

Ridge 2000 Steering Committee
April 18–19, 2005
Waikoloa Beach Marriott
Waikoloa, Hawaii

Attendance

Program Chair: Chuck Fisher

Executive Committee: Debbie Kelley, Mike Perfit, Doug Wiens

Steering Committee: Donna Blackman (*Chair-elect*), Suzanne Carbotte, Chris German, Charlie Langmuir, Bob Lowell, Anna Metaxas, David Naar, Rob Reves-Sohn, Andreas Teske, Andreas Thurnherr

National Science Foundation: Dave Epp

Staff: Liz Goehring, Patty Nordstrom

Guests: Bob Detrick (Woods Hole Oceanographic Institution and ORION), Jim Cowen (University of Hawaii and Time Critical Studies Coordinator)

Absent: Dave Butterfield, Anna-Louise Reysenbach, and Geoff Wheat (Steering Committee); Phil Taylor (NSF), and Sharon Givens (Program Coordinator)

Due to a power outage at the hotel, the agenda was rearranged; those presentations not requiring electrical power were presented first.

Opening Remarks/Logistics: C. Fisher

The summary of Ridge 2000 (R2K) activities presented at the recent InterRidge (IR) Steering Committee meeting is impressive. All of the Integrated Studies Sites (ISS) are up and running; Time Critical Studies (TCS) is seeing some action; Education and Outreach (E&O) activities are in full force. In addition, many international efforts are taking place, and R2K will need to see how it can interact with the various groups for everyone's benefit.

Welcome to Bob Detrick from WHOI, who will present the latest about ORION. The Steering Committee (STCOM) should think seriously about what efforts R2K wants to make, so that the community can be best poised to take advantage of opportunities. At present, opportunities are forthcoming not just from ORION, but also from NEPTUNE Canada, and perhaps MoMAR and other European efforts.

Other Issues: TCS, data policy enforcement, and navigation are all topics that need discussion.

Meetings: A number of meetings are coming up that must be discussed, some of which the STCOM is aware and others that have recently been proposed.

Introductions: All present provided a short introduction.

Minutes: The minutes from the October 2004 meeting were approved with minor typographical corrections. They will be posted on the R2K website.

Office Report: C. Fisher

Overview: The R2K office has been busy. Additional details of activities will be addressed throughout the meeting as they are presented in the agenda.

New Office Personnel: Catherine Williams, Ph.D., is working with Education & Outreach, conducting evaluations and developing a public website. She is employed by the Penn State College of Science and has agreed to work with R2K.

Budget: A pie chart of the R2K budget based on the proposal submitted to NSF was presented. The budget supplement includes some expenses past the official end date of the office's tenure at Penn State. The budget includes participant costs up to the November community meeting, which will be in the new office budget (Donna Blackman, R2K chair-elect, Scripps Institution of Oceanography). The next STCOM meeting is in the current (Penn State) office budget. The current office also will help with some aspects of the AGU Fall Meeting activities (financial: booth deposit and contributions for the reception) in December 2005. Staff domestic travel includes some E&O-oriented travel for Liz Goehring and Catherine Williams that is not specifically budgeted in the E&O supplement. The EXCOM expenses for 2005 also are included with staff salaries and wages in the current budget.

Newsletter: The newsletter is in production. Copies will be mailed to all R2K members in the United States who have requested this option. If STCOM members would like additional copies, please contact the office. Newsletter text from each of the ISSs was included in the STCOM binders. Any edits or revisions should be sent directly to Sharon Givens.

Transition: The proposal submitted to NSF by Donna Blackman is modeled after the proposal submitted by the current R2K office. The overall budget amounts are generally similar, except the first-year budget includes two large meetings and differences in E&O, which came in close to 20% of the total budget. The additions include Liz Goehring at half-time for the first year as well as a part-time web manager. Liz's appointment through Scripps will begin 8 months into the budget year.

Funding for participant support for the Vancouver community meeting (November 2005, ~\$100K) is included in the new office's budget. If the current office will be handling participant support, both offices may consider transferring the funds to Penn State.

There is sufficient money in salaries in the current budget to help with the transition, including flying webmaster Greta Mertz to Scripps. Greta has been instrumental in revising the website to make the transition easier.

Education & Outreach: Liz Goehring will present a full report on E&O activities later in the meeting. A question was asked about the funding source. Dave Epp indicated that E&O funds have come mostly from outside of the R2K science budget. Many PIs use R2K E&O activities in their proposals to address the "broader impact" criteria.

Website: Greta Mertz (part-time student) has been working full-time on the web projects and is doing a great job. If time permits, when the power is restored, the new look for the R2K website will be demonstrated. The site has been streamlined, and is easier to use.

The STCOM questioned why the site is going through major revisions now when it is moving to a new office. A primary motivation for the site revision is to make it more transportable. The

current office is working closely with Donna Blackman to avoid any big design concerns. The goal is to have a website and database that can be handed over intact so that the new office does not need to spend the first year getting up to speed.

The idea of making the site more interactive was also discussed. An evaluation of the site should be done before this level of redesign is undertaken.

The new R2K public site is being hosted externally. The benefits for doing this include (1) cost is minimal, \$12/month; (2) no downtime if the R2K server crashes because the web hosting company would not be affected and the company has multiple servers in the event of crashes; (3) protection of the R2K server against hackers; and (4) the host company can provide valuable evaluation statistics. R2K should consider external hosting for all of the websites, which could make future transitions even easier.

Relevancy Review Panel Preview: C. Fisher

Relevancy review will be conducted Tuesday afternoon after the STCOM meeting. The panel's meeting was moved to follow STCOM so that the panel could hear about program updates and think about high-priority needs when discussing the proposals. There are 20 pending proposals. Guidelines for relevancy review were available.

The purpose for relevancy review was reviewed for new STCOM members, as there is some confusion outside the R2K community about the reviews. The panel does not evaluate the science, but looks only at whether a proposal is relevant to the R2K program. The results of R2K review panels serve as a recommendation to NSF regarding the source of funding if a proposal is subsequently recommended.

NEPTUNE Canada, VENUS, Endeavour MPA: C. Fisher and A. Metaxas

VENUS: A shallow water observatory, the VENUS Project will install three observatory power cables off the coast of British Columbia. The first line, the Saanich Inlet line, is scheduled to go into the water in July 2005, and will have plenty of room to plug in basic instruments (cameras, DVDs). The second line will go in south of Vancouver across the Strait of Georgia, and is scheduled for fall 2006. The third line will run south from Vancouver Island across the Juan de Fuca Strait to the US border. An NSF proposal is pending to fund a US line from the Olympic Peninsula to connect with the third VENUS cable. Part of VENUS is to be used as a test bed for NEPTUNE, but NEPTUNE will not connect to VENUS. VENUS has a large, well-funded outreach component. The city of Victoria is also providing a lot of support. A recent copy of an ORION newsletter that includes an article on VENUS was passed around.

NEPTUNE Canada: Of the CA\$60 million funding for NEPTUNE Canada, \$13 million is earmarked for instruments and \$47 million for infrastructure. Seventeen proposals for community-based experiments were submitted, most but funding to do science must be obtained from other sources, such as NSERC (Canadian equivalent to NOAA and NSF).

Endeavour Node: A meeting was conducted in early April 2005 to discuss how to prioritize observatory node placement. A node at Endeavour is being viewed favorably and is reported to be high on the priority list.

Endeavour MPA: – Discussion was rescheduled for later in the meeting.

ORION: B. Detrick

The Ocean Research Interactive Observatory Networks (ORION) program was established by NSF to operate and manage the science programs at existing and future ocean observing sites. Key to ORION's success will be the Ocean Observatory Initiative (OOI), which is the mechanism to acquire the infrastructure that will obtain and transmit time-series data back to shore in real time.

There are three components to ORION: global, regional, and coastal.

- *Global:* The global network will probably consist of about 10 moored buoys. Some of these sites are already established, and some but not all will have seismometers.
- *Regional:* NEPTUNE in the northeast Pacific Ocean is an example of a regional observatory.
- *Coastal:* Large coastal communities are keen on hosting observation arrays, which include endurance arrays for long-term, time-series monitoring, and pioneer arrays, which are relocatable, telemetering clusters.

OOI funding to build some of the future infrastructure will come from NSF's major research equipment and facilities construction fund (MREFC).

A "Request For Assistance" (RFA) for conceptual proposals was solicited to members of the community, with proposals due May 23, 2005. Letters of intent are optional. The proposals will go through the normal NSF proposal review process. ORION will use these RFAs to better define the needs for infrastructure. The expected outcome are ranked science program. This process is an important mechanism for R2K to have input on the ORION sites. Additional information, frequently asked questions, and proposal guidelines are available at www.orionprogram.org. These requests will not result in funding for research, but will influence where observatory nodes are placed. It will be a multiple-step process, and this is the first step.

Action Item: Integrated R2K proposals for ORION.

The STCOM agreed on two separate efforts that will need to be coordinated. With respect to the Juan de Fuca regional observatory, Debbie Kelley and William Wilcock will take the lead on an R2K proposal for the Endeavour ISS. Debbie will coordinate an email request to the R2K community for interest and assistance.

A second proposal will be submitted for buoys at the EPR and Lau Basin Integrated Studies Sites, as well as the Mid-Atlantic Ridge site selected in March 2004 at the Providence, RI, workshop (35°–37.5°N, including Lucky Strike and Rainbow). Doug Wiens indicated that the Lau ISS scientists have already expressed interest. Donna Blackman will take the lead to contact Maya Tolstoy, site coordinator, about the EPR ISS and Susan Humphris of WHOI about including the Mid-Atlantic Ridge site. They will solicit community input and assistance with proposal writing. The result will be a single, unified proposal including justification for all three sites

NSF Report: D. Epp

The federal budget deficit, attributed to the trade deficit (\$61 billion) and the increase in the cost of oil, continues to have an impact on NSF. The budget for Ocean Sciences is down from the 2003 level—\$312M is budgeted for 2005 and \$315M requested for 2006. Although the budget is trending up, it has not reached predicted levels.

Ship Costs: There has been an increase in ship costs because of higher fuel and insurance expenses. In 2005, the total number of ship days in the UNOLS fleet is 4678; of that, 2948 are

NSF days. Several ships are currently laid up. In 2005, NSF's outlay for ships was \$41–42M. For 2006, \$34–\$38M is on hand, but the cost for 3000 days is \$44M. It is almost certain there will be layoffs in 2006. In 2006, on the books are 3238 ship days, and of those 2400 are NSF days.

Funding Rate: The MG&G funding rate for proposals is about 22%; an optimal success rate is 30–40%.

NSF Budget: MG&G has been informed that because of a shortfall in the ocean drilling program, the budget might be down 10%. Do not expect an increase in science budgets to accompany MRE (Major Research Equipment) funding.

R2K Budget: The current MG&G budget has \$2.3 to \$2.6M left to spend at the next review. MG&G has committed approximately one-third of the budget to ongoing projects

NSF Division Director: The NSF Ocean Sciences division director position remains open, and R2K STCOM members are urged to apply. Larry Clark is the acting division director and Phil Taylor is acting section head.

Proposals: From the previous target date, the proposals as a whole were very well integrated. Only a few did not meet requirements.

A significant number of proposals have been funded that do not have the R2K title, but that have contributed to R2K. The \$9.4M spent directly for R2K is not the full story, as almost \$1M more has been spent than was in the R2K budget.

Previously, MG&G spent 50% on ridge research, and now it is down to 30%. R2K proposals are not as competitive as others funded by MG&G, such as paleoclimate. Proposal pressure is down; a lot of momentum was lost during the transition between RIDGE and Ridge 2000.

The STCOM discussed several reasons why proposal pressure may be down:

- The community (including MARGINS) is large
- Not entraining new, young scientists?
- A lot of research is being done on with non-NSF support

There was no consensus why proposal pressure is down.

Program Review: The question of program review was discussed. The review will take place toward the end of the next office's tenure (2008). R2K does not have the funds to take on another ISS yet, and at least one of the current ISSs must show significant progress by 2008.

Time Critical Studies: J. Cowen

This report began with a brief history of recent mid-ocean ridge events in the Endeavour region. In 1999, there was an event, but there were no ships on site. Ships visited the site a few months later and documented changes to the chemistry.

In October 2004 and December of 2004, events were also recorded but no follow-up cruises were warranted. In February 2005, however, an intense earthquake swarm occurred. The R2K community was notified of the start of this event on the end of day one. The TCS rapid response team was on site within a week.

Specifically, on February 27, 2005, an intense earthquake swarm occurred in the northern part of Endeavour Segment. Approximately 3000 earthquakes were logged over 5 to 6 days. The rapid response team went to four of the five known Endeavour vent fields. Results to date:

- *Preliminary results:*
 - No indication of seafloor expression of this event
 - No event plume
 - No chemical changes in the water column
 - No evidence of new lava
- *Still waiting for additional data:*
 - In situ sensors with time-series records
 - Endeavour vent fields monitoring
 - ODP/IODP boreholes
- *Tentative conclusions:*
 - It is likely that this was an intrusive magmatic event (but regardless of interpretation, either a tectonic or a magmatic event could affect hydrothermal systems).
 - The event may not have reached sufficiently shallow crustal depths to lead to extrusion (eruptive flows).
 - The event did not change hydrothermal circulation at the seafloor.
 - The event did not stimulate new venting or changes to the existing venting as discernable via surface ship sampling.

Needs/Issues:

- Air-droppable monitoring equipment on standby
- In situ sensors: tighter communication/cooperation between TCS & ISS/and eventually NEPTUNE
- Expanded real-time detection
- “TCS box” for ISS cruises, so that PIs are prepared
- Camera sled (available only in the summer)

Decision-making Process: The STCOM discussed the decision-making process for TCS response to an event. At present, during discussions among the TCS oversight committee about responding to an ongoing event, preparations are being made to respond, but there is not a well-defined protocol to make the decision. The TCS community is working on a protocol for the go/no-go decision. Nonetheless the STCOM concurred that the oversight committee made a good decision in the most recent case.

A TCS workshop was discussed, and the STCOM agreed to include a TCS meeting in conjunction with the R2K community workshop in November. Jim Cowen agreed to join the organizing committee to oversee the TCS workshop.

Marine Protected Areas (MPA): C. Fisher

Chuck Fisher, Kim Juniper, and Rick Thomson attended a Canadian Department of Fisheries and Oceans (DFO) meeting in Vancouver, BC, to discuss the Endeavour MPA established by the Canadian government. All these are on the advisory committee and Rick is a DFO employee. One objective of the MPA is to protect a portion of the Endeavour area from litter and large-scale impacts. Any collections from the area will need DFO approval, and no debris can be left behind. A few details remain to be worked out, but the process is heading in the right direction.

Along the Mid-Atlantic Ridge, Portugal has designated an MPA that includes the Lucky Strike hydrothermal vent field and may affect MoMAR. A representative from the World Wildlife Federation (WWF) attended the recent MoMAR meeting. WWF wants to set up another MPA in international waters that would encompass the Rainbow vent field. In a proactive move, IR is working on a “Code of Conduct” for working in protected areas.

Action Item: The STCOM agreed to develop a Ridge 2000 “Statement of Attitude” setting forth guidelines on how to responsibly conduct science in mid-ocean ridge fumarole environments while protecting the areas. The goal is to have R2K and IR become the authorities to be consulted when activities are planned for these protected areas. Chuck Fisher will draft text and circulate it to the R2K and IR steering committees, and subsequently post on the web for community comment.

InterRidge: D. Blackman and C. Fisher

Donna Blackman and Chuck Fisher attended the April 2005 IR STCOM meeting in Germany. The IR office will rotate for 2007–2009, and proposals to host the new office will be solicited this year. It has been 10 years since the office was hosted by the US and Chuck and Donna’s impressions was that a US proposal could be timely.

Updates: The following items were discussed at the IR Steering Committee meeting.

- China and India indicated interest in hosting a R2K distinguished lecturer.
- China is planning a world-circling cruise to include the Indian Ocean, 13°N EPR, and the MAR. There are opportunities to collaborate. For information, contact John Chen.
- India Ridge cruises to Carlsberg and Central Indian Ridges have some spaces available for people who might help locate hydrothermal vent fields.
- The UK’s research vessel, RRS *Charles Darwin*, will be going out of commission at the end of 2006.
- Spain and Russia, both of which are IR corresponding members, are moving toward upgrading their memberships.
- Other countries targeted for membership upgrades include Australia and Brazil, both of which are corresponding members.
- IODP Deep Biosphere (European) meeting will be held in October 2005.
- Oman drilling is scheduled for January 2006.
- An Artic Ridge/Polar Ridge meeting will be held 25 March–1 April 2006.
- An IR Theoretical Institute on Biogeochemical Interaction is being planned for 2007.
- IR is continuing to update the membership database. The IR biology database will be migrated to the Census of Marine Life–Chemosynthetic Ecosystems (ChEss) office.
- Kristen Kusak, IR E&O coordinator, will go to sea and host a journalism student as an E&O effort
- Funding for an educational video series is forthcoming. The video, which is targeted for an 8th-grade-level audience, will be broader than mid-ocean ridges, but will have a ridge theme.
- Student support: IR will continue to fund poster awards at IR meetings. Also, the IR website will host curriculum vitae of students looking for post docs or jobs.
- The IR office is developing a series of pamphlets highlighting the organization’s accomplishments, which include collaboration. They are looking for suggestions.
- Dues were recently raised for full members.
- US scientists can submit science proposals to go out on JAMSTEC cruises.
- Norway has a 2000-m ROV in the water, and is building a 4000-m ROV. The primary focus for Norwegian research is biogeochemistry.

- ROPOS is increasingly mobile and was recently shipped to the East Coast for operations in the Atlantic.

Education & Outreach: L. Goehring

SEAS: The SEAS (Student Experiments at Sea) program provides students with the opportunity to participate in real in situ research. Because we “can’t take the kids to sea, we take their ideas to sea.” The program teaches students to use scientific methods to do inquiry-based science. Some aspects include proposal and report competitions, and it is all delivered over the web. Scientists can work with SEAS to address NSF’s “broader impact” criteria. For the scientist, the program provides an excellent means to get involved, and it is less expensive (time and money) than some other E&O options.

SEAS Update: SEAS is in its second year, and this year will focus on evaluation and teacher training courses. Some curriculum changes have been made, including a more user-friendly “Classroom to Sea Lab” and the addition of a hands-on mussels lab. The program offers a variety of ways and levels to participate; teachers and students need not submit proposals, but may follow along or “adopt” some of the other proposals, download data and enter the report competition.

If the program is to grow, it needs continued and increased involvement from the R2K community. The STCOM was asked to continue to provide feedback and comments on the program.

Ridge Science Teacher Course: A teacher’s course called “Exploring the Mid-Ocean Ridge Environment with SEAS” will be offered at the Ocean Institute in Dana Point, CA, and at Penn State University this summer. The course is modeled after the REVEL precruise workshop and will feature interdisciplinary ridge topics, the SEAS curriculum, and the inquiry process. Teachers will spend one week on site and that will be followed by on-line assignments. The course is being funded by \$9K from the SEAS grant for the course at Penn State and \$25K from the SEAS grant for the course at the Ocean Institute.

Web-based Public Outreach: The R2K Office is reexamining the program’s outreach efforts by asking the following questions:

- What are our goals, and what do we expect to happen?
- What is our goal in outreach to the public?
- What message do we want the public to get?
- What do we want this audience to do?

As a result of this needs assessment, a new public outreach website—www.venturedEEPocean.org—has been developed. The STCOM was asked to review the site and send in comments and suggestions. This site is more generic than the R2K scientist site.

Distinguished Lecturer Series, 2004-2005: The Distinguished Lecturer Series, which Sharon Givens coordinates, is in its second year and is going strong. Lecturers have visited 14 of the 16 institutions scheduled for the 2004–05 series, and audiences have ranged from 40 to 250. The cost to run the series is \$15K, which includes travel support (\$10K), brochure printing and mailing (\$3K), and honoraria (\$2K). The overall response to the series has been outstanding; the few negative comments will be taken into consideration for the upcoming series.

- *2003-2004 Lecturers:* Andy Fisher, University of California, Santa Cruz (hydrogeology); Charlie Langmuir, Harvard University (geochemistry); Meg Tivey, Woods Hole

Oceanographic Institution (geochemistry); and Cindy Van Dover, College of William & Mary (marine biology)

- *2004-2005 Lecturers:* Ed Baker, NOAA/PMEL (marine geology); Debbie Kelley, University of Washington (marine geology); Melanie Holland, Arizona State University (microbiology); and Ken Macdonald, University of California, Santa Barbara (marine geophysics)

Action Item: The STCOM recommended candidates for the 2005-06 academic year, and directed the office to follow up with invitations and publicity.

R2K and REVEL: A special edition of *Current, The Journal of Marine Education* featuring ridge science will be published soon. R2K and REVEL purchased the special edition, and articles from both ridge scientists and educators are included.

Centers for Ocean Sciences Education Excellence (COSEE): A consortium including Penn State and Lamont-Doherty has submitted a thematic COSEE proposal to NSF that would focus on R2K deep-sea science and teacher professional development. The partners include Lamont Doherty Earth Observatory, the Penn State College of Education, and the Ocean Institute. Decisions on the proposals are due in the summer.

Undergraduate Course: This project is on hold but should still be kept under consideration. This type of course would be a good way to introduce ridge science to undergraduates.

Image Gallery: This feature from the Lau cruise website may be incorporated in the new VentureDeepOcean site.

Additional Comments: Debbie Kelley, Jeff Karson, Dan Fornari and Mike Perfit have been working on an atlas of the seafloor (mantle to microbes). The book (400 pages) will feature ridge science and images, and will be available online. The target audience is upper undergraduate. The publisher is Cambridge University Press, and the cost will be \$80.

In preparation for the NSF evaluation in 2008, it was suggested that the STCOM consider submitting articles to EOS about progress at the Integrated Studies Sites. This has been done by the DMO and one is in preparation from the TCS group.

Endeavour Integrated Studies Site Report: D. Kelley

The following points were covered in an update on the Endeavour ISS:

- Last year six cruises went out. Approximately 40 researchers from 20 institutions are currently working at the Endeavour site, including investigators from Canada and Japan.
- Currently, there are 32 sensors in place (Keck Foundation) and the potential to inherit \$400K in equipment from the Keck Foundation.
- The Keck array has been completed.
- Navigation is still a serious, ongoing problem that has been discussed, but never resolved.
- Two *Alvin* dives were devoted to cleaning up the marine protected area, picking up old transponders, and putting down new markers.
- Gill, funded by the NOAA Undersea Research Program (NURP), has collected close to 200 well-located petrologic samples.

- Wilcox, Toomey, & Hooft Toomey ran a research class for post-undergraduates at Friday Harbor to analyze seismic data collected recently. This was a big success both for the science and the students. The group located more than 12K earthquakes.
- Two additional broadband seismometers were installed (Stakes and McGill) and are providing clean data.
- Lilley installed new in situ chemical sensors.
- Microbial incubators were installed in two chimneys that also measure the environmental parameters where microbes can live. The incubators have the potential for collecting long data sets; preliminary results are encouraging.
- Young scientists at the University of Washington are using a noninvasive technique of measuring sound to measure flow rate through black smoker chimneys.
- McDuff and Thomson are measuring heat/chemical flux in the main Endeavour field
- *Needs:* Currently not enough microbial or macrofauna studies are integrated into the ongoing research.

Endeavour 2005 Field Research Plans

August 13–September 3, 2005

M. D. Lilley and K. Booksh, *Smart Sensors for In Situ Monitoring of Hydrothermal Vent Systems*. A 10-dive *Alvin* program to test new in situ instruments for use in hydrothermal systems. This is a collaborative effort between Arizona State University and the University of Washington. In addition, previously deployed instruments that measure fluid resistivity and temperature will be recovered for redeployment on later cruises. The primary focus will be on Main and Mothra vent fields, but they will also visit Sasquatch.

W. Seyfried and K. Ding, *In Situ Sensors for Monitoring the Chemistry of Hydrothermal Fluids: Experimental Calibration and Field Applications*. A 4-dive *Alvin* program on time-series and in situ chemical measurements of high-temperature and diffuse-flow venting. Three electrochemical units have been built and will be deployed.

Chinese Ocean Mining Research Association (COMRA)

COMRA has funded 4 *Alvin* dives with the objective of gaining submersible experience and examining the vents at Endeavour.

September 12 – September 16, 2005

D. S. Kelley, M. D. Lilley, J. R. Delaney, J. Baross, C. G. Wheat, and P. Girguis, *Determining the Limits to Life in Submarine Hydrothermal Systems: Active Sulfide Deposits as Natural Laboratories*. This trip will focus on deploying and testing three new instrumented in situ microbial incubators in Mothra and Main Endeavour. The cruise will host the REVEL program.

September 19-September 30, 2005

J. R. Delaney. This 11-day field program will focus on recycling all of the Keck hydrothermal instruments and recovering the seafloor seismometers. If a pending NSF proposal is funded, the seismic instruments will be redeployed for 3 more years. SM2000 mapping will be continued when possible as will clean up of the field. The cruise will host the REVEL program.

CCGS John P. Tully Sea Breeze

R. Thomson. Moorings that bound the High Rise vent field will be recovered and redeployed. Funding is being sought to keep this array in place.

Funded and Pending Programs

D. R. Toomey, E. Hooft Toomey, W. S. Wilcock, and A. H. Barclay, *Testing Models of Magmatic and Hydrothermal Segmentation: A 3-D Seismic Tomography Experiment at the Endeavour Ridge*. The program will address a missing key component at Endeavour, the 3-dimensional structure of the crust and upper mantle.

Submitted proposals to NEPTUNE Canada are pending to transition the Keck seismic array onto the cabled seafloor observatory, and also to build and deploy an extensive suite of in situ chemical, biological, and hydrothermal sensors.

EPR Integrated Studies Site Report: S. Carbotte

Two cruises took place in 2004 since the October STCOM:

November 5–26, 2004

K. Booksh, *Smart Sensors for In Situ Monitoring of Hydrothermal Vent Systems* (Biocomplexity funding). This ongoing project is focused on developing sophisticated fiber-optic sensors for in situ monitoring of vent ecosystems. The cruise (M. Lilley, chief scientist) had 8 dives and the work included fluid and rock sampling, Imagenex bathymetry, camera tows, dead transponder removal, sediment trap deployment, and current meter measurements.

K. Edwards and W. Bach, *Establishing a Role for Fe and S Microbial Metabolism in Ocean Crust Weathering*. This program had 5 dives to continue the work of looking at microbial controls on the weathering of seafloor materials, collecting environmental samples, and conducting in situ incubation studies. At various locations on the EPR axis and upper flanks, they deployed and retrieved baskets with chips of basalt glass, sulfides, oxides, olivine, plagioclase, and steel for the in situ incubation studies.

L. Mullineaux, *Time-Series Larval Studies in the Deep Sea* (WHOI funded). This project focused on developing a protocol for investigating dispersal of deep-sea organisms in their larval stage. The workers used sediment traps to quantify larval distributions and temporal variations, and took care to preserve DNA in the specimens, so that molecular genetic tools could be used for subsequent identification.

T. Shank, S. Sievert, and S. Beaulieu, *The Interaction of Microbial Biofilms and Fluid Chemistry on Larval Settlement*. This project explored how larvae colonize basalt substrates at hydrothermal vents, with emphasis on the interface between geochemistry and microbial biofilm development. Larval recruitment is the first step toward development of megafaunal assemblages.

November 30–December 20, 2005

S. C. Cary, *Biocomplexity: A Meta-Genome Level Analysis of an Extreme Microbial Symbiosis* (Biocomplexity funding). This was the third cruise on the R/V *Atlantis* for this biogeochemistry study of the microbial environment surrounding the symbiont tubeworm, *Alvinella pompejana*. The 12 dives collected temperature measurements and sipper samples, along with *Alvinella*, *Riftia*, and mussels.

A bathymetry map of the area that included a summary and location of the equipment at EPR was presented. Equipment includes:

- Sediment traps
- Biology cages/low-temperature probes
- Microbiology incubation experiments

- Ocean Bottom Seismometers (OBS)
- Transponders
- High-temperature probes (HOBOT)
- Markers
- Pressure gauge
- Current meter

EPR proposals recommended for funding, August 2004 target

M. Spiegelman, *Dynamics of Coupled Tectonic/Hydrothermal Systems at Mid-Ocean Ridges: A Damage Rheology Approach (Postdoctoral Fellowship)*.

C. M. Cavanaugh and J. Wakeley, *Bacterial Population Structure: Evaluating Gene Flow in the Symbionts of Deep-sea Hydrothermal Vent Mussels (genus Bathymodiolus)*, (Biological Oceanography).

L. Mayer, Y. Rzhzhanov, S. Beaulieu, T. Shank, A. Soule, *The Generation of Geo-Referenced Video Mosaics in Support of Submersible and ROV Operations*, (Ocean Technology and Interdisciplinary Coordination Program).

EPR funded proposals, February 2004 target

L. S. Mullineaux, A. Thurnherr, J. R. Ledwell, D. McGillicuddy, and J. W. Lavelle, *Oceanographic and Topographic Influences on Dispersal of Hydrothermal Vent Species*. This program will include topographically influenced flow dispersal trajectories, maximum dispersal distances, tracer release, current meter measurements, measurements of larval positions and stages in field-coupled biological and physical modeling.

M.-H. Cormier, S. Webb, and R. Buck, *Testing Models of Magma Movement along the East Pacific Rise Using Combined Geodetic and Numerical Experiments*. This project is focused on monitoring vertical seafloor motion to detect magmatic events. Four years of data from 20 pressure sensors deployed at 9–10°N will be collected for numerical models of (1) coupled dike intrusion and sill emptying that also account for the seafloor rheological structure, and (2) repeated microbathymetric surveys to constrain surface deformation patterns across a section of plate boundary.

S. Webb, *A Compliance Study of Partial Melt in the Crust Beneath the EPR and the Relationship of Melt to Tectonics and Construction of the Crust* (NSF core funding). Seafloor compliance will be measured at more than 50 sites on the EPR axis and flanks between 9°20'–10°20'N to map the distribution of melt in the upper crust and lower mantle. Results will address questions about melt and melt distribution at the crust–mantle boundary.

G. Kent, J. Orcutt, and D. Kilb, *Immersive Visualization at RIDGE 2000 Integrated Study Sites: Community Access and Construction of Virtual 3-D Models*. This project will build a library of visual objects that will provide the foundation for 3-D visualizations of the Endeavour and EPR ISS. The materials will be archived and made available to the community along with the required freeware.

EPR 2005 Upcoming Field Programs

April 23–May 13, 2005

R. Lutz, T. Shank, G. Luther, and M. Tolstoy, R/V *Atlantis (Alvin)*, 16 dives). The SEAS program will accompany this cruise.

November 28, 2005–January 5, 2006

S. Webb and M. Cormier, R/V *Knorr*

EPR 2006 Upcoming Field Programs

- Mutter et al., EPR 3-D multichannel seismic reflection (MCS) study
- K. Von Damm, Time-series fluid sampling (2nd of 3 cruises)
- L. Mullineaux et al., Larval dispersal (1st of 3 cruises)
- R. Lutz and M. Tolstoy, Microbiology time series, and Seismicity monitoring, respectively (3rd of 3 cruises)
- C. Cavanaugh and J. Wakeley, Bacterial population structure

EPR Research Holes

- Heat budget work
- IOPD proposal—Rachel Haymon was working on this proposal, but cannot lead it; she is looking for someone to take over. We have been advised it should have a microbiology focus.
- Subsurface biosphere

Site Issues: *A transponder died, was recovered during the Lilley cruise, serviced, and will be redeployed on the Lutz cruise.* Temperature probes will be inspected on the Lutz cruise and redeployed. Navigation issues are under consideration; recommendations have been sent to Tim Shank, and a composite map for infilling is in the works.

The EPR ISS oversight committee needs a replacement for Melanie Holland.

Action Item: *Communication issues.* The STCOM discussed how to best communicate with R2K members. Two methods were discussed, a listserv and an ISS site specific e-mail distribution list. The STCOM agreed to keep a single e-mail list and differentiate messages using the subject line.

Lau Basin Integrated Studies Site Report: D. Wiens, A. Thurnherr, C. Langmuir, and C. Fisher

Lau Basin 2004–2005 Field Programs

A. Thurnherr, *LAUB-FLEX: Deep Circulation and Dispersal in the Lau Basin Using Floats.* As of March 30, 2005, 6 floats released during the first and second R2K Lau Basin cruises are operational. Another 13 floats had some technical difficulties, but these are now working and ready to be deployed. The results from the floats are not as expected. Andreas offered to discuss the results in more detail individually.

C. Langmuir et al., *Integrated Hydrothermal and Petrological Studies of the East Lau Spreading Center.* The analysis of data from the September 2004 cruise is going well. The write up from the cruise is still pending.

April 7–May 10, 2005

M. Tivey et al., *Collaborative Research: Sampling and Initial Characterization of Hydrothermal Fluids, Deposits, Microfauna, and Megafauna at Vent Fields along the Eastern Lau Spreading Center.* Ongoing during the STCOM meeting, this is the third of five cruises for this funded project and by all accounts everything is going well.

May 15–June 3, 2005

R. Vrijenhoek, *Multispecies Phylogeography of Lau/Fiji Basin Vent Fauna* (Biological Oceanography), and C. Van Dover, *Biogeography and Community Structure in Mussel Beds at Pacific Hydrothermal Vents* (Biological Oceanography). This next cruise heading to the Lau Basin will both contribute to and benefit from the R2K program. Both PIs have agreed to limit their collections to areas identified during Meg Tivey's first cruise.

June 8–June 30, 2005

J. Childress, C. Fisher et al. *Site Evaluations and Background Studies of Interactions Among Fluid Chemistry, Physiology, and Community Ecology*. This is the fifth of the original R2K-funded Lau Basin ISS cruises, and it will focus on biology. The second cruise for this study is scheduled for February 2006.

D. Wiens et al., *Collaborative Research: Crustal Accretion and Mantle Processes along the Subduction-influenced Eastern Lau Spreading Center*. The last proposal to be funded for the Lau Basin ISS, this is a seismic study that may not start until 2007 because of OBS issues.

At a pre-cruise meeting held in March, Charlie Langmuir transferred data collected during his cruise to the scientists on the Tivey and Fisher cruises. The meeting at Woods Hole went well and a lot of valuable information was exchanged between scientists.

The next step for the Lau ISS will be to determine a bull's eye. This could be discussed at the community meeting in November.

Data Management Office (DMO): S. Carbotte and M. Perfit

The Data Management Office has redesigned the website for R2K data management (<http://www.marine-geo.org/ridge2000/>). It now includes:

- New metadata forms
- More cruise information and data
- Historical data from EPR and Lau
- Dynamically generated deployed instrument lists
- Imagenex bathymetry for 2004 dives available in xyz form
- Importation of *Alvin* framegrabs via GeoMapApp

Vent locations are now available for the EPR and Endeavour ISS, but not yet for the Lau Basin ISS. In addition, the website has links to NSF's proposal website and a host of other data resources.

The report included a demonstration of the website's capabilities. STCOM members were urged to continue providing feedback on the site. It was stressed that the DMO needs data and cruise information and that data from previous cruises are welcome.

DMO Outreach Efforts

- Booth at AGU in December 2004
- EOS article (December 2004)
- The Monterey Bay Aquarium Research Institute and NOAA Pacific Marine Environmental Laboratory have shown interest in making data available.
- The US Geological Survey is also interested in the data management program.
- ORION Cyberinfrastructure (CI) Committee

DMO Plans for 2005

- Revise metadata forms

- Implement web GIS (MapServer) for displaying data locations server side
- Expand queries with a user interface for query building
- Add capability to import shape files into GeoMapApp
- Host a booth at AGU 2005 Fall Meeting
- Submit another EOS article

DMO Issues

- *Alvin* dive navigation—need good navigation to enable generation of community products
- Sampling metadata—need time and position
- What data do we want submitted quickly? e.g., bathymetry

Action Item: Missing Data. The STCOM discussed how to get missing data and concluded that the DMO should not be the policing agent. The R2K data policy is part of NSF OCE policy. The policy requires that metadata must be submitted within 60 days and that the proprietary hold on the data expires after 2 years. PIs must document to NSF how they submitted their data.

The STCOM approved the following procedure to enforce the data policy: A blanket e-mail, along with a copy of the R2K data policy, will be sent from the R2K office stating if programs are funded by R2K, investigators must comply with the data policy. If PIs need an extension, they should contact the DMO to make arrangements. To motivate those who have not complied, NSF will send an e-mail letter to the DMO asking for the names of PIs who have not complied with the policy guidelines. The DMO will forward that letter to PIs who have not complied, but will not copy NSF. PIs will have a month to comply before NSF is notified.

Action Item: Navigation. The issue of submersible navigation is important, and it will be revisited. Navigation also will be on the agenda at the next meeting of the Deep Submergence Science Committee (DESSC). The community needs benchmarks with known locations and structural features on bathymetry maps. Donna Blackman agreed to put together a model for switching out transponders at sea. She will circulate the model among the STCOM for further input.

Meeting Reports: C. Fisher and others

R2K–IR Korea Theoretical Institute Publication Status: The majority of the papers are in, but the office is still waiting for some. The goal is to have them in by mid-summer. Reviewers are being lined up for the monograph, so that as soon as the papers come in, they can be turned around.

NEPTUNE Canada: The Canadian research community is very receptive to involving US investigators in projects.

MoMAR: At the MoMAR meeting in early April in Portugal, the European Union welcomed US participation. Should MoMAR move forward, it may impact the R2K data management office. France and Portugal are currently the major players from the EU in the MoMAR arena.

AGU Fall Meetings, 2004 & 2005: The 2004 poster session, with 60 posters on display, was well received. The STCOM agreed to host a poster session again in 2005. Donna Blackman will take the lead in organizing the session. R2K will have a booth in 2005 as in past years, as well as host the annual “Smoker” reception. STCOM members were asked to contribute to the Smoker for the purchase of alcohol, which cannot be purchased from NSF grant funding.

India Ridge: The January 2005 meeting held in Goa, India, had lots of international participation and was a productive exchange of information and ideas about ridge research in the Indian Ocean. R2K provided \$10K in travel support for the meeting.

Upcoming Meetings: C. Fisher and others

Cyprus Field Trip/Field School (May 2005): There has been a good response for both the field school and trip, both from the US and abroad. Sharon Givens from the R2K office is the on-site staff for the field school, and Katja Freitag from IR is the on-site staff for the field trip. Joe Cann, University of Leeds, is running both sessions.

Symposium on Hydrothermal Vent and Seep Biology (September 2005): In addition to R2K, the following organizations have agreed to help sponsor the meeting: Scripps Institution of Oceanography, NSF, IR, Minerals Management Service, NOAA National Undersea Research Program, NOAA Ocean Exploration, and ChEss. Horst Felbeck from Scripps is the primary organizer.

Joint R2K/IODP (2006): This meeting was originally planned for 2005, and \$20,000 is earmarked in the current office budget. It has been rescheduled for 2006. Dave Christie is the primary organizer.

“Polar Ridge” (May 2006): There is IR and European Science Foundation support for this meeting; US organizers need to submit a proposal to NSF Polar Programs and Dave Epp simultaneously.

InterRidge Theoretical Institute (2007): Nadine LeBris will take the lead to organize this TI.

R2K Theoretical Institute on Modeling (2006): This TI is in the Scripps R2K office budget (\$250,000). The STCOM discussed whether Hawaii would be the best location to hold the TI because of the cost of airfare. Other potential locations will be investigated and reported back to the STCOM. Bob Lowell is the lead organizer. Other members of the organizing committee are Michael Perfit, University of Florida, Meg Tivey, Woods Hole Oceanographic Institution, Andreas Teske, University of North Carolina, and Chuck Fisher, Penn State.

R2K Community Workshop (Fall 2005): C. Fisher

The R2K community workshop, proposed at the October STCOM meeting, will be held in late October–early November in Vancouver, BC. Attempts will be made to involve the Canadian Department of Fisheries and Oceans and NEPTUNE. The STCOM discussed the purpose of the meeting, and proposed some potential topics of discussion in addition to the primary focus on the Integrated Studies Sites (e.g., data management, TCS).

The organizing committee will include Donna Blackman; Executive Committee members Mike Perfit, Doug Wiens, and Debbie Kelley; Chuck Fisher, Rick Thomson (local host), and Jim Cowen (TCS). The workshop format will include overview talks, breakout sessions, and concurrent oral sessions. People who have not worked at ISSs will be encouraged to attend, and posters or white papers will be required from participants to receive R2K financial support.

Fall 2005 STCOM: C. Fisher

The next STCOM meeting will be held in Vancouver, BC, on the 2 days before the community meeting. Donna Blackman will chair the meeting. The Penn State R2K office will send out a call for nominations for new committee members before the meeting.

New R2K Website: P. Nordstrom

The link to the new website (site is not currently live) was provided to STCOM members, and they were encouraged to review it and send comments and suggestions to the R2K office.

Meeting adjourned.