



WHAT'S UP IN THE DRY-WET?

Research assignment in six of the world's mangrove forests

ON EXPEDITION

The mud is 20 minutes away. That's the time it takes a vehicle to drive from ZMT's field station in Bragança in north eastern Brazil to where the mangroves begin – 15 million hectares of forest with wet feet. For marine biologists, this area is too dry; for land ecologists, too wet. But Martin Zimmer is fascinated. Steaming swamps, a plague of mosquitos at 35°C and waist-deep in mud. Field work like this is certainly exhausting, but very satisfying, according to ZMT's mangrove ecologist. "You don't just know, you actually feel, that you as a human being are part of a whole."

Leibniz researchers will now spend three years wading through the dry-wet of the tropical intertidal zones in Singapore, Brazil, Australia, Colombia, South Africa and Oman. They will measure trees, take sediment samples and observe biodiversity. They will, however, also investigate how the ecology and the respective social systems correlate. How do people make use of the mangrove forests? What kind of interference are the forests subjected to? What impact do humans have on the system and what, in turn, are the consequences for humans? "Interest in protecting and conserving mangrove forests has grown across the world because they store large amounts of greenhouse gases in their sediments," says Martin Zimmer, who heads the Leibniz Association's new collaborative project DiSeMiNation (Digging into Sediments and Microbes for Nature conservation). "But so far what we understand about this world is based more on guess-work than on knowledge."

Between knowledge and mysticism

High time to dig around in this in-between world and uncover important insights. Apart from the ZMT scientists, the team includes chemists, biologists and social scientists from three other Leibniz Institutes and local research institutions. "We run workshops where we assimilate the users' knowledge, too," Martin Zimmer emphasises. "When we have collected all the data we will be able to make recommendations on how the forests could be used and conserved in future." But whether there is really any such thing as "the" mangrove forests is open to debate in Martin Zimmer's opinion. At the six locations under scrutiny, there are differences in the tidal range, the species and nutrient diversity as well as the intensity of use. "It may not be possible to draw comparisons – that would be an important finding in its own right." But before he gets that far, he can wade through the mud and even allow himself to enjoy the mystical atmosphere. "Together with the rising mists," the scientist notes, "the local history emerges and that contains a lot of valuable knowledge about how to treat this world." [>MORE](#)

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SEE-THROUGH STONES

With Sebastian Flotow in the Thin Section Lab

"I cut stones so thinly you can see through them." Expressed in numbers, Sebastian Flotow explains, this means to a thickness of about 28 thousandths of a millimetre; in figurative terms, about half as thick as a hair.

The demand for such delicate wafers of rock or calcium carbonate skeletons comes, above all, from the ZMT researchers who study sediments, the ocean floor, sandy beaches and coastal silt. Scientists in all fields across the world entrust their geological and biological samples to Flotow's skilful hands. "With the equipment we have, we can determine materials and do element analysis or identify the structure of microorganisms."

From the macro- to the microcosm

Sebastian Flotow is a preparator specialised in geology and palaeontology and also a trained carpenter. The differences between these fields are not so very big, according to the modest member of ZMT's technical staff. Whether you are using a mineralogical saw or a panel saw, you always have to work precisely, and even with the scanning electron microscope it was really just a case of setting it as precisely as possible for the task in hand. Sebastian Flotow is a sought-after craftsman in his field. With his experience, he assesses the physical effects that could be produced by the SEM and patiently prepares it so that eventually the structures in the microcosm become as visible as possible.

ZMT's many Ph.D. students come to his lab with a diversity of samples and perspectives that enthuse him. Flotow is

ambitious when it comes to fulfilling special requests. He takes the time to decide whether the desired goal would be better served by a partially ground surface or a fracture surface, and how he can ensure that none of the valuable minerals get shredded during the cutting process. Such concentrated effort pays off, he says. "The result is better for everyone, and I enjoy achieving it."

Amidst sailors and scientists

Sebastian Flotow's technical expertise is also coveted on the research vessel. He sometimes constructs special devices for scientists heading for the Tropics or supervises the transport and operation of the equipment on the ship when, for example, sediment samples are being taken. The sailors operate the winch with the gripper jaws, but lifting and sifting the sediment and collecting the dust is his job. What sounds straightforward enough, is actually complicated in a scientific setting. "Work on board is always extreme," he laughs, but he still occasionally enjoys swapping his workshop and lab in Bremen for the high seas.

When the technical world is under control, the passionate craftsman allows himself to indulge in investigating the miniature worlds. He particularly loves imperfectly washed samples. On a planktonic foraminifer with a calcium carbonate skeleton that is as tiny as a pinhead for instance, you can discover much smaller structures and microorganisms like diatoms and radiolarians. "Diatoms are basically made of glass. They build a silicate skeleton, and it is wonderful to observe."

Sebastian Flotow belongs to ZMT's Department of Infrastructure and is the main contact for the Thin Section Laboratory as well as for light and scanning electron microscopy. He provides technical support for the preparation of sample material. The Thin Section Lab and SEM are two service facilities at ZMT with an extensive array of equipment for marine analysis and detailed study of the ultrastructure of geological and biological samples. [>MORE](#)

ALWAYS AT YOUR SERVICE

The ZMT laboratories: Nicolas Dittert and Donata Monien on the backbone of a research institute

What are the responsibilities of ZMT's laboratories?

Donata Monien: Apart from typical lab work, we spend time on coordination and communications. As head of the Chemistry Laboratory, I receive requests for analysis from all the research groups, irrespective of discipline, on a daily basis. Be it biology, chemistry or geology, I try to grasp the project context and the objective of the analysis, consult with the other labs about the best possible procedures and analytical methods, feed back to the researchers and pass on the action plan to the technicians.

Nicolas Dittert: Good cooperation between the scientific, technical and non-scientific sectors is key to the success of a research institute. When all the cogs are in sync, the institute as a whole is stronger and more efficient.

What helps promote interaction based on good partnership?

Nicolas Dittert: All the pillars of ZMT have a leadership structure that supports them in internal communications. The labs and workshops and all the rest of the infrastructure at ZMT also now have a voice of their own – mine – because we are very serious about cooperation based on partnership. Even the facilities behind the scenes provide indispensable services for science. Next to the research departments, they are the backbone of a successful research institute.

Donata Monien: To encourage productive dialogue, for example, labs and workshops require certain procedural flows. We are involved in so many different processes that

our structures need to be as clear as possible and we must be able to access information and metadata on any forthcoming analysis constantly. By working together closely with the researchers, we can evaluate the results satisfactorily and support the quality of the scientific conclusions.

How can the structures be improved yet more?

Donata Monien: Because our institute has grown so enormously in the last few years, we have, for instance, agreed that researchers, doctoral candidates and students have to register their lab project work in writing. This helps me to familiarise myself with the projects and means I can offer meaningful advice, especially to young scientists. When they return to Bremen brandishing their samples after spending six months in one of our international partner countries, I can consult the database and know immediately what it's all about so the lab can do its job properly.

Nicolas Dittert: Given that ZMT is involved in capacity development around the world and also advises politics and science, which means that as well as doing fundamental research, it also has a strong scientific services bias, it is only logical that it should create structures at leadership level that also value everyday services. Appreciation is an important element of communication and as such it is an intrinsic part of the role as leader to listen, follow up, enquire, praise and criticize constructively.

Nicolas Dittert became the managing director of the Leibniz Centre for Tropical Marine Research (ZMT) under a dual leadership principle in 2017. His responsibilities include managing and promoting the Infrastructure Department – administration, Media and IT Unit, workshops, laboratories, research aquaria facility and Scientific Diving Centre. Since 2013, **Donata Monien** has been in charge of ZMT's Chemistry Laboratory, which conducts centralised analyses to support research in fields like material cycles, ocean acidification, and the observation and recording of environmental parameters as well as training junior researchers. [>MORE](#)

ZMT information specialist...

Christina Schrader is the head of ZMT's MEDIA Unit (Management of Electronic Resources, Data, Information and Open Access).

...is Vice-President of EURASLIC

The European Association of Aquatic Sciences Libraries and Information Centres (EURASLIC) has now elected Christina Schrader as its vice-president. EURASLIC is the European branch of the International Association of Aquatic and Marine Science Libraries and Information Centres (IAMSILIC) – an organisation of libraries and information specialists in the marine and aquatic sciences which has dedicated itself to international ideas and resource sharing for more than 40 years.

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EURASLIC conference at ZMT

The European representatives of marine institute libraries meet every two years – in May 2017, ZMT in Bremen hosted 25 participants from Belgium, Croatia, Germany, Latvia, Poland, Russia, the UK and Ukraine for three days. Under the heading "Riding the Wave: Information Retrieval and Resource Management for the Future", the conference focused on open access and the restructuring of library work. www.euraslic.org

Alumni conference in Colombia

Successful endeavours at the "Western Hemisphere Alumni Network": in March 2017, 30 ZMT alumni from eleven American countries met in Santa Marta, Colombia, to share their knowledge and discuss research approaches to conserving and managing coastal ecosystems in the region. [>MORE](#)

Green light for joint lab

The Eilat Leibniz IUI Center (ELIC) on the Red Sea, which is based on a memorandum of understanding (MoU) signed by the Leibniz Association and the IUI in April 2016, is the location and centrepiece of German-Israeli research in marine science. Germany and Israel have a long history of partnership in marine sciences which is coordinated by ZMT in Bremen und the Interuniversity Institute for Marine Sciences in Eilat (IUI) in Israel. Summer 2017 will see the launch of a raft of jointly agreed research topics at ELIC.

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For the future of our oceans

Some 100 representatives of science and politics from 24 countries met at a special conference in Bremen's Haus der Wissenschaft and at ZMT in March 2017 to discuss the future of the oceans. The international conference launched the European network project "Ocean Governance for Sustainability", headed by ZMT scientist Anna-Katharina Hornidge – a project in the framework of European Cooperation in Science and Technology (EU COST). Visit "Sustainable Ocean Economy, Innovation and Growth" on www.oceangov.eu for reports and information on the policy brief for the G20 summit in Hamburg. [>MORE](#)

Campus Prize awarded for the first time

It recognises research for a sustainable future – valued at €2,000, the Campus Prize is conferred by the KELLNER & STOLL FOUNDATION FOR CLIMATE AND ENVIRONMENT, ZMT, and the University of Bremen. Awarded for the first time in April 2017, it went to Martin C. Lukas for his doctoral thesis in which he investigated the connections between the causes and consequences of coastal land use in Indonesia. [>MORE](#)

ZMT at UN Ocean Conference in New York

Concurrently with World Oceans Day at the beginning of June, a conference dedicated to the conservation and sustainable use of seas, oceans and marine resources took place at United Nations' Headquarters in New York. ZMT's Werner Ekau and Anna-Katharina Hornidge, members of the International Ocean Institute (IOI) delegation, ran events and presented research and activities related to ZMT's capacity building in the German Pavilion. [>MORE](#)

