

ECORD Bremen Summer School

Subseafloor Biosphere: Current Advances and Future Challenges

22 September - 2 October 2014, Bremen, Germany

The MARUM Center for Marine Environmental Sciences in Bremen was the host of the 8th ECORD Summer School, focusing on the geomicrobiology of the deep biosphere. In the course of two weeks 22 Master-, Ph.D.-students, Post docs and scientists renowned in the fields of microbiology and geology discussed and presented the latest advances in research and methodological techniques.

The participants came from 14 countries from the Americas, Europe and Asia, which gave the event an international touch and contributed to lively debates and discussions on various scientific topics, as well as social and cultural issues.

The first week featured an intense and exciting schedule of talks held by the lecturers dealing with diversity, distribution and limits of microbial life, geochemical processes within seafloor sediments and the oceanic crust. To complement these topics the researchers reported on case studies involving the IODP, presenting results from various drilling expeditions that offered insights into scientific questions and the structure of this international programme. In addition, each participant gave a short presentation on their current area of research, which enabled a vivid exchange of information and ideas that often extended to the coffee breaks. The first week was rounded off by a field trip to the first German oil museum in Wietze, a small town in Lower Saxony. The museum conveyed an extensive and current perspective on oil and gas production, including a historic view on oil production in Germany at the beginning of the 20th century.

As the first week concentrated on theory, the second week of the summer school had a strong focus on practical and laboratory work (*above*). We were introduced to



first-hand shipboard methodology applied during IODP expeditions. These methods, presented under the concept of the "Virtual Ship", included cultivation techniques, characterisation of microbial activity, drill-core description and core scanning, and downhole logging. The scientists provided insights on how to cultivate microbes, highlighting the difficulties imposed by anaerobic, nutrient-poor conditions. The next course was carried out at the MPI for microbiology, where we extracted DNA from a contaminated sediment core and subsequently amplified the DNA using PCR to identify the various strains of bacteria and archaea living within the core. In the last course, we attempted the quantification of microbial communities via cell counting under the microscope. In the last two days we were introduced to the first onboard procedures conducted on a sediment core after its immediate retrieval. We characterised the physical core properties using a multi-sensor core logger, performed sedimentological core descriptions using smear slides, and extracted pore water for chemical analyses. The practical part of the summer school offered a great and colourful mixture of biological and geological methodologies, encouraging

us to conduct necessary procedures on future IODP expeditions.

During the last day we were challenged to write our very own scientific proposal for a seagoing expedition, a great experience, which demanded teamwork and creativity. We were also informed on options for active participation in the IODP. To summarise, the ECORD Summer School 2014 was a great experience, a chance to meet and exchange ideas with students and lecturers, and an opportunity to understand how to take part in future IODP cruises.

We would like to thank all of the people involved including Dierk Hebbeln, Verena Heuer, Ursula Röhl and Jutta Bülden. We are grateful to all the lecturers who came from all over the world to share their knowledge with us. We acknowledge the technicians and staff at MARUM and all the participating students for making this year's ECORD Summer School such a memorable one.

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