

# **Operations Task Force Report**

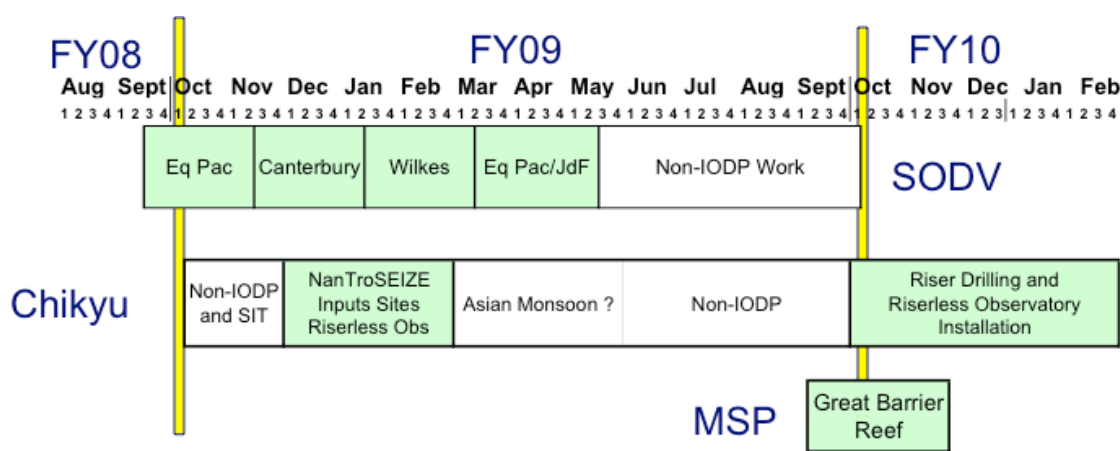
**Summary of activity from  
1 March 2008 – 1 August 2008**

## PREFACE

This report provides a summary of the IODP-MI Operations Task Force (OTF) for the period following the March 2008 SPC meeting to early August 2008. Section 1 of the report shows the SPC-approved FY09 IODP operations as of the March 2008 SPC meeting. Section 2 describes changes to the FY09 IODP platform schedules following the March 2008 SPC meeting and up through August 1, 2008. Section 3 of the report discusses FY10 platform scheduling issues. This report incorporates email discussion among OTF members and a report of the June 2-3, 2008 NanTroSEIZE Project Management Team.

### 1.0 Status as of March SPC meeting

Figure OTF-1 (below) shows the approved IODP platform schedule that resulted from the March OTF and SPC meetings. See **SPC Consensus 0803-03** and discussion in SPC March meeting minutes for more details.



**Figure OTF-1.** Summary of OTF-recommended and SPC-approved IODP platform operations following the March 2008 SPC and OTF meetings

## 2.0 FY09 Scheduling Issues

### 2.1 MSP

On April 18<sup>th</sup>, Dan Evans informed the community that ESO was unable to come to terms with the drilling contractor to implement the New Jersey Shallow Shelf program in 2008. ESO had received only one tender offer to carry out the work and then entered into contract negotiations with that contractor. Progress appeared to be satisfactory, if slow. In the end, the conclusion was that the contractor would only be able to carry out the work starting in September, which was not acceptable for operational and logistical reasons. The current demand for drilling services is high and thus commercial opportunities were more viable for the contractor. As such, ESO was forced to defer operations until FY09. ESO is currently working towards getting a contract signed for implementation of New Jersey Shallow Shelf in May-Aug 2009 time frame.

ESO still plans to implement the Great Barrier Reef sometime in the September-December 2009 period and currently has a tendering notice out for this expedition.

Thus at this time, there are no MSP issues for OTF to address with respect to FY09 operations.

## 2.2 JOIDES Resolution

At the March SPC meeting in Barcelona, the FY09 *JOIDES Resolution* schedule shown in Figure OTF-1 was approved (pertinent excerpt from **SPC Consensus 0803-03** copied below):

### SPC Consensus for FY2009 JOIDES Resolution Schedule

**SPC Consensus 0803-03:** The SPC approves the FY2009 recommended scheduling options presented in the FY2009 IODP Platform Scheduling report.

Recommended expeditions for the *JOIDES Resolution*, assuming the vessel will be available to begin operations in September 2008, proceed as follows:

- Pacific Equatorial Age Transect I (Proposal 626-Full2)
- Canterbury Basin (Proposal 600-Full)
- Wilkes Land Margin (Proposal 482-Full3)
- Pacific Equatorial Age Transect II (Proposal 626-Full2) *plus* Juan de Fuca Flank Hydrogeology cementing operation (Proposal 545-Full3)

At the March SPC meeting, OTF/SPC further discussed how to deal with any additional slippage of the *JOIDES Resolution* delivery date. Two options were examined in the event that delivery date slippage required that the initial Equatorial Pacific expedition be deferred. One option would simply move the deferred Equatorial Pacific expedition after the combined Equatorial Pacific/Juan de Fuca expedition. Another option (preferred by SPC –**See Consensus 0803-04** below) would be to insert the Bering Sea expedition at the end of the schedule and conduct only one Equatorial Pacific expedition in FY09.

### SPC Consensus on Schedule Slippage Options for JOIDES Resolution

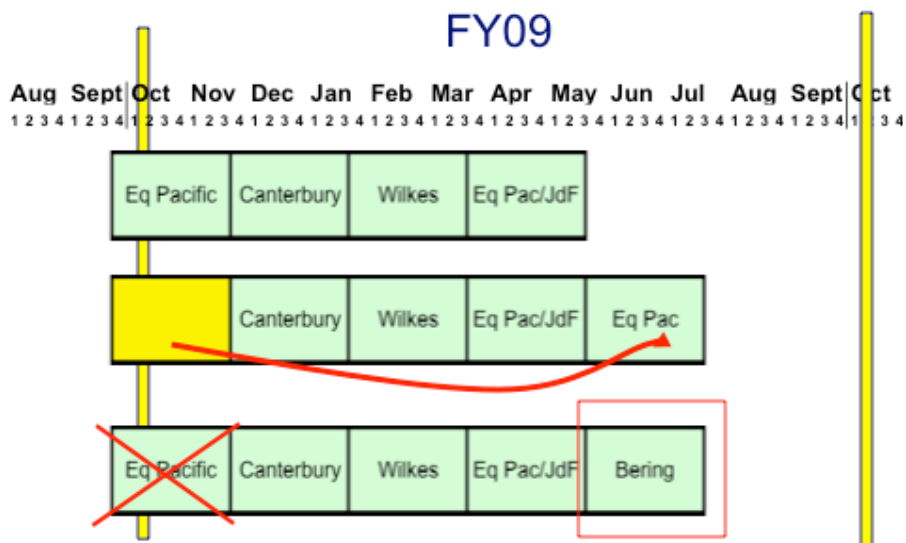
**SPC Consensus 0803-04:** Should the start date for *JOIDES Resolution* operations slip beyond September 2008 (e.g., to mid-November 2008), the SPC recommends that FY2009 expeditions for the *JOIDES Resolution* proceed as follows:

- Canterbury Basin (Proposal 600-Full)
- Wilkes Land Margin (Proposal 482-Full3)
- Pacific Equatorial Age Transect II (Proposal 626-Full2) *plus* Juan de Fuca Flank Hydrogeology cementing operation (Proposal 545-Full3)
- Bering Plio-Pleistocene (Proposal 477-Full4)

If operational factors preclude scheduling the Bering expedition at the end of the FY2009 schedule, the SPC recommends that FY2009 expeditions for the *JOIDES Resolution* proceed as follows:

- Canterbury Basin (Proposal 600-Full)
- Wilkes Land Margin (Proposal 482-Full3)
- Pacific Equatorial Age Transect II (Proposal 626-Full2) *plus* Juan de Fuca Flank Hydrogeology cementing operation (Proposal 545-Full3)
- Pacific Equatorial Age Transect I (Proposal 626-Full2)

Figure OTF-2 (below; initially presented at the March SPC) shows these options graphically.



**Figure OTF-2.** *JOIDES Resolution schedule slippage options. Row 1 shows the approved schedule as of March 2008 SPC meeting. Rows 2 and 3 shows contingencies identified by SPC should there be a delay in delivery date of the JOIDES Resolution that would require starting IODP operations after late September.*

On 17 March, OTF and SPC were notified via email (Copied below) that the *JOIDES Resolution* would not be available until early November 2008 and that, per **SPC Consensus 0803-04**, the FY09 *JOIDES Resolution* IODP operations would begin in mid-November 2008 with the following schedule:

- Canterbury Basin
- Wilkes Land Margin
- Pacific Equatorial Age Transect *plus* Juan de Fuca cementing operation

and that the USIO would evaluate in detail the options for expedition(s) beyond the Pacific Equatorial Age Transect/Juan de Fuca cementing operation.

#### **MARCH 17 Email Tto SPC/OTF members regarding change in SODV delivery date**

Date: Mon, 17 Mar 2008 14:07:27 -0400  
 To: Jan Behrmann <jbehrmann@ifm-geomar.de>,.....  
 From: Thomas Janecek <tjanecek@iodp.org>  
 Subject: SODV FY09 Schedule update  
 Cc: Nancy Light <nlight@iodp.org>, Manik Talwani <mtalwani@iodp.org>, Greg Myers <gmyers@iodp.org>, Kelly Oskvig <koskvig@iodp.org>, IODP-MI Science <science@iodp-mi-sapporo.org>  
 Bcc:  
 X-Attachments:

Dear All,

I have been recently informed by the USIO that the SODV will not be available for IODP operations until early November 2008.

Per SPC Consensus 0803-04, the FY09 SODV IODP operations will begin in mid-November 2008 with the following schedule:

- Canterbury Basin (Proposal 600-Full)
- Wilkes Land Margin (Proposal 482-Full3)
- Pacific Equatorial Age Transect II (Proposal 626-Full2) *plus* Juan de Fuca Flank Hydrogeology cementing operation (Proposal 545-Full3)

The possibility of additional FY09 SODV IODP expeditions beyond the Pacific Equatorial Age Transect/Juan de Fuca expedition (per SPC Consensus 0803-04) is currently being assessed by the USIO and will be addressed over the next few weeks by the Operations Task Force.

I will update you as we learn more.

Best Regards,

Tom

The USIO examined incorporating the proposed Bering Sea expedition into the schedule. After an examination of the issues, the USIO indicated that an ~30-day window would need to be inserted into the schedule after the Equatorial/Juan de Fuca expedition to move the Bering Sea program into a desirable weather window. This 30-day window could, in theory, consist of one of three options, including (1) conducting commercial operations, (2) conducting IODP operations or (3) idling the vessel. Issues associated with the three options were then examined.

#### *Idling the vessel: Issues*

Inserting a 30-day hiatus of operations (essentially tying the ship up) was not deemed a good option. The USIO would still need to pay day-rate and salaries during this time, thus in effect adding another 30 days to the 8-month schedule with no science return. Also, inserting a 30-day hiatus into the schedule (and extending the FY09 IODP schedule until early August) reduces the contiguous time available for non-IODP activities at the end of FY09. Putting all the available commercial operations into one contiguous block maximizes the chance for obtaining commercial operations and for relief from almost 3-months of day-rate obligations (when the ship would be otherwise sitting at the dock at the end of fiscal year due to budget restrictions).

The latter issue (relief of day-rate obligations) is very important. NSF had informally indicated to the USIO that day-rate saved from FY09 non-IODP work could be applied to FY10 USIO POC operations (although there is no guarantee at this point). Given the indications that FY10 budgets would be similar in scope to FY09, the USIO deemed it essential to have as much of this FY09 day-rate relief brought forward to FY10, if NSF is able to carry forward these funds to FY10 USIO POC operations. A loss of 30-days carry forward in day-rate could mean the difference in maintaining a four-expedition schedule for FY10 or scaling back to a lesser schedule.

#### *Conducting Commercial Operations: Issues*

The USIO indicated that there was essentially no chance of conducting non-IODP (commercial) operations in this 30-day window. Given mobilization/demobilization issues (transits) to the most likely areas of commercial operation, there would be little, if any, available time for actual operations.

During the time of this discussion (April-May, 2008) the USIO indicated that there were not any contracts signed for commercial work in FY09. However, there were several good possibilities

being actively examined at the time, including a partnership with ODL (ship operator) and Fugro. In addition, IODP-MI and the USIO were working on an additional opportunity with DEEPSTAR for use of ship time possibly as early as late FY09 for testing of a dual-gradient mud drilling system for the *JOIDES Resolution*. Thus, although specific non-IODP work had not been identified at the time, prospects looked good. This work, combined with maximizing the number of contiguous days available for this work, would provide needed fiscal relief for FY10 operations.

#### Additional IODP operations - Issues

OTF and the USIO could not identify any reasonable IODP operations that could fit into this 30-day window, given that any viable operations in this window would need to include transits that would likely use ~2 weeks of that time. Even if reasonable operations could be identified for this 30 day period, these operations would need to be prioritized against the potential loss of day-rate carry-forward that NSF has indicated might be able available for FY10 (helping to insure a four-expedition plan in FY10 --- see discussion above).

The USIO also indicated that there is an added cost (even for simple paleo operations) that would result from running operations in this 30-day window (fuel, expendables, etc). The USIO only has sufficient funds for eight months of operations in FY09. Given this operating budget, adding another 30 days of operational time on top of eight months (even simple paleo operations) would prohibitive. Thus, if we wanted to insert 30 days of time to move put Bering Sea in a good weather window and also conduct operations during this 30-day period, we would need to remove 30 days of operations from another program on the schedule.

Finally, given the likelihood of the *JOIDES Resolution* operating in the Pacific in FY10 (**per SPC Consensus 0803-29**), OTF concluded that there is good potential for including Bering Sea into some FY10 options

In sum, OTF concluded that best option for the USIO and IODP is to move forward with the 4-expedition model that includes Canterbury, Wilkes Land, Equatorial Pacific, and Equatorial Pacific/JdF. This option:

- 1) Fits within the FY09 fiscal guidance given by the Lead Agencies and IODP-MI
- 2) Can be implemented even if external funds cannot be found.
- 3) Maximizes the contiguous block of non-IODP time for the USIO, which will be important for attracting external funding. Given the budget realities for FY10, maximizing the time available for FY09 non-IODP operations (by putting it into a contiguous block) also maximizes the amount of day-rate carry-forward that might be potentially be applied to FY10 USIO POC operations.

Based upon the above discussion, OTF notified the USIO to move forward with formalizing the schedule shown in Table OTF-1 (below) and incorporating it into the FY2009 Annual Program Plan.

**Table OTF-1. USIO FY2009 schedule.**

Expedition		Port (Origin)	Dates <sup>1,2</sup>	Total Days (Port/Sea)	Days at Sea (Transit/Ops)
Deployment, mobilization, sea trials, transit <sup>3</sup>	N/A	Singapore	24 August- 12 November	80 (49/31)	24/7
Canterbury	TBN	Wellington	12 November – 4 January 09	53 (6/47)	2/45
Wilkes Land <sup>4</sup>	TBN	Wellington	4 January 09 – 9 March	64 (5/59)	16/43
Equatorial Pacific <sup>5</sup>	TBN	Wellington	9 March – 9 May	61 (5/56)	23/33
Equatorial Pacific/JDF <sup>6</sup>	TBN	Honolulu	9 May – 9 July	61 (5/56)	21/35

<sup>1</sup> Dates for expeditions may be adjusted pending final vessel delivery date from shipyard or nonIODP activities.

<sup>2</sup> The start date reflects the initial port call day. The vessel will sail when ready.

<sup>3</sup> An intermediate Darwin port of call is targeted for about 19-20 October. Sea Trials will be completed at DSDP 588.

<sup>4</sup> Wilkes Land activities include completion of the Adelai APL.

<sup>5</sup> Scientists would embark the vessel in Tahiti on about 18 March.

<sup>6</sup> Expedition would consist of operations in both the equatorial Pacific (30 days) and Juan de Fuca (5 days). Scientist would be targeted to disembark the vessel in San Diego on 27 June.

### 2.3 *Chikyu*

In April, CDEX informed IODP-MI and OTF that *Chikyu* had experienced operational difficulties with gears on its azimuthal thrusters. Cracks and chips were found on three out of six azimuthal thruster gears (for more details, see:

[http://www.jamstec.go.jp/e/about/press\\_release/20080422/index.html](http://www.jamstec.go.jp/e/about/press_release/20080422/index.html)). A special task force set up to investigate the issue in more detail determined that new gears would have to be fabricated and installed on *all* six thrusters before *Chikyu* could return to IODP operations. CDEX indicated that the fabrication and installation would require *Chikyu* to be out of IODP operation until March 2009, when it would resume IODP operations for four months (March - June 2009).

As a result of these technical difficulties, CDEX (after consultation with OTF) deferred Expeditions 318 and 319 on *Chikyu* (at that time planned for the Dec 2008 - Feb 2009) until a to-be-defined later date. Unfortunately, these expeditions *could not* be moved forward to the March - May 2009 time frame because of fishing union restrictions in the area of operation during this period of operations.

Based upon this information about *Chikyu* and the required change in operations, the OTF Chair asked the NanTroSEIZE Project Management Team to meet to discuss potential options for

NanTroSEIZE operations in this March-June 2009 time frame and to make a prioritized list of recommended options to OTF. The PMT met on June 2-3 in Chicago to address not only this request for FY09 operations but also some additional options for FY10 and beyond. During its meeting, the PMT first revised the overall long-term priorities for NanTroSEIZE operations (in light of operational and vessel availability considerations) and then developed specific operational recommendations for the March-June 2009 time frame for OTF consideration.

Two days after the meeting, CDEX informed IODP-MI that two additional months of IODP operational time would be available for *Chikyu* operations in FY09 (i.e., six contiguous months of operations in FY09). With this information in hand, the OTF Chair tasked the PMT to include recommendations for operational plans at NanTroSEIZE that would also include these two months.

Below is the summary report of the PMT discussion and recommendations:

\*\*\*\*\*  
\*

### **Report of Project Management Team discussion**

After CDEX informed IODP-MI of the technical issues regarding *Chikyu*'s azimuthal thrusters and the subsequent change in operational schedule, IODP-MI requested a meeting of the PMT to recommend new operational plans for *Chikyu*.

The discussion for the PMT was guided by two overarching operational factors. First, the operations would need to be in the northern portion of the NanTroSEIZE operational area because of Japanese Fishing Union restrictions over most of the drill sites during the month of March-June. Second, the present location (and strength) of the main belt of the Kuroshio current would prohibit *Chikyu* from beginning riser operations at the two main NanTroSEIZE riser sites (NT3-01 and NT2-03).

Before the PMT began discussion on specific operational recommendations for FY09, the group recognized that logistical constraints associated with the Kuroshio current, limited drilling time associated with *Chikyu* (~ 6 mo/year), and the need to begin riser operations with *Chikyu* would require a modification of the NanTroSEIZE roadmap (Stage Plan) in order to ensure that significant progress was made on the main objectives outlined in the 603 proposals.

This discussion of revised long-term priorities was actually started at the February 2008 PMT meeting but events since that time (e.g., thruster issues) provided additional focus to the discussion. Based upon the logistical constraints and issues described above, the PMT reviewed the 603 proposals and developed the following prioritized list of operations for NanTroSEIZE to address the major coring and observatory objectives of the 603 proposals:

1. Drilling to the plate boundary in the seismogenic zone (C0002/NT3-01 or an alternate site if one can be identified)
  - a. Sampling
  - b. Observatory
2. Installing upper-plate observatory locations (more than one).
  - a. Hanging wall observations
    - i. NT2-11 or NT2-04 to "intermediate depth" of ~1500-2500 mbsf
    - ii. C0004 (NT2-01J/K) fault 500m,
    - iii. C0002 (NT3-01) shallow ~1000 m
3. Sampling inputs



- a. NT1-07 (higher priority)
  - b. NT1-01 (lower priority, if time is available)
4. Drilling to intermediate depth into fault zone (e.g., C0001/NT2-03 site)
- a. Sampling
  - b. Observatory
  - c. (C0001 option at 500-1000 m?)

In essence, the above list can be considered a “contingency tree” for conducting NanTroSEIZE operations. The primary operations, when possible, should focus on drilling to the plate boundary in the seismogenic zone and establishing a long-term observatory at this location. Should this operation not be logistically possible in any particular field season, the next set operations should consist of installing observatories in the hanging wall. Sampling the input material is the next priority. Finally, should the above three operations not be logistically possible in any field season or be successfully completed then drilling the intermediate-depth fault zone site would become the prescribed operation.

### **FY09 options**

Using the prioritized list of operations described above as guidance, the PMT set about to determine what specific operations to recommend to OTF for FY09. The first priority, drilling at C0002 (NT3-01), was examined. During and since Stage 1 drilling, it became clear that riser drilling in the Kuroshio current would be even more difficult than anticipated. Early this year, CDEX had advised the PMT about mechanical limits on the riser performance (related to vortex induced vibration of the riser in ocean currents) that would preclude operations in the region affected by the Kuroshio. Unfortunately, Site C0002 is in a region presently covered by the Kuroshio current. Given the inability of *Chikyu* to drill at this location because of present location of the Kuroshio and the constraints imposed by the Japanese Fishing Unions for operation in this area, the PMT recommended that FY09 operations should focus on the second item in the priority list as significant progress could be made in FY09 toward observatory aspects related to the 603 proposals.

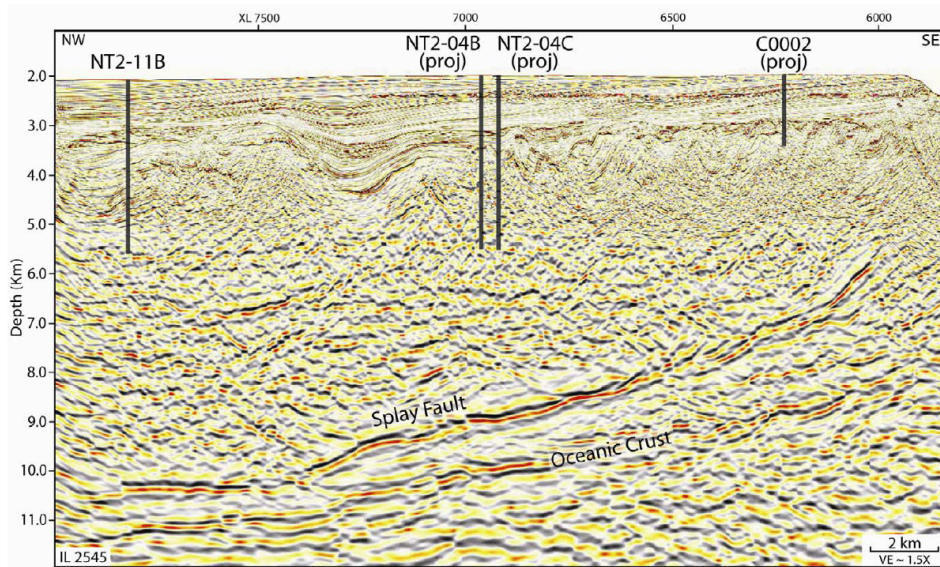
The PMT examined several sites that would be out of the main Kuroshio axis and not affected by Japanese Fishing Union restrictions. These sites included NT2-04 and a new proposed alternate NT2-11. The primary purpose of a drilling effort at either of these sites would be to establish a geodetic/seismic/hydrologic observatory above the plate boundary fault zone. This is a necessary component of the “distributed seismogenic zone observatory” as described in the 603-CDP proposal. An upper plate observatory at Site NT2-04 was proposed in detail in Proposal 603-D (pgs. 14-15 in 603D-Full2).

Site NT-04 is still subject to Kuroshio a substantial fraction of the time (although not as much as C0002 (NT3-01)). However, Kuroshio studies and modeling all indicate that the NT2-11 region, about 12 km farther north than Site NT2-04 (see figure below), is much less affected by the current (both in terms of its presence and strength when present). NT2-11 thus meets the requirements for the upper plate observatory installation equally well as NT2-04, but has the enormous advantage of lying outside the main track of the Kuroshio.

Detailed consideration of observatory design requirements has indicated that the geodetic elements (strain and tilt), should be emplaced deeper beneath the seafloor than originally proposed for NT2-04, in order to reach more competent, higher rigidity rock for signal fidelity and low noise measurements. NT2-04 was proposed to 1400 mbsf, but the PMT recommends up to 2500 mbsf for NT2-11 (and for NT2-04 as the less-preferred alternative now).

Key points in favor of NT2-11:

1. Lies directly above the strong “megaspay fault” reflector, the primary target of seismogenic zone studies. Meets the same observatory objectives as NT2-04, described in proposal 603D, for detecting long-term strain, tilt, microseismicity, and other signals related to testing hypotheses for the locking of the up-dip end of the seismogenic/tsunamigenic fault system.
2. Upper ~1500 mbsf is in flat-lying, unfaulted Kumano basin sediments, providing a likely stable environment for drilling and casing operations. This site may be significantly less fractured in the accretionary prism rocks beneath 1500 mbsf relative to NT2-04 and C0002. C0002 cores and logs provide an excellent analog for physical properties prognosis at this site.
3. Lies outside the typical main track of the Kuroshio current. Riser drilling to reach depth objective is permissible here under a wide range of Kuroshio scenarios.
4. Reachable for a cable link to the DO-NET seafloor cable system (a Japanese domestic science project, to be laid on the seafloor in 2009), providing power and data transmission access for the observatory.



**Figure.** Inline 2545 extracted from the Kumano 3D pre-stack depth migrated volume. Note that depths shown for NT2-11B and NT2-04B/C are EPSP approved maximum depths, but the PMT recommends drilling to 2.5 km bsf or less.

Preliminary time estimates for the riser-based drilling/coring operations at NT2-11 are approximately 100-120 days depending on the amount of coring associated with this operation and contingency time allocated to operations (note that CDEX includes weather and mechanical contingency time in its operational plan, unlike the USIO procedure). The PMT recommends this program form the bulk of operations in the March-June time frame.

Utilizing the priorities established at the Chicago PMT meeting, the group then discussed the operations that should follow NT2-11. Additional observatory preparation (priority 2) and Input Sites (priority 3) were recommended, should the location of the Kuroshio current prohibit any riser drilling at the primary deep site (NT3-1). In essence, the PMT recommended reinstating the previously deferred Exp 318/319 operations associated with coring at the Subduction Inputs (318) and riserless observatory preparation (319). These operations can be conducted during this time frame (July-Aug) as Fishing Union restrictions *would not* apply.

In sum, the PMT-recommended operations for FY09 *Chikyu* schedule include:

**Expedition A:** March-Mid June: NT2-11 riser drilling and casing (~100 days)

**Expedition B:** Mid June – late July: Inputs coring of NT1-07 and/or NT1-01, and logging and coring near C0004 (48 days). The latter operation is in preparation for subsequent casing operations (see expedition C below). This new coring and site location allows connection to the DO-NET cables.

**Expedition C:** late July - Aug 31: Drilling and casing of C0004 riserless observatory (and C0002 if time allows --- observatory installation in subsequent year) (34 days)

(Note: Days are approximate).

Prior to the PMT discussion of *Chikyu*'s long-term schedule (FY10 and beyond), CDEX had indicated that the *Chikyu* would be available each year in the Jan-Jun time frame. The PMT requested that CDEX consider moving its yearly operations outside of this time frame because Japanese Fishing Union severely restricts operations at most NanTroSEIZE sites during this period. CDEX discussed the issue with JAMSTEC and MEXT and responded with proposed operational times for FY10 and beyond outside of this Jan-Jun window. The PMT greatly appreciated this response by CDEX. This change in period of operation, as well as new information regarding increased capability of *Chikyu* to drill in higher current, bode well for completion of the long-term NanTroSEIZE objectives.

\*\*\*\*\*

Utilizing the NanTroSEIZE PMT report, OTF then examined (via email) several options for *Chikyu* FY2009 operations, including:

- 1) Allocate all six months of FY09 operations to NanTroSEIZE.
- 2) Partial allocation to NanTroSEIZE and partial allocation to non-NanTroSEIZE IODP efforts.
- 3) Allocate all six months of FY09 operations to IODP non-NanTroSEIZE efforts.

During discussion of the options, OTF quickly discarded option #3. OTF recognized that making progress with NanTroSEIZE is a very high priority for IODP and thus option #3 (no NanTroSEIZE operations) was a non-starter. Thus the question for OTF became.....how much time to allocate for NanTroSEIZE in FY09?

OTF members were concerned that long-term operational issues with respect to the location of the Kuroshio current could prohibit IODP from ever reaching the primary objectives of NanTroSEIZE and the grand goal of drilling into the seismogenic zone. Perhaps it would be better to diversify and consider Option 2 and devote two out of the six months to an expedition carrying out drilling for another highly ranked proposal. Thus OTF had to weigh the scientific and logistical merits of this option against those of proceeding entirely with NanTroSEIZE.

OTF discussed many factors related to recommending either Option 1 or 2:

(1) *The importance of making progress at NanTroSEIZE -both scientifically and politically.*

- a. NanTroSEIZE is one of the highest science priorities for IODP. Significant progress towards completion of NanTroSEIZE objectives is imperative for the program. We must begin to address deep-drilling objectives and make significant progress towards establishing observatories.
- b. The 6-month FY09 plan developed by the NanTroSEIZE PMT would make significant progress towards two of the four primary objectives at NanTroSEIZE.

*(2) Maximizing operational flexibility*

- a. Operationally and logistically, combining the NT2-11 riser program with the two months of NanTroSEIZE-related riserless work (casing installation and input sites) provides the operator with maximum flexibility (contingency) in conducting riser operations and finishing the riser hole should delays occur with this first deep scientific riser site. Conducting a non-NanTroSEIZE riserless operation in the two months following the operations at NT2-11, severely limits the contingency time for riser operations should problems arise (and thus we would have to allocate time to return to the site to finish before being able to install an observatory).

*(3) The limited operations to date at NanTroSEIZE.*

- a. OTF recognized that a significant effort (i.e., time) has to be allocated at NanTroSEIZE. The program has figuratively (and literally) only scratched the surface of this CDP. CDPs by their very nature have "unglamorous" parts (parts that by themselves probably never would be drilled). The two months of *Chikyu* time spent on casing installation and the input sites are essentially those "unglamorous" portions. IODP made a commitment to them when the CDP was forwarded to OTF. OTF fully understands that the program doesn't have the operational time on *Chikyu* (or any platform) that IODP thought when CDPs were first put forth. Thus allocating operational time for these "unglamorous" portions of a CDP now seems onerous. But unless SPC and SAS wish to back away from CDPs and NanTroSEIZE, OTF recognized that the IODP has a prime opportunity to make significant progress on several high-priority objectives for NanTroSEIZE. Following these FY09 operations, we will be in a position to install several long-term observatories in the coming years. That would be an important scientific and logistical achievement for IODP.

*(4) The high likelihood of the JOIDES Resolution operating in the Pacific in FY10.*

- a. Given the recent SPC consensus for this operational mode for the *JOIDES Resolution*, there is a high probability that the *JOIDES Resolution* will be in the Pacific in FY10 for IODP operations and thus be able to complete ~ four more Pacific-based programs in FY10. This operational aspect of *JOIDES Resolution* drilling lessens the pressure to drill other riserless programs with *Chikyu*.

*(5) No viable non-NanTroSEIZE riser operation(s) ready for FY09*

- a. Any non-NanTroSEIZE *Chikyu* options during these six months of FY09 operations would have to be riserless expeditions. While *Chikyu* could conduct non-NanTroSEIZE riserless programs in FY09 (e.g., Okinawa Trough, Asian Monsoon), these would have to come at the expense of high-priority objectives at NanTroSEIZE. Given SAS directives to maximize riser drilling for *Chikyu* and in order to make some significant progress at NanTroSEIZE with respect to riser drilling and observatory preparation, we need to concentrate on NanTroSEIZE

when possible and utilize non-NanTroSEIZE riserless options only as a contingency. OTF believes that mode of operation in FY09 affords IODP the opportunity to make this progress.

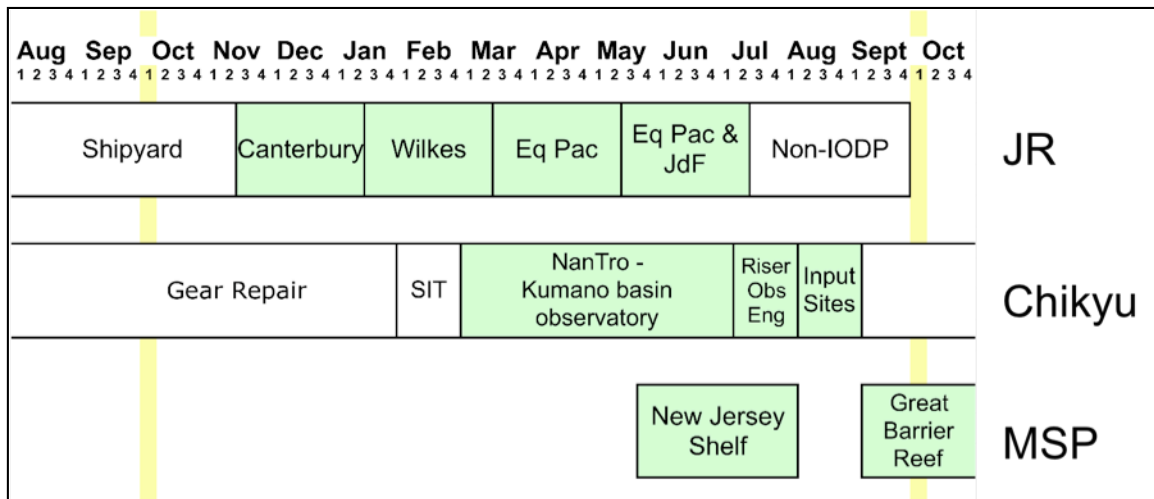
Taken together, the points listed above led to an OTF recommendation to allocate all six months of Chikyu operations in FY09 to NanTroSEIZE. OTF recommended that the NanTroSEIZE PMT's proposed plan for FY09 *Chikyu* operations be implemented. This plan keeps one of the highest priority IODP programs moving forward while SPC and OTF (1) examine and debate the larger issue of what to do in FY10 should the Kuroshio Current not move, blocking access to the deep riser site and (2) discuss how to develop a contingency strategy for *Chikyu* in FY10 and beyond that allows us to drill other programs.

CDEX and the PMT have subsequently modified the order of operations listed on Page 11 above to maximize operational efficiencies. The current FY09 operational schedule (as of August 1) is as follows:

Operation	Exp #	Dates of Operation
Port Call at Shingu		05 Mar 09 - 09 Mar 09
Riser Observatory (NT2-11)	319	10 Mar 09 - 29 Jun 09
Riserless Observ Engineering	322	30 Jun 09 - 30 Jul 09
Subduction Inputs	323	31 Jul 09 - 12 Sep 09

**Table OTF-2:** Summary of revised FY09 Chikyu Operations

#### 2.4 FY09 Schedule summary (as of August 1, 2008)



**Figure OTF-3.** Summary of revised FY09 IODP platform operations as of August 1, 2008

### 3.0 FY2010 Scheduling Discussion

#### 3.1 MSP

FY2010 scheduling for MSPs is fairly straightforward at this time. Currently, ESO is planning for two MSP operations, New Jersey Shallow Shelf (564-Full) and the Great Barrier Reef (519-Full2). ESO's plan is to conduct New Jersey Shallow Shelf in the May-August 2009 time frame and the Great Barrier Reef in September-December 2009 time frame.

Actual dates of operation for both expeditions are dependent upon final tendering contracts. At this time, ESO is evaluating several bid packages for New Jersey Shallow Shelf. The tender proposal submission deadline for Great Barrier Reef is in early August. Thus we should have updates on the status of both tendering processes at the SPC meeting in August.

Assuming platform/contractor negotiations are successful, New Jersey operations will clearly fall into FY2009 (May-Aug time frame). Planning and contracting for Great Barrier Reef will also occur in FY2009, with operations either spanning the FY2009/2010 fiscal years (e.g., Sept-Oct 2009) or entirely in FY2010 (e.g., Oct-Nov 2009). Shorebased operations for both expeditions would in FY2010. Either way (i.e., GBR operations spanning the fiscal years or entirely within FY2010), there will be no other MSP operations in FY2010. ESO has indicated the next new MSP operation would be scheduled for FY2011. ESO has also indicated they would like to conduct MSP operations in FY2012 and FY2013.

Thus, at this point, OTF does not need to develop any options for FY2010 MSP operations. OTF can await the results of the next SPC global ranking exercise (March 2009) before considering FY2011 MSP operations.

#### 3.2 *CHIKYU*

Following the six months of FY2009 operations, CDEX has indicated that *Chikyu* will be involved in non-IODP work (and some routine maintenance/dock time) for up to 12 months, with a return date to IODP operations around September 2010 (for ~8 months, perhaps more). Except for September 2010, these new IODP operations would occur in FY2011. Thus, for planning purposes, OTF will treat these 8+ months of contiguous IODP operations as FY2011 operations.

This schedule effectively means there will be no FY2010 IODP operations for *Chikyu* and a large block of IODP operations in FY2011. This timing provides OTF and SAS with the opportunity to examine some of the issues that have arisen with respect to *Chikyu* operations at NanTroSEIZE (i.e., Kuroshio location) and the need to begin operations for other programs with deep drilling (riser) objectives. Given the lack of viable riser programs at OTF and the potential for the Kuroshio current to effectively block progress toward the primary deep drilling objectives at NanTroSEIZE (NT3-01), IODP may be in position where riserless drilling is our only option for *Chikyu* in FY2011. Clearly, SAS and OTF must examine proposal reviewing, nurturing, and scheduling options that will result in moving more viable riser programs at OTF.

Along these lines, the OTF Chair informed SASEC that scheduling for *Chikyu* beyond FY2009 will be problematic and that our ability to achieve the 1st priority at NanTroSEIZE (Deep Fault at NT3-

01 and observatory installation at that fault) in this phase of IODP is in doubt if the Kuroshio does not shift its location in the near future. SASEC was then presented with some options for post FY09 drilling at NanTroSEIZE

Options:

A) Commitment to NanTroSEIZE Deep Fault (NT3-01)

This option would require a concerted monitoring effort (with simulations and perhaps buoys) to examine the movement of the Kuroshio three months in advance in advance of operations (the current level of reasonable predictive capability). In this scenario, depending on what Kuroshio predictions, we would do one of the following:

- 1) Kuroshio moves: *Chikyu* mobilizes to drill at NT3-01
- 2) Kuroshio does not move:
  - a. conduct Non-NanTroSEIZE programs in the area (to minimize transits)
    - i) Western Pacific riser program and/or
    - ii) Western Pacific non-riser

B) Commit to another IODP riser program elsewhere

In this scenario, we defer NanTroSEIZE until/if a long-term shift occurs in the Kuroshio

- Non NanTroSEIZE riser programs (at OTF) outside Western Pacific
  - i) CRISP
  - ii) Murray Ridge

At this point, neither alternate riser program is viable: CRISP does not have a 3D survey and Murray Ridge cannot be drilled due to clearance (and hence, logistical) issues.

These issues obviously need input from SPC. Along these lines, time has been allocated at the upcoming SPC meeting for a full discussion of NanTroSEIZE results to date, operations in FY09, and plans for FY2011 and beyond (agenda item 8 in SPC agenda-- <http://www.iodp.org/spc>). The chief project scientists for the NanTroSEIZE Project Management Team will be at SPC to aid in this discussion. Dovetailing with this NanTroSEIZE discussion is SPC agenda item 16 --- *Prospects for riser drilling beyond beyond NanTroSEIZE* – where SPC will examine options with respect to other IODP riser programs (both those already at OTF and other potential candidates).

Thus, for now, there is no specific action for OTF to address with respect to FY2010 *Chikyu* operations. OTF will await the discussion at the upcoming SPC meeting to fully understand community priorities before planning options with respect to NanTroSEIZE and other riser-based programs.

### **3.3 JOIDES RESOLUTION**

Scheduling of the *JOIDES Resolution* for FY2010 (and perhaps beyond) will require a great deal of flexibility on the part of OTF, SPC, and the community in general. For FY2010 we will probably not know enough about non-IODP operations for the *JOIDES Resolution* by the August 2008 SPC meeting to effectively propose, and have SPC approve, a firm schedule. Most likely this information will be available in the fall. As such, OTF and SPC will need to develop a procedure whereby after



the August SPC meeting, OTF can develop an IODP schedule from a prioritized set of operations whose location could be heavily dependent on the location of non-IODP operations. Ideally, if this procedure is fully vetted and approved by SPC in August, OTF should be able to develop a schedule in a timely manner once non-IODP operational areas/duration are known.

To be in a position to develop an FY2010 IODP schedule once non-IODP work is known, OTF will need to establish a hierarchy of protocols to step through in evaluating options for any particular 8-month block of time.

Below is a draft hierarchy of protocols developed by the OTF Chair. ***This list is only a "strawman" meant for initiating a discussion among OTF and SPC.***

**Schedule Development Priorities:**

- 1) Period(s) of Operation.** Primarily dependent on available commercial work
- 2) Area(s) of Operation:** Dependent heavily on location of commercial work. In addition, SPC has a consensus item on the table for a preference for Pacific operations in FY10, if logistically possible.
- 3) Weather Window(s):** If in a poor weather window (as defined by Protocol 1), some operations will be eliminated immediately even if they are Tier 1 programs, in an optimal transit path, cost efficient, etc. The risk of significant downtime is simply too great for some operations in certain time frames.
- 4) Tier 1 Designation:** If the 8-month IODP block (as defined in protocol 1) contains Tier 1 programs in appropriate locations and good weather windows (as defined in Protocols 2 and 3), OTF should develop options that maximize the completion of these operations.
- 5) Tier 2 Ranking Order:** Within the 8-month window, insert Tier 2 programs according to viability with Tier 1 operational areas. If two Tier 2 operations are equally viable and compete for the same time block, then global ranking order should be utilized. Clearly, there are issues with respect to utilizing global rankings as programs at OTF come from many SPC ranking sessions. But they probably can be utilized as first-order guides.
- 6) Cost:** Cost is obviously an important factor. The Lead Agencies have already indicated that FY2010 funding levels will be similar to that of FY09. Thus operations with significant extra costs (CORK infrastructure, ROV usage, significant casing needs, etc) may not be implementable if we try to conduct four expeditions in FY2010.

OTF will present these protocols to SPC as part of a discussion on how to move forward with *JOIDES Resolution* scheduling this fall and as part of a discussion to examine alternative operational models to maximize the science that the *JOIDES Resolution* can deliver in any fiscal year.