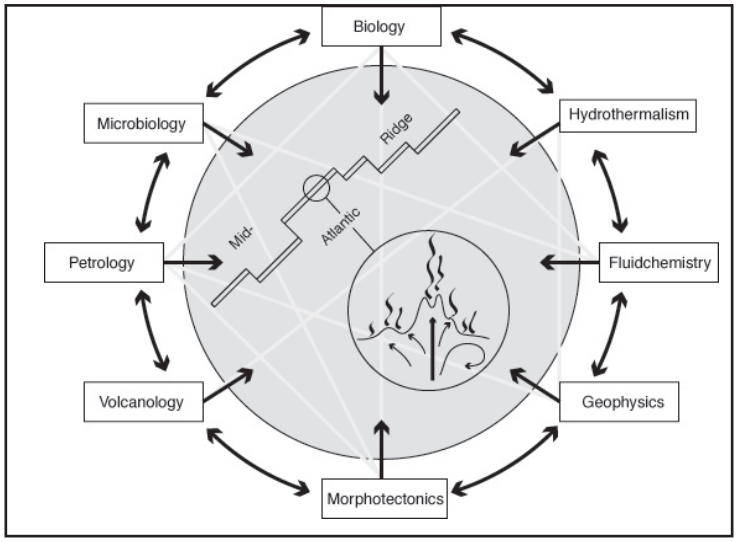


SPP-reader

The bi-annual newsletter of the DFG Priority Program SPP 1144
Issue 3, February 2005

The SPP 1144 web site is at:
www.deridge.de

Third Edition

The SPP 1144: “From Mantle to Ocean: Energy-, Material- and Life Cycles at Spreading Axes“ started on the first of October 2003, and with it this newsletter. In general, there will be two editions per year. We hope that you will find this newsletter useful. Please send any feedback to Katja Freitag (kfreitag@ifm-geomar.de) or Klas Lackschewitz (klackschewitz@ifm-geomar.de). This is also the address to use if you have a contribution which you would like included in the next issue. And at this point it would be a good place to introduce you to Katja Freitag who, after getting the InterRidge Office started in Germany is now devoting half her time to the De-Ridge effort, with the goal of helping the SPP1144 community to play an ever more important role in the wider InterRidge effort.

Our bi-annual newsletter aims to bring you all the latest developments and news regarding the SPP and other international activities at mid-ocean ridges.

In this issue

Call for proposals for the 2nd Phase of SPP 1144

In October 2003 the Senate of the German Research Council (DFG) started supporting the priority program "From Mantle to Ocean: Energy-, Material- and Life cycles at Spreading Axes". The project is currently planned to run for six years.

The objective of the priority program is to quantify the processes at mid-ocean ridges by undertaking detailed tectonic, geophysical, volcanological, geochemical, fluid-chemical and biological investigations. In order to attain a globally-relevant description and quantification of ridge processes it is necessary to carry out an intensive, multi-year, multi-disciplinary project at various time scales and at clearly-defined, representative regions along the mid-ocean ridge.

During the first phase (2003-2005) of the priority program, the DFG funded 20 projects. A list of these funded project are available on the SPP1144 web site, located at IFM-GEOMAR and accessible under www.deridge.de.

Continuation and/or new proposals for the next two year funding period (1.10.05-30.9.07) need to be submitted to the DFG before March, 31th, 2005 in written form (three copies) using the reference "SPP 1144". In addition, a copy of the proposal should be sent to the Coordinator.

In order to assure the maximum interlinking between proposals, we recommend you send a first draft of the proposal to the coordinating office (use Katja Freitag´s email address, above) as soon as possible. This way we can highlight any extra links which might be relevant.
Note that for this proposal phase, ALL COSTS FOR CRUISES WHICH ARE A PART OF SPP1144 (E.G. TRAVEL (INCL. SHIP PER DIEM), CONSUMABLES, AIR FREIGHT) NEED TO BE INCLUDED IN THE SPP PROPOSALS. HEAVY EQUIPMENT AND CONTAINER TRANSPORT MUST BE APPLIED FOR THROUGH THE PROGRAM CHAIR C. DEVEY.

*For questions concerning the **thematic background and the scientific direction** of the program please contact the program coordinator, Prof. C.W. Devey, tel.: 0431 6002257, email: cdevey@ifm-geomar.de*
*Questions concerning **submission of proposals** should be directed to U. Bennerscheid at the DFG, Kennedyallee 40, 53175 Bonn, tel.: 0228 885 2455, email: ute.bennerscheid@dfg.de*
*For **technical questions** please contact Dr. S. Faulhaber at the DFG, Kennedyallee 40, 53175 Bonn, tel.: 0228 885 2363, email: susanne.faulhaber@dfg.de*

Summary of Meteor cruise M62/5

The R/V METEOR cruise M62/5, which took place from 7 November – 29 December 2004, was the second research cruise to the South Atlantic Ridge between 7° and 11°S after cruise M62/4.
The aim of the first leg of the cruise was to determine, amongst others, the volcanological and tectonic nature of the seafloor in a portion of the South-Atlantic Ridge (MAR) between 7-11°S using the British TOBI device. Several segments (A1-A4) which are separated from one another both by transform- and non-transform faults were studied. Using backscatter detectors mounted on TOBI as well as MAPR backscatter devices attached to the towing wire, we collected real-time as well as off-line pressure, temperature and nephelometry data at various depths along the TOBI towing track. With this basic information about the nature and activity of the seafloor, we used a ROV (remotely operated vehicle) to explore an active hydrothermal field and to sample the seafloor and a CTD to sample the water column during the second leg of the cruise. Analyses for methane in the water were carried out on board to build up a detailed 3-D visualisation of the hydrothermal plume. Additionally we have made LADCP measurements to examine the vertical mixing within the water column above hydrothermal vent fields.

The main results of M62/5 can be summarized as follows:
(1) Four second-order ridge segments were explored south of the Ascension fracture zone, over a distance of 1000 km along-axis. Approximately 6000 km2 of seafloor with an average depth of 3100 m were imaged with TOBI.
(2) Two extensive sheet-flows were identified at the

northern-central end of Segment 2. The northern sheet-flow has an area of 4.5 million m2, while the southern one has an area of 6.3 million m2. The flows emanate from the neovolcanic axis and spread north-eastwards for over 6 km. The southern flow clearly on-laps older faulted and fissured terrain at its southern boundary. There are lobate internal reflectors within the flows that indicate either flow fronts or pressure ridges.

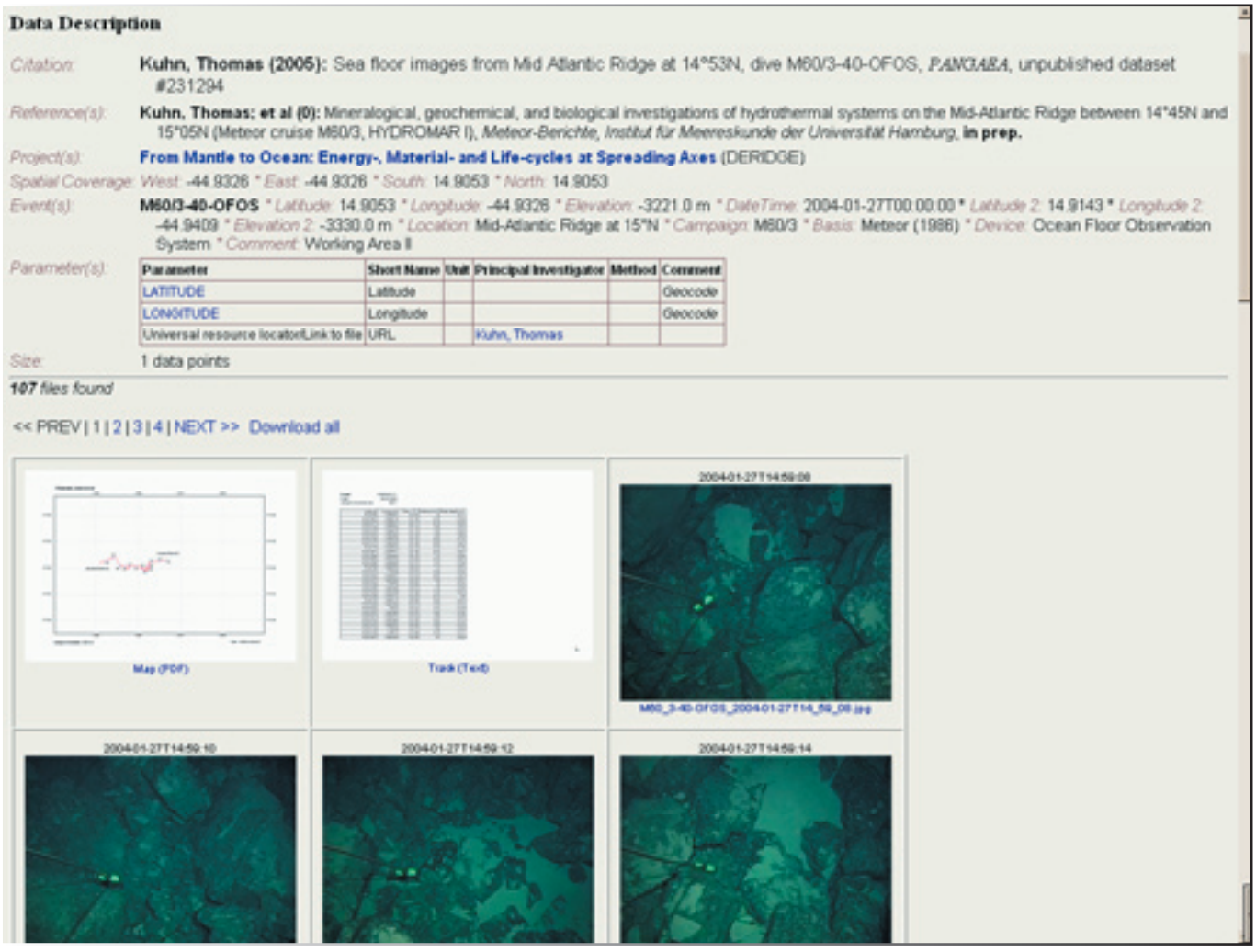
(3) A hydrothermal plume with methane concentrations of up to 115 nmol/l and a maximum turbidity of 0.1331 V was found in 2700 m water depth at the border between segment A1 and A2. The border is marked by a non-transform fault. This site is located at the northern end of a N-S striking ridge and forms a bay called “Cheating Bay” which is open to the NW. A near bottom water sample taken in this area with the ROV showed a CH4 concentration of 27 nmol/l.

(4) A temperature anomaly of 0.14°C found during a ROV dive on a plateau at the western flank of “Cheating Bay” is clearly related to an increase in heat transfer from a hydrothermal system below the surface. The occurrence of intense alteration of rocks and sediments around this so-called “Nibelungen field” also supports this conclusion.

(5) Most of the microcrystalline basaltic rocks sampled in the “Cheating Bay” area are covered by Mn-oxide which is clearly related to hydrothermal plume fallout. The volcanic glass shows only minor palagonitization.

SPP 1144 data management

Data from Meteor cruise M60/3 were the first data provided for transfer to the SPP1144 archive at WDC-MARE/PANGAEA. These data include CTD measurements, chemical analyses of fluids and rocks, temperature measurements and seafloor images and maps. Some specific work was necessary to prepare the OFOS images (‘minifilms’) for clear and easy access and to ensure a precise geocoding of the dives and images. An example for this kind of data is shown below.



Data Description

Citation: **Kuhn, Thomas (2005):** Sea floor images from Mid Atlantic Ridge at 14°53N, dive M60/3-40-OFOS, *PANGAEA*, unpublished dataset #231294

Reference(s): **Kuhn, Thomas; et al (0):** Mineralogical, geochemical, and biological investigations of hydrothermal systems on the Mid-Atlantic Ridge between 14°45N and 15°05N (Meteor cruise M60/3, HYDROMAR I), *Meteor-Berichte, Institut für Meereskunde der Universität Hamburg*, **in prep.**

Project(s): **From Mantle to Ocean: Energy-, Material- and Life-cycles at Spreading Axes** (DERIDGE)

Spatial Coverage: *West:* -44.9326 * *East:* -44.9326 * *South:* 14.9053 * *North:* 14.9053

Event(s): **M60/3-40-OFOS** * *Latitude:* 14.9053 * *Longitude:* -44.9326 * *Elevation:* -3221.0 m * *DateTime:* 2004-01-27T00:00:00 * *Latitude 2:* 14.9143 * *Longitude 2:* -44.9409 * *Elevation 2:* -3330.0 m * *Location:* Mid-Atlantic Ridge at 15°N * *Campaign:* M60/3 * *Basis:* Meteor (1986) * *Device:* Ocean Floor Observation System * *Comment:* Working Area II

Parameter(s):

Parameter	Short Name	Unit	Principal Investigator	Method	Comment
LATITUDE	Latitude				Geocode
LONGITUDE	Longitude				Geocode
Universal resource locator/Link to file	URL		Kuhn, Thomas		

Size: 1 data points

***107** files found*

<< PREV | 1 | 2 | 3 | 4 | NEXT >> Download all

The following data are available: 1) thumbnails representing the original images, 2) a track plot (as PDF file) and 3) a list (as ASCII text) containing the image names, as well as latitude and longitude of each image. Each document or image can be visualized and downloaded in the original size. Because of the physical storing strategy it may take a while to get an original sized image. The reason is that images which have not been used for a long time migrate to a tape archive. To load the image back to the hard disk takes up to 40 seconds. A 'download all' link allows all files to be received as a zipped archive. In order to access the SPP database, please contact K. Lackschewitz to apply for a password.

The next step in data management beside continuing the transfer of M60/3 data, is to start to inspect and prepare the new data from cruise M62/5.

The project web page moved from Bremen to Kiel (http://www.deridge.de). Therefore some changes occurred with regard to the temporary presentation of non-project data. These date, previously available via the project homepage, are now on the data web page (http://www.pangaea.de/Projects/SPP1144/). These data will successively get transferred to the WDC-MARE/PANGAEA archive.

Please explore the new project web site.

Upcoming events

Meteor cruise M64/1

Meteor cruise M64/1 will start on April 2, 2005 from Mindelo, Cape Verdes and end in Fortaleza, Brasil on May 3. Chief scientist is K. Haase, Univ. of Kiel. The main objectives of the cruise are to find and sample active hydrothermal vents and to study recent volcanic processes on the Mid-Atlantic Ridge between 8 and 11°S. During the M64/1 cruise we will sample the structures defined by previous TOBI side-scan mapping and extensive water sampling and vent exploration programmes by German and British cruises (see report above). Both fluid chemical and biological/microbiological studies are planned at hydrothermal vents. CTD/ water sampling with tow-yos will be carried out to map the size and distribution of the hydrothermal plumes. Several recent lava fields and volcanic structures were found during side-scan mapping and these structures will be sampled using the ROV and a wax corer in order to determine the composition and age of the lavas. Furthermore, the volcanic setting of the sampled hydrothermal vents will be investigated using the ROV and camera tows. Dredge sampling is planned to study the petrological and geochemical evolution of the northward propagating spreading segment.

Meteor cruise M64/2

M64/2 will start on May 6, 2005 from Fortalezza (Brasil) and end in Dakar (Senegal) on June 6. Chief scientist is K. S. Lackschewitz (IFM-GEOMAR Kiel). The overall goal of the cruise is to increase the understanding of the geochemistry, biology and microbiology of the Logatchev Hydrothermal Field (15°N at the MAR). The studies will put special emphasis on the temporal variability of fluid emanations, fluid chemistry, microbial activities and associated fauna at selected vent sites in comparison to results obtained in previous Meteor-cruises to this hydrothermal field. In order to assess long-term variations of the activity of the Logatchev Hydrothermal Field, a number of environmental monitoring stations (pressure, temperature, tilt, microseismicity) will be installed, recovered and redeployed in 2006. As the fluids at the Logatchev Field are known to be phase-separated (sub-surface boiling), changes in the emanation of the different phases and their consequences for the hydrothermal ecosystem will be the focus of the biological studies. All our work at the hydrothermal field will be carried out using the Bremen ROV Quest. Geological sampling of sediments and hard rocks will be done with a TV-grab. Observations with a deep-tow camera system will allow exploration in the wider vicinity of the hydrothermal field. Studies of the plume chemistry as well as tow-yos will help to map in detail the geometry and nature of the plume. To date little is known about the temporal variability of complex hydrothermal systems, therefore the plan is to continue these time-dependant studies in the following years.

Schedule and main objectives of planned Meteor and Merian cruises 2006

The M.S. Merian cruise HYDROMAR III to the Logatchev Hydrothermal Field at 15°N is currently scheduled to depart on 25 January, 2006 and end on 21 February, 2006 (coordinator is C. Borowski, MPI Bremen). The investigations of this cruise are a continuation of the program started at 15°N on the Mid-Atlantic Ridge in 2004 (cruise M60/3; HYDROMAR I followed by cruise M64/2; HYDROMAR II). The emphasis of this cruise is to study the temporal variability of fluid emanations, fluid temperature and chemistry, microbial activities and associated fauna at selected hydrothermal vent sites. The 2005 installed longterm monitoring stations will be recovered to get the first continuous long-term data set from this area.

A second M.S. Merian cruise to the Logatchev Field is presently scheduled for 23 February to 15 March 2006 (coordinator is T. Kuhn, IFM-GEOMAR Kiel). This HYDROMAR IV project proposes to drill 15 m long boreholes into the ultramafic-hosted active vent sites of the Logatchev-1 hydrothermal field. The drilling device that will be used is the newly built Rockdrill 2 owned by the British Geological Survey in Edinburgh (UK). The major scientific objectives include the investigation of depth zonations of mineralization and alteration, their age relationships and the establishment of the variability of the subsurface biosphere.

Meteor cruise M68/1 is scheduled to depart from Barbados on 25 April, 2006 and end in Recife on 2 May, 2006 (coordinator is A. Koschinsky, International University Bremen). The overall goals of the investigation are (1) to investigate the petrology and geochemistry of source rocks and the geochemistry and fluxes of the respective hydrothermal fluids, temporal variations of hydrothermal activity, hydrothermal alteration of volcanic rocks, and geo-bio interactions between fluids and hydrothermal biotopes at the slow-spreading Mid-Atlantic Ridge (MAR between 7 and 11°S) and (2) to focus on the biogeographic role of the southern MAR with respect to the distribution of hydrothermal fauna and the differences between hydrothermal systems at the northern and the southern MAR. The southern MAR is geologically and biologically much less well investigated than the northern MAR. However, several indications for the occurrence of hydrothermal venting of hot and gas-rich fluidswere found on the cruise M62/5. The main tool for this cruise will be the 4000m workclass ROV Quest 5 (www.rcom-bremen.de/ROV_QUEST.html) provided by the University of Bremen (c/o Prof. G. Wefer, Dr. V. Ratmeyer, MARUM).

The proposals of all three cruises are presented as pdfs on the SPP1144 web site.

2nd SPP1144-Workshop in Etelsen, 28.-30.6.05

We announce a 2nd SPP1144 workshop to present the results of Meteor cruises M62/4, 62/5, 64/1 and 64/2 and the preliminary results of the funded SPP1144 DFG-projects. Furthermore, we need to coordinate the future research activities at the Mid-Atlantic ridge segments and hydrothermal vent fields in the selected areas at 15°N and between 7 and 11°S
This workshop brings together scientists and graduate students from all disciplines interested in both areas. Based on our good experience last year, we will carry out our workshop again in Etelsen (near Bremen) from 28.-30.6.05. An official invitation together with a registration form will be sent out by the DFG during the next month.

The main goals of the workshop are:

• Present and discuss what is currently known about all aspects of the Logatchev Hydrothermal Field including knowledge gained from the most recent expeditions
• Present a first overview of volcanic and hydrothermal activity in the area 7-11°S
• Discuss the commencement of the web-based data integration for both areas
• Plan future developments in the SPP
• Determine the state of readiness for long-term monitoring of the MAR, including feedback from the MoMAR workshop in Lisbon (7-9.4.05)

News from the InterRidge-Office

A lot has happened since the last report on InterRidge activities half a year ago.

Office projects: A new InterRidge logo was introduced in September 2004, followed by the design and printing of an InterRidge flier. And one of the biggest projects, restructuring InterRidge website, has just been implemented by going online in February.

Recent events: From 19-21 January 2005, the National Institute of Oceanography hosted a workshop on Indian Ridge Systems. This was a successful workshop, with just over 80 participants, a third of whom came from outside of India. It is evident that India has an active ridge-researching community who are actively seeking collaborative work with other nations, especially with regards to training young scientists in the newest research technologies. The need to study the little-known biology of the Indian ridges also became apparent.

Upcoming events: (these are being organized together with the US Ridge 2000 office)
- a field school and field trip led by Professor Joe Cann (UK) to study ophiolites in Cyprus (May 2005)
- the 3rd International Symposium on Seep and Hydrothermal Vent Biology to be held in California, USA (September 2005).

InterRidge working groups: The Mid-ocean ridge ecosystem working group, together with the InterRidge Steering committee, is presently formulating a voluntary code of conduct for scientific work at hydrothermal vents to establish the position of scientists as stakeholders with expert knowledge. This led to the IR chair, Colin Devey, being invited to talk at an International Seabed Authority workshop in Jamaica (September 2004) where he discussed the work of InterRidge and its potential relevance to the establishment of environmental baselines as well as potential collaborations with the Authority. InterRidge is finding international recognition as a representative body for ridge scientists in policy decisions. The first Biogeochemical interactions at deep-sea vents working group meeting was held in San Francisco (December 2004). This was a successful starting point for the working group, and a report will be available on the outcome shortly. Future working group meetings are:
- Monitoring and Observations working group: an International MOMAR implementation meeting will be held in Portugal (April 2005)
- Ultraslow-spreading ridges working group: planning a meeting in Italy (start 2006)
- Deep Earth Sampling working group: planning a meeting with IODP (first half of 2006)
Outcomes of working group meetings and information on activities can be found on the InterRidge website (www.interridge.org).

Last year IR teamed up with an educational media group (Future Vision: Educational Media Group) and other science organizations in a cost-effective plan to develop innovative print and video media products for formal and informal audiences. Although funding is still pending, the plan is to join groups that traditionally do not work together – scientists, writers, educators, video producers, graduate students – in a common mission: to develop an educational video package including six half-hour programs that tell the compelling stories of ridge science in an effective, accurate way.

SPP1144 Newsletter is published bi-annually by

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K. Freitag Coordinator
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