HOSST

TRANSATLANTIC RESEARCH SCHOOL

summer school 2017

Helmholtz
Transatlantic Graduate Research School
"Ocean System Science and Technology"
June 05-16, 2017

"Multi-use Conflicts in an Industrialized Coastal Zone"

TOSST TRANSATLANTIC RESEARCH SCHOOL

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Concept of the Summer School

The Summer School on "Multi-use conflicts in an industrialized coastal zone" is a joint Summer School of the "Helmholtz Ocean System Science and Technology" (HOSST) graduate school, based at GEOMAR and Kiel University, Kiel, Germany and the "Transatlantic Ocean System Science and Technology" (TOSST) research school of Dalhousie University, Halifax, Canada. The Summer School will focus on how ocean system science and technology can provide a firm foundation for reconciling conflicting needs for the sustainable use and protection of coastal areas. Participants of the summer school will include both Kiel- and Halifax-based PhD-Candidates

The Summer School will combine lectures by scientists from GEOMAR, Kiel University, and regional Ministry and NGO's, with on-site visits, demonstrations of technical equipment used for ocean sampling and for modern analytics, as well as sampling from the intertidal and ocean environments.

The focus will be on nurturing a trans-disciplinary understanding of the challenges and possible solutions for sustainable use and protection of our oceans. The knowledge gained during the Summer School will be pulled together in group work, in which the students will be asked to generate management recommendations for a highly impacted coastal region they are familiar with in the North Atlantic. Their short written proposal will be presented orally to a panel of experts, giving them direct feedback on their performance and ideas.

Agenda

Monday, June 05, 2017

11:00 h	Welcome Excursion - Bike Tour in Kiel TOSST Group pick up - meet HOSST Group along the way	Start at Hotel "Am Segelhafen"
	Bike Tour along Kiel Fjord – "Kiel Sailing City" German Naval Yard Kiel Hörn / Train Station / Center of Town Aquarium / Kiellinie / Kiel Kanal / Kanal Schleusen / Thiessenkaj	
14:00 – 15:00 h	"Kieler Meeresfarm GmbH" Dr. Tim Stauffenberger (oceanBasis)	Coast between Holtenau and Friedrichsort
	Free time	
18:30 –	Meeting HOSST and TOSST Leaders	Halle 400

Tuesday, June 6, 2017

09:00 – 9:15h	Official welcome to HOSST-TOSST Kiel Summer School 2017 HOSST-Leader Prof. Dr. Christian Dullo TOSST-Leader Prof. Dr. Doug Wallace	Main Entrance GEOMAR - East
09:15 – 09:45 h	Tour through GEOMAR HOSST Coordinator Dr. Christel van den Bogaard Group Picture	Lithothek
09:45 – 10:00 h	Coffee Break	TLZ Seminarroom
10:00 – 12:30 h	"Munitions in the Sea – A Heritage of Wars" Dipl. Ing. Claus Böttcher (Ministry for Agriculture, the Environment and Rural Areas of the Federal State of Schleswig-Holstein)	TLZ Seminarroom
	"The DAIMON Project" Dr. Sabine Bohlmann Uni Clausthal, Germany	
12:54 – 13:06 h	Ferry from Wellingdorf to Reventlou	Schwentinelinie
13:15 – 14:00 h	Joint Light Lunch	Fischbar
14:00 – 16:15 h	Research Infrastructure "Mesocosm" Lecture and Survey Prof. Dr. Martin Wahl (GEOMAR, Marine Ökologie)	GEOMAR West Großer Konferenzraum
16:38 – 16:48 h	Ferry from Reventlou to Wellingdorf	Schwentinelinie
17:00 – 20:00 h	Icebreaker Invited: Summer School Group, HOSST PI`s, HOSST Co-PI's, HOSST First Cohort, Lecturers	GEOMAR East Shore – Lithothek at Schwentine Side

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Wednesday, June 7, 2017

08:24 – 08:36 h	Ferry from Wellingdorf to Reventlou	Schwentinelinie
09:00 – 10:30 h	"MPA's in coastal Areas" Dr. Christine Wenzel (Ministry for Agriculture, the Environment and Rural Areas of the Federal State of Schleswig Holstein)	GEOMAR West Großer Konferenz-raum
10:30 – 11:00 h	Coffee Break	
11:00 – 12:30 h	"Marine Protected Areas in Areas under National Jurisdiction and beyond: Legal Aspects and Challenges" Prof. Dr. Nele Matz-Lück (CAU)	GEOMAR West Großer Konferenz-raum
12:30 – 13:00 h	Joint Light Lunch	
13:00 – 14:30 h	"Marine Protected Areas in Areas under National Jurisdiction and beyond: Legal Aspects and Challenges" continued Prof. Dr. Nele Matz-Lück (CAU)	GEOMAR West Großer Konferenz-raum
14:30 –	Time for working on Summer School Project	

Thursday, June 08, 2017

08:00 – 08:30 h	Embark Research Vessel "Alkor" Loading of equipment	GEOMAR East Shore
08:30 – 16:30 h	Research Infrastructure – "Research Vessel Alkor" Day cruise "Holocen History of the SW Baltic Sea" Fahrtleitung Dr. Christel van den Bogaard "Sediment core sampling" Dr. Robert Spielhagen (GEOMAR), Dr. Henning Bauch (GEOMAR) Technical Assistance Maik Lange "Driving CTD's" Evangelia Louropoulou (HOSST), Felix Geißler (HOSST) Technical Assistance Svend-Olaf Mees (GEOMAR)	Alkor Research Vessel
11:30 – 12:00 h	Lunch	Alkor
16:30 – 17:00 h	Dissembark Research Vessel "Alkor" Unloading equipment	GEOMAR East Shore

Friday, June 09, 2017

09:00 – 10:30 h	"Offshore Wind Energy – Status, Opportunities and Challenges" Prof. Dipl. Ing. Peter Quell (Fachhochschule Kiel, Applied Sciences)	GEOMAR East TLZ – Seminarroom
10:30 – 11:00 h	Coffee Break	
11:00 – 12:30 h	"Marine Protected Areas in the High Seas" I. Introduction: "Establishment and Management of Marine Protected Areas in the High Seas"	GEOMAR East TLZ – Seminarroom

	II. Case Study: "Establishment and Management of MPAs in the High Seas of the North-East Atlantic by the OSPAR Commission - the process, challenges and possible way forward" Dr. Tim Packeiser (International WWF-Centre for Marine Conservation High Seas and Marine Conservation)	
12:30 – 13:30 h	Joint lunch	
13:30 – 15:00 h	III. Group Discussion: "Ways to propose an MPA in the High Seas" Dr. Tim Packeiser (International WWF-Centre for Marine Conservation High Seas and Marine Conservation)	GEOMAR East TLZ – Seminarroom
15:00 –	Time for working on Summer School Project	

Saturday, June 10, 2017

	Overnight Excursion	
08:31 – 08:42 h	Bus Stop Seefischmarkt to Train Station	Bus 200
09:03 – 11:35 h	Train from Kiel Hbf to Westerland (Sylt) Change trains in Husum	RE 21208, RE 11008
11:35 – 13:00 h	Individual Lunch	Westerland (Sylt)
13:00 – 13:30 h	Bus to "Rotes Kliff"	
13:30 – 16:30 h	Tour along "Rotes Kliff": Geology of Sylt; Erosional Structures and Influence of Tourism Dr. Eckehard Klatt (Geologist)	Rotes Kliff
16:30 – 17:00 h	Bus ride to List (Sylt) – Pick up bikes	Bus
17:00 – 21:00 h	Check in at Youth Hostel, Joint Dinner in List	
21:00 – 23:00 h	Tour through the Watt – at low Tide Carsten Heldermann (Erlebniszentrum Naturgewalten)	World Heritage Wadden Sea - List (Sylt)
	Bike ride to Youth Hostel, 3 km	

Sunday, June 11, 2017

07:00 – 09:00 h	Breakfast at Youth Hostel	
09:00 – 12:00 h	"Erosional Structures, Sand Dunes"- Bike tour	North Coast Sylt
12:00 – 12:30 h	Return Bikes to List	
	Packed Lunch from Youth Hostel	
13:30 – 14:00 h	Bus to Westerland	RE 11027
14:22 – 15:29 h	Train from Westerland to Husum	RE 11027
15:29 – 18:35 h	Walk through Husum – Individual Dinner	
18:35 – 19:57 h	Train to Kiel Hbf	RE 21233

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Monday, June 12, 2017

9:00 – 12:00 h	Research Infrastructure Analysis (or Biogeochemical Cycling) of Phytoplankton Growth limiting Micro-Nutrients and Nitroaromatic Compounds in Seawater. Introductory and Hands on Sample Preparation and Analysis Dr. Christian Schlosser (GEOMAR)	GEOMAR East TLZ Seminarroom Laboratories
12:00 – 13:00 h	Lunch	Mensa Fachhhochschule
13:00 – 16:00 h	Time for working on Summer School Project	
16:00 – 17:00 h	Feed back on Draft of Summer School Project	GEOMAR East Shore TLZ -Seminarroom

Tuesday, June 13, 2017

09:30 – 11:00 h	"Sea-level Rise and its Potential Impacts in Coastal Regions" Prof. Dr. Nassos Vafeidis – (CAU)	GEOMAR East Shore TLZ -Seminarroom
11:00 –	Time for working on Summer School Project	
12:25 – 12:35 h	Ferry from Wellingdorf to Reventlou	Schwentinelinie
13:00 – 14:30 h	"Communicating Science in Politics" Discussion Prof. Thomas Stocker (University of Bern)	GEOMAR West Großer Konferenzraum
14:30 – 19:00 h	Time for working on Summer School Project	

Wednesday, June 14, 2017

08:45 – 09:00 h	Bus Seefischmarkt to Kiel Main Station Hbf	BUS 60s
09:21 – 10:18 h 10:48 – 11:07 h 11:11 – 11:18 h	RE Train to Hamburg Hbf Hbf Hamburg nach Hamburg-Othmarschen nach Hühnengrab (DESY)	RE21013, S1 Bus 1
11:20 – 12:00 h	Lunch at DESY Cantine	
12:00 – 15:00 h	Guided Tour through the Deutsches Elektronen-Synchrotron DESY in Hamburg (limited number of participants)	
15:00 –	Tour through Hamburg organized by HOSST Students	
22:21 – 23:38 h	Last Train Hamburg Hbf to Kiel Hbf	RE21036
23:50 – 23:59 h	Bus from Kiel HBF to Bus Stop Seefischmarkt (Hotel)	Bus 200

Thursday, May 15, 2015

08:29 – 08:51 h	Seefischmarkt – Universität Kiel	Bus 60S
09:00 – 12:00 h	Research Infrastructure Introduction to the Leibniz Laboratory for Radiometric Dating and Stable Isotope Research: Lab Tour AMS Laboratory C. Matthias Hüls (Leibniz Labor, CAU)	CAU meet at Leibniz Labor Max-Eyth-Str. 11-13, Main Entrance
	Research Infrastructure Modern Laser Methods in Marine Sciences Hands – on CRD and VSFG Spectroscopy Prof. Dr. Gernot Friedrichs (CAU)	CAU meet at Building 8D Max-Eyth-Str. 1 Front Door
12:00 – 13:00 h	Joint Lunch at CAU Mensa	CAU
13:08 – 13:30 h	Bus to Seefischmarkt	Bus 60S
14:00 – 17:00 h	Research Infrastructure Introduction to AUV and ROV, followed by Hands-on Experiment Prof. Dr. Colin Devey (GEOMAR) Dr. Friedrich Abbegg (GEOMAR) Dipl. Ing. Marcel Rothenbeck (GEOMAR)	GEOMAR East TLZ Seminarroom, TLZ

Friday, May 16, 2015

09:00 – 12:30 h	Preparation of Summer School Project Presentation	
12:30 – 13:00 h	Light Lunch	GEOMAR West Large Conference Room
13:00 – 15:00 h	Project Presentations to Committee 5 Groups, 15 Min + 10 Min Questions	
15:00 – 16:00 h	Celebration with Closing Remarks	
16:00 –	"Soundcheck" at Kieler Woche	Everywhere in Kiel

Project plan "Use and Protection of the Ocean"

During the summer school we will see in lectures and site visits how impacted the oceans around Europe and other developed countries already are by human activity. We will have a chance to experience, first-hand, how information about the state of the ocean is acquired by sampling, experiments and with modern analytical tools.

Experts from Kiel University, several government ministry and NGO's will give us insights into which legal aspects and challenges are involved in protecting the marine environment.

Your task during the summer school will be to come up with a management concept for a North Atlantic coastal region of your choice, seeking to reconcile the competing needs of users and protectors of this natural habitat.

As you are obviously not lawyers or politicians but scientists, the concept should be based on the best science at your disposal, realizing that some of the scientific information needed may not be available. The concept should be formulated along the following lines:

1. Select an Atlantic coastal area that is highly impacted by human use.
2. Determine which stakeholders are involved. What are their likely areas of conflict?
3. What specific features of the region (animals, plants, seafloor features etc.) might need protection?
4. What laws might be applicable to solve these conflicts (including environment protection as a stakeholder with potential conflicts with users)?
5. If a legal solution is not evident, how might the conflicts be mediated BY YOU - what would be your solution to resolving these problems to allow the coastal area to be both used and protected?

The participants will form groups of 4 with an equal balance of HOSST and TOSST members and a spread of scientific disciplines.

The concept will be presented in two ways:

- As a short (maximum 3 pages) written paper, which should include an Executive Summary (a form of "abstract" with recommendations and actions), a list of stakeholders, a matrix (or similar) of their mutual interactions, suggestions for sustainable use or necessary protection measures, and an outline of assessment methods to test if the management concept is working.
- An oral presentation (on Friday, 16th June, 15 minutes per group) of the concept to a panel of experts. The panel will discuss the concept with the proponents and give feedback on the concept.

There will be time in the Summer School schedule for you to work on this concept and its presentation, and also a chance, halfway through the Summer School, to discuss your draft concept with the School leaders.

Summer School Participants

HOSST PhD Researchers

Jacqueline Bertlich
Felix Geißler
Tatum Herrero
Florian Lange
Annalena Lochte
Evangelia Louropoulou
Kriste Makareviciute
Kirsten Meulenbroek
Lisa Samrock
Falko Vehling
Wanxuan Yao

TOSST PhD Researchers

Masoud Aali
Ricardo Arruda Monteiro da Silva
Andrea Buchholz
Allison Chua
Ana Corbalan
Patrick Duplessis
J. Scott McCain
Helen Packer
Sughadeep Rakshit
Najeem Shajahan
Meghan Troup

HOSST Project Speaker

Christian Dullo (GEOMAR)
Colin Devey (GEOMAR)
Gernot Friedrichs (CAU)

TOSST Project Speaker

Doug Wallace (Dalhousie University)
Markus Kienast (Dalhousie University)

HOSST Coordinator

Christel van den Bogaard

TOSST Coordinator

Rebecca Langlois-Warnat

HOSST PIs

Supervisors in Kiel

TOSST PIs

Chris Algar (Dalhousie University)
David Barclay (Dalhousie University)
Erand Bertrand (Dalhousie University)

Supervisors of Summer School Participants

Supervisors GEOMAR, CAU	PhD Candidate	
	HOSST	TOSST
Eric Achterberg	Wanxuan Yao	
Colin Devey	Tatum Herrero	Allison Chua
Martin Frank	Kirsten Meulenbroek	
Gernot Friedrichs	Florian Lange	Patrick Duplessis
Thor Hansteen	Lisa Samrock	
Ed Hathorne*	Kirsten Meulenbroek	
Heidrun Kopp		Masoud Ali
Arne Körtzinger		Ricardo Monteiro da Silva
Birte Matthiessen*	Kriste Makareviciute	
Dirk Nürnberg	Jacqueline Bertlich	
Andreas Oschlies	Wanxuan Yao	
Martin Quaas		Andrea Bryndum-Buchholz
Janne Repschläger*	Annalena Lochte	
Lars Rüpke	Falko Vehling	
Jörn Schmidt		Helen Packer
Ruth Schmitz-Streit	Evangelia Louropoulou	
Ralph Schneider	Annalena Lochte	
Ulrich Sommer	Kriste Makareviciute	
To be decided		Ana Corbalan Castejon
To be decided		J. Scott McCain
To be decided		Suphadeep Rakshit
To be decided		Najeem Shajahan
To be decided		Meghan Troup

* 2nd Kiel Supervisor for HOSST Student

Supervisors Dalhousie University	PhD Candidate	
	HOSST	TOSST
Christopher Algar		Suphadeep Rakshit
Megan Bailey		Helen Packer
David Barclay		Najeem Shajahan Meghan Troup
Erin Bertrand	Wanxuan Yao	Scott McCain
Rachel Chang		Patrick Duplessis
Katja Fennel	Wanxuan Yao	
Markus Kienast	Jacqueline Bertlich Annalena Lochte Kirsten Meulenbroek	
Heike Lotze	Kriste Makareviciute	
Randall Martin		Patrick Duplessis
Julie La'Roche	Eva Louropoulou	
Mladen Nedimovic	Tatum Herrero Lisa Samrock Falko Vehling	Masoud Aali Ana Corbalan Castejon
Derek P. Tittensor		Andrea Bryndum-Buchholz
Doug Wallace	Felix Geißler Florian Lange	Allison Chua Ricardo Monteiro da Silva

PhD Candidates Short CV

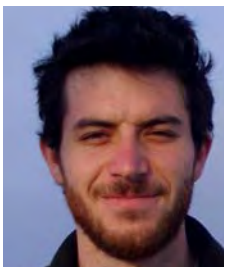
Masoud Aali

TOSST

Geophysicist
M.Sc. in Exploration Geophysics - Gubkin University, Russia

The primary goal of my PhD studies is to use state-of- the-art geophysical and petrophysical methods in order to study sea-level change and constrain the complex forcing functions tying evolution and preservation of the margin stratigraphic record to Sea-level changes. I use 3D seismic imaging to map and characterize nearshore features (e.g., meandering rivers, incised shelf valleys). Determining the sedimentological properties of these features and associated facies, that were developed during periods of known eustatic variations, will hopefully lead us to understanding the evolution of shorelines and quantifying timing and amplitude of the eustatic changes in each geological period.

Supervisor: Prof. Mladen Nedimovic
Transatlantic Co-Supervisor: Prof. Dr. Heidrun Kopp



Ricardo Arruda Monteiro da Silva

TOSST

Oceanographer
M.Sc. in Physical, Chemical & Geological Oceanography - University of Rio Grande (FURG)

The topic of my PhD research is Air-Sea CO_2 Fluxes in Spatio-Temporal Variability in the North Atlantic Ocean.
My Phd project will use new field data from Volunteer Observing Ships (VOS), sea gliders, wave gliders and moorings to estimate air-sea fluxes of CO_2 in the NW Atlantic Ocean. These new data, combined with existing data, will be used to establish accurate, year-round estimates of air-sea CO_2 fluxes. My project will also explore value of these new data constraints for biogeochemical models designed to track inter-annual variability of the air-sea CO_2 flux in the North Atlantic, and investigate the main processes and drivers affecting pCO_2 spatio-temporal variability.

Supervisor: Prof. Dr. Doug Wallace
Transatlantic Co-Supervisor: Prof. Dr. Colin Devey

Jacqueline Bertlich

HOSST

Geologist/Biogeochemist/Paleoceanographer
M.Sc. in Geosciences – Westfälische Wilhelms-Universität Münster, Germany

I studied geosciences with a focus on marine biogeochemistry and isotope geochemistry at the University of Münster, Germany. During my studies I mainly focused on biogeochemical processes in marine environments, particularly in extreme habitats. I am also interested in volcanology and mineralogy.
In my current PhD project I am concentrating on foraminiferal (isotope) geochemistry, constraining the deglacial to Holocene decay of the Laurentide Ice Sheet and the related meltwater/freshwater discharge into the adjacent ocean areas. We attempt to reconstruct ocean salinity and temperature anomalies at different depth levels to trace meltwater fluxes to distal ocean areas in the North Atlantic and to decipher extreme events. Foraminiferal calcite is used as a geochemical proxy to determine past oceanic conditions and their biogeochemical interactions with the atmosphere, which is most interesting to me. Based on that I am calibrating a new proxy for ocean salinity to gain a broader understanding of the ocean.

Supervisor: Prof. Dr. Dirk Nürnberg
Transatlantic Co-Supervisor: Prof. Dr. Markus Kienast

Andrea Bryndum-Buchholz

TOSST

Marine Ecologist, Fisheries Ecologist
M.Sc. in Marine Ecology–Lund University, Sweden; B.Sc. in Biology-Tuebingen University, Germany

My research focuses on human uses of the oceans and associated management measures and processes. For my Ph.D. project, I am researching climate change impacts on marine ecosystems and fisheries in the North Atlantic Ocean, and how management and conservation measures can respond and adapt to predicted changes. A changing climate has already been associated with major biological changes in marine ecosystems, with significant consequences for ecosystem structure and functioning, as well as associated marine fisheries and fisheries dependent societies. How these changes may play out on regional or ocean-basin scale is largely unknown. Understanding climate change impacts on marine ecosystems and fisheries is essential to ensure future effective and sustainable management and conservation of marine ecosystems and their valuable resources.

Supervisor: Prof. Dr. Heike K. Lotze, Prof. Dr. Derek P. Tittensor
Transatlantic Co-Supervisor: Prof. Dr. Martin Quaas

Chua Allison

TOSST

Engineer/Oceanographer
MASc. Materials Engineering - Dalhousie University, Canada; BEng. Mechanical Engineering

My research interests lie in the development and use of autonomous or remotely operated vehicles and their associated instrumentation for oceanographic measurement and exploration. Autonomous Underwater Vehicles (AUVs) have special potential for application within projects such as MOSES (Modular Observation Solutions for Earth Systems) or ROBEX (Robotic Exploration of Extreme Environments), which are both major initiatives of Germany's Helmholtz Association. MOSES has an ocean component aimed at studying ocean eddies and other mesoscale phenomena, while ROBEX targets the exploration of environments with extreme conditions (such as the deep sea). Both projects involve the design and construction of a co-ordinated network of marine observation systems, including a stationary system that acts as a "home base" for energy supply and data exchange and mobile elements that deploy and explore the environment. Technological advances in robotics and autonomy have enhanced our ability to provide real-time data of a large area, improving our understanding of ocean phenomena that have traditionally suffered from undersampling. These include biogeochemical interactions of marine life such as zooplankton migration, causes of bioluminescence, and nutrient cycles.

Supervisor: Prof. Dr. Doug Wallace
Transatlantic Co-Supervisor: Prof. Dr. Colin Devey

Ana Corbalan Castejon

TOSST

Geophysist
M.Sc. in Seismology - Colorado State University, USA

Geophysical fingerprints of an exhumed serpentinized mantle domain at the ultraslow Southwest Indian Ridge and their application to the rifted margins of Eastern Canada
My research aims to assess the geophysical fingerprints of exhumed serpentinized mantle-derived rocks exposed at the seafloor of ultraslow-spreading ocean ridges. To do such evaluation, I will use marine seismic refraction and reflection data to constrain seismic velocity models and reflection structure of the oceanic lithosphere, respectively. The long-term goal is to apply these geophysical fingerprints to the magma-poor rifted margins, where a thick post-rift sedimentary package hampers the prediction of serpentinized mantle domains in the crust. At these type of rifted margins, such of those found offshore Eastern Canada, the processes of mantle exhumation and serpentinization may lead to specific thermal conditions relevant to oil and gas exploration.

Supervisor: Prof. Dr. Mladen Nedimović
Transatlantic Co-Supervisor: to be decided

Patrick Duplessis

TOSST

Physics / Atmospheric Science / Meteorology
B.Sc. Earth and Atmospheric Sciences / UQÀM, Montréal, Canada

Weather is more than just an indicator of which jacket you should be wearing on a particular day, or whether you would rather order an iced or regular coffee at Starbucks. It can also be a serious hazard, notably for transportation, and cause important economic losses notably when it is inaccurately forecasted. My research focuses on marine/coastal fog in Atlantic Canada, particularly on how it forms, maintains, and dissipates. We investigate fog microphysics through a series of field and laboratory studies and use models to better understand fog trends in the changing climate.

Supervisor: Prof. Dr. Rachel Chang (co-supervisor: Prof. Dr. Randall Martin)
Transatlantic Co-Supervisor: Prof. Dr. Gernot Friedrichs

Felix Geißler

HOSST

Chemist
M.Sc. in Chemistry / Kiel University, Germany

As a chemist my research interests are in the field of physical and analytical chemistry with applications in environmental science. Thus, I am involved in the development and validation of chemical in situ sensors and analyzers for measurements in natural waters. In contrast to the laborious sampling-analysis approach, these systems provide a high spatial and temporal resolution and prevent sample alteration as well as contamination. Currently, I am working on an iron analyzer based on microfluidic technology in close collaboration with NOC Southampton. As the trace element iron is strongly transient with high oxidation rates and very low concentrations in the open ocean, iron in situ measurements are highly demanded.

Supervisor: Prof. Dr. Eric P. Achterberg
Transatlantic Co-Supervisor: Prof. Dr. Douglas Wallace

Tatum Miko Herrero

HOSST

Volcanologist
M.Sc. in Volcanology / Université Blaise Pascal, France

Volcanoes have captivated our inquiring minds with their breathtaking display of power and scenic beauty, reminding us that the ground beneath our feet is alive. In the depths of the ocean, far from the reach of our mortal eyes and meager lifetimes, volcanism is a constant event that bestrews the seemingly quiet ocean floor. In the form of tiny pimple-like cones and built-up hummocky lava flows, these volcanic morphologies give insight to how active the seafloor is and how our crust is being made. But, their mere existence already raises many questions such as why are there volcanoes there? where is the magma coming from? how did the magma reach the surface?
My task is to scour through bathymetric and backscatter data to seek out these inconspicuous landforms and to search for clues to help answer the mystery of their existence.

Supervisor: Prof. Dr. Colin Devey
Transatlantic Co-Supervisor: Prof. Dr. Mladen Nedimovic

Florian Lange

HOSST

Chemist
M.Sc. in Chemistry - Kiel University, Germany

Although in terms of size and importance the interface between the ocean and the air is one of the most important areas in the environment, still few is known about the processes and dynamics occurring in it. My research contributes to the understanding of this interface by investigation of the photochemical reactions at the sea-air interface. The approach is coming from the methodology of Physical Chemistry: Creation of an idealized laboratory system of well-known composition, surface-sensitive laser spectroscopy and controlled irradiation shall provide insight on photochemical processes on the molecular scale. Besides studying those artificial systems, our group performs laser spectroscopic analysis of sea surface samples on a regular basis to gain information about the interfacial molecular layers.

Supervisor: Prof. Dr. G. Friedrichs
Transatlantic Co-Supervisor: Prof. Dr. Douglas Wallace

Annalena Lochte

HOSST

Paleoceanographer
M.Sc. in Palaeobiology / Earth Sciences – Uppsala University, Sweden

My PhD project focuses on unique Holocene sediment cores from the Labrador shelf. A set of multiple paleoceanographic proxies will help to investigate the Holocene variability of the Labrador Current, which is part of the anticlockwise circulating subpolar gyre and plays a major role in the formation North Atlantic Deep Water. Previous work in the North Atlantic region discovered deglacial and early Holocene freshwater events, which had severe effects on global climate due to disturbances in the deep-water formation. However, significant and undisturbed Holocene sediment covers along the Labrador shelf are sparse. In order to assess potential impacts of recent climate change that may include Greenland Ice Sheet melt, it is important to improve our understanding of freshwater forcing and deep-water formation.

Supervisor: Dr. Janne Repschläger, Prof. Dr. Ralph Schneider
Transatlantic Co-Supervisor: Prof. Dr. Markus Kienast

Evangelia Louropoulou

HOSST

Chemist
M.Sc. in Environmental Chemistry & Technology – National and Kapodistrian University of Athens, Athens, Greece.

My research field is Chemical Oceanography with focus on trace element biogeochemistry and utilization by marine microbes. I investigate the molecular adaptation of nitrogen fixers to iron limitation. The goal is to identify strategies of iron optimization that are employed by the nitrogen fixers in order to utilize efficiently the available iron. The identification of such adaptation strategies will lead to a better understanding of the factors controlling nitrogen fixation in the ocean and could therefore be linked to global scale environmental issues, such as climate change. In practice, my study involves the determination of the abundances of key iron-binding proteins and of the expression patterns of the genes encoding these proteins. The study is carried out through laboratory experiments under different iron concentrations and field surveys in the Atlantic Ocean.

Supervisor: Prof. Dr. Ruth Schmitz-Streit
Transatlantic Co-Supervisor: Prof. Dr. Julie LaRoche

Kriste Makareviciute

HOSST

Ecology

M.Sc. in Applied Ecology – University of Kiel, Germany; University of Poitiers, France.

Planktonic organisms, though small and barely visible by naked eye, contribute greatly to sustaining life on earth. For instance, phytoplankton produce more than half of the oxygen in the earth's atmosphere; they provide the base of marine food webs and therefore are essential for sustaining world's fish stocks. Phytoplankton abundance and community structure depend on different nutrient availability. Nutrient supply to the coastal ocean has been changing due to various factors, including fertilization, waste water production, damming and erosion among others. I am interested in how these changes affect planktonic food webs. In particular, for my PhD I study experimentally how changes in silicon to nitrogen ratio affect phytoplankton communities and how these effects are transmitted within planktonic food webs.

Supervisor: Prof. Dr. Ulrich Sommer, Dr. Birte Matthiessen
Transatlantic Co-Supervisor: Prof. Dr. Heike Lotze

Scott McCain

TOSST

Biologist

M.Sc. in Biology – Dalhousie University; B.Sc. in Biology – University of Western Ontario,

I am interested in how microbial communities influence biogeochemical processes in the ocean. Specifically, I use a variety of `omics based methods (metagenomics, metatranscriptomics, and metaproteomics) to examine marine microbial communities. My project focuses on the use of metaproteomics, to functionally profile communities in a high-throughput way. To analyze these data, I use a variety of statistical, computational, and laboratory-based methods

Supervisor: Prof. Dr. Erin Bertrand
Transatlantic Co-Supervisor: to be decided

Kirsten Meulenbroek

HOSST

Paleoceanographer
M.Sc. in Palaeoceanography / and Geo-ecosystems, VU Amsterdam

Knowing how ocean circulation responds and influences climate change is of vital importance to understanding global climate. In this respect, comprehending changes in the density of the ocean currents and water column highly contributes to this understanding. The density of the water depends mostly on both its' temperature and salinity. To reconstruct temperature several proxies already exist, but for salinity this appears more complicated. We are aiming to develop a salinity proxy through the use of barium isotopic ratios in the calcite shells of foraminifera. Heavy barium isotopes reside mainly in ocean waters, where the lighter isotopes can mostly be found in continental fresh water entering the ocean through runoff. Our objective is to see if a direct relation exists between the salinity of the water and the isotopic ratio of barium in foraminifera.

Supervisor: Prof. Dr. Martin Frank, Dr. Chris Siebert, Dr. Ed Hathorne
Transatlantic Co-Supervisor: Prof. Dr. Markus Kienast

Helen Packer

TOSST

Sustainable Tuna Industry
M.Sc. in Marine Resource Management /Wageningen, The Netherlands; B.Sc. in Marine Biology/Swansea, UK

I started my PhD in September 2016 and will be looking at Corporate Social Responsbility (CSR) and Sustainabe Supply Chain Management (SSCM) in the European and North American Tuna industries. Following the failure of governments to manage global tuna fisheries, private actors (NGOs and businesses) have taken up responsibilities to change the industry towards more sustainable practices. This market-based approach include new procurement policies, third-party certification (e.g. Marine Stewardship Council), increasing transparency in the industry through traceability, fishery improvement projects etc. My research will be looking more specifically at how businesses (small and large) are contributing to this shift towards a sustainable industry through changes in their business model and their supply chains.

Supervisor: Dr. Megan Bailey
Transatlantic Co-Supervisor: Dr. Jörn Schmidt

Subhadeep Rakshit

TOSST

Geology, biogeochemistry.
B.Sc - M.Sc. in Geological Sciences – Indian Institute of Science Education and Research (IISER) Kolkata, India.

During my PhD thesis I will be working on nitrogen cycling of seasonally hypoxic Bedford basin to understand the development of redox driven reactions in sediments in response to the changes in bottom water oxygen level in an annual scale. Coupling the water and sediment nutrient data, I would like to find out how the nutrients interact in the sediment water interface, the rate of different reactions and will look for any feedback processes involved in it. This is important because it is now well established that oxygen minimum zones in oceans are increasing with climate change, and it will have huge impact on the global nutrient cycle. Finally a bio-physical model will be proposed explaining these processes. I am also interested to investigate the anthropogenic effects on the nitrogen cycling and decoupling this effect from the natural trend of environmental change.

Supervisor: Dr. Christopher Algar
Transatlantic Co-Supervisor: to be decided

Lisa Samrock

HOSST

Geologist
M.Sc. in Earth Sciences - Uppsala University, Uppsala, Sweden; B.Sc. in Geosciences – University of Potsdam, Potsdam, Germany

My research focuses on ocean islands and, in particular, the geodynamic evolution of the Cape Verde archipelago. To understand the evolution of the Cape Verde archipelago it is vital to compare the temporal and spatial evolution of both island and seamount edifices. An important goal of this project is therefore to establish absolute ages, especially for the seamounts in the area, and the onset of volcanism. I will also investigate structural controls on the evolution of the archipelago (e.g. regional fault patterns) in order to account for the spatial distribution of volcanic activity through time, as well as further geodynamical parameters controlling the evolution of the archipelago such as magma and melt inclusion composition to constrain the magma plumbing system.

Supervisor: PD. Dr. Thor Hansteen
Transatlantic Co-Supervisor: Prof. Mladen Nedimović

Najeem Shajahan

TOSST

Physicist
M.Sc. in Physics – Kerala University, India

My research field of interest is underwater acoustics, Where I primarily focus on the measurement and characterization of background noise in Ocean generated by natural processes. In my PhD research, I will be aiming to study the properties of hydrothermal vents based on passive acoustic measurements. The measured noise data will be used to study the spectral and spatial characteristics of hydrothermal vent. Hence acoustic data analysis can be used to understand the sound generating mechanism and physical properties of vents. Once the acoustic properties of hydrothermal vents are understood, background sound measurement can be later used for the localization of new vent sites. Passive acoustics, signal processing, sound propagation modelling and geoacoustic inversion are my topics of interest in Ocean acoustics.

Supervisor: Dr. David Barclay
Transatlantic Co-Supervisor: to be decided

Meghan Troup

TOSST

Student
B.Sc. in Marine Science- Coastal Carolina University, USA

Using ROVs for Surveying In Shallow Water Systems
My research focuses on engineering a remotely operated and autonomous hovercraft to collect and analyze sonar data in very shallow waters (<1m) and in areas where the current is strong and tidally forced. These sonar data will be used for bathymetric surveys, habitat mapping, and other analyses with applications to larger scale impacts such as sea level rise and how it affects these small scale environments.

Supervisor: Dr. David Barclay
Transatlantic Co-Supervisor: to be decided

Falko Vehling

HOSST

Geophysicist/Geomodelling
Diplom in Geophysics, Christian-Albrechts-Universität zu Kiel, Germany

My PhD-project aims at using numerical modeling techniques to investigate the pattern of hydrothermal circulation along the Reykjanes Ridge (RR). The objective is to integrate hydrothermal flow models with geophysical data in order to investigate how hydrothermal cooling of young ocean floor and the formation as well as distribution of marine mineral deposits are related to each other. For this purpose, the main part of the PhD project is to develop a novel hydrothermal flow model that resolves multi-phase phenomena and metal transport. This model will be based on a novel numerical scheme that allows for a fully coupled treatment of the mass and energy conservation equations and the resolution of complex geological geometries like bathymetry and subsurface fault zones. The results will be integrated and tested with geophysical data from the Reykjanes Ridge and possibly the East Pacific Rise – depending on data availability.

Supervisor: Prof. Dr. Lars Rüpke
Transatlantic Co-Supervisor: Prof. Dr. Mladen Nedimovic

Wanxuan Yao

HOSST

Biogeochemistry
M.Sc. in Environmental Modelling – Karl von Ossietzky University of Oldenburg , Germany

I was trained in China (Wuhan University of Technology) as a Geography Information computer scientist. Thereby, I focused on the research of dynamic network planning optimization and implemented game theory in simulation system. Subsequently, I did my master degree in mathematical modeling at the Carl von Ossietzky University Oldenburg. During my master, I formulated a special food web model, which serves as a framework to study the spatial variety of ecosystems. Currently, I am a PhD candidate in the Biogeochemical Modeling Group at the Geomar. I research on iron scavenging in the ocean, which limits the oceanic primary production. My research objective is to improve the description of the scavenging process and thereby provide better parameterizations for global biogeochemistry models.

Supervisor: Prof. Dr. Andrea Oschlies, Prof. Dr. Eric Achterberg
Transatlantic Co-Supervisor: Prof. Dr. Katja Fennel, Prof. Dr. Erin Bertrand

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