

IODP Science Advisory Structure Executive Committee

7th Meeting, 20–21 January 2009

Solplay Apartment Hotel, Lisbon, Portugal

Science Advisory Structure Executive Committee (SASEC)

Richard Arculus* (observer)	Earth and Marine Sciences, The Australian National University, Australia
Nicholas Arndt	Laboratoire de Géodynamique des chaînes Alpines, France
Keir Becker	Rosenstiel School of Marine & Atmospheric Science, University of Miami, USA
Patrick De Deckker ¹	Earth and Marine Sciences Education Program, The Australian National University, Australia
John Hayes	Woods Hole Oceanographic Institution, USA
Kenji Kato	Department of Environment and Energy Systems, Shizuoka University, Japan
Hodaka Kawahata*	Ocean Research Institute, University of Tokyo, Japan
Masaru Kono (chair)	Global Edge Institute, Tokyo Institute of Technology, Japan
Young-Joo Lee (observer)	Korea Institute of Geoscience and Mineral Resources, Korea
Jim Mori (SPC; non-voting)	Disaster Prevention Research Institute, Kyoto University, Japan
Maureen Raymo (vice chair)	Department of Earth Sciences, Boston University, USA
Jianshong Shen* (observer)	Ministry of Science and Technology, China
Manik Talwani (non-voting)	IODP Management International, Inc., USA
Yoshiyuki Tatsumi	Institute for Research on Earth Evolution, JAMSTEC, Japan
Brian Taylor	School of Ocean and Earth Science and Technology, University of Hawaii, USA
Gerold Wefer	Center for Marine Environmental Studies, University of Bremen, Germany

¹Alternate for Richard Arculus

*Unable to attend.

Liaisons, observers, and guests

Fatima Abrantes (host)	National Institute of Engineering, Technology and Innovation, Portugal
Rodey Batiza	National Science Foundation, USA
Se Won Chang	Korea Institute of Geoscience and Mineral Resources, Korea
David Divins	Consortium for Ocean Leadership, USA
Dan Evans	ECORD Science Operator, British Geological Survey, UK
Jun Fukutomi	Center for Deep Earth Exploration, JAMSTEC, Japan
Shinji Hida	JAMSTEC, Japan
Masahiko Hori	Ministry of Education, Culture, Sports, Science, and Technology, Japan
Takao Kato	IODP Management International, Inc., USA
Shin'ichi Kuramoto	Center for Deep Earth Exploration, JAMSTEC, Japan
Hans Christian Larsen	IODP Management International, Inc., Japan
Lester Lembke-Jene	Alfred Wegener Institute for Polar and Marine Research, Germany
Catherine Mével	ECORD Managing Agency, France
Julie Morris	National Science Foundation, USA
Toshiyuki Oshima	Ministry of Education, Culture, Sports, Science, and Technology, Japan
Deborah Smith	National Science Foundation, USA
Kiyoshi Suyehiro	JAMSTEC, Japan
Barry Zelt	IODP Management International, Inc., Japan

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Executive Summary v.1.1

1.5. Approve SASEC meeting agenda

SASEC Motion 0901-01: SASEC approves the amended agenda for its seventh meeting on 20-21 January 2009 in Lisbon, Portugal.

Taylor moved, Wefer seconded, 9 in favor (Arndt, Becker, Hayes, Kato, Kono, Raymo, Tatsumi, Taylor, Wefer), 2 non-voting (Mori, Talwani).

1.6. Approve last SASEC meeting minutes

SASEC Consensus 0901-02: SASEC approves the minutes of its sixth meeting on 23-24 June 2008 in Beijing, China.

1.7. Items approved since last meeting

SASEC Motion 0810-01: SASEC recognizes that the current draft FY09 APP describes a USIO expedition schedule that will likely change significantly as announced in September. SASEC approves the overall budgeting levels in the draft FY09 APP, with the understanding that (1) consistent budgeting levels will be applied to the revised FY09 expedition schedule now being developed by OTF and SPC and (2) Data Reports and Synthesis Papers will remain an integrated part of the IODP Proceedings.

Becker moved, Taylor seconded, 10 in favor (Arndt, Becker, Hayes, Kawahata, Kimura, Kono, Raymo, Tatsumi, Taylor, Wefer), none opposed, 2 non-voting (Mori, Talwani).

SASEC Motion 0811-01: SASEC votes to approve the Annual Program Plan.

Arndt moved; Wefer seconded; 8 in favor (Arndt, Becker, Hayes, Kawahata, Kono, Raymo, Tatsumi, Taylor), none opposed, 2 did not vote (Kato, Wefer), 2 non-voting (Mori, Talwani).

3. Highlights of program management report by IODP-MI

SASEC Consensus 0901-03: Owing to the unexpected absence of SASEC member Hodaka Kawahata, Jim Mori is assigned voting rights for this meeting.

6. Annual program plan

6.1. SASEC budget subcommittee report

SASEC Consensus 0901-04: SASEC commends its Budget Subcommittee for shedding so much light on the IODP science operating cost (SOC) budgeting process, and welcomes the addition of two representatives of the IODP-MI Board of Governors to the Budget Subcommittee (initially Yoshiyuki Tatsumi and Chris Harrison).

6.2. Budget making process

SASEC Action Item 0901-05: As soon as possible, the SPC chair, SASEC vice-chair and IODP-MI VP Science Planning should provide the IODP funding agencies brief summaries suitable for non-specialists of scientific objectives, expected results, and societal relevance of the high priority riser and MSP proposals and Tier 1 *JOIDES Resolution* proposals that currently reside with the Operations Task Force (OTF).

SASEC Consensus 0901-06: For the post-renewal phase of IODP, SASEC requests that the IODP funding agencies consider funding schemes that allow more flexibility in platform use to maximize the scientific return of the program.

8. Science themes before renewal

SASEC Consensus 0901-07: SASEC notes ECORD Council Motion 08-02-6, expressing concern about “progress in the biosphere initiative.” Although progress has been limited by the slow refit of the *JOIDES Resolution*, there are currently eight biosphere-related proposals awaiting scheduling by the Operations Task Force (OTF). Additionally, at its most recent meeting (25-27 August 2008), the Science Planning Committee (SPC) accepted the recommendations of the Scientific Technology Panel (STP) calling for substantial enhancements of sampling procedures related to microbiology. Together, the facts that expeditions dedicated to microbiology have been ranked highly and will be scheduled as soon as possible and that numerous valuable samples will be archived from this point forward provide confidence that studies of the deep biosphere share equal priority with the other objectives specified in the Initial Science Plan (ISP). This priority derives not only from the intrinsic scientific interest and importance of these path-breaking studies but also from their capability to significantly broaden and enrich the IODP science community.

9. Program renewal

9.2. Summary of IODP New Ventures in Exploring Scientific Targets (INVEST) steering committee activities to date/future

SASEC Consensus 0901-08: SASEC asks that the INVEST steering committee provide brief descriptions (e.g., one paragraph each) of the tentative INVEST themes within a few weeks for possible comment by SASEC.

9.3. Update from the *ad hoc* committee on the framework for the future of scientific ocean drilling

SASEC Consensus 0901-09: SASEC receives the report of the Ad Hoc Committee as a useful starting point for discussion of the future structure of IODP. In principle, SASEC would favor a structure that would both minimize management costs and maximize scientific integration in the future IODP. Therefore, SASEC requests that the IWG+ expand on the implications of the management options defined in Ad Hoc Committee recommendation 4 (on the need to define the future management structure of IODP-MI).

SASEC Consensus 0901-10: Achieving the goals of the Initial Science Plan will require maximizing use of all IODP platforms for scientific drilling. Therefore, SASEC endorses recommendations 1 and 2 (requesting \$80M from NSF to ensure funding for twelve-month operation of the *JOIDES Resolution*, and seeking other sources of funding, respectively) of the Ad Hoc Committee report.

SASEC Consensus 0901-11: SASEC thanks the Ad Hoc Committee and especially its chair John Byrne for their outstanding efforts in producing their report.

9.4. Additional recommendations to the INVEST steering committee

SASEC Consensus 0901-12: SASEC emphasizes to the INVEST steering committee the importance of active participation at INVEST by representatives of fields with important links to IODP science, e.g., climate modeling, cryosphere communities, and reinsurance industry; microbiology and pharmaceutical industry; energy and geotechnical industry.

9.5. Planning the next science plan

SASEC Consensus 0901-13: From the members of the steering committee of INVEST, SASEC nominates Christina Ravelo, Wolfgang Bach and Fumio Inagaki as initial members of the committee to draft the next IODP science plan. These members are asked to provide a

recommendation for additional members of the committee to the next SASEC meeting (June 2009).

9.6. Other efforts (e.g., funding agencies, Board of Governors) and issues

SASEC Consensus 0901-14: SASEC appoints a subcommittee to evaluate models for the BoG/SASEC/SPC structure. Members: John Hayes, Hodaka Kawahata, Gerold Wefer.

SASEC Consensus 0901-15: In light of Ad Hoc Committee recommendation 5 on the need to revolutionize the proposal handling system for the next phase of scientific ocean drilling, SASEC re-emphasizes its related message to the SPC from last year (SASEC Consensus 0806-12 on recommending that the SPC (i) implement procedures to provide more specific feedback to proponents, and (ii) streamline the process of proposals forwarded to them from the SSEP) and looks forward to the results of the next (March 2009) SPC ranking meeting.

SASEC Consensus 0901-16: Following Ad Hoc Committee recommendation 5 on the need to revolutionize the proposal handling system for the next phase of scientific ocean drilling, SASEC appoints a subcommittee to assess models for the proposal evaluation process for the post-renewal phase of IODP. Members: Nick Arndt, Keir Becker, Yoshiyuki Tatsumi.

14. Review of action items, motions and consensus statements

SASEC Consensus 0901-17: SASEC thanks Fatima Abrantes and other Portuguese colleagues for hosting its seventh meeting in Lisbon, Portugal. The facilities were excellent, the weather was marginal, and the food was fantastic!

IODP Science Advisory Structure Executive Committee

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Solplay Apartment Hotel, Lisbon, Portugal

Final Minutes v.1.1

Tuesday	20 January 2009	09:00-17:00
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1. Introduction

1.1. Call to order and opening remarks

Masaru Kono called the meeting to order at 09:00.

1.2. Introduction of participants

All meeting participants introduced themselves.

1.3. Welcome and meeting logistics

Local host Fatima Abrantes welcomed the meeting participants to Lisbon.

1.4. Rules of engagement (Robert's rules, COI policy, etc.)

Masaru Kono presented some points for consideration, asking participants to speak slowly and clearly and to avoid excessive use of acronyms. He noted that conflicts of interest should be declared. He also explained that SASEC decisions were mostly made by consensus, otherwise a motion would be required followed by a vote of the voting committee members. Kono summarized the SASEC conflict-of-interest policy, and asked committee members and other meeting participants to declare any potential conflicts. There were no declarations. Kono noted that Becker would keep track of the motions and consensus statements. He also listed some of the salient points from Robert's Rules of Order.

1.5. Approve SASEC meeting agenda

Masaru Kono proposed two changes to the agenda: (1) changing the name of agenda item 6.2 to "Budget making process"; and (2) inserting a new agenda item 8 titled "Science themes before renewal." The latter would primarily address ECORD Council Motion 08-02-6, which registers concern over a lack of progress in the deep biosphere initiative of the IODP Initial Science Plan (ISP). Kono asked if there were any other suggestions for changes to the meeting agenda. The committee approved the modified agenda without further changes.

SASEC Motion 0901-01: SASEC approves the amended agenda for its seventh meeting on 20-21 January 2009 in Lisbon, Portugal.

Taylor moved, Wefer seconded, 9 in favor (Arndt, Becker, Hayes, Kato, Kono, Raymo, Tatsumi, Taylor, Wefer), 2 non-voting (Mori, Talwani).

1.6. Approve last SASEC meeting minutes

Masaru Kono asked if there were any suggested changes to the draft minutes of the June 2008 SASEC meeting. With no suggested changes, the previous meeting minutes were approved by consensus.

SASEC Consensus 0901-02: SASEC approves the minutes of its sixth meeting on 23-24 June 2008 in Beijing, China.

1.7. Items approved since last meeting

Masaru Kono reviewed two motions passed by the committee since the June 2008 meeting and asked for comments. There were no comments.

SASEC Motion 0810-01: SASEC recognizes that the current draft FY09 APP describes a USIO expedition schedule that will likely change significantly as announced in September. SASEC approves the overall budgeting levels in the draft FY09 APP, with the understanding that (1) consistent budgeting levels will be applied to the revised FY09 expedition schedule now being developed by OTF and SPC and (2) Data Reports and Synthesis Papers will remain an integrated part of the IODP Proceedings.

Becker moved, Taylor seconded, 10 in favor (Arndt, Becker, Hayes, Kawahata, Kimura, Kono, Raymo, Tatsumi, Taylor, Wefer), none opposed, 2 non-voting (Mori, Talwani).

SASEC Motion 0811-01: SASEC votes to approve the Annual Program Plan.

Arndt moved; Wefer seconded; 8 in favor (Arndt, Becker, Hayes, Kawahata, Kono, Raymo, Tatsumi, Taylor), none opposed, 2 did not vote (Kato, Wefer), 2 non-voting (Mori, Talwani).

2. Highlights of funding agency reports

2.1. U.S. National Science Foundation (NSF)

Rodey Batiza took the NSF report in the agenda book as read. He added that the *JOIDES Resolution* is on schedule, with a planned departure from Singapore on 25 January 2009. The ship will proceed to Guam where it will pick up scientists that will assess the onboard scientific equipment. Batiza summarized the expedition schedule, noting the first port call (5–9 March 2009) will be in Honolulu. IODP operations will begin with Equatorial Pacific, after which the ship returns to Honolulu, where on 6 May there will be a reception to celebrate the recommencement of *JOIDES Resolution* drilling. Batiza noted that most of the first year’s drilling (with the exception of Shatsky Rise) will address climate change issues. After the first expedition the ship will continue with part two of Equatorial Pacific, followed by Bering Sea, Shatsky Rise, Canterbury Basin, and Wilkes Land. What would follow this, he said, was “a big question.”

2.2. Japan Ministry of Education, Culture, Sports, Science, and Technology (MEXT)

Masahiko Hori took the MEXT report in the agenda book as read. He added that repair work on *Chikyu* was progressing on schedule, with work on the azimuthal thrusters and riser tensioners expected to be completed by late February or early March 2009. Hori said that the budget for JAMSTEC was decided at the end of December 2008, and will provide for five months of *Chikyu* operation in Japanese FY2009. CDEX/JAMSTEC is currently trying to arrange commercial contracts to cover the remainder of the year, but no details are available. Hori noted that he has succeeded Kazuya Shukuri as MEXT’s Director for Deep Sea Research (Ocean and Earth Division), and will be responsible for oversight of IODP activities. He added that Hiroshi Ikukawa has assumed the post of MEXT’s Director of Ocean and Earth Division (Research and Development Bureau), succeeding Hideki Kondo.

2.3. European Consortium for Ocean Research Drilling (ECORD) Managing Agency (EMA)

Catherine Mével reported on a number of ECORD activities, noting that the ECORD Science Support and Advisory Committee (ESSAC) has been very active in preparing for the future of scientific drilling beyond 2013. Three major upcoming activities are: (1) an EGU interdivision session (April 2009, Vienna); (2) a workshop titled “Beyond 2013” (April 2009, Vienna); and (3) a web forum featuring a questionnaire. All these activities are designed as preparation for the IODP New Ventures in Exploring Scientific Targets (INVEST) meeting. Mével also highlighted several ECORD/IODP outreach activities. ECORD has been lobbying the European Commission for funding, but to date has been unsuccessful. A proposal led by Achim Kopf and targeting the “Deep Sea Frontier” initiative was submitted in January 2009.

Mével reported that the ECORD Council is concerned about the renewal of IODP, post-2013,

saying it is absolutely essential that the IODP shows that new and exciting science has been accomplished. The Council felt that the achievements to date by the IODP are not successful enough to justify program renewal. There was particular concern about a lack of progress on the deep biosphere initiative of the ISP. This prompted ECORD Council Motion 08-02-6:

ECORD Council is concerned that IODP will not make significant progress in the biosphere initiative, which was one of the underpinning drivers of IODP. Therefore ECORD Council strongly encourages IODP to make a sustained approach to the study of the deep biosphere. We encourage IODP to link existing, highly-ranked proposals in dedicated biosphere observatory installation with a coupled programme of 4-6 months additional drilling that would be the subject of a specific call for proposals and creation of a 'biosphere mission group', if appropriate working in a regional context.

This motion is discussed in more detail under agendum 8.

Hayes asked for clarification on the request to “*to link existing, highly-ranked proposals in dedicated biosphere observatory installation...*” Mével could not clarify. Both Mével and Evans suggested that the committee should consider the spirit of the message, without too much concern over the exact wording.

2.4. China Ministry of Science and Technology (MOST)

The MOST representative (Jianshong Shen) was not present.

2.5. Korea Institute of Geoscience and Mineral Resources (KIGAM)

Young-Joo Lee gave a brief report of KIGAM activities. Korean IODP (K-IODP) is negotiating a new memorandum of understanding (MOU) with NSF and MEXT; K-IODP will contribute \$1M per year for 2008-2013. K-IODP is also investigating the possibility of forming a consortium with other circum-Pacific countries (Australia, New Zealand, India, Taiwan, Canada and China) and will convene a workshop on this subject in April 2009. A Korean gas hydrate R&D organization is discussing use of the *JOIDES Resolution* for gas hydrate deep drilling in the Ulleung Basin, offshore Korea, in 2011.

Mével noted that losing Canada as a member to another consortium would really disrupt ECORD.

Taylor said that the NSF and MEXT should be strongly encouraged to complete MOUs that have been unsigned for more than a year. He added it was urgent to add new members to IODP, but the bureaucracy has made this difficult. Hori replied that the lead agencies are very aware of the issue of the MOUs, and had a discussion yesterday. Small issues still need to be resolved, but he hoped this would happen by next week, with final approval to follow shortly afterward.

2.6. Australian Research Council (ARC)

Patrick De Deckker summarized a written report of Australia-New Zealand Consortium (ANZIC) activities submitted by Neville Exon, but too late to be included in the agenda book. A MOU for Australian membership in IODP has been agreed upon and initialed, but not yet finally signed off. Australia is a 25% member of IODP for five years; New Zealand has joined as a 5% member for at least two years. De Deckker noted that devaluation of the Australian versus U.S. dollar may require renegotiation of the membership level of Australia. But, he said, ANZIC is excited and enthusiastic about its participation in the IODP.

3. Highlights of program management report by IODP-MI

Hans Christian Larsen reported on IODP-MI science planning and deliverables, highlighting several topics not addressed in the report in the agenda book. Larsen presented updated

proposal statistics, noting that nine brand new proposal submissions received at the most recent (1 October 2008) submission deadline suggests that interest in the community is picking up. He also noted strong ECORD representation in terms of both the number of proposals submitted and the number of active proponents. A breakdown of active proposals shows thirty-one proposals at the Operations Task Force (OTF) and twenty-nine with the Science Planning Committee (SPC); Larsen said the former shows the effect of the drilling hiatus, with proposals piling up at the OTF. He recommended that proposals that have no likelihood of being implemented should be deactivated, and suggested that a “weeding/sorting” process was needed.

Arndt asked if Larsen had any concrete ideas regarding a weeding/sorting process. Larsen explained that, currently, proposals residing with the Science Steering and Evaluation Panel (SSEP) and which show no activity for three years are deactivated. Mori noted that at the March 2009 SPC meeting, the SPC would seriously discuss deactivating some proposals. Larsen added that the reluctance of the SSEP to deactivate proposals is one reason for the large number of proposals residing with the SPC. He suggested that the SSEP may need to be a bit harsher when dealing with proposals that have little chance of implementation.

Talwani stated that for 2010-2013 there are sixteen expedition slots, with fourteen left to be filled, and thirty-one proposals residing with the OTF. He described this as a problem which the SPC should deal with. Taylor pointed out that the SASEC only brought the problem to the attention of the SPC at its last (June 2008) meeting, and since then the SPC has not had another review/ranking meeting. Mori said that a good reservoir of mature proposals was needed (for the program beyond 2013), and suggested it was necessary to think beyond the currently available fourteen slots. Larsen agreed, but said the current distribution of proposals residing with the OTF, SPC and SSEP was off-balance, and that a weeding/filtering mechanism was required to re-establish better balance, and at the same time not raise false hopes for proponents.

Kato asked if proponents can get information about the status of proposals. Larsen pointed out that proposal statistics are posted on the IODP website.

After summarizing the FY2009 platform schedules (as of June 2008), Larsen listed one recent and three new ancillary project letters (APLs) associated with four currently scheduled expeditions. He said these APLs raise a number of implementation issues, which has led to a general discussion of the usefulness of APLs.

Becker declared that he was a proponent of Proposal 734-APL (Cascadia Accretionary Prism CORK) and warned that he may be conflicted if discussions became specific. He was not asked to leave the room.

Kono said that the SASEC did encourage the submission of APLs at its previous meeting, but in hindsight perhaps this problem was not so simple as thought at the time because an APL takes away time from the main expedition. He added that APLs are usually submitted late, requiring a decision by email. He suggested that the committee may want to reconsider encouraging APLs.

Larsen listed four possible alternatives to the Nankai Trough Seismogenic Zone Experiment (NanTroSEIZE) as potential riser drilling projects: CRISP-B (Proposal 537B-Full4), Indus Fan (Proposal 595-Full3), East Asia Margin (Proposal 618-Full3), and IBM Middle Arc Crust (Proposal 698-Full2). Raymo and Tatsumi noted they were proponents of Proposals 595 and 698, respectfully. They were not asked to leave the room. Talwani stated that 3-D seismic data were very important for riser drilling, and asked about the site survey status of each proposal. Larsen explained that CRISP-B did not have a funded site survey. He was

unsure about Indus Fan, but said that political issues effectively made it impossible for *Chikyu* to operate in that area. East Asia Margin has a detailed 2-D survey; the chair of the Site Survey Panel (SSP) says 3-D data are not required. IBM Middle Arc Crust has dense 2-D data. Taylor stated that the objective of the latter is the middle crust (plutonic rock) with a target depth of 3 km, hence there is no need for 3-D data. Larsen summarized by saying that East Asia Margin and IBM Middle Crust were the most realistic possibilities. Talwani asked if these projects would proceed only if NanTroSEIZE cannot be drilled. Larsen replied that there are two issues: identifying (1) an alternate for NanTroSEIZE; and (2) the next riser project after NanTroSEIZE. He said the program must have an alternate to NanTroSEIZE. Mori commented that the SPC previously identified Indus Fan as the next riser project, but political issues have nullified that choice.

Larsen briefly addressed the IODP's record of achievements with respect to the initiatives outlined in the ISP. Most initiatives have been, or will shortly be, addressed by IODP expeditions: gas hydrates, extreme climates, rapid climate change, 21st century Mohole, seismogenic zone, and (in 2009) large igneous provinces. The deep biosphere initiative has not had a dedicated expedition, but elements of it have been addressed in piggyback studies. Larsen said that continental breakup and sedimentary basin formation may be the only initiative not addressed by the end of the current phase of the IODP in 2013. Mori added that this was due to a lack of highly ranked proposals at the SPC addressing this initiative.

Hayes commented that the minutes of the August 2008 SPC meeting mention an extensive report on how to deal with microbiology issues. He called this a significant and substantial step forward that will have an excellent impact in the future.

Larsen reported that the deep biosphere is the theme of the upcoming (September 2009) IODP thematic review. He mentioned a large third party donation towards Proposal 677-Full (Mid-Atlantic Ridge Microbiology), saying he expected this proposal to be implemented by 2013. He also mentioned that Proposal 601-Full3 (Okinawa Trough Deep Biosphere) has been highly ranked by the SPC (#2 of 26; Tier 1 in March 2008), and thought it likely that this project would make it onto a schedule at some point. Larsen said the program has been actively trying to do a lot to address the deep biosphere initiative, but that if more needs to be done, the SASEC should tell the IODP-MI. Mével, acknowledging these activities and potential achievements, stated that something has to happen now. Hayes agreed that it was important to schedule some highly ranked microbiology expeditions.

Larsen concluded by mentioning the importance of the core redistribution project, showing a picture of the final core redistributed to the Kochi Core Center (KCC). He was very impressed by the staff and research facilities at the KCC, and noted that the KCC was trying to invite scientists from around the world to use its facilities.

Morris mentioned that Larsen had given a presentation on IODP achievements to the NSF last summer. She said this was important for educating the new head of the NSF, who walked away very impressed, saying he saw three very profound things the program has accomplished. Morris suggested that this kind of presentation, updated as new results come in, and made to decision makers in all agencies, will be a very important part of the program renewal effort.

Manik Talwani gave a brief presentation of IODP outreach highlights for June-December 2008 prepared by IODP-MI's Directory of Communication, Nancy Light. Tatsumi commented that at the December 2008 AGU meeting he saw a very good video for introducing IODP. He asked if there were plans to translate it to other languages. Talwani replied that this in theory could be done, but suggested that the question be raised with Light.

Kono mentioned that SASEC member Hodaka Kawahata could not attend the meeting due to a last minute problem. He noted that Kawahata is a voting member from Japan, and suggested that his voting right be assigned to Mori for the remainder of the meeting. This suggestion was accepted by consensus.

SASEC Consensus 0901-03: Owing to the unexpected absence of SASEC member Hodaka Kawahata, Jim Mori is assigned voting rights for this meeting.

4. Highlights of implementing organization reports

4.1. United States Implementing Organization (USIO)

David Divins reported that the *JOIDES Resolution* underwent successful harbor trials on 9–11 January 2009. Vessel certification is now underway and the ship is no longer in the shipyard. Divins showed the expedition schedule for FY2009-2010:

5 March - 5 May 2009	Pacific Equatorial Age Transect (PEAT)
5 May - 5 July 2009	PEAT/Juan de Fuca
5 July - 4 September 2009	Bering Sea
4 September - 4 November 2009	Shatsky Rise
4 November 2009 - 4 January 2010	Canterbury Basin
4 January - 9 March 2010	Wilkes Land

Divins noted that the *JOIDES Resolution* will depart Singapore on 25 January, transit to Guam, arriving 5 February where it will pick up the readiness assessment team comprising eight independent (non-USIO) scientists. Eleven days of science sea trials will follow with testing (drilling, logging, etc.) at Site 807. The vessel will arrive in Honolulu on 5 March, with the port call for the PEAT expedition on 5–9 March. There will be a large media event at the 5–9 May port call in Honolulu. Divins also showed several photos of the interior of the refurbished *JOIDES Resolution*.

Taylor asked where the ship took on fuel, and how much it cost. Divins replied that this was yet to be done. He estimated fuel cost to be about \$600–700/metric ton. De Deckker asked who makes the decision on port call locations. Divins answered that it was a USIO decision. De Deckker said there were three port calls in New Zealand; it would be good to have one in Australia. Divins said that the final port call is in Australia.

4.2. Center for Deep Earth Exploration (CDEX)

Jun Fukutomi presented a brief update of CDEX activities. He reported that two of *Chikyu*'s six azimuthal thrusters have been repaired and are now working, two have been installed and are being rewired, and two will be reinstalled in a couple of days. All riser tensioners have been repaired and reinstalled, and are being checked for functionality. Fukutomi mentioned that *Chikyu* has a new operator: Mantle Quest Japan, a joint company of JDC (Japan Drilling Company) and NYK LINE (Nippon Yusen Kabushiki Kaisha). JDC has already hired seasoned, experienced drillers. Fukutomi also showed a FY2009 target schedule for *Chikyu*, including a planned start date for riser drilling at NanTroSEIZE site NT2-11 of 10 May. He added that, so far, CDEX has not been successful in getting industry contracts for *Chikyu*.

4.3. ECORD Science Operator (ESO)

Dan Evans gave an update on planning for mission specific platform operations. He noted that the delay in approval of the annual program plan causes contractual problems. He said that money was required up front to place contracts for logging; the British Geological Survey (BGS) and the Bremen group have no science operating cost (SOC) funds in place for FY2009.

Evans reported that ESO plans to implement New Jersey Shallow Shelf (Expedition 313) in

May–July 2009, and Great Barrier Reef Environmental Changes in September–December 2009 (FY2010). Evans noted the new name for the latter expedition. For the New Jersey expedition, Evans reported that ESO was very close to completing a contract for a platform. He noted, however, that the present contract does not allow for LWD, thus after the contract is signed, ESO will review the possibility of amending it to enable LWD. For Great Barrier Reef, Evans noted that ESO has a drilling permit from the Great Barrier Reef Marine Park Authority (GBRMPA), but that it is not entirely satisfactory; hence an application has been resubmitted and is anticipated to be accepted very soon. He also reported that positive negotiations with a platform vendor have been ongoing and a successful outcome is anticipated.

Referring to Proposal 728-APL2 (Gulf of Papua Coralgall Barrier Reef), Evans said the APL has been problematic: work in Papuan waters requires another permit; there has been no SSP or Environmental Protection and Safety Panel (EPSP) approval. He described the APL as being in limbo, yet ESO is expected to make potential plans to implement it, leading to permitting and contracting problems.

Taylor wondered how Proposal 728-APL2 could be with the OTF without SSP approval. Mori replied that the SPC sent the APL to the OTF contingent on it getting SSP and EPSP approval. Larsen noted that the proponents of the APL had not submitted any site survey data by the latest data submission deadline (15 December 2008) for review by the SSP in February 2009. He said that should be the “end of the story” for the APL. He wondered who was expecting ESO to scope the APL when it is effectively dead. Evans replied it was the SPC. Evans added that the proponents did have plans to collect data during the autumn. This did not happen and the proponents were planning on using existing data. But now he understands that no data were submitted. He mentioned that ESO does not support implementation of the APL, and he expects the chair of the OTF to reach the same conclusion. Mével noted that the APL was discussed by the ECORD Council, which recommended not implementing it.

Morris wondered if platform vendors are more interested in providing a platform to ESO now compared to one year ago. Evans replied that he did not know, because the tenders were put out in early summer 2008. He added that for New Jersey, he has no indication that a platform might not be available. The same was true for Great Barrier Reef; he had no impression there were a lot of people clamoring to use the vessel. Morris wondered if that implied reduced rates. Evans answered that ESO is stuck with what was tendered. De Deckker asked how many days the APL would use up. Evans replied that an APL should take no more than three days. The vessel would have to start and return to Port Moresby; he added this was unfeasible in three days.

5. Report on the August 2008 Science Planning Committee (SPC) meeting

Jim Mori reported on recent activities of the SPC. He reviewed the planned stages for NanTroSEIZE, and commented that the project management team (PMT) is doing a good job in dealing with scheduling difficulties. Mori noted that the SPC has developed mechanisms to handle complementary project proposals (CPPs). He pointed out that at its March 2009 meeting the SPC will rank about thirty proposals, comprising: (1) new proposals forwarded by the SSEP; (2) existing proposals residing with the SPC; and (3) the Tier 2 proposals that have been residing with the OTF but that do not appear on an approved schedule. Mori listed the current Tier 1 proposals residing with the OTF. Becker noted that three of them (505-Full5 - Mariana Convergent Margin, 601-Full3 - Okinawa Trough Deep Biosphere, and 677-Full - Mid-Atlantic Ridge Microbiology) were biosphere proposals. Larsen asked if Proposal 505-Full5 as forwarded to the OTF retained the CORK component. Mori replied it did not. Larsen said he was surprised. He also pointed out that another Tier 1 proposal (537B-Full4 –

CRISP-B) had no site survey data; he wondered how it could be Tier 1. Mori replied that the tier designations were not perfect, and the SPC was working on these issues. Mori also noted that at its August 2008 meeting, the SPC dealt with a number of microbiology issues, such as sample handling policies and procedures.

Arndt asked if the SPC discussed the evaluation criteria for CPPs. Mori explained that the criteria would be the same as for other proposals: quality of science and relevance to the ISP. Kato commented on the difficulty of handling microbiology samples. Mori replied that the program does not yet have a lot of experience in this area, hence the formation of a task force to develop routine procedures. Kono asked if it would help to acknowledge the good work done by the microbiology (Subsurface Life) task force. He suggested that the minutes should note that this group has done a good job.

6. Annual program plan

6.1. SASEC budget subcommittee report

Maureen Raymo presented a report on the IODP budget process. She reminded the committee that the budget subcommittee was formed because one of the SASEC's mandated tasks is to review and approve the annual IODP program plan and budget prior to submission to the Board of Governors (BoG) for corporate approval. Raymo reviewed the (ideal) budget process and timeline, noting that the process for FY2010 was already behind schedule. She also reviewed the timeline for development of the FY2009 annual program plan. Raymo listed some positive accomplishments: (1) the FY2009 engineering plan represents the first centrally coordinated, detailed engineering effort within the IODP; (2) data management integration, including the creation of metadata for the new data management scheme being adopted by the USIO, and the start of phase three of the Scientific Earth Drilling Information System (SEDIS); and (4) consolidation of the core repositories. She noted that there were large forces outside the program's control that probably hampered the FY2009 budget process, including currents (Kuroshio), regulations (fishing industry), platform availability (New Jersey margin), shipyard costs and schedules.

Hayes commented that Raymo's presentation was a nice summary of the difference between theory and practice. Taylor, as BoG liaison, announced that the BoG has decided to add two of its members (Yoshiyuki Tatsumi and Chris Harrison) to what will become a joint BoG/SASEC budget subcommittee. Mori commented that a lot of people will be happy to hear that publications were kept in the USIO's budget.

Raymo said that budget guidance from the lead agencies for FY2010 should be known now. Morris explained that the NSF was still waiting for budget information for FY2010. She said that for FY2009, the President's request to Congress will come out in April 2009. She hoped that in the FY2009-2010 budgets there would be growth to stabilize operations and allow 70% of full-year operation.

Taylor said that, in terms of transparency, some parts of the budget process are more transparent than others. He described the platform operating costs (POCs), which are the main part of the budget, as not transparent and off limits to inspection. He hoped that would change over time. Kono recommended that the SASEC thank the budget subcommittee.

SASEC Consensus 0901-04: SASEC commends its Budget Subcommittee for shedding so much light on the IODP science operating cost (SOC) budgeting process, and welcomes the addition of two representatives of the IODP-MI Board of Governors to the Budget Subcommittee (initially Yoshiyuki Tatsumi and Chris Harrison).

Manik Talwani gave a presentation on the ideal process for formulating the IODP program budget for each fiscal year:

Early summer: Lead agencies give estimate of how many expeditions they can fund in the year after the following year.

August: OTF and SPC make science plan for the year after the following year.

September: IODP-MI asks the IOs for preliminary budget estimates for the year after the following year. IODP-MI submits the summary of the preliminary cost estimates to the Lead Agencies.

February: IODP-MI receives budget guidance for next FY from lead agencies, which includes the target budget for total SOCs and other specific directions.

March-May: After necessary coordination including a meeting to be attended by the IOs and the BoG/SASEC budget committee representatives, IODP-MI makes an integrated draft plan, submits it to lead agencies for preliminary comments and makes modifications based on their comments if necessary.

June: IODP-MI submits the draft APP to SASEC and BoG for their discussion and approval in their June meetings.

July-September: IODP-MI submits the draft APP to the lead agencies for their approval.

Talwani described the process as long and involved, and noted that various delays cause deviations from the ideal timeline. Raymo commented that it appeared FY2010 would have the same problems, in terms of the timeline, as FY2009. Taylor called this an undesirable reality. Becker asked if the major problem for FY2009 was the re-adjustments to the *JOIDES Resolution* schedule. Talwani agreed, adding that CDEX and ESO also had problems. But, he said, it was no one's fault. Becker suggested the budget situation may be better in FY2010. Divins stated that, because there will not be budget guidance for FY2010, the situation may actually be worse.

6.2. Budget making process

Masaru Kono presented his thoughts on what the SASEC can and will consider and discuss about the budget problem. He said the primary problem facing the IODP is that, for a number of reasons, not many expeditions have been completed so far. He summarized two of the recommendations of the *ad hoc* committee charged with looking at the framework for the future of scientific ocean drilling: (1) request from the NSF a total of \$80M annually; and (2) seek other sources of funding (e.g., Ocean Drilling Consortium, industry, foreign governments, philanthropic organizations). Kono stated that fund-raising poses its own problem (e.g., it is not an easy task; will conflict with similar activities of oceanographic institutions; successful fund-raising may endanger getting governmental funds in future). He compared ODP and IODP budgets, noting that the IODP has been adversely effected by long delays in refurbishment of *JOIDES Resolution*, a sharp increase in oil price since 2005, the world economic crisis in 2008. Despite these difficulties, the IODP budget received very large increases in 2008 and 2009.

Analyzing the present status, Kono said that *Chikyu* and MSPs provide new possibilities (riser drilling, drilling in shallow seas and the Arctic, etc.); however, he said the *JOIDES Resolution* is the most versatile platform (in terms of science themes it can address). He stated that the budget problem is mainly due to the day rate of the *JOIDES Resolution*. He added that other sources of funds are extremely difficult to obtain, although the Ocean Drilling Consortium does provide some hope.

Kono presented a number of items for discussion. He argued that currently, the IODP is quite expensive (>\$200M per year), yet still suffers from a deficit in funding, especially for operation of the *JOIDES Resolution*. Kono suggested that the budget deficit is caused by the IODP structure, which seeks local optima separately for three platforms, and not the global optimum of the entire program. Further, the IODP may be reformulated as an optimization

problem seeking the global maximum, in which case, the solution would be to operate the *JOIDES Resolution* year-round by slightly reducing activities of *Chikyu* and MSPs. Kono noted that such a solution may not be possible under current MOUs and other restrictions; however, he stressed that the future of the IODP is not bright if significant scientific achievements cannot be obtained with the current more-than-\$200M yearly budget.

Taylor thanked Kono for “identifying the elephant in the room.” He said that the SASEC is mandated to look at the future of the program, both in terms of the remainder of the current phase, and program renewal. He suggested that someone from outside the program, looking at the budget and knowing nothing about the budget constraints, might conclude that the program is not effectively allocating its budget to identify the science drivers; however, this was due to constraints codified in the MOUs. Taylor agreed it was fair for the SASEC to point out the issue to the lead agencies, even as the lead agencies task the SASEC to achieve the best science for the program.

Raymo wondered if it was pointless to discuss the optimization problem as presented by Kono because of the constraints. Kono replied that nothing would result from discussing moving money from one platform to another for the FY2010 budget, because the system is built on MOUs that prevent that kind of maneuver. He suggested, however, there was still a need to discuss how to get the maximum scientific results with three platforms and a limited budget; if not leading to real action, perhaps it would be possible to advise the funding agencies on implementing some system that would allow the money to be used in a way that would optimize the science, starting in 2013. He did not think it practicable to talk about the current phase of the IODP. Kono noted that renewal efforts are underway, and suggested the community needs to send a message about what it would like to have.

Hayes asked if the *JOIDES Resolution* was capable of doing the non-riser drilling for NanTroSEIZE. Becker replied that originally the *JOIDES Resolution* was scheduled to do the non-riser drilling. Hayes suggested that if expenses within the NanTroSEIZE project were saved by using the *JOIDES Resolution*, some sort of cost sharing could be arranged in which the *JOIDES Resolution* operates twelve months per year, partly doing NanTroSEIZE. Money saved in that way could be used to keep the *JOIDES Resolution* operating, freeing up *Chikyu* to do commercial work. Suyehiro pointed out that releasing *Chikyu* from the IODP does not actually free up money for the program.

Talwani said that a total of about \$1B has been spent on building *Chikyu* and refurbishing the *JOIDES Resolution*; program costs are about \$200M/year. He stated that the NSF is trying to get more funding, but if that does not happen the program is in really bad shape. Talwani suggested that to keep the IODP going requires seeing what other scientific drilling programs can be attracted; China, Korea, India, and industry are willing to accept some of the conditions imposed by the IODP (but not all). He said the scientific community has to make the effort, noting that proponent Katrina Edwards got \$5M from the Moore Foundation, and proponent Andy Fisher is trying to raise money from the Keck Foundation. Talwani stated that to keep the IODP going, the SASEC needs to think up other possibilities. He said that after spending \$1B on the two drilling platforms, it is unthinkable to give up, but he said a different mindset was needed to think about other ways to get funding.

Raymo said that, in other words, IODP is faltering. She suggested that the program needs to give the funding agencies a full schedule for FY2010-2011, adding it was imperative to know what the program wants to accomplish. With this information, after the budgets are clarified, it would be possible to know what is lost. She suggested that this would not require a huge amount of work for the SPC and SASEC. Hayes agreed this was a good idea. Taylor suggested making a positive statement to other possible IODP members, stressing that there

is great science to be done; enough to use the full capabilities of all platforms. He added that the first recommendation of the *ad hoc* committee, to ask for funding to allow year-round use of *JOIDES Resolution*, would be another positive statement that could be made to the funding groups.

Morris stated that the funding agency representatives need help to sell the program to the people above that make budgetary decisions. She suggested that a one-paragraph summary of the science goals of each Tier 1 proposal, written in a way that non-specialists can understand, and tied with issues of societal concern (energy, climate change, bio-pharmaceuticals), would be very useful in this regard and would not take a lot of work.

Tatsumi suggested that to overcome the funding situation requires a “home run.” He cited the results of Stage 1 NanTroSEIZE, and the results of the Arctic Coring Expedition (ACEX) as the type of results that need to be promoted, and quickly. Tatsumi said that the SAS and scientists should be encouraged to show results as soon as possible.

Mével pointed out that the IODP was sold as a new, multi-platform program, with ECORD providing access to MSPs. She expressed concern that diverting SOC funding from ECORD would lead to a loss of MSPs.

Raymo asked if there was a Tier 1 MSP proposal at the OTF. Evans replied that MSP proposals are not allocated tiers. He added that currently Late Pleistocene Corallgal Banks (Proposal 581-Full2) is next on the horizon, along with New England Shelf Hydrogeology (Proposal 637-Full2). Taylor added that currently there is no MSP proposal at the OTF, but there are proposals that will come before the SPC in March 2009.

Suyehiro stated that the highest priority item was the need to justify the program’s \$200M budget. Morris agreed, saying her bosses have asked if scientists can afford to run a drilling program that competes with industry; they wonder if scientific drilling will be affordable in the future. Taylor said that, because of the way the day rate for the *JOIDES Resolution* works, there is a built-in level of affordability. Morris agreed, and said that is the argument currently being used. But she said it is a very big and very expensive program, and to head to full operation, which would cost \$300-400M, will be very difficult.

Mori said that the program needs to try harder to justify its \$200M budget. He suggested emphasizing the things that are unique about the program, in particular *Chikyu* and the MSPs. Talwani agreed that there should be more emphasis on what *Chikyu* can do, noting that half of the \$200M IODP budget goes for operation of *Chikyu*. He disagreed with Kono’s suggestion that *Chikyu* should do less, saying that this idea “does not compute.”

Hori mentioned that it is difficult for MEXT to secure the budget to operate *Chikyu*, adding there was a real danger that the budget could be lost. He said that this year *Chikyu* can operate for only five months, and this was unlikely to change in the future. Further, to secure even this amount of funding in the future will require some big scientific results, and good projects for *Chikyu* to drill. Hori added that the financial authority is asking MEXT to demonstrate to the public the importance of the scientific results; he called this a very difficult problem.

Mori said that viewing the problem as one requiring global minimization was not correct. The program is too complex, requiring looking at different parts and adjusting the goals and purposes accordingly to match differences in the different funding agency requirements. Mori agreed that the program needs to emphasize *Chikyu*’s accomplishments, and explain that it has the ability to do new things in the future. He added that the accomplishments and abilities of the *JOIDES Resolution* also need to be pushed for the NSF. Mori said an integrated approach is needed, but the problem will not be solved by global minimization.

Batiza suggested that the problem was one of global maximization of the science. Morris said that a corollary to this is that the SSEP and SPC must put together schedules of highly ranked proposals that will have high scientific impact.

Kono suggested that the SASEC make a statement about providing the description of Tier 1 proposals, as well as high priority riser and MSP proposals, to the funding agencies. A statement, drafted by Becker, was accepted by consensus of the committee.

SASEC Action Item 0901-05: As soon as possible, the SPC chair, SASEC vice-chair and IODP-MI VP Science Planning should provide the IODP funding agencies brief summaries suitable for non-specialists of scientific objectives, expected results, and societal relevance of the high priority riser and MSP proposals and Tier 1 *JOIDES Resolution* proposals that currently reside with the Operations Task Force (OTF).

Larsen wondered if there was a need for a mid-term evaluation of accomplishments with respect to the ISP, in order to provide guidance on what needs to be delivered to adequately address the themes and initiatives of the ISP by the end of 2013. He suggested estimating at a minimum how many months of drilling it would take to make good progress on the ISP. Taylor said there were two time frames to consider: immediate, which relates to the Tier 1 and high priority proposals; and long term, as mentioned by Larsen.

Arndt said he recognized that, while not ideal, the current funding structure cannot be changed because of the MOUs. He wondered what changes would be possible under a renewed program, and recommended that some thought be put into this as part of the renewal process. Kono replied that the SASEC has no power to decide the future funding structure, but as representatives of the scientific community, the SASEC could ask the funding agencies to structure the next program in a way the most effectively maximizes the science. This, he said, was the point of his earlier presentation. Kono suggested it was necessary to find a way to achieve the global optimum, rather than the current method, with money tied to each platform. He added that if such a message is not sent to the funding agencies, the structure of the renewed program will likely follow the current system. He also noted that defining what “global optimum” means may be difficult.

Mori agreed there is a need to look for the best overall use of resources throughout the program, but added this goes beyond money. As an example, he mentioned that if *Chikyu* were used only for riser drilling, it would not yet have been used at all, which would be a big mistake.

De Deckker said that the program has been suffering because the *JOIDES Resolution* has not been working for years, but now some exciting science needs to be done quickly. He disagreed with Morris’ comparison of the IODP with industry, saying the IODP does exciting fundamental science. He suggested the program needs to do a better job of selling itself.

Kono suggested sending a message to the funding agencies: for a renewed program after 2013, a system should be implemented which seeks the global optimum, i.e., uses the budget in a way that maximizes the scientific results. Kono asked the committee if a such a message was acceptable. Taylor endorsed it. Kono’s statement, rephrased by Becker, was accepted by consensus.

SASEC Consensus 0901-06: For the post-renewal phase of IODP, SASEC requests that the IODP agencies consider funding schemes that allow more flexibility in platform use to maximize the scientific return of the program.

The committee also discussed issuing a positive statement to the scientific community to the effect that, as suggested by Suyehiro and Wefer, this fiscal year all three platforms will be

operational, and in fact all three platforms are necessary to work on global problems and to fully address the ISP. However, Raymo suggested that it may be better to wait until the June 2009 meeting to issue such a statement, after the *JOIDES Resolution* and *Chikyu* have been drilling. Becker agreed that issuing such a message would be good just before the INVEST meeting. Taylor also agreed.

7. Workshops and thematic reviews

7.1. Report on workshop: *High to ultra-high resolution sedimentary records*

Hans Christian Larsen reported that the workshop on high to ultra-high resolution sedimentary records was sponsored by the IODP and the International Continental Scientific Drilling Program (ICDP), occurred on 29 September–1 October 2008 in Potsdam, and was attended by sixty-three participants. He noted that a workshop report from the steering committee is late.

7.2. Report on long-term thematic review: *Oceanic crustal formation and structure*

Hans Christian Larsen briefly reviewed the long-term thematic review meeting on oceanic crustal formation and structure, which took place 2–3 October 2008 in Zurich. IODP Expeditions 304, 305, 309 and 312, and ODP Legs 206 and 209 were included in the review, as were comparisons with ophiolites. Larsen summarized the outcomes of the review of both superfast and slow-spreading crust, noting that, for the latter, some of the discoveries may lead to a revision of textbooks regarding both the fundamentals and complexity of slow-spreading crust. He noted that a first draft of the report of the review committee was completed in December 2008, with a mature draft targeted by the time of the March 2009 SPC meeting.

Morris asked if different styles of hydrothermal alteration were seen. Larsen replied that this was the case for superfast crust, which shows a strong gradient.

7.3. Planning for long-term thematic review: *Deep biosphere and subseafloor ocean*

Hans Christian Larsen noted that the next long-term thematic review (on the deep biosphere and subseafloor ocean) was tentatively planned for September 2009 (just before the INVEST meeting), possibly in Bremen. He displayed a shortlist of committee member candidates, and said that if any areas of expertise were missing, perhaps one more member could be added to the committee. Hayes suggested adding Ken Takai.

Kono asked about the theme of the next review. Larsen replied that it is up to the SASEC to decide, but pointed out that after the deep biosphere and subseafloor ocean review, all the basic themes and expeditions will have been covered by a thematic review. He suggested a break of one year before considering another thematic review. Mori pointed out that the SPC recommended the deep biosphere and subseafloor theme instead of the seismogenic zone. Larsen replied that the seismogenic zone could be one possibility for the next review. Kono suggested deferring any decision until the June 2009 SASEC meeting.

8. Science themes before the renewal

Masaru Kono explained that this agenda item arose from ECORD Council Motion 08-02-6 (see agenda 2.3 for text of the motion), which expresses concern over a lack of progress on the deep biosphere initiative; he added that any other science themes that may need more emphasis can also be discussed.

Kono suggested acknowledging the ECORD Council motion. Becker suggested that the spirit of the motion should be acknowledged. He said the ISP defines a two pronged strategy: global inventory and focused expeditions, the latter of which may be addressed by the current three Tier 1 deep biosphere proposals residing with the OTF. Becker asked if the ECORD Council was particularly interested in seeing the global inventory aspect addressed? Mével

said her impression was that the Council felt the global approach is good, but wants to see dedicated expeditions completed. Hayes said he counts eight deep biosphere proposals residing with the SPC and OTF. He called this a good indication that this theme has not fallen through the cracks. Hayes expressed confusion over the final sentence of the ECORD Council motion (“*We encourage IODP to link existing, highly-ranked proposals in dedicated biosphere observatory installation with a coupled programme of 4-6 months additional drilling that would be the subject of a specific call for proposals and creation of a ‘biosphere mission group’, if appropriate working in a regional context.*”) Taylor read out the last part of the sentence referring to a biosphere mission, then said he rejected it outright.

Arndt reported that he was at the ECORD Council meeting, at which the Council talked about the need to do high impact science; the deep biosphere was identified as an area that could be promoted. Mével added that the deep biosphere is something new and visible, and can attract new communities, which is why it was picked by the Council. She said it is the responsibility of the SASEC to ensure that the SPC implements the science that is considered important. She also drew a parallel with the mission concept, saying it was a way to sell big ideas. Kono replied that the SASEC has decided it is not practical or productive to proceed with the mission concept in the current phase of the program. Becker suggested that a program planning group (PPG) could be an appropriate mechanism to achieve the goals of a mission.

Larsen suggested that the SASEC respond to the ECORD Council statement, with an explanation of the current situation. Kono agreed. Hayes drafted a statement which was accepted by consensus.

SASEC Consensus 0901-07: SASEC notes ECORD Council Motion 08-02-6, expressing concern about “progress in the biosphere initiative.” Although progress has been limited by the slow refit of the *JOIDES Resolution*, there are currently eight biosphere-related proposals awaiting scheduling by the Operations Task Force (OTF). Additionally, at its most recent meeting (25-27 August 2008), the Science Planning Committee (SPC) accepted the recommendations of the Scientific Technology Panel (STP) calling for substantial enhancements of sampling procedures related to microbiology. Together, the facts that expeditions dedicated to microbiology have been ranked highly and will be scheduled as soon as possible and that numerous valuable samples will be archived from this point forward provide confidence that studies of the deep biosphere share equal priority with the other objectives specified in the Initial Science Plan (ISP). This priority derives not only from the intrinsic scientific interest and importance of these path-breaking studies but also from their capability to significantly broaden and enrich the IODP science community.

Arndt suggested that the program should also be encouraged to make progress on the continental breakup and sedimentary basin formation initiative. Mével said she recognizes that there is less drilling time than had originally been expected, so understands that it is not possible to accomplish everything. She said that the ECORD Council likes the deep biosphere theme because it is exciting; however, she said that if you push for everything you will not accomplish much. Mori noted that there have been no highly ranked proposals addressing the continental breakup and sedimentary basin formation initiative. He was concerned that the SPC might be placed in a difficult position if it were to be pressured to highly rank a weak proposal from this field.

Becker asked if, with such limited available drilling time, it makes sense to try to “check off every box,” as opposed to doing one or two really well. Taylor noted that previously the SASEC did try to specify scientific focus areas, but the community disagreed strongly with this approach. Talwani said the SASEC needs to be careful not to promote any specific field.

Wednesday	21 January 2009	09:00-18:00
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9. Program renewal

9.1. Update on the renewal process, deliverables and timeline

Masaru Kono displayed the following timeline for (the science part of) steps towards program renewal:

INVEST Symposium	September 2009
Proceedings of INVEST	Early 2010
New Science Plan (draft)	Late 2010
Completion of Science Plan	2011
Review of IODP science	
Review of new science plan	Late 2011
Approval by National Science Board (U.S.)	Late 2011–2012
Approval by Council for Science and Technology Policy (Japan)	
Approval by ECORD countries	
Approval by Funding Agencies	2012

Kono noted that “Review of IODP science” means a review of phase one science. Tatsumi asked who would do the review. Kono replied that this has not been decided, though there was discussion suggesting it should be an external review. Larsen suggested replacing “Approval by ECORD countries” with “Approval by IODP members.”

Kato asked about the distinction between “Review of IODP science” and thematic reviews. Larsen explained that thematic reviews are done by the program itself, although external members are included, and focus on specific science themes which are represented by completed expeditions. He thought that the other review would be external, looking across the entire program from an outside perspective.

Batiza noted that there will also be an IODP second triennium review in late 2009. Larsen said that review would look at the performance of the current phase of the program, though it could influence renewal.

Kono asked for further comments on the timetable. Larsen noted that the timetable is focused on science; he suggested that at some point, program planning of the entire program structure needs to be considered. He asked if the National Science Board and the Council for Science and Technology Policy would look only at the science plan or the program plan. Taylor said he thought it would be both elements. He noted that details of the International Working Group “Plus” (IWG+) would be determined later this week and it would look at program structure.

Batiza confirmed that the National Science Board would look at everything. Becker wondered if everything (science and implementation) needed to be integrated in a single document. Batiza thought that this would be difficult, and would depend on timing. He said that if the IWG+ can come up with a plan early enough that could be incorporated into the science plan, that would be great, but there does not have to be (probably will not be) a single document. Batiza explained that the planning will culminate in a new set of principles and a new set of MOUs. This will include details about the architecture of central management.

Hayes inferred that any expedition that will significantly affect the new science plan will have to be completed no later than halfway through 2011 at the very latest. He said this was significantly sooner than he had been thinking up to now.

Larsen suggested that the SASEC may want to encourage the program to prepare fairly final plans for expeditions in 2012 and 2013, so at the time of the science review it is known what has been done and what likely will be done. This, he said, would be useful guidance.

Tatsumi said that to maximize scientific achievements and foster better proposals, it would be best to consider the form of science advisory structure (SAS) needed for renewal. He suggested this topic should be discussed.

9.2. Summary of IODP New Ventures in Exploring Scientific Targets (INVEST) steering committee activities to date/future

Hans Christian Larsen summarized the status of planning for the INVEST meeting. He listed the ten members of the steering committee, noting the committee was formed in mid-2008. Larsen complemented the steering committee, saying the group was extremely helpful and a real pleasure to work with. He also listed past and future planning activities, as well as SAS activities, noting that the SSEP is interested in producing documents for the meeting. Larsen reviewed the INVEST schedule, culminating with the meeting itself on 23–25 September 2009. He noted that travel support programs have been established by most, if not all, IODP members units. Finally, Larsen listed the planned keynote speakers together with draft titles of their talks. He mentioned that borehole observatories are mentioned in two of the draft titles, but believed it important to highlight this area. He suggested that, if necessary, the SASEC could reasonably add one more keynote speaker.

Becker commented on the lack of women in the list of keynote speakers, and wondered if this issue was discussed by the steering committee. Larsen replied that it was discussed at length, and the committee was disappointed it could not do a better job; the one woman speaker asked declined. Batiza agreed that the lack of women was a concern.

Morris noted that many of the keynote topics are tangential to energy, but not directly related to energy. She suggested that a talk on hydrates or basin formation, which could set the stage for discussions of energy and what the program can contribute to that area. Larsen pointed out that breakout groups can also cover areas not covered by keynote talks. Arndt said it would be very useful to have a keynote speaker representing the view of industry. Raymo disagreed, saying the focus should be on science. Talwani suggested considering someone who understands scientific questions common to academia and industry. A number of other suggestions for specific speakers were made.

Kono asked about the style of the keynote presentations. Larsen replied that talks would be thirty minutes plus time for questions, and would not be limited to the speaker's own specific field, but would cover a broad area and its future potential in a ten-year program. He said the keynote talks are the place where the entire meeting comes together in plenum. This would be followed by breakout sessions, then another plenary session where results are presented.

Gerold Wefer, local host for the INVEST meeting, presented a status report on planning and preparation for the meeting. He displayed the INVEST flyer, showed the INVEST web page (www.marum.de/iodp-invest.html) and described the meeting venues. Wefer presented a list of five tentative breakout session themes: (1) co-evolution of life and planet; (2) Earth's interior, crust and surface interactions; (3) climate change – records of the past, lessons for the future; (4) Earth system cycles; and (5) Earth-human-Earth interactions. He noted these were to be expanded with input from the participants. He also presented five examples of cross-cutting themes: (1) role of fluids in Earth processes; (2) timescales and resolution of the Earth's record; (3) Earth and ocean resources; (4) influence of material properties; and (5) techniques, technology and science co-innovation. Wefer also reviewed the INVEST planning timetable, noting that in mid-May 2009 there would be a full steering committee

meeting, at which the agenda details and meeting structure would be finalized.

Taylor asked if the INVEST meeting would be three *full* days. Wefer and Larsen confirmed this, saying no one should plan to leave at noon on the third day.

Larsen noted that the five tentative breakout session themes would in principle be the five main themes the meeting is organized around. He suggested these could be equated with the three themes of the current ISP. The committee had several questions about the tentative breakout session theme titles. Taylor asked what was meant by “Earth system cycles”; Hayes suggested it could mean hydrologic and geochemical cycles. Raymo wondered what was meant by “Earth-human-Earth interactions.” Larsen agreed the title was a bit abstract and reiterated that these were tentative themes to be finalized by the steering committee.

Smith asked if the broad community would be asked for input on the themes. Larsen said yes. Raymo explained that people will be asked to submit abstracts based on the themes, so the themes need to be clarified. She suggested the titles be revised then presented again to the SASEC for comments, though she also expressed concern that the SASEC should not try to micro-manage the work of the steering committee.

Raymo said that the breakout session themes do not address the interaction between the climate modeling community and the paleoclimate and past-climate history community. Taylor suggested this was covered by the third title.

Hayes said that the “co-evolution of life and planet” theme does not fit with the timescale from seafloor core. He said the title relates to Archean and Proterozoic processes. He felt that this topic did not warrant a breakout session. Arndt suggested that the title may refer to the relationship between large igneous provinces (LIPs) and mass extinction. Larsen agreed that was part of it, but also agreed with Hayes’ comments, though he stressed that the theme titles shown were just tentative. Wefer concurred, saying the breakout themes will be discussed in more detail at the mid-May INVEST steering committee meeting. Larsen suggested that the SASEC should provide recommendations now in preparation for the May meeting.

Hayes asked for the list of themes to be distributed by e-mail. Arndt suggested that it would be more useful if the steering committee provided a brief explanation about each topic. Kono asked if the SASEC should request clearer titles for the themes, along with explanations of what each theme encompasses. He also asked if the SASEC should suggest some themes and titles, or wait until it has received an explanation of the current list. Arndt said that the current list may cover everything, but the wording could be improved and explanations added. Arndt’s suggestion was accepted by consensus of the committee.

SASEC Consensus 0901-08: SASEC asks that the INVEST steering committee provide brief descriptions (e.g., one paragraph each) of the tentative INVEST themes within a few weeks for possible comment by SASEC.

9.3. Update from the *ad hoc* committee on the framework for the future of scientific ocean drilling

Note: agendum 9.3 was completed after agendum 9.4.

Manik Talwani presented a summary of the report of the IODP-MI *ad hoc* committee (document dated 8 December 2008). He explained that this report was different from most committee reports in that the chairman, John Byrne, “sort of made it his report.” Talwani noted that the report contains responses to five questions that were sent to the BoG, the *ad hoc* committee, all chief scientists, and all SAS panel members. A total of thirty to forty replies were received. Talwani presented the five recommendations of the *ad hoc* committee:

1. Request from the NSF a total of \$80 million annually to ensure adequate funding for the continuous 12-month operation of the JR.
2. Seek other sources of funding, specifically from oil and gas corporations, from other countries and from the philanthropic sector of society.
3. Expand the scope of IODP Marketing and Public Relations.
4. Define the future management structure of IODP-MI in one of two ways: (a) a strong integration model employing well-defined centralized management, or (b) a weak integration model involving coordination at the Implementing Organization (IO) level. Each IO would be responsible for the operational as well as the scientific funding of its related drilling platform.
5. The proposal handling process for the next phase of scientific ocean drilling needs to be revolutionized. We need more straightforward mechanisms for promoting excellent proposals that incorporate the most important scientific themes, and for rejecting proposals with little chance (scientific or operational) of ever being drilled.

Talwani noted that the “*ad hoc* committee strongly urges the BoG to take action on these recommendations as soon as possible.”

Becker said he found most of the recommendations to be sensible, but wondered what was meant by “the proposal handling process for the next phase of scientific ocean drilling needs to be revolutionized.” Talwani suggested this meant that the amount of nurturing should be reduced from the current level.

Hayes said that the comment about “one-off” projects in the explanatory text for recommendation 5 is rather harsh, but added that it “gets our attention.” Talwani replied that the program needs to focus on some major themes, and the very best ideas have to be drilled.

Taylor agree with recommendation 5, saying there was no question about this one. Zelt questioned the need “for more straightforward mechanisms ... for rejecting proposals with little chance (scientific or operational) of ever being drilled.” He thought the mechanisms exist; both the SSEP and SPC can recommend deactivation of proposals. Becker agreed there were mechanisms for rejection on scientific grounds, but not on operational grounds; he said the latter would require a greater effort by the IOs in looking at proposals. Taylor added that a greater effort by the OTF would also be required. Larsen suggested that the science should drive the technology. As an example, he said the Arctic Coring Expedition (ACEX) would not have happened if the proposal had been rejected because it was operationally not feasible when first submitted. He said it is the same situation with the quest to reach the Moho; the technology currently does not exist, but that was no reason to reject proposals addressing that goal.

Arndt questioned the *ad hoc* committee’s suggestion of change from a bottom-up to top-down approach, which he said implies that some group has to decide which themes are important. Talwani replied that the important themes might be top-down, but proposals would be bottom-up. He added that the best mix of top-down and bottom-up needed to be found. Taylor suggested that themes could be decided by the community at, for example, the INVEST meeting. Talwani pointed out that NASA groups propose themes, and the best themes win out.

Kato asked what the SASEC should do with the report. Taylor said the SASEC should provide advice. Talwani said the SASEC can provide comments on the report.

Referring to recommendation 4, Hayes said that there could be a major scientific impact with

a possible change in the future management structure of IODP-MI. He suggested it would be appropriate to discuss this and make a recommendation in favor of the strong or weak integration model. Taylor suggested that the management structures mentioned in recommendation 4 were polarized end members, but a middle ground approach was also possible, such as a strong coordination model. Hayes said his interpretation of the report was that any middle model was unstable. Talwani agreed, saying it should be one way or the other. He suggested it was easy to pick something in the middle, but this would not be the best solution. Becker agreed. He wondered if strong central management meant control of the budget. Talwani said yes. Hayes asked it would include pooling of POC funds. Talwani thought this was unrealistic.

Wefer thought it might be easier to involve the European community if the central management was more responsible for platform management. Mével said it would be easier to get money from the European community by selling a scientific program. Talwani replied that by definition, a scientific program includes both scientific and implementation aspects.

Raymo wondered which management model would be preferred by the community. Talwani said that, although not stated in report, the weak integration model would basically eliminate IODP-MI.

Hayes said that the SASEC is obliged to justify its existence by making a consensus statement. He suggested there was no scientific reason requiring adoption of the strong central management model, and therefore favored the weak integration model. Hayes said he could see no scientific benefit to having strong central management of the three platforms, and an attempt to impose across the board fiscal management of all three platforms carries unnecessary complexities that cannot be justified. Kono stated that without strong central management it would not be possible to globally maximize the use of the platforms, therefore he opposed the weak integration model. Larsen said it was naive to think that the weak integration model could work.

Becker asked if the weak integration model implied separate scientific proposal evaluations for each IO. Hayes replied that he was not suggesting that. Batiza suggested it was not necessary, and that some of the tasks of IODP-MI could be retained in a coordination model. Raymo said that it might not be such a bad thing to have different proposal evaluation processes for each platform. She said the time scale for *Chikyu* riser proposals was very different compared to non-riser proposals; the same would apply if there was an Arctic icebreaker.

Talwani, clarifying, said that neither model suggested that the SAS should not be integrated, but the function of the SAS could be implemented differently. Taylor suggested this could be a hybrid “strong coordination model.” Larsen asked for clarification. Taylor said there needs to be discussions with the IOs on the distribution of funds, or put another way: a strong federation. Larsen said he would endorse that kind of model. Talwani said the key question was whether there would be separate or joint budgets, and how the budget would be split up. Taylor stated that the IWG+ will investigate that. Kono said he hoped that, at least, the SAS would remain as a single body, even if not supported by IODP-MI.

Kono asked if the funding agencies wanted the opinion of the SASEC. Batiza replied that some sort of statement would be a good idea. He added that the *ad hoc* committee report was a start, but lots of details need to be worked out.

Becker suggested that the SASEC should ask the funding agencies about the implications of the two management models. Talwani said it would be useful to know the budget implications of the two models and Taylor’s hybrid strong coordination model. Mével said

that the IWG+ will investigate this. Mori felt uncomfortable endorsing any model without knowing the implications.

Hori said he has already received useful input from this meeting, but the main input will come from the IWG+. He said he was not in a position to ask the SASEC for comments, but any input would be appreciated. Kono wondered when such input was needed. Hori thought it could wait until the June 2009 SASEC meeting. Mével suggested that the SASEC was not in a position now to give a meaningful opinion.

Raymo thought it was difficult for the SASEC to give an opinion on the next program. She said that perhaps there is a community of people that don't want the renewed program to be anything like the current IODP. Mével agreed, saying that a look from the outside was needed. Batiza reminded everyone that nothing will change between now and 2013, when the contract with IODP-MI expires, but he noted that there can be an evolution towards one model or another based on fiscal reality.

The committee discussed a consensus statement regarding the *ad hoc* committee report. Hayes suggested that the committee should say that it receives the report but is not able to make a clear recommendation, though it does favor the evolution of the management structure towards one which minimizes costs and provides strong scientific integration. Mori supported this statement. Hayes' statement, as reworded by Becker, was accepted by consensus of the committee.

SASEC Consensus 0901-09: SASEC receives the report of the Ad Hoc Committee as a useful starting point for discussion of the future structure of IODP. In principle, SASEC would favor a structure that would both minimize management costs and maximize scientific integration in the future IODP. Therefore, SASEC requests that the IWG+ expand on the implications of the management options defined in Ad Hoc Committee recommendation 4 (on the need to define the future management structure of IODP-MI).

Taylor suggested that the *ad hoc* committee's recommendation 1 should be augmented by mentioning that the science program justifies this request. Raymo added that justification would be given to the NSF in the form of summaries of the top proposals and science that can be accomplished before the end of the current phase, together with an explanation of why it is relevant societally, politically and economically. Batiza suggested that the request for \$80M not be restricted to the NSF.

Divins suggested it was necessary to say why eight months of drilling per year is not enough. Referring to recommendation 3, he said the science is what funds the program, thus the focus of the public relations objective should be to highlight the importance of the science. Larsen agreed. He said the program's contract with the funding agencies is to achieve the objectives of the ISP; the funding agencies need to be informed which parts of the ISP can and cannot be done. Morris suggested that the request to the NSF (for a total of \$80 million annually) should be combined with the *ad hoc* committee's recommendation 2 (to seek other sources of funding).

Wefer suggested that the SASEC give a combined response to recommendations 1 and 2. Becker agreed to this, but suggested that the request to the funding agencies should be for full funding for all platforms. Talwani said that Taira has stated that CDEX does not need help from the *ad hoc* committee to get funding for *Chikyu*. Suyehiro agreed with this.

A statement, written by Taylor, addressing recommendations 1 and 2 was accepted by consensus of the committee.

SASEC Consensus 0901-10: Achieving the goals of the Initial Science Plan will require

maximizing use of all IODP platforms for scientific drilling. Therefore, SASEC endorses recommendations 1 and 2 (requesting \$80M from NSF to ensure funding for twelve-month operation of the *JOIDES Resolution*, and seeking other sources of funding, respectively) of the Ad Hoc Committee report.

Raymo pointed out that recommendation 3 has budget implications. She thought it should be endorsed. After further discussion, the committee decided to not comment on recommendation 3.

Talwani suggested that the SASEC should thank Byrne for the *ad hoc* committee report.

SASEC Consensus 0901-11: SASEC thanks the Ad Hoc Committee and especially its chair John Byrne for their outstanding efforts in producing their report.

9.4. Additional recommendations to the INVEST steering committee

Masaru Kono said he thought preparation for the INVEST meeting was going quite well. He asked if the committee had any further recommendations for the steering committee. Becker mentioned that the lack of women speakers has already been mentioned (see agenda 9.2). He asked if the committee want to make a consensus statement. Taylor said it was adequate to just record the concern in the meeting minutes.

Kato suggested that to extend the IODP community requires interesting those from outside the drilling community. Larsen said this was discussed by the steering committee, but it is hard to find a mechanism to do it. He wondered what sorts of outside communities Kato was thinking about. Kato said that he would send more concrete ideas later, by e-mail. Raymo suggested that the ice core community is one that should be represented at the INVEST meeting.

Kuramoto said there was a need to invite representatives of other fields, e.g., space science or climate modeling, as keynote speakers to bring new ideas to the IODP. Kato agreed. Raymo also agreed, but said it would be difficult to find keynote speakers from outside who can interface with, and see the value of the ocean drilling community. She added that these people do not need to be keynote speakers, but could still be given a place of prominence. Taylor said that, as an example, a climate modeler could explain to the drilling community what information modelers need; however, he added that keynote speakers have already been invited and they cannot be disinvited.

Larsen suggested that it would be possible to invite other speakers to, for example, lead breakout sessions, or help write and review the new science plan. He explained that the steering committee tried hard not to choose only insiders as keynote speakers. He said it was hard to make it as external as desired, but thought the current list of speakers is pretty good. Becker said it was necessary to go beyond just inviting people from outside communities; it was necessary to ensure they participated actively, for example by leading breakout sessions. Kono thought that real outsiders, such as space scientists might not fit into the breakout themes. He suggested it was possibly too late to consider Kuramoto's suggestion to include outsiders, and to change the style of the meeting. Larsen said there would be no harm in giving the suggestion to the steering committee.

Hayes suggested that if the INVEST meeting is similar to the 1999 COMPLEX meeting in Vancouver, people who attend will be drawn in. He said that the names of speakers could be tweaked, but the main thing was to ensure the right people are in the room. Morris agreed, saying the list of topics is most important. She suggested that the science plan that results from the INVEST meeting should not be exclusively IODP-centric, and that non-IODP people should walk away from the meeting saying that ocean drilling is a valuable and necessary

tool.

Arndt suggested creating a list of outside communities that should be attracted to the INVEST meeting. He mentioned space science, energy, pharmaceutical communities. Kono wondered if space scientists should be included. Talwani said he thought so. He suggested looking beyond communities such as climate and microbiology as a way to get other external ideas. Taylor wondered what kind of connections could be made in terms of processes and drilling. Talwani replied that this would not be known until the communities were asked. Raymo called this a risky strategy. She explained there will be three days to create the foundation for the next science plan to sell to the funding agencies. She counseled sending messages about existing strong links with external communities. Larsen said the steering committee was very aware that it has a product to deliver. He agreed there was a limit to the number of risks that should be taken. Raymo said there were already strong links with the geomicrobiology and climate modeling communities, and industry, etc. She suggested it was unnecessary to involve space scientists. Kono agreed it may not be prudent to be so ambitious. Lembke-Jene suggested including representatives of the cryospheric sciences as a way to think about how high latitudes are reflected in the keynote and breakout topics.

A few other specific outside fields were mentioned. Becker drafted a statement emphasizing the importance of including representatives of outside fields at the INVEST meeting. This was accepted by consensus.

SASEC Consensus 0901-12: SASEC emphasizes to the INVEST steering committee the importance of active participation at INVEST by representatives of fields with important links to IODP science, e.g., climate modeling, cryosphere communities, and reinsurance industry; microbiology and pharmaceutical industry; energy and geotechnical industry.

9.5. Planning the next science plan

Masaru Kono mentioned that at the previous SASEC meeting (June 2008) there was general agreement that the INVEST steering committee members would write a substantial report. In addition, some of the steering committee would be asked to join a team that would write the new science plan. He said that other members would have to be appointed to science plan writing committee.

Larsen agreed it was good to include some members of the steering committee on the writing committee. He said the SASEC needs to decide on the details of how the new science plan will be written. He suggested a group of ten to twelve people with approximately four from the steering committee, four from the thematic review committees who know the program well, and four from outside the program to bring in a different perspective. He noted that it may be necessary for IODP-MI to provide some salary money to the steering committee and writing committee. Because of the budgetary implications, the details would need to be known by May 2009 in order to be included in the FY2010 annual program plan.

Wefer suggested keeping some spaces open because new themes may arise out of the INVEST meeting.

Larsen asked if national or gender balance was important for the writing committee, or should the very best people be chosen regardless of balance. Kono replied that balance should be considered, although it could not be insisted on. Larsen asked if technology should be a part of the science plan. He thought it worthwhile to include a section on the technology needed to achieve the science goals. Kono said that the timing of the science plan also needed to be determined.

Raymo recommended going slow, allowing the science plan to develop organically. She

suggested naming four initial members to the writing committee and giving them the responsibility of helping it grow. More members could be added at the June 2009 SASEC meeting, and more after the INVEST meeting. Raymo suggested INVEST steering committee chairs Ravel and Bach, plus a solid Earth person and a climate person as the initial members of the writing committee. Becker recommended that the steering committee chairs not be members of the writing committee because they will be too busy writing the INVEST report. Larsen said he liked the suggestion of letting the committee grow slowly as described by Raymo.

Kono noted there was general agreement to invite Ravelo and Bach to be members of the writing committee. Other names were considered. Kato nominated Inagaki to cover the field of microbiology. Tatsumi wondered if naming members could be delayed to give J-DESC time to come up with some nominations. Larsen was not sure if it was a good idea to ask the program member offices for nominations. He thought the nominations should come from the SASEC. Raymo said naming the writing committee could wait until June 2009. Larsen agreed but felt it important to inform the two INVEST steering committee co-chairs, Ravelo and Bach, now; other names could be considered in June. Arndt suggested that they also be asked to think about other members of the writing committee. The committee agreed to ask Bach, Ravelo and Inagaki to be on the science plan writing committee. Larsen would contact them regarding the invitation. The initial members would provide recommendations for other members before the June 2009 SASEC meeting.

SASEC Consensus 0901-13: From the members of the steering committee of INVEST, SASEC nominates Christina Ravelo, Wolfgang Bach and Fumio Inagaki as initial members of the committee to draft the next IODP science plan. These members are asked to provide a recommendation for additional members of the committee to the next SASEC meeting (June 2009).

9.6. Other efforts (e.g., funding agencies, Board of Governors) and issues

Masaru Kono noted that discussion about the current SAS, as requested by Tatsumi, would occur under this agenda item. He asked Becker to summarize the results of the SASEC's SAS working group report (June 2007). Becker reported that the working group did not recommend any radical changes to the SAS. It did recommend some reduction in panel size and meeting frequency; both of which happened on some panels. The working group provided other suggestions for implementation if necessary, e.g., merging the Engineering Development Panel (EDP) and Scientific Technology Panel (STP) if there was not much money in the budget for engineering development, or combining the SSP and SSEP.

Mori suggested considering if it is necessary to have both the SPC and SASEC. He said there are three groups directing the program: the BoG, SASEC and SPC; each with separate mandates and tasks, but with a fair bit of overlap. He wondered how the SASEC felt about eliminating itself. Talwani said that when the Science Planning and Policy Oversight Committee (SPPOC) was replaced by the SASEC it was suggested that only the SPC was necessary, and an executive committee of the SPC could do what the SASEC does. He explained that this was rejected because the SPC ranks proposals, and hence it could be a conflict of interest for the SPC to approve the annual program plan that it would itself recommend. Talwani said that the terms of the committees are not clearly defined and there is a lot of overlap, so it is not certain who is responsible for the future of the program.

Larsen asked if the executive authority could be transferred to the BoG to solve the perceived conflict of interest problem. Taylor explained that the common functions of the BoG and SASEC are approving the annual program plan and budget. These functions, he said, could be done by one group. He noted that the BoG has corporate responsibility, while the SPC has

responsibility for science ranking. Taylor added that the only catch that would effectively prevent combining the BoG and SASEC was that the SASEC should be representative of all international program members. Zelt pointed out that the SASEC does not have members from China, Korea or ANZIC, only official observers with no voting rights.

Talwani stated that the annual program plan and budget goes separately to the BoG and SASEC because it is not clear if the BoG members would have knowledge of the scientific disciplines to approve the program plan. Thus, the SASEC looks at the scientific part, while the BoG focuses more on the financial and managerial part.

Taylor stated that the SASEC is the executive committee of the SAS. He thought the Board could choose to make itself the executive committee of the SAS, but the question is whether or not that would be a good idea. Taylor again mentioned potential conflict of interest issues with the corporation. Addressing the representation of the BoG and SASEC, Taylor said that, as currently constituted, the BoG does not have an overly managerial representation, and is in fact quite scientific. Further, he noted that Talwani has asked the BoG to become more involved in the program and its science for quite some time. Taylor said he was not supporting such a move, but agreed it was possible to devolve some of the tasks of the SASEC to the BoG, and others to the SPC. He added that the SASEC is charged with long term scientific planning. He thought this could be partitioned one way or the other, and said it was possible to reduce the BoG, SASEC and SPC to two groups. Taylor declared that this was his last SASEC meeting (subsequently it was determined he will attend one more meeting as a SASEC member), and he is a member of the BoG.

Mori suggested that the SPC could not take on the current SASEC roles of approving the annual program plan and long term program planning, which includes workshops and thematic reviews. He said this was a significant amount of work and the SPC did not have time to do it without an additional meeting per year and/or more members.

Talwani said the BoG could take on approval of the annual program plan; however, the Board consists of very busy, high level people. He said the Board does not look at the annual program plan at all, and it is hard to get approval from them. Talwani suggested that, unless the BoG changes its style, there is still a need for the SASEC to approve the annual program plan. Taylor said that, in some ways, the program cannot afford duplication. He pointed out that the SASEC and BoG meeting agendas are almost identical, and he wondered if this duplication was warranted. He agreed that eliminating the SASEC may require the BoG to become more active. Larsen said it would be a good thing if the BoG were to become more energized. He said that is felt throughout the program. Mével suggested that if the BoG were the only body to approve the annual program plan, it might feel more engaged. Becker asked if the Board listens to and follows the advice from the SASEC. Taylor replied that the Board did listen to the advice, but did not necessarily follow it. Talwani noted that the SPPOC tried to change its mandate, but the BoG said no.

Raymo said expanding the SPC was probably not a good idea. She recommended focusing the discussion on whether the SASEC and BoG should be merged. She wondered if the BoG could take on long range science planning. Kono said that the SPC also considers long range planning sometimes. Taylor stated that in June 2009, Susan Humphris and Peter Flemings will rotate on to the BoG (replacing John Orcutt and Paul Stoffa). He said these sort of people are well capable of doing long range science planning. The board, he said, can change. Mori said that these kind of people have conflict of interest issues. Taylor pointed out that the same applied to some current SASEC members. Talwani said that if the board is more scientific, with the right type of members, than perhaps it could work.

Raymo said there were five more years in the current phase of the program, with important things coming up. She thought eliminating the SASEC now was a bad idea, and suggested that doing so would not free up a lot of money. She mentioned that perhaps the committee could be reduced in size.

Kono stated that the third mandate of the SASEC (fostering links with other programs) could be handled by the SPC. However, he thought that long range planning was different. He said this was a big task with the renewal effort, and not realistic to ask the SPC to do it. Kono suggested that perhaps a small working group could be set up to study how long range planning could be handled.

Larsen stated that he never saw any activity in long range planning, and asked what activity there has been. Kono said that renewal planning was long range planning.

Tatsumi said that one reason to consider restructuring the SAS is to improve the proposal process. He said that discussions so far have only been about the SPC, SASEC and BoG, yet the entire SAS has to be considered, for example, the effectiveness of the SSEP. Kono replied that the SASEC already did this a few years ago.

Raymo, looking at a list of BoG members, thought that the membership did not look very thematically balanced, comprising mostly solid Earth people. Taylor replied that there is a wide representation on the BoG, though perhaps it is not balanced; this, he said, could be addressed.

Taylor stressed that eliminating the SASEC has not been discussed by the BoG. He did not know if the BoG would support it, but because of the *ad hoc* committee's report, and for the sake of efficiency, he thought it was something the BoG would consider. Becker wondered if it was worth pursuing the idea if the Board would not support it, or the structure does not permit it to happen. Kono stated that Talwani said there was nothing in the structure to prevent it. He added that Taylor will become chair of the BoG and can represent the wishes of the SASEC. He asked if the committee wanted to form a working group to study eliminating the SASEC. There was general agreement; Hayes, Kawahata and Wefer were appointed to the working group.

<p>SASEC Consensus 0901-14: SASEC appoints a subcommittee to evaluate models for the BoG/SASEC/SPC structure. Members: John Hayes, Hodaka Kawahata, Gerold Wefer.</p>
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Kono returned to Tatsumi's request to discuss restructuring the SAS. He asked what the problem was with the current SAS. Tatsumi said that more effective proposal evaluation is needed. He added that proponents have to wait a long time. Kono asked for discussion.

Mori said he supported looking at the SAS and making any fixes that can improve the process. Taylor suggested waiting to see the results of the March 2009 SPC meeting before suggesting any changes. He pointed out that the SASEC has not seen the results of its charge to the SPC (SASEC Consensus 0806-12) from its previous meeting.

Hori mentioned that when he was put in charge of the IODP for MEXT four months ago, he was amazed at the complexity of the system and felt there must be a reason for it. He suggested that those looking at the system be careful and not think from the beginning that the structure is flawed. Regarding the elimination of the SASEC, Hori said that the BoG and SASEC have very different responsibilities. He said he was happy to see there is interest in looking at the issue, but suggested being cautious.

Tatsumi acknowledged Taylor's remarks regarding waiting to see the results of the next SPC meeting, but he suggested there was a need to go faster. He said Japan has a pre-INVEST

meeting coming up, and many people think there are too many proposals in the system. Raymo said the proposals do not go in a line; the very best science goes quickly through the system. Becker agreed, saying there have been several good examples of this. Suyehiro suggested that the present system works well for non-riser proposals; but he noted there were very few riser proposals.

Tatsumi said a more simple, straightforward evaluation system was needed. Arndt said that the *ad hoc* committee agreed. He felt the time is right to set up a working group to look into the proposal evaluation process. Kono pointed out that the SASEC has sent a message to the SPC, and via the SPC to the SSEP to limit nurturing and to not hesitate to deactivate proposals that have no chance of succeeding. Becker agreed with Taylor, saying he wanted to wait to see the results of the March 2009 SPC meeting.

Hayes recommended that the SPC should codify its general approach for eliminating proposals. As an example, he suggested that if a proposal has been with the OTF for a while, and ten expeditions have occurred in its ocean basin, it could be killed. Mori said it was hard to make up a simple rule for proposal deactivation. He preferred a case-by-case approach. Hayes also suggested that, if there were a deactivation rule, the SPC should explain to the SASEC why it deviated from using it for any proposal.

Talwani noted that the *ad hoc* committee's recommendation 5 requested that the proposal handling process needs to be revolutionized; he felt the current discussion was not pointing to a revolutionary change. Taylor pointed out that this recommendation applied to the next phase of ocean drilling, while the current discussion refers to the next few years. Kono agreed that it is too early to say that the current system is not working and agreed that the committee should wait at least until after the March 2009 SPC meeting to make any recommendations. Taylor read a draft consensus revisiting the previous SASEC statement to the SPC. This was accepted by consensus.

SASEC Consensus 0901-15: In light of Ad Hoc Committee recommendation 5 on the need to revolutionize the proposal handling system for the next phase of scientific ocean drilling, SASEC re-emphasizes its related message to the SPC from last year (SASEC Consensus 0806-12 on recommending that the SPC (i) implement procedures to provide more specific feedback to proponents, and (ii) streamline the process of proposals forwarded to them from the SSEP) and looks forward to the results of the next (March 2009) SPC ranking meeting.

Raymo raised the issue of proposals that rank lowly. She asked what the problem was, and wondered if anything needed to be done. She said the best science gets drilled. Suyehiro said that riser proposals are expensive to implement; he asked how to make riser expeditions possible, and warned that nothing except NanTroSEIZE may be implemented. Taylor said that this was an issue for renewal, but not an issue related to the large group of undrilled proposals. Larsen noted that the IODP-MI recently requested that some old proposals residing with the SPC be re-evaluated by the SSEP, and this effectively led to deactivation of a couple. He disagreed that it does not hurt to have low ranked proposals residing with the SPC.

Arndt asked if the SASEC should set up a working group to address the *ad hoc* committee's recommendation 5, and look into the proposal handling process for the next phase of the program. Taylor said that the IWG+ and INVEST meetings will speak to some issues, such as riser drilling. Arndt thought that, instead of waiting for the INVEST or other groups to do something, SASEC should do something now, like setting up a working group to study how the current system works in order to anticipate how it might be changed for the new program. Kono asked if the committee agreed to establish such a working group. The committee

discussed if a decision could be deferred until the next SASEC meeting, but eventually decided by consensus to form a working group now, naming Arndt, Becker and Tatsumi as members.

SASEC Consensus 0901-16: Following Ad Hoc Committee recommendation 5 on the need to revolutionize the proposal handling system for the next phase of scientific ocean drilling, SASEC appoints a subcommittee to assess models for the proposal evaluation process for the post-renewal phase of IODP. Members: Nick Arndt, Keir Becker, Yoshiyuki Tatsumi.

Zelt asked if mandates would be written for the two subcommittees established in SASEC Consensus 0901-14 and -16. Kono said this would not be necessary.

Morris stated that the new science plan will be very important for renewal, but other things will be necessary if the IODP is to compete effectively for renewal. She said it is important for scientists outside the ocean drilling community to say they use IODP science and that this science is very important for their research. She added that scientific papers written for non-specialists and general scientists and published in widely read journals were also necessary; from these, one-page summaries can be extracted for the NSF to lobby for funding.

10. External program activities

10.1. Ocean Drilling Consortium (ODC) report

Manik Talwani presented a report on the Ocean Drilling Consortium (ODC). He explained that the motivation to form the ODC was lack of funds to operate the *JOIDES Resolution* year round. The ODC applies only to the *JOIDES Resolution*; CDEX will find industry users for *Chikyu* on its own. The proposal for the ODC came from a workshop in June 2008, sponsored by four companies. Industry suggested picking three scientific themes.

Talwani listed the scientific themes to be addressed by the ODC: (1) rifted margins: structure and evolution of deep-water basins; (2) reservoirs: origin, architecture, and properties; and (3) source rocks: distribution and origin of organic-carbon-rich strata. For each theme, Talwani described the problems to be addressed and the locations of the proposed drilling. He also reviewed the ODC timeline, noting that the proposal would be submitted to companies in a few days, with companies having until June 2009 to commit to joining the consortium. Six months of phase 1 drilling could, for example, commence in June 2010, with six months of phase 2 drilling beginning in June 2012.

Hayes said that, from the perspective of organic geochemistry, it is a beautiful proposal, bearing on all the problems of petroleum generation. He said the only question was whether the companies will pay for it.

Raymo asked whether the SASEC was being asked to endorse the ODC, adding she has not given up on full-year operation of the *JOIDES Resolution* in 2010. Talwani replied that he would love to have the SASEC's endorsement, but was not asking for it. Kono explained that the report was simply information to the SASEC. Taylor added that the SASEC has already gone through the process of commenting on the ODC. Divins stated that the preparation for the ODC has been in progress for 1–1.5 years; delaying was not an option. Talwani added that the best prospect for the *JOIDES Resolution* in 2010 is eight months of IODP drilling. Raymo said she understood this, but expressed concern that if the ODC proposal goes ahead, it will not be possible to make changes that could affect the 2010 schedule. She said the timing was unfortunate.

Larsen asked how companies will be solicited for involvement in the ODC. Talwani replied that the proposal would be advertised widely and sent to every company in the world. He added he was hoping to interest multinational companies.

Kono noted the proposed ODC drilling is in the Atlantic Ocean. He asked, should the proposal be funded, if this implied the *JOIDES Resolution* would remain in the Atlantic during the period of time covered by the ODC drilling. Talwani said yes, noting there were some highly ranked IODP proposals in the Atlantic. Kono wondered how this would affect the SPC's ranking of proposals. Mori replied that it would not affect the ranking, but would affect the scheduling.

Taylor asked about the status of feasibility studies utilizing the AGR Drilling Service's riserless mud recovery system. Divins reported that the first phase of the study, to determine if the system could be installed on the *JOIDES Resolution*, was successfully completed this month. The next phase is to write a proposal to install the system on the *JOIDES Resolution* and do testing. Divins said it is a possibility which is still being pursued.

10.2. Other external funding activities by the IOs

Divins reported that the USIO was involved with Talwani in the ODC, and in the DeepStar-funded study of AGR's riserless mud recovery system. The USIO is in discussions with Korea to use the *JOIDES Resolution* for a two-month hydrate drilling project in 2010. He added there were opportunities with a couple of other companies.

Evans reported that ECORD is watching the European system for possibilities to fund work in the Arctic, but currently has no specific news.

CDEX and JAMSTEC representatives did not report any activity.

10.3. External program funding: current rules of engagement (funding agencies)

Rodey Batiza said that Divins (in agenda item 10.2) gave a good summary, and noted that it is the prerogative of the USIO to pursue these options. Divins noted that IODP funds are not being used to pursue the external funding opportunities. Kono said that, months ago, there was a problem with the use of U.S.-owned property on the *JOIDES Resolution* for commercial work, or work associated with the ODC. Batiza explained there were two general issues: liability and use of government-owned equipment. He said that the liability issue was taken care of, and there is an agreement that such usage of the vessel, including the government-owned equipment, would be in the best interest of the U.S. government.

Taylor asked if there was any progress on the arrangement with Korea to use the *JOIDES Resolution*. Divins replied that ODL (Overseas Drilling Limited) would be the contractual lead; the USIO would be the science lead.

11. Status of European research icebreaker AURORA BOREALIS

Lester Lembke-Jene presented a detailed report on the status of planning for the European research vessel AURORA BOREALIS. He stressed that, in addition to being a drilling platform, the vessel would be a multi-purpose research vessel for all polar and marine research. Lembke-Jene reported that the technical design of the vessel was finished. He reviewed the technical specifications, noting it was a Heavy Icebreaker (IACS Polar Class 1), allowing year-round operations in all polar waters, and in multi-year ice. The vessel will have two moon pools, the aft one primarily for drilling, coring and monitoring, the forward one for ROV and AUV deployment and other equipment operations. The ship will also be capable of deploying seismic streamers and airguns. Drilling capabilities include: (1) the ability to drill in 95% of polar waters to depths of more than 1000m below mudline in 100–500m water depths; (2) the ability to drill in closed sea-ice cover without added icebreaker support; (3) an enclosed, weather-protected derrick; and (4) use of standard IODP technology (casings, re-entering and deepening holes) and installation of monitoring or observatory systems.

Larsen asked about the estimated construction costs. Lembke-Jene said that preliminary estimates suggest approximately 650M euros. He described this as a conservative cost

estimate made before the current economic crisis. He said a better estimate would be known in about one year, but he did not expect the cost to increase significantly above 650M euros.

Taylor asked about the operational day rate and number of operational days per year. Lembke-Jene said it would cost approximately 35M euros to operate for one year, with about 300-320 operational days per year. As an IODP MSP he envisaged about one expedition per year.

De Deckker wondered if nuclear power was considered. Lembke-Jene replied that it was, but with nuclear power, it would be difficult for the ship to enter Antarctic waters below 65°S because of political issues. He added that nuclear power was hard to sell in some European countries, some of which do a significant amount of work in Antarctica. Lembke-Jene added that currently the initiative to build the icebreaker is strictly European, but other countries are being approached and are welcome to join as partners; Canada has expressed interest.

12. Review of rotation schedule for SASEC members

Barry Zelt noted that the SASEC member rotation schedule appears on page 206 of the agenda book, and asked that any errors be reported to him. Becker stated that his appointment letter specified a three-year term, so that his final meeting should be June 2011. (Subsequently, USSSP confirmed that Becker's appointment is in fact for two years.)

13. Other business

The committee did not raise any other business for discussion.

14. Review of action items, motions and consensus statements

The committee reviewed the motions, consensus statements and action items from the meeting. Most of these were recorded by and presented by Becker. The committee also thanked Fatima Abrantes and her colleagues for hosting the meeting. Taylor was thanked for his service on the committee. Subsequently it was established that Taylor will remain as a SASEC member for one more meeting.

<p>SASEC Consensus 0901-17: SASEC thanks Fatima Abrantes and other Portuguese colleagues for hosting its seventh meeting in Lisbon, Portugal. The facilities were excellent, the weather was marginal, and the food was fantastic!</p>

14. Future meetings

Brian Taylor reported that the next meeting will be in Washington, D.C. during the week of 15 June 2009; SASEC will meet on 15-16 June, the BoG meet on 17-18 June, and the NSF/MEXT meet on 14 June.

Kono said the following meeting (January 2010) should be in Asia or possibly one of the ANZIC countries.

15. Closing remarks

Masaru Kono adjourned the meeting at 18:00.