

## Completion of first IODP Mission Specific Platform (MSP) project (Arctic Coring Expedition-ACEX) in Bremen

The Arctic Coring Expedition (ACEX, IODP Expedition 302) was the first Mission-Specific Platform (MSP) project in scientific ocean drilling (see [www.ecord.org/acex/acex](http://www.ecord.org/acex/acex)). Due to the nature of MSPs, some new approaches are required, e.g. due to space and time restrictions cores usually are not split at sea and the science has to be conducted both offshore and onshore. During ACEX three primary scientific activities were conducted offshore: ephemeral properties (pore-water chemistry, microbiology, physical properties; gas analyses for safety purposes) were measured and/or selected samples were preserved; core logging was carried out; and near real-time micropaleontology (and palynology) was performed for biostratigraphic analyses on core-catcher samples. The 340 m of recovered cores, yielding ~56million years of climate record from the Arctic Ocean, were then sealed and stored in temperature-controlled containers. The full science party did not meet until the so-called "Onshore Party" in Bremen when the cores were described, measured and sampled.

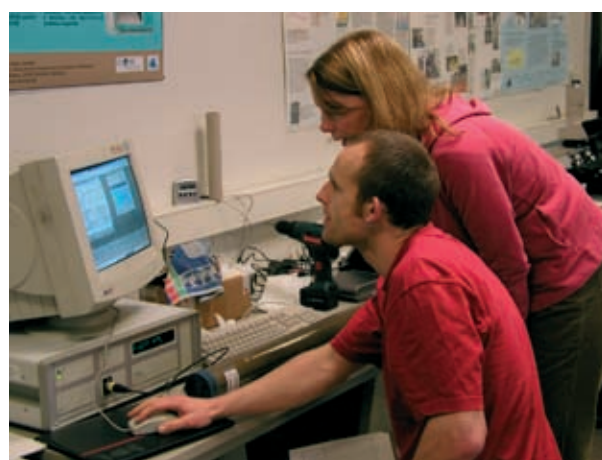
The first IODP Mission-Specific Platform (MSP) Onshore Party was held November 8 to 23, 2004 in the ODP/IODP Core Repository (BCR) and laboratory at the Bremen docks. The science party was welcomed at an icebreaker party in the hotel on the evening before the start. On the first day of the onshore party a science meeting was held in a seminar room on campus. While the main lab of the BCR has often been the site of standard ODP sampling parties during its past 10 years of operation, it was a totally new experience to split cores and also acquire all the data for the IODP minimum measurements. About 50 people (scientists, operator personnel, guests from US and Japanese Implementation Organizations in IODP) worked in two shifts processing the IODP Expedition 302 cores. All participants worked hard, helped each other, and came up with solutions as difficulties arose. This was a critical aspect in making this first onshore party successful, as was the enthusiasm of everybody involved. The facilities used two floors in the building, with the upper floor devoted to office space and specific laboratories (e.g., report writing, microscopy, and physical properties measurements on discrete samples). The main lab downstairs was used for initial core description of the freshly split cores, digital imaging, color reflectance measurements, split-core logging, petrophysical analyses (thermal conductivity, falling cone penetrometer measurements), photography, and detailed core sampling. Further analytical laboratories were available through the Department of Geosciences (specifically the geochemistry lab), the DFG Research Center for Ocean Margins (RCOM), the Centre for Marine Environmental Research (MARUM) of Bremen University, and the Max Planck Institute for Marine Microbiology (MPI), all on the campus of Bremen University. Overall it was a very well functioning system, and the work flow was much faster and smoother than might have been expected for a first-time effort. Trips during the week to the city hall,

including a reception with the mayor of Bremen, and a visit to the Alfred Wegener Institute for Polar and Marine Research (AWI) in Bremerhaven were nice interludes to ease the stress of the regular shift work. Numerous national and international media representatives from television as well as journals and newspapers attended a press conference and showed great interest in the scientific activities. Scientists stayed in a hotel in the city center, which, in contrast to a ship environment, allowed them to spend their off-shift time enjoying a variety of excellent Bremen restaurants, all of which offer very good German beer. The scientists received their samples soon after returning home (those who did not take the samples with them personally in cars or planes), and are busy now working on their individual analyses. New key results regarding the long-term climate history of the planet will soon be available.

*Ursula Röhl, ESO curation manager*



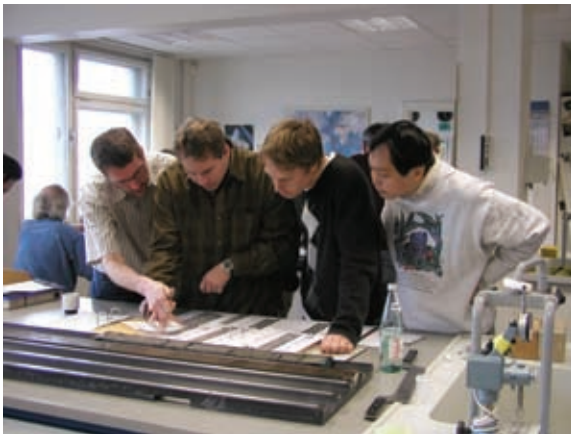
*Holger Kuhlmann (left) and Alex Wülbers (right, both Bremen) splitting an ACEX core. Photo courtesy BCR, Bremen.*



*Heike Delius and Brice Rea (Leicester University) checking the thermal conductivity measurement station at initiation of the ACEX onshore phase. Photo courtesy BCR, Bremen.*



*Ric Jordan (micropaleontologist, Japan, left) and Nalan Koc (micropaleontologist, Norway, right) doing microscope work during the ACEX Onshore Party. Photo courtesy BCR, Bremen.*



*IODP Expedition 302 scientists discussing lithological features (from left to right: Jens Matthiessen (micropaleontologist/sedimentologist, Germany), Matt O'Regan (physical properties specialist, USA), Martin Jakobsson (physical properties/logging specialist, Sweden), Masanobu Yamamoto (organic geochemist, Japan)). Photo courtesy BCR, Bremen.*



*Ted Moore (sedimentologist, USA) and Kristen St. John (sedimentologist, USA) admiring the freshly printed T-shirt logo. Photo courtesy BCR, Bremen.*

## New IODP Bremen Core Repository (BCR)

A very special landmark helps find the way to the Bremen University Campus – the 146-meter-high gravity tower, the only one in Europe, at the Bremen Center for Applied Space Technology and Microgravitation (ZARM). In this literally towering space laboratory, experiments can be carried out under simulated weightlessness. The University Campus “University and Technology Park” mirrors the practical, application-oriented approach as a principle of research in Bremen. Facilities that are closely associated with the university ensure that this transfer takes place. More than 40 high-tech companies have started up or moved in here in recent years. On the University Campus the Department of Geosciences, the new building housing both the Centre for Marine Environmental Sciences (MARUM), the DFG Research Center for Ocean Margins (RCOM), and the Bremen Core Repository (BCR), as well as the University and State Library of Bremen are all located in close proximity.

The **Bremen Core Repository (BCR)** has been operating for the Ocean Drilling Program (ODP) for the past ten years, and on October 1, 2004, was carried over into the new Integrated Ocean Drilling Program (IODP). The BCR is the second largest ODP/IODP core repository in the world, and presently contains about 83 km of deep-sea sediment and hard-rock cores from 31 expeditions (thirty with the JOIDES Resolution in the Atlantic Ocean, Caribbean Sea, Mediterranean Sea, South of 60° S, and one with the Vidar Viking in the Arctic Ocean) in over 127,000 d-tubes in a refrigerated storage hall. With the recent move to the new building on campus, the BCR now has an 1100 sqm refrigerated storage area and racks with a height of 5.5 meters (*see photo below*), most of them are movable. The total capacity will be about triple that of the former refrigerated hall at the Bremen docks.

Almost two thousand scientists have visited the repository since 1994, often cooperating in week-long sampling meetings of the shipboard investigators. So far more than 375,000 samples have been taken by the visitors and BCR staff and distributed world-wide.

As a partner within the ECORD Science Operator (ESO) Consortium for IODP, the University of Bremen also undertakes the curation, database operations, and archiving of collected cores, as well as providing offshore (mobile laboratory containers) and onshore laboratory facilities for systematic sampling and further data gathering according to IODP minimum measurements policies.

*Ursula Röhl, ESO curation manager, IODP curator*



*Refrigerated hall of the new Bremen Core Repository (BCR).*

*Photo courtesy BCR, Bremen.*