Dr. CHEN Xueen</td>
<td>Modelling of nonlinear internal waves propagating over Dongsha Atoll in the South China Sea</td>
<td>Ocean University of China</td>
</tr>
<tr>
<td>14:20</td>
<td>Dr. LEHMANN Ralph</td>
<td>The impact of oceanic emissions on stratospheric ozone</td>
<td>Alfred Wegener Institute for Polar and Marine Research</td>
</tr>
<tr>
<td>14:55</td>
<td>PD Dr. LADSTAETTER-WEISSENMAYER Annette</td>
<td>Tropospheric ozone from SCIAMACHY as measured during pollution events</td>
<td>University of Bremen</td>
</tr>
<tr>
<td>15:20</td>
<td>Dr. SU Jian</td>
<td>Ocean feedback mechanism in a couple atmosphere-ocean model system for the North Sea</td>
<td>University of Hamburg, (Institut für Meereskunde, ZMAW)</td>
</tr>
<tr>
<td>15:55</td>
<td>Session chair: Dr. LEHMANN Ralph</td>
<td>Session summary and discussion</td>
<td></td>
</tr>
<tr>
<td>16:10</td>
<td></td>
<td>COFFEE BREAK</td>
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</table>

### Session: Regional climate modelling

**Session chair: Dr. LEHNER Susanne**

<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker</th>
<th>Title</th>
<th>Institution</th>
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<tbody>
<tr>
<td>16:25</td>
<td>Dr. LEHNER Susanne</td>
<td>Satellite-based radar measurements for validation of high resolution sea state forecast models in the German Bight</td>
<td>German Aerospace Center (DLR), Remote Sensing Technology Institute</td>
</tr>
<tr>
<td>16:50</td>
<td>Prof. Dr. LI Xiaoming</td>
<td>Derivation of high resolution surface currents field drom space-born SAR</td>
<td>Institute of Remote Sensing and Digital Earth, CAS</td>
</tr>
<tr>
<td>Time</td>
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<td>Institution</td>
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</tr>
<tr>
<td>17:15</td>
<td>Dr. CHEN Meixiang</td>
<td>Contribution of wind forcing to the seasonal and interannual sea level variations in the midlatitude North Pacific Ocean</td>
<td>Hohai University</td>
</tr>
<tr>
<td>17:40</td>
<td>Prof. Dr. LOHMANN Gerrit</td>
<td>Northern Hemisphere Holocene SST trends re-examined</td>
<td>Alfred Wegener Institute Helmholtz Centre for Polar and Marine Research</td>
</tr>
<tr>
<td>18:05</td>
<td>Prof. Dr. GAO Guoping</td>
<td>Effects of ice-induced wave attenuation on surface waves in the Arctic Ocean: an application of FVCOM-SWAVE</td>
<td>Shanghai Ocean University</td>
</tr>
<tr>
<td>18:30</td>
<td>Session chair: Dr. LEHMANN Ralph</td>
<td>Session summary and discussion</td>
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<tr>
<td>19:00</td>
<td>SYMPOSIUM DINNER</td>
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**Thursday 17 September**

**Session: Regional biogeochemistry and responses to the food web**

**Session chair: Prof. Dr. FUKUI Manabu**

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<thead>
<tr>
<th>Time</th>
<th>Speaker</th>
<th>Title</th>
<th>Institution</th>
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</thead>
<tbody>
<tr>
<td>09:00</td>
<td>Prof. Dr. SAINT-PAUL Ulrich</td>
<td>The need for a holistic approach in mangrove related fisheries research</td>
<td>Leibniz Center for Tropical Marine Ecology</td>
</tr>
<tr>
<td>09:25</td>
<td>Prof. Dr. FUKUI Manabu</td>
<td>Seasonal changes in organic matter mineralization in marine coastal sediments and temperature-driven decoupling of key processes</td>
<td>Institute of Low Temperature Science, Hokkaido University</td>
</tr>
<tr>
<td>09:50</td>
<td>Prof. Dr. HAGEN Wilhelm</td>
<td>Energetic adaptations to an extreme environment: the role of lipids in Antarctic and Arctic Zooplankton</td>
<td>University of Bremen</td>
</tr>
<tr>
<td>10:15</td>
<td>Prof. Dr. ZHANG Xuelei</td>
<td>Benthic records indicating long-term increasing nutrient availability and primary production in the Yellow Sea</td>
<td>First Institute of Oceanography, SOA, China</td>
</tr>
<tr>
<td>10:40</td>
<td>COFFEE BREAK</td>
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<tr>
<td>11:15</td>
<td>Dr. Lenz Mark</td>
<td>Effects of microplastic particles on deposit feeding invertebrates</td>
<td>Helmholtz Centre for Ocean Research Kiel (GEOMAR)</td>
</tr>
<tr>
<td>11:40</td>
<td>Dr. LI Chengxuan</td>
<td>Assessment of DMSP-turnover reveals a non-bioavailable pool of dissolved 1 DMSP in coastal waters of the Gulf of Mexico</td>
<td>First Institute of Oceanography, SOA, China</td>
</tr>
<tr>
<td>12:05</td>
<td>Prof. Dr. SMETACEK Victor</td>
<td>Green and golden seaweed tides on the rise</td>
<td>Alfred Wegener Institute Bremerhaven</td>
</tr>
<tr>
<td>12:30</td>
<td>Session chair: Prof. Dr. FUKUI Manabu</td>
<td>Session summary and discussion</td>
<td></td>
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<tr>
<td>12:55</td>
<td>LUNCH BREAK</td>
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</tr>
</tbody>
</table>
### Session: Short and long-term variability of biogeochemical cycles in coastal and marine systems
**Session chair: PD Dr. JENNERJAHN Tim**

<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker(s)</th>
<th>Title</th>
<th>Institution</th>
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<tbody>
<tr>
<td>14:00</td>
<td>Prof. Dr. PICHLER Thomas</td>
<td>Marine shallow-water hydrothermal systems as natural laboratories to study biogeochemical cycles</td>
<td>University of Bremen, Department Geosciences</td>
</tr>
<tr>
<td>14:25</td>
<td>Ass. Prof. Dr. YU Huaming</td>
<td>The dynamic process and simulation of global ocean tides and circulation</td>
<td>Ocean University of China</td>
</tr>
<tr>
<td>14:50</td>
<td>PD Dr. JENNERJAHN Tim</td>
<td>Human activities and extreme events increasing dissolved nutrient and particulate organic matter loads in the Brantas River, Java, Indonesia</td>
<td>Leibniz Center for Tropical Marine Ecology</td>
</tr>
<tr>
<td>15:15</td>
<td>Prof. Dr. CHEN Jianfang</td>
<td>Real Time Monitoring of Eutrophication and Hypoxia off the Changjiang Estuary</td>
<td>Laboratory of Marine Ecosystem and Biogeochemistry, Second Institute of Oceanography, SOA, P.R. of China</td>
</tr>
<tr>
<td>15:40</td>
<td>Prof. Dr. SCHRUM Corinna</td>
<td>What drives multidecadal variations in biogeochemical cycles and foodweb dynamics in regional seas: Comparative assessment of North Sea, Baltic Sea and Barents Sea</td>
<td>Geophysical Institute, University of Bergen</td>
</tr>
<tr>
<td>16:05</td>
<td>Session chair: PD Dr. JENNERJAHN Tim</td>
<td>Session summary and discussion</td>
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<td>16:25</td>
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<td>COFFEE BREAK</td>
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<tr>
<td>16:50</td>
<td>Lab visits to ZMT: Chemical lab &amp; „MAREE“, MARUM (17:30)</td>
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<td>19:00</td>
<td>SYMPOSIUM DINNER</td>
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<td></td>
</tr>
</tbody>
</table>

**Friday 18 September**

### Session: Coastal planning and protection
**Session chair: Prof. Dr. HORNIDGE Anna-Katharina**

<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker(s)</th>
<th>Title</th>
<th>Institution</th>
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</thead>
<tbody>
<tr>
<td>9:30</td>
<td>Prof. Dr. CHEN Shang</td>
<td>Technical directives for marine ecological capital assessment: introduction and application in China seas</td>
<td>First Institute of Oceanography, SOA</td>
</tr>
<tr>
<td>9:55</td>
<td>Ass. Prof. Dr. BI Naishuang</td>
<td>Evolution of River Deltas under the impacts of Climate Change and Human Activities</td>
<td>Ocean University of China</td>
</tr>
<tr>
<td>10:20</td>
<td>Prof. Dr. WOLFF Jörg-Olaf</td>
<td>Wave energies and wave-induced longshore currents in an unstructured-grid model – circulation in front of barrier islands</td>
<td>University of Oldenburg, ICBM</td>
</tr>
<tr>
<td>10:55</td>
<td></td>
<td>COFFEE BREAK</td>
<td></td>
</tr>
<tr>
<td>11:20</td>
<td>Dr. KUMARA Marappullige Priyantha</td>
<td>Anthropogenic impacts and management issues in Sri Lankan mangroves</td>
<td>Ocean University-Sri Lanka (NIFNE)</td>
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<tr>
<td>Time</td>
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<tr>
<td>11:45</td>
<td>Prof. Dr. HORNIDGE Anna-Katharina</td>
<td>Marine Knowledge Scapes, Leibniz Center for Tropical Marine Ecology</td>
<td></td>
</tr>
<tr>
<td>12:10</td>
<td>Prof. Dr. QI Dingman</td>
<td>Practice and Experience of Regulation Project of North passage deep waterway in Yangtze Estuary, Shanghai Estuarine and Coastal Science Research Center</td>
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<tr>
<td>12:35</td>
<td>Session chair: Prof. Dr. HORNIDGE Anna-Katharina</td>
<td>Session summary and discussion</td>
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<td>12:55</td>
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<td>LUNCH BREAK</td>
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</tr>
</tbody>
</table>

**Session: Sustainable aquaculture and its governance**  
**Session chair: Dr. BINIAM Samuel-Fitwi**

<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker/Title</th>
<th>Institution/Center</th>
</tr>
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<tbody>
<tr>
<td>13:45</td>
<td>Dr. BINIAM Samuel-Fitwi</td>
<td>LCA based ecological footprinting of aquaculture and fisheries, Institute of Animal breeding and husbandry, Büsum, Kiel University</td>
</tr>
<tr>
<td>14:10</td>
<td>Dr. HERBECK Lucia</td>
<td>Impact of pond aquaculture effluents on seagrass performance in NE Hainan, tropical China, Leibniz Center for Tropical Marine Ecology</td>
</tr>
<tr>
<td>14:35</td>
<td>Prof. Dr. FOCKEN Ulfert</td>
<td>Tracing nutrient flows from marine aquaculture into benthic organisms by stable isotopes of carbon and nitrogen, Thuenen-Institute of Fisheries Ecology</td>
</tr>
<tr>
<td>15:00</td>
<td>Session chair: Dr. BINIAM Samuel-Fitwi</td>
<td>Session summary and discussion</td>
</tr>
<tr>
<td>15:20</td>
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<td>COFFEE BREAK</td>
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<tr>
<td>15:40</td>
<td>Proposals for tentative joint research projects, discussion &amp; summary</td>
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<td>19:00</td>
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<td>SYMPOSIUM DINNER</td>
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**Saturday 19 September**

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<td>DEPARTURE</td>
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</table>
German participants' profiles and abstracts

Dr. BINIAM Samuel-Fitwi

**Education**

2012  Doctorate in Agricultural Science – Aquaculture (*Magna cum laude*), University of Kiel, Germany.

2004  Master of Philosophy in Livestock Industry Management, University of Stellenbosch, South Africa.

2002  Postgraduate courses in Applied Marine Science, University of Cape Town, South Africa.

2001  Bachelor of Science in Marine Biology and Fisheries (Distinction), University of Asmara, Eritrea.

**Employment**

2008–2012  Researcher and scientific employee, Gesellschaft für Marine Aquakultur (GMA) mbH, Germany

2004–2005  Researcher in Inland Fisheries; lecturer and coordinator in curriculum design in the College of Marine Science and Technology, Ministry of Fisheries, Eritrea.

2002–2003  Research assistant in US aquaculture farm, University of Stellenbosch, South Africa

**Selected publications**


LCA based ecological footprint of aquaculture and fisheries

Dr. BINIAM Samuel-Fitwi, Kiel University

Fisheries production has stagnated for the past two decades. On the other hand, aquaculture production has doubled every decade for the past fifty years, representing the fastest growing food sector. The environmental impact of fishing and aquaculture is of increasing concern for sustainable seafood production. Two case studies using utilized life cycle assessment (LCA) method are presented to evaluate the environmental impact of brown shrimp fisheries and trout farming in Germany and to identify hotspots for improvement. Methodological limitations are identified and future research needs are highlighted that may provide the basis to support sustainable policy formulation.
Prof. Dr. FOCKEN Ulfert

Professional Formation

1978 - 1985  Kiel University, Germany
Degree obtained: "Diplom-Biologe" (M.Sc. in Biology) Grade: "Very good"
Major: Fisheries Biology,    Minors: Zoology, Oceanography, Aquatic Chemistry

1986  Technical University of Berlin, Germany
Postgraduate Studies at the Centre for Advanced Training in Agricultural Development (Duration: 12 Months)

1989 - 1990  Ph.D. student at the Institute for Hydrobiology and Fisheries Science, Hamburg University. Degree obtained: "Doktor der Naturwissenschaften" (Ph.D., Faculty of Natural Sciences, Hamburg University), Grade "Good" (1993)

2004  "Habilitation" (German qualification for full professorship) in aquaculture systems and animal nutrition at the University of Hohenheim, with research on the modification of stable isotope signatures in aquatic food chains

Professional Experiences

1987 - 1989  Employee of GTZ (German Co-operation Agency), Germany and Costa Rica

1990-2009  Research associate, lecturer, associate professor at the Department of Aquaculture Systems and Animal Nutrition, Institute for Animal Production in the Tropics and Subtropics, Hohenheim University, Germany.

Since 2009  Senior scientist at Thuenen Institute of Fisheries Ecology, head of Ahrensburg branch (aquaculture and inland fisheries)
Professor supernumerarius at Universität Hohenheim, teaching aquaculture, supervising M.Sc. and Ph.D. students

Selected publications


Tracing nutrient flows from marine aquaculture into benthic organisms by stable isotopes of carbon and nitrogen

Ulfert Focken

Expansion of marine aquaculture is on the European political agenda, but at the same time, the EU Marine Strategy Framework Directive explicitly demands to avoid potentially problematic impacts on the marine environment. This calls for the development of reliable methodologies to trace potential emissions from mariculture operations.

To evaluate the suitability of stable isotopes as tracers for aquaculture-derived nutrients, three formulated experimental diets were fed to sea bass (*Dicentrarchus labrax*) with four replicates each. The main protein components were fish meal, soya protein concentrate and wheat gluten, respectively. The effluents of each tank were passed through a separate tank in which shrimps (*Litopenaeus vannamei*) were reared. Shrimp did not receive any other feed. We then analyzed the isotopic signatures of carbon and nitrogen of the diets, sea bass and shrimps by EA-IRMS (d$_{13}$C in defatted sample, d$_{15}$N from untreated sample).

Shrimp reared in the effluents of fish on fishmeal based diets (Shrimp_FM) showed highest values of d$_{13}$C and d$_{15}$N, higher than those of the respective fish and similar to those determined in benthic organisms from the North Sea. Shrimp reared in the effluents of fish on wheat gluten based diets (Shrimp_WG) showed high enrichment in both d$_{13}$C and d$_{15}$N compared to the diet, again higher than those of the respective fish. Shrimp reared in the effluents of fish on soya protein concentrate based diets (Shrimp_Soy) showed substantially lower enrichment in d$_{13}$C and no enrichment in d$_{15}$N at all, while the enrichment of the fish on soya-based diet was similar to that of wheat gluten based diet.

Our study demonstrates that by modification of the fish feed, feed-derived isotopic signatures can be produced in organisms living on the effluents (uneaten feed and/or feces). However, calibration under controlled conditions seems necessary before field applications.
Prof. Dr. HAGEN Wilhelm

Education

1976-79  Studies of General Biology, Free University of Berlin (West-Berlin)
1988    "Dissertation" (Ph.D.)
1996    "Habilitation" (Postdoctoral thesis)

Employment

1983-87:  Ph.D. student at the Alfred-Wegener-Institute for Polar and Marine Research in Bremerhaven
1988-89:  Postdoc at the University of South Florida, Dept. of Marine Science, St. Petersburg, Florida, U.S.A. National Science Foundation
1989-98:  position similar to assistant professor ("Wissenschaftlicher Assistent und Oberassistent") at the Institute for Polar Ecology, Kiel University.
since 1998:  Professor of Marine Zoology at the University of Bremen

Other

Various functions, e.g. vice dean of faculty biology/chemistry, director of BreMarE
>100 international peer-reviewed publications
>20 major research expeditions

Selected publications


Niehoff B., Kreibich T., Saborowski R., Hagen W. 2015: Influence of physiological conditions and feeding history on digestion, metabolism and fatty acid composition of Temora longicornis females (Crustacea, Copepoda) under different nutritional conditions. JEMBE: in press.

Oceanic zooplankton species exhibit quite diverse life history traits. A major driving force determining their life strategies is the seasonal variability in food supply, which is most pronounced in polar oceans, where fluctuations in primary production are extreme. Seasonal adaptations are closely related to the trophic level of zooplankton species, with strongest environmental pressures occurring on herbivorous organisms. The dominant grazers, calanoid copepods and krill (Euphausiacea), have developed fascinating solutions for successful overwintering at higher latitudes. They usually exhibit a very efficient storage and utilization of energy reserves to reduce the effect of a highly seasonal primary production. The predominant larger *Calanus* species from the Arctic and *Calanoides acutus* from the Antarctic biosynthesize large amounts of high-energy wax esters with long-chain monounsaturated fatty acids and alcohols (20:1 and 22:1 isomers) as major components. They survive the dark season at depth in a stage of dormancy called diapause. In contrast, the Antarctic *Calanus propinquus*, a winter-active species, synthesizes primarily triacylglycerols, which are dominated by long-chain monounsaturated fatty acids with 22 carbon atoms (2 isomers) and yield even higher calorific contents. The omnivorous and carnivorous species, which are less subjected to seasonal food shortage, usually do not exhibit such an elaborate lipid biosynthesis. Herbivores usually do not utilize much of their enormous lipid reserves for overwintering, but channel this energy towards reproductive processes in late winter/early spring. Timing of reproduction is critical especially at high latitudes due to the short production period, and lipid reserves ensure early spawning independent of external resources. These energetic adaptations (dormancy, lipid storage) are supplemented by other life strategies such as extensive vertical migrations, change in the mode of life, and trophic flexibility.
**Education**

01/2012 – present * Post-Doc Scientist, Leibniz Center for Tropical Marine Ecology GmbH (ZMT), Bremen, Germany - Ecological Biogeochemistry Group

08/2007 – 12/2011* PhD candidate, Leibniz Center for Tropical Marine Ecology GmbH (ZMT), Bremen, Germany - Ecological Biogeochemistry Group, PhD (Dr. rer. nat.) in Biology/Chemistry with "summa cum laude" (02/2012)


09/2004 – 09/2006 University of Bremen, Germany

Master of Science (M.Sc.) “passed with Distinction” - International Studies in Aquatic Tropical Ecology (ISATEC)

* on maternal leave 03/2010 - 01/2011 and 11/2012 - 10/2013

**Selected publications**


Impact of pond aquaculture effluents on seagrass performance in NE Hainan, tropical China

Dr. HERBECK Luzia, Leibniz Center for Tropical Marine Ecology

Aquaculture has grown enormously in recent years with China being the largest producer world-wide. However, little is known on the amount and composition of effluents from large-scale pond agglomerations and their effects on tropical coastal ecosystems. We examined the impact of pond aquaculture effluents on the distribution and performance of seagrasses in NE Hainan, tropical China. Samples were taken along transects in three back-reef areas with different extent of aquaculture production in their hinterland. High δ15N in seagrass leaves and epiphytes (6-9‰) similar to values in pond effluents documented aquaculture as dominant nitrogen source in the back-reefs with decreasing impact with distance from shore. Seagrass species abundance, shoot density and biomass were lower and concentrations of nutrients, chlorophyll and suspended matter were higher at nearshore sites with high and moderate pond abundance than at the control site indicating adverse growth conditions. High epiphyte loads and low δ34S in seagrass leaves suggest temporal shading and sulphide poisoning of the nearshore seagrasses. Observed gradients in environmental parameters and seagrass performance indicate that the distance from the pond outlets and size of the adjacent pond agglomeration are major determinants of seagrass degradation.
Professional Work Experience

Since 05/2015 Full Professor, Development and Knowledge Sociology, Leibniz-Center for Tropical Marine Ecology (ZMT) & University of Bremen

08/2014 – 04/2015 Director and Professor, Dept. of Political and Cultural Change, Center for Development Research, University of Bonn

10/2006 – 07/2014 Senior Researcher, Center for Development Research, University of Bonn, Dept. of Political and Cultural Change

Habilitation

10/2008 – 07/2014 Habilitation, Faculty of Philosophy, University of Bonn; Title: “Discourses of Knowledge: Normative, Factual, Hegemonic”, Venia Legendi: Development Research

Doctoral Studies

10/2003 – 03/2007 Dr. phil. In Sociology: "The Construction of Knowledge Societies: The Cases of Germany and Singapore" with Prof. Dr. H. Knoblauch, Technical University of Berlin and Prof. Dr. Tong Chee Kiong, National University of Singapore (NUS) (Grade: 1.0)

01/2005 – 06/2005 Field research in Singapore with Prof. Dr. Tong Chee Kiong, NUS

07/2004 – 12/2004 Field research in Germany with Prof. Dr. H. Knoblauch, TU Berlin

Selected publications


Marine water ways, such as the Straits of Malakka, the Suez canal or the Panama canal, have historically always acted as zones of intensified social interaction. Zones through which people, goods, ideas and belief systems travel; zones which, through the exchange of these, act as culturally diverse trade and knowledge hubs, while at the same time experiencing tremendous losses in biodiversity. This discrepancy between the little used potential to act as nucleus for social mobilisation (or ‘social tipping point’) and the even more so made contribution to reach our ecological tipping points stands at the center of a planned research project. The here suggested presentation outlines the project under construction and hopes to encourage discussion for potential points of cooperation.
Tim Jennerjahn is a Senior Scientist and head of the working group "Ecological Biogeochemistry" at the Leibniz Center for Tropical Marine Ecology in Bremen, Germany. He is trained in geology and biogeochemistry at the University of Hamburg. His research focuses on the biogeochemical response of coastal aquatic systems to environmental change in tropical regions at present and in the past. He is coordinating and participating in collaborative interdisciplinary research projects in Indonesia, India, Brazil, China and Vietnam and has conducted numerous land- and ship-based expeditions. His research in the past years concentrated on the effects of land-based human activities on coastal aquatic systems in the tropics, for example, the impact of inputs of nutrients, organic matter, organic pollutants and suspended sediments on mangroves, seagrasses and coastal seas. His research results are published in numerous articles in journals and books. He is an Associate Editor at *Estuarine, Coastal and Shelf Science* and he served as guest editor for numerous special issues of international journals. He is teaching at the University of Bremen and in partner universities abroad and he serves as thesis supervisor for students from Europe, South America, Africa and Asia.

**Education**

04/2009  Privatdozent (cf. Adjunct Professor, Senior Lecturer), Geosciences/Biogeochemistry, University of Bremen; Granting of the *Venia Legendi* and status of Privatdozent, Habilitation thesis: "Biogeochemical response of tropical coastal systems to present and past environmental change"

01/1995  Dr. rer. nat. (cf. Ph.D.), University of Hamburg, Faculty of Geosciences; Dissertation: "Biogeochemistry of sediments from the Brazilian continental margin and adjacent mangrove areas between 8° and 24°S"

09/1989  Diploma (cf. M.Sc.), Geology-Paleontology, University of Hamburg, Faculty of Geosciences

**Selected publications**


Increasing human modifications of the coastal zone are endangering the integrity of coastal ecosystems during the Anthropocene. This is of particular importance in SE Asia where large parts of the population live in the coastal zone and economically depend on its resources. The region is also affected by extreme natural events like storms, earthquakes and volcano eruptions. The Indonesian island of Java which has a population density >1,000 inhabitants km\(^{-2}\) is a prime example in this respect. Its second largest river, the Brantas, empties into the shallow Madura Strait through two major branches, the Wonokromo and the Porong. Major land use in the catchment is agriculture (61\%) and the hydrology of the river is regulated by 8 large dams and numerous weirs. The estuarine lowlands are characterized by extensive aquaculture ponds. The eruption of a mud volcano near the Porong in 2006 added another factor affecting the amount and composition of the dissolved and particulate river loads. We found high concentrations of dissolved inorganic nutrients and particulate organic carbon (POC) related to land use with maxima during the rainy season. While high nitrate and POC loads originated from upstream regions dominated by agriculture, high amounts of ammonium were introduced from lowland aquaculture. The high POC load resulted in low oxygen concentrations particularly in the dry season. The additional input of suspended sediment, POC and ammonium from the mud volcano exacerbated oxygen depletion in the Porong. The high POC supply led to high benthic degradation resulting in high ammonium release from sediments as well as high rates of carbon burial. Most likely the mud volcano input amplifies adverse effects of human activities in the river catchment on the biogeochemistry of coastal waters.
PD Dr. Annette Ladstätter-Weißenmayer graduated in Chemistry, at the University of Mainz, Germany in 1989. She got her PhD at the Max-Planck Institute for Chemistry, Department of Airchemistry in Mainz, Germany. Since 1993 she is a Post doc at the Institute of Environmental Physics and Remote Sensing, University Bremen, Germany, with Prof. Dr. John P. Burrows. In 2008 she got her habilitation in Environmental Physics. Her scientific focus is atmospheric physics and chemistry as well as the analysis of satellite based SCIAMACHY data. In addition to that in-situ measurements and chemical and transport models are used to understand Atmospheric Pollution Events in the Tropics and Sub-tropics.

**Selected publications**


Pollution events have a great influence on the atmosphere. During these pollution events, ozone precursors such as carbon monoxide (CO), nitrogen oxides (NOx), methane (CH4), and other hydrocarbons are emitted. With chemical chain reaction, tropospheric ozone is photochemically produced (Jenkin, Clemitshaw, 2000) and influence large region due to its long lifetime.

SCIAMACHY has produced over the past 10 years a unique set of database (Bovensmann et al., 1999). Based on SCIAMACHY measurements, tropospheric ozone is retrieved by using the limb-nadir matching (LNM) technique (REF). The focus of this study is the improvement of SCIAMACHY limb profiles with respect to optimise the retrieval of stratospheric ozone amount to get finally a more accurate tropospheric ozone product. Results show limb profile improvements in different altitude layers. The comparison with ozonesonde demonstrates a decline of differences of about 5 ~ 15 DU in stratospheric ozone amount, hence a significant average up of retrieval accuracy.
Dr. Susanne Lehner studied Mathematics and Physics at the University of Hamburg, Germany. She received her MSc (1979) in applied mathematics at Brunel University, Uxbridge (UK) and received her PhD 1984 in Geophysics at the University of Hamburg. During the PhD she worked as a research scientist at the Max-Planck Institute for Meteorology in Hamburg, Germany. She joined the German Aerospace Center DLR/DFD in 1996. Since 1999 she is head of the team Radar Oceanography at DLR, Institute for Remote Sensing Technology (IMF), Oberpfaffenhofen. In SAR Oceanography research focussed on developing algorithms to extract information on wind fields, sea state, currents and underwater topography from SAR images. Recent interest in addition to global sea state measurements is in high resolution coastal SAR Oceanography, especially TerraSAR-X oceanography and meteo-marine observations and maritime traffic surveillance in near real time. She holds a faculty position at the Nova Southeastern University, Port Everglades, Florida (USA). She was appointed as Affiliated Faculty Member in 2013. Currently she is head of Maritime Security Lab in Bremen, Germany, established in July 2013.

Selected publications


Remote sensing Synthetic Aperture Radar (SAR) data from TerraSAR-X and Tandem-X (TS-X and TD-X) satellites have been used for validation and verification of newly developed coastal forecast models in the German Bight of the North Sea. The empirical XWAVE algorithm for estimation of significant wave height has been adopted for coastal application and implemented for NRT services. All available TS-X images in the German Bight collocated with buoy measurements (6 buoys) since 2013 were processed and analysed (total of 46 scenes/passes with 184 StripMap images). Sea state estimated from series of TS-X images cover strips with length of ~200km and width of 30km over the German Bight from East-Frisian Islands to the Danish coast. The comparisons with results of wave prediction model show a number of local variations due to variety in bathymetry and wind fronts.
Dr. LEHMANN Ralph

Degrees
1985  PhD in Mathematical Optimization, Humboldt University, Berlin
1982  Diploma in Mathematics, Humboldt University, Berlin

Employment

1992-present  Alfred Wegener Institute for Polar and Marine Research, Potsdam: Senior Scientist

1984-1991  Meteorological Service / German Weather Service, Potsdam: Scientist

Research Topics

- Modelling of stratospheric chemistry
- Development and application of algorithms for the analysis of complex chemical reaction systems
- Mathematical methods for data analysis

Teaching

Block lectures on stratospheric chemistry:
- Tokyo Institute of Technology, Japan, 2013
- University of Stockholm, Sweden, 2010
- University of Bern, Switzerland, 2009
- Swedish Institute of Space Physics, Kiruna, Sweden, 1997, 2000

Selected publications


The impact of oceanic emissions on stratospheric ozone

Dr. LEHMANN Ralph, Alfred Wegener Institute for Polar and Marine Research AWI

Oceanic algae may emit bromine- and sulphur-containing substances. Their transport and chemical conversion in the atmosphere and their potential impact on stratospheric ozone are discussed. A technical tool for a detailed analysis of stratospheric ozone chemistry (automatic determination of catalytic cycles) is presented. The question whether this tool may also be useful for the analysis of chemical systems in the ocean will be raised.
Education and Employments

2003 – now Post-doctoral position at the Leibniz Institute of Marine Sciences (GEOMAR)


1998 – 2001 Research employee at the Zoological Institute at the University of Kiel. Research on the influence of disturbance on the structure of Western Baltic fouling communities. Funded by the German Science Foundation (DFG)


1996 Training as a semiprofessional scientific diver at the University of Kiel


Selected publications


Effects of microplastic particles on deposit feeding invertebrates

Dr. LENZ Mark, GEOMAR Helmholtz-Zentrum für Ozeanforschung Kiel

The talk summarizes the results of two global research projects on the effects of microplastic pollution on marine deposit feeding invertebrates. In laboratory assays, various species of polychaetes, holothurians, gastropods and crustaceans were exposed to pollution by microplastic particles over the course of 1 - 3 months. The findings reveal that the presence or absence of measurable impacts as well as the size and direction of effects vary between species and study systems. This indicates that the influence of microplastics on the performance of marine invertebrates depends on species characteristics and on environmental settings such as the presence of further abiotic stressors.
Gerrit Lohmann studied physics and mathematics at the Universities Göttingen and Marburg, and received the diploma in physics in 1992. From 1992 to 1995 he worked as a graduate research assistant at the Alfred-Wegener-Institute for Polar and Marine Research in Bremerhaven, Germany. In 1994, he was a visiting scientist at the Earth Science Centre, University of Gothenburg and got a scholarship of the German Academic Exchange Service DAAD. He obtained his Ph.D. Degree in physics in Bremen in 1995. After 5 years at the Max-Planck-Institute in Hamburg working on climate modelling, he worked at the Geosciences Department of Bremen and the Meteorological Institute at the University of Hamburg. From 2002 to 2004, he had a tenure position at Bremen University, Center for Marine Environmental Sciences and was lecturer at the University of Hamburg and the European Graduate College in Marine Sciences. Since July 2004, he is a professor for physics of the climate system ("Paleoclimate Dynamics") at the Alfred-Wegener-Institute for Polar and Marine Research in Bremerhaven in cooperation with the Physics Department at the University of Bremen. He authors 140 peer-reviewed publications in international journals in the fields of climate modelling, and statistical analysis of observational and proxy data. Gerrit Lohmann was the President of the climate division of the European Geosciences Union (2006-2009). Gerrit Lohmann is initiator and speaker of the Earth System Science Research School (ESSReS) at the University of Bremen, Jacobs University Bremen, and AWI Bremerhaven (2008-2015). Gerrit Lohmann is spokesperson in the Helmholtz research program PACES for the topic "The Earth System from a Polar Perspective" (2014-2018).

Selected publications


Northern Hemisphere Holocene SST trends re-examined

Prof. Dr. LOHMANN Gerrit, Alfred Wegener Institute for Polar and Marine Research

We compare the ocean temperature evolution of the Holocene as simulated by climate models and reconstructed from marine temperature proxies on a global scale. We use transient simulations from a coupled atmosphere–ocean general circulation model, as well as an ensemble of time slice simulations from the Paleoclimate Modelling Intercomparison Project (PMIP). Independently of the choice of the climate model, we observe significant mismatches between modelled and estimated SST amplitudes in the trends for the last 6000 yr. Alkenone-based SST records show a similar pattern as the simulated annual mean SSTs, but the simulated SST trends underestimate the Alkenone-based SST trends by a factor of two to five. We test if such discrepancies can be caused by too simplistic interpretations of the proxy data. Our results indicate that modelled and reconstructed temperature trends are to a large degree only qualitatively comparable, thus providing at present a challenge for the interpretation of proxy data as well as the model sensitivity to orbital forcing. One possible drawback of present climate models is that they cannot represent spatially heterogenous patterns and regional dynamics.

On a hemispheric scale, one earlier hypotheses suggested a Holocene SST large-scale seesaw pattern between the N-Pacific and N-Atlantic. A long-term warming of the North Pacific Ocean was proposed, whereas the North Atlantic experienced continuous cooling. However, new proxy-based results reveal a spatially diverse SST pattern in the subarctic Northwest Pacific, not supporting the hypothesis of a large-scale Holocene seesaw trend in SST development, but instead support a cooling trend in the Northwest Pacific Ocean which is also in better agreement with the insolation-driven trend in most PMIP models. The heterogenous pattern in the North Pacific suggests furthermore that the atmospheric dynamics plays a dominant role. A new climate model simulation suggests a weakened Aleutian Low during the Mid-Holocene, which is consistent with the Northeast Pacific cooling and Northwest Pacific warming trends, as seen in the data. A positive feedback between SST changes and atmospheric circulation is proposed.
Prof. Dr. Justus Notholt graduated in Solid State Physics at the University of Kassel in 1985. In his diploma thesis he studied the structure of amorphous semiconductors using X-ray spectroscopy. He received his PhD degree in Physical Chemistry at the same University in 1989 in the field of Surface Enhanced Raman Scattering, working in the area surface science and electrochemistry. As a postdoctoral fellow at the Joint Research Centre of the EC in Ispra/ Italy, he switched to atmospheric science where he advanced a DOAS-system for simultaneous measurements of atmospheric trace gas and aerosol concentrations. In September 1990, he moved to the Alfred-Wegener-Institute for Polar and Marine Research. There he began atmospheric trace gas observations in both Polar Regions and developed measurement and analysis techniques for using the moon as infrared light source during the polar night. Furthermore he started ship borne FTIR measurements to obtain the latitudinal variability of atmospheric trace gases. In April 2002 he obtained a professorship at the University of Bremen. His activities now comprise development and application of spectroscopic observations from the microwave via the infrared to the visible spectral region, using ground-based and satellite instruments. Scientific topics are greenhouse gas observations, stratospheric and mesospheric studies, and sea-ice remote sensing.

Selected publications


Throughout the last decades remote sensing has been established as a powerful tool in climate research and environmental studies. Measurements from the ground or satellites allows measuring the total column concentrations of more than 30 trace gases and properties of the earth surface, like the sea ice extent. In the first part of the talk basics of remote sensing will be explained. In the second half results in relation to climate research will be presented and discussed. This will include observations of the atmosphere, the ocean and the sea ice.
WORK EXPERIENCE

2008-present Professor, Geochemistry and Hydrogeology, University of Bremen

2008-present Courtesy Professor, Department of Geology, University of South Florida

2004-2008 Associate Professor, Department of Geology, University of South Florida

2003-2008 Courtesy Associate Professor, Department of Civil and Environmental Engineering, University of South Florida

2000-2008 Director, USF Center for Water Analysis

1999-2004 Assistant Professor, Department of Geology, University of South Florida

1998-1999 Postdoctoral Fellow, University of Saskatchewan

EDUCATION

Graduate:

1994 to 1998: Doctor of Philosophy, Geology, Ottawa-Carleton Geoscience Centre

1992 to 1994: Master of Science, Geology, Colorado School of Mines

Undergraduate:

1989 to 1992: Geology, Christian Albrecht’s Universität, Kiel, Germany.

Selected publications


Marine shallow-water hydrothermal systems as natural laboratories to study biogeochemical cycles

Prof. Dr. PICHLER Thomas, University of Bremen

Research on seafloor hydrothermal activity has focused primarily on deep-sea blacksmokers, which are primarily found along the mid-ocean ridges and in deep back arc basins. Submarine hydrothermal activity, however, is not confined to deep-water environments. Hydrothermal vents have been documented on the tops of seamounts, on the flanks of volcanic islands and in other near shore environments characterized by high heat flow. Presently more than 50 locations of so-called marine shallow-water hydrothermal systems are known. The discharge of hot mineralized fluids into near shore marine environments creates steep physical, chemical and biological gradients. This, combined with easy accessibility, makes them "natural" laboratories to study a wide range of chemical, physical and biological processes. Studies can be performed either through measuring/observing along biogeochemical gradients or by conducting experiments along biogeochemical gradients. Until present studies have covered topics including the adaptability of micro, meio and macro organisms to changes in biogeochemical cycles. Working in this environment has the potential to overcome several of the limitations of "normal" laboratory experiments.
Prof. Dr. SAINT-PAUL Ulrich

Holding MSc and PhD in biology with specialisation on hydrobiology and fisheries sciences. Senior scientist in aquatic ecology. Since 2014 retired as full professor in marine ecology at the University of Bremen. For 20 years head of the Department for Mangrove Ecology of the Leibniz Center for Tropical Marine Ecology (ZMT) in Bremen, Germany. Over 30 years working experiences in the tropics, especially in South America (Brazil). Co-ordinator of several integrated international research projects. Specialist in tropical aquaculture, fisheries sciences, floodplain and mangrove ecology. Author of a significant number of scientific publications. Editor and co-editor of international scientific journals. Academic teaching experiences on the field of fishery science and tropical aquatic ecology. Supervision of many MSc and PhD students.

Selected publication


The need for a holistic approach in mangrove related fisheries research – Lessons learnt from the German/Brazilian research project MADAM

Prof. Dr. SAINT-PAUL Ulrich, Leibniz Center for Tropical Marine Ecology

The main objective of the bilateral German Brazilian MADAM program (Mangrove Dynamics and Management) was to generate the scientific basis enabling the sustainable stewardship of the resources of the Caeté mangrove estuary in Northeast Brazil in the sense of integrated coastal (zone) management. Main emphasis was given to fish and crabs captured by artisanal fishermen. The presentation describes the project strategy as developed and modified in the context of research results obtained over a period of 10 years. It is argued that a continuous discussion process is essential to assess the validity of the strategies formulated at the beginning of a medium-time project, particularly if the project is of interdisciplinary nature. To achieve this, it was necessary to acquire in-depth knowledge of natural processes as well as of the relevant institutional, cultural, economic, social and political dynamics.
Victor Shahed Smetacek was born in 1946 in India and acquired his B.Sc. in Biology in Nainital, India in 1964. He was awarded a scholarship to study Marine Biology at the University of Kiel, Germany where he received his PhD degree in 1975. His early research focused on plankton ecology of coastal waters of northern Europe and in 1986 he was appointed Professor of Bio-Oceanography at the University of Bremen and Head of the Pelagic Biology Section of the Alfred Wegener Institute Helmholtz Centre for Polar and Marine Research in Bremerhaven, Germany. His research focus shifted to the biology of sea ice and ice-covered waters, including krill, and the role of Southern Ocean plankton in the global carbon cycle. He has served as Chief Scientist on 8 interdisciplinary, international cruises on board RV “Polarstern” the last three of which carried out iron fertilization experiments in the Antarctic Circumpolar Current. Smetacek has supervised numerous PhD students and published a number of papers in leading scientific journals and books on a variety of themes pertaining to the structure and functioning of planktonic ecosystems with emphasis on the links between ecology and biogeochemistry. He has served on the International Scientific Steering Committee of various research programmes, on the Scientific Councils of institutions in Germany and abroad and has received several prestigious awards for excellence in research.

Selected publications


Green and golden seaweed tides on the rise

Prof. Dr. SMETACEK Viktor, AWI Bremerhaven

Reports of sudden beaching events of huge masses of seaweed (macroalgae) that clog the coastline and pile up and rot on the shore have increased worldwide in recent years. These “seaweed tides” can harm tourism-based economies, smother aquaculture operations or disrupt traditional artisanal fisheries. Coastal eutrophication is the obvious, ultimate explanation for the increase in seaweed biomass but the proximate processes responsible for individual beaching events are complex and require dedicated study in order to develop effective mitigation strategies. Harvesting the macroalgae, a valuable raw material, before they beach could well be developed into an effective solution.
Dr. SU Jian

Education


Professional Experience

2007-present Researcher, Institute of Oceanography (IfM), ZMAW, University of Hamburg, Germany

2007-2010 Researcher, GKSS Research Center, Geesthacht, Germany

Research interests

Impact of climate change on coastal seas; Numerical modelling of hydrodynamics in estuaries, coastal and shelf seas; Coastal upwelling dynamics; Integrating data analysis of remote-sensing data, time-series observations and in situ measurements.

Selected publications


Cross-shelf water and heat exchange in the East China Sea: a climate perspective

Dr. SU Jian, Universität Hamburg, ZMAW

Choosing an interactive coupling between atmosphere and ocean models was widely practiced in regional climate study over the last decades. The added value of the coupling is attributed to providing regional details and incorporating the feedback of the ocean in regional climate downscaling. Such coupled model system serves for a variety of purpose, such as detailed process studies, air-sea interaction studies and long-term simulations. However, the necessity of including the ocean component in the regional climate downscaling is still under evaluation. Here we present a coupled model system applied to the North Sea, comprising a regional ocean model HAMSOM (resolution 3 km), an atmospheric model REMO (resolution 37 km) and the coupler OASIS.

The assessment presented in this study focused on the reaction of the ocean component. The uncoupled model experiment used the sea surface temperature (SST) from the global model as boundary input for the atmospheric model. The comparison of SST data revealed that spatial pattern of SST in coupled model simulation showed no major deviation from observations. In the uncoupled model simulation, a drift from observations was found when integrating the model for more than 10 years. This led us to revisit the individual years (1997 and 1999) to look for the mechanism of better performance in coupled model. We found that the cloud cover was responsible for correcting the heat flux errors in the uncoupled run. Therefore, we concluded that the local air sea interaction processes are responsible for damping these errors, in particular at the coastal waters, which leads to a better ocean model results.

The coupled model simulation shows no major deviation from observations, thus it can serve as a tool for a free climate-model run. In the uncoupled model simulation, we found a drift from observations when integrating the model for more than 10 years. This drift is due to the accumulation of latent heat flux errors. The interactive coupling could damp these errors in a long-term simulation. Finally, it provides a better simulation in the coastal waters.
University education

1977-1985 University of Hamburg, Diploma in Oceanography Doctorate

1986-1990 Max-Planck-Institute for Meteorology Uni Hamburg Postdoctorate

1991-1992 Max-Planck-Institute for Meteorology, Hamburg

1993-1999 Antarctic CRC, Hobart, Australia Positions

1986-90 Research Scientist, Max-Planck-Institute for Meteorology and German Science Foundation (DFG) Special Research Initiative 318 ―Climate relevant processes in the system ocean-atmosphere-cryosphere‖, Hamburg

1991-92 Research Scientist, Max-Planck-Institute for Meteorology (Climate Dynamics Group), Hamburg

1993-99 Senior Research Scientist, Co-operative Research Centre for the Antarctic and Southern Ocean Environment (Antarctic CRC), Hobart, Australia since 1999

Professor for Physical Oceanography (Theory), ICBM, Carl-von-Ossietzky University, Oldenburg

Professional experience since 2010

2010 – present Advisory editor SpringerBriefs in Earth Sciences, Springer

2010 Scientific Steering Committee IMUM 2010, MIT, Boston, USA

2011 Scientific Steering Committee IMUM 2011, AWI, Bremerhaven

2012 Scientific Steering Committee IWMO 2012, Yokohama, Japan

2013 Scientific Steering Committee Futoore 2013, BSH, Hamburg

2015 – present Scientific Steering Group member, KDM – Coastal ocean modelling

Selected Publications


Wave energies and wave-induced longshore currents in an unstructured-grid model – circulation in front of barrier islands

Prof. Dr. WOLFF Jörg-Olaf

An unstructured-grid model (FVCOM) coupled to a wave model (FVCOM-SWAVE) is used to investigate the hydrodynamic and wave energy conditions during a moderate and a storm situation in the southern North Sea. Two different setups are presented. One setup covers the whole North Sea with moderately increased grid resolution at the coast, whereas the other comprises a very high resolution East Frisian Wadden Sea setup, one-way coupled to the coarser North Sea model.

The results of both model setups are validated, compared to each other and analysed with a focus on longshore currents and wave energy. The results show that during storm conditions strong wave-induced longshore currents occur in front of the barrier islands of the East Frisian Wadden Sea, resulting in total current speeds up to 2 m/s. This effect is especially pronounced in the high-resolution setup.

The wave-current interaction also influences the sea surface elevation by raising the water level in the tidal basins. Calculated wave energies show large differences between moderate wind and storm conditions with time-averaged values up to 200 kW/m.

The numerical results indicate that wave-current coupling, albeit numerically expensive, cannot be ignored because it plays an important role in almost all near coastal transport phenomena (sediments, contaminants, bacteria, etc.).
Chinese participants' profiles and abstracts

Prof. Dr. CHEN Xueen

Dr. CHEN Xueen is a professor with College of Physical and Environmental Oceanography, Ocean University of China (OUC) since 2007 and Executive Director of Center for Sino-German Cooperation in Marines Sciences. Dr. CHEN received his PhD degree from University of Hamburg in 2004. He has rich academic experiences in marine sciences community of home and abroad, namely, visiting scholar at Tongji University, Shanghai (2000-2001), research scientist in such institutions as Center for Marine and Atmosphere Science, University of Hamburg (Jan, 2005-Oct, 2006; July 2007-Oct, 2007) and AWI, Bremenhaven, Germany (Oct, 2006-Feb, 2007). From 1995 to 2000, Dr. CHEN participated in a number of marine field work, for example, Ocean Research Cruise to Jiaozhou Bay, China, China-Japan Joint Kuroship Investigation Cruise to the East China Sea, and Research Cruise to Bohai Sea (commander-in-chief). Since 1996, Dr. CHEN has joined in two projects supported by National Natural Science Foundation of China, namely, Wave-induced Circulation and Inter-wave Transport Process in Tropical Region, and Study on the Three-dimensional Chaotic Motion and the Great Ocean Barrier in the Tropical Pacific as well as two programs under National High Technology Research and Development Program of China (863 Program), i.e., Retrieval of Air-sea Water Vapor Flux from Satellite Remote Sensing Data and Study on Adjoint Method and its Application to Multi-source Remote Sensing Data Assimilation of Sea Surface Wind and Current Field. Moreover, he undertook a DFG project, Earth Rotation: Modelling the Earth's Rotation, Figure and Gravity Field Using A Consistent Earth System Model from 2005 to 2006. Dr. CHEN's research interests focus on estuarine and coastal dynamics, meso-scale process and global climate change.

Selected publications


Modelling of nonlinear internal waves propagating over Dongsha Atoll in the South China Sea

CHEN Xueen, Ocean University of China, xchen@ouc.edu.cn

The three-dimensional, non-hydrostatic numerical model MITgcm driven by 8 tidal components is used to simulate nonlinear internal waves (NLIWs) in the South China Sea (SCS) with high resolution. In order to validate the numerical model, the model outputs are firstly compared to TPXO7.1 data sets and temperature measurements from the WISE field experiment in late June 2005, which are in well agreement with the model predicted results. The model could well predict the whole life circle including evolution and dissipation of NLIWs originated from Luzon Strait (LS). The gradient of sea surface height around Dongsha Atoll indicates that, single NLIWs with long crest line normally break into two parts after collision with Dongsha Atoll. Northwest to the Dongsha Atoll, these two parts with short crest lines gradually interact and combine, but not merged into a single wave at all.

Detailed dynamic processes of NLIWs interacting with Dongsha Atoll are presented and discussed in this article, such as the NLIW packets being diffracted by the atoll, a weak reflected NLIW, and intricate wave-wave interaction. Calculating baroclinic energy flux of the incident energy and reflect energy at Dongsha Atoll indicated that in spring tide and neap tide, the reflected to incident energy ratios are different. Three mooring sites and a profile which is perpendicular to the crest line of NLIWs were selected to discuss the characteristics of amplitude and wave speed.
Education

2000-2004  B.Sc in College of Marine Geosciences, Ocean University of China, China

2006  Exchange student in Kiel University, Germany

2004-2009  PhD in College of Marine Geosciences, Ocean University of China, China

Employment

2009-2013  Lecturer, College of Marine Geosciences, Ocean University of China (OUC)

2013-  Associate professor, College of Marine Geosciences, OUC

Research Interests

Sediment transport in the coastal oceans, coastal evolution

Selected publications


Evolution of River Deltas under the Impacts of Climate Change and Human Activities

Ass. Prof. Dr. Naishuang BI Ocean University of China

River deltas tend to be highly populated regions in coastal zones due to their ability to support large human populations because of their highly fertile soil and productive fisheries. As natural recorders of depositional conditions, erosion-accretion patterns of river deltas are sensitive to global environmental changes, including those caused by climate change and human activities. Erosion-accretion patterns of the river deltas are primarily controlled by the rivers sediment supply and sea-level change in coastal oceans. Over the last century, sediment loads in numerous rivers decreased sharply primarily due to climate change and human activities, such as river damming, irrigation and soil conservation practices. Sea levels off river deltas are continually rising as a result of global warming and delta subsidence. Both the changes in sediment supplies and sea levels alter the erosion-accretion patterns of river deltas. Here, we took the Huanghe (Yellow River) and Changjiang (Yangtze River) as examples to quantitatively examine the contributions of climate change and human activities to the changes in water and sediment discharges to the sea, to reveal effects of their changes on the processes of sediment transport off the river mouths in the context of sea-level rise, and finally to assess the impact of climate change and human activities on the evolution of the Huanghe and Changjiang deltas.
Prof. Dr. CHEN Jianfang

Education
1990 Zhejiang University, Earth Science, Hangzhou, BS
1993 Zhejiang University, Environmental Chemistry MS
2005 Tongji University, Shanghai, Paleoceanography PhD

Appointments
2014 - present Director of Laboratory of Marine Ecosystem and Biogeochemistry, Second Institute of Oceanography (SIO, SOA), Hangzhou, China
2002 - present Principal Research Professor in biogeochemistry unit, Laboratory of Marine Ecosystem and Biogeochemistry (now Laboratory of Marine Ecology and Environment), Second Institute of Oceanography (SIO, SOA), Hangzhou, China
1993 - 2001 Junior Researcher, Assistant Researcher, Associate Research Professor (SIO, SOA), Hangzhou, China

Selected publications


Inputs of anthropogenic nutrients and carbon dioxide-rich waters to the coastal waters can not only lead to eutrophication in the surface water and hypoxia in the bottom water, but also will enhance acidification of coastal water. Inter order to understand the details mechanism of concurrence of eutrophication and hypoxia in the Changjiang Estuary, a real time monitoring system has been established since 2010 under the support of Chinese National Key Technologies R&D Program and Chinese Marine Research Special Funds for Public Welfare Projects. The platforms of the monitoring system includes a 3-meter buoy with water column chain unit and a seabed mounted unit, the sensors includes those can detect wind speed and direction, air and water temperature, salinity, currents, PAR, DO, pH, nutrients, Chl a, turbidity and pCO₂ etc..
Dr. CHEN Meixiang

Education Background
09/2000~06/2004: Dept. of Oceanography, Ocean University of China, B.S
09/2004~06/2009: Dept. of Oceanography, Ocean University of China, Ph.D

Professional Experience
06/2009-now: Dept. of Oceanography, Hohai University, Lecturer

Research Areas
Climate change and sea level rise

Selected publications


Sea level change in the midlatitude North Pacific Ocean (MNPO) is dominated by both seasonal and interannual variability and wind mainly influences the area north of 39°N on seasonal timescale by Sverdrup dynamics and north of 33°N on interannual timescale by both the first-mode baroclinic Rossby waves and Ekman pumping. Seasonal wind-forcing sea level changes from the three effects have phase lags with observation, and the largest contributor is Sverdrup transport, which can only explain less than 20% of the real-time seasonal sea level change north of 39°N. Rossby waves and Ekman pumping contribute 60% and 50% to the interannual sea level variation in the mid-eastern and northeastern MNPO, respectively. Real-time influence of the sum of the three effects is dominated by the interannual contribution of the Rossby waves and Ekman Pumping in the northeastern NMPO by about 40-50%.
Dr. Shang Chen is Senior Scientist, Leader of Marine Ecological Assessment Group, First Institute of Oceanography, State Oceanic Administration of China (SOA). His research areas focus on marine ecosystem services, ecological capital and compensation. He was awarded Ph. D in Marine Ecology by Ocean University of China in 2002. He is member of PICES S-HD sub-committee and Editorial Committee of Acta Ecologica Sinica. He led and drafted 2 China national standards, including “Technical Directives for Marine Ecological Capital Assessment” and “Guidelines of Marine Ecological Survey”. He led a six-year national assessment project on ecosystem services of China coastal waters funded by SOA in 2005. Because of his innovative findings in marine ecosystem services, he was granted Second Class Award of Innovation in Marine Science and Technology, awarded by SOA.

Selected publications


Technical directives for marine ecological capital assessment: 

Introduction and application in China seas

Prof. CHEN Shang First Institute of Oceanography, SOA

Marine ecological capital (MEC) concept is developed based on the theories on natural capital and ecosystem services. MEC is defined as those marine ecological resources which provide benefits for mankind. It consists of marine living organisms and their habitat and the marine ecosystem entirety. The value of MEC includes not only the value of standing stock of marine ecological resources but also the value of marine ecosystem services. Marine ecosystem services are the benefits human beings obtain from marine ecosystem, which consist of the four services, i.e. the provisioning, regulating, cultural and supporting services. In 2012, National Standardization Committee of China and State Oceanic Administration of China jointly published the national standard “Technical Directives for Marine Ecological Capital Assessment” to guide the valuation of marine ecological resources and ecosystem services at national, province and city levels.

The assessed coastal waters cover 19.31*104 km2 in China Seas, which provided 1,034.18 billion CNY of ecosystem services in 2008, which supported 1,740 billion CNY of marine industrial output. The average value per square km coastal waters provided 5.57 million CNY of ecosystem services per year. In 2008, Bohai Sea’s coastal waters provided 215.24 billion CNY of ecosystem services, Yellow Sea’s coastal waters provided 328.86 billion CNY, East China Sea’s coastal waters provided 191.48 billion CNY, while South China Sea’s coastal waters provided 298.60 billion CNY.

The value of China coastal ecosystem services show the following spatial patterns: (1) From onshore to offshore waters, the value of ecosystem services decreases gradually; (2) The high value of service distributing in the maricultural and recreational areas.

The 11 provincial coastal waters are classified into 3 kinds of ecosystem service utilization models. Liaoning, Shandong, Guanxi and Hainan belong to the P-model, i.e. provisioning-service-dominated utilization model; Hebei and Tianjin belong to the C-model, i.e., cultural-service-dominated utilization model; While Jiangsu, Shanghai, Zhejiang, Fujian and Guangdong belong to the PC-model, i.e. Provisioning and cultural service-dominated, balance utilization model.
Prof. Dr. GAO Guoping

Education Background

1990-1994  B.Sc. Physical Oceanography, Ocean University of Qingdao (now Ocean University of China)
1999-2002  M.Sc. Physical Oceanography, Ocean University of China
1996-2011  Ph.D. Physical Oceanography, University of Massachusetts, USA

Professional Experience

1994-2005,  Engineer, Senior Engineer, Ocean University of China
2005-2006,  Visiting Scientist, University of Massachusetts, USA
2006-2011,  Research Assistant, University of Massachusetts, USA
2011-            Professor, Shanghai Ocean University

Research Areas

Application and development of FVCOM Model
Ocean dynamics
Ploar Oceanography

Selected publications


Gaop Guoping, Dong Zhaoqian et al., Advances of physical oceanographic study on Prydz Bay and adjacent region, Antarctica, Journal of Shanghai Ocean University, 2013, 2 (3) :313-320.
The Arctic Ocean has been experiencing a rapid decrease in sea ice area and increase in the marginal ice zone (MIZ) in summer during the latter half of the 20th century. To investigate the role of ice-wave interaction in wave attenuation and wave-induced ice breaking and enhanced deformation, we implemented ice-wave interaction dynamics into the unstructured-grid surface wave model (SWAVE) and coupled it with the Arctic Ocean FVCOM (AO-FVCOM) to establish a fully ice-wave-current unstructured-grid finite-volume model for Arctic Ocean research. Process-oriented experiments were conducted to examine the influence of ice-induced wave attenuation on the wind sea and swell waves propagating into the marginal ice zone (MIZ). The model-simulated significant wave heights and peak periods were compared with available buoy measurements in the Arctic. The results were improved when the ice-induced attenuation and the blocking effect of the ice on the surface forcing mechanisms are included in the model system. The model results also suggested that the ice-induced wave attenuation played a key role in dissipation of wind sea and swell waves in the MIZ. With a simplified estimation of the wave-induced ice breaking, the ice concentration was less than 0.6 the wave-induced internal ice strain could cause significant ice breaking when waves penetrated into the MIZ.
Dr. LI Chengxuan

Education Background

Ph.D. and M.S., 2010. College of Chemistry and Chemical Engineering, Ocean University of China; University of South Alabama, USA


Professional Experience

Research Assistant, Research Center for Marine Ecology, The First Institute of Oceanography, State Oceanic Administration, 2010- present.

Visiting Scholar, Department of Marine Sciences, University of South Alabama, 2008-2009

Research Areas

Microbial biogeochemistry of organic matter in aquatic environments with emphasis on the role of bacteria in production and consumption of trace gases and organic sulfur compounds

Selected publications


Chengxuan Li, Guipeng Yang, Jinfen Pan, Honghai Zhang, 2010. Experimental Studies on Dimethylsulfide (DMS) and Dimethylsulfoniopropionate (DMSP) Production by Four Marine Microalgae. Acta Oceanologica Sinica, 29(4): 78-87. (SCI)
Dissolved dimethylsulfoniopropionate (DMSPd) is an important substrate for marine microbes and a precursor of sulfur gases. We compared DMSPd turnover flux rates in coastal seawater measured with a 35S-DMSPd tracer to those obtained with the DMSP-uptake inhibitor glycine betaine (GBT). The 35S-DMSP tracer method yielded DMSPd turnover fluxes (35.7-215 nM d\(^{-1}\)) that were 1.7 to 152 times higher than those obtained in parallel samples with the GBT inhibitor method (0.34 -21.6 nM d\(^{-1}\)). Tests confirmed that GBT functioned as planned by strongly inhibiting DMSPd degradation and that 35S-DMSPd gave accurate estimates of DMSPd loss rate constants. This left the initial DMSPd concentrations, determined by small volume drip filtration (SVDF) through Whatman GF/F filters (0.7 µm nominal retention) ([DMSPd]\(_{SVDF}\)), as a potential cause of the discrepancy in rate estimates. Indeed, experiments with GF/F filtrate incubations showed that the initial [DMSPd]\(_{SVDF}\) overestimated the bioavailable DMSPd concentrations for at least two reasons: 1) a significant fraction (10-37%) of DMSP passing through GF/F filters was in particles > 0.2 µm (likely bacteria) and therefore not dissolved, and 2) a significant pool (0.5-1.0 nM) of operationally-dissolved, non-particle DMSP ([DMSPd]<0.2µm), comprising 40-99% of [DMSPd]\(_{SVDF}\), was refractory to degradation on a time scale of days. The nature of this refractory DMSP is currently unknown. Accounting for DMSP-containing particles and the refractory DMSP pool in GF/F filtrates is necessary to obtain the true bioavailable DMSPd concentrations, which we estimate to be very low (0.006 -1.0 nM; mean of 0.41 nM) in the coastal waters examined, and to avoid overestimation of DMSPd turnover fluxes when using the 35S-DMSP tracer technique.
Prof. Dr. LI Xiaoming

**Education Background**

Dr. rer. nat Geophysics University of Hamburg, 2010

M.Sc. (Equ.) Ocean Physics Ocean University of China, 2006

Beng. Information Engineering Xi’an Communication College of the PLA, 2002

Ph.D. Candidate Ocean University of China (OUC) 2002.9 – 2006.5

**Professional Experience**

2014.2 - Research Professor Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences (CAS)

2013.2-2014.1 Wissenschaftler Remote Sensing Technology Institute, German Aerospace Center (DLR)

2010.2 – 2013.1 Jungwissenschaftler Remote Sensing Technology Institute, German Aerospace Center (DLR)

2006.6 -2010.1 Doktrand Remote Sensing Technology Institute, German Aerospace Center (DLR)

**Selected publications**


Derivation of high resolution surface currents field from spaceborne SAR

LI Xiaoming Institute of Remote Sensing and Digital Earth, CAS

Sea surface winds, waves and currents are the three most important, as well as basic ocean dynamic parameters in the air-sea interface. While derivation or retrieval of the former two parameters from spaceborne SAR data is in a mature stage and even becomes operational now, derivation of sea surface currents still remains some limitation and difficulties. The Along-Track-Interferometry (ATI) is considered to be the most effective configuration to derive sea surface current field with a spatial resolution in scale of kilometer from spaceborne SAR data. The launching of TanDEM-X by the German Aerospace Center (DLR) in 2007 makes it possible to derive sea surface currents field from spaceborne ATI in high spatial resolution.

In the present study, we demonstrate the possibilities to derive sea surface currents from the TerraSAR-X and TanDEM ATI data, not only in coastal zone, but also in open sea. One case shows the example of deriving sea surface currents field in the internal wave observed in the Dongsha Atoll. The second case occurs in the HangZhou Bay, where we also simulate the tidal current field using the FVCOM for comparison with SAR derivation. The third case is chosen for studying coastal dynamics in the German Bight, where the in situ measurements by HF radar are available for comparison.
Prof. Dr. Qi Dingman

Education Background

April 1999 to July 2001: Post Doctor in State Key Lab of Estuary and Coastal research of East China Normal University, Shanghai.

September 1994 to April 1999: Doctor’s degree in Fluid Mechanics, Shanghai Jiaotong University, Shanghai.

September 1990 to September 1994: Bachelor’s degree in School of Mechanics, Shanghai Jiaotong University, Shanghai.

Professional Experience

July 2010 to Present: Deputy Director of Shanghai Estuarine and Coastal Science Research Center

Jan 2003 to July 2010: Director of numerical technique department in Shanghai Estuarine and Coastal Science Research Center, Shanghai.

July. 2001 to Jan 2003: Assistant Chief Engineer of Shanghai Estuarine and Coastal Science Research Center.

Research Areas

Numerical Simulation, Sediment dynamics, Regulation Project of Port & Waterway Engineering, Water Environmental of Estuarine and Coastal Zone

Selected publications


Practice and Experience of Regulation Project of
North passage deep waterway in Yangtze Estuary

Dr. Qi Dingman Shanghai Estuarine and Coastal Science Research Center

The Regulation Project of north passage deep waterway in Yangtze Estuary is the starting project of comprehensive regulation of the Yangtze estuary. Principles and general layout plan were forwarded based on law of riverbed evolution, flow and sediment of the Yangtze River. Characteristic about Yangtze River flow, sediment movement and salt intrusion has been constantly understood, role about regulating structures to flow field, topography and silting adjustments has been obtained, new experience about using spur dikes to adjust flow dynamic distribution of cross-sectional and longitudinal section, then to adjust the Riverbed has been gained.
Dr. Huaming Yu, an associate professor from the College of Physical and Environmental Oceanography, Ocean University of China. He is also a research assistant from Texas A&M University at Qatar from 2009. Presently, he teaches Introduction to Oceanography. His research interests include global circulation & tide simulation and the marine renewable energy development. During 2008 to 2010, he spent two years on studying at the Hamburg University in Germany. Dr. YU participated in the research expedition by 'Marian', one of the best ocean survey vessel, to investigate the marine environment of the Mediterranean Sea. Dr. YU published more than 20 papers in the international and Chinese journals, such as *Acta Oceanologica Sinica*, *Ocean Dynamics*, and so on. He also got a patent of invention about unstructured mesh generation for the global ocean simulation’. Now, he takes charge in and also engaged in several important research projects, such as National Marine Renewable Energy Developing Project of China.

**Selected publication**


The dynamic process and simulation of global ocean tides and circulation

Associate Prof. YU Huaming  Ocean University of China

Ocean tides and circulation, with several hundred years' history of study, are the important dynamic process in the ocean. Tides, as a form of wave, are the rise and fall of sea levels caused by the combined effects of gravitational forces exerted by the Moon, Sun, and the rotation of the Earth. Ocean circulation is driven by the thermodynamic process, the Earth’s water cycles, Coriolis force wind, etc. The two dynamic processes are complex and interact with each other. It is essential to do the numerical simulation and forecast of the tides and circulation in order to better know the ocean. This study reviewed the dynamic processes of global tides and circulation, narrated the research of the formation mechanism and introduced basic patterns of them. Furthermore, the development of numerical simulation on a global scale was presented. It would great if you could know more about the global marine dynamic processes by this study.
Education Background

1991-1995, Bachelor (Ecology), College of Marine Life Sciences, Ocean University of Qingdao

1995-1998, Master (Marine Biology), First Institute of Oceanography, SOA

1999-2003, Ph. D. (Environmental Sciences), College of Marine Life Sciences, Ocean University of China (Qingdao)

Professional Experience

August 1996 – October 1996 and July 1998 – September 1998 (Research Assistant), Department of Biology, Hong Kong University of Science & Technology.

1998 – 2000 (Research Assistant), 2000-2004 (Assistant Research Professor), 2004-2007 (Associate Research Professor) and 2007-present (Research Professor), 2010-present (Deputy Director, Marine Ecology Research Center), First Institute of Oceanography, SOA.

2010 – 2014 (Head of General Affairs) and 2014-present (Vice Director), Indonesia-China Center for Ocean and Climate

Member of the Regional Working Group for the biodiversity component of the UNDP/GEF Project “Reducing Environmental Stress in the Yellow Sea Large Marine Ecosystem” (2007 - 2009)

Member of the Section on Climate Change Effects on Marine Ecosystems (2011) and Working Group on Environmental Interactions of Marine Aquaculture (2008-2012) of PICES

Selected publications


The Yellow Sea is a semi-enclosed shallow shelf and is vulnerable to eutrophication pressures from the neighboring lands. We present an analysis of sediment records of the key bioactive elements C, N and P at three sites locating in the north, middle and south of the Southern Yellow Sea. The sediment contents of total organic carbon (TOC) and total nitrogen (TN) both presented an overall increasing feature, while total phosphorus (TP) without significant increase, over the last century; the molar ratios C/N and C/P also presented significant increases since six decades ago. The low C/N ratios (<8) in the middle and north of the Southern Yellow Sea also indicated that the sediment organics derived from the sea. The contents of TOC, TN and TP in the surface sediment were mostly positively correlated with contents of these elements except for TP and primary productivity in the overlying water column of Southern Yellow Sea. The trends of historical changes of sediment contents of TN and TP and N/P molar ratio were consistent with the observed increase of nutrients in the water column of 36°N in the Yellow Sea since late 1970s/late 1980s and the trends of TOC and TN contents also paralleled with the decadal increases of chlorophyll a content, zooplankton and macrobenthic biomass. The results indicate that the Yellow Sea has been receiving more nutrient inputs from the neighboring lands, which stimulated the sea’s production toward a higher level through bottom-up effects.
Third country participants' profiles and abstracts

Prof. Dr. FUKUI Manabu

Short CV:

1984-1989 Graduate School of Science, Tokyo Metropolitan University (PhD)
1994-1995 Guest Microbiologist, Max-Planck Institute of Marine Microbiology
1998-2004 Associate Professor, Graduate School of Science, Tokyo Metropolitan University
2004-present Professor, Institute of Low Temperature Science, Hokkaido University
2014-2020 Member, Science Council of Japan

Selected Publication:


In the global carbon cycle, organic carbon sedimented and buried in aquatic environments plays a significant role as a major sink of carbon [Dean & Gorham, 2009; Emerson & Hedges, 1988]. Whether the sedimented organic carbon is recycled or remains buried permanently largely depends on microbial activity. With regard to marine systems, sedimentation mainly occurs in coastal areas including tidal flats and sublittoral zones, which are one of the most productive marine ecosystems. In addition to active on-site primary production of organic matter, sublittoral zones receive the organic matter transported from terrestrial ecosystems. Thus, sublittoral sediments are exposed to a high input of organic compounds of both autochthonous and allochthonous origins. Seasonal changes in the mineralization of organic compounds in sediments were investigated in temperate, sublittoral zone sediments (Tokyo Bay, Japan). The total mineralization rate and sulfate reduction rate showed large seasonal variations over the year, and although the fluctuations in both rates correlated with temperature, the latter was irregularly high in May. The concentration of organic carbon dissolved in interstitial water was specifically high in April. A culture-based experiment was also conducted under temperatures corresponding to the seasonal changes. In the culture incubated at a temperature corresponding to April (13 °C), hydrolysis and fermentation proceeded, but terminal oxidation was hindered, thereby resulting in acetate accumulation. At a temperature corresponding to May (22 °C), acetate oxidation coupled with sulfate reduction was observed. The temperature-related differences were also reflected in the bacterial community structure in the cultures analyzed by DGGE. In the culture incubated at the lower temperature, sulfate-reducing bacterium of incomplete oxidizer was detected, while sequence found in the culture incubated at the higher temperature was related to complete oxidizers. These results suggest that complete and incomplete-oxidizing sulfate-reducing bacteria act as distinct functional groups, responding to temperature in different ways, particularly in environments characterized by large temperature fluctuations. The relationship between temperature and organic matter mineralization is still an important subject of environmental science (Gudasz et al., 2010), because it is a key to understand feedback from ecosystems to climate change. Our study indicated that there may be some threshold temperatures corresponding to large-scale changes, and it is important to take into consideration the temperature history of the sediments reflected in microbial community structures.
Dr. KUMARA Marappullige Priyantha

Education

2005  Bachelor of Science (BSc) special degree in Fisheries Biology with a second class upper division (University of Ruhuna, Matara, Sri Lanka)

2011  Doctor of Philosophy (PhD), in Mangroves and Coastal Ecology, Edinburgh Napier University, UK.

Professional / Research Qualifications and Experience

2011 November to today: Senior Lecturer in Fisheries and Marine Sciences, Ocean University-Sri Lanka. Lectures undertaken on the impacts of climate change on the coastal ecosystems and associated communities.

2006-2011: Teaching experiences in School of Life sciences, Edinburgh Napier University, UK.

2009: Principle investigator of the research on Investigation of Garbage and Urban Drainage Pollution in Puttalam lagoon

2013: Regional Training on Mangrove Restoration and Management (IUCN), Thailand

Selected publications


Anthropogenic impacts and management issues in Sri Lankan mangroves

Dr. Kumara Marappullige Priyantha, Ocean University of Sri Lanka

Mangroves are intertidal plant communities growing in the tropical and subtropical areas. They enhance the coastal fisheries production, function as coastal carbon sinks, provide habitats for many other faunal species, and supply various economic services to the coastal people. Sri Lankan mangrove shows a patchy distribution in lagoons but holding almost 1/3 of world mangrove species raising Sri Lanka as a mangrove-Hot-spot. Harvesting forestry and non-forestry products from mangroves has long being traditionally practised in Sri Lankan mangroves by the adjacent human communities in a sustainable manner with less attention on acquiring mangrove lands in to other land uses. Most of the small-scale damages caused by such practises are recoverable under sufficient seed supply and with no further disturbances. However, since the beginning of the commercial shrimp farming in early 90s, large mangroves lands were converted in to shrimp ponds in north-western Sri Lanka. The shrimp industry eventually became unsuccessful and now the ponds are abandoned where the modified ground do not supports the natural regeneration of mangroves in to the abandoned ponds. Ecological mangrove restorations are needed in to those abandoned ponds however, issues with the land ownerships, shortage of funds and lack of proper coordination between the relevant institutes has delayed such restorations. Mangrove planting has been practised in some areas of Sri Lanka mostly as single-species cultivations with higher survival. The potential of such high-density mangrove plantations to elevate the soil against the sea-level rise also has been demonstrated in Sri Lanka. However, less attention has been paid for ecological restorations where natural colonization should be promoted. Large scale land reclamations for housing, salt production, agriculture, infrastructure developments, garbage disposal and tourist hotels have also heavily damaged mangroves in the recent past. Lack of boundary demarcations for mangrove forests, presence of mangroves in private lands, unsustainable harvesting of firewood and timber, release of garbage and pollutants, cattle browsing and grazing in mangroves, hydrological changes in mangrove areas, higher tree mortality in some mangrove areas, absence of strong policy and legal frameworks for mangrove protections are also among the management challenges. These issues need to be addressed by a national mangrove management plan cooperating with all the stakeholder groups in order to preserve Sri Lankan mangroves for the future.
Education

Research fields
Schrum’s primary research during the past 20 yrs focused on the understanding and modeling the functioning of regional marine systems and their coupled interactions with atmosphere and marine biosphere. A significant part of Schrum’s research efforts therefore went into the development of coupled models, resulting in one of the first regional coupled atmosphere-ice-ocean models, a NPZD-hydrodynamic model and a coupled ground water-sea water model. Schrum guided the compilation of a number of modeling databases and observational based gridded products, which have found their way into a wider research community and are distributed to the users via the ICES working group WGOOFE (www.wgoofe.org). Moreover her developments were utilized in the Norwegian Pollution Assessment Programme (Tilførsel).

Employment and working history
Since 2006 Professor, Geophysical Institute, University of Bergen
2004-2006 Senior Scientist, Danish Institute of Fisheries Research, Denmark
1997-2004 Assistant Professor (Wissenschaftliche Assistentin), Institute of Oceanography, University of Hamburg.
1990-1997 Scientist, Institute of Oceanography, University of Hamburg
Since 2012 Professor II NERSC-Nansen Environmental Research Centre
2008-2010 Researcher 1 (principle) NIVA-Norwegian Water Research Institute


Selected Publications


What drives multi-decadal variations in biogeochemical cycles and food-web dynamics in regional seas: Comparative assessment of North Sea, Baltic Sea and Barents Sea

Prof. Dr. SCHRUM Corinna, Geophysical Institute

Climate variability and changes on a range of time scales mediate the hydrodynamic and biogeochemical processes responsible for nutrient supply to the euphotic zone and thus impact marine primary production, biogeochemical cycling and foodweb structure. We will present new, consistent and improved reconstructions of hydro- and ecosystem dynamics for the regional seas North Sea, Baltic Sea and Barents Sea by coupled physical-biological models and investigate long term variations in all three systems.
## Participants’ contact information

### German Participants

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# Third-party Participants

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General information

Accommodation

1. Hotel Heldt
Friedhofstraße 41
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Phone: +49 421 43 60 300
Fax: +49 421 21 51 45
Internet: www.hotel-heldt.de

2. Ringhotel Munte am Stadtwald
Parkallee 299
28213 Bremen
Phone: +49 4 21 2 20 2-0
Fax: +49 421 2 20 26 09
Internet: www.hotel-munte.de

3. 7THINGS – my basic hotel Bremen
Universitätsallee 4
28359 Bremen
Phone: +49 421 696 77 377
Fax: +49 421 696 55 166
Internet: www.7things-hotel.de/en/home.html
**Mail, Fax and Internet**

Mail services and facsimile communication are available in the Secretariat Office. Internet connection is available in your room if you bring your lap-top with you. Please go to the Reception Desk of the hotel to open the Internet connection service.

**Meals**

Breakfast is available for all registered participants in the hotel. Lunch is offered in the Mensa of the University of Bremen. On Day 1, a Tutor will accompany you to the Mensa. Your lunch ticket entitles you to a free choice of one main meal, one dessert and one non-alcoholic beverage. Each ticket is valid only for 1 day so be sure not to lose them. Dinner is offered at various places depending on the day's program and situation.

**Phone Numbers in Common Use in Bremen**

Report to the Police 110  
First Aid 112  
Fire Alarm 110

**Registration**

Registration will be on Monday, September 7 from 9:00 to 10:30 at Leibniz Center for Tropical Marine Ecology, at the University of Bremen, Germany. If you miss the registration time, please contact the Secretariat (contact information below)

**Secretariat**

The Symposium Secretariat is at SFG 0370, at the University of Bremen, Germany.  
Tel: +49 421 218 60383  
Ms Regine Moll  
University of Bremen, Germany  
International Office  
SFG 0370

**Transportation**

The University of Bremen will be responsible for transportation between the airport and the campus as well as other venues for group activities in Bremen.

In order to get from your hotel to the venue, take the tram 4 towards Lilienthal or Borgfeld and exit at Bürgermeister-Spitta-Allee. From there, take the 21 bus towards Universität and exit at the bus stop "Universität/NW1". The ride takes approximately 15 minutes.

If you want to take local city buses, you are advised to have exact change since most buses operate with an automatic cash-ticketing system.

**Shopping**

The major shopping centers are located near the City Hall. Please take the tram No. 6 (direction: Flughafen/Airport) from the University or the tram No. 4 (Direction: Arsten) and get off at "Domsheide", this will take you to the major sights and shops.
**Notice**

1. Please read the agenda carefully for timely presence at the programs.

2. Please turn off your mobile phone or leave it mute during the lectures.

3. Please take care of your mini-bar expenses and the telephone bill when you leave the hotel.

4. Please inform the secretariat if you leave the hotel ahead of the schedule.

5. Please leave the postal services and facsimile communication to hotel front desk.

6. Internet connection is available in your hotel room if you bring your lap-top with you.

7. If you had any other inconveniences, please contact the Secretariat.
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