



SUSTAINABLE MARINE CONSERVATION

Supporting the SoNG-MPA management in Bangladesh

ON EXPEDITION

The diversity of fish, marine mammals and turtles in the underwater canyon in the Bay of Bengal is breathtaking. Recognising its unique biodiversity, the government of Bangladesh declared the so-called "Swatch of No Ground" (SoNG) a protected area back in 2014. Covering some 1,700 square kilometers, the marine protected area (MPA) south of the Sundarbans Mangrove Forest is the nursery for countless sea creatures and, against the backdrop of ocean warming, a cool refuge for disappearing species, too.

In harmony: ecology and fishing

Several million people live off the abundance in the SoNG both locally and further afield. "Bangladesh is a densely populated country, and a large percentage of the coastal population is dependent on small-scale fishing," explains ZMT sociologist Marion Glaser. "The parallel importance of the SoNG-MPA as fishing grounds and as an ecologically valuable area is a core theme of the management." Sustainable fishing and species conservation can be combined but an integrated management plan has been on the cards for more than ten years. There is also a continued shortage of local staff to put the plan into action. For a year, support was forthcoming from ZMT.

In collaboration: authorities, fishermen and science

"ZMT's contribution is part of a larger SoNG project run by the GIZ and the Bangladesh Ministry of Environment, Forest and Climate Change," ecologist Hauke Reuter adds. He heads one of the working groups responsible for the SoNG support project at ZMT. "Our job is to sustainably integrate fair options for local fishing into effective management because, initially, the SoNG-MPA was declared top-down without broad participation." It is also unclear how many fishing households depend on access to the SoNG and mangrove forest, which fishing methods are used and how they affect the ecosystems. ZMT organised kick-off workshops with various stakeholders and a pilot training scheme for officers in the authorities responsible for the SoNG-MPA. "We worked on suggestions for further training geared to needs and locally available knowledge," explains ZMT project manager Désirée Schwindenhammer. A handbook with material for training future trainers in MPA management in Bangladesh completes the ZMT initiative for the time being. Discussions are underway to further build on it with stakeholders in Bangladesh. [>MORE](#)

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TROPECS SYMPOSIUM

Coupling tropical coastal ecosystems to Earth system models

Earth System Models are essential for understanding climate change. They link atmosphere, ocean, land, biosphere and cryosphere and form the basis for climate assessments that inform global policy. Yet many models still fall short when it comes to regional processes such as land-sea fluxes, coastal dynamics or socio-economic interactions. "Models of the next generation must go beyond physical feedbacks to capture ecological tipping points, the vulnerability of tropical coasts and socio-economic dynamics – particularly those affecting communities in the Global South," says Julian Lilkendey, who coordinated the TropEcS Symposium on Earth System Modelling organised and hosted by ZMT.

Over three days, more than 100 international experts, early-career researchers, colleagues, and partners from tropical regions – from Indonesia to Peru – gathered in Bremen to discuss how tropical coastal ecosystems can be better integrated into global Earth System Models. The symposium also marked the official launch of ZMT's new institute extension (Sondertatbestand) TropEcS – Modelling Socio-Economic Dimensions across Tropical Coastal Ecosystems and the Earth System.

Three days of sharing, (re)connecting, and learning

Keynotes by Bjorn Stevens (Max Planck Institute for Meteorology) and Veronika Eyring (University of Bremen /DLR, lead author IPCC Report) set the stage for expert contributions across meteorology, oceanography, ecological modelling, biogeochemistry and the social sciences

– enriched by essential perspectives from the Global South. In her keynote, Erma Yulihastin (BRIN, Indonesia) presented new insights on extreme weather events over the Indonesian Maritime Continent. Lívia Sancho (UFRJ, Brazil) discussed multi-ocean teleconnections and regional climate extremes in South America and Dante Espinoza (IMARPE, Peru) highlighted the socio-ecological relevance of coastal upwelling along the Peruvian coast. Marie Fujitani (ZMT) brought the discussions together by emphasising how social-ecological linkages and governance

perspectives can help translate model outputs into actionable outcomes. A whole session with contributions from OECD and World Bank, among others, discussed socio-economic dimensions. ZMT's newly

established TropEcS modelling team was also introduced. Their research highlights the institute's strong suits: combining social and natural sciences, advancing data generation in tropical regions and building partnerships across scales.

Overall participants engaged in lively exchange, culminating in the decision to produce a joint perspectives paper that will outline future research priorities and expand collaboration. The strong participation and collaborative spirit made the TropEcS Symposium a successful first step in strengthening ZMT's modelling capacities and underscored the critical importance of advancing our understanding of coastal and marine processes in the context of global change.

TropEcS stands for "Modelling socio-economic dimensions across Tropical Coastal Ecosystems and the Earth System". The initiative aims to develop a high-resolution modelling framework that integrates physical, ecological, and social dimensions to improve forecasts, inform policy and support resilience in the Global South. [> MORE](#)

VALUABLE WEATHER DATA

Climate research is reliant on globally accessible observation data. A conversation about collecting and exchanging data with the climate scientists Jan Härter and Maxime Colin

How important is the evaluation of weather data to climate research?

JAN HÄRTER: If we don't have access to this kind of data, we can't make progress. One example: In ZMT's working group "Complexity and Climate" we recently focused on investigating extreme rainfall. We asked ourselves to what extent it changes with temperature and then leads to so-called flash floods. For this very important study that recently appeared in the journal *Nature Geoscience* and clarifies a hypothesis that had long been formulated in climate research, we evaluated huge sets of data on precipitation. They came from several hundred weather stations in Germany that use very high temporal resolution for their measurements. We also used temperature data collected at the same weather stations. [> MORE](#)

MAXIME COLIN: In other cases, we make use of data-sets from satellites, for example, from research centers in the United States or use models developed in the US that are freely available – which can run on the supercomputer at the German Climate Computing Center in Hamburg. A lot of our work is dependent on access like this.

What might be the consequences if access to weather data is restricted because of political decisions as is happening in the United States at present?

JAN HÄRTER: If data are suddenly inaccessible or deleted it definitely makes climate research harder but just how much harder is difficult to tell. It could, for

example, impact forecasts about tropical cyclones. This makes it all the more important to collect data by building new weather stations which we at ZMT are currently campaigning to do in Senegal.

MAXIME COLIN: One of the things we are aiming for is a better understanding of monsoon rain, which is my area of research. But in this case, the first step is to observe the monsoon in West Africa more precisely. To this end, ZMT is cooperating with its Senegalese partners in the Sahel region east of Dakar and has built 13 weather stations. The data from these weather stations should in turn help to predict extreme weather events that cause flooding around Dakar. [> MORE](#)

Weather stations in the Sahel region – what has that got to do with tropical marine research?

MAXIME COLIN: The ocean, atmosphere and land continuously exchange water. It is important to understand the entire water cycle. The ocean plays an enormous role in the rain over land.

JAN HÄRTER: And for sub-Saharan Africa in particular there are very few data. Usually, regions like this are dependent on remote sensing such as satellite data. At ZMT we are now trying to observe at least this small area a bit better. These data could help us to understand tropical cyclones that are not only formed over the ocean but may originate over land masses. As part of a ZMT institute extension new working groups will model this interconnection in greater detail. [> MORE](#)



Shaping marine futures

This summer, ZMT, IPB University in Indonesia, the International Ocean Institute (IOI), the University of Bremen and partners hosted their first international summer course on transdisciplinary research. Funded by DAAD ASEAN the hybrid program brought together 89 participants from nine countries, combining lectures at IPB Campus with online sessions via the ZMT Academy. Field visits to Pramuka Island and the Cilincing fishing community added practical insights. Guided by an international faculty, the course strengthened skills in co-designing solutions, impact-oriented research and stakeholder engagement. [>MORE](#)

Partnership with Bangladesh think tank

Blue economy, maritime security, marine ecology and conservation, marine renewable energy, climate change – these are all research topics addressed by the Bangladesh Institute of Maritime Research and Development (BIMRAD) as well as ZMT. The Bremen institute and the non-profit think tank BIMRAD, founded in Dhaka, Bangladesh, in 2018, are thus looking to form an official partnership. The aim is to cooperate on tropical marine research as well as on marine protected area management and capacity development. In April 2025, the two institutes signed a memorandum of understanding (MoU). [>MORE](#)
See p. 1 for more on this topic.

ZMT team at UNOC3

Amongst the 2,000 international researchers at the promising UN Ocean Conference in Nice was a seven-person team from ZMT, including ZMT director, Raimund Bleischwitz, and the head of the Office for Knowledge Exchange (OKE), Rebecca Lahl. She moderated an IOC-UNESCO panel on mobilizing international partnerships for capacity building in marine sciences. Overall,

Raimund Bleischwitz rated the UNOC3 as a milestone in marine policy. All the participants particularly emphasized the solution-oriented culture of discussion, which, despite the initial failure of political negotiations in Geneva, will continue to inspire future work on a binding global plastics agreement. [>MORE](#) [>MORE](#)

Welcome to ZMT

They hail from Kenya, Indonesia, India, Bangladesh and Malaysia and are spending time at ZMT in Bremen: five researchers with fellowships from the Centre for Science and Technology of the Non-Aligned and Other Developing Countries (NAM S&T Centre) have joined the ZMT team for three months in 2025. They conduct their research and projects in various fields of marine science and are mentored by ZMT scientists. At the same time, they contribute valuable specialist knowledge to the Bremen institute – in this round, on ocean management, ship recycling, coastal hydrogeology and marine spatial planning. [>MORE](#)



The value of “beautiful” reefs

People’s emotional relationship with ecosystems is a precondition for their willingness to protect them. In the journal *Proceedings of the National Academy of Sciences (PNAS)*, a research team led by the University of North Carolina Wilmington (UNCW) and involving ZMT recently published a study on the beauty of fish communities on reefs. Every year, the vibrancy and blaze of colour in this underwater world attracts millions of people. But these unique ecosystems are fragile and highly endangered. The new study now reveals that protecting the reefs not only supports fishing and tourism but human well-being, too. Preserving their beauty should be a well-argued core conservation goal. [>MORE](#)