

RESEARCH ALUMNI MEETING:

Sustainable Ocean Development – A Perspective from Former, Current and Future Kiel Marine Scientists

September 28 – 30, 2015 | New York City

Location: Union Theological Seminary, 3041 Broadway



organized by the Cluster of Excellence 'The Future Ocean' at Kiel University, Kiel, and the Earth Institute at Columbia University, New York under the auspices of the sponsorship programme 'Research Alumni Meetings Abroad' administered by the Alexander von Humboldt Foundation and funded by the German Federal Ministry of Education and Research

The meeting is a constituent part of the collaborative project "International Research Marketing" which is a joint initiative by the Alexander von Humboldt Foundation, the German Academic Exchange Service, the Deutsche Forschungsgemeinschaft and the Fraunhofer-Gesellschaft. All the activities within the project are part of the "Promote Innovation and Research in Germany" initiative under its brand "Research in Germany". The initiative is funded by the German Federal Ministry of Education and Research.

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Welcome

to the first Research Alumni Meeting ‘Sustainable Ocean Development – A Perspective from Former, Current and Future Kiel Marine Scientists’.

The goal of this conference is to connect Kiel alumni scientists from the US and Canada with the current Kiel marine sciences community to exchange perspectives and project ideas on integrated marine research in the context of sustainable ocean development. We hope that the symposium will lead to ideas for new lines of inquiry in this rapidly developing field, as well as enhancement in community and network building.

Specifically, we are aiming to establish the 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.

We thank both the Cluster of Excellence ‘The Future Ocean’, Kiel, Germany, and the Earth Institute of Columbia University, New York, USA, for their joint initiative to organize this symposium. We are also very pleased that representatives from research funding agencies and programs in Germany, Europe and the US are supporting the symposium by sharing their expertise on exchange programs and joint funding opportunities.

Finally, we are grateful for the financial support provided by a grant from the Alexander von Humboldt Foundation within the framework of the Research Alumni Strategy Campaign, and generous contributions from the Earth Institute of Columbia University and the German Center for Research and Innovation.

We would like to welcome you to New York and wish you productive and inspiring discussions during the symposium!

Prof. Martin Visbeck

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

Prof. Peter Schlosser

Deputy Director and Director of Research / Maurice Ewing and J. Lamar Worzel Professor of Geophysics, Earth Institute, Columbia University and Lamont-Doherty Earth Observatory, Columbia University

Sponsors and Supporters

The symposium is generously supported by grants from the Alexander von Humboldt Foundation, the Earth Institute at Columbia University, the Cluster of Excellence 'The Future Ocean' and the German Center for Research and Innovation – New York.

The Research Alumni Meeting 'Sustainable Ocean Development – A Perspective from Former, Current and Future Kiel Marine Scientists' has been organized by the Cluster of Excellence 'The Future Ocean' at Kiel University, Kiel, and the Earth Institute at Columbia University, New York, under the auspices of the sponsorship programme 'Research Alumni Meetings Abroad' which is administered by the Alexander von Humboldt Foundation and funded by the German Federal Ministry of Education and Research.

www.research-in-germany.org
www.research-alumni.de



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The Earth Institute is an interdisciplinary research institute at the heart of Columbia University in New York City. It comprises more than 30 research centers and more than 850 experts and educators dedicated to systematic study of global sustainable development challenges such as environmental degradation, climate change, natural hazards, public health, poverty, energy, and urbanization. Earth Institute experts work hand-in-hand with academia, corporations, government agencies, nonprofits and individuals to develop and apply solutions for sustainable development at the forefront of innovation.

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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

The German Center for Research and Innovation (GCRI) in New York is the most accessible and visible portal in North America to the German research and innovation landscape, bringing together key stakeholders in the public and private sectors. These include leaders in science, the humanities, and technology. Furthermore, the GCRI provides a platform to foster creativity and enhance innovation in a rapidly changing world. The GCRI was created as a cornerstone of the German government's initiative to internationalize science and research and is one of six centers worldwide.

German Center for Research and Innovation – New York



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September 28 | 12:30 to 18:00

- 12:30 – 13:00 Registration
- 13:00 – 13:10 **Welcome by the Organizers**
- 13:10 – 13:30 **The Earth Institute at Columbia University and Lamont-Doherty Earth Observatory**
Peter Schlosser
- 13:30 – 14:00 **The Cluster of Excellence Future Ocean and Kiel Marine Science at Kiel University**
Martin Visbeck and Ralph Schneider

14:00 – 14:30 Refreshment and networking break

14:30 – 15:30 **Science Session 1 Valued Ocean**

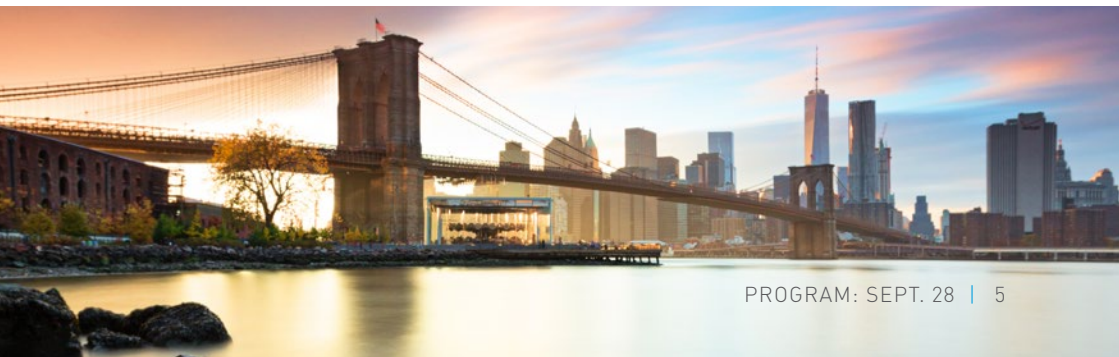
chaired by Jamileh Javid and Tina Treude

Keynote speaker:

Andrew Thurber, Assistant Professor of Ocean Ecology and Biogeochemistry, Oregon State University
Vast, unknown, and critical: Ecosystem function and services provided by the deep sea

Barbara Neumann | *Ecosystem services and sustainable development of coastal regions – Conceptualizing ‘coastal sustainability’*

15:30 – 16:00 Refreshment and networking break



16:00 – 18:00 Science Session 1 Valued Ocean (cont'd.)

Oral presentations:

Biniam Samuel-Fitwi | *LCA based ecological footprinting of aquaculture and fisheries*

Esther Regnier | *Integrating different user groups into fishery management*

Ulrike Kronfeld-Goharani | *The 'nature' of sustainability in ocean affairs from a poststructuralist perspective*

Nigel D'souza | *Evidence for bottom-up and top-down controls on planktonic microbes near natural hydrocarbon seeps in the Gulf of Mexico*

Tania Anders | *Undergraduate research in the marine sciences*

Poster pitch talks:

Jie Song | *Conoidean peptides – Novel ion channel-targeted peptides from the ocean*

Renato Salvatelli | *Fisheries productivity in the Peruvian upwelling ecosystem: Lessons from the sedimentary record to understand the impact of global warming*

Wilfried Rickels | *Measuring sustainable oceanic development*

Monica Rouco | *Microbial diversity within the *Trichodesmium* consortia*

Isobel Yeo | *Mapping the oceans: A global assessment of the deep sea*

Jeff Bowman | *Inferring microbial ecosystem function from community structure*

Dominik Palgan | *Low-temperature hydrothermal systems as potential source of renewable energy. Where to find them on the seafloor?*

Kimberly Pependorf | *Microbial role in the marine phosphorus cycle*

18:30 Dinner

September 29 | 09:00 to 22:00

09:00 – 10:00 **Science Session 2 The Ocean in 2100**

chaired by Ralph Schneider and Gisela Winckler

Keynote speaker:

Michael Oppenheimer, Albert G. Milbank Professor of
Geosciences and International Affairs, Princeton University

*Sea level rise: Wide-ranging estimates, disaster
planning, and the need to decide*

Hannes Baumann | *Combined effects of ocean acidification
and its co-stressors on marine organisms*

10:00 – 10:30 Refreshment and networking break

10:30 – 12:30 **Science Session 2 The Ocean in 2100** (cont'd.)

Oral presentations:

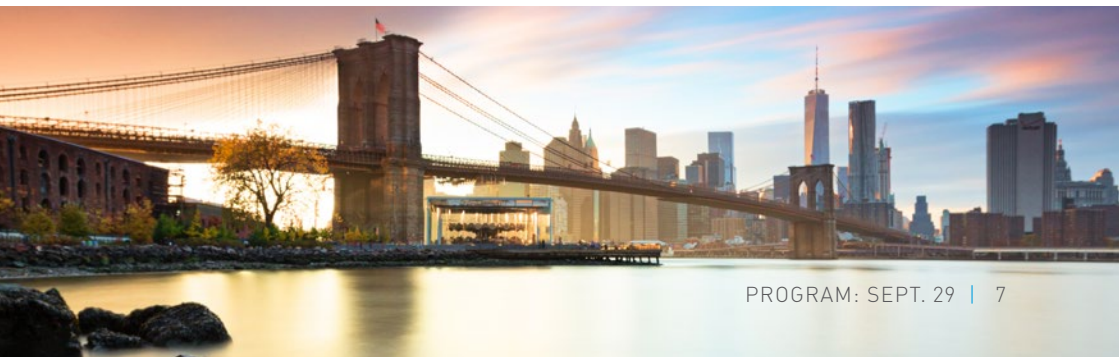
Helenice Vital | *Coastal erosion and sea level changes
on NE Brazil*

Jonathan Durgadoo | *Isolating the impact of Agulhas
leakage in the South Atlantic*

Magda Gutowska | *Predicting phytoplankton sensitivity to
climate change requires cross-disciplinary synthesis*

Arvind Singh | *Impact of ocean acidification on N_2 fixation*

Shima Hossein Abadi | *Marine mammal monitoring using
hydrophone streamers during seismic reflection surveys*



Poster pitch talks:

Shubham Krishna | *Explaining variability observed in calcification during the PeECE-I experiment*

Yunchang He | *Impact of orbital forcing on marine productivity during last two interglacials*

Anne Jordt | *Computer vision and marine science – Towards efficient handling of big data on the example of 3D reconstruction*

Allanah Paul | *New nitrogen supply in a future acidified ocean*

Taewook Park | *Impact of North Atlantic surface salinity bias on the ocean circulation and Atlantic multidecadal variability in the Kiel Climate Model*

Scarlett Sett | *Climate change and marine phytoplankton*

12:30 – 16:00

Lunch with inspirational talk

Speaker:

Caleb McClennen, Director of Marine Conservation, Wildlife Conservation Society | *Ocean conservation in focus: Meeting the sustainability challenges of the new Blue Economy*

Walking tour of the Columbia University campus



16:00 – 18:00 Science Session 3 Marine Conservation

chaired by Magda Gutowska and Stephanie Pfirman

Keynote speaker:

Liesbeth Lijnzaad, Professor of Practice of International Law, Maastricht University and Legal Adviser of the Netherlands Ministry of Foreign Affairs and Head of the International Law Department | *BBNJ, process and prospects for the marine biodiversity beyond national jurisdiction negotiations in the United Nations*

Erik van Doorn | *Sharing the benefits of fisheries' common heritage: A proposal based on the natural capital approach*

Oral Presentations:

Elizabeta Briski | *Invasive species in an era of globalization*

Patricia Grasse | *Oxygen minimum zones: Past, present, future*

Jan Dierking | *Oxygen minimum zone induced fluctuations in cod genetic diversity – and what the Baltic Sea may tell us about the global future ocean*

Poster pitch talks:

Nina Keul | *Assessing marine biodiversity – Pteropods as indicator species for climate change*

Sebastian Fraune | *Cnidarian microbiome: Impact of microbial communities for acclimation*

18:30 – 22:00 Poster session on the scientific topics

with snacks, beer and wine

September 30 | 09:00 to 15:30

International Careers

Session: Alumni Work and Funding Opportunities

chaired by Eva Maria Streier (formerly DFG, NY;
now: Streier CCM | Consulting, Concept, Media)

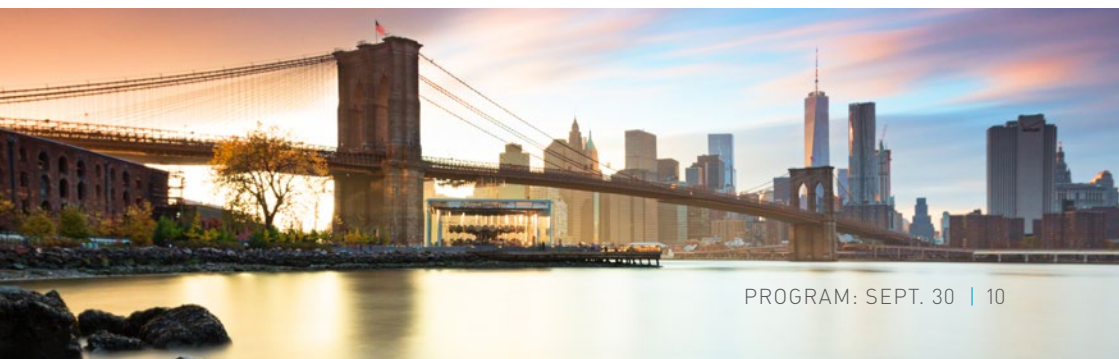
- 09:00 – 09:30 **Cathleen Fisher**, President, American Friends of AvH
| *Alumni Work of the Alexander von Humboldt
Foundation and of American Friends of AvH*
- 09:30 – 09:45 Joann Halpern, Director, German Center for Research
and Innovation (GCRI)

09.45 – 10.15 Refreshment and networking break

10:15 – 12:30 Round table discussion: Funding Opportunities for Researchers in Germany, Europe and the USA

Annette Doll-Sellen (DFG – German Research Foundation)
Cathleen Fisher (American Friends of the AvH Foundation)
Peter Kerrigan (DAAD – German Academic Exchange Service)
Jill Karsten (NSF – National Science Foundation USA)
Sonja Ochsenfeld-Repp (KoWi – European Liaison Office of
the German Research Organizations)

Moderation: Eva-Maria Streier



12:30 – 13:00 Open Space with representatives of the funding organizations

13:00 – 14:00 Lunch with networking opportunity

Session: Looking to the Future

chaired by Peter Schlosser and Martin Visbeck

14:00 – 15:00 Concluding discussion with short summaries of the science sessions and outlook on upcoming alumni activities

15:00 – 15:15 Closing remarks

15:15 End of the symposium

Science Session Descriptions

Session 1 Valued Ocean

The ocean significantly contributes to global benefits for humans (social/economic) and environments (ecosystem services). This topic discusses ecosystem function and services provided by the ocean and consequences of their loss/degradation for social, economic, and environmental issues. Although these terms are anthropocentrically driven, it appears imperative to identify ocean values offered to mankind in order to make them competitive in economic and legal debates. Major questions that could be addressed include: What are the benefits of the ocean? How are different sectors contributing to the loss of benefits? How is unsustainable use of resources valued by different sectors? How will society/the economy change if certain ocean services disappear? How can we protect common interests against national/individual interests? Who decides which interests are common?

Session 2 The Ocean in 2100

The global ocean system is currently under increasing anthropogenic stress. The effects of climate change are already widely seen in the world ocean, and they are likely to have significant consequences for natural systems and humankind in the future. The oceans absorb much of the anthropogenic heat and about a quarter of anthropogenic carbon dioxide introduced into the atmosphere. These impacts lead to sea level rise and melting of sea ice and coastal land ice at high latitude. They also lead to ocean acidification and deoxygenation, reduced ocean productivity, and are threatening the sustainability of marine ecosystems. We invite presentations in a wide range of marine research areas highlighting impacts of climate change on the oceans across different spatial and temporal scales. The aim of the session is to link and integrate studies of the modern oceans with future projections and paleo studies using proxies to define how the ocean system has changed through the past on a number of different timescales.

Session 3 Marine Conservation

Conservation of marine biodiversity is fundamental to preserving ocean function. This includes everything from global scale elemental cycling by microbial communities to intact marine food webs that support fisheries. The goal of this session is to present a road map of current highlights in marine biodiversity research and the legal challenges we face in implementing conservation policies. We particularly encourage presentations on marine biodiversity topics that are occurring in international dimensions and/or on the high seas. This session will include discussions on the issue of protecting marine biodiversity in areas beyond national jurisdiction (ABNJ). This is a matter that falls within the interface of marine biology, oceanography, marine policy and international law of the sea. As far as the political and legal perspective is concerned, the situation concerning ABNJ is characterized by the concurrence and overlap of different legal traditions and underlying political interests. Significant progress has been made in the number of relevant treaties and concepts in the past decades. It is thus essential to focus on the question of how the existing interactions between the different instruments and categories may best be tackled.

A pdf-document containing all of the abstracts from the symposium is available for download on the Future Ocean website: <http://www.futureocean.org/nyconference>



Steering Committee

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