

**Proposal Evaluation Panel (PEP) and Site Characterization Panel (SCP) Meeting:  
19 – 21 June 2013  
Santa Cruz, CA USA**

Proposal Evaluation Panel – PEP

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|                                |  |
|--------------------------------|--|
| Richard Arculus**              | Australian National University                                 |
| Jang-Jun Bahk                  | Korea Institute of Geoscience & Mineral Resources (KIGAM)      |
| Jennifer Biddle                | University of Delaware   |
| Tim Bralower**                 | Pennsylvania State University                                  |
| Beth Christensen               | Adelphi University   |
| Peter Clift                    | Louisiana State University                                     |
| Adélie Delacour                | Université Jean Monnet   |
| Jörg Geldmacher                | GEOMAR-Helmholtz Centre for Ocean Research                     |
| Marguerite Godard <sup>a</sup> | Montpellier 2 University                                       |
| Verener Heuer                  | University of Bremen   |
| Barbara John                   | University of Wyoming  |
| Jun-ichi Kimura <sup>b</sup>   | JAMSTEC  |
| Dick Kroon*                    | The University of Edinburgh                                    |
| Kathie Marsaglia <sup>c</sup>  | California State University, Northridge                        |
| Lisa McNeill                   | University of Southampton                                      |
| Katsuyoshi Michibayashi        | Shizuoka University  |
| Tomoaki Morishita              | Kanazawa University  |
| Craig Moyer <sup>d</sup>       | Western Washington University                                  |
| Masafumi Murayama              | Kochi University   |
| Clive Neal                     | University of Notre Dame                                       |
| Hiroshi Nishi                  | Tohoku University  |
| Matt O'Regan                   | Stockholm University   |
| Koichiro Obana                 | Japan Agency for Marine-Earth Science and Technology (JAMSTEC) |
| Stuart Robinson                | University College London                                      |
| Amelia Shevenell**             | University of South Florida                                    |
| Ashok Singhvi                  | Physical Research Laboratory                                   |
| David Smith                    | University of Rhode Island                                     |
| Michael Strasser**             | ETH Zurich   |
| Nabil Sultan                   | IFREMER  |
| Yohey Suzuki                   | The University of Tokyo  |
| Yoshinori Takano**             | Japan Agency for Marine-Earth Science and Technology (JAMSTEC) |
| Eiichi Takazawa                | Niigata University   |
| John Tarduno                   | University of Rochester  |
| Jun Tian                       | Tongji University  |
| Jody Webster                   | Sydney University  |
| Yasuhiro Yamada                | Kyoto University   |
| Yusuke Yokoyama                | The University of Tokyo  |
| James Zachos                   | University of California, Santa Cruz                           |

Unable to attend

\* Chair

\*\* Sub-chair

a – Alternate for Delacour

b – Alternate for Takizawa

c – Alternate for Clift

d – Alternate for Biddle

## Site Characterization Panel – SCP

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|                           |  |
|---------------------------|--|
| Caroline Burberry         | University of Nebraska - Lincoln                                 |
| Ben Clennell              | CSIRO  |
| Roger Flood               | Stony Brook University   |
| Andrew Goodliffe          | University of Alabama  |
| Mads Huuse                | The University of Manchester                                     |
| Ken Ikehara               | National Institute of Advanced Industrial Science and Technology |
| Yoshihiro Ito             | Tohoku University  |
| Koji Kashihara            | JAPEX  |
| Yi Kyun Kwon              | Kongju National University                                       |
| Gille Lericolais*         | IFREMER  |
| Jiabiao Li                | Second Institute of Oceanography                                 |
| David Mallinson**         | East Carolina University   |
| Dave Mosher               | Natural Resources Canada   |
| Yasuyuki Nakamura         | JAMSTEC  |
| Dhananjai K Pandey        | National Centre for Antarctic and Ocean Research                 |
| Derek Sawyer              | University of Kentucky   |
| Gabriele Uenzelmann-Neben | Alfred Wegener Institute   |
| Mikiya Yamashita          | JAMSTEC  |

\* Chair

\*\* Vice-chair

## Liaisons, Guests, and Observers

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|                    |  |
|--------------------|--|
| Jamie Allan        | National Science Foundation (NSF), USA                           |
| Louise Anderson    | University of Leicester, UK                                      |
| Keir Becker        | University of Miami  |
| Peter Blum         | Integrated Ocean Drilling Program, Texas A&M University, USA     |
| Kara Bogus         | Integrated Ocean Drilling Program, Texas A&M University, USA     |
| Se Won Chang       | Korea Institute of Geoscience & Mineral Resources (KIGAM), Korea |
| Jamus Collier      | IODP Management International, Inc.                              |
| Sarah Davies       | University of Leicester, UK                                      |
| Jan de Leew        | Royal Netherlands Institute for Sea Research, The Netherlands    |
| David Divins       | Ocean Drilling, The Consortium for Ocean Leadership, USA         |
| Nobuhisa Eguchi    | Center for Deep Earth Exploration (CDEX), JAMSTEC, Japan         |
| Robert Gatliff     | British Geological Survey, UK                                    |
| Holly Given        | IODP Management International, Inc.                              |
| Karsten Gohl       | Alfred Wegener Institute   |
| Gilles Guerin      | Lamont-Doherty Earth Observatory                                 |
| Susan Humphris     | Woods Hole Oceanographic Institution                             |
| Tom Janecek        | National Science Foundation (NSF), USA                           |
| Yoshihisa Kawamura | IODP Management International, Inc.                              |
| Gil Young Kim      | Korea Institute of Geoscience & Mineral Resources (KIGAM), Korea |
| Anthony Koppers    | Oregon State University  |
| Yusuke Kubo        | Center for Deep Earth Exploration (CDEX), JAMSTEC, Japan         |

|                    |  |
|--------------------|--|
| Denise Kulhanek    | Integrated Ocean Drilling Program, Texas A&M University, USA |
| Shin'ichi Kuramoto | Center for Deep Earth Exploration (CDEX), JAMSTEC, Japan     |
| Mitch Malone       | Integrated Ocean Drilling Program, Texas A&M University, USA |
| Dhananjai Pandey   | National Centre for Antarctic and Ocean Research             |
| Donald Potts       | University of California, Santa Cruz                         |
| Emily Powell       | Ocean Drilling, The Consortium for Ocean Leadership, USA     |
| Jeff Schuffert     | Ocean Drilling, The Consortium for Ocean Leadership, USA     |
| Karen Stocks       | Scripps institution of Oceanography, UCSD                    |
| Shouting Tuo       | Tongji University, China                                     |
| Michiko Yamamoto   | IODP Management International, Inc.                          |

**Proposal Evaluation Panel (PEP) Meeting:  
First day joint meeting with the Site Characterization panel**

**19 June 2013  
Santa Cruz, CA USA**

**Wednesday**

**19th of June 2013**

**08:30-18:00**

**PEP-SCP Joint meeting:**

**1. Introduction**

**1.1. Call to order and self-introductions**

PEP chair Dick Kroon called the meeting to order at 8:30. Self-introductions were skipped because of the large group of people.

**1.2. Welcome and meeting logistics**

Kroon welcomed the meeting participants. The meeting host James Zachos outlined the logistics for the meeting.

**1.3. PEP-SCP Review Process**

**1.3.1: Introduce the agenda, discussion on the PEP-SCP integration.**

[Discussion: expectations of the SCP/PEP back-to-back meeting]

- Aim: to improve communication/integration between the two advisory panels to the benefit of the proponents of proposals.
- As an example of how to improve communication: We need to discuss the format of future SCP/PEP meetings (back-to-back, parallel or separate meetings?).
- As an example of how to improve integration: We need to discuss the format of response letters to proponents (one letter or two?).
- Another example of how to improve integration: Feasibility issues of proposals can be better evaluated by a merged panel?
- The joint PEP-SCP panel should evaluate the proposals by addressing the following questions:
  - Are the scientific questions/hypotheses being addressed exciting and of sufficiently wide interest to justify the requested resources?
  - Will the proposal significantly advance one or more goals of the Science Plan?
  - Would the proposal engage new communities or other science programs into the drilling program?

- To what degree does the integrated experimental design of site characterization, drilling, sampling, measurements, and downhole experiments constitute a compelling and feasible scientific proposal?

Kroon stressed that PEP and SCP should be flexible and fast in a more integrated system.

[Discussion: PEP mandate]

Specifically, the PEP is responsible for:

-evaluation of pre-proposals, identification of pre-proposals for development into full proposals, and deactivation of those proposals unlikely to succeed.

evaluation of full proposals and identification of those needing revision and those to be sent for external review. Those proposals sent for external review will also be sent for simultaneous review by the Site Characterization Panel (SCP), and to the U.S. platform provider (or other appropriate platform provider) for operator feasibility analyses. .

-Selection of the best proposals for forwarding to JRFB or other Facility Board using the JRF advisory panels for development of annual and long-term platform schedules. Each forwarded proposal will be accompanied by a summary of key discussion points and justification for the rating assigned by PEP, as well as a summary of external reviews.

-SCP comments and reviews will be collated together with the PEP documentation by the Support Office to form a complete proposal package for the JRFB or other appropriate Facility Board.

- Full proposals that PEP identifies as among the scientifically most compelling but needing further site characterization or technological development based on SCP review are placed in a “holding bin.”

- When the site characterization or technological needs are determined by the PEP and SCP chairs and the appropriate Facility Board to be satisfied, such proposals will be released and included within the pool considered in developing annual and long-range science plans.

(Discussion: SCP-PEP integration: the way forward):

Question: How do we serve best the FBs and create clarity on proposal issues for proponents?

- adapt the proposal guidelines?
- adapt Terms of Reference?
- parallel SCP-PEP meetings?
- one response letter to proponents?
- amalgamate the two panels in the long run?

Kroon explained that flexibility is key! The potentially joint PEP-SCP team should handle proposals as fast as possible to serve requirements of all FB and proponents (and support office).

[Discussion: Site survey data requirement]:

Concerns raised by PEP and SCP members during the discussion:

- SCP needs to comment on site survey data at pre-proposal stage to aid in the discussion on the drilling plan and drilling feasibility.
- The matrix is the key for judging feasibility of the drilling plan.
- PEP and SCP should send one review letter together to the proponent as two letters could confuse proponents with opposite messages (good science but bad site survey data).
- If the two letters say good science in one but bad site survey data in the other, proponents can use the good letter to get funding for further site survey cruises.
- On the contrary, one PEP-SCP letter pointing out the proposal's good science and lack of site survey data would be more helpful for proponents to get funding for further site survey cruises.
- Need to define what types of site survey data are needed for pre-proposal and full-proposal. They should be different.

[Discussion: Pre-proposals]

A well-prepared Pre-proposal should:

- state the scientific objectives and explain how those objectives relate to, or advance beyond, the IODP Science Plan 2013-2023, including the theme(s) and challenge(s) addressed,
- justify the need for drilling to accomplish the scientific objectives,
- present a conceptual strategy for addressing the scientific objectives through drilling, logging, or other down-hole measurements,
- describe the proposed drilling sites, penetration depths, expected lithologies, available site-survey data, and discuss the recovery rates needed to achieve key goals.
- describe any development of advanced and non-standard tools, special sampling techniques, down-hole measurements, bore-hole observatories or others,
- identify any logistical problems, e.g. extreme weather, sea-ice, piracy, or others,
- describe briefly any relationships to other international geoscience programs and /or companies

[Discussion: Pre-proposals]

Comments from PEP and SCP members:

- SCP should review pre-proposals to give advice on site survey requirements expected at the full proposal stage.
- Concerned that lack of site survey data would stop science.
- PEP and SCP watchdogs should work together to help proponents to develop pre-proposals to full-proposals.

[Discussion Full Proposals]

A well-prepared Full proposal should:

- state the scientific objectives and explain how those objectives relate to, or advance beyond, the IODP Science Plan 2013-2023, including the theme(s) and challenge(s) addressed,
- justify the need for drilling to accomplish the scientific objectives,
- present a well-defined strategy for addressing the scientific objectives through drilling, logging, or other down-hole measurements,
- provide detailed estimates of the time required for drilling, logging, or other down-hole measurements. In addition, discuss required recovery rates (general) as a function of depth and highlight particular target zones including required recovery rates for these in order to achieve key goals, and finally comment on the impact on the science if such recovery rates are fully achieved.
- describe the available site-survey data and any plans for acquiring additional data, and discuss how the drilling targets relate to those data in the Full proposal. In addition, the proponents are reminded to upload the available site survey data in the Site Survey Data Bank in case the data are directly available, or a.s.a.p. after collection of new data. But note that the proponents are expected to upload the full suite of site-survey data in the Site Survey Data Bank after the external review at the latest.
- discuss the expected scientific outcome of drilling and any subsequent work required to complete the overall project.
- describe any development of advanced and non-standard tools, special sampling techniques, down-hole measurements, bore-hole observatories or others, and include an out-year plan for observatory data recovery, maintenance and ultimate termination.
- describe any source for external funding for non-standard tools and/or drilling in general (less than 70% of the total, otherwise it becomes a CPP proposal)
- identify any logistical problems, e.g. extreme weather, sea-ice, piracy, or others,

-describe briefly any relationships to other international geoscience programs and/or companies.

[Discussion: Full proposals]

Concerns and comments raised by PEP and SCP members:

- When are proponents required to upload the full suite of site survey data to the data bank, after the external review at the latest?
- “after the external review” would be too late.
- “adequate site survey data” means data enough to tell scientific objectives can be met.
- There was an example that NSF didn’t fund site survey data until the proposal was put in the Holding Bin. It's difficult to have full site survey data until it goes to the Full proposal or HB stage.
- Proposals should be drill-ready when PEP forwards the proposal to FBs for scheduling. Proposals cannot be forwarded for scheduling before all the data are in.
- Strict rules about site survey data could hamper efficient use of the JR, cutting out of opportunities.
- The source of funding should not drive science at the PEP stage.

**PEP Consensus 1306-01:** PEP and SCP may forward outstanding scientific proposals to the appropriate facility board with the understanding that the acquisition of additional site survey data is scheduled (but data are not available yet). PEP and SCP will review these new data on an ad-hoc basis. Proponents should understand that if the new data indicate that the scientific objectives cannot be met, the proposal would be deactivated

[Potential SCP-PEP agenda: discussion on potential joint SCP-PEP meeting logistics]

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SCP-PEP Joint meeting:

1. Introduction (Kroon / Mallinson) 60min
  - 1.1. Call to order and self - introductions
  - 1.2. Welcome and meeting logistics
  - 1.3. The integrated PEP - SCP Review Process
    - 1.3.1: Introduce the agenda.
    - 1.3.2: Short presentation on changes in the matrix discussion
    - 1.3.3: Participants’ declarations of COI for current proposal set



## 2. Report

2.1 Question - and - answers to Agency reports (Kroon/Agencies) 30min

MEXT(Japan), NSF(U.S.), EMA(ECORD), MOST(China), KIGAM(KIGAM), ANZIC(Australia/ New Zealand), MoES(India)

2.2 Support Office report (Yamamoto)

2.3. Implementing Organization (IO) reports;

2.3.1. CDEX (Eguchi) 15 min

2.3.2 USIO (Divins) 15 min

2.3.3. ESO (Gatliff)

3. Review of Preproposals and APLs (2 watchdogs from PEP and 1 from SCP)

4. Review of Full proposals (2 watchdogs from PEP and 2 from SCP)

5. Review of motions and consensus items

6. Schedule of next PEP-SCP meeting

7. AOB

Note: no break-out groups if less than 20 proposals

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[Discussion: potential SPC-PEP agenda]

Concerns and comments raised by PEP and SCP members:

- Breakout groups are important regardless of number of proposals
- Expertise diversity is necessary. Need more members?
- Big panel can be cumbersome. On the contrary, PEP can reduce members because PEP workload is light.
- Maintain the current number until we see how it works.

(Discussion on future joint meetings of PEP and SCP):

Kroon asks the question whether anyone is against a future joint meeting. All PEP and SCP members are in favor of future joint meetings. Kroon proposes to report this consensus statement to the Joides Resolution Facility Board (JRFB) at the end of August 2013. Kroon explains that the JRFB will make a decision on this issue in August.

### **1.3.2: Short presentation on the outcomes of the matrix discussion (c.f. 2.3 SCP meeting)**

Gabriele Uenzelmann-Neben (SCP) presented the new guidelines of site survey data submission.

[Responsibility of proponent]

Demonstrate feasibility of the science by demonstrating via their data that:

- target is adequately imaged,
- there are no structural complications

SCP recommends that every proposal list includes a proponent, who has the following abilities :

- to manipulate and interpret the geophysical data
- to prepare figures and statements regarding the adequacy of the data

[New Guidelines]

- High resolution palaeoceanographic objectives require :
  - a sedimentary column that is nearly complete
  - not disturbed by erosional unconformities, faults, or mass transport deposits
  - the data provided to SCP thus should be of sufficient resolution and continuity (i.e., a 2d SCS or MCS grid)
- For some targets, which are very small (e.g. gas seeps) or deep (e.g. crustal slip planes)
  - only a 3d grid of MCS data (or 3d seismic volume) provide a detailed image.
- For deeper targets
  - seismic refraction data as well as
  - gravity
  - and magnetic data provide additional information on the structural configuration

[New guidelines applied on a case by case basis]

- Bathymetric data are needed to characterise the seafloor
- Surface surface samples
- Side scan/back scatter data
- 3.5 kHz, Parasound, Topas, or other high-frequency subbottom profiler data characterise the shallow environment
  - => provide valuable information about the shallow subsurface which are vital for drilling operations (what materials are being spudded) and for scientific purposes as related to high-resolution studies (paleoclimate reconstructions), geohazard studies (slumps, slides, fluid flow, etc), or shallow crustal objectives.
- Seismic velocities are always needed to
  - a) convert the seismic data from two-way travel time into depth,
  - b) characterise changes in lithology, e.g. gas, volcanic, hard rock
- To correctly evaluate the data submitted to the SSDB, SCP needs as much information about acquisition and processing parameters as possible (i.e., metadata)
- Coordinates unequivocally identifying the location of the data as well as unambiguous seismic trace numbers (either shot point SP or Common Datum Point CDP) are needed to correctly locate and evaluate the proposed drill site

[General definition]

- High resolution Multi-Channel Seismic (MCS) (theoretically allows a resolution of layers > 6 m thickness)
  - optimum sampling rate (SR)= 1 ms (max 2ms)
  - shot interval  $\leq$  25 m
  - streamer offset  $\geq$  1200 m
  - fold $\sim$  50
  - CDP interval  $\leq$  25 m
  - source frequency content up to 150 Hz
  - true amplitude preservation
- 2d grid MCS: line spacing max 10 km
- 3d grid MCS: a dense 2d grid, line spacing should be determined case-by-case, 1 km in general
- Cross lines: seismic lines crossing each other at roughly 90°, need to extend at least 10 km beyond the proposed site.
- Single channel seismic (SCS) data will be considered on a case by case basis, e.g. if the proposed sites are located in ice covered areas where one cannot always collect MCS data, or if target depths are very shallow (<100 m subsurface). The determining factor is whether or not the data adequately image the targets.
- 3D seismic volume, which was acquired to fill a box-shaped area, sorted into “bin”, migrated with 3D-migration technique, will be required on a case by case basis, e.g. very small target, deep target with very complicated structure which should be properly imaged only in 3D seismic volume.

[General data guidelines]

- Digital seismic data (SCS or MCS depending on objectives and targets) in SEG Y format with the following header information to allow proper evaluation
  - Trace sequential number bytes 1-4
  - Shot point number bytes 17-20
  - Common datum point (CDP) number bytes 21-24
  - Coordinate units bytes 89-90
  - Scalar to be applied to coordinates bytes 71-72
  - Navigation with the coordinate units and scalar defined above
  - MCS data should contain CDP location bytes 181-184 and 185-188
  - SCS data should contain source location bytes 73-76 and 77-80
  - Record length bytes 115-116
  - Sample rate bytes 117-118
  - If the header location does not follow the SEG Y standard as mentioned above, proponents must provide the table describing the location of the headers.
- Detailed information on acquisition and processing parameters
- Acquisition
  - Type and frequency content of seismic source
  - Streamer length and channel interval
  - Sample rate, record length, filters applied during recording
  - Shot interval, CDP interval, fold
- Processing

- Processing sequence including information on filters and gain applied (at what stage, type filter flanks, type of gain)
- Static corrections?
- Deconvolution?
- Multiple suppression?
- Stacking, type and parameters
- Migration, type and parameters
- Depth conversion or depth migration (for depth section)?
- Figures (jpg, pdf, tif, gif) of seismic lines (interpreted and un-interpreted) with clearly annotated SP or CDP (the same as in digital files), scale, orientation and information on filters and/or gains applied. Interpreted lines should include the location, with proposed penetration depth, of proposed sites.
- Swath bathymetric data as image files (jpg, pdf, tif, gif) as well as ASCII xyz-files or net-cdf grids with information on cell size
- Navigational data as ASCII xyz-files with either SP or CDP number, which directly relates to the same parameter in the digital seismic data, seismic figures and location maps
- Location maps annotated with lat/lon for each site with bathymetry across the proposed site and available seismic lines with annotated SP or CDP numbers (same as digital seismic data, seismic figures and navigational data)
- If available, information from nearby wells or cores.

[Examples of Needed Data (arranged according to broad objectives). ]

Ocean and Climate Change (e.g. 318 Wilkes Land, 339 Mediterranean outflow, 342 Paleogene Newfoundland Sediment drifts) or Biosphere Frontiers (e.g. 331 Deep Hot Biosphere, 336 Mid Atlantic Ridge Flank, 337 Deep Shimokita Coalbed)

- High resolution MCS (or SCS where target depth is <100mbsf).
- Depending on target, 2d or 3d (lateral high resolution or very deep) grid of MCS
- Sites ideally located on or near crossing lines (this depends upon demonstrated regional continuity of reflections and EPSP considerations).
- Acoustic backscatter data (side-scan or multibeam) to characterise the seafloor
- High resolution bathymetry
- Seismic velocities appropriate to demonstrate the local velocity fields
- For very shallow target, 3.5 kHz, Parasound, Topas or other subbottom profiling data both as figures and SEG-Y similar to MCS data to characterise shallow subbottom structures and determine the thickness of sediment cover.
- Surface samples to provide information on surface sedimentary composition and structure (e.g. gas seeps, fluid flow) as figures and tables for shallow targets and expected gas seeps of fluid flow; add locations to base maps
- Video/photography if drilling into a hard irregular outcrop (e.g. a reef, or basalt outcrop)

Uenzelmann-Neben stressed that SCP can waive some requirements case by case basis and take into account cost benefit of getting data. However, a general guideline for everyone is needed.

## 2. Report

### 2.1 Question-and-answers to Agency reports

#### MEXT

Clive Neal asked if the report from the Chikyu+10 meeting had been finalized, if the outcomes had any notable impact to date, in particular with respect to stabilization of funding over the next 10 years. Nobu Eguchi responded that the draft report would be finalized by the end of June, and that budgetary debates continue.

#### NSF

Jamie Allan announced that the Foundation is in the final stages of negotiations with the Scripps Institution of Oceanography to become the new USA Support Office.

#### EMA

Clive Neal asked for clarification of the extent of discussions with the IMAGES program in regard to future drilling projects. Karsten Gohl responded that in the past, this program had been prominent in using long piston cores for paleoceanographic studies, and would like to get proposal proponents with mutual interests in using these techniques together, and to submit proposals to IODP. Jody Webster enquired on progress with seabed rock drills. Louise Anderson responded with a discussion on the BGS and MARUM technologies, and the news that a new MeBo with penetration capability of possibly down to 200m is under construction.

#### ANZIC

Richard Arculus advertised the availability of an independent consultant's cost-benefit analysis of Australian participation in the IODP, at the ANZIC web site: ([http://iodp.org.au/wp-content/uploads/Allens\\_IODP\\_Final-report\\_14March\\_1.pdf](http://iodp.org.au/wp-content/uploads/Allens_IODP_Final-report_14March_1.pdf))

### 2.2 IODP-MI report

Michiko Yamamoto presented the IODP-MI report.

[Proposal submission for the April 2013 deadline]

MI received 19 proposals in total. 17 are new proposals and 2 are "revised proposals".

#### Breakdown by Science Plan theme

| Theme               | Number of proposals |
|---------------------|---------------------|
| Climate and Ocean   | 49                  |
| Biosphere Frontiers | 13                  |
| Earth Connections   | 17                  |
| Earth in Motion     | 18                  |

#### Breakdown by ocean

| Ocean    | Number of proposals |
|----------|---------------------|
| Arctic   | 8                   |
| Atlantic | 20                  |

|               |    |
|---------------|----|
| Indian        | 18 |
| Pacific       | 43 |
| Southern      | 6  |
| Mediterranean | 2  |

#### Breakdown by SAS evaluation stage

| SAS Stage   | Number of proposals |
|-------------|---------------------|
| PEP         | 54                  |
| FB          | 41                  |
| Holding Bin | 2                   |

#### Breakdown by lead proponent's country

| Country of PI | Number of proponents |
|---------------|----------------------|
| USA           | 50                   |
| Japan         | 9                    |
| ECORD         | 26                   |
| ANZIC         | 7                    |
| India         | 2                    |
| China         | 1                    |
| Korea         | 1                    |
| Brazil        | 1                    |

#### Breakdown by distribution of all proponents

|        |     |
|--------|-----|
| USA    | 394 |
| Japan  | 125 |
| ECORD  | 373 |
| ANZIC  | 56  |
| China  | 27  |
| India  | 21  |
| Korea  | 11  |
| Brazil | 15  |
| Others | 68  |

#### Breakdown by platform

| Platform  | Number of proposals |
|-----------|---------------------|
| Non-riser | 68                  |
| Riser     | 7                   |
| MSP       | 15                  |
| Multiple  | 7                   |

### 2.3. Implementing Organization (IO) reports

### 2.3.1. CDEX

Yusuke Kubo provided the CDEX report.

[Chikyu's recent expeditions]

|                |  |                               |  |
|----------------|--|-------------------------------|--|
| <b>Exp 338</b> | <b>NanTroSEIZE Stage 3 - Plate Boundary Deep Riser — 2</b> | <b>Oct. 1 - Jan. 13, 2013</b> | <b>B. Dugan<br/>K. Kanagawa<br/>G. Moore<br/>M. Strasser</b> |
|                | <b>Non-IODP</b>  | <b>Jan 13 – Apr. 2</b>        |  |
|                | <b>Non-IODP</b>  | <b>Apr. 5 – Jul</b>           |  |
|                | <b>Non-IODP</b>  | <b>Early Aug</b>              |  |
| <b>Exp 348</b> | <b>NanTroSEIZE Plate Boundary Deep Riser – 348</b>         | <b>Sep – Jan., 2014</b>       | <b>D. Saffer<br/>T. Hirose<br/>H. Tobin</b>                  |

[Site survey]

- NanTroSEIZE (April 2013 - April 2013)
- IBM-4 (Potential riser operations)
- CRISP (Potential riser operations)

[DONET]

The long-term borehole observatory at C0002 in Nankai Trough was connected to the submarine cable monitoring network DONET. This enables real-time monitoring of a number of critical parameters (pore-fluid pressure meter, strain meter, broadband seismometer, (It meter, array thermometers) in the borehole.

[Retrieval of JFAST sensors and data]

Borehole thermometer that was installed in Exp.343T last year was successfully retrieved on April 26.

[Chikyu+10]

- Great success with 397 participants from 180 institutions.
- 136 international participants from 21 countries
- 127 white papers 53 drilling project ideas
- Steering committee is now finalizing a report.

[CIB]

The first meeting is held from 23 to 25<sup>th</sup> of July 2013 in Yokohama.

Membership

| CIB members  | Liaisons   | Observers   |
|--|--|---|
| Six leading scientists<br><i>Chikyu</i> Regular Members<br><i>Chikyu</i> Project Members<br>Director/IODP, MEXT<br>CDEX Director | IODP Forum Chair<br>PEP Chair<br>Project Partnership<br>Office(PPO)<br>Support Office(SO)<br>USIO<br>ESO<br>Kochi Core Center(KCC)<br>ECORD FB Chair<br>JR FB Chair<br>EPSP Chair<br>SCP Chair | NSF<br><i>Chikyu</i> Partnership<br>Members<br>Program Member Offices<br>Others<br>J-DESC<br>USSSP<br>ESSAC<br>Other PMOS |

#### Mandate

CIB will discuss and/or review the matters concerning the planning and the operations of *chikyu* IODP expeditions and relevant programs and provide suitable recommendations for JAMSTEC and other relevant parties.

1. Discuss and review annual *Chikyu* IODP implementation plans for the following Japanese fiscal year,
2. Discuss and review long-term *Chikyu* IODP implementation strategies for the following 4-5 years
3. Discuss and review data management core curation publications capacity building outreach programs and other related activities.
4. Discuss the establishment of full-proposal formation workshops
5. Discuss and review activities of the Project Partnership Office
6. Discuss other related issues when a need arises.

#### 2.3.2 USIO

David Divins provided the USIO report.

[FY13 JR Operations Schedule]



| <b>EXPEDITION</b>        | <b>EXP#</b> | <b>DATES</b>                | <b>TOTAL DAYS<br/>(port./at sea)</b> | <b>CO-CHIEF<br/>SCIENTISTS</b>    |
|--------------------------|-------------|-----------------------------|--------------------------------------|-----------------------------------|
| <b>Non-IODP</b>          |             | <b>1 Aug – 23 Oct '12</b>   |                                      |                                   |
| <b>CRISP-2</b>           | <b>344</b>  | <b>23 Oct – 11 Dec '12</b>  | <b>49 (2/47)</b>                     | <b>R. Harris<br/>A. Sakaguchi</b> |
| <b>Hess Deep</b>         | <b>345</b>  | <b>11 Dec – 12 Feb '13</b>  | <b>63 (7/56)</b>                     | <b>K. Gillis<br/>J. Snow</b>      |
| <b>Non-IODP</b>          |             | <b>12 Feb – 19 May '13</b>  |                                      |                                   |
| <b>SCIMP1/858 RECORK</b> | <b>341S</b> | <b>19 – 29 May '13</b>      | <b>11 (0/11)</b>                     | <b>I. Kulin,<br/>M. Riedel</b>    |
| <b>South Alaska</b>      | <b>341</b>  | <b>29 May – 29 July '13</b> | <b>61 (3/58)</b>                     | <b>J. Jaeger,<br/>S. Gulick</b>   |
| <b>Asian Monsoon</b>     | <b>346</b>  | <b>29 July – 28 Sep '13</b> | <b>60 (5/55)</b>                     | <b>R. Tada<br/>R. Murray</b>      |

[Hess Deep: 11 December 2012 12 February 2013]

Expedition 345 was the second offset drilling program at the Hess Deep Rift to study crustal accretion processes at the fast-spreading East Pacific Rise (EPR).

#### Expedition 345 Objective

- Principal objective: to sample the lower levels of young plutonic crust that formed at the fastspreading EPR, filling in a major lithologic gap.

#### Expedition 345 Science Goal

- Test competing hypotheses of magmatic accretion and hydrothermal processes in the lower ocean crust formed at the fast-spreading EPR.

#### Achievements

- Primary objective accomplished: young EPR primitive gabbros recovered!!
- Modally layered olivine gabbros and troctolites discovered
- Unexpected mineral assemblages and textures that challenge aspects of our models for MORB genesis and ophiolites as ancient analogues for fast-spreading crust

[ Tie-Up/Maintenance Period: ~ 5 March - 2 May 2013]

- Tie-up at Ogden Point, Victoria, British Columbia
- Normal preparation work for IODP Expedition 341S: Simple Cabled Instruments for Measuring Parameters In Situ (SCIMPI)
- New maintenance projects:
  - remove and replace older instrument host computers;
  - install and test a new Vibration Isolated Television (VIT);
  - wireline logging related work by USIO-LDEO staff and Schlumberger engineers
- First 2013 School of Rock workshop will be held on board the JR (1-9 April)

[SCIMPI/858G ReCORK: 19-29 May 2013]

#### Expedition 341S Objectives

- APL 816: Reinstrument Hole 858G on Middle Valley, Juan de Fuca Ridge, which was instrumented with a CORK on Leg 139 and later replaced on Leg 169. Seals on both CORKs failed after one year.
- Test deployment of Simple Cabled Instrument for Measuring Parameters In Situ (SCIMPI) on the Cascadia margin.

#### Results:

- 858G CORK: Old CORK could not be removed. Repeated pulling on the release sleeve, increasing to a peak of >150,000 lb, resulted only in the release sleeve breaking not far below the latch dogs. Corrosion or mineralization apparently kept the sleeve from shifting as designed and the latching ring from disengaging.
- SCIMPI was successfully deployed in Hole U1416A. The final tool sting consisted of nine modules, with three of these including pressure sensors ( at 8, 117, and 234 meters below seafloor, respectively).
- ~30 yr old subsea camera and sonar system (VIT) was replaced with modern fiber optic cable, camera, sonar, and gyro in May. Successfully used during Exp. 341S.

[Southern Alaska Margin: 29 May - 29 July 2013]

#### Major Objectives:

- Document the tectonic response of an active orogenic system to late Miocene to recent climate change;
- Establishing the timing of advance and retreat phases of the northwestern Cordilleran Ice Sheet to test its relation to dynamics of other global ice sheets;
- An expanded source-to-sink study of the complex interactions between glacial, tectonic, and oceanographic processes responsible for creation of one of the thickest Neogene-Quaternary high-latitude continental margin sequences;
- To understand the dynamics of productivity and intermediate water circulation in the Northeast Pacific, and their role in global carbon cycle;
- Documenting the spatial and temporal behavior during the Neogene of the geomagnetic field at extremely high temporal resolution in an undersampled region of the globe.

New 1/2 APC deployed and being utilized successfully on first site S. Alaska

- Designed to cut a 4.8 m core
- Uses:
  - Correcting offset to maintain core breaks during stratigraphic correlation (on S.Alaska)

- Extending APC coring depths with improved core quality and reduced drill over/partial strokes with full APC system (on S. Alaska)
- Recovering APC cores between hard layers (e.g., chert) that are less than 9.5 m apart

[FY14 JR Operation Schedule]

| <b>EXPEDITION</b>                         | <b>EXP#</b> | <b>DATES</b>                     | <b>TOTAL DAYS<br/>(port./at sea)</b> | <b>CO-CHIEF<br/>SCIENTISTS</b>    |
|---|-------------|----------------------------------|--------------------------------------|-----------------------------------|
| <b>Dry Dock/Non-IODP</b>                  |             | <b>28 Sep 2013 – 28 Jan 2014</b> |                                      |                                   |
| <b>South China Sea<br/>Tectonics</b>      | <b>349</b>  | <b>28 Jan – 30 Mar 2014</b>      | <b>61 (3/58)</b>                     | <b>C.-F. Li<br/>J. Lin</b>        |
| <b>Izu Bonin Mariana:<br/>Rear Arc</b>    | <b>350</b>  | <b>30 Mar – 30 May 2014</b>      | <b>61 (5/56)</b>                     | <b>Y. Tamura<br/>C. Busby</b>     |
| <b>Izu Bonin Mariana:<br/>Arc Origins</b> | <b>351</b>  | <b>30 May – 30 July 2014</b>     | <b>61 (5/56)</b>                     | <b>R. Arculus<br/>O. Ishizuka</b> |
| <b>Izu Bonin Mariana:<br/>Forearc</b>     | <b>352</b>  | <b>30 July – 29 Sep 2014</b>     | <b>61 (5/56)</b>                     | <b>J. Pearce<br/>M. Reagan</b>    |

[FY15 JR Operation Schedule]

| <b>EXPEDITION</b>                 | <b>Proposal#</b> | <b>DATES</b>                     | <b>TOTAL DAYS<br/>(port./at sea)</b> | <b>CO-CHIEF<br/>SCIENTISTS</b> |
|-----------------------------------|------------------|----------------------------------|--------------------------------------|--------------------------------|
| <b>Potential Non-IODP</b>         |                  | <b>28 Sep 2013 – 30 Nov 2014</b> |                                      |                                |
| <b>Indian Monsoon</b>             | <b>795</b>       | <b>30 Nov – 30 Jan 2015</b>      | <b>61 (5/56)</b>                     | <b>TBD</b>                     |
| <b>Bengal Fan</b>                 | <b>552</b>       | <b>30 Jan – 30 Mar 2015</b>      | <b>61 (5/56)</b>                     | <b>TBD</b>                     |
| <b>Arabian Sea</b>                | <b>793</b>       | <b>30 Mar – 30 May 2015</b>      | <b>61 (5/56)</b>                     | <b>TBD</b>                     |
| <b>Tie Up</b>                     |                  | <b>30 May – 30 Jul 2015</b>      |                                      |                                |
| <b>Indonesian<br/>Throughflow</b> | <b>807</b>       | <b>30 Jul – 30 Sep 2015</b>      | <b>61 (5/56)</b>                     | <b>TBD</b>                     |

## [E&O Activities]

### Two 2013 School of Rock Workshops

- First workshop, titled “Exploring Ocean Cores and the Geology of the Pacific Northwest,” was held April 1–9 on board the JR during the tie-up period in Victoria. 19 educators and 4 instructors participated in this SOR.
- Second workshop, titled “Investigating Earth’s History and the Deep Biosphere Using Samples from Below the Seafloor aboard the JOIDES Resolution,” had a focus on cyber-educators and was held May 16–30, 2013 on board the JR during Expedition 341S: SCIMPI. This SOR consisted of 13 educators and 5 instructors.

### Expedition 345: Hess Deep

- Three Educators: Jean-Luc Berenguer from the Centre International de Valbonne, France) and former SOR alumni, Susan Gebbels from Newcastle University, UK, and Nicole Kurtz, illustrator from Shaker Heights, Ohio
- 93 video broadcasts to students from 16 countries, developed cross curricula work packages linked to the National Education Standards and targeting different student age groups.
- A press release covering the outcomes of the expedition is available at:  
<http://www.oceanleadership.org/2013/joides-resolution-retrieves-youngcrustal-rocks-from-hess-deep-rift/>

### Ship to Shore Project

- First ebook about the JR titled, “Uncovering Earth's Secrets: Science and Adventure on the JOIDES Resolution” is available as a free download from iTunes at:  
<https://itunes.apple.com/us/book/uncovering-earths-secrets/id632960308?mt=11>
- Two well-attended community events: one at the New Rochelle Public Library and the second at the Museum of the Earth in Ithaca, NY. A third event is planned at the Carnegie Museum of Natural History in Pittsburgh, PA in June.

### Victoria, Canada Outreach Activities

- In partnership IODP Canada and Ocean Networks Canada, ship tours conducted on 28 April for ~30 staff and scientists from Ocean Networks Canada, and on 9-10 May for ~50 local scientists and students from the University of Victoria as well as a local journalist and a photographer from the “Victoria Times Colonist”.
- Article in the “Victoria Times Colonist” regarding the SCIMPI expedition:  
<http://www.timescolonist.com/life/sea-floor-drillingtool-could-unlock-mysteries-of-gas-hydrates-1.175865>

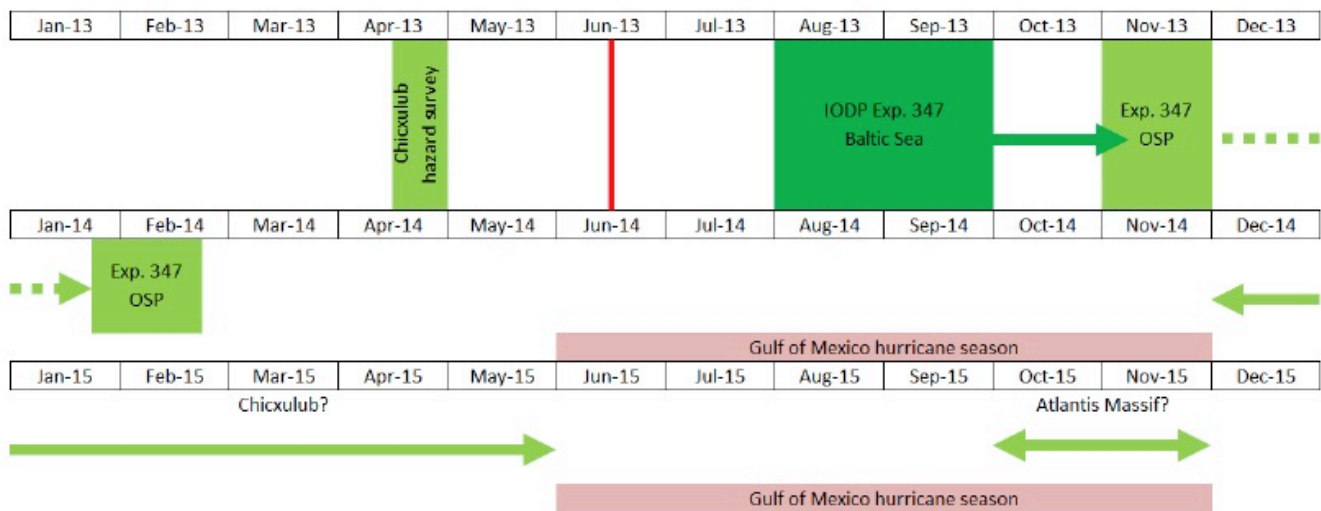
### **2.3.3. ESO**

Louise Anderson provided ESO report.

## [Future MSP]

| FY13, next MSP                                     |   |     |   |
|--|---|-----|---|
| 672  | Baltic Sea Basin<br>Paleoenvironment                    | OTF | Forwarded March 2011, SPC ranked #2<br>Spring/Summer 2013                             |
| FY14 / FY15 options                                |   |     |   |
| 548  | Chicxulub K-T Impact<br>Crater                          | OTF | Forwarded March 2010, SPC ranked #4<br>First MSP of the new program, 2014?            |
| 758  | Atlantis Massif Seafloor<br>Processes                   | OTF | Forwarded March 2011, SPC ranked #1<br>2014-2015? Depends on seabed drill readiness   |
| FY16 and beyond                                    |   |     |   |
| 716  | Hawaiian Drowned<br>Reefs                               | OTF | Forwarded March 2009, SPC ranked #6   |
| 581  | Late Pleistocene<br>Coralgal Banks<br>(full expedition) | OTF | Forwarded March 2010, SPC ranked #10  |
| 637  | New England Shelf<br>Hydrogeology                       | OTF | Forwarded March 2009, SPC ranked #4<br>In holding bin with technology and cost issues |
| Plus new MSP proposals, possibly in the Antarctic. |   |     |   |

[MSP Schedule FY13-15]



[Proposal 548, Chicxulub Impact Crater]

### Objectives

- To drill into one of the largest & best preserved impact craters on Earth,
- Target: a topographic feature of crater known as the peak ring
  - What is the peak ring made of?
  - How did the peak ring form?
  - How do rocks weaken during large impacts?
  - What caused the environmental changes that lead to mass extinction?

### Hazard survey for rig positioning

- Successfully took place offshore Mexico, 17-22 April.

- Survey imaged typical karst topography.
- A few sinkholes in the survey area, but not in the vicinity of the 3 drill sites.
- Seabed is very hard, shown by surface tow boomer, CHIRP, CPT hit rock.
- Veneer of sand-sized sediment forms ribbons across the rock platform.
- No wrecks or unidentified objects were found.
- Sites look suitable for a jack-up style vessel, contractors will be given access to report.

#### Drilling operation

- Plan to drill in Dec 2014 – May 2015. Jun-Nov is hurricane season.
- Need confirmation of FY14 funds: 'Left over' funds from Baltic Expedition, plus ECORD FY14 member contributions, minus contributions to other IODP platforms.
- If and when FY14 Chicxulub drilling looks affordable, ESO will issue notice of interest for platform and drilling services.
- Mexican authorities are aware of the project and have asked ESO to submit drilling permit applications when ready.
- Involvement of Universidad Nacional Autónoma de México (UNAM) will assist in the permitting process (this was done for the hazard survey).

#### [Proposal 672 / IODP Expedition 347 Baltic Sea Paleoenvironment]

- Recover records of climate change over the last 140,000 years in the vicinity of the Scandinavian Ice Sheet
- 7 primary sites
- Additional core taken specifically to meet microbiological objectives
- Co-chiefs Thomas Andréén, Södertörn University, ECORD/Sweden Bo Barker Jørgensen, Aarhus University, ECORD/Denmark

#### Planning:

- Drilling contractor is Island Drilling Ltd., Singapore.
- Greatship Manisha currently under contract offshore Fiji.
- Repairs (weather damage) and contract extension have delayed the expedition.
- Start date TBC: start between 1st August – 5th September.
- Client must relinquish before 15th July, but wishes to extend further.

#### Platform options:

- Given the delay in the delivery of the Greatship Manisha to Europe, ESO has asked Island Drilling for alternative options to bring the Expedition back on track.
- Island Drilling have offered a new proposal to provide an alternative vessel and rig which could be ready by 1st Aug (Aug-Sep operation).
- ESO visited the alternative rig on offer, to assess feasibility and reliability.
- The alternative proposal is currently being assessed by ESO, and a decision is expected to be made soon.
- The Science Party and IODP community will be immediately informed.

#### [Other ESO Preparations]

- OSP will take place in Nov 2013.
- Currently planning the expedition science program, which includes a significant microbiology element.
- New ESO containers purchased and outfitted, inc. new microbiology lab.
- Science Party has been selected, three recent withdrawals, replacements are being sought (1 x sedimentologist, 1 x microbiologist still outstanding).
- EPSP approved all sites on 9th April.
- Danish authorities have given approval for the Expedition.
- Waiting for final Swedish approval.
- ESO EPC: Sally Morgan, has worked with Geotek to develop & install a fast-track MSCL system for use offshore
- ESO Bremen: worked on fine-tuning the Scientific Prospectus, Sample and Measurement Plan, core flow, contamination tests assessment, and planning for the microbiology and geochemistry requirements:
  - Planning and preparation for required lab space, temperature-controlled storage and shipping of recovered materials (especially for microbiological purposes).
  - Feasibility study and design for a new containerized microbiological laboratory.
  - Installation and testing of new Curation Container facilities.

[Proposal 758 Serpentinization and life: Biogeochemical & tectono-magmatic processes in young mafic & ultramafic seafloor ]

Drill a spreading-parallel profile across the southern wall of the Atlantis Massif. Aims to explore the extent of the biosphere in young ultramafic seabed.

1. How biological processes change with rock type changes
2. The role of serpentinisation in hydrothermal systems
3. How serpentinisation might sustain microbial communities
4. What processes lead to variations in lithologies and detachment faulting

- A full and up-to-date copy of the site survey database associated with this proposal has been assembled on the servers at the BGS.
- ESO operations staff are continuing to evaluate all available seabed drill options, including the evolving RD2 (BGS) and MeBo (MARUM) seabed drills for this proposal.
- BGS and MARUM engineers are discussing fluid sampling tool development for both seabed drills, required for this proposal.

[Rock drill Summary]

MeBo

- Drilling depth 70 m
- 2014 aims: 3.5m stroke length and 200m penetration.
- Coring of soft sediments and hard rocks
- Core diameter 55 – 84 mm
- Deployment depth 0 – 2000 m
- MeBo weight about 10 tonnes
- Total system weight about 75 tonnes

#### BGS Rockdrill 2 (RD2)

- 50 mbsf penetration
- 4000 m water depth
- HQ pipe diameter 63 mm
- Wireline logging in development
- Core run 1.7 m
- weight 5T
- 5-10o dip
- Data transfer – all memory
- Operate in 5.5 m swell but never deploy in >3 m
- 70-85oC optimum operation temp

#### [QA/QC Documentation]

- ESO, led by Bremen, is making its QA/QC web interface available
- All quantitative & detailed information on measurements of standards, reference materials and blanks during sample measurements.
- Presented at STP Meeting in Kochi: STP Consensus Statement 1203-11
- <http://iodp.wdc-mare.org/>

#### [Outreach]

##### European Geosciences Union (EGU) Annual Meeting, Vienna, Austria – 7-12 April 2013

- Townhall Meeting: 10th April
- IODP/ECORD/ICDP Booth
- IODP-Forum session

Supporting ESO during the outreach activities of the Baltic Sea Expedition (flyers, media conferences, etc)

- Goldschmidt meeting, Florence, Italy– August 25th-30th 2013
- 3P Arctic, Stavanger – 15-19 October 2013
- Media event launching IODP, Paris – October 2013

#### [ECORD Summer Schools 2013]

- ECORD Summer School on Deep Sea Sediments: From Stratigraphy to Age Models. September 9-20, Bremen, Germany

<http://www.marum.de/Page12793.html>

- The Urbino Summer School in Paleoclimatology July 10-30, Urbino, Italy
- <http://www.urbinosp.it/coursedesc.aspx>



### 3. Overview of the SSDB system

Karen Stocks presents the SCRIPS team in charge for maintaining and supporting the site survey data bank and gives an overview of the SSDB system.

[What is SSDB?]

- A digital library of ocean drilling-related data. 9,300 files (296 proposals) submitted through SSDB ~10,000 legacy files (pre-2005)
- A physical archive of ODP/DSDP-era data artifacts  
>18,000 physical objects, including maps, seismic sections, reports and photographs
- An online system for uploading, discovering, and accessing digital data holdings

[What is SSDB for?]

- Proponents & Reviewers
- Expedition planners
- General public

[Quality Control]

- SSDB staff check that metadata are reasonable and complete, files can be opened, etc.
- Completeness of submission package not assessed
- Communicate with proponent on any issues
- QC is a manual process – requires time

[Data Submission Timeline]

- Data submissions are due 1 month after the proposal deadline = 1 month+ before panel.
- SSDB accepts data at any time, but cannot guarantee it will be ready for panel if submitted late.
- We can accommodate accelerated review – advance notice is appreciated.

[Reliability]

San Diego Supercomputer Center Hosting

- Generator power backup
- Cloud data backup
- High bandwidth access

Two independent SSDB systems

- Production and development
- Acts as a hot swap

“SSDB In A Box”

- Portable, self-contained unit to bring to meetings

[Supporting Expeditions]

Data collections are prepared for expeditions packaging the data needed to make on-site operational decisions

[Public Access]

- Data within SSDB are valuable to science beyond individual proposals and expeditions
- Files not on hold are discoverable, viewable, and downloadable.
- Data persisted regardless of the proposal’s fate. Searchable by site, lat/lon, etc. as well as proposal
- SSDB query for current era
- SSDB legacy for pre-2005, digital and analog

[Future Plans]

- The Science Support Office for the new Integrated Ocean Discovery Program will be at Scripps.
- The SSDB team will provide the IT support: website and Proposal Database as well as SSDB
- We plan to integrate the SSDB and the proposal database over time, and to incrementally improve both systems.
  - One login
  - Single list of sites referenced by both
  - Proposal data list automatically compiled from SSDB submissions

Question from the audience: Is there a plan to digitize old analogue printed seismic data from DSDP and ODP site survey data?


Answer from Stocks: There is no plan to do this systematically but digitalization can be done on a case by case basis upon request from proponent teams


**4. Summary of SCP reviews**

SCP watchdogs present short summaries of all SCP reviews completed over the last two days and answer short clarification questions from the audience. Overall, there is no discussion, because this agenda item is meant to present the results as overview for PEP to be aware of SCP ratings, recommendations and inputs on specific proposals.

| Proposal # | Title                                 | Signal |
|------------|---------------------------------------|--------|
| 702-Full2  | Southern African Climates             | Yellow |
| 704-Full3  | Sumatra Seismogenic Zone              | Yellow |
| 769-APL2   | Costa Rica Crustal Architecture       | Green  |
| 770-Full3  | Kanto Asperity Project: Observatories | Yellow |
| 781A-Full  | Hikurangi: observatory                | Green  |
| 793-CPP2   | Arabian Sea Monsoon                   | Yellow |
| 795-Full2  | Indian Monsoon Rainfall               | Yellow |

|          |                                     |  |
|----------|-------------------------------------|--|
| 807-Full | Indonesian Throughflow              |  |
| 821-Full | South-East Pacific Paleoceanography |  |
| 823-Full | Bengal Bay monsoon                  |  |
| 830-APL  | Scott Plateau microbial interaction |  |
| 831-APL  | Campbell Drift climate              |  |
| 832-Full | Tasman Frontier subduction          |  |
| 833-Full | Guaymas Basin activity              |  |

 : 1A or 1B or 1C

 : 2A or 2B or 2C

(See Appendix A for Site Characterization Completeness Classification)

## 5. Schedule of next PEP-SCP meeting

David Mallinson suggested setting the next joint PEP-SCP meeting in February to avoid the repeated discussion on the date of the PEP winter meeting, because US members don't like December meetings because of their vacation season and Japanese members don't like January because of their vacation season and university exams that they must supervise. If the next meeting will be in February, IODP needs to set the new proposal deadlines (May 1 and November 1) that are one month later than the traditional deadlines, to give proponents enough time to revise. However, it was found that Japanese members wouldn't be available also in February, and a very early January meeting was proposed. No members opposed the suggestion. No February meeting means no reason to move the traditional deadlines. Thus, the deadline remains April 1 and October 1.

Next joint PEP-SCP meeting

-----  
 Venue: Scripps, San Diego  
 Date: January 6-9

**Proposal Evaluation Panel (PEP) Meeting:  
20 – 21 June 2013**

|                 |                         |                    |
|-----------------|-------------------------|--------------------|
| <b>Thursday</b> | <b>20h of June 2013</b> | <b>08:30-17:00</b> |
|-----------------|-------------------------|--------------------|

**PEP meeting:**

**1. Approve PEP meeting agenda**

The agenda of the PEP 4 meeting was approved.

**2. PEP Review Process: status of new proposal guidelines**

Dick Kroon introduced the draft of the new proposal guidelines (See Appendix B)

Comments about expedition length:

- JR community is used to a 2 month JR cruise duration, but in the new program, JR proposals may have a drilling plan for 3-4 weeks, resulting in a hybrid JR cruise.
- APL expedition length should be less than 10-15 % of the main expedition.
- APL needs to be very flexible. One APL can be one MSP expedition.
- PEP should not judge proposals based on the expedition length.
- Proponents have to justify that they can achieve the objectives in the time they claimed. PEP should see also that point.

**3: Reflection on last meeting**

Kroon summarized all decisions made in the last PEP meeting.

| Proposal# | Title                                      | PEP review result  |
|-----------|--|--|
| 702-Full  | Southern African Climates                  | Send to External Review  |
| 707-MDP   | Kanto Asperity Project: Overview           | Endorse umbrella proposal, but request further development along with daughter proposals |
| 735-CPP2  | South China Sea Evolution                  | Forward to FB  |
| 770-Full3 | Kanto Asperity Project: Observatories      | Put in holding bin before further consideration by the Facility Boards                   |
| 774-APL2  | Costa Rica Subseafloor Microbial Mats      | Deactivate   |
| 777-APL3  | Okinawa Trough Quaternary Paleoceanography | Forward to FB  |
| 784-Full2 | Amundsen Sea Ice Sheet history             | Deactivate   |

|           |                                 |   |
|-----------|---------------------------------|---|
| 793-CPP2  | Arabian Sea Monsoon             | Send to external review                                     |
| 795-Full2 | Indian Monsoon Rainfall         | Send to external review                                     |
| 800-MDP   | Indian ridge Moho               | Send to external review                                     |
| 807-Full  | Indonesian Throughflow          | Send to External Review                                     |
| 808-APL   | East/Japan Sea back-arc opening | Deactivate  |
| 809-APL   | Alaska Holocene record          | Forward to FB   |
| 810-APL   | Hole504B life limit             | Deactivate  |
| 811-Pre   | Cape Fear Slope Stability       | Develop full-proposal                                       |
| 812-Pre   | Ross Sea Glacial History        | Develop full proposal                                       |
| 813-Pre   | Antarctic Cenozoic Paleoclimate | Develop full proposal                                       |
| 814-Pre   | Greenland Ice Sheet             | Develop MDP   |
| 815-Pre   | Weddell Sea History             | Deactivate and encouraged to submit two new Pre-Proposal(s) |
| 816-APL   | ReCORK Hole858G                 | Forward to FB   |
| 817-Pre   | Maldives Atolls Sea Level       | Deactivate  |

Kroon explained the review procedure of the fast tracking of proposals.

Step 1 select external reviewers.

Step 2 Support Office submits the reviews and response letter to the watchdogs.

Step 3 Watchdogs comment on the documents and propose a rating of the proposal or deactivate the proposal; hopefully by consensus! If no consensus, then the appropriate subchair and chair enter the discussion until consensus has been found.

Step 4 Support Office submits the reviews, response letter, comments by watchdogs, and rating to all PEP members for further comments. If no more comments, PEP forwards the proposal to the appropriate FB.

#### 4. Proposal review

The PEP members and meeting participants declared before the meeting their direct and indirect Conflict of Interests with the proposals to be reviewed. Here is the list of the COIs.

| Proposal# | Title                           | COI                               |
|-----------|---------------------------------|-----------------------------------|
| 702-Full2 | Southern African Climates       | Heuer                             |
| 704-Full3 | Sumatra Seismogenic Zone        | Obana, McNeill                    |
| 813-Full  | Antarctic Cenozoic Paleoclimate |                                   |
| 781B-Full | Hikurangi: Riser                |                                   |
| 818-Pre   | Brothers Arc Flux               | Arculus, McNeill, Heuer, Humphris |
| 819-APL   | Arabian Sea OMZ                 |                                   |
| 820-Pre   | Maldives monsoon                |                                   |

|          |   |                           |
|----------|---|---------------------------|
| 821-Full | South-East Pacific Paleoceanography             | Gohl                      |
| 822-Pre  | Madeira Abyssal Plain flux                      |                           |
| 823-Full | Bangal Bay monsoon                              | Strasser, Heuer           |
| 824-Pre  | Antarctic Cryosphere Evolution                  | Murayama, Obana, Nakamura |
| 825-Pre  | Aleutian Basin formation                        | Geldmacher                |
| 826-Pre  | Marmara tectonics                               |                           |
| 827-Pre  | Aleutian arc evolution                          | John, Geldmacher          |
| 828-Pre  | Brazilian Equatorial Margin<br>Paleoceanography |                           |
| 829-Pre  | Weddell Sea History                             | Gohl                      |
| 830-APL  | Scott Plateau microbial interaction             | Smith, Arculus            |
| 831-APL  | Campbell Drift climate                          | Arculus                   |
| 832-Full | Tasman Frontier subduction                      | Nishi, Tarduno, Arculus   |
| 833-Full | Guaymas Basin activity                          |                           |

Kroon assigned three members as watchdog #1, #2 and #3 to each proposal as listed below. He asked the members and participants with direct COIs to leave the meeting room during the discussion, and asked the ones with indirect COIs not to join the discussion, but they can stay in the room.

The panel members were thematically divided into four breakout groups (but physically into two rooms) to review and discuss on the proposals submitted the 1<sup>st</sup> of April 2013.

4 thematic Sub-chairs:

- Climate and Ocean Change (Amelia Shevenell/Tim Bralower)
- Biosphere Frontiers (Yoshinori Takano)
- Earth Connections (Richard Arculus)
- Earth in Motion (Michael Strasser)

| Proposal# | Title | Theme | WD1 | WD2 | WD3 |
|-----------|-------|-------|-----|-----|-----|
|-----------|-------|-------|-----|-----|-----|

Break-out group1: CO (Chair: Bralower)

|           |   |       |             |             |             |
|-----------|---|-------|-------------|-------------|-------------|
| 702-Full2 | Southern African Climates                       | CO    | Zachos      | Tian        | Christensen |
| 813-Full  | Antarctic Cenozoic Paleoclimate                 | CO    | O'Regan     | Bralower    | J-J Bahk    |
| 819-APL   | Arabian Sea OMZ                                 | CO    | Murayama    | Robinson    | Shevenell   |
| 820-Pre   | Maldives monsoon                                | CO    | Yokoyama    | Webster     | Singvi      |
| 821-Full  | South-East Pacific<br>Paleoceanography          | CO    | Shevenell   | Christensen | Bralower    |
| 824-Pre   | Antarctic Cryosphere Evolution                  | CO    | Robinson    | Shevenell   | Nishi       |
| 828-Pre   | Brazilian Equatorial Margin<br>Paleoceanography | CO    | Singvi      | Webster     | Zachos      |
| 829-Pre   | Weddell Sea History                             | CO    | Christensen | O'Regan     | J-J Bahk    |
| 831-APL   | Campbell Drift climate                          | CO    | Webster     | Robinson    | Yokoyama    |
| 823-Full  | Bangal Bay monsoon                              | CO/BF | Smith       | Marsaglia   | Singhvi     |

Break-out group2: BF, EC, EM (Chair: Takano, Arculus, Strasser)

|           |                          |    |              |          |              |
|-----------|--------------------------|----|--------------|----------|--------------|
| 704-Full3 | Sumatra Seismogenic Zone | EM | John         | Yamada   | Michibayashi |
| 781B-Full | Hikurangi: Riser         | EM | Michibayashi | Strasser | Sultan       |
| 826-Pre   | Marmara tectonics        | EM | McNeill      | John     | Obana        |

|          |                                     |       |            |           |           |
|----------|-------------------------------------|-------|------------|-----------|-----------|
| 825-Pre  | Aleutian Basin formation            | EC    | Sultan     | Kimura    | Arculus   |
| 830-APL  | Scott Plateau microbial interaction | BF    | Suzuki     | Moyer     | Heuer     |
| 822-Pre  | Madeira Abyssal Plain flux          | BF/EC | Smith      | Morishita | Suzuki    |
| 833-Full | Guaymas Basin activity              | EC/BF | Marsaglia  | Tarduno   | Takano    |
| 827-Pre  | Aleutian arc evolution              | EC    | Kimura     | Neal      | Marsaglia |
| 818-Pre  | Brothers Arc Flux                   | EC/BF | Godard     | Neal      | Moyer     |
| 832-Full | Tasman Frontier subduction          | EC/CO | Geldmacher | Godard    | McNeill   |

The general evaluation criteria for IODP proposals are:

- Are the scientific questions/hypotheses being addressed exciting and of sufficiently wide interest to justify the requested resources?
- Will the proposal significantly advance one or more goals of the Science Plan?
- Would the proposal engage new communities or other science programs into the drilling program?
- To what degree does the integrated experimental design of site characterization, drilling, sampling, measurements, and downhole experiments constitute a compelling and feasible scientific proposal?

|               |                         |                    |
|---------------|-------------------------|--------------------|
| <b>Friday</b> | <b>21h of June 2013</b> | <b>08:30-17:00</b> |
|---------------|-------------------------|--------------------|

## 5. Proposal review continued

The breakout groups gathered again to continue their discussion.

## 6. Reports from breakout sessions

Sub-chairs presented the summary of the breakout discussions. The course of action regarding each of the 20 PEP proposals reviewed during the 4th PEP meeting was achieved by consensus of the full panel. The specific dispositions for each proposal were as follows:

| Proposal# | Title                           | Review results                            |
|-----------|---------------------------------|---|
| 702-Full2 | Southern African Climates       | Holding bin; excellent                    |
| 704-Full3 | Sumatra Seismogenic Zone        | Deactivate                                |
| 813-Full  | Antarctic Cenozoic Paleoclimate | External review                           |
| 781B-Full | Hikurangi: Riser                | External review, following upon SCP-email |

|          |   |                              |
|----------|---|------------------------------|
|          |   | review                       |
| 818-Pre  | Brothers Arc Flux                               | Submit MDP                   |
| 819-APL  | Arabian Sea OMZ                                 | Submit revised APL           |
| 820-Pre  | Maldives monsoon                                | Submit full proposal         |
| 821-Full | South-East Pacific Paleoceanography             | Submit revised full proposal |
| 822-Pre  | Madeira Abyssal Plain flux                      | Deactivate                   |
| 823-Full | Bengal Bay monsoon                              | Submit revised full proposal |
| 824-Pre  | Antarctic Cryosphere Evolution                  | Deactivate                   |
| 825-Pre  | Aleutian Basin formation                        | Deactivate                   |
| 826-Pre  | Marmara tectonics                               | Deactivate                   |
| 827-Pre  | Aleutian arc evolution                          | Deactivate                   |
| 828-Pre  | Brazilian Equatorial Margin<br>Paleoceanography | Deactivate                   |
| 829-Pre  | Weddell Sea History                             | Deactivate                   |
| 830-APL  | Scott Plateau microbial interaction             | Submit revised APL           |
| 831-APL  | Campbell Drift climate                          | Holding Bin                  |
| 832-Full | Tasman Frontier subduction                      | Submit revised full proposal |
| 833-Full | Guaymas Basin activity                          | Submit revised full proposal |

|  |                                  |
|--|----------------------------------|
|  | : Submission of revised version  |
|  | : Came back from External review |
|  | : New proposals                  |

## 7. Review of motions and consensus items

No motions and consensus

## 8. AOB

No other business was discussed.

Kroon adjourned the meeting at 17:00.



## **[Appendix A: Site Characterization Completeness Classification]**

### **IODP SCP Guiding Statement and Rationale for Site Characterization Data**

The method and rationale for data evaluation are outlined as follows. The proponents choose sites, which according to their knowledge and existing data will allow answering of questions, testing of hypotheses, and achieving of objectives presented in their proposal. The Site Characterization Panel (SCP) reviews all data in the Site Survey Data Bank (SSDB), advises the proponents on the adequacy of the drill site characterization package, and provides an assessment of whether or not the scientific objectives of each drill site can be effectively achieved on the basis of the proposal and data package. The SCP uses a classification scheme to summarize the completeness of the site survey data package (Page 5).

**The rationale for this review is to ensure that IODP expeditions will have a high probability of success and that ship time, researcher time, and funds are not wasted by drilling in the wrong location or to the wrong depth, or recovering sediments or rocks that will not achieve the objectives of the proposal. This is the guiding statement for SCP reviews, and represents the standard to which the site survey data package is held. Actual data requirements are based on meeting this standard, and are at the discretion of the SCP. The fundamental responsibility of proponents with respect to demonstrating the feasibility of the science is to demonstrate via their data that the proposed target is adequately imaged and there are no structural complications. It is recommended that every proposal include a proponent who has the ability to manipulate and interpret geophysical data and prepare figures and statements regarding the adequacy of the data.**

For example, high-resolution paleoceanographic objectives require a sedimentary column that is nearly complete and not disturbed by erosional unconformities, faults, or mass transport deposits. Thus, to ensure success, the data provided to SCP must be of sufficient resolution and continuity (i.e., a 2d SCS or MCS grid) to develop a regional image of the target and the structural configuration of the target area in order to avoid structural complications (faults, mass transport deposits, unconformities, etc.). For some targets, which are very small (e.g. gas seeps) or deep (e.g. crustal slip planes) only a 3d grid of MCS data (or 3d seismic volume) provide a detailed image. For deeper targets seismic refraction data as well as gravity and magnetic data may be needed to provide necessary information on the structural configuration.

Bathymetric data are needed to characterize the seafloor surface. Surface samples and acoustic backscatter data (from side scan sonar or multibeam echosounder) as well as 3.5 kHz, Parasound, Topas, or other high-frequency subbottom profiler data may be needed to characterize the shallow environment and thus provide valuable information about the shallow subsurface which are vital for drilling operations (what materials are being spudded) and for scientific purposes as related to high-resolution studies (paleoclimate reconstructions), geohazard studies (slumps, slides, fluid flow, etc.), or shallow crustal objectives.

Seismic velocities are always needed to a) convert the seismic data from two-way travel time into depth, and b) characterize changes in lithology, e.g. gas, volcanic, crystalline basement.

In order to correctly evaluate the data submitted to the SSDB, SCP needs as much information about acquisition and processing parameters as possible (i.e., metadata). Coordinates unequivocally identifying the location of the data as well as unambiguous seismic trace numbers (either shot point SP or Common Datum Point CDP) are needed to correctly locate and evaluate the proposed drill site.

SCP tries to be very specific and detailed in their guidelines to make things easy for the proponents and to avoid misunderstandings, thus accelerating the review process.

## Definitions and Idealized Survey and Data Parameters

- High resolution Multi-Channel Seismic (MCS) (theoretically allows a resolution of layers  $> 6$  m thickness)
  - optimum sampling rate (SR)= 1 ms (max 2ms)
  - shot interval  $\leq 25$  m
  - streamer offset  $\geq 1200$  m
  - fold~ 50
  - CDP interval  $\leq 25$  m
  - source frequency content up to 150 Hz
  - true amplitude preservation
- 2d grid MCS: line spacing max 10 km
- 3d grid MCS: a dense 2d grid, line spacing should be determined case-by-case, 1 km in general.
- Cross lines: seismic lines crossing each other at roughly  $90^\circ$  and extending at least 10 km beyond the proposed site.
- Single channel seismic (SCS) data will be considered on a case-by-case basis, e.g. if the proposed sites are located in ice covered areas where MCS data collection is difficult, or if target depths are very shallow ( $<100$  m subsurface). The determining factor is whether or not the data adequately image the targets.
- 3D seismic volume, which was acquired to fill a box-shaped area, sorted into “bin”, migrated with 3D-migration technique, will be required on a case-by-case basis, e.g. very small target, deep target with very complicated structure which should be properly imaged only in 3D seismic volume.

## General Data Guidelines and File Formats

- **Digital seismic data** (SCS or MCS depending on objectives and targets) in SEG Y format with the following header information to allow proper evaluation
  - Trace sequential number bytes 1-4
  - Shot point number bytes 17-20
  - Common datum point (CDP) number bytes 21-24
  - Coordinate units bytes 89-90
  - Scalar to be applied to coordinates bytes 71-72
  - Navigation with the coordinate units and scalar defined above
    - MCS data should contain CDP location bytes 181-184 and 185-188
    - SCS data should contain source location bytes 73-76 and 77-80
  - Record length bytes 115-116
  - Sample rate bytes 117-118
  - If the header location does not follow the SEG Y standard as mentioned above, proponents must provide the table describing the location of the headers.
- Detailed information on acquisition and processing parameters
  - Acquisition
    - Type and frequency content of seismic source
    - Streamer length and channel interval
    - Sample rate, record length, filters applied during recording
    - Shot interval, CDP interval, fold
  - Processing
    - Processing sequence including information on filters and gain applied (at what stage, type filter flanks, type of gain)
    - Static corrections?
    - Deconvolution?

- Multiple suppression?
- Stacking, type and parameters
- Migration, type and parameters
- Depth conversion or depth migration (for depth section)?
- Velocity data (an ASCII file containing CDP #, TWT, stacking velocity, interval velocity organized by CDP) for the whole seismic line
- **Figures** (jpg, pdf, tif, gif) of seismic lines (interpreted and un-interpreted) with clearly annotated SP or CDP (the same as in digital files), scale, orientation and information on filters and/or gains applied. Interpreted lines should include the location, with proposed penetration depth, of proposed sites.
- **Swath bathymetric data** as image files (jpg, pdf, tif, gif) as well as ASCII xyz-files or netCDF grids with information on cell size
- **Navigational data** as ASCII xyz-files with either SP or CDP number, which directly relates to the same parameter in the digital seismic data, seismic figures and location maps
- **Location maps** annotated with lat/lon for each site with bathymetry across the proposed site and available seismic lines with annotated SP or CDP numbers (same as digital seismic data, seismic figures and navigational data)
- If available, information from nearby wells or cores (lithology, age-depth models, etc.).

**Examples of Needed Data (arranged according to broad objectives).**

**Actual data requested will vary on a case-by-case basis.**

Ocean and Climate Change (e.g. 318 Wilkes Land, 339 Mediterranean outflow, 342 Paleogene Newfoundland Sediment drifts) or

Biosphere Frontiers (e.g. 331 Deep Hot Biosphere, 336 Mid Atlantic Ridge Flank, 337 Deep Shimokita Coalbed)

- High resolution MCS (or SCS where target depth is <100mbsf).
- Depending on target, 2d or 3d (lateral high resolution or very deep) grid of MCS
- Sites ideally located on or near crossing lines (this depends upon demonstrated regional continuity of reflections and EPSP considerations).
- Acoustic backscatter data (side-scan or multibeam) to characterize the seafloor depending on target
- High resolution bathymetry
- Seismic velocities appropriate to demonstrate the local velocity fields
- For very shallow target, 3.5 kHz, Parasound, Topas or other subbottom profiling data both as figures and SEG Y similar to MCS data to characterize shallow subbottom structures and determine the thickness of sediment cover.
- Surface samples to provide information on surface sedimentary composition and structure (e.g. gas seeps, fluid flow) as figures and tables for shallow targets and expected gas seeps of fluid flow; add locations to base maps
- Video/photography if drilling into a hard irregular outcrop (e.g. a reef, or basalt outcrop)

Earth Connections (e.g. 331 Deep Hot Biosphere, 340T Atlantis Massif)

- Middle resolution MCS (SR= 2ms, shot interval 25-50 m, CDP interval 25-50 m, fold 50-100)
- 2d grid, 3d grid MCS or 3D seismic volume for fluid and volatile flow (on a case-by-case basis).
- Sites ideally located on or near crossing lines
- Acoustic backscatter data (side-scan or multibeam) to characterize seafloor depending on target
- Refraction seismic data and structural model for deeper target where the MCS section with interpretation cannot properly image.
- Seismic velocities, both reflection (appropriate to demonstrate the local velocity fields) and refraction

- Surface information providing the surface sedimentary composition and/or structure, (e.g. surface samples, shallow cores, video/photography). Sub-bottom and/or backscatter may be also included.
- High resolution magnetic and gravity data as well annotated maps and ASCII xyz-files

Earth in Motion (e.g. 340 Lesser Antilles Volcanism and Landslides, 343 Japan Trench Fast Earthquake Drilling Project JFAST)

- High or middle resolution MCS, depending on target
- 2d grid MCS, or 3d grid MCS or 3D seismic volume depending on target (e.g. gas hydrates, fluid flow, deeper complicated structure)
- Sites ideally located on or near crossing lines
- Refraction data and structural model to accurately image deeper targets (e.g. fault zones, slip planes)
- High resolution gravity and magnetic data for deeper targets
- Acoustic backscatter data (side-scan or multibeam) to characterize seafloor in case of e.g. fluid flow or landslides

## **[Appendix B: Draft of proposal guidelines]**

The International Ocean Discovery Program (IODP) proposal guide primer

### **Proposal submission and review process**

At first, the entire IODP, and the way from scientific idea to actual drilling operations ('Expedition') can be difficult to understand. But there are some simple steps to follow to help guide you through the proposal process. These, along with a list of some frequently asked questions, are presented in this primer. IODP technical terms and acronyms are plenty and ever evolving, but these are not really important to the initial stages of submitting a science proposal to the IODP, and are largely avoided here.

Science in IODP is driven by community-generated proposals targeting the research themes outlined in the overall science plan for the program (<http://www.iodp.org/science-plan-for-2013-2023/>). Drilling and workshop proposals are reviewed by the program's Advisory Panels (<http://www.iodp.org/sas/>). The program provides multiple platforms (<http://www.iodp.org/ships-platforms/>), and ocean drilling efforts constitute "**Big Science**" for the Earth and Ocean sciences community. Each two-month-long expedition with the riserless platform JOIDES Resolution costs USD 8-14 million, as most of the Mission Specific Platform expeditions implemented by ECORD ; operations with the riser vessel CHIKYU and major missions even much more. A level of investment in science that goes beyond an individual researcher or research group, and can require knowledge about scientific drilling that not all proponents may initially possess. Thus, the proposal structure, review and planning processes are comprehensive and may differ from those applied to mainstream grant applications. The biggest difference likely is that the IODP process is somewhat iterative and quite open to communication between the science proponents, the Advisory Panels, and the drilling platform operators. As a result, the proponents (roughly analogous to the group of Principal Investigators - PI's -) are in communication with various groups, committees and implementing organizations within IODP, each of which may require different information from the proponents. It is a system designed to transform exciting science into successful expeditions. Another difference is that for the most part, the detailed technical planning, implementation and financial responsibilities involved are managed within the program. Therefore, for regular proposals not offering co-funding (drilling time; special instrumentation), there is no budget section in an IODP proposal.

### **How do I start?**

You start by writing a proposal outlining science that addresses one or more of the four major themes of the IODP Science Plan (summarized as Climate, Deep Life, Planetary Dynamics, and Geohazards) and requires scientific ocean drilling. The Science Plan (<http://www.iodp.org/science-plan-for-2013-2023/>) is intended to provide a context for generating proposals, but is not intended to be prescriptive.

Proposals typically come into the program as **Preliminary proposals**, which you can submit to the program through IODP-Management International (IODP-MI) (<http://www.iodp.org/drillingproposals/>) at any time, and are reviewed by committees twice per year. These Preliminary proposals are relatively short (up to 2700 words), more like a generic proposal with a compelling hypothesis or idea supported by a conceptual drilling strategy. They range from hypothesis-driven to question-driven, from very

discipline-specific to very interdisciplinary, from simple to complex. They should address questions that are of interest to the global scientific community and be linked to relevant parts of the science plan.

### **What is Next?**

The review panels within the program will receive your Preliminary proposal from IODP-MI. Panel chairs will assign watchdogs to examine and present your proposal to the panel, who will review your Preliminary proposal and develop recommendations based on their assessment. Soon after the panel meeting, you will receive feedback from the science panel that has reviewed the Preliminary proposal, with contact information for all of the watchdogs involved in the review, as well as the chairs of the review panel, all of whom you can then contact for additional feedback or clarification. The feedback you will receive typically will include the following points:

- 1) Great idea, in line with the science vision of the program, likely achievable by scientific ocean drilling
- 2) Interesting concept with potentially high impact, but difficult to see how the problem is addressed by scientific ocean drilling
- 3) Idea not as interesting or transformative as others received, and thus not likely to move forward as a drilling proposal in its current state

Most importantly, though, you will receive a decision of whether the panel (1) recommends that you develop a Full proposal and/or pursue workshop funding to further develop your idea, and potentially coordinate your efforts with other closely-related proposals, into a comprehensive Full proposal, or the panel (2) deactivates the Preliminary proposal.

The recommendation will include the contact information for all of the watchdogs, and you should contact one or more of the watchdogs to discuss their recommendation and to gain more insight into the next steps for your proposal if you have any questions in this regard.

### **What is a Full proposal and what constitutes an excellent one?**

A Full proposal includes the operational information necessary to determine feasibility, data availability, and site assessment needs (<http://www.iodp.org/proposal-submission-overview/>). Think of it as a step from a great idea to one that can be implemented in the real world, with present technology and within a reasonable length of time. Prior reviews and/or workshop input should be carefully considered and be addressed in a Full proposal. Excellent Full proposals range from complicated and extremely interdisciplinary programs to simple and discipline-specific ones, but they do share a number of elements common to all good science proposals:

- 1) They are responsive to input from science panels
- 2) They have a strong and compelling science question(s) that require ocean drilling
- 3) They are innovative, and have an acceptable balance between risk and potential for achievements

### **How do workshop proposals and workshops fit into the proposal structure?**

Workshops can be valuable for developing community-based scientific plans and prioritizations, and are often an integrated part of the IODP science planning process. Proposals for workshops funded by the program (as opposed to many national activities) are of three types:

- 1) Unsolicited Workshop proposals for thematic workshops that have a potential for developing new scientific approaches.
- 2) Unsolicited or solicited proposals that will address scientific opportunities in a particular region, with or without a specific scientific theme in mind, with the purpose being to more efficiently use the research platforms in the program.
- 3) Proposals specifically solicited by the Proposal Evaluation Panel (PEP), and from the proponents of favourably reviewed Preliminary proposals, and with the goal of developing a strong, Full proposal. Thus, workshop proposals span a broad range of purposes and contexts, but share the common feature that they are designed to effectively transform ideas into proposals that can be executed.

### **What proposals don't move forward?**

Reasons that a proposal might not advance in IODP are mostly similar to why science proposals in general ultimately aren't funded:

- 1) Science to be addressed is incremental—i.e., makes only a small step forward
- 2) Science to be addressed is one-sided—i.e., doesn't account for alternative hypotheses
- 3) Proponents are unresponsive to review comments
- 4) Proposals that display little effort on the part of the proponents to understand what makes science drillable; i.e., pursues science that is simply undrillable
- 5) Proposals that do not critically select drilling targets to answer well defined questions, but more take a 'shotgun' approach.
- 6) Proposals that do not clearly state how the proposed measurements will be used to answer the proposed questions. A successful proposal will have a clear outline of all proposed sampling, shipboard or shore measurements and/or logging data that are needed and planned
- 7) Proposals with scientific objectives that conform poorly with the overall goals of the program's science plan, and do not bring added value to the science plan
- 8) The data that is needed to characterize the drill site (location and target depth), and place it in a proper context are not sufficient to underpin the science or to conduct operations safely.

### **Are there other proposal types for special circumstances?**

Several other proposal types can result in IODP operations. The most common is when a researcher or research group requests additional data/samples from an already scheduled expedition. In some cases, valuable science can be obtained with minimum additional time, which can be allocated from an already scheduled expedition. The mechanism to request additional coring or logging is through an Ancillary

Project Letter (APL). These short requests (<http://www.iodp.org/proposal-submission-overview/>) are received by IODP-MI with the same deadlines as all other proposals, and are reviewed by the science advisory structure. The APLs are also reviewed by the science advisory structure, and if approved, are available for implementation in association with a planned expedition.

The other proposal type is a Complementary Project Proposal (CPP). These are full proposals (<http://www.iodp.org/proposal-submission-overview/>) that have a substantial amount of financial support already secured from an entity outside of IODP. It is entirely appropriate to contact the Chair of the appropriate Facility Board to enquire about the required relative amount of outside money to total costs of a drilling program, usually 70%. These proposals are reviewed in a more rapid manner than typical proposals, and often involve more direct scientific input and assistance from program committee members. Because of the specialized nature of these programs, it is highly advisable to discuss potential plans for developing a CPP with staff at the Support Office or appropriate IO before a proposal is written.

## Frequently Asked Questions

*The review comments say that I need to bring in other expertise for my Preliminary proposal. Why?*

When a platform implements an expedition, it is not a single-focus effort—some locations lend themselves to different or interdisciplinary science efforts, and may address related but somewhat independent questions. If you can do more, and do it well, with additional proposal components, it enhances the impact of the project.

*Why does it take so long to get a proposal drilled?*

Expeditions are complicated and very expensive efforts. As such, they must be carefully planned and often require some additional technological development and site assessment before being scheduled. Additionally, drilling platforms cannot be airlifted...the reality that ships need to slog through the ocean to get from place to place means that operationally, the program is tied to shiptracks. Thus, the expedition schedule is typically defined by ocean region. In order to minimize transits, which increase costs and reduce time that can be dedicated to science, the platforms tend to work in one ocean basin, or one part of an ocean basin, for some time before moving on. Finally, in this current phase of the program, there is not adequate funding for full year operations, and thus the platforms have periods of non-operation limiting the speed at which great proposals can be implemented.

*Is IODP an Insider's Club?*

The answer is no. In fact, the IODP is eager to engage new scientists, and new fields of science that require ocean drilling, and actively reaches out to other science programs, like the International Continental Drilling Program. On the other hand, experience with drilling and the program certainly makes things easier for the proponent. Nevertheless, writing a proposal is a very significant effort for everyone. However, "support" guidance from IODP program committees, national offices, implementing organizations and the IODP-MI is something we recommend you take full advantage of.

*I am not sure if my idea is do-able...can I ask somebody?*

Yes, you can and you should. Your first contact would be the IODP-MI ([science@iodp.org](mailto:science@iodp.org)), who will then direct you to the proper individuals for discussion.



*I have questions about the review comments on my proposal...am I allowed to talk to someone?*

Yes, you are allowed, and in fact encouraged, to do so. Watchdog names and contact information are on review comments that you will receive after your proposal is evaluated.

*I am an early-stage Investigator (Assistant Professor or Assistant Scientist)...should I write a proposal?*

Yes, because writing an IODP proposal can help you establish a national/international reputation and broaden your sphere of colleagues. But should you depend on that for promotion? NO! Programs can take significant time to be implemented, and even longer for results to come in - total time can easily be in excess of five years. Successful grant applications that can be achieved in a few years therefore work better for promotion.

*Are there ways I can get involved in the program besides writing a drilling proposal?*

Yes - by applying to sail on scheduled expeditions (<http://www.iodp.org/expeditions/>) and volunteering to serve in the advisory panels of IODP (<http://www.iodp.org/scientific-advisory-structure>)

IODP drilling proposal guidelines

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## **Introduction**

The International Ocean Discovery Program (IODP) receives drilling proposals, or piston coring proposals to support drilling proposals, from the scientific community and evaluates those proposals through Advisory Panels and through external peer review. Proposals are submitted to the Support Office (currently IODP-MI). This document specifies the requirements for submitting proposals and outlines the review process. It also briefly describes multi-phase drilling projects, the requirements for designating drilling sites, and the requirements for preparing Site Summary Form 6. Unless otherwise specified, all submitted items related to drilling proposals must arrive in the Support Office by 23:59 GMT on the semi-annual deadlines of either 1<sup>st</sup> of April or 1<sup>st</sup> of October.

Proponents must submit the required materials through the online submission system <http://proposals.iodp.org/>. Required documents except cover sheet and Site Summary Forms must be in one PDF file to upload, with all pages in A4 or U.S.-letter size (12-point font and 1.5 line spacing are recommended). Figures should have sufficient resolution to show all relevant details. Data available to image the sites should be uploaded to the Site Survey Data Bank. See the additional requirements below for submitting Preliminary proposals (pre-proposals), Full proposals, Multi-phase Drilling Proposals, addenda, Ancillary Project Letters, and response letters. Questions regarding proposal submission and proposal handling should be directed to the Support Office ([science@iodp.org](mailto:science@iodp.org)).

## **Preliminary Proposals (Pre-proposals)**

Proponents who have a new idea for scientific ocean drilling are strongly advised to initially submit a Preliminary proposal (Pre-proposal) before engaging in the preparation of a Full proposal. A Preliminary proposal can be up to 2700 words long excluding references, with up to 8 figures including tables. Pre-proposals must also include the following items that do not count against the page limit:

- an official proposal cover sheet, complete with an abstract of 400 words or less, a statement of the scientific objectives, and a list of the proposed drilling sites,
- an initial site summary form for each proposed drilling site, with designated site names conforming to the established system (see below),
- a list of all proponents, specifying the name, affiliation, and expertise of each proponent.

*A well-prepared Pre-proposal should:*

- state the scientific objectives and explain how those objectives relate to, or advance beyond, the IODP Science Plan 2013-2023, including the theme(s) and challenge(s) addressed,
- justify the need for drilling to accomplish the scientific objectives,
- present a conceptual strategy for addressing the scientific objectives through drilling, logging, or other down-hole measurements,
- describe the proposed drilling sites, penetration depths, expected lithologies, available site-survey data, and discuss the recovery rates needed to achieve key goals.
- describe any development of advanced and non-standard tools, special sampling techniques, down-hole measurements, bore-hole observatories or others,
- describe any contribution of industrial funding (less than 70% of the total costs of the leg).
- identify any logistical problems, e.g. extreme weather, sea-ice, piracy, or others,
- describe briefly any relationships to other international geoscience programs and /or companies

The Support Office sends all received Pre-proposals to the Proposal Evaluation Panel (PEP). The PEP assesses each proposal in terms of its relevance to the IODP Science Plan 2013-2023, the suitability of the study area, study sites, and platform for addressing the proposed scientific objectives, and whether the achievement of those objectives would likely result in any fundamental scientific advances. The PEP seeks advice on technical aspects of the drilling proposal through a representative of the appropriate Implementation Organisation (IO; i.e. Platform Operator) who in turn participates in the platform's Facility Board (FB). The PEP also determines whether a given Pre-proposal may be appropriate for developing a Multi-phase Drilling Project (MDP).

Proponents receive a written summary of the PEP review, instructing them whether to develop it into a Full proposal or a MDP with or without a workshop. In some cases the PEP may ask proponents to collaborate with another group of proponents. The PEP deactivates the Pre-proposal if the science objectives are not well described or are not compelling enough, if the conceptual drilling strategy doesn't adequately support the science questions, and/or if the proposed drilling program is simply not feasible

## Full Proposals

Proponents who have previously submitted a Pre-proposal may submit a Full proposal if advised to do so by the PEP. However, a Full Proposal can also be submitted without prior submission of a Pre-proposal. A Full proposal requires extensive documentation of the drilling plans and all aspects of the full scientific experiment. It is therefore highly recommended to seek programmatic advice through submission of a Pre-proposal before developing a Full proposal.

All Full proposals (new Full proposals, revised Full proposals, and new or revised Complementary Project Proposals) can be up to 7800 words long excluding references, with up to 12 figures including tables. All Full proposals must also include the following items that do not count against the page limit:

- an official proposal cover sheet, complete with an abstract of 400 words or less, a statement of the scientific objectives, and a list of the proposed drilling sites,
- the appropriate set of site summary forms for each proposed drilling site, with designated site names conforming to the established system (see below),
- a list of all proponents, specifying the name, affiliation, and expertise of each proponent, plus a two-page curriculum vitae or biographical sketch for one or more of the lead proponents,
- a list of at least five potential reviewers external to the Advisory Panel membership.

*A well-prepared Full proposal should also:*

- state the scientific objectives and explain how those objectives relate to, or advance beyond, the IODP Science Plan 2013-2023, including the theme(s) and challenge(s) addressed,
- justify the need for drilling to accomplish the scientific objectives,
- present a well-defined strategy for addressing the scientific objectives through drilling, logging, or other down-hole measurements,
- provide detailed estimates of the time required for drilling, logging, or other down-hole measurements. In addition, discuss required recovery rates (general) as a function of depth and highlight particular target zones including required recovery rates for these in order to achieve key goals, and finally comment on the impact on the science if such recovery rates are fully achieved.
- describe the available site-survey data and any plans for acquiring additional data, and discuss how the drilling targets relate to those data. In addition, the proponents are reminded to upload the available site survey data in the Site Survey Data Bank in case the data are directly available, or a.s.a.p. after collection of new data.
- discuss the expected scientific outcome of drilling and any subsequent work required to complete the overall project.

-describe any development of advanced and non-standard tools, special sampling techniques, down-hole measurements, bore-hole observatories or others, and include an out-year plan for observatory data recovery, maintenance and ultimate termination.

-describe any source for external funding for non-standard tools.

-describe any contribution of industrial funding (less than 70% of the total costs of the leg).

-identify any logistical problems, e.g. extreme weather, sea-ice, piracy, or others,

-describe briefly any relationships to other international geoscience programs and/or companies.

Shortly after each proposal deadline, all new and revised Full proposals go to the PEP for review. The PEP seeks advice on technical aspects of the new and revised Full proposals through a representative of the appropriate Implementation Organisation (Platform Operator) who in turn participates in the platform's Facility Board (FB).

#### *How are 'New Full proposals' handled by PEP?*

The PEP issues a written review advising the proponents how to improve or revise their new Full proposal, or PEP deactivates it if the science objectives and drilling plan are not sufficiently described. The PEP may directly send the new Full proposal for external peer review if it has reached a sufficient state of development. New Full proposals can be revised only once. There is no time limit for resubmission as time may be required for the proponents to seek essential advice on technical and funding aspects from the IO (and thus FB) to improve the overall feasibility of the drilling proposal. Moreover, proponents may wish to organise a workshop to advance their scientific objectives, drilling plan, or indeed to develop new techniques (in case the drilling plan requires new techniques, it is advised to ask representatives of the IO in question to attend the workshop).

#### *How are 'Revised Full proposals' handled by PEP?*

The PEP recommends the revised Full proposal for external peer review, or the PEP deactivates the proposal if it hasn't reached a sufficient state of development for external review. If the PEP deems the proposal to be worthy for external review, then the Support office selects reviewers and sends out the proposal for review. The reviewers are asked to comment on the importance of the scientific objectives toward the advancement of the IODP Science Plan 2013-2023, the suitability of the study area for addressing the scientific objectives, the likelihood of achieving the scientific objectives with the proposed drilling and logging strategy, and the scientific competence of the proponents, keeping in mind that many scientists besides the proponents ultimately participate in planning and executing an IODP expedition. The external reviewers remain anonymous to the proponents and PEP at all times.

Proponents receive the external reviews of their proposal from the Support Office and may submit a brief response letter (see below) before the next PEP meeting. The PEP then reviews the proposal again, together with the external reviews, response letter, and decides whether it should advance to a Facility Board for possible implementation by the appropriate IO. If recommended for implementation, the PEP

writes a final review assessing the priority of the proposal with respect to the IODP Science Plan 2013-2023, and the PEP rates the proposal according to the above described criteria.

The PEP forwards the Full Proposal to the appropriate FB if the proposal satisfies most requirements of the Site Characterization Panel (SCP) and Environmental Protection and Safety Panel (EPSP).

The final decision whether a proposal is actually implemented is made by the FB overseeing the scheduling of the platform in question. At this stage, the Full Proposal must satisfy all SCP and EPSP requirements before it can be implemented.

#### *How are Complementary Project Proposals with substantial external funding handled by PEP?*

Full proposals with external funding (CPPs) are scientifically motivated proposals having a commitment from a third party source of a certain relative amount of about 70% funding of total cost for the platform operating costs of the expedition(s) arising from the proposal. The amount of external funding in proportion to the total costs of the expedition would be determined by the Chair of the FB. The science operating costs and the remaining portion of the platform operating costs are the responsibility of the Platform Provider. Expeditions arising from such proposals will follow the normal IODP rules for designation of co-chief scientists, scientific staffing, and the IODP Sample, Data and Obligations Policy that defines data moratorium, data access and publication responsibilities.

CPPs should be prepared as normal Full proposals but, in addition, must include a description of the formal arranged financial commitment from a third party, or must include a description of the desire of a to be arranged financial commitment (including potential pathways of securing additional funding, perhaps in some cases together with the FB) to support the estimated platform operating costs for the ensuing expedition(s).

CPPs can receive fast-track consideration by the Advisory Panels if required by the situation (e.g., funding source, operational plans etc.). Shortly after each proposal deadline, these proposals go to the PEP, for review. The PEP assesses each proposal with external funding on the basis of scientific quality just like normal Full proposals without additional substantial external funding. If fast-track consideration is required, the PEP may forward directly the proposal to the relevant IO(s). If fast track is not required, PEP may send the proponents a written review, advising them how to improve or revise their proposal depending on time pressures. The revised proposal may be sent out to external advisers for additional comments if time permits. The proponents then receive the external advice of their proposal from the Support Office and may submit a brief response letter before the next PEP meeting. The PEP then reviews the proposal again, together with the external advice and response letters and forwards all information to the relevant IO and FB, and the PEP rates the proposal with external funding according to the criteria as described under Full proposals (see above).

The final decision whether a proposal is actually implemented is made by the FB overseeing the scheduling of the platform in question. The FB may negotiate with the proponents on details of the external funding. At this stage, the Full Proposal must satisfy all Site Characterization Panel (SCP) and Environmental Protection and Safety Panel (EPSP) requirements before it can be implemented.

#### **Multi-phase Drilling Project (MDP)**

A multi-phase drilling project (MDP) can take different forms, but the unifying concept is that the project cannot be done in a single drilling expedition. Examples of an MDP include, but are not limited to, a project that requires a long site occupation in one location, a series of scientifically related projects located in close proximity, or a project that addresses (a) large, overarching scientific question(s) requiring data from geographically distant sites.

The initial proposal, or the umbrella proposal, of a potential MDP should define the overall scientific objectives of the entire project and justify the need for a multi-platform or multi-phased drilling strategy to achieve those objectives; this may not require site-specific information beyond some generic site description. In other words, this umbrella proposal should be an overarching conceptual proposal including description of why the different phases of drilling are required, and including which platforms are to be used. The umbrella proposal should follow the Pre-proposal format, but without site specific information.

The PEP reviews the umbrella proposal. Then PEP may endorse the umbrella proposal, or the PEP may recommend revision of the umbrella proposal, or the PEP may deactivate the umbrella proposal if the science objectives and drilling plans (multiple platforms) are not sufficiently described.

After endorsement of either the initial umbrella proposal or the revised umbrella proposal, the PEP will ask to develop a set of closely interrelated proposals to describe the individual steps or phases in detail (multiple proposals), and to identify actual drill sites in each individual proposal. PEP would evaluate each proposal (either Pre-proposal or Full proposal) of the set within the broader context provided by the umbrella proposal. All components (individual proposals besides the umbrella proposal) of a MDP must otherwise fulfil the normal requirements for Pre-proposals and Full proposals, or ancillary project letters, and follow the normal review process. The PEP decides whether a component (individual proposal within the set of proposals) of the MDP has reached a sufficient stage of development for external peer review and whether it should advance to the IOs (and thus FBs) for possible scheduling. The Support Office will ask the reviewers to assess the individual proposal as a component of the MDP within the context of the umbrella proposal.

### **Ancillary Project Letters (APLs)**

An individual scientist or group of scientists may propose a project that requires less than 10-15% of dedicated platform time in an expedition, including transit. APLs can require an investment of drilling, logging, and technician time, as well as a platform berth; therefore, the IODP will strive to integrate such projects with an appropriate drilling proposal as early as possible in the normal planning process, preferably at the Pre-proposal stage. Note that for Mission Specific Platforms (MSPs), the submission of APL(s) by proponents may follow only after ESSAC has made a call. The implementation of APLs by MSPs primarily depends on the available budget.

Investigators must submit an APL to the Support Office in accordance with the normal proposal deadlines. An APL can be up to 1600 words excluding references, with up to 5 figures including tables, and it must include the following items that will not count against the word count limit:

- an official proposal cover sheet, complete with an abstract of 400 words or less,
- the appropriate set of site summary forms for each newly proposed drilling site, if any, with designated site names conforming to the established system (see below),

-a list of all proponents, specifying the name, affiliation, and expertise of each proponent.

*A well-prepared project letter should also:*

-describe the project and its overall scientific goals,

-identify the geographic areas of interest,

-explain the proposed types of shipboard measurements and data collection,

-define the requirements for ship time and shipboard personnel.

Shortly after each proposal deadline, all APLs go to the PEP for review. The PEP may advise the investigators to develop their ideas into a Pre-proposal or collaborate with the proponents of an existing proposal. If the latter, the Support Office or the PEP Chair can initiate contact between the two groups of investigators. The PEP may also decide to forward an APL directly to the IO (and thus FB), particularly if it relates to a drilling proposal that has already undergone external review.

## **Addenda**

Proponents of Full proposals that have been externally reviewed may submit an addendum to provide an update on relevant scientific research including new data, to fulfil a specific request for more information, or perhaps to present an offer of support from another scientific program or agency. However, if the supplementary material implies a significant change to the objectives or strategy of the original proposal, the proponents must submit a revised proposal instead of an addendum, and the revised proposal would return to the PEP for review. Addenda can be up to 2700 words long excluding references, with up to 8 figures including tables. Addenda must also include the following items that do not count against the page limit:

-an official proposal cover sheet, complete with an abstract of 400 words or less, a statement of the scientific objectives, and a list of the proposed drilling sites,

-the appropriate set of site summary forms for each newly proposed or modified drilling site, if any, with designated site names conforming to the established system (see below).

## **Response Letter**

Proponents may submit a brief letter in response to the external reviews of their Full proposal. Response letters can be up to 1600 words long excluding references, with up to 5 figures including tables, and they must address only the specific comments or questions posed by the reviewers. Occasionally, an advisory panel or committee may request an additional response letter during subsequent stages of the review process. The Support Office will set an appropriate deadline for receiving such response letters, typically at least four to six weeks in advance of the next relevant panel or committee meeting.

## **Drilling Site Designation**

The IODP follows a uniform system for naming proposed drilling sites whereby any seafloor site ever considered for possible drilling receives a unique name. Site names must conform to the general format AAAAA-nnX, where AAAAA represents a string of up to five alphanumeric characters (first character alphabetic only) referring to the geographic area of the proposed drilling site, nn represents the specific site number within that area, and X represents an alphabetic character that indicates the version of a specific site. For all newly proposed sites, X=A. Whenever proponents relocate a proposed drilling site, they must also rename it by incrementing X, changing nn, or changing AAAAA, depending on the relative geographic proximity and similarity of the scientific objectives compared to the original site. Designated site names should not encode any indicators of relative priority because site priorities often change as a proposal develops and matures. Alternate sites therefore must have unique site numbers.

Example: PIG-3B refers to the second (hence “B”) proposed location of Site 3 in Pigafetta Basin. PIG-4A could represent a newly proposed alternate site for PIG-3B.

### **Site Summary Form 6**

For Full proposals and APLs, Site Summary Form 6 summarizes the supporting data that exist in the Site Survey Data Bank (SSDB), or that will in the near future be submitted to the SSDB, for each proposed drilling site. This required form does not substitute for submitting data to the SSDB. Proponents must create Site Summary Form 6 as a single-page PDF document (see attached example) that contains the following four elements, depending on data availability:

- A label identifying the document as Site Summary Form 6 and indicating the proposal number (first three digits only) and site name,

- A list of the file names of the relevant site-survey data that exist in the SSDB, i.e., the file names corresponding to the seismic data (images and SEG-Y) and navigation data presented on this form; for any displayed data that have not been submitted to the SSDB, the form should specify when the data will be submitted,

- A clearly annotated map showing all relevant details around the proposed drilling site, including seafloor bathymetry, with labelled contours or a depth scale; the exact site location; track charts for the key seismic lines, annotated at regular intervals with the same horizontal unit (e.g., CDP, shot-point number, etc.) as the accompanying seismic profiles; and a distance scale if not apparent from the horizontal and vertical annotation,

Two profiles for each seismic line that crosses the proposed drilling site where appropriate. One profile should include an annotated vertical line showing the location (e.g., Site ABC-1A, CDP 4871) and penetration depth (or time using best depth-to-time conversion) of the proposed drilling site. This profile may also show an interpretation of the seismic data. The second profile should show the same image as the first profile, but without showing the drilling site or any interpretation. Each seismic profile should indicate the name and orientation (e.g., NW–SE) of the survey line, have well-annotated horizontal and vertical axes, including a horizontal scale bar (in km), and have sufficient resolution to show the relevant structure imaged by the data.