future ocean
KIEL MARINE SCIENCES

RESEARCH CONFERENCE

Advances in Integrated Ocean Research towards Sustainable Development

July 3 – 6, 2017 | Kiel, Germany
Location: Wissenschaftszentrum, Fraunhoferstraße 13

Organized by the Cluster of Excellence 'The Future Ocean' at Kiel University, Kiel,
and supported by the German Academic Exchange Service (DAAD)
through funding from the Federal Foreign Office and by the Joachim Herz Stiftung, Hamburg.

CAU Kiel University Christian-Albrechts-Universität zu Kiel · IPN · muthesius kunsthochschule · ZBW · ifw · GEOMAR · Joachim Herz Stiftung · DAAD

Welcome

to this year's international Cluster conference: 'Advances in Integrated Ocean Research towards Sustainable Development' in Kiel, Germany.

Our goal for this conference is to connect Kiel alumni scientists and early career researchers from around the world with the current Kiel marine sciences community. We hope to provide a platform for you to engage with each other and to exchange perspectives and project ideas on integrated ocean research in the context of sustainable development.

In addition, we will use the conference to evaluate the proposals of 43 postdoctoral researchers who were selected from almost 90 applicants to our Postdoc Project Proposal Call. Up to 20 new postdoctoral projects will be supported by the Cluster of Excellence 'The Future Ocean' starting this fall. We hope that all of you actively engage to support the new project ideas, critique them by asking questions and in that way make it a positive experience for all of us. We invite all participants to become part of the Kiel marine science family regardless of the outcome of this particular funding scheme. We have many more opportunities that you can learn about.

We hope that the conference will lead to ideas for new lines of research from discovery, understanding and assessment to solution opportunities especially in the area of three grand challenge areas: Ocean Pressures, Ocean Resilience and Ocean Prosperity, supplemented by the integrative themes Digital Ocean and Ocean Education & Lifelong Learning.

Specifically, we are aiming to enhance the international community and network building to establish an engaging framework for joint activities amongst former, current and future Kiel marine scientists and to create an environment that is conducive to the formation of international collaborations.

Finally, we are gratefully for the financial support provided by grants from the German Academic Exchange Service within the framework of the Alumni Programme and by the Joachim Herz Stiftung, Hamburg. And last but not least the base funding provided to our Cluster 'The Future Ocean' by the German Federal Ministry of Research and Education and the state government of Schleswig-Holstein.

We welcome you to Kiel and wish you productive and inspiring discussions during the conference!

Martin Visbeck
Professor, GEOMAR Helmholtz Centre for Ocean Research Kiel – Head of Research Unit Physical Oceanography / Co-speaker 'The Future Ocean'

Ralph Schneider
Professor Kiel University, Institute of Geosciences, Director KMS, Center for Interdisciplinary Marine Science-Kiel Marine Science, Kiel University / Co-speaker 'The Future Ocean'

Nele Matz-Lück
Professor Kiel University, Director Walter-Schücking Institute for International Law

Sponsors

The conference is generously supported by grants from the German Academic Exchange Service, the Joachim Herz Stiftung and the Cluster of Excellence 'The Future Ocean'.

The alumni conference 'Advances in Integrated Ocean Research towards Sustainable Development' has been organized by the Cluster of Excellence 'The Future Ocean' at Kiel University, Kiel. In recent years, German higher education institutions have made significant efforts to keep in touch with their alumni, which to a great extent is due to the support of the German Academic Exchange Service (DAAD) through funding from the Federal Foreign Office and the Federal Ministry of Economic Cooperation and Development. Continuing education and training in the sense of lifelong learning, and the initiation and deepening of expert and professional contacts, are the primary focus of the funding scheme and aim at targeting alumni worldwide.
www.daad.de/alumni-programm

The Joachim Herz Stiftung was founded in summer 2008 and promotes education, science, and economic and scientific research, as well as the personal development of young adults. The economy, science, and strong personalities are key drivers of innovation within society – and the Joachim Herz Stiftung enables people to harness their potential in these areas. The foundation invests in education, because it forms the foundation for active participation and efforts to shape society.

The foundation's concept of education implies personal responsibility and initiative, the ability to reflect on one's actions, motivation, independent thought and action, and acceptance of others. Interdisciplinary research requires communication and supportive networks. With the program 'Begegnungszonen' the foundation supports events for young scientists who aim at learning new approaches and establishing new contacts.
www.joachim-herz-stiftung.de

The Cluster of Excellence 'The Future Ocean' is an interdisciplinary research group in Kiel with 250 experts in marine science, economics, medicine, math, informatics, law, sociology and art from Kiel University, GEOMAR Helmholtz Centre for Ocean Research Kiel, the Institute for the World Economy and Muthesius Academy of Arts. They investigate climate and ocean change, evaluate the opportunities and risks of such change and develop sustainable ocean resource management options. 'The Future Ocean' is supported within the framework of the 'excellence initiative' of the German Research Foundation (DFG) on behalf of the German government and the federal states of Germany.
www.futureocean.org

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Monday, July 3, 2017

08.30 – 09.00	Registration
09.00 – 09.30	**Welcome Martin Visbeck**
09.30 – 10.15	**Keynote** | **Noel Keenlyside** | *Challenges towards environmentally based ecosystem prediction*
10.15 – 10.45	Networking break

Science Session Ocean Pressures

10.45 – 11.00	**Lina Röschel** | *Protecting and restoring biodiversity across the marine realm: Is the existing EU policy framework fit for this purpose?*
11.00 – 11.15	**Valentin Schatz** | *The new international instrument on fisheries in the Central Arctic Ocean: A step forward for the conservation of marine living resources in the Arctic?*
11.15 – 11.30	**André Giskard Aquino da Silva** | *Parnaíba Delta shoreline change: Erosion versus progradation*
11.30 – 11.45	**Ali Nasrolahi** | *Warming impacts on marine biofouling and benthic communities*
11.45 – 12.00	**Helenice Vital** | *Environmental change and human activity impacting Brazilian NE shelf system*
12.00 – 12.15	**Cyrus Karas** | *The formation of AAIW from the Pliocene until present*

12.15 – 12.30	Group photographs	
12.30 – 13.30	Networking lunch	
	Science Session **Ocean Pressures**	**Science Session** **Ocean Resilience**
13.30 – 14.00	**Tamar Guy-Haim** | *Ocean Hitchhikers: The biogeography and physiology of animal-aided dispersal and bioinvasions*	**Laura Gomez de la Peña** | *Deep-Alboran: Revealing the seismic and tsunamigenic hazard to coastal cities in the western Mediterranean*
14.00 – 14.30	**Dirk Metz** | *Using the International Monitoring System for studying the ocean soundscape*	**Jacob Geersen** | *Evaluating the impact of bottom trawling on the seafloor*
14.30 – 15.00	**Amit Lerner** | *Modification of marine animal vision by light and particulate pollutions*	**Yaping Lin** | *Does the reduction in population size of taxa during the transport stage of the invasion process select for populations with high invasion success?*
15.00 – 15.30	**Helmke Hepach** | *From fish to ozone destruction – Toxic disinfection byproducts in coastal regions*	**Elliot Scanes** | *Can intertidal oysters and mussels handle the heat waves of a future ocean?*
15.30 – 16.00	Networking break	

16.00 – 16.30	**Nicolas Ory** | *Mechanisms and effects of microplastic ingestion by juvenile planktivorous fish*	**Julia Grosse** | *Changes in organic nutrient supply and its consequences for carbon flow through the mixotrophic loop*
16.30 – 17.00	**Teresa Morganti** | *An integrative approach to assess the effect of anthropogenic pollutants on the feeding metabolism of sponges*	**Yuming Feng** | *Could artificial upwelling prevent and mitigate coral bleaching?*
17.00 – 17.30	**Christopher Somes** | *Impacts of nutrient pollutants on marine productivity, deoxygenation and sedimentary feedbacks in the Anthropocene: From the coastal to the global ocean*	**Anna Roik** | *The role of the bacterial microbiome in acclimatization and resilience of reef-building corals*
17.30 – 18.00	**Virginie Sanial** | *Could the isotopic exchange occurring during submarine groundwater discharge explain the land-ocean 'Boundary Exchange'?*	**Christiane Schmidt** | *Adaptation in marine calcifying holobionts: Can foraminifera be the winners of climate change?*
18.00 – 18.30	**Lars Heepe** | *Getting the grip on barnacle adhesion: Comparative study on barnacle-substrate interactions*	**Thomas Larsen** | *What can bivalves teach us about algal regime shifts?*
19.00	Bus transfer to conference dinner	
19.30 – 22.00	Conference Dinner: Restaurant Gosch	

Tuesday, July 4, 2017

8.30 – 9.15 **Keynote** | **Heike Link** | *Interdisciplinary Coastal Research - Examples and perspectives from the Department Maritime Systems, University of Rostock*

Science Session Ocean Resilience

9.15 – 9.30 **Shital Paulu Godad** | *Remote forcing of winter cooling in the Arabian Sea*

9.30 – 9.45 **Ilker Basaran** | *The IMO Polar Code: A proactive solution to sustainability quest*

9.45 – 10.00 **Iba Wa** | *Lipid extraction and fatty acid quantification of newly isolated Indonesian microalgae to be used in shrimp hatchery*

10.00 – 10.30 Networking break

Science Session Ocean Prosperity

10.30 – 10.45 **Patricia Villarubia-Goméz** | *Marine plastic pollution and planetary boundary threats: The drifting piece in the sustainability puzzle*

10.45 – 11.00 **Katrina Abhold** | *Europe's marine biodiversity and the need to look upstream for ecosystem-based management*

11.00 – 11.15 **Vincent Saderne** | *The role of blue carbon habitats: Seagrass meadows, mangrove forests and saltmarshes, on carbon burial and sea level rise protection in the Red Sea and Arabian Gulf – with a special emphasis on the inclusion of inorganic carbon in blue carbon research*

11.15 – 11.45 **Florian Mühlbauer** | *Aquaculture beyond the territorial sea – State of the art, environmental effects, legal identification and guidance*

11.45 – 12.15 **Rüdiger Voss** | *Of fish and men – Integrated fisheries management solutions to secure sustainable marine food production*

12.15 – 12.45 **Bleuenn Guilloux** | *Integrating international ocean and climate legal frameworks: A core challenge for environmental governance and sustainable development*

12.45 – 14.00 Networking lunch

	Science Session Ocean Pressures	Science Session Ocean Resilience
14.00 – 14.30	**Ibrahim Sadiek** | *Chirped laser dispersion spectroscopy as a new tool for environmental monitoring of CO_2 and other marine related trace gases*	**Rebecca Scott** | *Resilience of sea turtle populations to pressures from offshore oil activities under variable oceanic conditions: informing a new network of MPAs in Gabon*
14.30 – 15.00	**Andrew Margolin** | *The ocean's natural and anthropogenic carbon cycles constrained: Novel analysis of the total $\delta^{13}C$ system in seawater*	**Animesh Kumar Gain** | *Social-ECological interdependencies in dynamic COASTal zones (SECure-COAST)*

15.00 – 15.30	**Matthew Humphreys** | *Ocean deoxygenation, oxygen minimum zone expansion, and the marine carbon cycle*	**Christian Baatz** | *Supporting adaptation to sea level rise in Small Island Developing States. A normative investigation of possible criteria and procedures for a fair distribution of adaptation finance*
15.30 – 16.00	Networking break	
16.00 – 16.30	**Volkmar Sauerland** | *Assessing biogeochemical models: Multi-objective optimization and misfit bounds*	**Joana Gaspar de Freitas** | *Coastal cities in the Portuguese world: Risks, vulnerabilities and resilience in a historical perspective*
16.30 – 17.00	**Fengjie Liu** | *Effect of climate change on iron uptake by marine phytoplankton – Potential importance of boundary layer effect*	
17.00 – 18.30	**Poster pitch talks** (Room Einstein)	
19.30 – 22.00	**Poster session with refreshments** (Audimax at Kiel University)	

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Poster pitch talks

Erik van Doorn | *Grand challenge areas and integrative themes in "The Future Ocean"*

Ocean Pressures

Helena Fortunato | *Biodiversity conservation and marine resources: Bryozoans as case studies*

Pullabhatla Kiran Kumar | *Monsoon and upper ocean stratification variability for the last ~66 ka over the Andaman Seas*

Josefine Maas | *Anthropogenic very short-lived halocarbons from ballast water treatment and their environmental impact*

Ocean Resilience

Champoungnam Panmei | *High-resolution Mg/Ca-derived SST record of the Younger Dryas from the Bay of Bengal*

Nurullah Yildiz | *A comparative study on the coastal wave run-up empirical equations for coastal/ocean resilience*

Mareike Huhn | *Can the urn ascidian Didemnum molle threaten reef resilience?*

Ocean Prosperity

Bicheng Fan | *OSMAC approach on marine fungi for discovery of new anticancer lead compounds*

Ernest Oppong-Danquah | *Discovery of novel anti-phytopathogenic agents through co-cultivation of marine-derived fungi*

Annegret Kuhn | *International Regimes and Marine Resource Governance: Analyzing the Role of Indigenous People*

Heike Link | *Comparative benthic experiments in polar seas – What can we learn from it about ecosystem functions?*

Digital Ocean

Kemgang Ghomsi Franck Eitel | *Tropical instability waves and its feedback in the Atlantic Ocean*

Shunya Koseki | *Can anomaly-coupling improve the tropical Atlantic variability?*

Ocean Education & Lifelong Learning

Mirjam Glessmer | *Public aTANtion! A citizen science project investigating the influence of sunscreen on the Baltic Sea*

Mirjam Glessmer | *What do we need to know to predict ENSO? Student-centered learning in a master's course in Climate Physics*

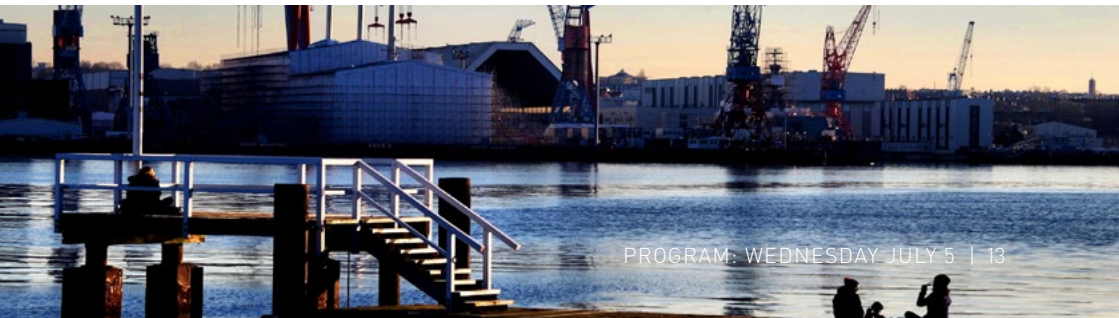
Badr Mabrouk | *Management of seawater intrusion along the coastal zone of the Nile Delta aquifer, Egypt*

Wednesday, July 5, 2017

8.30 – 9.15 **Keynote** | **R. Andreas Kraemer** | *Sustainable ocean economy, innovation and growth: A G20 initiative for the 7th largest economy in the world*

	Science Session Ocean Prosperity	Science Session Digital Ocean, Education & Lifelong Learning
9.15 – 9.45	**Erik Borchert**	*The one hundred marine actinomycete genomes project (ActiGen)*	**Claudine Leonhard**	*Quantification of uncertainties in ocean models*
9.45 – 10.15	**Martina Baum**	*Smart and environmentally friendly polymer blend for antifouling applications*	**Shubhangi Gupta**	*A thermo-chemo-hydro-geomechanical numerical simulation framework for marine geo-system applications*
10.15 – 10.45	**Jan Bielecki**	*Vision made easy: Visual information processing in box jellyfish can reveal basic functional units in neural image analysis*	**Karin Loscha**	*3D scientific animation of marine sponges and their microbial symbionts*

10.45 – 11.15 Networking break



11.15 – 11.45	**Paul Stange** | *Smart aquaculture? Influence of artificial upwelling on the marine food-web structure in a Norwegian fjord*	**Josefin Ahlkrona** | *The impact of ice sheet melting on the ocean - Reducing uncertainty in projections of future sea-level rise and ocean circulation*
11.45 – 12.15	**Sumeet Kulkarni** | *Impact of climate change on inshore sea level extremes and coastal morphology along German coastline*	**Huynh van Luong** | *Online information tracking and understanding in distributed and heterogeneous data sources for underwater smart drones*
12.15 – 12.45	**Christine Bertram** | *Coastal blue carbon ecosystems and sustainable development (BlueS)*	**Timm Schoening** | *Rapid, off-shore analysis of marine imagery*

12.45 – 13.15 **Closing Remarks** | **Martin Visbeck**

13.15 – 14.15 Networking lunch

14.15 – 16.00 **Career Event**

14.30 – 16.00 **For Alumni: Visit to the Kiel Forschungswerkstatt**

16.00 – 21.00 **17th Kieler Marktplatz 'Environmental Aspects of Offshore Wind Energy'**

Career Event / Life after PhD:

Time	**July 5, 2.15 – 4.00**
Venue	Wissenschaftspark
Format	**Panel discussion** – short introduction by each panelist, questions by participants
Moderation	**Dr. Nicole Schmidt** | *Scientific Officer Research Strategy, Kiel University, Kiel Marine Science, Kiel, Germany*

Participants

Industry

Dr. Eva Philipp | *Environmental Lead, Vattenfall, Onshore & Offshore Wind Projects (Germany, Sweden, Netherlands, Denmark, UK), Hamburg, Germany*

Private Sector

Dr. Stephan Hüttmann | *Managing Director, Sensatec GmbH Remediation and Sensor Technologies, Kiel-Berlin-Cologne-Ulm, Germany*

Public Sector

Kirsten Wegner | *Expert Advisor for Protection of the Marine Environment and Wadden Sea, State Ministry of Energy Transition, Agriculture, Environment, Conservation and Digitalisation (MELUND), Schleswig-Holstein, Kiel, Germany*

Science Management

Dr. Katja Barth | *Head Research Affairs, Kiel University, Service Centre Research, IT and strategic Innovation, Kiel, Germany*

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DIE KIELER MEERESWISSENSCHAFTEN

maritimes cluster norddeutschland

17. Kieler Marktplatz | Kiel Marketplace
Environmental Aspects of Offshore Wind Energy

Wednesday, 5th July 2017, 4.00 p.m. - 8 p.m.

Wissenschaftszentrum Kiel GmbH, Fraunhoferstraße 13, 24118 Kiel, Germany

Offshore wind power provides a valuable source of renewable energy that can help reduce carbon emissons, reduce air pollution, create jobs and local business opportunities. Technological advances are allowing higher capacity turbines to be installed also in deeper water, but there is still a lot that is unknown about the effects on the environment (e.g. biological effects, mitigation, environmental impact assessments). Data collection and modeling aims to answer questions for the consenting process and allow regulators to make decisions based on the best available information and achieve an equilibrium between climate change targets and environmental legislation.

Program

4.15 p.m. | Welcome
Dr. Wiebke Müller-Lupp, Coordinator Knowledge Exchange „Future Ocean"
Dr. Nancy Smith, Coordinator Internationalization „Future Ocean"
Moderated by: Dr. Sonia Endres, GEOMAR

4.20 p.m. | Environmental Impacts and Responsibilities - How to foster cohabitation between Offshore Wind Farms and the Marine Environment
Dr. Eva Philipp, Environmental Strategy for Onshore and Offshore Wind, Vattenfall GmbH, Hamburg

4.40 p.m. | Whales' PAL: innovative acoustic device to reduce anthropogenic impact
Prof. Dr. Boris Culik, F³: Forschung . Fakten . Fantasie, Heikendorf

5.00 p.m. | Embedded offshore power supply high-voltage cables in soils at coastal, near and offshore conditions
Katrin Sembdner M.Sc., Kiel University

5.20 p.m. | Offshore Windfarms - licensing procedure and environmental aspects
Janine Sänger-Graef, Bundesamt für Seeschifffahrt und Hydrographie, Hamburg

5.40 p.m. | Networking break

6.00 p.m. | Temperatures and thermal properties of marine sediments - in-situ testing and modeling
Dr. Regina Usbeck, Fielax mbH, Bremen

6.20 p.m. | The German Program on Underwater Munitions: An introduction with regard to national offshore projects
Claus Böttcher, Ministerium für Energiewende, Landwirtschaft, Umwelt und ländliche Räume des Landes Schleswig-Holstein

6.40 p.m. | Financing of an offshore windfarm - risk management
Dr. Jörg Böttcher, HSH Nordbank AG, Kiel

7.00 p.m. | Snacks-n-chat

Contact:
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Please register online by 30th June 2017: www.futureocean.org/17KM

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Excursions | Thursday, July 6, 2017

Excursion 1: Baltic Sea, Kiel – Heiligenhafen

8.45 **Departure** | University main gate Christian-Albrechts-Platz
9.00 Kiel main train station in front of the "Kaiser" steps

The excursion will take you to an interesting section of the southern Baltic Sea shoreline east of Kiel.

- *evolution and present day state of the Baltic Sea including sea-level history*
- *risk of flooding by storm surges*
- *coastal protection*

17.30 **Return to Kiel** | Kiel main train station
17.45 University main gate

Excursion 2: GMA Gesellschaft für Marine Aquakultur, Büsum

8.45 **Departure** | University main gate Christian-Albrechts-Platz
9.00 Kiel main train station in front of the "Kaiser" steps

The GMA, established in November 2004, runs aquaculture research- and development facilities in Buesum, supporting both external and internal aquaculture research and development projects. Another core area is the transfer of aquaculture knowledge and technology for both seawater and brackish water. We will be guided through the facility which includes eight recirculation systems which are installed in two areas of approx. 500m² each.

16.00 **Return to Kiel** | Kiel main train station
16.15 University main gate

Science Session Descriptions

Ocean Pressures

Enhanced input of anthropogenic waste in the form of dissolved or solid matter represents a threat to the Ocean. Ocean pollution includes littering of plastics and industrial waste, noise from shipping and offshore wind farms, fertilizers applied for terrestrial agricultural production, emissions from ships, tailings from mining and elevated atmospheric CO_2. This thematic area covers understanding the distribution and dilution pathways of pollutants and e.g. assessing the potential, vulnerability and environmental and societal impacts of oceanic carbon sequestration options as well as the effectiveness and socio-economic consequences of carbon management techniques.

Ocean Resilience

Resilience against natural ocean disasters will become increasingly important under the perspective of growing population and urbanisation in coastal areas. On the other hand, human activities have altered the ocean and its ecosystems beyond their natural state. This thematic area covers ecological and geological hazards (e.g. harmful algae blooms, de-oxygenation, earthquakes, submarine mass movements or volcanic eruptions) and how to assess, sustain and restore ocean and ecosystem services (food provisioning, climate regulation, coastal protection and cultural benefits) and improve or restore the resilience of coastal societies.

Ocean Prosperity

Oceans provide spiritual, cultural, provisioning and regulating services that improve human physical and mental health and rely on a functional, intact ecosystem. At the same time, the extraction of resources such as food, molecules of biotechnological/medicinal relevance, energy, and raw materials may comprise the integrity of marine ecosystems. This thematic area investigates benefits and challenges of marine seabed resource extraction, marine food supply and marine health/disease functions to improve long term overall human wealth and well-being. An understanding and ▸ ▸ ▸

assessment of the services and potential disservices of the ocean to human's well-being is fundamental for the development of risk assessments and counteractive measures since humankind is progressively turning towards the oceans for securing future resource supplies.

Digital Ocean

The digital revolution towards open science in all disciplines holds tremendous opportunities for integrated marine sciences. Within this thematic area key methods and technologies from mathematics, computer science and engineering are developed and provided for scientific solutions of problems concerned with marine data and computations, by combining the emerging areas of Ocean Informatics and Ocean Numerics. Open science principles will define the basic architecture for an open science approach to ocean science, increase the efficiency of workflows and the transfer of information between expert disciplines. Building on the products of Digital Ocean, a new Ocean Media Lab will develop visualization tools to improve the scientific workflows in marine sciences and to enhance stakeholder engagement.

Ocean Education & Lifelong Learning

A key opportunity for advancing an integrated ocean agenda is to support improvements and innovation in the areas of education, lifelong learning and literacy. The vision for this thematic area is to develop a comprehensive and lifelong learning and education program that addresses a diverse clientele - from schoolchildren and the general public to national and international university students, early career researchers, and professionals. Research in this area will focus on how different approaches, e.g. using serious games and digital media, are perceived by the respective target group and can be employed to enhance ocean literacy.

Steering and Review Committee

- **Tania Marie Anders**
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German Marine Research Consortium, Brussels, Belgium

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IASS Potsdam and Ecologic Institute, Berlin, Germany

- **Heike Link**
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- **DAAD Alumni Grantee**
- **Herz Foundation Fellow**

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