

**12th Meeting of the
Science Steering and Evaluation Panel
May 25-28, 2009**

Grand Hotel Karel V Utrecht, Utrecht, The Netherlands

Draft Minutes (v1)

1. Joint Session, Introduction

1.1. Call to Order (SSEP co-chair Heiko Pälike)

SSEP co-chair Pälike briefly reviewed the meeting agenda and described how the meeting would be organized.

1.2. Self-introduction of panel members, liaisons, and guests

The following attendees briefly introduced themselves, and explained their function during the meeting: Schulte, Zierenberg, Jaeger, Elliott, Suzuki Nishi, Ikehara, Takazawa, Kubo, Marsaglia, Carlut, Ishiwatari, Torres, Pälike, Li, Berné, Brunelli, Wilson, Harris, Koppers, Vrolijk, Yamaguchi, Suzuki, Rosenthal, Inagaki, Aiello, Brinkhuis, Kuroda, Kopf, Pinheiro, Powell, Guerin, Ask, Zelt, Davies, Zarikian, Janecek, Kawamura, Geldmacher, Mori, Maclain, Toczko, Mitchell and the MSPHD students. Gurnis, Gallagher, and Kim could not attend.

1.3. Welcome and meeting logistics (hosts Brinkhuis and Mullen-Pouw)

The SSEP thanked SSEP member Brinkhuis and local host Mullen-Pouw as well staff from the Netherlands Geological Survey for guiding a much appreciated field trip “Historical Utrecht and Geological Highlights” prior to the SSEP meeting on May 24th, introducing participants to geological building materials throughout the historical city of Utrecht. Local SSEP co-chair Pälike announced that a busy meeting schedule could be expected, with required reviews for 23 drilling proposals (3 with external review). Pälike reminded participants to speak slowly & clearly, to be sensitive to cultural and style differences, and that only one person would speak at a time (through the co-chairs), and that cross talk should be avoided.

1.4. Approval of present 12th SSEP meeting agenda

SSEP Consensus 0905-1: The SSEP approves the revised agenda of their 12 th meeting in Utrecht, 25-28 May 2009 in Utrecht, The Netherlands.
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The agenda for the 12th meeting of SSEP is provided as **Attachment 1**.

1.5. Approval of last (11th) SSEP meeting minutes

Pälike asks for approval of the most recent 11th SSEP meeting in San Francisco (November 2008). Pälike asked for a consensus to approve the minutes ‘as is’, and all members agreed.

SSEP Consensus 0905-2: The SSEP approves the minutes of their 11 th SSEP meeting on November 10-13 th 2008, San Francisco, U.S.A.
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1.6. SAS Panel Reports

1.6.1. SPC and SASEC Report

SPC chair Jim Mori gave an update for the last SASEC meeting in Lisbon (January 2009), for which he provided a review for 1) 2009 Program Plan and 2) The recent Board of Governors Ad Hoc Report. He also provided an updated on the most recent March 2009 SPC meeting in Miami, Florida: 1) Proposal Ranking, including discussions of the Asian Monsoon and Hot Spot Detailed Planning Groups (DPG), 2) new policy from SPC regarding time allocations for each drilling Expedition for APL and engineering testing and development time, typically 3 days per two-month Expedition. If the OTF then determines that there is no appropriate engineering testing or approved APL for a given expedition, the time will transfer back to the scientific objectives of the given expedition. Mori also reported on 3) Riser Contingency Planning, 4) Multi-platform operations, and approval by SPC for Torres as incoming SSEP co-chair.

1.6.2. SSP Report (Site Survey Panel)

Neill Mitchell (SSP liaison) explained the role of the SSP, and reported on the outcomes of most recent February 2009 SSP Meeting in Busan, Korea. Mitchell listed three new SSP members, and provided updates on those proposals that the SSEP panel evaluated during the meeting. Mitchell announced that the next SSP meeting will be held in Austin, TX, in late July 2009.

1.6.3. EDP Report (Engineering Development Panel)

Maria Ask (EDP liaison) reviewed the role of EDP and updated the SSEP on EDP activities. She summarized current technological issues, including continuous core recovery high latitude coring activities. She then reviewed engineering and technical issues for upcoming proposals, which include SCIMPI and non-magnetic core barrels. Ask offered to report SSEP comments back to EDP regarding proposals currently under review. Ask then listed current activities from the EDP Meeting in Shanghai (January 2009): During that meeting, EDP endorsed IODP-MI engineering testing time policy on IODP platforms, responded to a request by the INVEST Steering Committee for an EDP White Paper on Technological needs of Scientific Ocean Drilling, endorsed IODP-MIs Engineering and Development plan for FY2010, and discussed motion decoupled hydraulic delivery systems (MDHDS), SCIMPI, and a new multi-sensor magnetometer logging tool. Ask reported that EDP postponed a technical review of Proposal 698-Full2. The next EDP meeting will be held in Lulea, July 2009.

1.6.4. ESO Report (European Implementing Organization)

Sarah Davies (Leicester) reported on current and future activities by the European Science Operator. She noted that the lift boat Kayd mobilized for Expedition 313 (New Jersey) at the end of April in Atlantic City. The drilling operations appear to be successful, and are scheduled to last through early July. Davies reported that Expedition 325 (Great Barrier Reef Environmental Changes) is scheduled for November-December 2009, with Jody Webster and Yusuke Yokoyama as co-chief scientists.

1.6.5. USIO Report (United States Implementing Organization)

Carlos Zarikian (TAMU) reported on the *JOIDES Resolution* Expedition Schedule following the first completed Pacific Equatorial Age Transect (PEAT) Expedition 320 after the ship's conversion. Following expeditions will comprise PEAT II and a Juan de Fuca CORK remedial cementing job, Bering Sea during July and September, followed by Shatsky Rise, Canterbury Basin, and Wilkes Land. Zarikian reviewed the work of the ship conversion Readiness Assessment Team prior to PEAT I, and showcased the new laboratory systems onboard the JR. Zarikian reported that Expedition 320 had turned out to be a real shakedown cruise, and that TAMU is currently working on a significant number of issues that were identified with software and other laboratory systems during Expedition 320 and the RAT cruise. Zarikian reported also that industry work in collaboration with KIGAM and the Korean National Oil Company will follow the Wilkes Land Expedition, with an additional scientific cruise now scheduled in FY2010 following the Korean Gas Hydrate work. Zarikian provided an update to planned engineering developments including the Deepstar Project, dual gradient drilling feasibility studies, and riserless mud return systems. Zarikian also reported on the IODP TAMU Director Search process, and the TAMU Publication Services status. Guerin (LDEO) then gave an update on wireline problems encountered during Expedition 320, and what remedial measures were taken to improve logging reliability.

1.6.6. CDEX Report (Japan Implementing Organization)

Sean Toczko (CDEX) provided an update on the current CDEX and *Chikyu* status. He reported that *Chikyu* azimuth thruster repairs have been completed, and that *Chikyu* is now at sea on Expedition 319. He also noted that the PR event during the portcall was very popular, with 9231 visitors during one day alone. Expedition 319 started on May 10th, and spudded in on May 19th. A film crew from the BBC will report from onboard the *Chikyu* on Friday 29th May.

1.7 IODP-MI Report

Barry Zelt (Science Support, IODP-MI, Sapporo Office) reported on activities at IODP-MI. He provided information about the IODP organizational structure to brief new and update existing SSEP members, and gave an overview of the current Science Advisory Structure (SAS) meeting schedule. He then provided proposal submission statistics: For this SSEP meeting, IODP-MI received 20 proposals (11 environment, 6 solid earth, 3 microbiology and sub-seafloor). As of 14 April 2009, 113 proposals were active in the system (42 solid earth, 47 environment, 24 deep biosphere). 995 unique proponents contributed to currently active proposals, with 427 ECORD, 328 US, 122 Japan, 29 ANZIC, 5 Korean, 23 Chinese, 2 Indian, and 59 other geographic proponents. Excluding three Complex Drilling Proposals (CDPs), 54 proposals are in the Pacific, 25 in the Atlantic Ocean, 13 in the Indian Ocean, 5 in the Mediterranean, 6 in the Arctic, and 7 in the Southern Ocean. Currently, 54 proposals reside with the SSEP, 21 are at SPC, 29 with OTF, and 6 in the Holding Bin, including 78 non-riser, 15 multiple, and 4 riser expeditions. For the current SSEP meeting there would be 6 full, 11 pre-proposals, 1 complex drilling proposal (CDP), 2 ancillary proposal letters

(APL), as well as 3 proposals with external reviews. Zelt explained the potential outcomes and recommendations for each proposal type. He then concluded with a reminder of the current SSEP member rotation schedule.

1.8 MSPHD program Emily Powell (Ocean leadership) introduced participants, who introduced themselves and detailed objectives and outcomes of the program, as well as expectations for the student participants in this meeting

2. Reviewing process

2.1 Introduction

The SSEP co-chair Heiko Pälike reviewed the SSEP terms of reference, and explained again the conflict of interest rules (COI) that had been circulated prior to the meeting. Pälike reviewed the star grouping system, and reminded the panel that if an EDP and/or STP review was requested, a detailed justification will be added in the review.

2.1 Breakout Sessions

A total of 23 proposals were reviewed during the meeting, including new external reviews available for 3 proposals. Panel members were divided into two breakout sessions for detailed discussions of the proposals: Breakout Session 1: *Solid Earth/Petrology* (chaired by M. Torres and A. Ishiwatari); Breakout Session 2: *Paleoclimate/oceanography, Faults/Fluids and Deep biosphere* (chaired by H. Pälike)

BREAKOUT Group 1 (Solid Earth, chairs M. Torres/A. Ishiwatari)							
Number	Short Title	Lead Proponent	WD #1	WD#2	WD#3	WD#4	WD#5
707A-Full2	Kanto Asperity Project: Tectonics & Paleoseismology	Yamamoto	Takazawa	Carlut	Zierenberg	Ikehara	Brunelli
707B-Full2	Kanto Asperity Project: Observatories	Kobayashi	Kimura	Kopf	Takazawa	Koppers	Zierenberg
707-CDP2	Kanto Asperity Project: Overview	Kobayashi	Zierenberg	Kimura	Brunelli	Elliott	Kopf
743-Pre	Gulf of Mexico Hydrate Dynamics	Knapp	Marsaglia	Harris	Suzuki, Y	Yamaguchi	Pinheiro
744-Pre	Indian Ocean HyperSLiME	Kumagai	Elliott	Yamaguchi	Rosenthal	Marsaglia	Pinheiro
745-Pre	Shimokita Coal Bed Biosphere	Inagaki	Suzuki, Y	Vrolijk	Yamaguchi	Elliott	Pinheiro
748-Full	Nice Airport Landslide	Stegmann	Li	Harris	Ikehara	Carlut	Koppers
749-Pre	Gulf of California Rifting & Microbiology	Teske	Inagaki	Ikehara	Aiello	Harris	Koppers
752-Pre	Kanto Asperity Project: Plate Boundary Deformation	Yamamoto	Kopf	Takazawa	Kimura	Zierenberg	Koppers
548-Full3	Chicxulub K-T Impact Crater	Morgan	Yamaguchi	Elliott	Marsaglia	Nishi	Brunelli
681-Full2	Lesser Antilles Volcanic Landslides	Le Friant	Brunelli	Li	Kimura	Carlut	Takazawa

BREAKOUT Group 2 (Env., Faults/Fluids, Deep biosphere , chair H.Pälike)

Number	Short Title	Lead Proponent	WD #1	WD#2	WD#3	WD#4	WD#5
645-Full3	North Atlantic Gateway	Jokat	Aiello	Brinkhuis	Li	Marsaglia	Wilson
672-Full3	Baltic Sea Basin Paleoenvironment	Andren	Suzuki, A	Berné	Kuroda	Schulte	Ikehara

730-Pre2	Sabine Bank Sea Level	Taylor	Rosenthal	Suzuki, Y	Kopf	Vrolijk	
736-APL2	Gulf of Mexico Paleoclimatology	Flower	Jaeger	Vrolijk	Wilson	Suzuki, Y	
737-Full	North Sea Cenozoic Climate Change	Donders	Berné	Rosenthal	Suzuki, A	Nishi	
742-APL	Shatsky Rise High-Resolution Climate	Channell	Harris	Aiello	Li	Kuroda	
746-Pre	Arctic Mesozoic Climate	Jokat	Schulte	Berné	Inagaki	Rosenthal	Brinkhuis
747-Pre	North Atlantic Paleogene Climate	Coxall	Nishi	Brinkhuis	Schulte	Wilson	
750-Pre	Beringia Sea Level History	Polyak	Vrolijk	Jaeger	Kuroda	Berné	
751-Pre	West Antarctic Ice Sheet Climate	Bart	Wilson	Jaeger	Inagaki	Carlut	
753-Pre	Beaufort Sea Paleooceanography	O'Regan	Kuroda	Nishi	Suzuki, A	Jaeger	Pinheiro
732-Full2	Antarctic Peninsula Sediment Drifts	Channell	Brinkhuis	Aiello	Schulte	Suzuki, A	Inagaki

The conflict of interest rules and confidentiality requirements were respected during the entire review procedure (breakout sessions, general sessions, and grouping). The table below lists the conflicted SSEP members, liaisons and guests who left the room during the review of the relevant proposals.

Number	Short Title	Conflict	Conflict
645-Full3	North Atlantic Gateway		
672-Full3	Baltic Sea Basin Paleoenvironment		
707A-Full2	Kanto Asperity Project: Tectonics & Paleoseismology		
707B-Full2	Kanto Asperity Project: Observatories		
707-CDP2	Kanto Asperity Project: Overview		
730-Pre2	Sabine Bank Sea Level		
736-APL2	Gulf of Mexico Paleoclimatology		
737-Full	North Sea Cenozoic Climate Change	Brinkhuis	
742-APL	Shatsky Rise High-Resolution Climate	Jaeger	Koppers
743-Pre	Gulf of Mexico Hydrate Dynamics		
744-Pre	Indian Ocean HyperSLiME		
745-Pre	Shimokita Coal Bed Biosphere	Hinrichs	Inagaki
746-Pre	Arctic Mesozoic Climate		
747-Pre	North Atlantic Paleogene Climate		
748-Full	Nice Airport Landslide	Kopf	
749-Pre	Gulf of California Rifting & Microbiology		
750-Pre	Beringia Sea Level History		
751-Pre	West Antarctic Ice Sheet Climate		
752-Pre	Kanto Asperity Project: Plate Boundary Deformation		
753-Pre	Beaufort Sea Paleooceanography		
548-Full3	Chicxulub K-T Impact Crater		
681-Full2	Lesser Antilles Volcanic Landslides		
732-Full2	Antarctic Peninsula Sediment Drifts	Jaeger	

The co-chairs ruled that a potential conflict of interest declared by Vrolijk (perceived industry and proposal title “Shimokita Coal Bed Biosphere” connection) for proposal 745-Pre was not a conflict of interest. Berné was also ruled as not conflicted for proposal 748-Full, but was only present for the discussion of this proposal in the Joint Session, not the breakout group.

3. Joint Session, Proposal Dispositions

The course of action regarding each of the 23 SSEP proposals reviewed during the Utrecht meeting was achieved by consensus of the full panel. The summary dispositions were as follows:

Pre-Proposal: request Pre2 Proposal	=	4
Pre-Proposal: request Full Proposal	=	5
Full Proposal: forward to SPC	=	3 (Groupings: 4*: 2, 5*: 1)
Full Proposal: send for External Review	=	2
APL: forward to SPC	=	1
CDP umbrella: revise	=	1
Full Proposal: request revision	=	2
Full Proposal: request new submission/deactivate	=	2
Pre Proposal: request new submission/deactivate	=	2
APL: request new submission/deactivate	=	1

The specific dispositions for each proposal were as follows:

Number	Short Title	Contact Proponent	SSEP disposition
645-Full3	North Atlantic Gateway	Jokat	revise F4
672-Full3	Baltic Sea Basin Paleoenvironment	Andren	external review
707A-Full2	Kanto Asperity Project: Tectonics & Paleoseismology	Yamamoto	deactivate
707B-Full2	Kanto Asperity Project: Observatories	Kobayashi	deactivate
707-CDP2	Kanto Asperity Project: Overview	Kobayashi	revise CDP3
730-Pre2	Sabine Bank Sea Level	Taylor	develop F
736-APL2	Gulf of Mexico Paleoclimatology	Flower	deactivate
737-Full	North Sea Cenozoic Climate Change	Donders	revise F2
742-APL	Shatsky Rise High-Resolution Climate	Channell	SPC
743-Pre	Gulf of Mexico Hydrate Dynamics	Knapp	revise Pre2
744-Pre	Indian Ocean HyperSLiME	Kumagai	deactivate
745-Pre	Shimokita Coal Bed Biosphere	Inagaki	develop F
746-Pre	Arctic Mesozoic Climate	Jokat	revise Pre2
747-Pre	North Atlantic Paleogene Climate	Coxall	develop F
748-Full	Nice Airport Landslide	Stegmann	external review
749-Pre	Gulf of California Rifting & Microbiology	Teske	develop F
750-Pre	Beringia Sea Level History	Polyak	revise Pre2
751-Pre	West Antarctic Ice Sheet Climate	Bart	develop F
752-Pre	Kanto Asperity Project: Plate Boundary Deformation	Yamamoto	deactivate
753-Pre	Beaufort Sea Paleooceanography	O'Regan	revise Pre2

	Proposals with external reviews:		
548-Full3	Chicxulub K-T Impact Crater	Morgan	SPC 4*
681-Full2	Lesser Antilles Volcanic Landslides	Le Friant	SPC 4*
732-Full2	Antarctic Peninsula Sediment Drifts	Channell	SPC 5*

A qualitative grouping was assigned to those proposals forwarded to the SPC using the 5-star scale grouping. Grouping was obtained by consensus of the full panel, after evaluation against the individual grouping criteria.

4. Discussion and Recommendations to SPC

Following the report from IODP-MI and SPC, which included an update on the impending consolidation and relocation of the IODP-MI offices, a lively discussion ensued with the SSEP on the relative merits and potential drawbacks of such a move. Zelt, Kawamura, Janecek left the room during these discussions due to a direct conflict of interest. The SSEP agreed by consensus on the following statement and requests SPC to voice these concerns to the Board of Governors and SASEC:

SSEP Consensus 0905-3: The SSEP has learned from the IODP Board of Governor meeting minutes and from IODP-MI that there is a plan to close the IODP-MI Washington D.C. office and to relocate a consolidated IODP-MI office from Sapporo to Tokyo between late 2009 and 2010, retaining all functions from the two current offices. The SSEP is extremely concerned about the timing of this decision at a time when all three platforms are finally operational, and just prior to IODP renewal efforts. Any reorganization of IODP-MI must not in any way interfere with the operation of IODP-MI, with respect to the science programs on all three platforms, the potential loss of experienced personnel and corporate memory, and the efficient running of the Engineering and Development Panel (EDP). We are concerned that a disruption of the drilling program at this critical time would undermine support from the scientific community that will be needed for a successful renewal of the program. We suggest that the renewal stage is the most appropriate time to discuss and implement any needed changes in the management structure. The SSEP request SPC to relay these grave concerns to SASEC and the Board of Governors.

5. SSEP recommendations for INVEST program renewal

The INVEST steering committee had requested input from the SSEP as to what exciting new directions can be identified from recent drilling proposals as well as SSEP member contributions. Due to time constraints of the meeting, this discussion took the form of a round-table discussion, where each SSEP member identified pressing needs from their own research field and experience, summarized in Appendix 2. Prior to discussions, Pälke and Inagaki, in their role as members of the INVEST Steering Committee, provided an update on the meeting format, and working group themes and sub-themes. Torres provided an update on the CHART online workshop in the US, Inagaki on the JDESC workshop in Japan, and Brinkhuis provided an update on the meeting that took place during EGU in Vienna during

April 2009. Zierenberg moved to formulate SSEP consensus that supports the current efforts and plans of the INVEST Steering Committee, Schulte seconds.

SSEP Consensus 0905-4: The SSEP supports the INVEST Steering Committee Program of scientific themes and breakout groups as presented at the meeting.

6. Next SSEP meetings

Gary Wilson on behalf of Stephen Gallagher presented the logistics and details for the next planned SSEP meeting in Melbourne, Australia, 16-19 November 2009. The May and November 2010 meeting locations have been proposed to be switched around in terms of locations in the Japan and US. It is proposed to hold the May 2010 meeting in Kochi, Japan, and the November 2010 meeting in the USA (possibly Portland).

6. Nominations for new SSEP co-chair, to replace Heiko Pälike

Berné nominates Henk Brinkhuis, Elliott seconds.
Brinkhuis was nominated unanimously by the SSEP.

7. Presentations by MSPHD students

The MSPHD students presented their impressions and learning outcomes gained during the meeting and thanked their respective mentors.

8. Resolutions for outgoing SSEP members

Resolutions were presented thanking outgoing SSEP members for their years of dedication: Elliott, Gurnis, Jaeger, Zierenberg, Aiello, Kim, Kimura, Suzuki, Nishi.

9. Conclusion

The co-chairs Akira Ishiwatari, Marta Torres and Heiko Pälike thanked all of the panel members for their dedication and hard work, and again thanked Henk Brinkhuis and Marjolein Mullen for hosting the meeting. Watchdogs submitted drafts of proposal reviews to the IODP-MI science coordinators (Hiroshi Kawamura and Barry Zelt) before the meeting ended.

APPENDIX 1:

Science Steering and Evaluation Panel

12th Meeting, May 25-28 2009

Grand Hotel V Utrecht, Utrecht, The Netherlands

Draft Meeting Agenda (Ver. 2d, May 11)

Sunday, May 24

Optional Field Excursion: *Historical Utrecht and Geological Highlights*

(Start at 14:30 from reception NH Hotel)

Optional Dinner at a restaurant in Utrecht center

Monday, May 25 (8:30-17:00)

Call to Order (Pälike)

Joint Session, Reports

- Opening Remarks by Host (Brinkhuis)
- Introduction of attendees to SSEP
- Approval of the agenda (Pälike)
- Approval of minutes from San Francisco Meeting, USA, Nov 2008 (Pälike)
- Introduction to meeting organization (Pälike)
- SAS Panel Reports
 - SPC report (Mori)
 - SSP report (Mitchell)
 - EDP report (Ask)

10:30 -----Coffee break -----

-IO Reports

- ESO report (Davis)
- USIO/LDEO report (Zarikian, Guerrin)
- CDEX report (Tocko)

- IODP-MI report (Zelt)

-MS PHD'S Program (Whitney et al.)

12:30 ----- Lunch break -----

Meeting overview

- Reviewing process and breakout sessions (Pälike)
- **Introduction to Whitepaper discussion& writing for INVEST**

15:00 -----Coffee Break-----

-Breakout sessions (Groups and Order of Proposal Review)

Breakout Group 1

Breakout Group 2

Solid Earth and

Paleoenvironment

Microbiology

Torres & Ishiwatari	Pälike
# Prop Watchdogs	Prop Watchdogs
1 743 Ma Ha SY Ya Pi	751 Wi Ja In Ca
2 744 El Ya Ro Ma Pi	732 Bh Ai Sc SA In
3 745 SY Vr Ya El Pi	645 Ai Bh Li Ma Wi
4 681 Br Li Ki Ca Ta	672 SA Be Ku Sc Ik
5 548 Ya El Ma Ni Bn	736 Ja Vr Wi SY
6 748 Li Ha Ik Ca Ks	730 Ro SY Kf Vr
7 749 In Ik Ai Ha Ks	737 Be Ro SA Ni
8 707C Zi Ki Br El Kf	742 Ha Ai Li Ku
9 707A Ta Ca Zi Ik Bn	746 Sc Be In Ro Bh
10 707B Ki Kf Ta Ks Zi	747 Ni Bh Sc Wi
11 752 Kf Ta Ki Zi Ks	750 Vr Ja In Ca
12	753 Ku Ni SA Ja Pi

In this schedule, the 548 Chicxulub proposal is included in the Solid Earth/Microbiology group, as in the case of San Francisco meeting.

-----Ice Breaker ?-----

Tuesday, May 26 2009 (8:30-17:00)

Breakout group proposal review (cont.)

10:30 ----- Coffee break -----

Breakout group proposal review (cont.)

12:30 ----- lunch -----

Breakout group proposal review (cont.)

15:00 ----- Coffee break -----

Breakout group proposal review (cont.)

Wednesday, May 27 2009 (8:30-17:00)

Joint session proposal review.

10:30 ----- Coffee break -----

Joint session proposal review (cont.)

12:30 ----- lunch -----

Joint session proposal review (cont.)

15:00 ----- Coffee break -----

Joint session proposal review (cont.)

-Discussion and Recommendations to SPC

Meeting Dinner (University Hall, Academiegebouw)

Thursday, May 28 2009 (8:30-17:00)

Joint SSEP session

-Whitepaper discussion & writing for INVEST

10:30 ----- Coffee break -----

-Whitepaper discussion & writing for INVEST

12:30 ----- lunch -----

-Whitepaper discussion & writing for INVEST

15:00 ----- Coffee break -----

Announcements and discussion on upcoming SSEP Meetings

Nov 2009 (Australia)

May 2010 (USA?)

Nomination of new SSEP Co-chair

Presentations by MS PHD'S students

Resolutions for outgoing SSEP members

Aiello, Elliott, Gurnis, Jaeger, Kim, Kimura, Nishi, Suzuki, Zierenberg

Conclusions

APPENDIX 2: Summary of SSEP scientific discussions for INVEST

The following points were raised during the SSEP INVEST discussion

- Technological development: IODP would benefit enormously from the ability to make holes in the ground faster and cheaper. What technological changes could really change the current state of affairs? The desire to drill deeply is really hindered by high cost, and a quick solution is not apparent.
- Microbiology: It is important to drill high quality zones without contamination. The borehole observatory design is important: CORK produces hydrogen which can contaminate in-situ microbiological studies.
- Climate change: Efforts are needed to determine tipping points and gradualism in Earth's history. Additional efforts include a better model-data comparison, wider diameter cores, and better high-resolution geochemical records. IODP should generate sub-centennial resolution climate records from past greenhouse events, reconstructing carbon dioxide levels on millennial timescales for the past 120 Ma. Efforts are needed to investigate "low carb vs. high carb" environments, oceanic overturning. Another important future field will be dynamics of polar regions and climate impacts: Bipolar linkages, arctic amplification and response to global climates, impact of ice sheet and seaice changes on ecosystems and climate feedbacks, and new approaches to underlying mechanisms of sea-level change.
- Recent proposals that were identified as high quality and "Beyond the ISP" include the Gulf of Aden proposal by deMenocal, with important societally relevant links to society and the origin of *H. sapiens*. Similarly, the K. Edwards proposal combines many of the high priority science that IODP should do: microbial rock, fluid flow properties combined.
- Important science in the past should be identified by asking when have actual cruises met expectations, failed expectations, and exceeded expectations. There is confidence that ODP produced a lot of cruises where they surpassed expectations.
- The nature of 5* grouped proposals is that they are one offs: Mantle dynamics/ Louisville: How plumes work. IBM1: onset of subduction in broades sense, interesting questions of mantle dynamics. Depth constraints from drilling implications for mantle dynamics.
- There is a need to more strongly tie proposals to modeling predictions. The interaction is still not strong enough.
- Much exciting science comes along opportunistically, and it is wrong to decide top down what the structure should be. If someone is out there with a good idea and drilling proposal, he/she should have chance to put something in, and one needs flexibility to have these people in the system.
- Dream cruises include:
 - drill Cape Verde islands: ocean island swell with no apparent plume heads, no obvious mechanisms. They remain stationary with respect to plates

- NantroSEIZE most interesting thing going on. Issue of faulting, plate convergence. How many times have we evaluated plate boundary faults
- deep biosphere: compile dataset for proto biomass and geochemical profiles. One needs a large number of routine records to see generic vs. site specific parts. It is the steady accumulation of data that is important
- Question of legacy samples, data curation and online databases. SSEP members note complete absence of routine legacy samples from IODP. The ISP ambition to make significant inroads into microbiology are still unfulfilled.
- Monterey Bay drilling: observatory cabling now working.
- Smooth Ridge: complete Pliocene section, which would make a great target for high resolution hothouse to icehouse studies during the Pliocene. How did a permanent El Nino change to El Nino/La Nina. How is the slope characterised by fluid flow, and how does it move through continental margins? This would be great opportunity to combine deep biosphere, tectonics, and link together seismic hazards
- need global coverage of Greenhouse events. PETM: where do we have records in tropics: only Walvis Ridge, Tanzania, Southern Ocean underexplored: offshore Argentina, Falkland Plateau.
- enormous progress in organic proxies: TEX86, BIT. Therefore siliciclastic regions becoming more important and into play only at the brink of proxies that we can dream of
- Need to drill as close as possible to an active hydrothermal system, and of course Santa Barbara Basin.
- Can learn more from Nankai trough, and Costa Rica: along strike variations on subduction zones. Heat and fluid flow are often cast in terms of age progression. This paradigm is probably not right, and need to better understand fluid flow. What are the environmental factors that affect fluid flow, permeability etc? Would argue for a transect along a crustal flowline.
- Important to drill into deep reaction zone that controls hydrothermal fluids: Would like to drill ICDP Reykjanes Ridges, staffing the JR as a floating laboratory. Additional drilling would be required at Atlantis Deep and the Red Sea to obtain a Piston core transect along layer brine interface. Microbial life can be studied in all of these habitats: upwelling zone in Atlantis deep zone is the only place where we have high salinity upwelling
- Need ICDP and IODP to work together along margins, e.g. Alaska. Good targets in the mid Pliocene to investigate the Arctic shelf response to climatic variations.
- Gulf of Aden evolution and Hawaiian Drowned Reefs are seen as high priority proposals. The latter would provide for the first time a recovery of coral reef sequence from previous glacial cycles.

- Cretaceous climatic variations: very few proposals currently target the KT transition with paleoceanographic targets.
- Geohazard issues are becoming very important, not only for science, but also for society. There is only limited knowledge on what controls landslides, and one needs geological and sedimentological evidence obtained by drilling. This could provide some insight into hazard mitigation. Active margin research is useful for human societies.
- Strong support for Izu-Bonin Margin drilling. Additional drilling at Petit hotspot, where one can obtain information about discontinuities in the lithosphere, and which is different from plume related volcanics. Can we drill hundreds of Petit type hotspots?
- Serpentinite: generally hated by petrologists, but exciting to study in terms of microbiology and hydrothermal systems. Recent seismological studies show that hydrated lithosphere important for seismics of the oceanic lithosphere --- slow spreading ridges. Interest to get more detailed knowledge about what these materials are.
- Exciting proposals: oceanic islands; Lesser Antilles, can look at others? Hawaii? Also submarine calderas, eruption & volume.
- More interest in the Cretaceous time period. During recent SSEP round no Cretaceous proposals.
- Need to develop better recovery and coring systems for chert and shale sequences in the Pacific.
- Evolution of life and the Environment during early Earth. Thus importance recognized of current KT Chicxulub proposal. This is the only current proposal with a link to Astrobiology: a window into the universe.
- Mission Mohole still of great interest: Petrologists are working on mantle peridotite. Oman ophiolite: can see contact between mantle and crustal section. Have not yet seen any in-situ Moho inside Earth. This is the oldest idea of ocean drilling. Most discussion so far on where the best place is to drill the Moho (slow vs fast spreading ridge), and nobody can reach agreement where is best place yet. It is, however, more interested to consider the process of how material is transferred from deeper part to shallower part. IODP should think about reaction processes happening in Moho, which could be continuously modified by melt passing through. Chikyu was built to eventually implement mission MoHole. IODP community should keep idea that drilling into MoHo in future.
- ANZIC as smallest member has the biggest shopping list: Interests in Antarctic: Greenhouse, Icehouse, Hothouse, with plenty of ideas to follow up. Plate boundaries interest funding agencies, particularly if research overlaps with human timescales and interests.
- Deep drilling in the western Mediterranean: 30 years after initial DSDP expedition still valid and livid debate about Messinian, Deep biosphere in the western Mediterranean. Can we use Chikyu along N margin of Med, where high subsidence rates and high sediment fluxes

are encountered (Alps, Rhone)? Can obtain very high resolution records there.

- More traditional science includes interpretation of tectonic events that caused different sedimentary basins. A question mark: continental margins and backarc basins. Need to get record of what process caused what type of record. Trying to interpret tectonic record difficult, thus need modern analogues.
- Still interested in midoceanic ridges: hydrogen release – serpentinization, fluid circulation.
- Interested in the subduction factory. So far subduction factory mostly studied from a magmatic aspect, but fluid circulation is arguably more important. Examples include dredged metamorphosed peridotites and blueschists and eclogites from Izu forearc. On the seamounts already drilled, also recovered high P metamorphic rocks. This proves very large scale solid material in mantle wedge. Metamorphic petrologists are not included in IODP scope so far, but should be.
- Gas hydrates in Arctic shelf: release of methane in the shallow Arctic shelves as bottom water temperature rises: Interaction with the biosphere, and requirement to monitor effects of climatic change on permafrost release into the atmosphere.
- A new IODP needs to focus on the evolution of the climate system throughout time. We have the first glimpse, but now need 3D and temporal mapping of, .e.g., the CCD, with important input into the IPCC process.
- High resolution records of more recent climate change: western Equatorial Pacific, Cariaco Basin, Chile margin, Santa Barbara basin. So far not of very high resolution. Rapid climate change originates in high latitudes. The western Pacific source of a lot of sediments, and we could recover high sedimentation rates there. These are linked to the Asian Monsoon and ENSO --- currently undersampled by IODP
- Active mud volcanoes: instrumentation for earthquake activity: don't have to go deep, and can be used for society for EQ prediction.
- More support for Cape Verde and Petit islands. More interest in LIPS drilling. Not represented at SSEP, but big workshop community of 80-100 people. Could drill Tanehiki Plateau, Manehiki: tectonised. Connection of LIPS with OAEs