



InterRidge

Steering Committee Meeting Report 2010

**Winchester, UK
6-7 September 2010**

**Chair, Bramley Murton
Co-Chair, Jon Copley
Coordinator, Debbie Milton**

Posted: 13 January 2011

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Absent Steering Committee Members:

Nicole Dubilier (Germany, 2004)
Jerome Dyment (France, 2001)
Pedro Ferreira (Portugal, 2009)
Jun-ichiro Ishibashi (Japan, 2006)
Nadine Le Bris (France, 2009)
Rolf Pedersen (Norway, 2001)
Kamesh Raju (India, 2005)
Alex Rogers (UK, 2007)

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InterRidge Chairs and Coordinators; Steering Committee Members;
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InterRidge 2010 Steering Committee Report

Meeting Agenda Day 1, Monday 6th September, 2010; 9:00AM – 5:30PM

1	9:00	Welcome and introduction	B. Murton
2	9:15	Accept 2009 meeting report, accept 2010 meeting agenda, and confirm Steering Committee Members; AOB to be added	B. Murton
3	9:30	InterRidge Office Coordinator – website, E-mail lists, and databases - details: <ul style="list-style-type: none"> • Website and email lists • Member database • Cruise and vents databases 	D. Milton
B	9.45	Education and Outreach: <ul style="list-style-type: none"> • InterRidge Fellowship and Postdoctoral Fellowship Programme (to include discussion of increasing numbers and funding) • “Statement of Responsible Research” survey • Cruise bursaries 	D. Milton / B. Murton D. Milton B. Murton / J. Copley
C	10:00	Review of 2009 meeting Action List	B. Murton
10:30 GROUP PHOTO AND COFFEE BREAK			
4	10:50	National updates	
A		Principal members	China – J.Chen / J. Li France – C. Hemond Germany – C. Devey Japan – H. Kumagai UK – T. Henstock USA – D. Fornari (via Skype)
B		Associate and corresponding members	India – K. Raju/ (B. Murton) Korea – S-H Park Norway – R. Pedersen / (B. Murton)
C		Status of potential membership upgrades / additions	B. Murton
13:00 LUNCH IN HOTEL			
5	14:00	Working groups – updates:	
A		Long-range Exploration	C. Devey
B		Mantle Imaging	N. Seama / (B. Murton)
C		Deep Earth Sampling (and Mohole report by N. Harmon)	B. Ildefonse / (B. Murton)
D		Seafloor Mineralisation	M. Tivey / (B, Murton)
E		Vent Ecology	S. Hourdez / (J. Copley)
F		Hydrothermal energy and ocean carbon cycles	N. Le Bris / (B. Murton)
15:30 COFFEE BREAK			
5G	16:00	Discussion of Working Groups – continuation and new WG proposal	B. Murton / J. Escartin (via Skype)
6	16.30	InterRidge liaisons with other programmes. Part 1: IODP – discussion of New Science Plan	H C Larsen
19:30 End of Day 1; DINNER AT THE CHESIL RECTORY, WINCHESTER			

Meeting Agenda Day 2, Tuesday 7th September, 9:00AM – 3:00PM

7	9:00	Discussion – MPAs, Chinese application for exploration licence and ISA presentation To include:	
A		<ul style="list-style-type: none"> • MPAs for vents and seeps, (Dinard conference, France) 	D. Milton
B		<ul style="list-style-type: none"> • Cindy Van Dover’s request for database of protected sites and progress 	J. Copley / B. Murton
C		<ul style="list-style-type: none"> • Discussion on Chinese application to ISA for exploration of SWIR and related issues 	B. Murton
D		<ul style="list-style-type: none"> • ISA presentation 	A. Cook
10:30 COFFEE BREAK			
8	11.00	InterRidge liaisons with other programmes: Part 2: UNEP/GRID-Arendal	Y. Beaudoin
9	12:00	Workshops and Meetings proposed for later this year and 2011	D. Milton
10	12:15	Workshop and Meeting Reports	B. Murton
12.30 LUNCH AT HOTEL			
11	13.30	IR Budget 2010 Status of billed nations	B. Murton B. Murton
12	14.00	Terms of Reference: Membership of Steering Committee Procedures for awarding Student Fellowships	D. Milton
13	14:30	Next Steering Committee meeting location and date Action List for 2010	B. Murton
14	14:45	Meeting adjourns	B. Murton

1 Welcome and introduction

The agenda of the 2010 Steering Committee meeting was circulated electronically to all Steering Committee members and Working Group Chairs prior to the meeting. Our meeting in 2010 was hosted by the UK InterRidge Office at Winchester, UK.

2 Accept 2009 meeting report, accept 2010 meeting agenda, and confirm Steering Committee Members

The 2009 Steering Committee Meeting Report was finalised in September 2009 and is available on the IR website at: <http://www.interridge.org/stcom/reports>. At our 2010 Meeting, we accepted the 2009 report and 2010 agenda, and we welcomed Michinari Sunamura, who will replace Junichiro Ishibashi as a Japanese StComm member in 2011 and attended as his alternate this year. We thank Jun-ichiro for his work for the IR StComm. We also welcomed Christophe Hemond, alternate for Jerome Dymont. Adam Cook kindly agreed to attend at late notice, representing the ISA, and InterRidge also welcomed Hans Christian Larsen, IODP, and Yannick Beaudoin, UNEP/GRID-Arendal.

DF requested discussion of access to national databases and Ridge2000 data portal.

3 InterRidge Office

3.a Coordinator – Update

Coordinator Presentation

Debbie Milton, InterRidge Coordinator, highlighted the activities below.

Major activities for the Coordinator since the 2009 StComm meeting included:

- Last quarter of 2009: Annual IR Newsletter produced by Stace Beaulieu;
- First quarter of 2010: Change of IR Office from WHOI, USA to NOC, Southampton, UK;
- Second quarter of 2010: Evaluation and selection of 2010 InterRidge and InterRidge/ISA Student/Post-doc Fellowships; attended Workshop on Design of Marine Protected Areas for Hydrothermal-Vent and Cold Seep Ecosystems Potentially Threatened by Human Activities in the Deep Sea, Dinard, France; coordinated Workshop for Long Range Exploration WG, NOC Southampton
- Third quarter of 2010: IR brochure production; database management; StComm meeting.
- Expected 4th quarter of 2010: Annual IR Newsletter.

Other activities for the Coordinator since the 2009 StComm meeting included:

- invoices to member nations, payments to IR-sponsored meetings;
- bi-weekly e-newsletters;
- education and outreach activities below.

3.a.i. Website and email lists

There are generally ~50-150 guests viewing the website when Debbie is working on it (“Who’s online” – most popular sites are listed below). Daily activities at the IR office include posting events, news, and jobs to the website. Since 1st Jan 2010, 17 emails have been posted with IR bi-weekly news to the interridge-mail emailing list. The transfer

of the mailing lists from WHOI to NOC was problematic due to a lack of synchronicity between systems. As of August 2010, there were 1202 members on this list (401 people who had selected not to receive mail on the WHOI database have been taken off the NOC mailing list). Most were also registered online in the IR Member Database. In addition, the IR bi-weekly news e-mails are transmitted to the InterRidge-Japan e-mail list. With regards to the interridge-classifieds emailing list, as of August 2010 there were 175 members on this list (26 more than last year).

DISCUSSION

- After discussion on IR environmental protocols and how to make these more generally known, it was agreed that IR adopted protocols should be passed to national agencies to create a greater awareness of global scientific communities.
- CD spoke of a SCOR WG proposal to integrate metadata on all cruises (http://www.scor-int.org/2010GM/Research_Cruise_2010.pdf)

ACTION

DM to ask National Correspondents for details of national agencies and add links to website.

CD to give IR Office an update after the SCOR 2010 General Meeting, Sept 2010.

3.a.ii. Member Database

As of August 2010, the Member Database contained 2596 registered members (gain of 47 from last year), from 63 different countries (gain of 1 from Bangladesh). However, the creation of a refreshed members list by the new IR Office showed 700 email addresses are now undeliverable. The actual mailing list has been edited but the website members list has not, as it has not been possible to distinguish who has moved institution as opposed to those who have left the field of oceanography.

The ten countries with greatest numbers of members in rank order are:

	Members	Change from 2009
USA	953	-5
France	289	+2
Japan	195	-2
Germany	191	+2
UK	190	+7
Russia	119	+5
China	87	+6
Canada	71	+1
Portugal	67	0
India	54	+4

Eighty-eight members have signed the Statement of Responsible Research Practices - this is an increase of 30 following the survey earlier this year.

ACTION

DM to contact National Correspondents with lists of undeliverable addresses for them to check, before deleting from website.

3.a.iii. Cruise and Vents Databases

Since January 2010, Debbie has added 30 cruises to the IR cruise database (<http://www.interridge.org/IRcruise>), bringing the overall total to 653 cruises (range in years now 1976 - 2010). Although anyone can add a cruise to the database without password (<http://www.interridge.org/node/add/cruise>), no one has entered his/her own cruise into the database yet.

The InterRidge Global Hydrothermal Vents Database is now available at: <http://www.interridge.org/irvents/>. A Creative Commons License was agreed although its shortcomings have been noted by the IR StComm. There has been considerable interest since its announcement.

3.b InterRidge Education and Outreach – Update

Major accomplishments in Education and Outreach in the past year included:

- Awarding 3 Fellowships in June 2010: one supported by InterRidge and two by the ISA Endowment Fund

Other E & O activities for the Coordinator in the past year included:

- Supporting a survey of the IR Statement of Responsible Research Practices, conducted by Cindy Van Dover, Laurent Godet and Kevin Zelnio. Preliminary results were presented.
- Presenting IR outreach activities at Dinard workshop, June 2010

3.b.i. InterRidge Student and Postdoctoral Fellowship Programme

In Nov 2008 IR received a grant from the International Seabed Authority (ISA) Endowment Fund for \$30,000 USD to be distributed as \$5,000 fellowships (2 per year for 3 years, 2009-2011). In its first year, only one ISA Fellow was appointed and so in 2010, there were four fellowships available – one IR-funded (seven applications) and 3 ISA-funded (two applications). One of the applications was from Turkey but as Turkey is not an ISA signatory, the student was ineligible for an ISA-funded fellowship and competed for the IR-funded award. Last year it was noted that it was difficult to obtain the two reviews for each proposal (one from a native and the other non-native English speaker). With such an increase in applications this year, finding reviewers was even harder. The awards were given in June 2010 to Shinsuke Kawagucci, a postdoctoral researcher at JAMSTEC, Japan USA, to work at a laboratory in the USA, to Baby Divya, a Ph.D. candidate at the National Institute of Oceanography (NIO), India, who will also conduct research in the USA and to Akumbom Vishiti, a graduate student who will make links with IFM-GEOMAR.

Advertisement this year included the InterRidge e-mailing list and website, and through the IR website. Debbie sent an announcement to the following societies and organizations: AGU, Asia Oceania Geosciences Society, Brazilian Geophysical Society, CenSeam, ChEss, European Geosciences Union, Indian Geophysical Union, InterRidge, IODP, Ridge 2000, SCOR, Society of Exploration Geophysicists, South African Geophysical Association. Debbie also emailed directly all InterRidge members in developing and emerging economy countries. Recommendations for improving the response from developing nations in particular to the call for proposals in 2011 include: continued advertising of the programme at international conferences and sending a flier to oceanography and geoscience graduate departments in emerging economy nations.

ACTIONS

Details of the process of awarding Fellowships have been incorporated into the Terms of Reference, Appendix 5.

3.b.ii. "Statement of Responsible Research" Survey

In February 2010, an on-line survey of InterRidge's "Statement of Commitment to Responsible Research Practices at Deep-Sea Hydrothermal Vents" was conducted, to evaluate its potential awareness, relevance and efficacy. The authors were Cindy Van Dover, Kevin Zelnio (both Duke University Marine Laboratory, USA) and Laurent Godet (CRESCO, France). The survey was sent to all InterRidge members as well as to corresponding members of the 11th International Deep-Sea Biology Symposium and ICES Symposium "Issues confronting the deep ocean", and the Deep Sea Laboratory, IFREMER. There were 164 respondents and as a result, 25 new signatories to the Code of Conduct. Results will be published later this year but preliminary findings are that 95% of participants considered that they followed the code and would not need to change their behaviour. However, when asked about other researchers' respect for the code, this figure dropped to 47%. Overall, the code is considered necessary and feasible to follow, but the least followed guideline was considered to be that of making one's research known to the community.

3.b.iii. Cruise bursaries

B. Murton outlined the proposed structure for operating a cruise bursary scheme. Initially there would be 1-2 places for students, \$2000 USD each. This is in the budget so there are no extra implementation costs. PIs would contact the IR Office and make space available particularly for early career scientists, preferably from developing nations, to aid capacity building. It is envisaged that an online system will be developed to act as an introduction agency. Jon Copley displayed a ning online interface and explained its potential, emphasizing its success will be determined by its members.

DISCUSSION

- CD - when will the ning will be ready – in two months (JCo).
- DF – can the ning be made accessible to StComm members so they can make suggestions?
- YB informed StComm of the University of the Seas, which operates a similar system, run by Elaine Baker. <http://www.geosci.usyd.edu.au/uos/> (A meeting has already occurred between Elaine Baker, BM and DM - discussions are ongoing).
- Discussion of the application process included:
 - Criteria list needed for a points-based application (IR/non-IR countries); countries where capacity building is an objective; matching of skills to PI; HK – non-native English speakers require a very simple, step-by-step application form. HK also proposed a simple, multilingual proforma for initial contact with PIs.
 - Will participation gain credit recognition? CD thought this will help IR become known to university administrators.
 - HK – 1-2 month turnover required (6 months is too long).
 - Small group of reviewers within the IR StComm is required.

ACTION

JCo to make ning available to StComm members for comment

BM and **DM** to meet Elaine Baker

BM, JC, DM to develop simple multilingual proforma

DM to organize sub group of reviewers (for fellowships) within IR StComm

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3.c Review of 2009 meeting Action List

List from 2009 StComm report:

2	Accept 2008 meeting report, accept 2009 meeting agenda, and confirm Steering Committee Members	Dan - With the office leaving the USA at the end of 2009, USA will need to appoint a new StCOM member. We discussed the possibility of choosing someone with a scientific discipline and geographic location different than Dan Fornari.
3	InterRidge Office	
B	Education and Outreach – Update	Stace - Planned E&O activities for later in 2009: Vents Database on Google Earth (<i>completed</i>) and InterRidge on Wikipedia (<i>to be completed</i>).
D	Status of payment of billed nations	Stace - Send 2009 invoices to Japan in July (<i>completed</i>) and to Portugal in Sept.; send 2010 invoices to China, France, and Germany in early Aug. 2009 (<i>completed</i>) and USA in Nov. 2009 (<i>completed</i>).
4	Review 2008 meeting Action List	Stace - Complete the couple of remaining items on the 2008 Action List (e.g., national correspondents). <i>Richard Wysoczanski is new NZ correspondent</i>
5	Discuss UK proposal for next InterRidge Office 2010 – 2012	Stace – Provide list of recommendations from the StCOM to Bram/Jon for revision of the bid to host the next office. <i>Completed 17 July 2009.</i> Bram/Jon - provide revised bid by early August. <i>Received 5 Aug.</i> StCOM - final decision by the end of August. <i>Completed mid-Aug.</i>
6	National Updates	
B	Associate and corresponding members	Jian/Dan - discuss the option of helping to find a replacement vehicle for the upcoming Carlsberg Ridge cruise. <i>Chris helped, too, by sending suggestions in email Aug. 2009.</i>
C	Status of potential membership upgrades / additions	Stace - Try to get in contact with SOPAC through ISA or UNEP/GRID-Arendal. <i>Aquila Tawake is named Correspondent</i>
7	Working Groups – Updates	
A	Monitoring and observatories	Javier – The WG is disbanded; however, either Javier or an appointed person will serve as InterRidge liaison to MoMAR observatory; please send final WG report to Stace for IR News and website by Sept. 2009. <i>Completed</i> Stace - Add recently released IODP Thematic Review to InterRidge website. <i>Completed July 2009.</i> Send email to Jim Mori, SPC Chair, to restate the wish of InterRidge to maintain a liaison with IODP. Invite IODP representatives to 2010 StCOM meeting. <i>H C Larsen is attending</i>
B	Deep Earth sampling	Benoit – Please send report of July 2009 MMFL workshop for 2009 IR News; please wait to send 2009 WG update until after Sept. 2009 INVEST workshop.
C	Hydrothermal energy and ocean carbon cycles	Stace – Coordinate the \$2,000 USD approved for 1 st meeting of this WG in November 2009. Chris - Talk with conveners of 2010 Chapman Conference re: affiliated member for expertise with detachment fault tectonics.

DISCUSSION

2. DF – R2K StComm does not support the expense of a second person at IR StComm meetings but recognizes the need for a second member for decision-making processes within IR.

6B. CD – India has use of Germany’s AUV for cruise starting 28/10/10

ACTION

DF will ask for nominations for a member to be involved in decision-making processes.

DM to pursue Wikipedia entry (3B)

4 National updates

As of August 2010, the total IR regional/national membership is 31.

4.a Principal Members

China National Update 2010

Report by Y. John Chen and Jiabiao Li, Co-Chairs, Steering Committee of InterRidge China

johnyc@pku.edu.cn; jbli@zgb.com.cn

Presentation

2010 has been another fruitful year of mid-ocean ridge researches in China, with important progress made in several areas:

1. Chinese scientists have completed 6 consecutive ridge cruises on board of R/V “Dayang Yihao” and have collected evidence for active hydrothermal vents on the equatorial East Pacific Rise, South Mid-Atlantic Ridges, and the Southwest Indian Ridges.
2. The first active source OBS array experiment at the ultraslow spreading Southwest Indian Ridge at 50°W was successfully conducted. A total of 40 OBSs were deployed and an array of 4 air-guns (1,500 cbf each) was shot for 14 continuous days covering two 50-km by 50-km areas for 3-D OBS study: one at the active hydrothermal vent site we found in 2007 and the other at the nearby axial high along the mid-point ridge segment. These OBSs also include 17 instruments from the IGP, France, and a team of 3 French engineers was also on board for conducting deployment/recovery of the French OBSs as part of the collaboration between IGP (Dr. Satish Singh) and InterRidge China (Dr. Jiabiao Li at the Second Institute of Oceanography and Dr. John Chen at Peking University).
3. During the cruise to the equatorial East Pacific Rise, the Chinese ROV, “Ocean Dragon 2” was successfully deployed for the first time for seafloor observation and direct collection of seafloor samples. Chinese Deep Tow System with sidescan and profile was also used in seabed observation of a 4,500m- deep manganese nodule area.
4. Four test dives to a depth of 3,759m by the Chinese manned underwater submersible “Harmony 7000” was successfully completed in the South China Sea.
5. Shanghai Ocean Sciences Summer School, “Evolution and Dynamics of Oceanic Lithosphere”, was held in Shanghai, China, August 2-6, 2010. This summer school invited three scientists (Jian Lin, Yaoling Niu, and Kelin Wang) from US, UK, and Canada to give lectures in the mornings, covering wide topics including the evolution in science concepts leading to plate tectonics, the mantle plume debates, mid-ocean ridges and transform systems, subduction processes, cycling of Earth’s geochemical elements, deep-sea hydrothermal vents, and the deep-biosphere. These in-depth lectures were followed by discussion sessions in the afternoons. The summer school attracted over 140 participants from institutions all over China and most of them were students, who are a major research force and future leaders in deep-sea research in China.

6. First national conference focused on Deep Sea Research and Earth System Sciences was held at Tongji University on June 28-30, 2010. Over 450 scientists and students participated in this conference (see “China outlines deep-sea ambitions”, Nature, 466, 166, 2010, http://www.nature.com/news/2010/100706/full/466166a.html?s=news_rss).
7. Finally, The China Ocean Mineral Resources Research and Development Association (COMRA) has submitted an application to the International Seabed Authority for approval of a plan of work to explore for polymetallic sulphides on the Southwest Indian Ocean Ridge.

DISCUSSION

DF - operators of the HOV, which is in testing mode, should be encouraged to make its capabilities available online.

France National Update 2010

Report by J. Dymont; presented by C. Hemond.

Year 2010 is quite a good vintage for the French Ridge community, with nine ridge-related cruises completed or scheduled before the end of the year! Among these are three long-awaited cruises in the NE Pacific Ocean; the renewal of back-arc basin exploration in the SW Pacific as part of EEZ mineral resource exploration; the completion of a geochemical exploration project on the SEIR and a cruise devoted to the SWIR crustal architecture in the Indian Ocean; and two MoMAR follow-up cruises, the first one devoted to the replacement of large scale hydrophone recording network around the Azores, and the second one to the instalment of an observatory demonstrator as part of the ESONET project.

Pacific Ocean

R/V *L'Atalante* has been in the NE Pacific Ocean with deep-sea submersible *Nautilie* and AUV *ASTER-X* in Spring and early Summer 2010 for the following three cruises.

Cruise PARISUB (P.I. P. Gente) investigated the East Pacific Rise (EPR) between 16 and 16°N, an area of interaction between the Mathematicians hotspot and the spreading axis. The main data collected include a 30 x 4 km wide AUV survey of the hyper-inflated spreading axis with multibeam bathymetry and imagery, magnetics, and nephelometry; a total of 25 *Nautilie* dives with videos and photos, rock samples, and magnetics as well, making a cross section of the axis up to 300 ka off axis to study inferred ridge jumps (10 *Nautilie* dives), and a set of along axis dives to search for active and fossil hydrothermal sites (11 *Nautilie* dives), among others. Previously unknown active hydrothermal vents have been directly observed, and fauna has been sampled as well.

Cruise MESCAL (P.I. N. Le Bris, 1st leg and F. Lallier, 2nd leg) was dedicated to biological and ecological studies of model organisms of the EPR (9°N and 13°N vent fields). Its objectives focussed on: colonisation dynamics of unstable vent habitats and adaptation to extreme environmental conditions. Complementing conventional sampling of animals and microbes for molecular studies of stress response, a series of high pressure aquaria have been operated on board for in vivo experiments. A newly developed isobaric fauna collection system (BALIST) was successfully implemented on the cruise. These approaches were integrated with an *in situ* microhabitat geochemistry study, using autonomous electrochemical sensors. The first leg (5 *Nautilie* dives) prioritized the most extreme habitats on black smokers, namely *Alvinella pompejana* and associated communities, while the second (13 *Nautilie* dives) was dedicated to symbioses from

diffuse vents (*Riftia pachyptila* and *Bathymodiolus thermophilus*). Ten additional dives are expected in 2011 to complete the first leg, which has been strongly reduced by technical problems.

Cruise BIG (P.I. A. Godfroy) aimed to compare the diversity of ecosystems associated to cold seeps and hydrothermal vents in the Guaymas Basin. This microbiology and ecology cruise involved multiscale approaches, including the use of AUV *ASTER-X* for the exploration and mapping of vent and seep biological assemblages and 14 *Nautile* dives. The operations allowed the sampling of both hard substrate and sediment communities, combined with the characterisation of physico-chemical conditions in their habitats.

Cruises FUTUNA 1 and FUTUNA 2 of R/V *L'Atalante* (P.I. Y. Fouquet) are devoted to the exploration of the Futuna Ridge, one of the small ridge segments connecting the Lau and North Fiji back arc basins. This spreading centre, located in the EEZ of the French territory of Wallis and Futuna, has been first recognized and explored by cruise ALAUF1 in 1999.

Cruise FUTUNA 1 has improved the sea-surface mapping by acquiring swath bathymetry and imagery using R/V *L'Atalante* new generation multibeam echo sounder, magnetics and gravity data; additional rock and water sampling have given an accurate picture of the ridge and paved the way for the ongoing cruise FUTUNA 2, devoted to the search for hydrothermal sites – active or fossil – with deep-sea submersible *Nautile* and AUV *ASTER-X*. These cruises are part of the French national effort to explore the French EEZ for mineral resource, supported by the industry and several government agencies.

Indian Ocean

Cruise GEISEIR 2 (P.I. C. Hémond) of R/V *Marion Dufresne* has continued in January and February the dense collection of samples along the SEIR initiated a year ago to investigate the small scale geochemical heterogeneity of the mantle. Bathymetric and geophysical data have been acquired as well, and the dense wax core sampling has also permitted the acquisition of a unique set of nephelometric data (MAPRs, collab. Ed Baker). Cruise GEISEIR 1 and 2 have achieved the mapping and dense sampling of a 1400 km long section (4 segments) of the SEIR, with 175 locations successfully sampled.

Cruise SMOOTHSEAFLOOR (P.I.s D. Sauter and M. Cannat) on the SWIR is scheduled onboard R/V *Marion Dufresne* in October 2010. As part of the European exchange of marine facilities, the cruise will use the British *TOBI* to collect deep towed side scan and magnetic data. Dredges and CTD are also planned to help to understand the crustal architecture of the peculiar “smooth seafloor” observed in this area and search for hydrothermal activity.

Cruise OHASISBIO (P.I. J.-Y. Royer) should take place in the end of 2010 or beginning of 2011 on R/V *Marion Dufresne* to redeploy a hydrophone network designed to monitor the seismicity of the three Indian ridges and the deformation zone of the Central Indian Ocean, as well as the vocal activity of marine mammals.

Finally, following the visit of Chinese colleagues in Paris aside of the InterRidge Steering Committee, a Sino-French collaboration has started to investigate the seismic structure of the SWIR. Three French engineers and 17 OBSs have joined the seismic cruise of R/V *Dayang Yihao* in February 2010 (French P.I. of the collaboration S. Singh).

Atlantic Ocean – MoMAR

French efforts are continuing to promote the MOMAR project, initiated by InterRidge and now part of the ESONET–EMSO European initiative for implementing deep sea observatories around Europe.

Cruise HYDROBS-MOMAR (P.I. J. Perrot) of R/V *Le Suroît* has redeployed the five hydrophones of the network centred on Lucky Strike hydrothermal site near the Azores in July and August, continuing time series covering almost a decade now.

Cruise MOMARSAT (P.I. M. Cannat, J. Blandin and P.M. Sarradin), a demonstration mission supported by ESONET which will deploy an acoustically-linked multidisciplinary observing system at the Lucky Strike vent field with satellite connection to shore; has to await the completion of ROV *Victor* refurbishment and should take place in October on R/V *Pourquoi pas?*

Instrumentation and methods

ROV *Victor* is currently in the final phases of a year-long refurbishment. For this reason, deep-sea manned submersible *Nautile* has been used for cruises PARISUB, MESCAL, BIG, and FUTUNA 2. In three of these four cruises, *Nautile* has been used in conjunction with AUV *ASTER-X*, *Nautile* diving on day time to focus on specific targets and *ASTER-X* on night time to map larger area. This configuration has proven interesting and offers an efficient alternative to the use of ROV *Victor* two modules – the “mapping” module with multibeam and geophysical measurement capabilities for surveys, and the “sampling” module for more focused geological, physico-chemical, and biological site exploration.

It is also worth mentioning that the efficient and dense sampling achieved using wax core on GEISEIR 1 and 2 cruises along the SEIR allowed a similarly dense MAPR data set – the use of such an easy and promising tool for geochemical studies and hydrothermal plume detection as well should probably be generalized on other parts of the World mid-ocean ridges.

Mineral Resource exploration

Following industrial requests to investigate parts of the French EEZ for this purpose, French officials have realized the general interest for deep sea mineral resources and more specifically massive sulfide deposits at mid-ocean ridge. A prospective working group made of scientists, industrial, and decision-makers has been established in Fall 2009 and has completed its task in less than 9 months, resulting in the implementation of an industry-supported exploration program around Wallis and Futuna (see above). Several scientists active in InterRidge, including the National Correspondent, participated to these meetings and made the non-scientific audience aware of InterRidge and its role in the community and beyond. Further discussions are presently held at Ministry level to define future actions in consideration to the new ISA policy on seafloor massive sulfide deposits.

DISCUSSION

- DF – asked about details of the wax system being used and is there was a web presence? (No, as material is being kept for publication).
- JL – is there a plan for a Working Group for prospecting SMS? CH said there was currently a cruise at Futuna Islands.

ACTIONS

CH offered to send images as they were being retained for publication

Germany National Update:

Report by C. Devey at the 2010 StCOM meeting.

Presentation

The coordinated German Ridge Program has officially ended, with the science output to be completed by summer 2011. Ridge research will continue in individual research groups (Kiel, Bremen, Münster etc).

Upcoming cruises:

- Sept 2010: Meteor 82/3 Menez Gwen (Dubilier)
- Jan-Feb 2011: Poseidon 407 Atlantis-II Deep (Devey)
- Jan-Mar 2011: Sonne 213 Pac.-Ant. Ridge (Haase)
- Jun-Jul 2011: Sonne 216 Manus Basin (Bach)

CD described work in the Woodlark Basin, the Franklin Seamount and the Carlsberg Ridge.

Other developments:

- AUV “ABYSS” now fully operational (6000m rated) (<http://www.ifm-geomar.de/index.php?id=auv&L=1>)
- Deployment for search for AF477 (<http://www.bea.aero/en/enquetes/flight.af.447/sea.search.ops.phase.3.php>)
- IR Membership 2010 is hopefully secure, 2011 will be more difficult due to a lack of a coordinated programme, but from 2012 the situation looks better.

DISCUSSION

- AF477 – it was recognized that data would be of great use to the IR community. Data would be best held at Lamont.

ACTION

CD to contact BEA and request seafloor data, with JD, DF and IR Office to be kept informed.

CH to ask J. Dymant about accessing the data.

Japan National Update 2010

Report prepared by Kyoko Okino.

Presentation

The InterRidge-Japan programme continues efforts to promote ridge-related studies in Japan and to expand our community. The outline of ongoing projects and other activities are described below.

Domestic and International Meetings

An InterRidge-Japan symposium was held on October 29-30, 2009, at the Ocean Research Institute, University of Tokyo. About sixty scientists participated in the symposium to share recent research activities. We plan a similar symposium in November 2010, including a one-day international session in collaboration with a Japan-New Zealand workshop on

marine resources. We also plan to host the IR Theoretical Institute led by the IR Mantle Imaging WG in 2011, and have submitted the budget proposal to JSPS (Japan Society for the Promotion of Science).

We also had a business meeting on May 25, 2010, at the Japan Geoscience Union Meeting, where we shared information on budget, cruise, workshops and international affairs, and discussed the InterRidge-Japan annual activity plan. We agreed that the annual contribution to InterRidge will be shared by the TAIGA project and JAMSTEC.

Ongoing Project "TAIGA"

The interdisciplinary research project TAIGA, Trans-crustal Advection and In-situ biogeochemical processes of Global sub-seafloor Aquifer, was launched in 2008. The project is funded by MEXT (Ministry of Education, Culture, Sports Science and Technology) from FY2008 to FY2012 and we will have a mid-term external evaluation this year.

As we mentioned in the last IR news, we focus on subseafloor fluid advection which carries huge heat and chemical fluxes from the interior of the earth and supports biological growth (beneath and on the seafloor). Three integrated study sites have been selected: the southern Mariana Trough as TAIGA of sulfur, the Indian Triple Junction as TAIGA of hydrogen, and the Okinawa Trough as TAIGA of methane. In the southern Mariana Trough, the detailed seafloor mapping and plume detection were done using AUV Urashima in 2009. We also conducted a cruise with a benthic multicoring system (BMS) and succeeded in obtaining 12 contamination-free core samples (0.4-4.5m) in the same area. These core samples will be used for various analyses including rock-magnetism, bulk petro-chemistry, alteration mineralogy, ore mineralogy, isotopic geochemistry, age determination, redox-state analysis, organic chemistry, amino-acid analysis, microbiology, microbial ecology, and so on. The deep crust / upper mantle imaging using OBSs and OBEMs, and the geological, geochemical, microbiological, and biological submersible surveys are also planned for later in FY 2010. In the Indian Triple Junction area, a short submersible dive cruise was done in FY2009 and the exposure of mantle peridotite was discovered, that may be a key to understanding the hydrogen-rich Kairei hydrothermal field. More surveys in the Indian Ocean are planned in FY2010 and 2011. We also have several cruises in the Okinawa Trough as TAIGA of methane and the Chikyu deep drilling is scheduled in September 2010.

More than fifty scientists joined the project, and many seagoing studies are planned, mainly in the integrated study sites. Further information can be checked at the project web site (<http://www-gbs.eps.s.u-tokyo.ac.jp/~taiga/en/index.html>).

Cruises in FY2009

In FY2009, eight ridge-related and/or hydrothermalism-related cruises were funded. Three-dimensional, high-resolution, multi-sensor mapping of three hydrothermal sites in the southern Mariana Trough was done by AUV Urashima (YK09-08: PI K. Okino). An intelligent rosettes sampling system with 24 arrays was equipped in the AUV and succeeded in recovering water samples as well as other sensors. Three geochemistry and microbiology cruises were conducted in the Okinawa Trough hydrothermal areas: NT09-10-2 to Tarama Knoll (PI T. Yamanaka) and NT09-11 to Iheya-kita (PI M. Yamamoto) both using ROV Hyper-Dolphin, and KT09-16 (PI M. Sunamura) by R/V Tansei-maru. A Japanese group was also active in the Indian Ocean in 2009. YK09-13-1 (PI K. Tamaki) using submersible Shinkai6500 and deep-tow system was conducted in the Central Indian Ridge Segments 15 and 16, where we detected a plume anomaly by AUV r2D4 in 2006. Another submersible cruise (YK09-13-2, PIs S. Nunoura and K. Nakamura) was also successful in the Kairei Hydrothermal Field near the triple junction. A petrological and geophysical mapping cruise by R/V Hakuho-maru cruise (KH-09-5-4, PI K. Okino) along the Southwest Indian Ridge near the Marion Hotspot was also conducted. Under US-Japan collaboration, a cruise using R/V Roger Revelle was done in the Lau Basin to deploy OBS, OBM and OBEMs (PI D. Wiens, Japanese Scientist: N. Seama). These instruments will be recovered in 2010.

Cruises in FY2010

Including the OBEM recovery cruise in collaboration with the US team, a total of nine cruises were funded in FY2010. In the southern Mariana backarc area, nine BMS (Benthic Multi-coring System) drillings were conducted during the Hakurei-Marun No.2 cruise in June 2010 (PI T. Urabe) and drilled 12 holes with a total hole depth of 42m. Two cruises with submersible Shinkai 6500 are planned in the same hydrothermal area this summer (YK10-10: PI J. Miyazaki and YK10-11: PI S. Kojima), when an in-situ microbiological incubation system using BMS drill holes will be settled. To investigate the deep crust and upper mantle structure beneath the Mariana hydrothermal area, 20 OBSs and eleven OBEMs will be deployed in August (YK10-10) and then recovered in November (YK10-15: PI N. Seama). In the Okinawa Trough area, two cruises using R/V Tansai-maru are scheduled in October: KT10-22 (PI T. Yamanaka) and KT10-23 (H. Yamamoto). Both cruises target the microbiological and geochemical studies in sediment-rich hydrothermal sites. R/V Hakuho-maru will visit the Indian Ocean triple junction (KH-10-6: PI K. Okino) with AUV r2D4 in November 2010. Integrated AUV survey, rock dredge, water and plankton sampling in hydrothermal plumes are planned.

InterRidge-Japan web site (in Japanese): <http://ofgs.ori.u-tokyo.ac.jp/~intridgej/>

DISCUSSION

HK outlined problems with IR funding by Japan. More visible activity was needed to support the funding.

ACTIONS

HK to give IR Office a list of outputs needed to help justify Japan's IR subscription.

UK National Update 2010

Report by T. Henstock

Presentation

2010 has seen a relatively large number of ridge-related cruises from the UK, with much of the programme of the RRS James Cook being dedicated to these projects.

In January and February JC042 (Chief Scientist Alex Rogers) carried out sampling around hydrothermal vent sites in the East Scotia Sea using the ISIS ROV; this was the second of three cruises funded within the ChEsSo consortium programme, with the final cruise of the series due to go to the Bransfield Strait in early 2011.

JC044 (Chief Scientist Doug Connelly) to the Mid-Cayman Rise spreading centre collected swath, deep-towed sidescan data using TOBI, and water column measurements using Autosub6000 and CTD casts. These enabled the use of HyBIS to locate and sample hydrothermal vent systems at depths of up to 4960m (see <http://www.thesearethevoyages.net/>). A later cruise will use the ISIS ROV to further characterise these systems.

JC048 (Chief Scientist Monty Priede) which ran throughout June was the last of four cruises funded as part of the ECOMAR consortium programme which used the ISIS ROV to sample the ecosystems around Charlie Gibbs Fracture Zone. This feeds into the Census of Marine Life MAR-ECO study of ecological systems along the Mid-Atlantic Ridge.

JC050 (Chief Scientist Nicky White) was a four week cruise which collected seismic reflection and underway geophysics transects running along flow lines between the Hatton Bank and East Greenland continental margins to study the V-shaped ridges south of Iceland. The data from this cruise will be used to support an IODP drilling proposal focused on studying fluctuations in the effect of the Iceland plume both on the ridge axis and ocean circulation.

There have also been some longer term developments. The Autonomous underwater vehicle Autosub6000 has been proved in depths of more than 5600m, with enhancements including the ability to carry out surveys at altitudes of as little as 3m above the seabed. Its scientific potential was demonstrated during JC044. In addition, the programme to replace RRS Discovery has survived the first round of expenditure review of the new government, and the new ship (also to be called Discovery) is projected to enter service in 2014.

DISCUSSION

Discussion centred on data quality and improvements expected with the design of Discovery 4, starting 2013-14. 100m ship designed for interdisciplinary studies, no conventional rudder system. Ship design will improve acoustic data.

Notice was given on expected funding cuts. National capability funding will be scaled back, including ship platforms, staff, IODP subscription. UK funding agency very keen on socio-economic impact of research.

USA National Update 2010

Report by D. Fornari at the 2010 StCOM meeting.

Presentation

Ridge 2000 Program Statement - 2010

Introduction

The overarching goal of the Ridge 2000 (R2K) program is to answer key questions pertaining to fundamental processes that control biological, chemical and geological phenomena at oceanic spreading centers using observational, experimental and modeling data derived from the past few decades of research on mid-ocean ridges (MORs). The program has completed many successful coordinated field campaigns and shore-based research projects, resulting in the publication of a large volume of scientific papers spanning many subjects. The program focus now is to synthesize the accumulated knowledge and data from the past ~8 years of field and laboratory efforts, and decades of allied research, into widely accessible published products that highlight the progress in understanding questions pertaining to earth/ocean phenomena associated with crustal generation and the linkages between physical, chemical and biological processes at MORs. Synthesis of these multidisciplinary data sets yields new insights into oceanic spreading center processes, impacts multiple related research fields, and paves the way for new scientific directions that will extend our knowledge of fundamental earth-ocean processes.

R2K Community Meetings and Commitment to Achieving Program Goals

The role of community meetings, including the currently planned 2010 R2K Meeting in Portland, OR (Oct. 29-31, 2010), is to bring all the groups together face-to-face after they have had a chance to begin interactions, to give them the opportunity to have focused, multi-day discussions, set strategies and schedules for producing their group products, and to learn about the work of other groups, including topics they are addressing, and to explore successful collaboration modes. The community meeting is a means to an end, rather than a specific, fixed time frame to accomplish this synthesis effort. The key point is that the meeting will serve as an impetus for the community to continue on the path that will lead to fully capitalizing on R2K research to date; synthesizing and integrating information to achieve a more complete knowledge of MOR processes.

R2K and Related Cruises

Shown in the table below. There were also several related cruises to the Galapagos Spreading Center (Sinton et al – RV Atlantis – April 2010) and Northern Galapagos area (Harpp et al. – RV Melville – May-June, 2010)

R. McDuff	R/V Thompson	18 - 23 Oct 2009	JdFR
D. Lizarralde	R/V Atlantis	19 Oct - 03 Nov 2009	Guaymas Basin/ EPR
A.-L. Reysenbach/ M.K. Tivey	R/V Atlantis	08 - 18 Nov 2009	Guaymas Basin/ EPR
D. Wiens	R/V Revelle	20 Nov - 05 Dec 2009	ELSC
A. Teske/ M.K. Tivey	R/V Atlantis	22 Nov - 06 Dec 2009	Guaymas Basin/ EPR
D. Bohnenstiehl	R/V Revelle	08 -17 Dec 2009	ELSC
M. Cormier/ S. Noonan/ M. Bright	R/V Atlantis	15 Dec 09 - 03 Jan 10	EPR
J. Resing (NOAA funding)	R/V Kilo Moana	28 Apr - 11 May 2010	Lau
R. Lee/ M. Tivey/ M. Lilley	R/V Atlantis	06 - 26 Jul 2010	JdFR
J. Delaney (NSF OOI funding) and R. McDuff (UW funding)	R/V Thompson	26 Jul – 23 Aug 2010	JdFR
W. Chadwick/ J. Huber	R/V Thompson	26 Aug – 07 Sep 2010	JdFR
M. Best (Neptune Canada) and R. Light (NSF OTIC funding)	R/V Thompson	11 Sep – 03 Oct 2010	JdFR

R2K Distinguished Lecture Series (DLS) Speakers

The 2010 speakers were: Suzanne Carbotte, Matt Schrenk, Bill Seyfried and Adam Soule

The web page for DSL is at: http://www.ridge2000.org/dls/speaker_list.php

The four speakers each went to 3 institutions each as noted below:

Bill Seyfried, University of Minnesota

University of Missouri, Columbia
University of Illinois, Urbana-Champaign
University of Texas, Pan American

Suzanne Carbotte, Lamont-Doherty Earth Observatory

Utah State University
Louisiana State University
Miami Dade College

Emerging Voices:

Matt Schrenk, East Carolina State University

Texas A&M, Corpus Christi
LaSalle University
Iowa State University

Adam Soule, Woods Hole Oceanographic Institution

Lawrence University
Colgate University
University of Kentucky

2011 DLS speakers selected are: Anna-Louise Reysenbach, Ken Rubin, William Strickrott and Brandy Toner. Titles for their presentations are as follows; venues will be decided in Fall 2011.

Anna-Louise Reysenbach

General Public Lecture:

From there to here, from here to there, funny microbes are everywhere” (at deep-sea vents)

Science Community Lecture:

From Mantle to Microbe: Geology Shapes Microbial Communities of Hydrothermal Vent Deposits

Ken Rubin

General Public Lecture:

Caught in the act – first observations of a deep-sea lava flow and pyroclast eruption

Science Community Lecture:

Ocean ridge and other submarine eruptions – the link between Earth’s deep interior and the sea floor

Bruce Strickrott

General Public Lecture:

Manned Presence in the Deep Ocean, from Fantasy to Reality

Science Community Lecture:

Engineering Interaction in the Deep Ocean

Emerging Voices:

Brandy Toner

General Public Lecture:

Mid-ocean ridge hydrothermal venting: Where does all of the iron go?

Science Community Lecture:

Integrated nested-scale biogeochemistry of hydrothermal plumes along Eastern Lau Spreading Center

MGDS-DMO/R2K Office Interactions on R2K Reference Database

Reference database at R2K data portal launched in July 2010

A new, searchable reference page was developed by LDEO-MGDS and R2K Office staff. (<http://www.marine-geo.org/portals/ridge2000/references.php>)

A significant effort was made this year to consolidate R2K references and integrate them within the primary database maintained by the R2K DMO. This effort included the development of a script by LDEO staff (Ferrini) to harvest reference information off the R2K website, so the information could be standardized and reformatted by WHOI staff (Govenar, Moore). Where possible, WHOI staff also gathered award, cruise, and focus site information for each reference. Modifications were then made to the MGDS database backend by LDEO staff (Ferrini), and reference information was integrated into the data system (Ferrini). A new searchable reference page (<http://www.marine-geo.org/portals/ridge2000/references.php>) was then developed by LDEO staff (Leung, Ferrini) and launched on the R2K Data Portal page to provide access to the new reference database. This page also provides direct access to data sets and cruise information, as well as options to save references in EndNote format. Updating the reference database is an ongoing project, and a new webform developed by LDEO staff (Ferrini) to facilitate this process will be launched in the coming weeks.

Ridge 2000 Education & Outreach Activities – E. Goehring – Penn. State Univ.

Summarized in the materials available on the following websites.

<http://flexe.psu.edu> (FLEXE project overview, including access to curriculum and login to FLEXE system)

http://flexe.psu.edu/forum_archive (archived versions of FLEXE Forums, so that the information may be accessible until a live version/format is made available through GLOBE)

<http://classic.globe.gov/projects/flexe> (original FLEXE project page on GLOBE site. will be moved to new GLOBE site when it is available)

DISCUSSION

- DF invited IR to consider developing a reference database with links to R2K.
- Discussion as to whether the R2K Distinguished Lecture model could be operated by IR.
- DF asked if other countries linked to R2K site.
- HCL stressed the importance of links between major programmes. DF agreed. TH noted that some national programmes are uncertain and considered the implications for InterRidge. CD – IR needs national programmes for the national contribution to be paid, and are essential for the longterm health of IR. IR membership (JCh) - does IR have the right contacts in particular countries? CH - France may be able to nominate a National Correspondent for Mexico.
- DF spoke of the need for NSF to continue IR funding. What are the advantages of belonging to IR? Working groups, collaboration at sites, attendees at workshops, national spread of members, ISA funding etc.
- Needed – a well-articulated statement of InterRidge’s contribution to international science, which each country can use and build on to gain funding. BM – IR has a critical crystallising role in articulating its science to policy makers.

ACTION

DM to make weblinks to GLOBE; encourage IR countries to link to R2K site.

CH to pursue possibility of Mexican National Correspondent.

BM to write statement of InterRidge’s contribution to international science.

4.b Associate and Corresponding Members

India National Update 2010

Report by K. Raju

We had one cruise to the Carlsberg Ridge during the last year, on a chartered Russian vessel RV Boris Petrov. The objectives of the cruise were to carry out systematic sampling along the rift valley from the Owen fracture zone to 62°E and to make repeat observations at the HT plume region that was discovered during the RV Sonne cruise in December 2007. Systematic sampling was carried out as planned. Repeat observations at the plume region were conducted with MAPRs, and these observations have reconfirmed the plume. We have also initiated a process to hire suitable AUV (due to non-availability of Sentry) to conduct a detailed investigation of the HT plume region and selected the Abyss AUV of

IFM Geomar. An AUV cruise to the Carlsberg Ridge is planned for October- November 2010 onboard the Indian research vessel RV Sagar Nidhi. Besides the scientists from NIO, Goa, scientists from National Geophysical Research Institute (NGRI), Hyderabad, Delhi University and IUAC (Inter-University Accelerator Centre) New Delhi are actively participating in the MoES funded Ridge programme.

Korea National Update 2010

Report by S.-H. Park

Presentation

Korea Polar Research Institute (KOPRI) will conduct the research survey on the 160E segment of the Southeast Indian Ridge from 25th Feb to 12th Mar, 2011. The ports of embarkation and disembarkation will be Christchurch, New Zealand. 160E segment in SEIR, which still remains unsurveyed, is scientifically interesting because it is very shallow (2200m), but may be not influenced by any plume. We will try to do mapping, sampling and hydrothermal surveys during the cruise. This survey is historical because it will be the first mid-ocean ridge survey using Icebreaker R/V Araon of KOPRI and pilot cruise to prepare the survey on the entire Pacific-Antarctic Ridge. Participation on the cruise will be open to international MOR scientists if they have any good ideas for the collaboration.

Korea Ocean Research and Development Institute (KORDI) will do a survey on the Lau Basin in March, 2011. This survey is related to mineral resources and Araon may be used as the research vessel. The schedule of this cruise is still pending.

Norway National Update

Report by R. Pedersen

Ridge research in Norway continues primarily at the University of Bergen where it is a research theme at the Centre for Geobiology. This summer researchers returned to the Mohns-Knipovich Ridge. The cruise had several research foci:

- returning to the Loki's Castle hydrothermal vent field for renewed measurements and sampling (both geological and biological);
- taking of several Calypso cores in the Mohn-Knipovich rift valleys to assess the sedimentation and geological history in this area;
- undertaking more detailed mapping and water column studies of the southern Knipovich Ridge region, searching for new hydrothermal sites.

This summer's cruise employed an AUV in addition to an ROV. A Hugin AUV (Kongsberg Maritime) that is operated by FFI was deployed from RV G.O. Sars to acquire micro-bathymetry of the Loki's Castle vent field and to search for new venting areas.

The Loki's Castle hydrothermal field is located on the crest of an axial volcanic ridge and is associated with an unusual large hydrothermal deposit. This sizeable field provides clear evidence that extensive venting and long-lived hydrothermal systems exist at ultraslow spreading ridges. In addition, the field hosts vent fauna that is distinct from that found to the south along the Mid-Atlantic Ridge. Successive cruises these past summers to the Loki's Castle area have enabled

researchers to build up significant data sets and sample collections that are being analysed by Norwegian and international collaborators.

Centre for Geobiology
<http://www.uib.no/geobio/en>

Russia national update

Report by Sergei Silantyev

The following are the principal cruises of Russian Research Vessels which took place in 2010:

R/V “Professor Logachev” (ship owner - Polar Marine Geological Expedition) - May - August 2010, 33rd cruise, the Mid-Atlantic Ridge Axial Zone, 19°15' - 20°05' N.

Two new ore deposits were discovered on the hydrothermal field “Zenith-Victory” (20°07.75' N, 45°37.35' W). A new unknown earlier hydrothermal field has been discovered at MAR, 19°52' N, 45°52' W. Dredged here were ore samples characterised by copper mineralisation.

R/V “Akademik Nikolai Strakhov” (ship owner - Institute of Geology of Russian Academy of Sciences) - the investigations were of the North Barents Sea and adjacent Arctic Basins including the western continental slope of the Arctic Ocean. These investigations will be continued in 2010.

R/V “Akademik Boris Petrov” (ship owner - Vernadsky Institute of Russian Academy of Sciences) - multidisciplinary investigations of the central part of the Indian Ocean under an agreement between Vernadsky Institute RAS and Ministry of Earth Sciences, India.

Joint International Conference “Minerals of the Ocean-5” and “Deep-Sea Minerals and Mining-2” organised by VNIIOkeangeologia (Russia), RWTH-Aachen and Berlin Free University (both - Germany) was held 28 June-01 July, 2010 in VNIIOkeangeologia (St.Petersburg, Russia). 50 participants from Russia, Germany, Brazil, Great Britain, China, Korea, Taiwan, Norway and Jamaica made presentations at 4 sessions: Ferromanganese nodules and crusts, Hydrothermal deposits, Gas hydrates and Sea technology.

The biennial workshop of Russian-Ridge will be held in Moscow in summer 2011 (date will be defined more exactly later). The topic of this workshop: “Main Results in Russian Study of the Mid-Oceanic Ridge Processes in First Decade of XXI.”

R/V “Professor Logachev” will be operating next year in the MAR area near recently discovered hydrothermal Field “Semenov” (13°31'N)

4.c Status of potential membership upgrades / additions

The revised table of national memberships is posted at:

http://www.interridge.org/files/interridge/IR_member_nations_table_2009.pdf

Since the 2009 StCOM meeting, InterRidge has encouraged Hong Kong to work closely with IR China.

Potential upgrade from Associate to Principal Membership: potential for Korea? India?

Potential upgrades from Corresponding to Associate Memberships: Brazil, Canada (needs new national correspondent), New Zealand, Russia.

DISCUSSION

- JCh - IR membership - does IR have the right contacts in particular countries?
- CH - France may be able to nominate a National Correspondent for Mexico.
- DF – contact with C. de Ronde (NZ)

ACTION

CH (or JD) to develop links with Mexico.

DM and **BM** to develop discussion with NZ correspondents.

5 Current working groups – Updates

In 2010, there are 6 active IR working groups.

5.a Long-Range Ridge Exploration

Chair - Colin Devey (Germany)

Group Members (Brazil, China, France, Japan, South Africa, UK, USA) - Chris German, Sidney Mello, Lucia Campos, Anton le Roex, Cindy Van Dover, Gwyn Griffiths, Koichi Nakamura, Hidenori Kumagai, Jiabiao Li, Marcia Maia.

Report by C. Devey

Presentation

This WG held an international workshop at NOC Southampton, UK on 28-30 June 2010, attracting approximately 30 participants from 8 countries. The full report is at:

http://www.interridge.org/files/interridge/LREWG_Report_Final_web_0.pdf

In summary, there were three main outcomes:

Segment Scale Studies (S3)

It quickly became clear that the technology (especially AUV) is now available to consider conducting total coverage studies of the seafloor at the first-order segment scale (length n x 100km). The science drivers for this type of study are very strong across a range of disciplines but the resources it will require are significant, confirming that there is a need for InterRidge involvement, coordinating the resources of more than one nation to conduct the work and meaning that the area to be studied needs to be picked with care. Because this is beyond the scope of the current “Long Range Exploration“ working group we recommend to the InterRidge Office and Steering Committee that the possibility of establishing a new working group focussing on this problem and running a workshop specifically to address segment-scale studies (photographic mapping of axial valley and flanks) be investigated.

Global Exploration (GE)

Main science drivers for global exploration are questions of vent biogeography, variations in fluid compositions in different or novel tectonic and geological situations and questions of tectonic evolution and functioning of the spreading axes. Our workshop identified 20 future targets for GE activities and prioritized the first 5 of these. These highest-priority targets have a global distribution and will attract multi-disciplinary scientific interest. It is clear that continuing international coordination will be required to bring the envisaged research to fruition.

Technological readiness

A range of autonomous underwater vehicles is now available at academic institutions around the world - these vehicles will play a key role in many LRE endeavours. Other key equipment is also required, however, including ship-based multibeam mapping, CTD, ROV & HOV capabilities. The most technologically challenging aspect of the work, multi-AUV deployments, is judged to be possible and vehicle reliability, although still an issue, is no longer seen as an insurmountable barrier. We recommend that this technological issue be considered further at a forthcoming international AUV conference in September 2010 "Mapping The World Ocean".

Additionally it was noted that vast areas of the ridge remain unmapped even at ship-based multibeam resolution. InterRidge should therefore make every effort to utilize any opportunity to acquire additional data. One such opportunity is presented by the search for AF447 in the equatorial Atlantic - here side-scan data at <1m resolution and with 100% coverage is being acquired over a ridge-transform intersection at ca. 4°N. The IR Office should contact the authorities concerned to make this data available when possible for scientific research.

DISCUSSION

- Discussion focused on feasibility of large scale data collection; all ridges need to be surveyed to know where to study. Feasible as AUV capability improves. High resolution data has storage implications. TH asked if the general science community could be involved – CD envisaged an extensive international community.

ACTION

CD – lead WG in developing proposals.

5.b Mantle Imaging

Chair - Nobukazu Seama (Japan)

Group Members (China, France, USA) - Douglas A. Wiens, Alan D. Chave, Douglas R. Toomey, Pascal Tarits, Wayne C. Crawford, John Chen.

Report by N. Seama

In this year, we convened a session at the EGU meeting. The title of the session was "Melt generation to crustal formation beneath mid-ocean ridges" and we had 12 abstracts. We needed to merge ours with another session in order to obtain a slot for an oral session, resulting in a new session entitled "Two-phase dynamics of mid-ocean ridges and other systems: theory and observation". The number of abstracts is not many, but the session itself attracted a lot of interest.

We also discussed an InterRidge Theoretical Institute with a workshop in Japan, 2011, and made a tentative plan for it. Since it is essential to obtain basic money for the meeting, we submitted our proposal to JSPS (Japan Society for the Promotion of Science) in April 2010. The result was supposed to appear in the middle of August 2010, but I have not

heard any news up till now (I am afraid that it is possibly due to cutting budgets by new government policy because they would like to cut budget for such as JSPS; I noticed that the maximum amount of the fund was reduced when the subscription was announced). Once it is funded, we will ask/write proposals to obtain other funds including the InterRidge meeting fund. Further, InterRidge-Japan agrees to help organise the meeting, and some funding support will be from project TAIGA.

DISCUSSION

BM offered IR written support if needed for IRTI 2011.

ACTION

DM to ask NS if written support from IR would aid the IRTI application.

5.c Deep Earth Sampling

Chair - Benoit Ildefonse (France)

Group Members (Canada, China, France, Germany, Japan, UK, USA) - Peter B. Kelemen; Mathilde Cannat; Jay Miller; Jan M. Peter; Chris J. MacLeod; Wolfgang Bach; Katrina Edwards; Yasuhiko Ohara; Henry J. B. Dick; Damon A.H. Teagle; Douglas R. Toomey; Kathryn Gillis; Susumu Umino; & Huaiyang Zhou.

Chair – Benoit Ildefonse (CNRS, Univ. Montpellier 2, France)

After a rather active year in 2009, the Steering committee recommended that the DES WG should continue into 2010, to follow-up on the 2009 MMFL and INVEST workshops.

The Melting, Magma, Fluids and Life (MMFL) Workshop, held in July 2009 at the National Oceanography Centre, Southampton, UK, was co-sponsored by InterRidge, its goal was to discuss the scientific planning for scientific drilling in the ocean crust, in preparation for the IODP INVEST meeting in September 2009. The full workshop report is available online at <http://www.interridge.org/WG/DeepEarthSampling/workshop2009>, as well as the white paper prepared for the INVEST meeting.

The IODP New Ventures in Exploring Scientific Targets (INVEST) workshop was held in Bremen, Germany, in Sept. 2009 (<http://www.marum.de/iodp-invest.html>). INVEST was organized as a large, multidisciplinary, international community meeting, whose focus was to define the scientific research goals of a new ocean drilling program, expected to replace IODP late in 2013. The workshop was extremely well attended, with more than 550 participants, including most members of the Deep Earth Sampling Working Group. The meeting report is available online at:

<http://www.iodp.org/weblinks/Featured-Publications-HOME-PAGE/INVEST/>

Several key objectives that were outlined in the MMFL workshop report are also articulated in the INVEST report; they include:

- the MoHole, i.e., a full crustal penetration to the Moho and into the uppermost mantle.
- addressing crustal aging and lithosphere/hydrosphere exchanges through drilling transects.
- ultramafic seafloor, including serpentinite-hosted hydrothermal systems, and CO₂ capture and storage through carbonation.
- subseafloor resources (including deep seafloor volcanogenic hosted massive sulfide deposits).

The Scientific Plan for the next phase of the scientific drilling program, to follow IODP in 2013, is currently being written by an international group of experts chaired by Michael Bickle (Cambridge University, UK).

In 2010, InterRidge co-funded the MoHole workshop organized in June in Kanazawa, Japan:

<http://earth.s.kanazawa-u.ac.jp/~Mohole/index.html>.

In continuation of the science planning discussions that took place in 2009 and during the earlier Mission Moho workshop in 2006 (<http://www.iodp.org/mission-moho-workshop/>), the 2010 MoHole workshop had two interconnected objectives, which have been discussed jointly between ocean lithosphere specialists, marine geophysicists, and engineers:

- to initiate a roadmap for technology development, and the project implementation plan, which are necessary to achieve the deep drilling objectives of the MoHole project.
- to identify potential MoHole sites in the Pacific (i.e., in fast-spread crust), where the scientific community will focus geophysical site survey efforts over the next few years. Selecting drilling sites is essential to identify the anticipated range of water depths, drilling target depths, and temperatures, and better define the technology required to be developed and implemented to drill, sample and geophysically log the MoHole.

This meeting was attended by ~65 people, and was very successful and productive. The full workshop report will soon be available on the IODP web site, and a report article is in press in *Scientific Drilling*.

In 2009, a motion was sent to the IODP Science Planning Committee (SPC) Chair to re-state the importance of returning to IODP Hole 1256D as a short-term community priority. The bottom of Hole 1256D currently resides in the vary-textured gabbros of the transition zone between the sheeted dyke complex and the underlying cumulate gabbros. The proposal to return to site 1256 and deepen further Hole 1256D was discussed for ranking at the August 2009 IODP Science Planning Committee meeting, forwarded to the IODP Operation Task Force, and the next expedition to Site 1256 is now scheduled in 2011 (April 14 to June 4; http://iodp.tamu.edu/scienceops/expeditions/superfast_rate_crust.html).

As a manifestation of the increased interest of the geomarine community for the ultramafic seafloor, aka "serpentinite sea", it is worth noting the recent submission in 2009 of a drilling proposal that presents a plan to drill and core the Atlantis Massif using a seabed, shallow drilling/coring device. Objectives of this proposal (IODP proposal #758, by G. Früh-Green et al.; http://www.iodp.org/index.php?option=com_docman&task=doc_download&gid=2837) are to:

- quantify the role of serpentinization in generating H₂- and hydrocarbon-rich fluids, in driving hydrothermal systems, and in sustaining microbiological communities, and the potential for carbon sequestration in ultramafic rocks.
- understand the linkages among detachment faulting, abiotic and biotic processes, and hydrothermal circulation in young mafic and ultramafic seafloor, and determine how these change with age and rock type.
- and characterize tectono-magmatic processes that lead to lithospheric heterogeneities and the evolution of hydrothermal activity associated with detachment faulting.

The proposal currently resides in the Science Steering and Evaluation Panel of IODP, and has recently been sent for external reviews.

It is now time for the Steering Committee to consider whether the deep Earth Sampling Working Group should be disbanded after ~6 years of activity, or renewed with an updated mandate (and possibly a renewed membership?). In any case, continuous liaison with IODP (through mutual attendance of liaisons to science planning/Steering committee meetings) should be maintained in the future. It is essential to ensure a good, mutual understanding of the objectives of the two programs. InterRidge will receive (if not done yet) a proposal from the organizers of the recent Chapman

conference on detachment faulting (Escartin and Canales) to create a WG on oceanic detachment faults. Drilling objectives in this type of ridge environment could be included in the new WG mandate if approved.

DISCUSSION

- IR thanks the members of this Working Group for their work, notes the success of their workshops and good liaison with IODP. The IR StComm accedes to the request to disband.

ACTION

BM to write to BI and WG members.

Report: “The Mohole – a Crustal Journey and Mantle Quest

Presented by N. Harmon, NOC

The 2010 MoHole workshop was held at Kanazawa University, Japan during 3-5 June 2010. It followed on from several recent scientific planning meetings on ocean lithosphere drilling, in particular the Mission Moho Workshop in 2006 (<http://www.iodp.org/mission-moho-workshop>; Christie et al., 2006; Ildefonse et al., 2007), and the "Melting, Magma, Fluids and Life" meeting in 2009 (<http://www.interridge.org/WG/DeepEarthSampling/workshop2009>, Teagle et al., 2009). Participants to these previous meetings reached consensus that a deep hole through a complete section of fast-spread ocean crust is a renewed priority for the ocean lithosphere community. The scientific rationale for drilling a MoHole in fast-spread crust is developed in the workshop reports (available online), and most thoroughly articulated in the 2007 IODP Mission Moho drilling proposal (IODP Prop 719MP; <http://www.missionmoho.org>).

The scientific goals can be divided into the following principal tightly interconnected threads:

- What is the physical nature of the Mohorovičić Discontinuity? and what is the geological nature of this boundary zone?
- How is the (lower) oceanic crust formed at the mid-ocean ridges, and what processes influence its subsequent evolution? What are the geophysical signatures of these magmatic, tectonic, hydrothermal, and biogeochemical chemical processes?
- What can we infer about the global composition of the oceanic crust, and what are the magnitudes of interactions with the oceans and biology and their influence on global chemical cycles?
- What are the limits of life, and the factors controlling these limits? How do the biological community compositions change with depth, and the evolving physical and chemical environments through the oceanic crust?
- What is the physical and chemical nature of the uppermost mantle, and how does it relate to the overlying magmatic crust?

Full report of meeting at: http://www.interridge.org/files/interridge/MoHole_report_kanazawa_SD.pdf

DISCUSSION

Points made concerning the future of the MoHole:

- Backing of general public is essential – IR can be active forging links at grassroots level.
- Can IR support ambassadors? Best advocates are those doing the science.

- Can IR engage key scientists to link major programmes? DF – important to be strategic and focused, to fit into national efforts with scientific and technological appeal. BM – there is a need to engage the IR community to discover priorities.

ACTION

BM and DF to make urgent case to IODP

5.d Seafloor Mineralization

Chair - Maurice Tivey (USA)

Group Members - Fernando Barriga (Portugal), Georgy Cherkashov (Russia), Yves Fouquet (France), Mark Hannington (Canada), Yasuhiro Kato (Japan), Jonguk Kim (Korea), Lisa Levin (USA), Rachel Mills (UK), K. A. Kamesh Raju (India), Xuefa Shi (China), Ingunn Thorseth (Norway), and Cindy Van Dover (USA).

Workshop and Colloquium and Seafloor Mineralization Working Group kick-off meeting, “Deep-Sea, Mining of Seafloor Massive Sulfides - A Reality for Science and Society in the 21st Century”, Woods Hole, MA, Mar 31st/Apr 2nd 2009.

Three recommendations of the working group have been followed up on:

i) Suggested that SMWG member Mark Hannington submit proposal to International Seabed Authority (ISA) to update technical database on seafloor vent deposits. That proposal was funded by ISA and submitted to ISA in December 2009. A portion of the database was ported to the InterRidge database by Stace Beaulieu. I think it would be a good idea to have ISA work with InterRidge to maintain updates to the database. As you know new discoveries are made all the time (e.g. Cayman) and it behoves ISA to have the latest information when making decisions on seafloor leases.

ii) The SMWG recommended that a workshop be convened to determine guidelines for the design of Marine Protected Areas and Reserves for hydrothermal settings. As chair, I wrote a memo in support of a proposed workshop – “Design of Marine Protected Areas for Chemosynthetic Ecosystems Potentially Threatened by Human Activities in the Deep Sea” by Cindy van Dover and Craig Smith which took place in June 2010.

iii) The SMWG recommended that more formal ties be initiated between United Nations environmental program (UNEP) and InterRidge in terms of outreach to small nations lacking scientific infrastructure to gauge their seafloor resources. Yannick Beaudoin of UNEP-GRID Arendal has initiated this connection although I am unsure as to the current status. Perhaps Yannick can update everyone on this at the meeting.

Other activity through the year

- Tivey hosted Ian Stevenson of Nautilus Minerals for a visit to Woods Hole, Sept 29th, 2009,
- Published article stemming from the workshop and colloquium:
Ref: Hoagland, P., S.E. Beaulieu, M.A. Tivey, R.G. Eggert, C.R. German, L. Glowka and J. Lin, Deep sea mining of seafloor massive sulfides, *Marine Policy*, 34, 728-732, doi:10.1016/j.marpol. 2009.12.001, 2010.
- Maurice Tivey: Invited keynote speaker, The New Gold Rush: Seafloor Hydrothermal Research and Marine Mining, Geological Assoc. Canada Spring meeting, St John’s, Newfoundland, Canada, Feb 22, 2010.
- Three members of SMWG (Fernando Barriga, Yves Fouquet, Georgy Cherkashov) participated (with presentations) in the workshop on SMS in BGR (Hannover, Germany) 20-21 July 2010

- Georgy Cherkashov co-chaired (with Peter Halbach) the Joint International Conference “MINERALS OF THE OCEAN-5 & DEEP-SEA MINERALS AND MINING-2”, 28 June-01 July, 2010 in VNIIOkeangeologia (St. Petersburg, Russia)
- Georgy Cherkashov has been invited to present a lecture “Prospects for the development of polymetallic sulphide deposits in the Area” to the participants of the training programme and the interns of the Tribunal for the Law of the Sea, Hamburg, Germany, 23 September 2010
- The International Seabed Authority announced in May the adoption of “Regulations for prospecting and exploration of polymetallic sulphides” in the Area

5.e Vent Ecology

Co-Chairs: Stephane Hourdez (France) and Yoshihiro Fujiwara

Group Members (Austria, Canada, China, Germany, Japan, Korea, Portugal, Russia, UK, USA) - Maria Baker, Monika Bright, Ana Colaço, Nicole Dubilier, Sergey Galkin, Peter Girguis, Jung-Ho Hyun, Crispin Little, Anna Metaxas, Katsu Fujikura, Xiang Xiao.

As no major meeting of general interest to the deep-sea hydrothermal vent ecology and biology community was organised this year, the Vent Ecology WG has mainly been interacting at distance, through the internet.

High-throughput list

When the WG group was created, one of the goals was to encourage international collaboration, in particular for costly approaches such as transcriptomics (ESTs, microarray), genomics, and proteomics. The initial interactive list of these projects has been made available to all on the InterRidge website (<http://www.interridge.org/highthroughput>) that was originally set up by Stace Beaulieu (InterRidge Coordinator in Woods Hole). The goals are to avoid duplicating efforts, encourage common projects, and facilitate communication between groups interested in such approaches. This has been going on for nearly two years now, a good number of projects have been posted and we encourage people to add their projects to the list (<http://www.interridge.org/node/add/highthroughput>).

Biological sample sharing

Another goal of the WG is to enhance the distribution and use of specimens collected at vents (one of the tenets of the InterRidge “Code of Conduct”). The goal here is to minimize the impact of biological sampling by sharing the samples already collected. We hope this will also enhance international collaboration and perhaps enable scientists in countries without deep submergence assets to gain access to such samples. The WG is looking into having a code of conduct or transfer agreement for sample sharing to try to alleviate possible concerns of some researchers about sharing their samples. Our ultimate goal is to also have an interactive webpage with a list of samples available and sample requests. These listings and requests would be announced periodically in the IR biweekly e-news. The WG will be working on this in the upcoming year.

Future of the ChEss database

ChEss is part of the Census of Marine Life programme that ends in 2010. ChEss and the biology/ecology scientific community working at hydrothermal vents have been actively participating in ChEss activities. Although the ChEss database “ChEssBase” is integrated with the Ocean Biogeographic Information System (OBIS), there were concerns as to whether ChEssBase will be kept updated. ChEss coordinators are actively working on this subject.

Meetings

CAREX Strategic Roadmap Workshop (18-20 November 2009, Ostende, Belgium)

5.f Hydrothermal energy and ocean carbon cycles

Co-Chairs - Nadine Le Bris (IFREMER, France), Christopher R. German (WHOI, USA)

Group Members - Wolfgang Bach (Univ. Bremen, Germany); Loka Bharathi (National Institute of Oceanography, India); Nicole Dubilier (Max Planck Institute Marine Microbiology, Germany); Katrina Edwards (Univ. Southern California, USA); Françoise Gaill (CNRS, Paris, France); Toshi Gamo (Univ. Tokyo, Japan); Peter Girguis (Harvard Univ., USA); Xiqiu Han (Second Institute of Oceanography, SOA, China); Julie Huber (Marine Biological Laboratory, Woods Hole, USA); Louis Legendre (LOV-UPMC, Villefranche, France); George W. Luther III (University of Delaware, USA); William E. Seyfried Jr. (Univ. Minnesota, USA); Stefan Sievert (WHOI, USA); Ken Takai (JAMSTEC, Japan); Andreas Thurnherr (Columbia Univ., USA); Margaret K. Tivey (WHOI, USA).

1. First meeting: where are we, and where do we go?

Hydrothermal systems have been studied for 35 years now, but the issue of their impact on global-scale ocean biogeochemistry remains to be adequately addressed. Rather, vent ecosystems are often described as being largely independent of the rest of the biosphere, but the extent to which they are inter-connected with the photosynthetic world still needs to be assessed. One way of considering this question is to consider the service that is provided by hydrothermal systems to the ocean as a whole. The aim of the first Working Group meeting was to discuss the most relevant strategies to address this objective and to clarify the expected outcomes, while discussing science plans and opportunities arising in partnership with various other initiatives such as GEOSTRACE (SCOR) and IODP or the Japanese programme TAIGA.

The first meeting of this Working Group was organized in Woods Hole 23-24 Nov. 2009 with the support of the InterRidge office, who arranged access to all meeting facilities at WHOI. Among WG members, Wolfgang Bach, Loka Bharathi, Nicole Dubilier, Katrina Edwards, Chris German, Peter R. Girguis, Xiqiu Han, Julie Huber, Nadine Le Bris, Louis Legendre, Stefan Sievert, Andreas Thurnherr, were present. George Luther and William Seyfried joined the discussion via teleconference on Nov. 24th. Ken Takai, Françoise Gaill, Toshitaka Gamo, Meg Tivey could not attend. Jian Lin (InterRidge Chair), Stace Beaulieu (InterRidge Coordinator) attended the meeting. The SCOR Executive Director, Ed Urban, joined us by Skype on Nov. 23rd.

Discussions allowed identification of some of the most important questions that still need to be answered:

- Can we estimate the fraction and nature of carbon exported from vent-sites to oceanic ecosystems (inorganic and organic carbon, including methane)?
- How much microbial biomass is trapped in the seafloor?
- How do the microbes that live within the crust affect the carbon balance to the ocean?
- Beyond carbon, what other elements are likely to have a significant impact on ocean biogeochemistry? Recent estimates have suggested that 10-25% of all dissolved Fe in the deep ocean may be hydrothermally sourced, but how much impact do vents have on other trace metals that can also act as micronutrients – e.g. nickel, which is known to be important in enzymes?

Conversely, the link between hydrothermal biogeochemical systems and the photosynthetic world can also be addressed by asking questions that consider the reverse order. For example: how much of the life at vents depends on a well-oxygenated ocean to function?

The objective is to engage a broad community in this work and, concurrently, to help shape the future direction of submarine hydrothermal research. Key goals identified include:

- 1: To constrain the micronutrient hydrothermal fluxes and their influence on ocean productivity.
- 2: To assess the productivity of seafloor and subseafloor vent ecosystems and their dependence on oceanic processes.
- 3: To estimate the extent of methane export, and of new DOC and POC production and export from seafloor hydrothermal systems and how these fluxes may influence deep water ecosystems.

2. Future plans

We have extant data in hand, although they are patchy. Consensus was met that the first aim of the Working Group should be to draft several review papers, together with a shorter paper that will capture key concepts and present them in an accessible form for a broad ocean science community, in advance of – and to set the scene for - the international community workshop in 2012. The main goal of these papers will be to provide a basis from which to explain why we think these systems are important to study in a broader oceanographic context, and to help establish what new approaches are needed to progress in this field. Starting with the best-studied hydrothermal sites known, our framework will be to summarize existing knowledge on these three questions:

- What are the important processes active in the system?
- What missing information do we need to know about mechanisms and rates?
- Where are the gaps and what new measurements are needed?

3. Other relevant and related activities in 2010

- In June 2010, Goldschmidt conference (Theme 5: Evolution of Oceanic Crust and its Hydrothermal Systems led by WG members Bill Seyfried and Wolfgang Bach; session in Theme 15 Geomicrobiology of Mid-Ocean Ridge Systems led by Brandy Toner)
- IR Long-Range Exploration WG community workshop in June 2010.

4. Agenda for 2011-2012

The most important date for 2011 will be the second Working Group Meeting. Xiqiu Han has offered to host this meeting at the 2nd Institute for Oceanography, in Hangzhou, China. The meeting will set the frame for a community-wide workshop for this WG which will be held in Europe in May/June 2012.

To sustain momentum until 2012, we will also propose related special sessions at one or more major international conferences in the interim. A special session at the Goldschmidt Conference (Prague, June 2011) is planned.

Other relevant and related activities will be:

- InterRidge Mantle Imaging WG community workshop.
- Completion of hydrothermal GEOTRACES cruise to the Southern East Pacific Rise in 2012.

5.g Discussion of Working Groups – continuation and new WG

Discussion to be led by B. Murton.

New Working Group proposal

“Proposal for IR Working Group on Oceanic Detachment Faults”; see Appendix III, pg 41

DISCUSSION

Although this was seen as an interesting scientific question, the WG proposal was deemed to need better articulation of its aims. Some concern was expressed about its continuation from the Chapman 2010 conference.

ACTION

It was decided by IR StCOM in Sept 2010 not to recommend this as a new WG but to encourage resubmission of a suitably revised proposal. Invite for resubmission to be circulated to StComm members for comment.

Seafloor Mineralisation

CD proposed that Sven Petersen should become a member of this WG. JD (reported by CH) suggested that this WG should be linked to ISA.

ACTION

DM to liaise with M. Tivey re. Petersen membership of WG.

6 InterRidge liaisons with other programmes (IODP)

IODP – we welcome Hans Christian Larsen to this meeting. The article below has been sent to the InterRidge community and posted on the website:

The Integrated Ocean Drilling Program (IODP; www.iodp.org) is inviting you to submit comments on the draft of a new science plan that will guide scientific ocean drilling and related observatory science for a decade starting in late 2013. The input from you to this science plan is of utmost importance to ensure that this document has broad support of the wider scientific community. This public hearing period is running for four weeks from August 24 to September 21. We may not be able to consider comments received after the deadline.

Background and actions required:

IODP ends September, 2013. The existing program will be neither continued nor renewed. Rather, an international consortium of more than 24 nations, represented through an International Working Group, seeks to develop a plan for a new drilling program. The success of this effort is not a given and will, because of the high costs involved, undergo scientific and political scrutiny at the very highest national levels.

The current drilling program has resulted in profound advances in a number of new science fields: Arctic coring, high-resolution paleo-climate proxies, deep crustal drilling, sub-seafloor observatory science, and the study of an active biosphere to depths of 1.6 km below the seabed. As the spectrum of science supported by ocean drilling is expanding and becoming more cross-disciplinary (i.e., Earth, Ocean, Climate, Life Sciences, and in-Situ processes), we seek your help to make sure that a wide perspective on the most innovative and compelling science for a new drilling program post 2013 is presented.

We sincerely hope you will give this matter your attention. Specifically, we solicit your comments on:

- a) Identify critical topics or themes that are essential for securing broad support for the new program, but not sufficiently well covered in the existing draft. The goal here is to make the strongest possible case to a wide audience. However, please, understand that the topics listed can not possibly be inclusive of all possible kinds of science, and that the writing committee, based on prior community input, has chosen a number exciting examples to guide the future science, rather than create an all inclusive, exhaustive list of topics. FYI, the new drilling program will be responsive to proposals developed and submitted by the scientific community. Proposals will be evaluated by a scientific advisory structure.
- b) Scientific editorial comments on individual subsections by experts in those fields. Are there changes to the text and figures that will help to make them more accurate and/or compelling?
- c) Substantive comments on overall structure, overall message, and excitement of draft science plan. How does it present as a "whole"? The science plan needs to capture the imagination and excitement of ocean drilling science, and inspire readers to be supportive based on a big vision of innovation and discovery. Please point out where the current draft does this job well, and, most importantly, where it may need to be improved.
- d) Suggest places where the draft can be made shorter without losing essential information or impact. The goal is that the final science plan will be reduced rather than expanded in length. Please, bear in mind that a small team lead by a science writer eventually will reformat the science plan to provide a visually more attractive and navigable document with a single and, most likely, less specialized style of writing. Scientific edits and suggestions for shortening might therefore be more effective than complete rewrites.

The draft of the new science plan can be downloaded at: <http://campanian.iodp.org/NewSciencePlan/>

Comments should be sent to: NewSciencePlan@iodp.org (before September 21)

Further background information and guidelines for submissions of comments are located at the above URL.

DISCUSSION

- BM asked what IR can do to renew the IODP process. HCL – needed proposals, 1-2p, 1-2 figs by 21 Sept 2010. There will be both science and political audiences. Material to include: advances in data quality, new observations addressed by drilling, overall value to society, mapping and sampling very important. TH – is there high resolution swath imagery available?
- Many members advised encouragement of others to respond to IODP New Science Plan. TH – needs a broad but targeted email. WG Chairs to be contacted - HCL to be included in email lists. IR to serve as a conduit – HCL asked for support letters from IR later in the process.

ACTION

HCL to contact Pablo Canales and Suzanne Carbotte at WHOI for EPR images, Doug Toomey for Endeavour images and Graham Kent, Univ. of Nevada, Reno.

BM – IR to contact WG chairs – include HCL.

7 Discussion – MPAs, Chinese application for exploration licence and ISA presentation

7.a Workshop on Design of Marine Protected Areas for Hydrothermal-Vent and Cold Seep Ecosystems Potentially Threatened by Human Activities in the Deep Sea

CRESCO (Centre de recherche, d'enseignement et de culture scientifique sur les systèmes côtiers), Dinard, France hosted this workshop during 31st May-4th June 2010. The workshop brought together 31 people representing 14 countries and a very broad range of disciplines (marine science, social science, ocean governance, industry) to develop design principles for seep and vent protected areas. The meeting was co-chaired by Cindy Van Dover (Duke University, USA) and Craig Smith (Univ. of Hawaii). This meeting received \$3000 USD from IR, approved by IR StCOM in Nov 2009. The bulk of the funding for this workshop was from ISA, COML and ChEss. A website is currently being constructed.

A list of five design principles for seep and vent protected areas were developed, with much discussion, especially on Point 4:

1. Account for uncertainty through adaptive management.
2. Define management units at the level of biogeographic provinces.
3. Define bioregions to support ecosystem-based management and marine spatial planning.
4. Define protected areas within bioregions.
5. Define human uses and levels of protection.

A paper is currently in progress.

7.b InterRidge involvement in listing and justifying protected sites

DISCUSSION led by B. Murton and J. Copley

- JCo - 2 initiatives –
 1. Advise ISA – April 2011 deadline. Document to ISA will contain:
 - What sites and where
 - Sites needing immediate protection
 - Underlying criteria to guide future decisions about new discoveries
 2. GOBI (facilitated by IUCN and BfN) – objective is to help signatories to the Convention on Biodiversity meet targets – advises and assists, but no authority. 7 criteria in identifying EBSAs. Deadline – Autumn 2010.
- Aim is to poll IR community to make submissions as to which vents they want protected against mining. Issue – what about sites not yet known? StComm gave strong support for a list of criteria for protected sites across the board. CH – biological and geological criteria should be set for protected sites. CD – list must go out to the IR community. JCo said this was in draft form.
- DF – important to distinguish between territorial and international waters. What standing does IR have and how is it best to situate IR? Issue is of scientific responsibility and important not to get crosswired with other international policies.
- Debate followed on the impact of mining on biological populations and how levels of sustainability are determined. CD - what are the scientific criteria which allow mining? YB – 150 countries need to agree so language is compromised. AC – precautionary principle is too protective and does not allow progress.
- DF – environmental impacts not understood and underestimated by mining companies. How will mining affect microbiology as this has societal relevance. BM – no consistency in environmental practices in drilling at a national level.
- Inactive sites have no biological uniqueness – difficult to find by mining companies.

- A database of current activities was discussed. AC – ISA already have a database and if given information, could make this available. DF – metadata on R2K and MGDS databases are available. Problems of updating, equivalent language and accessibility of national databases was discussed. Vicki Ferrini is the contact for data accessibility.
- TH – is a new WG required?

ACTION

AC to send IR Office a list of relevant websites.

JCo to start consultation with IR community and submit list to ISA Jan/Feb 2011

7c Discussion on China's application for an exploration licence for polymetallic sulphides

DISCUSSION led by B. Murton

- JCh – should IR persuade ISA to make a mandate requiring countries to contact the scientific community about their exploration? AC – ISA could recommend this, but cannot enforce because not in the exploration Regulations adopted May 2009. COMRA submitted application on the same day. If there is no information on any potential impact on SWIR, there is no reason not to approve. Data needed early 2011 – protected areas must be in place before any application is received, in order to be considered in the process.
- Exploitation regulations not yet considered – 15 years from now.

7d ISA presentation

See Appendix IV, pg 43

DISCUSSION

- AC – outlined how mining licences are granted. ISA cannot say that mining cannot occur, but by setting aside areas, it is possible to get members to abide. IR can feed into the wider community of people with data that supports/contradicts proposals. LTC can “not approve” an application if justified environmental reasons exist. Exploration licences allow the continuation of scientific research. Exploration licence allows identification of resources and feasibility.
- Contractors – have to do an environmental assessment prior to exploration; usually use own scientists or from within own country. A credible contractor has financial and technological capability.
- ISA has small research budget. Countries take ISA requirements to own funding agencies.
- ISA encourages members to join IR. In future, this may be a reason for countries submitting proposals to ISA to be IR paid members.

8 InterRidge liaisons with other programmes (UNEP/GRID-Arendal)

UNEP/GRID-Arendal: – we welcome Yannick Beaudoin to this meeting.

Presentation by Y. Beaudoin at 2010 St Comm meeting.

DISCUSSION

Possibility for future collaboration between IR and UNEP/GRID Arendal:

- Over next two years, develop strategy:
 - List of priorities
 - Type of specific outreach
 - One item per WG
 - Cost it and mandate
 - UGA will actively fundraise
- Strategy could be delivered centrally by IR (eg. WG) or by individual researchers.
- YB stressed the importance of small messages having a great impact over time.
- How can IR benefit? JCo – public can have a better understanding of the deep ocean. Conveyed message is the agenda of valuation
- USA contact – Sylvia Earls

ACTION

CD – make video of shrimps available

BM - Google Ocean bubbles – tangible start in next 6 months, using video clips

9 Workshops and meetings proposed for later this year and 2011

Meetings with some funding from InterRidge:

WG meeting(s):

- Mantle Imaging WG: IRTI expected in Japan, 2011 (IR funding for this WG meeting has not been officially requested).
- Hydrothermal Energy and Ocean Carbon Cycles: 2nd meeting proposed in Hangzhou, China, 2011 (IR may have to contribute funding as this is co-sponsored by SCOR).

Meetings listed as Upcoming Events on InterRidge website:

- International Ocean Stewardship Forum 2010, November 3-4, 2010, NOC Southampton, UK
- BBSRC/AHRC Workshop: Challenges of Visualising Biological Data; 16-17 November 2010, Bristol, UK
- AGU Fall Meeting, 13-17 Dec 2010, San Francisco, USA
- ASLO 2011, 12-17 Feb 2011, Puerto Rico
- EGU General Assembly 2011, 3-8 April 2011, Vienna, Austria
- 22nd Pacific Science Congress, 14-18 June 2011, Kuala Lumpur
- Asia Oceania Geosciences Society (AOGS) 2011, 8-12 August 2011, Taipei

A request for funding by J. Dymant was received for a conference, theme: “Ridge hotspot interaction” in Mauritius, Oct 17-21, 2011.

DISCUSSION

- There was debate about potential additional funding for the SCOR WG.
- Discussion about the Mauritius conference included:
 - Issues of capacity building – possible support from Japan, Korea, ISA
 - Linkages to existing WG and their potential level of support
 - Deliverables
 - Rationale for funding this conference

ACTION

DM to give feedback to SCOR WG.

BM – to write to JD; IR StComm welcomed the proposal but asked for more defined outcomes.

DM – ask WG Chairs to consult with their members as to who might support this conference.

10 Workshop and Meeting reports

10.a 12th Deep-sea Biology Symposium, Reykjavik, Iceland

Approximately 250 scientists attended the 12th Deep-Sea Biology Symposium held in Reykjavik, Iceland, 7-11 June 2010, which included talks and posters from MAR-ECO, ChESS, CenSEAM, CeDaMar, and COMARGE scientists.

In all, 154 lectures were given and 134 posters were presented on various aspects of the deep-sea. It is apparent that there is much going on in deep-sea biology and a lot of recruitment of good students. The next deep-sea symposium will be held in Wellington, New Zealand. Awaiting full report.

11 InterRidge Finances

11.a InterRidge Budget 2010

Please refer to Appendix II pg. 38 for the estimated budget for 2010.

DISCUSSION

- Student awards –
 - How proportional should they be to Student Fellowships?
 - Email conference conveners to publicise awards and to ensure good students attend.
- The positive recurrent balance was noted. IR should aim to keep this balance lower than IR's annual income. A 50% surplus is sufficient to allow for adjustment if there are changes to future income sources.
- BM proposed that the Coordinator post be increased to 0.8 fte.
- Actual expenditure requested, rather than estimates of 2008, 2009.
- TH – suggested a one-off innovative workshop

ACTION

- Student awards - \$500 each (10% of Fellowships)
- **StComm** supportive of increase in Coordinator's hours to 0.8fte.
- **DM** to liaise with Jian Lin on past budget statements.

11.b. Status of payment of billed nations

Contrary to what was reported in 2009, Portugal has been unable to pay the IR Associate Membership fees for 2007-09. China, France and USA have paid for Principal Membership through to the end of 2010. Outstanding payment for 2009 remains for Norway. Debbie has sent invoices to all Principal and Associate Members.

DISCUSSION

NERC made the decision not to invoice Portugal for 2010.

ACTION

BM to contact Portuguese Correspondent to clarify the situation.

12 Terms of Reference

Separate document distributed previously by email. This has been compiled to have all terms of reference in one place for more efficient referral. See Appendix V, pg. 48

13 Next StCOM meeting location and date; Action List 2010

Recent StCOM meetings: 2010 UK, 2009 France, 2008 USA, 2007 Brazil, 2006 Russia, 2005 Germany, 2004 Korea, 2003 Japan, 2002 Italy, 2001 Japan.

DISCUSSION

JCh offered to host the next StComm meeting in either Hangzhou, to coincide with the WG meeting, or Beijing. Peking University has a new curriculum for marine science which IR StComm members would be asked to support by participating in a one-day international workshop prior to our meeting.

ACTION

StComm agreed to hold its next meeting in China, date and venue tbd.

DM to circulate Action List 2010, derived from this meeting, via email.

List of Actions 2010

InterRidge 2010 Steering Committee Report

Item	Issue	Action	Who and when?
2	DF requested discussion of access to national databases and Ridge2000 data portal.	Place in Agenda after 5G Add links to website	Bram – at meeting Debbie – Dec 2010
3A	700 dead emails DF – does IR have distribution lists to Governments? CD – SCOR WG proposal for research cruise info. To integrate metadata on all cruises (Germany not supporting this) www.scor-int.org	Send list of each nation to Correspondents to check IR Office requires details from StComm members of national agencies to pass on IR adopted protocols CD can give feedback in 3 weeks	Debbie – March 2011 Debbie – Dec 2010 Colin Devey – Oct 2010
3B	DF – wants ning to be available to StComm for it to be able to make suggestions	Ning to be circulated to StComm	Jon Copley Oct 2010
3B	Cruise bursaries – overlap with University of the Sea	Meet with Elaine Baker in London 20 Sept; contact EB Develop on line, simple, multilingual proforma Organise subgroup of reviewers within StComm	Debbie and Bram Sept 2010 Debbie, Bram, Jon – Dec 2010 Debbie – as project develops
3C	USA 2 nd member of StComm	R2K Comm to nominate someone, pref. with biological background	Dan Fornari Oct 2010
3C	Wikipedia	DM to pursue. AC may have help at ISA	Debbie Feb 2011
4A	Germany update Air France data	Request BEA for seafloor data, to be made available to MGDS at Lamont JD and DF to be kept updated	Colin Devey Nov 2010
4A	Japan update Can benefits of IR be articulated against future severe funding cuts	HK to give IR list of outputs needed to help justify Japanese subscription (DM to prompt this)	Hide Kumagai; Bram - Dec 2010
4A	USA update Outreach Do other countries link to R2K? IR members need well-articulated statement of IR contribution to international science	IR to link to R2K site and FLEXE/GLOBE Debbie to ask National correspondents IR to consider a form of lecture series? IR to produce and circulate - also to policy makers	Debbie – Oct 2010 Debbie – Dec 2010 Office - ongoing Bram – Dec 2010

InterRidge 2010 Steering Committee Report

4C	Discussion on paid membership Potential member - Mexico NZ	IR Office to develop contacts – try to identify key people Contact Ireland, Canada France to identify and pursue? De Ronde and Wysoczanski – contact re. membership level	Bram – March 2011 Debbie to ask JD/CH – Dec 2010 Debbie/Bram – Dec 2010
5A	LRE WG	Needs to develop some proposals	Colin Devey - ongoing
5A	Mantle Imaging WG Possible IRTI	IR can offer letter of support	Bram (once Debbie has contacted Seama) – <i>completed (no mechanism for this)</i>
5C	DES WG Future of IODP Formal end of WG	Need to build linkages between major programmes. Can IR engage key scientists? IR Office to write	Bram+Dan Fornari to make urgent case Sept 2010 Bram - Oct 2010
5G	New WG proposal on Ocean Detachments by Escartin	Reply to Escartin to be sent round StComm before sending to Escartin	Debbie – Sept 2010
5G	Seafloor Mineralisation WG CD wants Sven Petersen to be a member.	Ask M Tivey his opinion.	Debbie – Oct 2010
6	IODP liaison New Science Plan	Contact WG Chairs for response Outline steps that could be taken Support letters from IR later in process (IR to serve as a conduit to HC Larsen) Cc HCL in all correspondence between IR members	Bram – same as 5C
7B	Vents list Is there a database of current activities? Where are instruments, for what purpose?	JC to send this round to meet GOBI deadline in October; urgent – to make spreadsheet available with criteria in a form which can be emailed to community. Submit list Jan/Feb 2011 Liaise with AC at ISA if they can do this AC to send IR website URLs	Jon – Sept 2010 Debbie/Adam Cook – March 2011
8	UNEP/GRID-Arendal Outreach	Develop 2 yr strategy of outreach with GRID-Arendal Make video available	Office – ongoing CD
9	Hydrothermal energy WG	Give WG feedback of discussion about supplementing SCOR budget	Debbie – Oct 2010
9	Mascarene proposed meeting	Ask WG chairs if they will support it through attendance by some of their groups Write to JD for more defined outcomes	Debbie Bram - <i>completed</i>

11	Budget	Make corrections Portugal becomes Corresp member by default Contact USA about actual expenditure 2008+9	Debbie – Sept 2010 Bram – Sept 2010 Debbie – Sept 2010
	Student awards	Advertise in advance to convenors; \$500	Debbie - ongoing
		Send HK Newsletters	Debbie – Sept 2010

14 Meeting Adjourns

**InterRidge Steering Committee Meeting 2010
Appendices**

APPENDIX I

InterRidge Chairs and Coordinators – Past and Present

InterRidge Chairs

Bramley Murton (UK)	2010 -
Jon Copley, co-chair (UK)	2010 -
Jian Lin, chair (USA)	2007 - 2009
Chris German, co-chair (USA)	2007 - 2009
Colin Devey (Germany)	2004 - 2006
Kensaku Tamaki (Japan)	2000 - 2003
Mathilde Cannat (France)	1997 - 1999
Roger Searle (UK)	1994 - 1996
John Delaney, co-chair (USA)	1991 - 1993
H. David Needham, co-chair (France)	1991 - 1993

InterRidge Coordinators

Debbie Milton	Jan 2010 -
Stace Beaulieu	Oct. 2007 – Dec 2009
Rhian Waller	Jan. - Oct. 2007
Sabine Lange	July -Dec. 2006
Valérie Epllé	May - July 2006
Kristen Kusek (Education & Outreach)	March 2004 - Dec. 2007
Katja Freitag	March 2004 - May 2006
Agnieszka M. Adamczewska	Nov. 1999 - March 2004
Cara Wilson	March 1997 - Nov. 1999
Ruth Williams (acting)	Oct. 1996 - March 1997
Heather Sloan	Oct. 1993 - Oct. 1996
Trileigh Stroh	1991 - Oct. 1993

InterRidge Steering Committee Members - Past and Present

Canada

Steve Scott	2004 - 2006
S. Kim Juniper	1998 - 2003

China

Jiabiao Li	2008 - present
John Chen	2004 - present

France

Nadine Le Bris	2009 - present
Jérôme Dymont	2001 - 2010
Françoise Gaill	2004 - 2008
<i>ad hoc</i>	1998 - 2003
Javier Escartin, <i>ad hoc</i>	2002 - 2003
Mathilde Cannat	1997 - 2000
Catherine Mével	1999 - 2003
<i>ad hoc</i>	1997 - 1998
Daniel Desbrières, <i>ad hoc</i>	1997
	1991 - 1996
Jean Francheteau	1991 - 1998
H. David Needham, <i>ad hoc</i>	1995 - 1996
	1991 - 1994

Germany

Nicole Dubilier	2005 - present
Colin Devey	1999 - present
Peter M. Herzig	1996 - 2000
Roland Rihm	1995 - 1998

India

K. A. Kamesh Raju	2005 - present
Abhay V Mudholkar	2002 - 2004
Ranadhir Mukhopadhyay	2000 - 2001

Italy

Enrico Bonatti	1998 - 2002
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Japan

Hidenori Kumagai	2009 - present
Jun-ichiro Ishibashi	2006 - 2010
Nobukazu Seama	2005 - 2008
Masataka Kinoshita	2002 - 2004
Toshitaka Gamo	2001 - 2004
Kantaro Fujioka	1999 - 2001
Hiromi Fujimoto	1997 - 2000
Tetsuro Urabe	1994 - 1998
Kensaku Tamaki	2000 - 2004
	1992 - 1997

Korea

Sung-Hyun Park	2007 - present
Sang-Mook Lee	2001 - 2006

Norway

Rolf Pedersen	2001 - present
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Eirik Sundvor 1996 - 2000

Portugal

Pedro Ferreira 2009 - present
Fernando Barriga 2001 - 2008
Ricardo Santos, *ad hoc* 2002 - 2003
Miguel Miranda 1996 - 2000

Spain

Rosario Lunar 2005 - 2008
Juan José Dañobeita 1995 - 1998
Miquel Canals 1995 - 1998

UK

Alex Rogers 2007 - present
Tim Henstock 2004 - present
Paul Dando 1999 - 2006
Damon Teagle 2002 - 2003
Christopher R. German, *ad hoc* 2002
1997 - 2001
Philippe Blondel, *ad hoc* 1997 - 2002
Lindsay Parson, *ad hoc* 1996 - 1998
Roger C. Searle 1994 - 1998
Martin Sinha 1991 - 1996

USA

Daniel Fornari 2009 - present
Jian Lin, chair 2007 - 2009
ad hoc 1999 - 2003
Chris German, co-chair 2007 - 2009
Donna Blackman 2005 - 2008
Charles Fisher 2002 - 2005
Deborah Smith 2003 - 2004
Spahr C. Webb, *ad hoc* 2002 - 2003
Christopher G. Fox, *ad hoc* 1998 - 2001
David Kadko 1999 - 2001
Alan Chave, *ad hoc* 1997 - 2001
Dave Christie 1997 - 2002
Karen Von Damm 1996 - 1998
Lauren Mullineaux, *ad hoc* 1996 - 2000
Robert S. Detrick 1992 - 1995
John Delaney 1991 - 1994
P. Jeff Fox 1991 - 1995
Charles H. Langmuir 1991 - 1996

InterRidge National Correspondents - current

Principal Members:

China – J. Chen (2004 - confirmed in 2008)
France – Jérôme Dymont (2004 - confirmed in 2008)
Germany - Colin Devey (1998 - confirmed in 2008)
Japan – Kyoko Okino (2005 - confirmed in 2008)
UK – Tim Henstock (2004 - confirmed in 2008)
USA – Dan Fornari (2009 -)

Associate Members:

India – K. A. Kamesh Raju (2002 - confirmed in 2008)
Korea – Sung-Hyun Park (2007 - confirmed in 2008)
Norway - Rolf Pedersen (2001 - confirmed in 2008)
Portugal - Pedro Ferreira (2009 -)

Corresponding Members:

Australia – Jo Whittaker (2010 -)
Austria - Monika Bright (2001 - replied to email 2009)
Brazil - Suzanna Sichel (1997 - confirmed in 2008)
Bulgaria – Vesselin Dekov (2009 -)
Canada – NO correspondent
Chile – Juan Diaz-Naveas and Luis Lara (2007 - confirmed in 2008)
Chinese Taipei – Saulwood Lin (2008 -)
Denmark – NO correspondent
Iceland - Karl Grönvold (1992 - NOT confirmed in 2008)
Italy – Paola Tartarotti (1997 - confirmed in 2006)
Mauritius - Daniel P. E. Marie (2002 - NOT confirmed in 2008)
Mexico - NO correspondent
Morocco - Jamal Auajjar (1998 - confirmed in 2006)
New Zealand – Richard Wysoczanski (2010 -)
Philippines - Graciano P. Yumul, Jr. (2000 - confirmed in 2008)
Russia - Sergei A. Silantyev (1998 - confirmed in 2008)
South Africa - Petrus Le Roux (2006 - NOT confirmed in 2008)
Spain – Rosario Lunar (2006 - replied to email 2007)
Sweden - Nils G. Holm (1993 - confirmed in 2006)
Switzerland - Gretchen Früh-Green (1995 - confirmed in 2006)
SOPAC - NO correspondent

APPENDIX II

InterRidge Estimated Budget for 2010

Funding (US \$)	Expenditure (US \$)
<ul style="list-style-type: none"> • 2010 IR Principal Membership <ul style="list-style-type: none"> China (paid end of 2009) 25 k France (paid end of 2009) 25 k USA (paid end of 2009) 25 k Japan (paid 50%) 25 k Germany (invoiced July 9 expected) 25 k UK (invoiced July 9 expected) 66.8k • 2010 IR Associate Membership <ul style="list-style-type: none"> Korea (invoiced July 9 expected) 5 k India (invoiced July 9 expected) 5 k Norway (invoiced July 9 expected) 5 k (Portugal not invoiced) • ISA Endowment Fund for two IR/ISA Student/Postdoc Fellowships/yr for 2010-2011 (plus one from 2009) \$25 k 	<ul style="list-style-type: none"> • IR Coordinator Salary with overhead (0.6 contract) -\$92 k (estimated) • 2010 Annual Newsletter (printing & mailing); mailing of additional copies of 2009 Annual Newsletter, and other IR documents -\$7 k • Web technical assistance, graphic support for design of annual newsletters, office supplies & communications -\$12 k • Two IR/ISA Student/Postdoc Fellowship for 2010 -\$10 k • One IR-funded Student/Post-doc Fellowship for 2010 -\$5 k • One IR/ISA Student/Postdoc Fellowship for 2009 -\$5 k • IR Best Student Paper Awards -\$1 k • Workshops/Meetings/Travel (Dinard Workshop; Mohole; Long-Range Exploration WG mtg; 2010 IR StCOM mtg; AGU) -\$17 k • Keep \$15 k of the ISA fund for IR/ISA Student/Post-doc Fellowships for 2011-2012 -\$15 k
<p>Total Expected Funding \$231.8 k</p>	<p>Total Expected Expenditure -\$164 k</p>

Balance \$67.8 k

Status of IR surplus funds

Transfer from WHOI to UK Office	\$84,583
Two Associate Memberships not paid (Portugal 2007-09; 3 years) (Norway 2009; 1 year)	\$20,000
Net IR surplus funds left as of 1 Jan 2010	\$64,583

APPENDIX II (Cont.)

InterRidge Estimated Budget for 2009

Funding (US \$)		Expenditure (US \$)	
<ul style="list-style-type: none"> • 2009 IR Principal Membership (China, France, Germany, Japan, UK, US, WHOI) \$175 k • 2009 IR Associate Membership (Korea, India, Norway, Portugal) \$20 k • ISA Endowment Fund for two IR/ISA Student/Postdoc Fellowships/yr for 2009-2011 \$30 k 		<ul style="list-style-type: none"> • IR Coordinator Salary with overhead (half time plus additional hours for IR Coordinator to work on IR Education & Outreach activities) -\$147 k • 2009 Annual Newsletter (printing & mailing); mailing of additional copies of 2008 Annual Newsletter, Oceanography magazines, and other IR documents -\$7 k • Web technical assistance, graphic support for design of annual newsletters, office supplies & communications -\$12 k • One IR/ISA Student/Postdoc Fellowship for 2009 -\$5 k • One IR-funded Student/Post-doc Fellowship for 2009 -\$5 k • IR Best Student Paper Awards at 2009 Vent/Seep Bio Symposium -\$1.4 k • Workshops/Meetings/Travel (2009 Vent/Seep Bio Symposium; 2009 Summer School on MOR Geodynamics; Seafloor Mineralization; Vent Biology, and Long-Range Exploration WG mtgs; Workshop for scientific ocean drilling; 2009 IR StCOM mtg; etc.) -\$22.6 k • Keep \$25 k of the ISA fund for IR/ISA Student/Post-doc Fellowships for 2010-2012 -\$25 k 	
Total Expected Funding	\$225 k	Total Expected Expenditure	-\$225 k

APPENDIX II (Cont.)

InterRidge Budget for 2008

2008 (estimated as of Sept. 29, 2008 by Jian Lin):

Funding (US \$)		Expenditure (US \$)	
<ul style="list-style-type: none"> • IR Principal Membership (China, France, Germany, Japan, UK, US, WHOI) Expected \$175 k • IR Associate Membership (Korea, India, Norway) Expected \$15 k 		<ul style="list-style-type: none"> • IR Coordinator Salary with overhead (half time plus additional hours for IR Coordinator to work on IR Education & Outreach activities) -\$146 k (Estimated) 	
<p>Total Expected Funding</p>	<p>\$190 k</p>	<ul style="list-style-type: none"> • 2008 Annual Newsletter (printing & mailing); mailing of additional copies of 2007 Annual Newsletter, Oceanography magazines, and other IR documents -\$10 k • Web technical assistance, graphic support for design of annual newsletters, office supplies & communications -\$14.5 k • IR Student Fellowships -\$6 k • InterRidge Awards at International MATE ROV competition) -\$0.5 k • Workshops/Meetings/Travel (Joint IR-ChEss group mtg on vent environmental protection; R2K-MAR Workshop; Magellan Workshop; Hosting 2008 IR StCOM mtg; Travel to present IR proposal at ISA Endowment Fund mtg, present IR code of conduct at AOGS mtg, and judge MATE ROV competition, etc.) -\$13 k 	
<p>In addition:</p> <ul style="list-style-type: none"> • A proposal was submitted and is pending at the International Seabed Authority Endowment Fund to support an IR/ISA student/post-doc fellowship program for 2009 and beyond. 			
		<p>Total Expected Expenditure</p>	<p>-\$190k</p>

APPENDIX III

(received after circulation of pre-meeting report)

Proposal for IR Working Group on Oceanic Detachment Faults

Proponents: J. P. Canales & J. Escartin

WG leaders: In addition to JPE and JE, the rest of the WG Members will likely overlap largely with the Scientific Committee of the Chapman Conference, and will require a consultation with the Community.

The scientific community held an AGU Chapman Conference on Oceanic Detachment Faults in Agros, Cyprus (8-15 May 2010), to advance understanding of the processes that control oceanic detachment faulting and associated geological, chemical, and biological phenomena. 86 scientists from fields in geosciences and biology attended the conference, which included overview talks on the topic, 3 days of field trips to the Troodos ophiolite, and poster sessions showcasing recent and on-going research and results. Documents, Conference presentations, and additional information from the conference are available at:

www.ipgp.fr/rech/lgm/je/Chapman2010

The conference deliverables include:

- A mandate to establish an InterRidge Working Group to coordinate the wider scientific community and their efforts. The study of detachment faults has seen an important surge in the last 10 years, mainly through individual projects and lacking overall community coordination. An iR WG could promote further advancement of research on the topic through integration of studies on specific topics and/or sites, the organization of Sessions at international meetings, establishing links to other programs and projects (i.e., drilling, Margins), or convening a Conference in following years.

- A dedicated 'Theme' in the electronic journal G-cubed. G-cubed has set-up a dedicated 'Theme on Oceanic Detachment faults'. We expect up to 20 contributions in the next 18 months, in addition to 8 articles published in 2007-2008, that have been included retroactively. The IRWG could also promote contributions to this Theme, that we expect will become a reference and key compilation of research results in the topic.

- A community statement on oceanic detachments, and a consensus on the definition of oceanic detachment fault and oceanic core complex:

“The scientific community present at the 2010 Chapman Conference on Detachments in Oceanic Lithosphere affirmed that extension accommodated by oceanic detachment faults should be recognized as a fundamentally distinct mode of seafloor spreading that does not result in a classical Penrose model of oceanic crustal structure. This type of spreading is characterized by: formation of oceanic core complexes; tectonized and heterogeneous lithosphere; extensive exposure of gabbro and serpentinitized mantle at the seafloor; some of the largest hydrogen-rich, deep-sea hydrothermal systems and mineral deposits; and large diversity in the deep-sea and subsurface biosphere. The recognition of this mode of spreading is one of the major advances in understanding plate tectonics in the last three decades.”

*An **oceanic detachment fault** is a large-offset normal fault formed at or in the vicinity of a mid-ocean ridge that accommodates a significant fraction of the plate separation. Offsets range from kilometers to tens of kilometers or more. Oceanic detachment faults may initiate as steep normal faults at depth, and shallow into low angle extensional faults through rotation of the footwall.*

*An **oceanic core complex** results from the activity of an oceanic detachment fault. The oceanic core complex may expose the footwall of the oceanic detachment fault, exhuming lower crustal and mantle rocks, and be capped by a detachment fault surface that is often marked by corrugations and striations parallel to the extension direction. Alternatively, the detachment fault plane may be buried below the seafloor by rotated blocks of the hanging wall.*

This proposed IR WG would link with prior and on-going IR efforts, indulging ocean drilling (Deep Earth Sampling WG), long-range exploration WG.

The specific aims of the proposed WG would include:

- Foster and strengthen links to other efforts and programs towards the study of oceanic detachment faults (e.g., Margins, IODP, other IR WGs, etc.)
- Advance the understanding of these structures through the planning of sessions at international meetings (EGU, AGU), and convening of a topic Workshop in the future (beyond 2012).
- Share information regarding on-going projects, planned cruises, and facilitate exchanges and cooperation among scientists.
- Playing a coordinating role for specific sites and projects if requested by the scientific community.

APPENDIX IV

(received after circulation of pre-meeting report)

BRIEFING FOR INTERRIDGE STEERING COMMITTEE ON CHINA'S APPLICATION FOR AN EXPLORATION LICENCE FOR POLYMETALLIC SULPHIDES

Michael W. Lodge, Legal Counsel, International Seabed Authority

[These notes are to accompany a PowerPoint presentation to be made to the Steering Committee at its meeting on 7 September 2010.]

INTRODUCTION

1. The presentation covers the following aspects:
 - The application
 - The procedure for consideration by the International Seabed Authority
 - Environmental considerations
 - Other issues that may be of interest to the scientific community

THE APPLICATION

2. The application is made by China Ocean Mineral Resources Research and Development Association (COMRA), a state enterprise under the Chinese Government. COMRA already holds a licence for polymetallic nodule exploration in the Clarion-Clipperton Zone of the Central Pacific. The application was filed on 7 May 2010 pursuant to the **Regulations on Prospecting and Exploration for Polymetallic Sulphides in the Area** (adopted by the ISA on the same day - ISBA/16/C/L.5). It covers an area of 100,000 km² in the vicinity of the South West Indian Ridge (SWIR). The precise coordinates must remain confidential until the application has been considered.

3. Under the regulations, 100,000 km² is the maximum area that may be claimed. The area must be divided into blocks, each block being a maximum size of 10 km x 10 km. To prevent 'cherry-picking', the blocks must be contained within an overall rectangular constraint area of 300,000 km², where the longest side does not exceed 1,000 km in length. Within that area, the blocks have to be configured in at least five clusters of contiguous blocks (contiguity is defined as touching at any point).

THE PROCEDURE FOR CONSIDERATION BY THE INTERNATIONAL SEABED AUTHORITY

4. Four steps are involved. They are all set out in detail in the Regulations:
 - Initial processing by the Secretary-General (Reg. 22)
 - Consideration by the Legal and Technical Commission (LTC) (Reg. 23)
 - Consideration by the Council (Reg. 24)
 - Procedure once application is approved (Regs. 25-44).
5. The first task of the Secretary-General is to acknowledge receipt, notify all members of the ISA

of the application by circulating 'information of a general nature', and keep the application in safe custody and **confidential** until it is considered by the LTC.

6. The application will be placed on the agenda of the LTC at its 2011 meeting. The LTC is required to make a number of systematic objective and subjective determinations which are specified in Regulation 23. The decision process is shown in the attached flowchart. Note that the powers and functions of the LTC are strictly limited by the Regulations. It cannot introduce new requirements, or seek to adjust or amend the application, but has to consider the application on the table before it strictly in line with the requirements of the Regulations. It can seek clarification from the applicant if necessary on any issues that may be unclear. The LTC does not approve the application, but can only **recommend approval** to the Council (which is the executive body of the ISA). It can only recommend disapproval if one of the specific grounds in the Regulations applies.

7. The report and recommendation of the LTC is passed to the Council. The Council consists of 36 States, elected into five chambers representing: (a) major importers of minerals (4 members), (b) major investors in seabed mining (4 members), (c) major producers (4 members), (d) special interests, e.g. landlocked States, small islands, large populations (6 members) and (e), geographic distribution (18 members). Under the terms of the 1994 Part XI Agreement, the power to reject applications is **extremely limited**.

8. Essentially, the Council **shall** approve **unless** it decides to disapprove by a majority of members present and voting, including a simple majority in each chamber (i.e. assuming all members present, would require 23 out of 36 votes to disapprove - do the maths, it's hard to imagine!). If no decision is made within a prescribed period (normally 60 days), the application is deemed to be approved. Furthermore, **even if** the LTC has recommended disapproval (e.g. because the application is not compliant with the Regulations), the Council **may still approve** by consensus or, failing consensus, by a two-thirds majority vote providing that is not opposed by a majority in any one chamber (this is more difficult to achieve; it would require 25 votes in favour, but can be blocked by only 3 votes in chambers (a), (b) or (c)).

9. Once the application is approved, it is issued in the form of a **CONTRACT FOR EXPLORATION**. This gives an exclusive licence for exploration for a period of 15 years. The standard terms of the contract are set out in Annex 4 to the Regulations and are the same for all contractors. There is no scope for negotiation of different terms or exceptions. Among the key terms are the following:

- Progressive relinquishment of blocks or sub-blocks over the first 10 years of the contract period down to a final area of 2,500 km²
- Training obligations for personnel of developing States
- Must retain State sponsorship throughout
- Annual reporting on implementation of plan of work and financial expenditures ('due diligence' in oil and gas language)
- Periodic review of the plan of work every 5 years
- Specific obligations to protect environment, establish environmental baselines and monitor environmental impacts
- Standard legal provisions relating to responsibility, liability, confidentiality, suspension and termination of contract, review, amendment and dispute settlement

ENVIRONMENTAL CONSIDERATIONS

10. This will be the area of most interest to the InterRidge Community. The environmental provisions of the LOS Convention, Part XI Agreement and the Regulations are complex and often expressed in the ambiguous terms of negotiated language. However, the various provisions do fit together into a coherent whole, illustrated in slides 12 through 16. Specific obligations and responsibilities are placed on each of the parties involved - contractors, the LTC and the ISA.

11. The duty of the ISA is to regulate in such a way as to protect and preserve the marine environment from the harmful effects of mining, applying a precautionary approach, and to continuously monitor and evaluate the impacts of mining. The contractor is **legally bound** to prevent, reduce and control pollution and to cooperate with the ISA in monitoring and evaluation of seabed mining impacts. In addition, contractors are required to gather environmental baseline data and establish environmental baselines during the exploration phase, against which to measure the later impact of actual mining.

12. The LTC has a central role in the implementation of these provisions (see flowchart on slides). It can issue 'Recommendations for Guidance' to tell contractors what environmental (and other) data to collect and how (collection protocols, data standards etc.). It is required to review and analyse the annual reports of contractors and make any recommendations for future work. The LTC also has a key **advisory function** within the ISA. It is required to make assessments of the marine environment of the Area and it can also advise the ISA on the establishment of monitoring and evaluation programmes.

13. One **new duty** of the LTC under the Regulations is designed to give effect to UN General Assembly 61/105 and 64/72 (the high seas bottom fishing resolutions). The provision reads as follows:

The Commission shall develop and implement procedures for determining, on the basis of the best available scientific and technical information, including information provided pursuant to regulation 20 [that is, contractor-provided data], whether proposed exploration activities in the Area would have serious harmful effects on vulnerable marine ecosystems, in particular hydrothermal vents, and ensure that, if it is determined that certain proposed exploration activities would have serious harmful effects on vulnerable marine ecosystems, those activities are managed to prevent such effects or not authorized to proceed.

14. This is a broad and far-reaching provision that could potentially be used to create protected areas around VMEs.

15. Note that there is also a role for general marine science. Both the LTC and contractors are required to act on the basis of the best available scientific and technical information, including best environmental practice (which includes technology). General and specific input from national and international MSR, as well as through workshops, seminars and scientific studies, are therefore essential parts of the overall process by which the LTC develops rules and procedures and evaluates the work of contractors.

OTHER ISSUES THAT MAY BE OF INTEREST TO THE SCIENTIFIC COMMUNITY

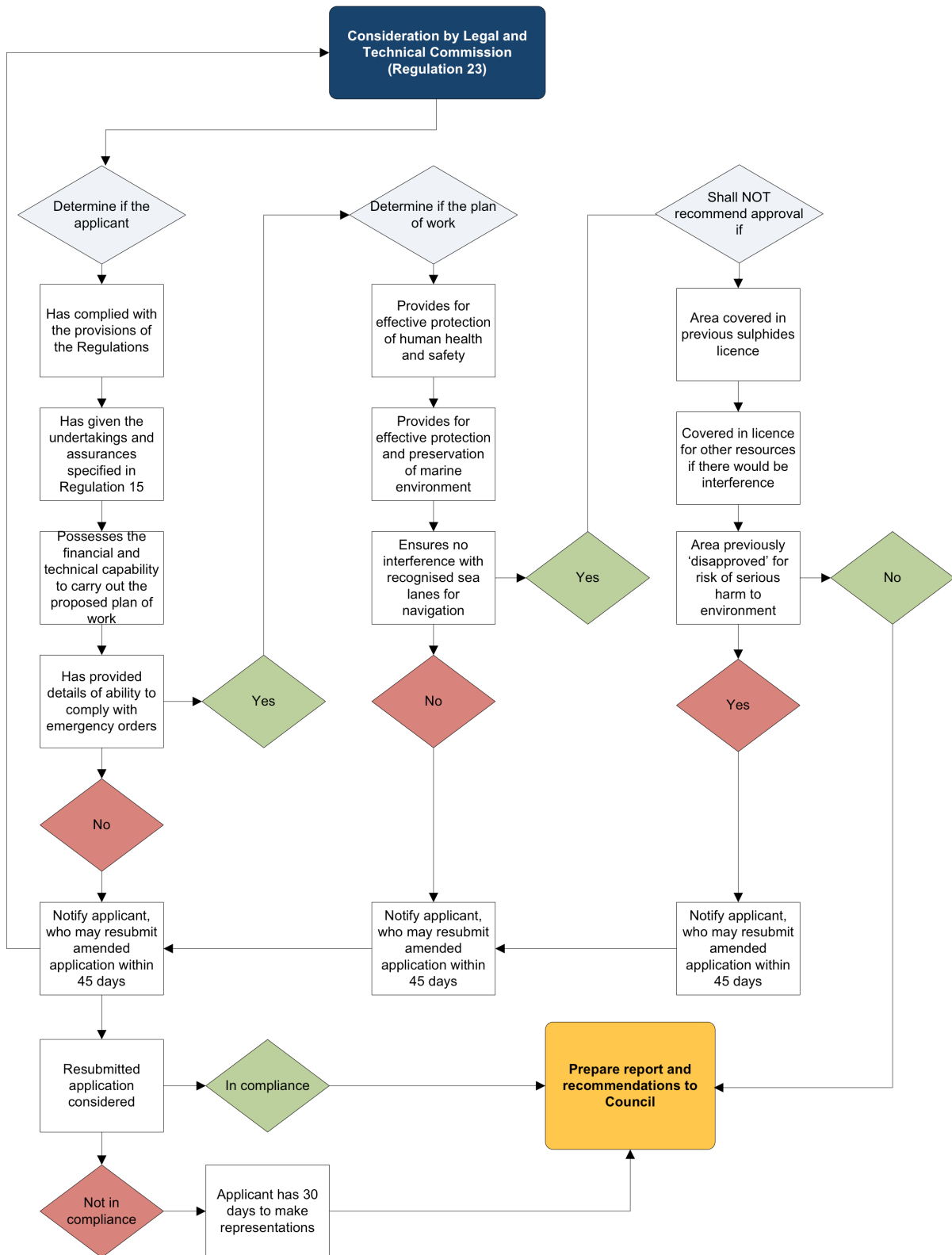
16. A key question for the InterRidge Community will be whether the issue of an exploration licence will impede MSR that is not directly related to mineral exploration. The answer in principle is **NO**, providing it is MSR carried out in good faith and with due regard to the rights, duties and interests of other States, including the contractor. The exclusive rights guaranteed by the contract are exclusive for sulphides exploration only. The Convention expressly preserves the operation of key provisions of the LOS Convention including:

- Article 87 - Freedom to conduct MSR on high seas
- Article 256 - Right of all States to conduct MSR in the Area

17. All States Parties to the LOS Convention are required to promote international cooperation in MSR in the Area (article 143(3)). In addition, ISA itself has a duty to promote and encourage MSR in the Area (article 143(1)) and a duty to promote research related to environmental impact of activities in the Area (Part XI Agreement, S.1, §5(h)).

18. The conclusion therefore is that the scientific community may continue to carry out MSR, even in areas covered by exploration licences, as long as it is general MSR rather than commercial exploration for sulphide deposits. Furthermore, the results of such research will contribute to the development of improved standards for the protection and preservation of marine environment through ISA and the LTC.

27 August 2010



APPENDIX V

InterRidge – Terms of Reference

IR Steering Committee membership

Host country’s representation on the steering committee: (2004)

The host country may have two steering committee members as well as the chair on the steering committee. The chair only votes when there is a tie.

Duration of office of steering committee members: (2004)

Different countries have different circumstances with regard to the national participation in ridge-related activities etc. For nations that do not have large ridge research groups, it can be difficult to have a 4-year rotation of steering committee members. IR therefore recommends that steering committee members are rotated regularly, the ideal would be every 4 years, but the nations themselves will decide on the timing of this.

IR previous chair: (2004)

The previous chair should stay on the steering committee for an additional year, as part of a handover phase so that there is continuity and a smooth transition between changing office locations. Past chairs should be encouraged to attend the first steering committee meeting after the new chair has taken over for this reason.

Status of working group chairs on the steering committee: (2004)

Working group chairs will be invited to steering committee meetings, however will not be able to vote. The steering committee decided to refrain from using the term “ad hoc”.

Added clarification, StComm meeting 2010

- Each country will make representations to the IR Office concerning new/replacement StComm members.
- 50% is the quorum for StComm decision-making.
- StComm meetings will be held in countries with paid-up members.
- Using a metric of reasonableness, one StComm member from principal member countries may carry two votes.

Funding issues

Membership dues: (2004)

The steering committee should reassess the dues approximately every 5 years to keep up with inflation. Currently the associate membership fee will remain at US\$5K, however in the future the committee may consider this as entrance level dues that increase to US\$10K after 3 years of associate member status.

Funding of IR workshops: (2004)

The IR office will support IR workshops with up to US\$3000, however the workshop convenors will be requested to only draw on this money if it is really necessary. This will allow more workshops to be funded in countries that do not have large budgets for this type of activity.

Working Groups

The terms of reference of the WG: (2006)

A general feeling was that a WG should organise an international workshop; if the product of this workshop is a clear program plan that needs further IR support then IR should offer it, but if the outcome is that national programs are dealing with the scientific problems on their own then the WG should be disbanded. After extensive discussion, the following generic plan for how a WG should operate was formulated:

1. A group of up to 10 international proponents submit a proposal to IR for the formation of a WG.
2. This proposal is considered by the StComm. If accepted, IR provides US\$2.000 "leverage money" to help these max. 10 people meet, possibly flanking another major congress. The aim of the meeting is for these proponents to finalise a plan for a workshop or cruise coordination.
3. The workshop/coordination plan is submitted to IR StComm. If accepted, US\$3.000 is given if necessary for workshop support/leverage or further cruise planning.

The workshop may have two end-member outcomes - either it produces a clear plan for how IR can help push forward science through a coordinated effort or it concludes that national programs are dealing with the burning issues at present and so IR involvement is not absolutely necessary at the time. The former outcome could lead to a proposal to IR to continue the WG, the latter outcome leads to the WG disbanding.

Added clarification, StComm meeting 2010

- A minimum 70% of the WG Organising Committee should be clearly identified in the proposal.
 - WG membership should cover a range of disciplines, countries and gender.
-

IR/ISA Fellowships

Workflow for review and announcement of awards: (2007)

Provide applications to topical reviewers:

Deadline to receive topical reviews:

Applications and topical reviews sent to StCOM for ranks:

Deadline to receive ranks from StCOM:

Compilation of ranks released to StCOM for further discussion if needed:

Final decision consensus:

Announcement to fellows:

Announcement to InterRidge biweekly e-news:

- Although all agreed that the grants could be used for fellows' travel and accommodation, there was no consensus on whether the grants could fund sample analyses. (2008)
- The proposals and reviews will be provided to the InterRidge Steering Committee to rank the proposals. The ranking will be based on several factors (outlined on web page). (2008)

- One reviewer suggested that we should also provide an abstract of the other proposals considered in that discipline, as a means to judge the relative significance and risk of the particular project. One reviewer suggested that the applicant should be required to state in the proposal the extent to which the fellowship funding will support the project, i.e., full or partial support. (2008)
- Obtain two reviews for each proposal (one from a native and the other non-native English speaker). (2009)

ISA Student Fellowship (2008 ISA doc)

- One possibility for this review process is that InterRidge would conduct the review internally and then provide a pool of up to 10 applications for which the Advisory Panel to the ISA Secretariat would approve a subset of 3 for funding by the ISA Endowment Fund; or
- Alternatively, one or several members of the Advisory Panel could participate in the initial review process so that the ISA is involved in evaluating all applicants' proposals. This (these) member(s) would then recommend 3 proposals for approval by the ISA Advisory Panel.
- A means of increasing the number of applications was suggested by increasing the number of IR-supported fellowships to 2. (2009)

Added clarification, StComm meeting 2010

- Funds can be used for sample analysis.
- All documents – proposal, CV, budget, advisor's letter, sponsor's letter will be sent to reviewers in one document.
- Abstracts of all proposals will NOT be sent to reviewers, due to mix of disciplines. Reviewers work to an absolute standard.
- Applicants state that \$5000 award will be sufficient to complete the project.
- StComm members WILL NOT receive reviewers' names.
- StComm members WILL receive all documentation.
- If the number of proposals increases in future, IR office will form a subgroup to identify the best proposals and only these will get sent to StComm for ranking.

Student awards: (2004)

IR will give a student award of up to US\$ 500 at each IR theoretical institute/workshop for the best student presentation/poster. Two awards a year will be made, and carried over if necessary. This is seen as a strong motivational action for young ridge researchers.

Translation (2010)

Payment of \$150 per 1000 words will be given for translation of website materials.
