Bremen Summer School Report 2014 by Marion Jaussi

From September 22 to October 2 2014, 29 students and scientists from all around the world participated in the ECORD Summer School "Subseafloor Biosphere: Current Advances and Future Challenges". To reach Bremen, some students arrived from next door (Bremen, Oldenburg, Cologne), others travelled from the north (Norway, Finland, Denmark), from the south of Europe (Austria, Italy), from the west of Europe (Belgium, UK), from the East (Poland, China), while others flew in from overseas (Turkey, Chile, Israel, USA). The background of the young researchers was as diverse as the nationalities, with microbiologists, molecular biologists, a marine virologist, sedimentologists, organic and inorganic geochemists, and geologists. The young scientists first gathered in the MARUM building on a Monday morning. They all shared a common mission: to attend fascinating seminars by experts on subseafloor life and to learn about IODP expeditions through the *virtual ship* laboratory.

During the first week, invited speakers exposed the participants to the state of research in the deep biosphere with stimulating lectures. The topics, discussed in the morning and afternoon, were highly multidisciplinary considering that marine sediments are at the frontier between the biosphere and the geosphere. The following list gives you some insights into our daily lectures: the limits of life in the deep biosphere, state-of-the-art technologies to quantify microorganisms and their activities, cultivation of subseafloor microbes, their lipid composition, the role of viruses, the use of stable carbon isotopes, and the biogeochemical processes in deep sediments and ocean crusts. Tea breaks were a perfect opportunity to continue the open discussions and exchange ideas with the lecturers, interact with future collaborators, or relax by planning the after-work dinner. Before the lunch break, the students introduced themselves with 15-minute talks revealing their diverse expertise and reinforcing their nascent friendships. At the end of each day, the lectures were dedicated to a specific IODP expedition with its main objectives and outcomes related to the deep biosphere. Specifically, Fumio Inagaki presented Expedition 337 "*Deep Coalbed Biosphere off Shimokita*", Steve D'Hondt gave a lecture on Expedition 329 "*South Pacific Gyre Subseafloor Life*", Bo Barker Jørgensen presented Expedition 347 "*Baltic Sea Basin Paleoenvironment*", and finally Beth Orcutt introduced us to Expeditions 327 and 336 "*Ridge Flank Microbiology Gleaned from Borehole Observatories"*. After these excellent talks most of us were ready to join an expedition on board the D/V JOIDES Resolution, the D/V Chikyu, or a Mission-specific platform.

We did the next-best thing the second week by experiencing a simulation of the onshore (cell counting, contamination control, MPN counts, pore water extraction, downcore logging) and offshore activities (core description, physical properties) in the MARUM laboratories. We finished up the ECORD Summer School by preparing a drilling proposal in small groups of biologists and geologists. After almost two weeks of intensive training, the participants proposed drilling in overlooked areas of the ocean with a full set of goals and experiments in less than three hours (see photo). In my opinion, this last task demonstrates that the hard work invested by the lecturers and the organizers was extremely fruitful. The ECORD Summer School entirely fulfilled its promise: a total immersion in the captivating world of the IODP.

Marion Jaussi

Center for Geomicrobiology, Aarhus, Denmark

Figure 1: Deep thoughts to shape a brilliant drilling proposal