

ISSEP Minutes

Joint Meeting: Interior and Environment SSEPs

Edinburgh, Scotland, May 4-6

8:30 Monday, May 4

The third joint meeting of the Scientific Steering and Evaluations Committees for the Dynamics of Earth's Interior (ISSEP) and Environment (ESSEP) was opened in the Playfair Library of the Old College, by the panel chairs, John Tarduno (ISSEP) and Ted Moore (ESSEP). The meeting host, Godfrey Fitton, added a few words on activities during the meeting, including a reception sponsored by NERC on Tuesday night. John Tarduno thanked Yucheng Chai, the new ISSEP member representing China, for attending the meeting on such short notice. China has recently become the programs first Associate member. After panel member introductions, the group heard a SCICOM/JOIDES office report from Susan Humphris.

JOIDES Office/SCICOM Report

Susan started by reviewing the ODP Science plan (FY'99) for the group [the legs comprising the plan can be found in the Fall 1997 ISSEP minutes]. Of note were the potential site survey problems with Leg 184 (East Asian Monsoon).

The group is to review the results of Leg 178 and its implications for the success of Leg 188 and the future of Antarctic scientific drilling. Susan mentioned that the SSEP's need to provide input to SCICOM on Leg 188 (Prdyz Bay); the potential operations of this leg should be based on experience gained on Leg 178.

Susan reviewed the progress of both ISSEP and ESSEP that was presented to SCICOM based on input of the panel chairs and continued by reviewing the SCICOM motion concerning the ship track. The JOIDES Resolution will remain in the Indian and Pacific Ocean through FY 2001, but anticipates leaving before the end of the program in 2003.

Budget Issues and Science Plan

Budgetary constraints continue to be one of the main concerns of the Program. Susan reviewed some funding issues. The FY99 budget is balanced, but projects have been deferred including: EXBASE issues, and other development issues. There has also been a prioritization of projects should funds become available. As a consequence of these funding limitations, EXCOM asked SCICOM to produce a prioritized list of programs issues, technology development, etc. This should be presented to EXCOM in September so SCICOM wants input from the planning structure. A programmatic approach has been adopted which involved 3 basic activities. The first activity involves a prioritization of the science by ISSEP and ESSEP. The second activity is to prioritize services by SciMP. The third activity is to compile this input, by SCICOM.

The approach adopted seeks to rebuild the program, rather than focusing on cuts. The SSEPs should be asking what objectives of the Long Range Plan (LRP) can we accomplish before 2003, and how will this position us for future drilling plans? Thus we are asked to identify that work which is critical to the achievement of LRP objectives, as well as that work which will be instrumental in forming a basis for a future drilling program. We should also identify those services and technologies which are required to achieve these high priority objectives. The SSEPs should report results by end of June to SCICOM. There will be subcommittees of SCICOM who will review these priority lists.

Planning for IODP

To develop science plan for post 2003 that complements the Riser drilling program, an executive group has been formed and a call for abstracts has been advertised.

The scientific community is being requested to submit extended abstracts (1-2 pages) that outline important scientific objectives to be addressed by a new drilling program. A conference is planned for the Spring of 1999 which will target the scientific goals of non-riser drilling as part of a multi-platform ocean drilling program with two major vessels. The deadline for submission of these abstracts is 1 September 1998. From these abstracts a conference organizing committee of 10-16 will be formed. □ This group will determine the structure of the conference and will be responsible for running the meeting. The Executive group will write a summary based on the conference.

The CONCORD meeting recognized drilling the seismogenic zone to be the first priority for riser drilling. In response SCICOM has formed a Seismogenic Zone Detailed Planning Group. □ Currently a core group has been formed, and they also plan to advertise for input in the planning process.

Also for IODP, a technology and operations workshop is being organized by SCICOM to be held in the fall. This workshop will discuss both the technology needed in a two-ship operation and the operations of laboratory facilities that study the recovered material.

News from the JOIDES Office

Susan presented a slightly revised proposal submission: deadline for proposals to be considered by the SSEPs in their November meeting will be Oct. 1.

Christina Chondrogianni will be the official JOIDES Office liaison to SSEPs.

The JOIDES office will be in Germany, starting in 1999; The SCICOM Chair will be Bill Hay, EXCOM Chair will be Helmut Beiersdorf.

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News from JOI

Because a representative from JOI could not make the meeting, Susan added a few words about JOI. A candidate for directors has been identified, but they are still in negotiations. Frank Rank has been offered, and has accepted position as Assistant Manager.

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Discussion:

Alan Kemp asked how IODP planning handle technology issues. Susan replied that science planning should not feel constrained by these factors at this point.

John Tarduno asked Susan to describe the current situation surrounding the proposed Nankai drilling (Proposal 445). At the last SSEP meeting (Hobart) there was considerable concern voiced by panel members over the handling of this program which met highest priority themes of both ISSEP and ESSEP.

Susan responded that after careful consideration by ODP-TAMU, the logistic concerns have been resolved. The Kuroshio current is in a phase where drilling should not be seriously impacted.

Some questions about SCICOM liaisons to the SSEPs were raised. Susan agreed with the SSEP Chairs that the liaison between the SSEPs and SCICOM and JOI should be substantially improved. The Chairs feel strongly that commitment to the drilling program should be one of the prime qualifications for service on JOIDES standing committees.

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Operators (TAMU) Report

Mitch Malone and Paul Wallace presented summaries of the recent legs and news from ODP-TAMU:

Leg 176 was extremely successful in recovering a 1500 m crustal section of gabbro. Unfortunately over 800 m of drill string and bottom hole assembly were left in the hole (after valiant attempts to retrieve it). Leg 176 will be the first leg with an all-electronic Reports Volume. A booklet which containing basic hole, coring, and lithostratigraphy information, as well as a leg summary and some figures, will accompany this report.

Leg 177 occupied a transect of sites across the frontal regions in the Southern Ocean. Some sites recovered extremely detailed records with accumulation rates exceeding 30 cm/kyr.

The ship suffered substantial damage to its drill string guide cone (located in the lower part of the moon pool) while in transit on Leg 176. A temporary repair was effected after leg 178 that resulted in a cut of 5 days from Leg 179.

Problems in shipping equipment to the JOIDES Resolution have resulted in changes to Leg 179. The seismic-while drilling experiment will not be

conducted at the NERO-ION site as originally planned; instead an alternate site has been selected.

There have been several personnel changes at TAMU. Tim Francis has left and Jack Baldauf is taking over his responsibilities. Russ Merrill departed in January and Jamie Allen is at NSF.

New core repository space is being built at TAMU by the University.

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NSF Report

Bruce Malfait reported that shortly after our Hobart meeting, the renewal of the program was presented to the National Science Board, who gave the plan their strong support. The program is supported to 2002, with 2003 viewed as a transitional year. The Board also expressed its interest in the planning process for post-2003 drilling.

Bruce added some comments about contracts. The day-rate increase in the new ship operations contract will probably be in excess of \$600K/yr.

All the previous international partners have joined the program except ESF and France. France is now said the maximum contribution to the Program would be at a 2/3 membership level; they are unwilling to make a statement about future full membership. Italy is the hold-up for ESF; Italy had previously been contributing 25 percent of ESF share.

This issue will be discussed at EXCOM.

China has joined as the programs first Associate member.

PACRIM is currently contributing at a 11/12 level. South Korea will possibly contribute 1/12 in future.

To summarize the finances:

For 1998, budget is 49.1M, but this includes approximately 3M for ship refit. The US contribution level is 64 percent.

For FY99, a \$48.5M budget is going forward to EXCOM; potential international support ranges from 17.3M to 4.3M. NSF will make up the difference from the NSF-ODP grants program (most likely field programs). This could reduce the available ODP science funds by 30%. Currently, only 2 field programs have been funded for 1999; 3-D seismic Nankai (N. Bangs) and Canterbury Basin (Fulthroe).

Jamie Allan has joined NSF- will be handling US science proposals.

Bruce mentioned the MARGINS initiative and its importance for IODP.

A working group for the initial planning of the Integrated Ocean Drilling Program (IODP) will meet in June in Bonn.

It is now planned for Active Heave Compensation to be installed while the ship is in dry dock in FY99.

Discussion:

Garry Karner asked about the future of OD21. Bruce answered that his understanding was that the program would be submitted this year.

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Program Planning Groups (PPGs)

Members of the SSEPs have received initial statements of plans from all of the PPGs except the Shallow Water Drilling PPG. Many of the PPGs are not meeting until later in the year. But some of the PPGs have met. We received reports from both the Long Term Observatories PPG from our liaisons Doug Wiens and Jon Martin and from the Chair of the Deep Biosphere PPG, John Parkes.

Long-term Observatories PPG.

This report focused on two aspects of the Long Term Observatories program: 1) the ION sites, which explore the usefulness of boreholes for the emplacement of seismographs; and 2) the redesign of CORKS and development of a multipacker system. □The first ION site has been drilled; however, it was not sealed because of the loss of the packer. It will evaluate the sensitivity of borehole seismometer, compared to that of a seismometers lying on the sea floor and buried in the sediment.

These instruments have been deployed, but data are limited. The borehole seismometer is quieter than those on islands, and at high frequency, the borehole seismometers seems superior to both island-based and buried seismometers. However, the current data are inadequate to resolve these questions conclusively. A thorough comparison of the three seismograph deployment techniques requires more than one site in order to evaluate the noise in the data.

The PPG wishes to encourage the establishment of re-entry holes which might be used in the future, and for efforts to remediate existing holes.

Results of the CORK workshop point to the development of a versatile multi-level packer that can be deployed by wireline in a pre-existing hole or drilled in with a drill ship. The exact spacing of the packers can be varied depending on the experimental needs of a particular hole and made up from off-the-shelf segments on board the ship. Davis and Becker are working now on the design of the new packer and are seeking funding from NSF.

The next meeting of the PPG will focus more on ridge-crest observatories; but with the successful completion of the CORK and packer redesign, the Chair of the Long Term Observatory PPG feels that much of the charge of this PPG will have been addressed.

The SSEPs feel, however, that this PPG has yet to address the broader scientific goals of developing drilling and sampling programs that will elucidate the hydrology of the Earth's crust and that SCICOM should consider reconstituting this PPG with a specific focus in this area.

Leg 178 (Antarctic Peninsula) Report

It has been stated by the SSEPs that the success of Leg 178 was critical to the evaluation and carrying out of future drilling in the circum-Antarctic drilling program put forward by ANTOSTRAT. Peter Barker, a Co-Chief on leg 178 and a leader in the ANTOSTRAT community presented the main results of the Leg 178 effort.

The main difficulties encountered on the Leg were: 1) At the shallow water shelf sites (< 650 m water depth) a ship's heave of > 2 m required a cessation of drilling. Sitting in the teeth of the "roaring forties", the Antarctic Peninsula drilling suffered substantial lost time because of these restrictions. Fortunately, periods of excessive heave only lasted for 6 to 12 hours. 2) A site at the shelf edge encountered a boulder field that made spudding in and drilling a difficult, if not impossible undertaking. This site was abandoned and an alternate site on the drift was substituted. As a result of this problem and the heave problem (1. above), only two sites were successfully drilled on the shelf. 3) The recovery of sediments at the shelf sites was extremely low; however, diatoms in sediments that were recovered did allow the dating and (along with logs) the lithologic evaluation of all three of the major reflection packages identified in the seismic data.

■■■The great successes of the Leg included: 1) excellent recovery of two high-resolution post glacial sections from a shelf basin (the Palmer Deep); and 2) excellent recovery, biostratigraphy (including some carbonate microfossils) and magneto-stratigraphy in all three of the drift sites. There was some indication of 40 kyr Milankovitch variation in the lithostratigraphy of these sites.

■■■Among the unexpected results of the leg was the discovery that the oldest depositional package on the shelf (the S3 package) which was thought to pre-date glaciation of the Peninsula, is in fact composed of glacial marine sediments. There is also no indication of a "de-glacial Pliocene" interval.

■■■Peter made several points in his presentation in support of continued Antarctic drilling: 1) The problems encountered with excessive heave on the shelf of the Antarctic Peninsula should not be as big a problem in the more southerly ANTOSTRAT target areas. Furthermore, the installation of Active Heave Compensation on the JOIDES Resolution (scheduled during dry dock in FY99) may ease the restrictions under which Leg 178 operated and improve overall recovery. 2) Even given the problems with heave and sediment recovery, the Leg was able to achieve its primary goal in drilling the shelf sites - the dating and evaluation of the lithology of the sedimentary packages on the shelf. 3) As everyone had hoped, the drift sites were an overwhelming success. Recovery was good, stratigraphic resolution was high, biostratigraphy was good, and magneto-stratigraphy was well established using both cores and down-hole logs.

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The SSEPs met separately in the afternoon to discuss the Proposals received. These reviews continued all through Tuesday, 5 May. ISSEP viewed several of the submitted proposals and pre-proposals as potentially exciting. The panel felt that none were sufficiently complete, however, to be sent for external review. Instead, ISSEP hopes that revised full proposals will be submitted by the new new October 1 deadline, that that these proposals will address the concerns raised (which will be communicated to proponents through ISSEP's written reviews).

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May 5-6

Reviews and Recommendation for SCICOM regarded externally reviewed proposals

After the panel discussion of new or revised proposals, pre-proposals and APL's, ISSEP reviewed the proposals sent for external review after our last meeting. The external review comments and the proponents responses were considered by the panel. After the discussion, ISSEP placed these proposals into one of 5 groups: I, of highest priority for meeting goals of the long range plan (within ISSEP's mandate); II; important for meeting these goals; III; primarily within ESSEP's mandate but having elements important for ISSEP's mandate; IV; proposal shows potential, but revision and/or augmentation needed; may require re-review; V; the proposal does not meet ISSEP objectives and is not encouraged further.

The panel grouped the externally reviewed proposals as follows:

Proposal ████ ISSEP Group

450 Taiwan ████ II

451 Tonga ████ I

479 Manus ████ IV*

500 H2O ████ I

504 NARM ████ IV*

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The panel noted that for two of these proposals (479 and 504), special comments should be passed on to SCICOM. In neither case does ISSEP view the science proposed as less important. Instead, placement in group IV reflects a need for augmentation. In the case of proposal 479, that augmentation follows closely requests made by the external reviewers for additional information on the prospect of meeting objectives at the sites chosen for drilling. For proposal 504, a complementary drilling effort (perhaps comprising a transect) is needed to before a deep penetration site can be selected. ISSEP felt it was best to place these two proposals in group IV, rather than giving the impression to SCICOM that these deficiencies

reflected a lower priority in the basic scientific problems addressed by the proposed work.

May 6

Joint Meeting of ISSEP and ESSEP

Deep Biosphere

John Parkes reported on the Deep Biosphere PPG. We were pleased to learn that they are proceeding with shipboard experiments to test whether or not drilling fluids significantly contaminate the recovered sediments during the coring process. If so, special coring techniques or hardware may have to be developed. John made a plea for the onboard placement of even a minimal microbiological lab. Such a move is critical to progress toward the goals of the LRP as well as to convince the microbiological community that ODP is serious about pursuing these goals. In response to this plea, the SSEPs in their joint meeting on Wednesday passed the following recommendation:

In response to the report from the Deep Biosphere PPG, the SSEPs recommend to SCICOM that support be found for establishing a microbiological laboratory onboard the JOIDES Resolution as soon as possible. We feel that this move is critical to progress toward meeting our LRP objectives in this area, to encouraging a new community of scientists to participate in the Ocean Drilling Program, and to positioning ourselves for a significant enhancement of this area of research in post-2003 scientific ocean drilling.

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ISSEP discussed program priorities, as requested by SCICOM. An outline of the results of these discussions will be appended to the end of the minutes. Following a period devoted to writing of proposal reviews, ISSEP and ESSEP met once again in joint session and presented a precise of our separate discussions of scientific priorities and the JOIDES scientific plan: 2000 - 2003. It was gratifying that both panels identified a few key areas in which they felt some significant progress needed to be made prior to 2003 and that such progress could lead to a strong foundation for the planning of future ocean drilling. For ESSEP these areas included the study of the deep biosphere and gas hydrates, the hydrogeology of the Earth's crust, and the extreme warm climates. For ISSEP these areas included mantle dynamics (including the problems posed by large igneous provinces as well as the makeup and recycling of oceanic crust), deformation at convergent margins (including insitu monitoring and studies of earthquake processes) and the architecture of ocean lithosphere.

The results of ISSEP and ESSEP discussions will be presented to SCICOM separately. However, it is clear that the interrelationship of the deep biosphere, fluid flow in the Earth's crust, and the interplay of these processes with the tectonics of convergence and extension is one unifying and overarching thematic area that brings together some of the two panel's main interests. Studies of the relationship between climate and tectonics is another such area.

Notes of Appreciation

The Chairs took the opportunity to thank members of the panels for whom this would be their last meeting. They have all worked hard in the service of the scientific drilling community and we are all indebted to them for their efforts:

ISSEP:

Garry Karner
John Mahoney
Jakob Skogseid
Doug Wiens

ESSEP:

Elisabetta Erba
Christina Ravelo
Mike Underwood
Brian Popp

Piera Spadea, Universita' di Udine, will be joining ISSEP for our next meeting, and the other replacements to be named soon. The ESEEP vacancies will be filled by: Svante Bjorck, University of Copenhagen; Chris Charles, Scripps Institution of Oceanography; Neil Lundberg, Florida State University; and Paul Baker, Duke University.

The entire SSEP joined with the Chairs in thanking Godfrey Fitton for hosting our meeting and to NERC and the University of Edinburgh for their support.

The SSEP meeting was adjourned.

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ISSEP Members Present:

Makoto Arima
Nathan Bang
Ulrich Bleil
Georges Ceuleneer
Yucheng Chai
Godfrey Fitton
Garry Karner
Debbie Kelley
Keith Louden
John Mahoney
Julie Morris
Carolyn Ruppel
Jakob Skogseid
John Tarduno
Doug Wiens

ESSEP Members Present:

Jamie Austin
Barbara Bekins
Gerard Blanc
Steve D'Hondt
Elisabetta Erba
Neville Exon
Alan Kemp
Jon Martin
Ted Moore
Christina Ravelo
Ryuji Tada
Ellen Thomas
Mike Underwood
Rainer Zahn

Liaisons and Guests Present:

Christina Chondrogianni (JOIDES Office Liaison)
Carlos Primez (ESSEP Logging Liaison)
Tim Brewer (ISSEP Logging Liaison)
Paul Wallace (ISSEP ODP/TAMU Liaison)
Mitch Malone (ESSEP ODP/TAMU Liaison)
Susan Humphris (ISSEP SCICOM Liaison)
John Parkes (Wed. only) (Deep Biosphere PPG Chair)
Roger Flood (ESSEP Site Survey Panel Liaison)
Robert Whitmarsh (ISSEP Site Survey Panel Liaison)
Peter Barker (Invited guest)

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