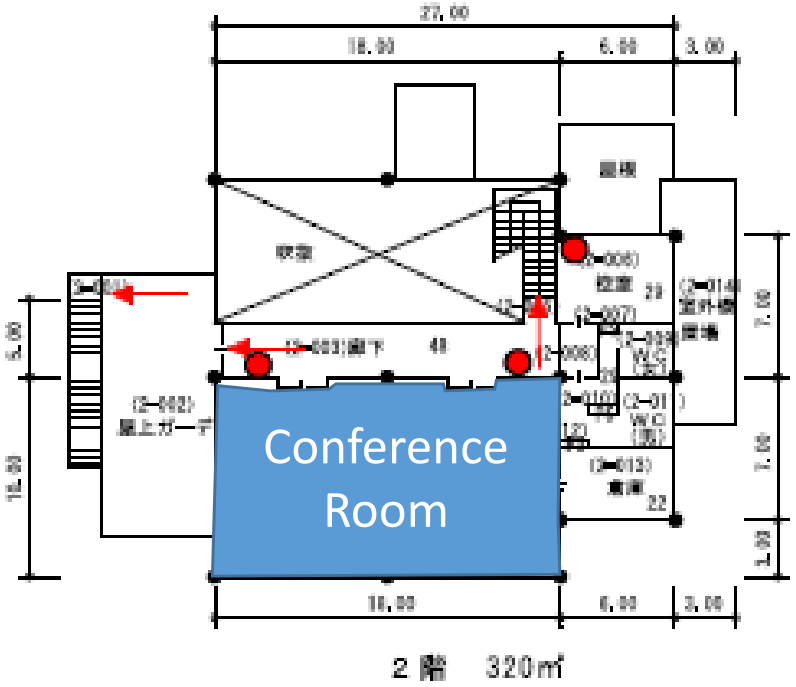
2. Introductions and Logistics

Emergency Escape Route

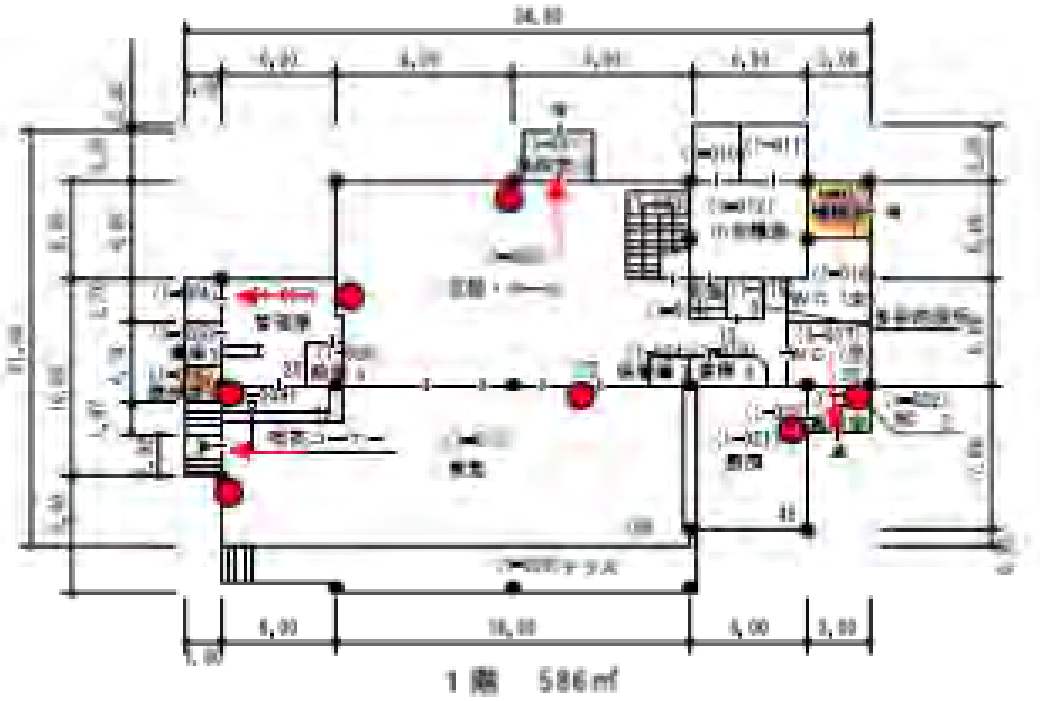
4th Chikyu IODP Board (CIB) Meeting
23–24 March 2016

CDEX-HSE

Emergency Escape Route



2nd Floor



1st Floor

Rokkodai 2nd Campus

Chikyu IODP Board #4 meeting
23 – 24 March 2016

Kobe University Takikawa Memorial Hall

Draft Agenda ver. 1.7

Day-1 **Wednesday, 23 March 2016**

0900-0905 **1. Welcome Remarks** (Hotta)

0905-0915 **2. Introductions and Logistics** (Kuramoto/Matsuda)

0915-0920 **3. Approval of Agenda** (Tatsumi)

0920-0930 **4. Approval of Last Meeting Minutes** (Tatsumi)

0930-0940 **5. CIB Decisions since Last Meeting** (Tatsumi)

0940-0950 **6. CIB Action Item Status** (Tatsumi)

Coffee Break

1030-1100 **7. Chikyu 5-year inspection and refurbishment report** (CDEX)

1100-1230 **8. Other FB, IODP Forum, and Agency Activities**

- a. IODP Forum (Austin)
- b. JR Facility Board (Kopper)
- c. ECORD Facility Board (Camoin)
- d. ECORD (Camoin)
- e. MEXT (Sato)
- f. NSF (Janecek)
- g. ANZIC (Heap)
- h. PMOs (as needed)

LUNCH

1330-1400 **9. Chikyu Operation/status Update** (CDEX)

- a. IODP Exp. 365 update
- b. PCT report
  1. Nankai Trough T-Limits PCT report
  2. NanTroSEIZE PCT report

1400-1445 **10. JR Advisory Panels Report/Proposal Overview**

- a. Science Support Office (Given)
- b. Science Evaluation Panel (Mallinson)

Coffee Break

1515-1545 **11. TAT Report** (Becker)

1545-1615 **12. JAMSTEC Budget and Mid-term Plan -1** (Kuramoto)

1615-1700 **13. Exploring the deep-biosphere frontiers through scientific ocean drilling** (Inagaki)

1830- **Reception**

Day-2 **Thursday, 24 March 2016**

0900-1000 **14. JAMSTEC Budget and Mid-term Plan -2** (Kuramoto)

Coffee Break

1030-1200 **15. Chikyu Proposals (update and discussion)** (Tatsumi)

a. Potential Chikyu Proposals at CIB and SEP
b. Recommendation for Future Chikyu IODP Window
c. Feed-back to Chikyu Proposal Proponents
d. Bend-Fault Serpentinization (Proposal 876) Workshop

LUNCH

1300-1330 **16. Chikyu Outreach Activities** (Eguchi)

1330-1350 **17. KCC Report** (Ishikawa)

1350-1410 **18. Access and Benefit-sharing (ABS) update** (Xiao)

1410-1430 **19. Safety Review Committee Update** (Naganawa/Matsuda)

Coffee Break

1500-1515 **20. Review of Consensus Statements and Action Items**

1515-1530 **21. Next CIB meeting**

1530-1545 **22. Any Other Business**

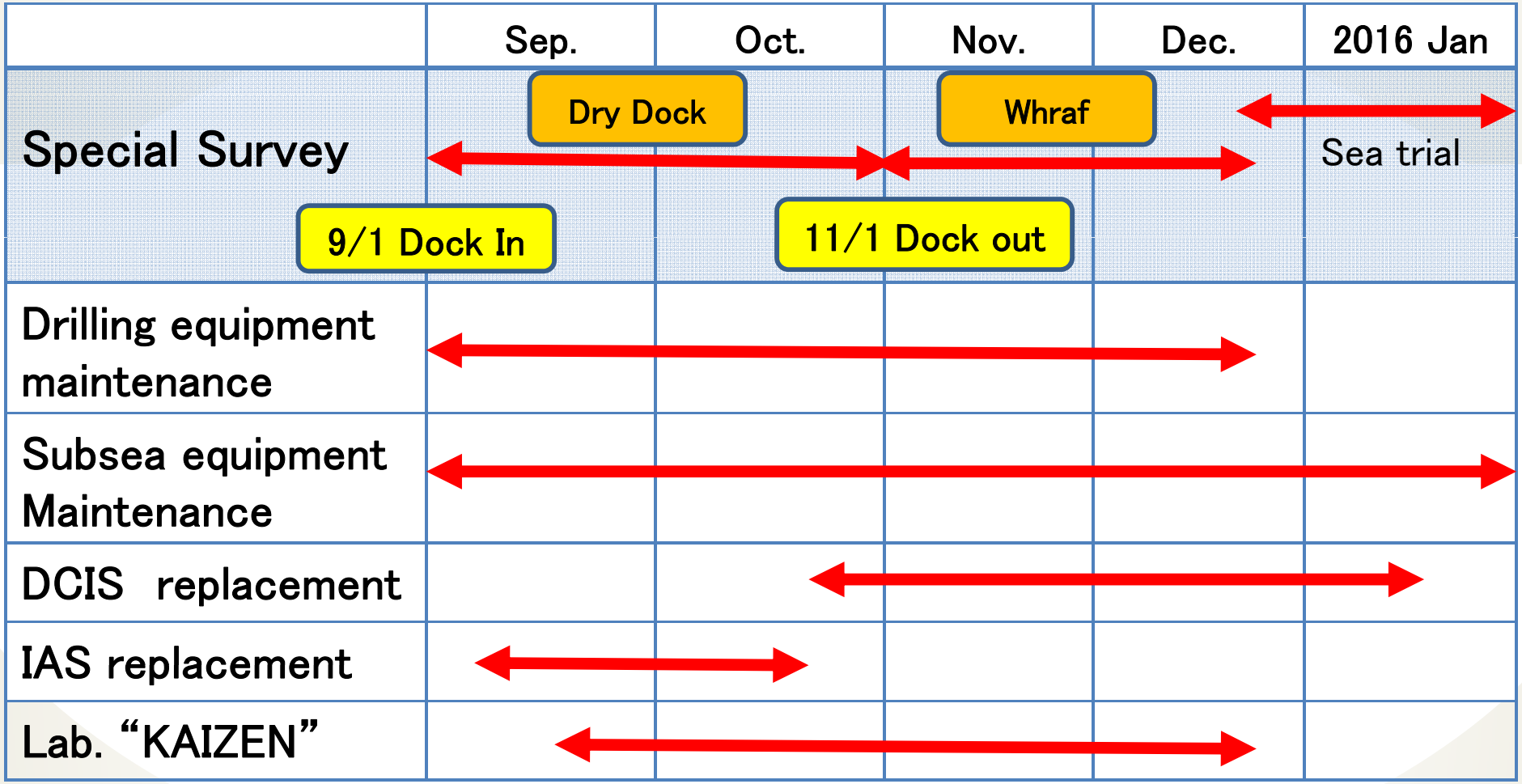
Adjourn meeting

Agenda

Chikyu 5 year inspection and refurbishment plan

Maintenance Schedule

- 2015 September～December@Yokohama Dockyard, Mitsubishi Heavy Industry Ltd.



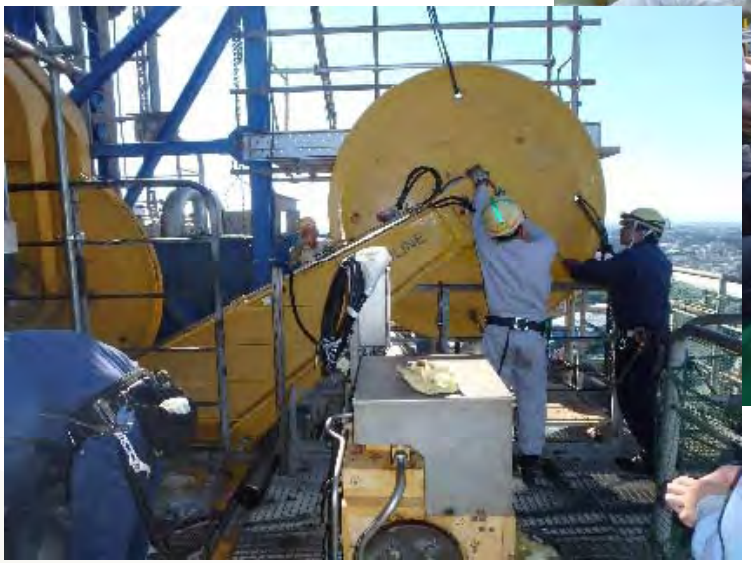
➢DCIS（Drilling Control & Instrument System）
➢IAS（Integrated Automation System）：Engines Control etc.

Major Work Item

- **Classification Society** required inspections & maintenances
  - 6,600 V high voltage instruments
  - Navigation instruments, Radio
  - Dynamic Positioning System (DPS)
  - Explosion proof instruments
  - Bottom Survey
  - Azimuth thruster
  - Ship construction
  - Main generator
  - Mooring gear
  - Ballast tank
  - Life boat
  - Crane
  - Elevator
  - Derrick

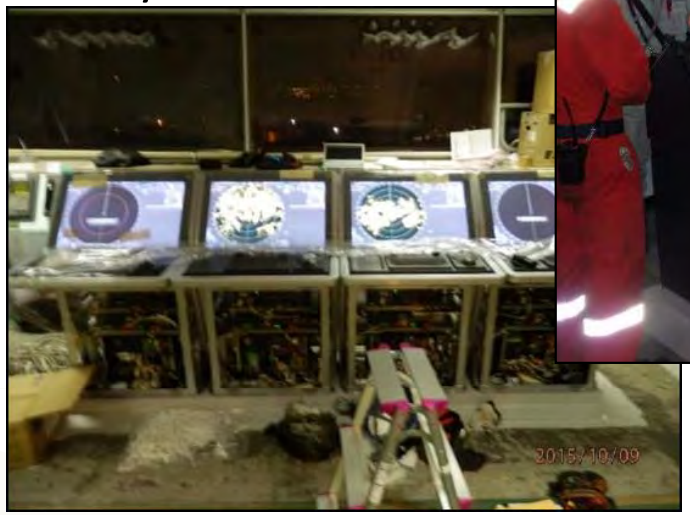
Major Work Item

- 5 year certification works
  - Crown Mount Compensator (CMC)
    (Cylinders & Sheaves replacement)
  - Travelling Block
    (Sheaves replacement & survey)
  - Power swivel
  - Tensioner
  - Riser
  - BOP



Major Work Item

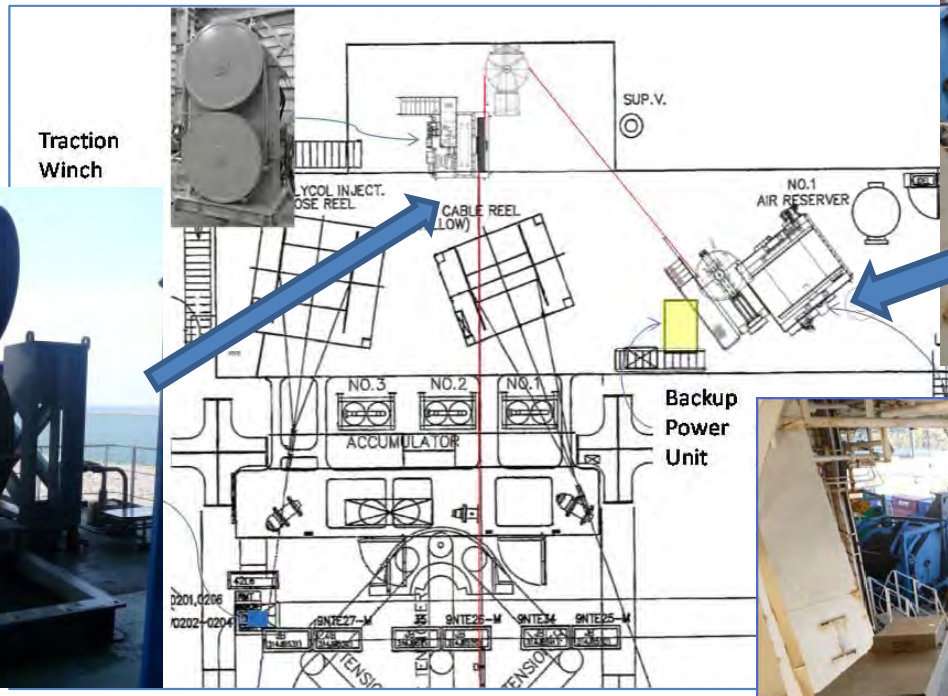
- Replacement of deterioration instruments
  - Intake exhaust facilities
  - Air conditioning facilities
    (Packaged air conditioners)
  - DCIS(Drilling Control Instrumentation System)
  - IAS (Integrated Automation System)
  - Rader/ECDIS（ Electronic Chart Display
    & Information System ）
  - Laboratory



Replacement work of Under Water TV

Mount of Store winch and traction winch at Shimizu port.
Improvement of winch system.
※ Replacement of winches is studied, we change the direction of the store winch 90 , then conversion sheave is only one. Addition of safety measures.

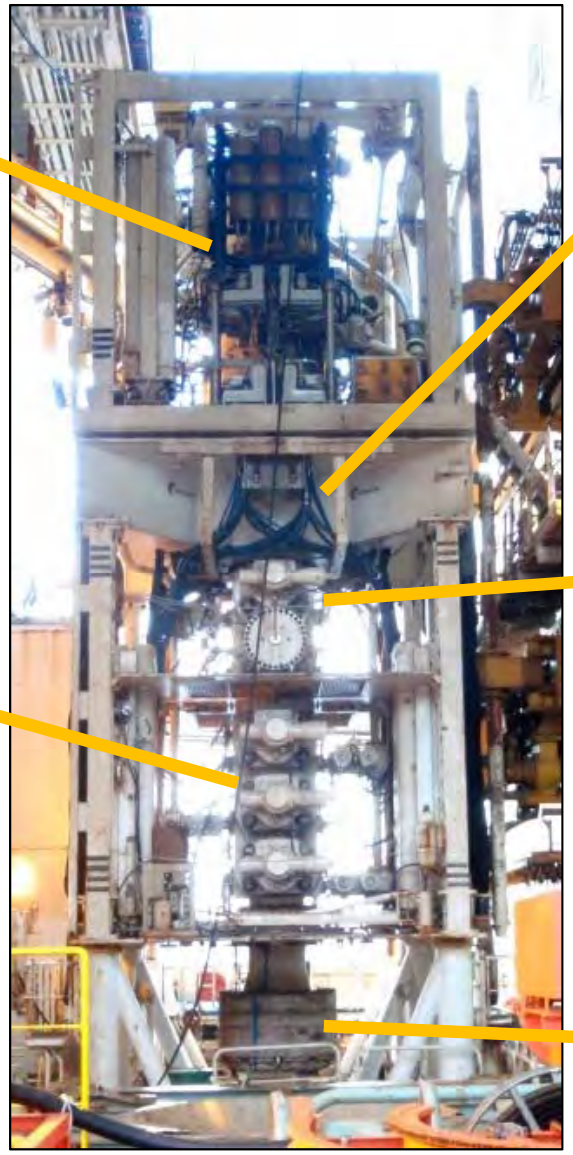
Traction winch



Improved placement plan

5-year special survey and recertification of BOP

Annular (NOV)
Repaired



Adapter spool (Cameron)
Replaced with new one

Triple body (Cameron)
Replaced with new ones
- Main Body
- Ram Cylinder
- Parts of Locking Devices

Double body (Cameron)
Replaced with new ones - SSR

Wellhead connector (GE)
Repaired

Maintenance of Riser Joints

- **Replacement of corroded riser main flanges**



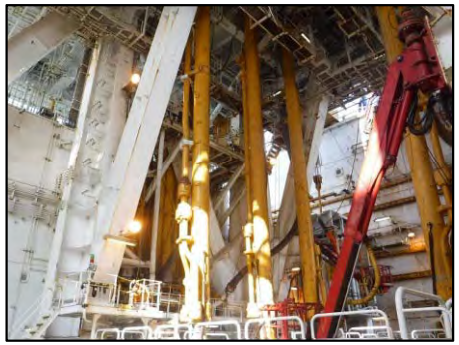



- **Replacement of damaged box/pin ends of auxiliary line pipes**


- **Replacement of damaged buoyancy modules**


Maintenance of Riser Tensioner

- Disassembling and cleaning of tensioner cylinders
- Replacement of seals for pistons and cylinder heads



- Two cracks were found on tensioner rings.
- Cracked parts were dismantled for repair.

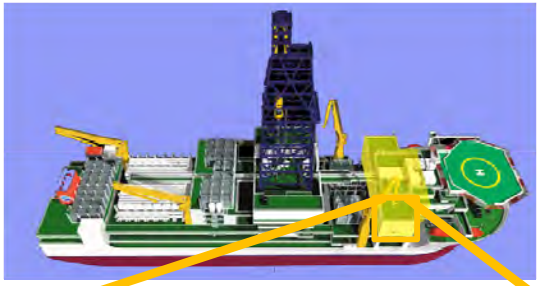
CHIKYU Lab Facilities
Refit and Renovation

CENTER FOR DEEP EARTH EXPLORATION
CDEX
JAMSTEC

CDEX
CENTER FOR DEEP EARTH EXPLORATION

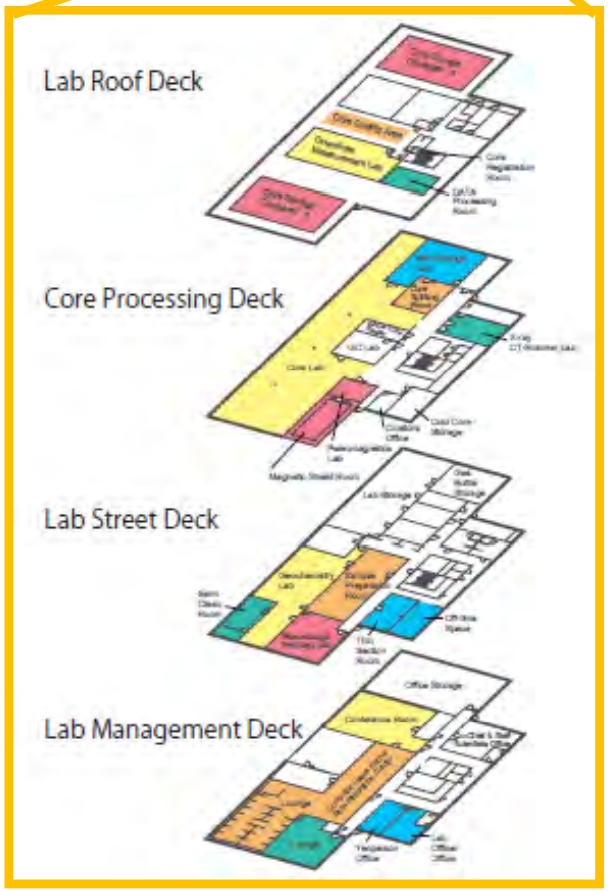
IODP
INTERNATIONAL OCEAN DISCOVERY PROGRAM

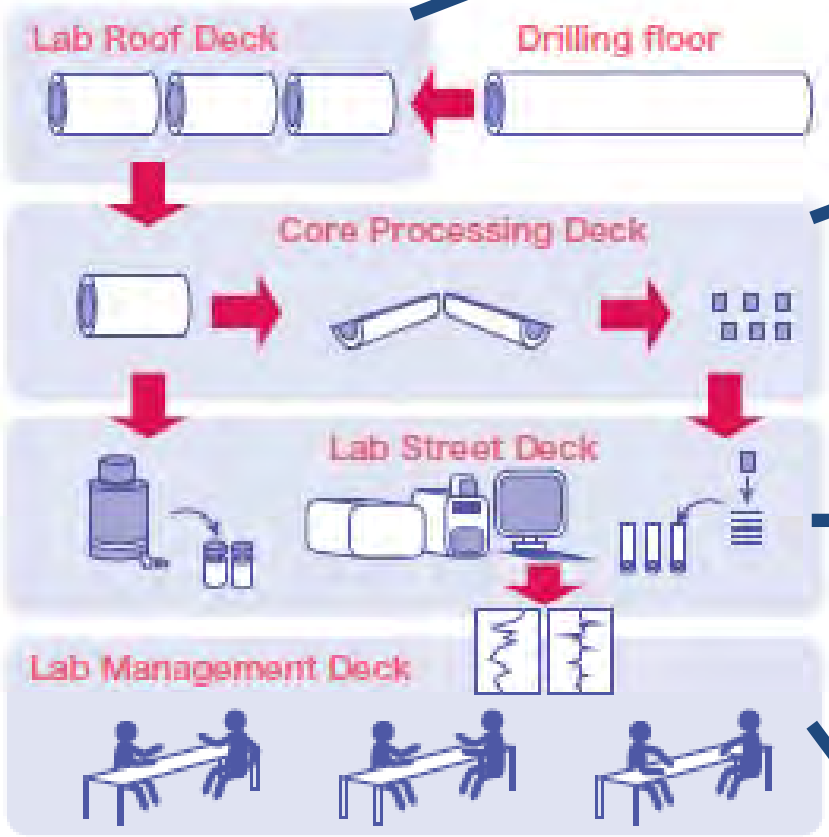
Chikyu Lab Facilities



Lab Facilities are at the fore side of the *Chikyu* which have 4 floor deck.

Each Lab facility has available to treat samples of each expedition.





Need newfangled technology and new vision depend on *Chikyu* 10-year old.

Chikyu is ready in next phase of IODP expedition.

Lab Modification Concepts

For next 10-year Lab development program

STEP 1 **Shakedown** → STEP 2 **Develop** → STEP 3 **Contribute**

1. Optimization

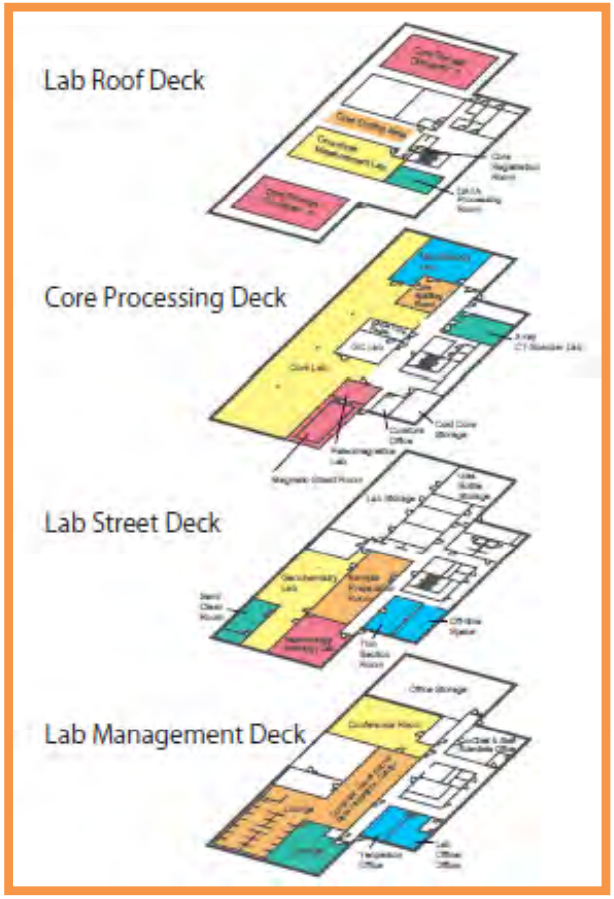
- New work flow for Core and Cuttings powdered samples lab
- New logging monitors
- More CCTV monitors

2. Flexibility

- Open spaces Working and Archive moveable tables to fit each expedition
- Analytical tools
- 3rd party tools
- Specific needs

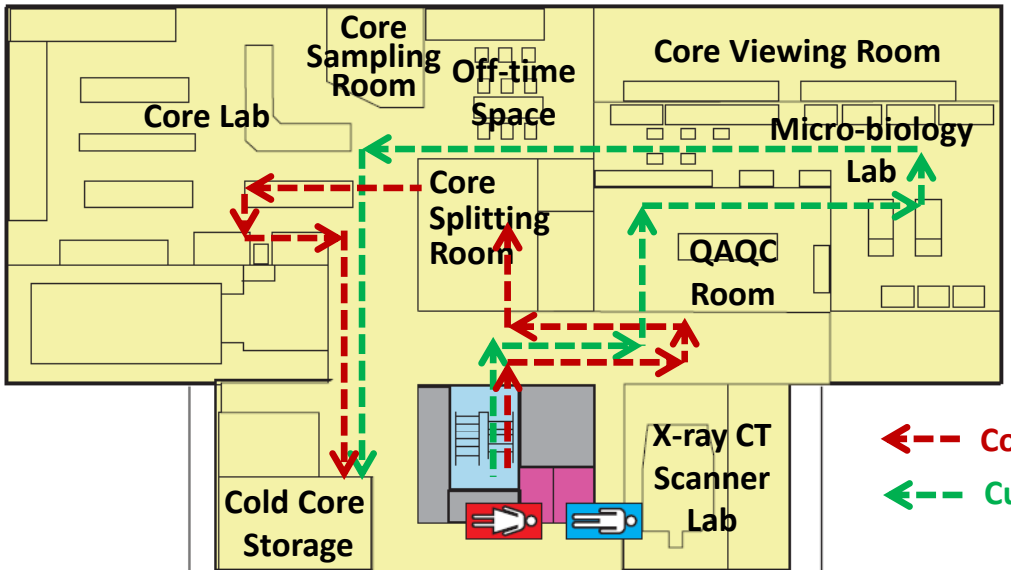
3. Safety and Comfort

- Automatic door for Core Splitting Room
- Separate flow paths reduce opportunities for accidents
- New dedicated work space for Cuttings
- Library and Lounge remodeling
- New personal work spaces

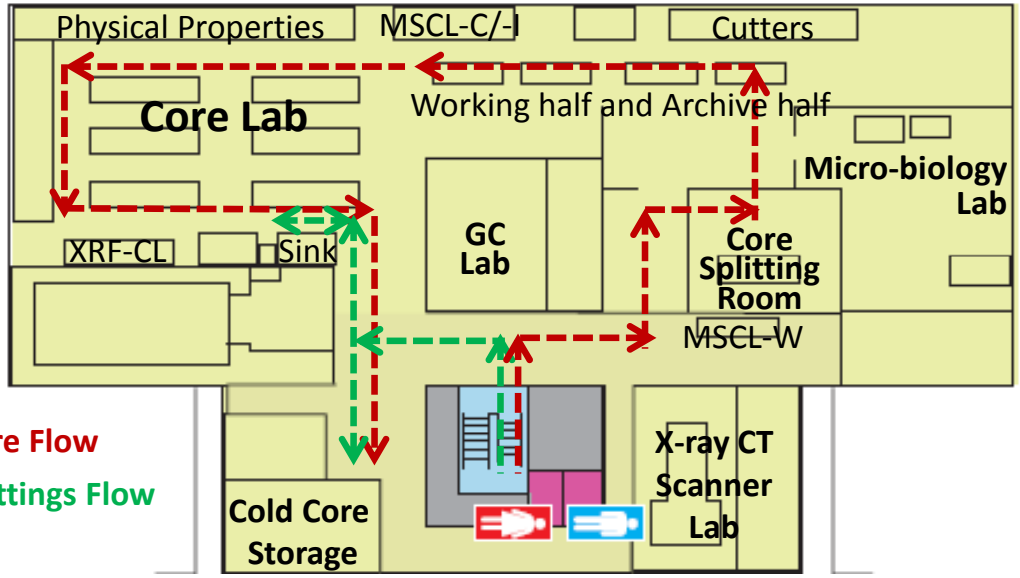


1. Optimization

Before



After

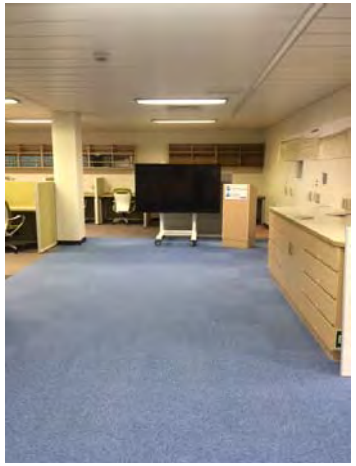


Core Flow

Cuttings Flow

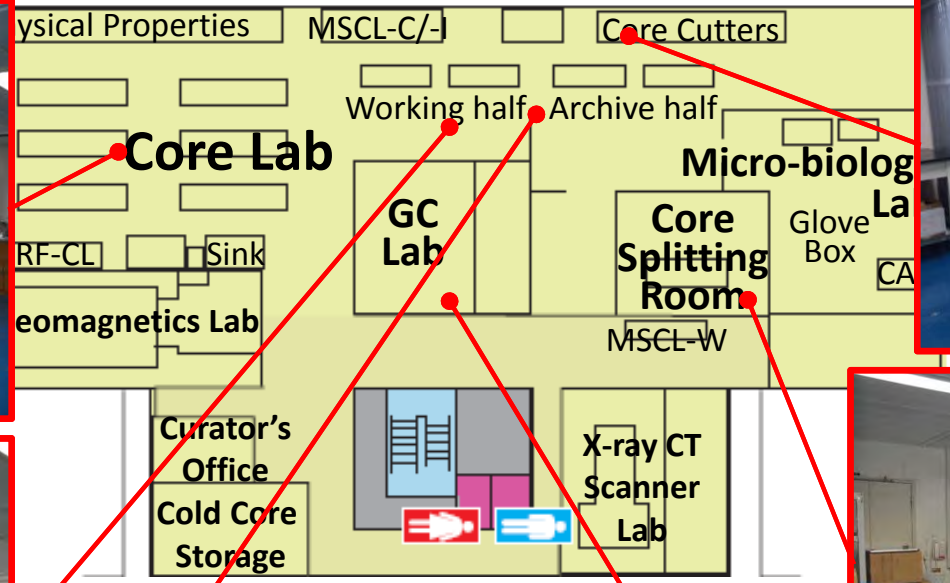
- New work flow for Core and Cuttings powdered samples lab

- Large sink for cuttings
- New logging monitors
- More CCTV monitors



2. Flexibility

After

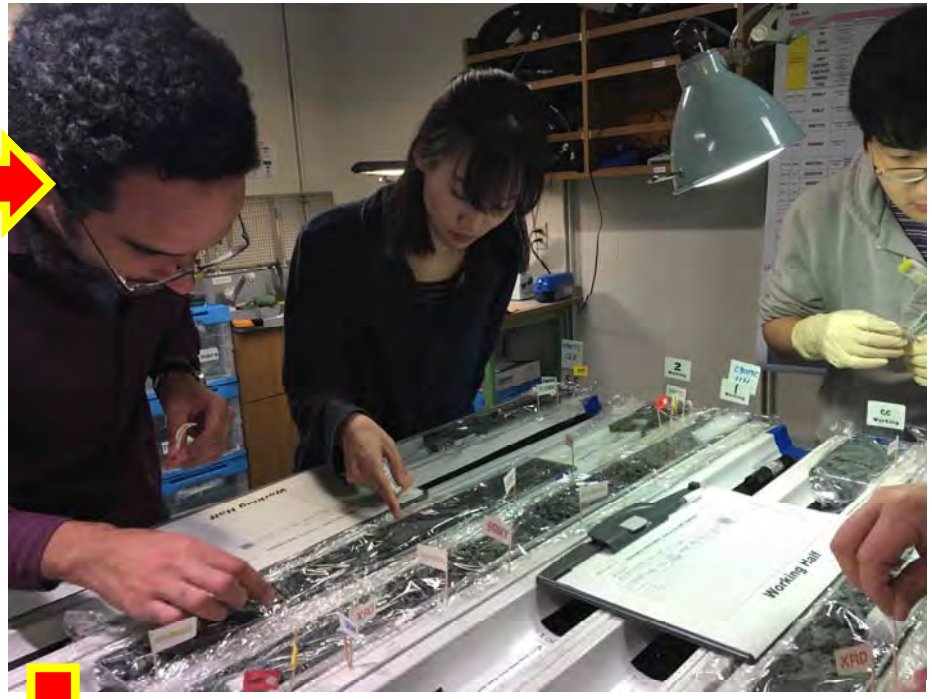


- Open spaces Working a
  moveable tables to fit each expedition
- Analytical tools
- 3rd party tools
- Specific needs

Core Processing Deck post mods

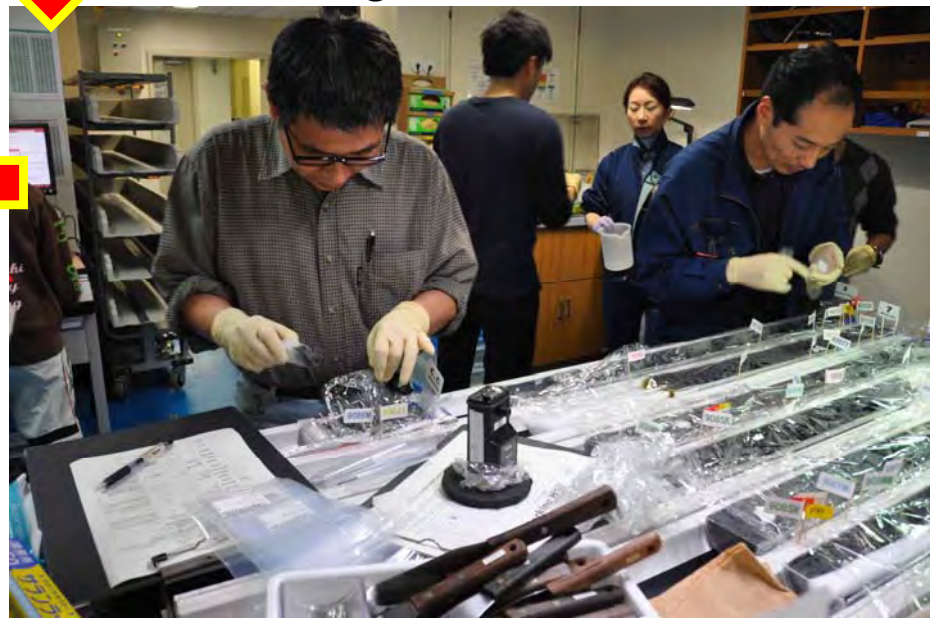
Core Splitting Room

Outside Core Splitting Room

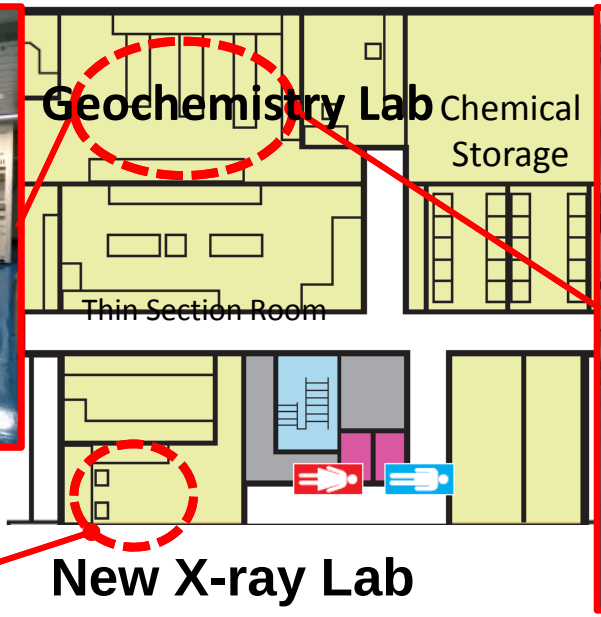


Working and Archive Halves

Newly spacious Core Lab



Lab Street Deck post mods



Simplified Samples Path

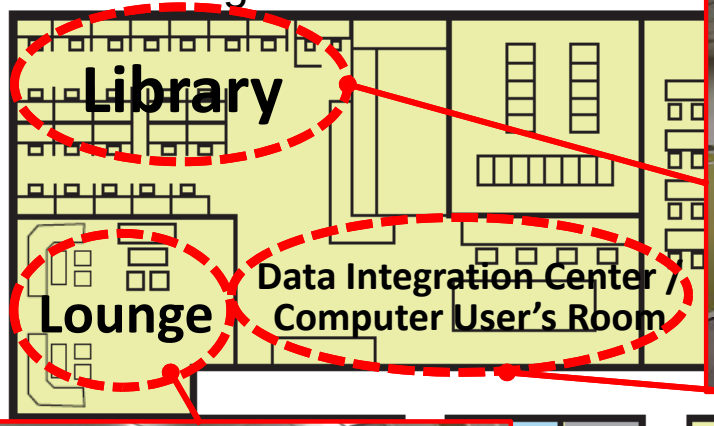
- Separate Work Space for Working and Archive Halves
- **New Flow Path for Powdered Solid Samples (New X-ray Lab for XRD, XRF)**

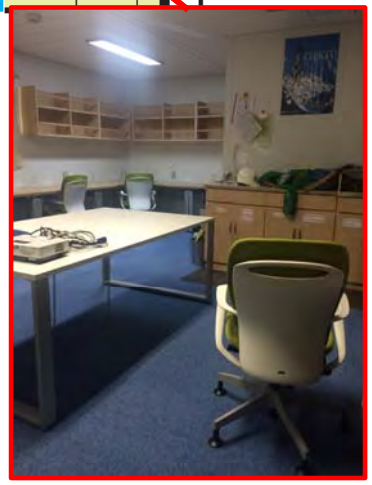
Efficient Lab Layout

- New Layout for **PP Lab**, **Geochemistry Lab**
- New GC Lab
- **More Monitors to display Drill Floor Operation and Real-time Data**

3. Safety and Comfort

Lab Management Deck

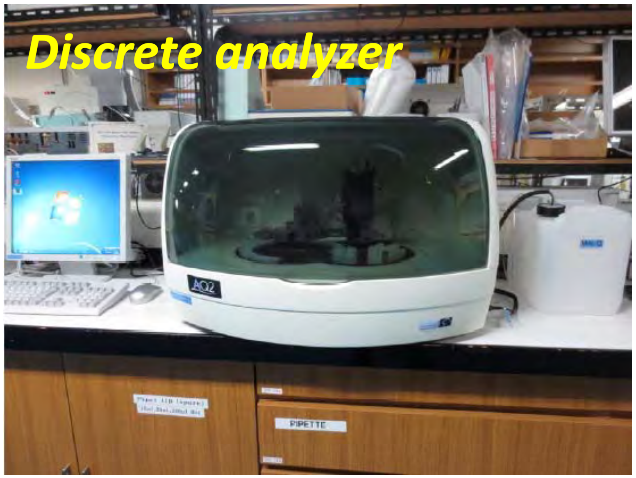




- Adopted requests from the scientists（**Library, Lounge, Data Integration Center, Co-Chief Scientist Office**）
- Changed other Lab furniture for CPD and LSD

- Installed automatic door for Core Splitting Room

Upgraded and New instruments



LAB KAIZEN Action items and Results

◆Current to end of 2015

Items	Total	Done	Canceled	Postponed
Common	8	**1**	2	**5**
Core Cutting Area	7	**1**	0	**6**
Core Processing Deck	120	**77**	9	**34**
Lab Street Deck	50	**17**	0	**33**
Lab Management Deck	19	**8**	0	**11**
Other	4	**0**	0	**4**
Total	208	**104**	11	**93**

For next 10-year Lab development program

Next step "Develop" and are starting forward

IODP Forum:
Update for the *Chikyu* IODP Board

James A. Austin, Jr. - IODP Forum Chair
Senior Research Scientist/Associate Director, International Relations
University of Texas/Austin, Jackson School of Geosciences, Institute for Geophysics

CIB – Kobe, Japan
March 23, 2016

General Purpose

The IODP Forum is the **custodian of the Science Plan** and is a **venue for exchanging ideas and views on the scientific progress of the program**. The Forum will also **provide advice to IODP Facility Boards** on Platform Provider activity.

- No budget; attendance by representatives of partner countries/consortia at scheduled meetings is voluntary and is supported by those members
- Philosophical rather than political clout.
- HOWEVER, this phase of SOD is “collaborative”, and in such a form important “program” aspects can get lost. The Forum helps to prevent that from occurring.

Membership

IODP Forum membership is **open to all countries, consortia, or entities providing funds to platform operations**. Members will include active community scientists and representatives from funding agencies (to any platform), implementing organizations and program member offices. Program Member Offices shall select one or two scientists for scientific membership to the Forum from each country or consortium that provides funding for any platform. Scientific **membership will be based on demonstrated experience in scientific and managerial leadership positions**. The Forum will have **liaisons from all other major entities in the program** (e.g., the Support Office, Project Partnership Office, the Chair and sub chairs of the Science Evaluation Panel, etc.), **potential new members to the Program**, and **interested related organizations** (e.g., PAGES, OOI, ICDP, etc.).

International Ocean Discovery Program: Progress Toward Science Plan Fulfillment: **Expeditions** (Full Proposals) by Theme/Challenge

- Updated after January 2016 SEP decisions
- Does not (generally) include pre-proposals (except where noted)

Key:

* = holding bin after external review
** = sent to external review after January 2016 SEP
( ) = done at end of first IODP
{ } = security issues
green font = 2012 top U.S. priority challenge for JR
cyan font = MSP
orange font = *Chikyu* (*** = PCT approved)
white font = *JOIDES Resolution*

The Forum Chair maintains a .ppt on the progress of IODP towards fulfillment of the 2013-2023 Science Plan. The latest version of that .ppt can be found at www.iodp.org/iodp-forum.

The Forum meets once/year:

- Last meeting in July 2015 in Canberra, Australia; next meeting in Búzios, Brazil, in September 2016

- All Forum decisions are by consensus; items arising from the last meeting can be found at www.iodp.org/iodp-forum.

- Several consensus items are of interest and relevance to CIB.

Forum Consensus 15-03: As the ~2018-2019 mid-term renewal of the International Ocean Discovery Program approaches, the **Forum recommends the preparation of 1-2 page, summaries of recent expedition-based achievements vs. further opportunities for each of the 14 challenges of the IODP Science Plan.** These summaries should be written in a style that is appropriate to target funding managers, non-specialists and the general public. If possible, **these summaries should be produced in time to distribute in 2017 to all national and consortium members engaged in IODP-renewal processes. Possible mechanisms to produce these summaries might range from: (a) <1 day meetings of Co-Chief scientists and outside experts, in association with major conferences such as AGU, EGU, or JpGU, to (b) synthesis mini-workshops (not more than ~ 6-10 participants) for major IODP efforts, such as the multi-expedition investigation of the Asian and Indian Ocean monsoons.** The **Forum strongly supports efforts by national and consortium IODP offices to consider providing appropriate levels of financial support for these efforts, to take place over the next 12-18 months.**

Forum Consensus 15-04: The IODP Forum recommends that all IODP Platform Providers coordinate their actions towards the development of joint activities at the occasion of the International Geological Congress which will be held on August 27th-September 4th, 2016 in Cape Town, South Africa. Activities should include the organization of an IODP-ICDP booth and (possibly) an IODP-related science session, **membership drive for South Africa.**

- *An IODP session was proposed and accepted, with conveners Camoin. Austin, Becker (1st Forum Chair) and Tatsumi*
- *U.S. abstracts submitted (most with at least some level of USSSP travel support expected): Austin, Becker (CORKs), Christensen (356 paleo-climate), Dick (360 Co-Chief), Fulthorpe (356 Co-Chief).*
- *ECORD will also submit two or more abstracts; the session is open, so others (TBD) may also contribute.*

Forum Consensus 15-05: **A thorough review of education and outreach activities across IODP should be a major agenda item for each future Forum meeting**, with the aim of better coordination of these activities and identifying opportunities for collaboration.

CIB – Kobe, Japan
March 23, 2016

Forum Consensus 15-08: The Forum endorses the suggestions by two of its members for **potential IODP workshops in coming years. These are: (1) an Antarctic-Southern Ocean workshop to provide an integrated perspective on proposed IODP and sub-glacial drilling in the region *(Note: The workshop to be convened by Trevor Williams, lead proponent of proposal 813, and funded by USSSP, is effectively a response to this suggestion.)*, and (2) a Global Monsoon workshop to integrate results of monsoon investigations throughout the world with results of the recent and upcoming IODP Pacific and Indian Ocean monsoon drilling programs.**

Questions? Comments?

JOIDES Resolution Facility Board

JRFB Chair

Anthony Koppers


EOS Earth & Space Science News

NEWS TOPICS & DISCIPLINES OPINIONS BLOGS JOBS & RESOURCES

GEOLOGY & GEOPHYSICS Project Update

Scientific Ocean Drilling Charts a New Course

The International Ocean Discovery Program plans drilling expeditions for 2016 and 2017 while increasing efficiencies in ship scheduling and operations.

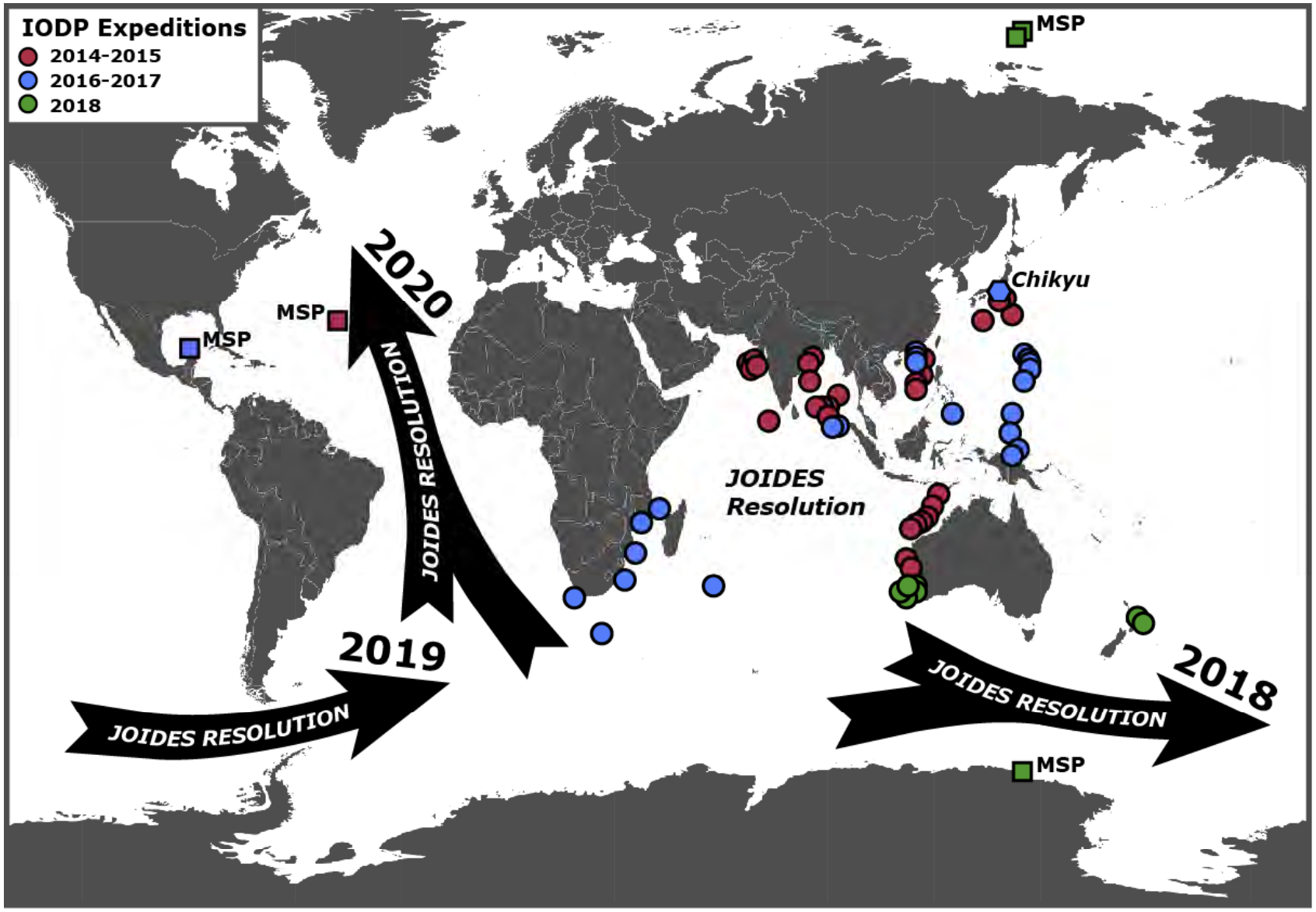
- **New Science Plan**
- **New Business Plan**
  - **>10% Budget Cut**
  - **New Revenue** from industry work and sponsored expeditions
  - **Five Expeditions** per year in 2018 and 2019
- **New Long-Term JR Track** *
  - **2017:** Western Pacific
  - **2018:** Southern Ocean
  - **2019:** South Atlantic
  - **2020:** Mid-Atlantic

* Depending on proposal pressure

- **New Streamlined Program Structure**
  - IODP structure is much simplified
  - JRFB oversees JR Science Operator and IODP Science Support Office
  - JRFB oversees both SEP and EPSP
- **Improved Proposal Throughput** *
  - From Pre-proposal to Sailing on the JR in only 3-3½ years

* Assuming high quality proposals

JR Expeditions from 2014-2020



JOIDES Resolution Facility Board

- **JRSO FY15 NSF Facility Review Panel Report**
- **JR FY15 Co-chief Scientists Review Report**
- **Denver II US Community Workshop in Support of the 2019 Renewal of the Cooperative Agreement of the JRSO (Texas A/M University)**
- **New Guidelines Relevant to SEP:**
  - **Proposal Guidelines:** Posted September 2015
  - **Site Characterization Data Guidelines:** Posted September 2015
- **New JRFB Science Members:**
  - **Clive Neal** (University of Notre Dame, USA)
  - **Paul Wilson** (University of Southampton, UK)

1 April 2016 Proposal Deadline

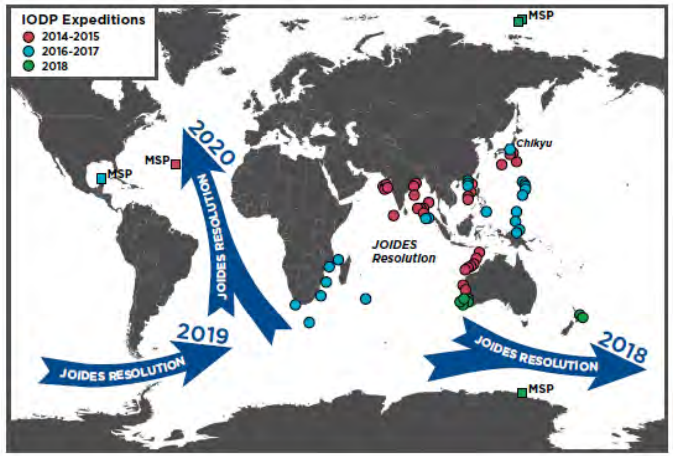
CALL FOR PROPOSALS

Scientific Ocean Drilling

IODP
INTERNATIONAL OCEAN DISCOVERY PROGRAM

The International Ocean Discovery Program (IODP) explores Earth's climate history, structure, dynamics, and deep biosphere as described at **www.iodp.org/Science-Plan-for-2013-2023**. IODP provides opportunities for international and interdisciplinary research on transformative and societally relevant topics using the ocean drilling, coring, and downhole measurement facilities D/V *JOIDES Resolution* (JR), D/V *Chikyu* and *Mission-Specific Platforms* (MSP).

The JR is planned to operate 10 months per year in 2018 and 2019 under a long-term, global circumnavigation track based on proposal pressure. Future JR expeditions are projected to follow a path from the southwestern Pacific Ocean, through the Southern Ocean, and into the Atlantic Ocean for opportunities starting there in 2019. The JR is then expected to operate in the Atlantic, Mediterranean, Caribbean, and Gulf of Mexico starting in 2020. Although JR proposals for any region are welcomed, pre- and full proposals for these future operational areas are strongly encouraged.



MSP expeditions are planned to operate once per year on average, and proposals for any ocean are welcomed. *Chikyu* operations will be project-based, and new proposals to use *Chikyu* in riser mode must be Complementary Project Proposals (with cost-sharing).

IODP aims to foster joint projects with the International Continental Drilling Program (ICDP). We therefore also invite proposals that coordinate drilling on land and at sea.

Submission Deadline: April 1, 2016 • More information: www.iodp.org • Contact: science@iodp.org

ECORD
EUROPEAN CONSORTIUM FOR OCEAN RESEARCH DRILLING

IODP
INTERNATIONAL OCEAN DISCOVERY PROGRAM

ECORD News

Gilbert CAMOIN

Director of the ECORD Managing Agency

INSU-CNRS, CEREGE, Aix-en-Provence, France

camoin@cerege.fr

ECORD Budget

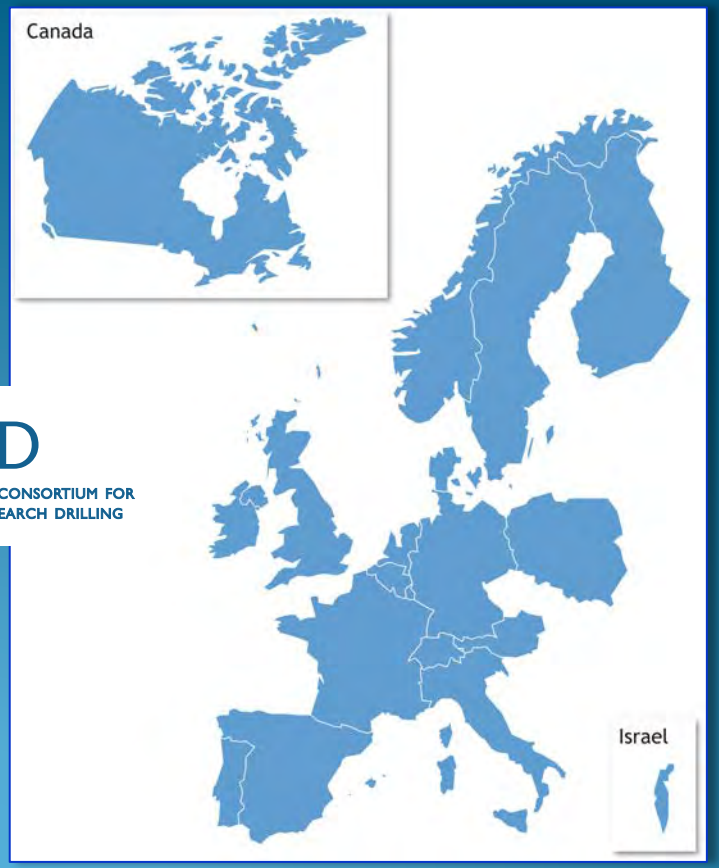
> *Annual contributions : $ 30,000 to $ 5,600,000*

> *3 major contributors : ~ 80 % of the ECORD budget*

> *Potential newcomers :*

Negociations : Turkey ; Discussions : Russia

FY16 contributions		($US)
Germany	> FY18	5,600,000
France *	>FY18	4,600,000
UK *	>FY18	4,000,000
Norway	>FY18	1,100,000
Switzerland	>FY16	600,000
Sweden	>FY18	528,000
Netherlands	>FY18	500,000
Italy	> FY18	400,000
Spain	TBD	168,000
Denmark *	> FY16	150,000
Ireland *	>FY18	112,000
Austria	> FY18	100,000
Portugal	>FY18	90,000
Finland	> FY18	80,000
Canada	> FY16	30,000
Israel	> FY16	30,000
Poland	>FY18	30,000
Belgium *	> FY16	NC
TOTAL		18,120,000
* *Subjected to exchange rate fluctuations*		



ECORD
EUROPEAN CONSORTIUM FOR OCEAN RESEARCH DRILLING

18 ECORD members

Timeline

- Jan 2017 : ECORD Evaluation Committee (EEC) appointed
- May 2017 : 2-3 days general meeting @ MARUM
  (EEC + ECORD representatives)
- June 2017 : Final report sent to EMA

Mandate

- ✓ Review of achievements of ECORD within IODP
- ✓ Review of the impact of MSPs in particular
- ✓ Review of the effectiveness/efficiency of ECORD entities

EEC membership

6 to 10 members : High standing scientists, specialists of subseafloor investigations (technology), managers/representatives of other international science programmes







ECORD Budget

FY16 contributions		($US)
Germany	> FY18	5,600,000
France *	>FY18	4,600,000
UK *	>FY18	4,000,000
Norway	>FY18	1,100,000
Switzerland	>FY16	600,000
Sweden	>FY18	528,000
Netherlands	>FY18	500,000
Italy	> FY18	400,000
Spain	TBD	168,000
Denmark *	> FY16	150,000
Ireland *	>FY18	112,000
Austria	> FY18	100,000
Portugal	>FY18	90,000
Finland	> FY18	80,000
Canada	> FY16	30,000
Israel	> FY16	30,000
Poland	>FY18	30,000
Belgium *	> FY16	NC
TOTAL		18,120,000

** Subjected to exchange rate fluctuations*

> *ECORD scientists' participation to IODP expeditions : Q*

> *Representation at the ECORD Council and ESSAC : NQ*

> *Participation to the ECORD educational program : NQ*

JR funding (US$ 7M/yr)

Chikyu funding (US$ 1M/yr)

MSP funding (US$ 7-8M/yr)

> *Additional project-based cash and in-kind contributions*

In-Kind Contributions (IKCs)

- Drilling platforms /systems
- Support vessels
- Any scientific service/equipment

  that ESO would normally pay for

In-Kind Contributions (IKCs)

- Drilling platforms /systems
- Support vessels
- Any scientific service/equipment that ESO would normally pay for

✓ Any IODP member or non-member country can propose IKCs following an open call

✓ IKCs rewarded by extra Science Party positions on the MSP expedition for which the IKC has been rendered

5 yrs ECORD MSP Operational Plan

2014	2015	2016	2018	2018
OSP - 347 Baltic Sea	357 Atlantis Massif Seabed drills (MeBo & RD-II) IKC LC	364 Chicxulub Drill platform MC	[813] Antarctic Seabed drill (RD-II) MC	[708] Arctic Drillship IKC + co-funding HC

LC = low-cost (<$8M)
MC = mid-cost ($8-15M)
HC = high-cost (>$15M)

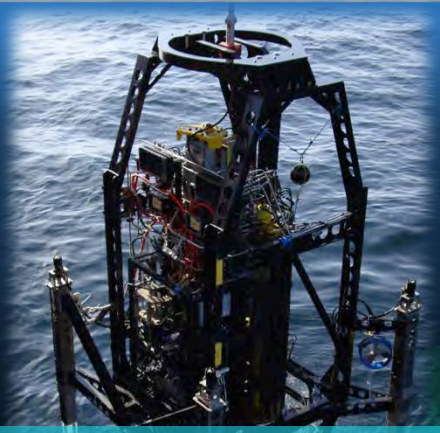
- ✓ *Diversity of science themes*
- ✓ *Operational and funding flexibility*
- ✓ *ECORD is aiming to fund and implement one MSP expedition per year for IODP*

ECORD MSP expeditions

ECORD MSP expeditions

IODP Ex. # 357 Atlantis Massif Serpentinization and Life

Oct 26 – Dec. 11, 2015 (OSP : Jan 20 – Feb 5, 2016)



BGS Rockdrill RD2

RRS James Cook

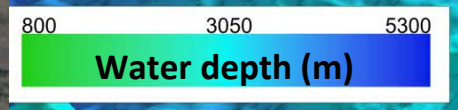
- Coring
- Logging
- Borehole plugging

ATLANTIS FRACTURE ZONE

Atlantis Massif

MeBO

MID-ATLANTIC RIDGE

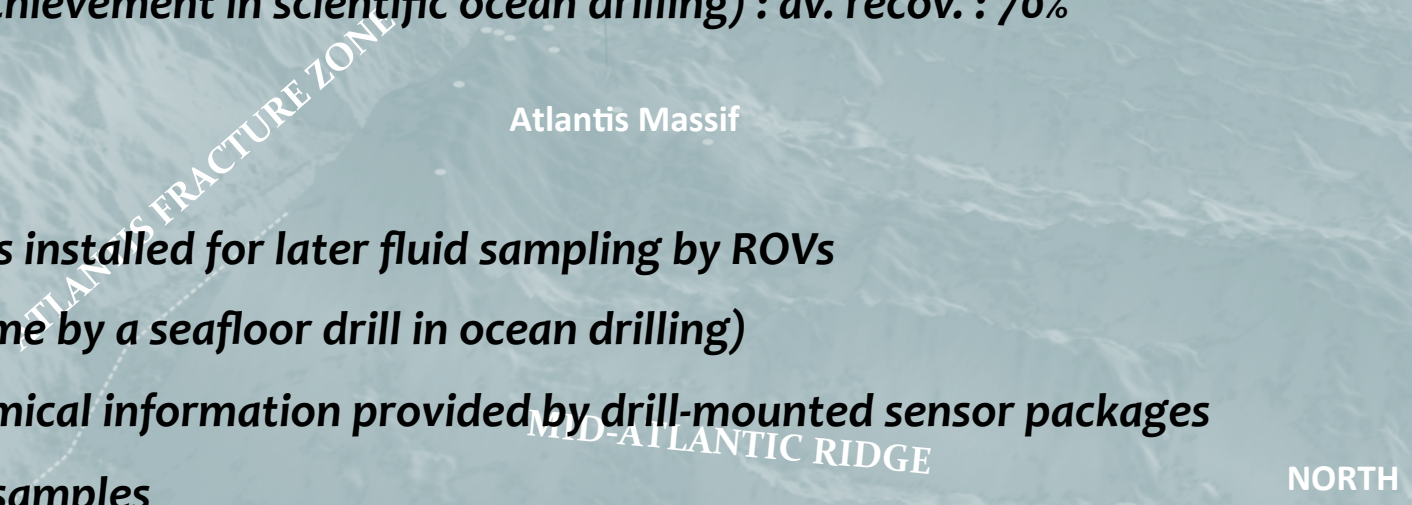


NORTH

ECORD MSP expeditions

> *To better understand the role of serpentinization in driving hydrothermal systems, in sustaining microbiological communities, and in the sequestration of carbon in ultramafic rock*

- *27 days – 9 sites – 17 holes – 57 m of cores*
- *Actively serpentinizing lower crustal and shallow mantle sequences (mafic and ultramafic lithologies) : av. recov. : 53%*
- *2 boreholes drilled north of the Lost City hydrothermal vent field (new achievement in scientific ocean drilling) : av. recov. : 70%*



- *Borehole plugs installed for later fluid sampling by ROVs (first time by a seafloor drill in ocean drilling)*
- *Real-time chemical information provided by drill-mounted sensor packages*
- *Microbiology samples*
- *Water samples*

ECORD MSP expeditions

- ✓ *Technologically challenging expedition*
- ✓ *Technical advancements have provided cores from lithologies not previously encountered in scientific drilling*
- ✓ *Further work required to develop capabilities of seafloor drills*
- ✓ *Scientific objectives will be met*

ATLANTIS FRACTURE ZONE

Atlantis Massif

REVIEW MEETING
Oct. 24-25, 2016, Bremen, Germany

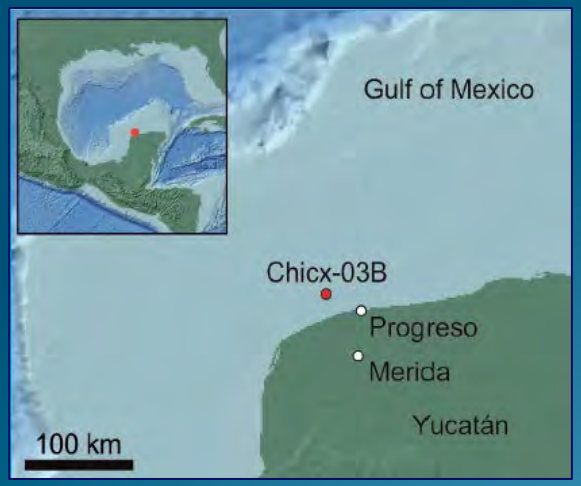
MID-ATLANTIC RIDGE

NORTH

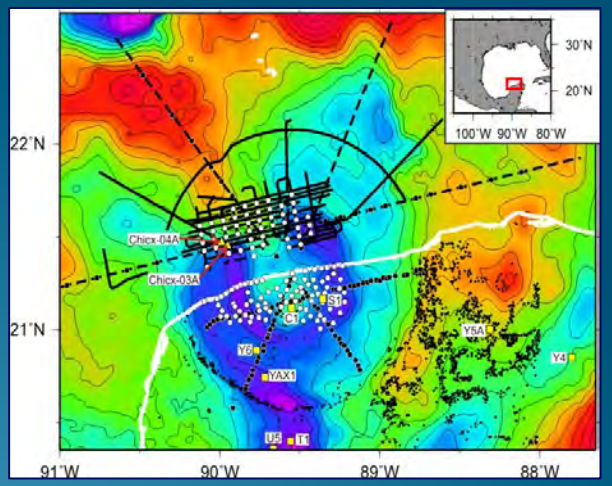
ECORD MSP expeditions

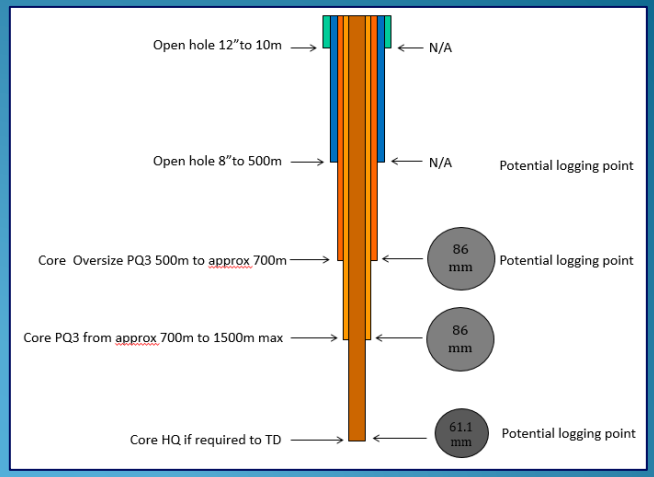
IODP Ex. # 364 Chicxulub Impact Crater
April 1 – May 31, 2016 (OSP will start on Sept. 21, 2016)

> *to drill the impact crater to study impact dynamics mechanism, the peak-ring lithology and formation, the impact effect on the deep biosphere, the extent of the hydrothermal system, the energy and mass extraction of the impact, and the biotic recovery*



- *Single-hole expedition*
- *1200 to 1500 mbsf*
- *ICDP co-funding*





ECORD MSP expeditions

Diverse oceans and environments (Atlantic, Pacific, Mediterranean, Arctic and Southern Ocean)

Various science topics (e.g. climate and sea-level change, ocean crust formation, hydrogeology, deep biosphere, geohazards)

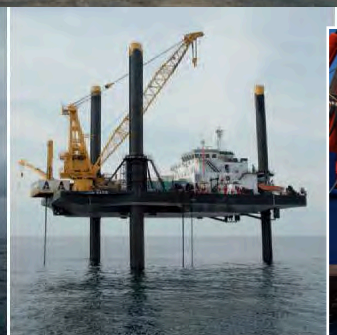
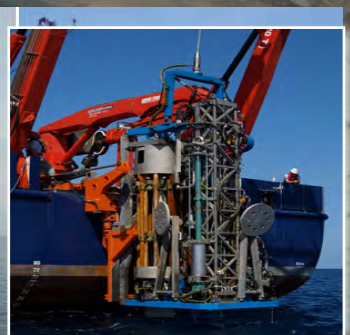
Proposal #	Short title	Lead Proponent	Country Lead Proponent	Ocean/Sea	Drill Platform
at EFB					
548-Full3	Chicxulub Crater	Morgan	ECORD (UK)	Atlantic	liftboat/jack-up rig
581-Full2	Coralgal Banks	Droxler	USA	Atlantic	geotech. rig/seafloor drill
716-Full2	Hawaiian Drowned Reefs	Webster	Australia	Pacific	geotech. rig/MeBo200
637-Full2	New England Hydrogeology	Person	USA	Atlantic	liftboat/jack-up rig
730-Full	Sabine Bank Sea Level	Taylor	USA	Pacific	MeBo200
708-Full	Central Arctic Paleoceanography	Stein	ECORD (Germany)	Arctic	drillship
813-Full	East Antarctic Paleoclimate	Williams	USA	Southern Ocean	seafloor drill
at SEP					
879-Full	Corinth Active Rift Development	McNeill	ECORD (UK)	Mediterranean	drillship
852-CPP*	North Sea GlaciStore	Stewart	ECORD (UK)	Atlantic	drill rig
796-ADP**	Nice Amphibious Drilling	Kopf	ECORD (Germany)	Mediterranean	geotechnical rig, MeBo
866-Pre	Japan Trench Paleoseismology	Strasser	ECORD (Switzerland/Austria)	Pacific	long-piston coring
863-MDP***	ISOLAT Southern Ocean Paleoclimate	Peterson	USA	Southern Ocean	long-piston coring
812-Pre	Ross Sea Glacial History	Wilson	USA	Southern Ocean	seafloor drill
806-Pre	Beaufort Gas Hydrates	Paull	USA	Arctic	geotech. rig
797-Pre	Alaska Beaufort Margin	Ruppel	USA	Arctic	drill rig (or JR)
756-Pre	Arctic Ocean Exit Gateway	Jakobsson	ECORD (Sweden)	Arctic	drillship (JR ?)

* CPP: Complementary Project Proposal, ** ADP: Amphibious Drilling Proposal, *** MDP: Multi-phase Drilling Project, JR: JOIDES Resolution,

16 MSP proposals

Various technologies (SB drills, jack-up rigs, drill ships, long piston coring, etc.)



Science Board members who rotated off at end of 2015 :

Antonio Cattaneo (France)

Marta Torres (USA)

New Science Board members who started 1 Jan 2016 :

Gilles Lericolais (France)

Stephen Gallagher (Australia)

Fumio Inagaki (Japan)

New Chair and Vice-Chair who started 1 Jan 2016 :

Chair : Gilles Lericolais (France) *Vice-Chair : Dominique Weis (Canada)*

Next EFB meeting :

15-16 June 2016 in Brussels, Belgium

ECORD Educational activities

For early-career scientists

ECORD Summer Schools
ECORD Scholarships
ECORD Research Grants
ECORD Training Course

NEW

ESS Petrophysics

For scientists

ECORD Distinguished Lecturer Programme

MagellanPlus Workshop Series

ECORD educational activities

For teachers

ECORD School of Rock

NEW

- 12-17 April - EGU 2016, Vienna

  ECORD-ICDP booth + IODP-ICDP Session + IODP-ICDP Townhall mtg

- 26 June / 1 July - Goldschmidt 2016, Yokohama

  Support to CDEX/JAMSTEC

- 27 August / 4 September - IGC 2016, Cape Town

  ECORD-ICDP booth + IODP Session

- 12-16 December – AGU Fall Meeting 2016, San Francisco

  ECORD-ICDP booth

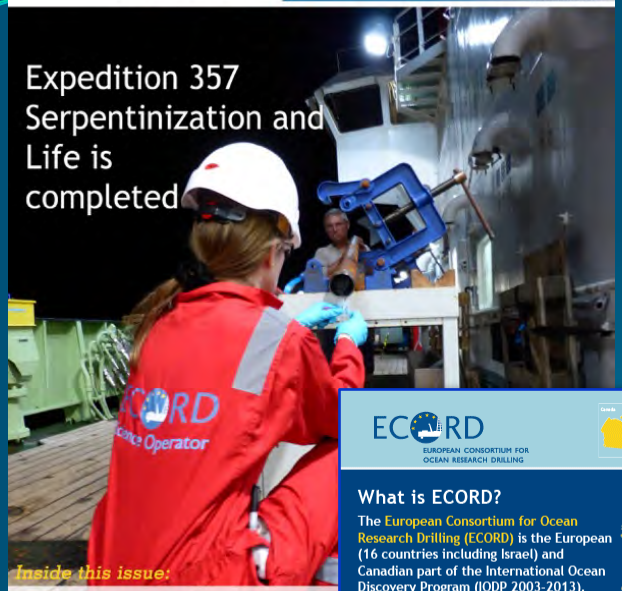
ECORD outreach

ECORD
EUROPEAN CONSORTIUM FOR OCEAN RESEARCH DRILLING

Newsletter

#26, April 2016

ISSN 2264-1556



Expedition 357 Serpentinization and Life is completed

Inside this issue:

Expedition Co-Chief Scientists

Professor Sean Gulick

Sean Gulick has been at The University of Texas at Austin since he completed his post-doctoral fellowship in 2011. He was Co-chief Scientist on a 2005 seismic study of Chicxulub and received the Jackson School Outstanding Researcher Award in 2014. Current projects include tectonic and climate interactions in the St. Elias Mountains and Surveyor submarine fan, geohazards and margin evolution of subduction and transform faulting in Alaska, Sumatra, and Japan, and the geologic processes and environmental effects of the Cretaceous-Paleogene Chicxulub meteor impact. Gulick served as Co-chief Scientist on the Integrated Ocean Drilling Program (IODP) Expedition 341 Southern Alaska Margin.

Professor Joanna Morgan

Joanna Morgan is a Professor of Geophysics at Imperial College London. She first became involved with Chicxulub when she co-led a seismic experiment across this impact structure in 1996 to map crater size and structure. Subsequently, she has been involved in the onshore drilling of Chicxulub, and running simulations of ejecta travelling around the globe, including its potential ...e is part of the full-... at Imperial who have ...ion imaging technique ...y to improve images ... has used this novel technology to obtain ...peak ring at Chicxulub, mid-ocean ridges and ... currently working on imaging magma storage ...ano.

...rations are conducted for IODP by the European ...h Drilling (ECORD), which represents the ocean-drilling ...ries, plus Canada and ...ken by the ECORD ...the British Geological ...f Bremen and the ...rtium comprising the ...Montpellier, France, and Aachen, Germany.

...updates are posted on the expedition webpage at ...eord.org/expeditions/364/364.php

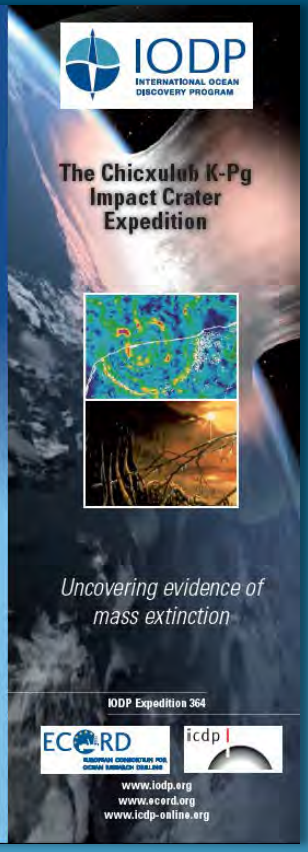
...Discovery Program

...covery Program (IODP) is an international marine ...rted by 26 countries, which explores Earth's history ...earth sediments and rocks, and monitors sub-seafloor ...ole platforms - a feature unique to IODP - scientists ...and sub-seafloor ocean, environmental change, ...olid earth cycles and dynamics.

...ental Scientific Drilling Program

...c Scientific Drilling Program (ICDP) is the international ...on drilling in terrestrial environments to explore the ...g gaining insights into environmental change, natural ...and the deep biosphere. ICDP was founded in 1993 ...s and is financed through the annual contributions ...ings together scientists and stakeholders from 23 ...which serves as a Corporate Affiliate to work together ...technical level. More than 30 drilling projects and 75 ...een supported to date by ICDP.

...rgonia.edu; Inserts: top, Chicxulub Bouguer anomaly map ...p; map and logo: ECORD Science Operator (ESO).



ECORD
EUROPEAN CONSORTIUM FOR OCEAN RESEARCH DRILLING

What is ECORD?

The European Consortium for Ocean Research Drilling (ECORD) is the European (16 countries including Israel) and Canadian part of the International Ocean Discovery Program (IODP 2003-2013).

ECORD Science Operator

Getting involved in ECORD/IODP

Scientists

- Apply to sail an expedition
- Access all DSDP, ODP and IODP samples
- Submit a proposal *(IODP, ECORD-ICDP MagellanPlus)*
- Take part in strategic decisions of IODP

PhD Students and Post-Docs

- Take part in an ECORD Summer School
- Apply for ECORD Research Grants
- Apply for an ECORD Scholarship

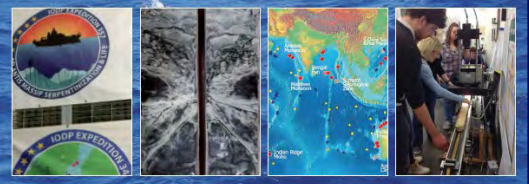
Educators

- Teachers at sea
- Use educational resources
- Portcalls, ship-to-shore videos, blogs

http://www.ecord.org

ECORD
EUROPEAN CONSORTIUM FOR OCEAN RESEARCH DRILLING

ANNUAL REPORT 2015



Baltic Sea Paleoenvironment Expedition

In September 2013, the *Greatship Manisha* left Kiel, Germany, with 17 scientists from Expedition 347 Baltic Sea Paleoenvironment onboard to begin coring and logging operations at 9 sites offshore Denmark and Sweden. Led by Co-chief Scientists Thomas Andrén of the School of Natural Sciences, Technology and Environmental Studies at Södertörn University, Sweden, and Bo Barker Jørgensen of the Center for Geomicrobiology at Aarhus University, Denmark, the offshore Science Party and ESO staff spent 50 days coring the sediments in six sub-basins of the Baltic Sea Basin. Situated in the heartland of past Scandinavian ice Sheet advances and retreats the coring sites have been subject to repeated glaciations and preserve unique geological, microbiological and environmental archives. These records will enable investigation of the environmental history and microbiological evolution of the Baltic Sea region over the last 140,000 years, from the beginning of the Eemian interglacial through the Last Glacial Maximum to the present day.

Dates: September 12 - November 1, 2013
Platform: *Greatship Manisha*
Deepest hole: 229.6 m
Number of boreholes: 30
Number of cores: 798
Core recovery: 1622.76 m (91.45%)
www.eso.ecord.org/expeditions/347/347.php

Scientific goals

There are several expedition scientific objectives that fall under four main research themes:

1. Climate and sea-level dynamics of marine isotope Stage (MIS) 5, including onsets and terminations;
2. Complexities of the last glacial, MIS 4-MIS 2;
3. Glacial and Holocene (MIS 2-MIS 1) climate forcing;
4. Deep biosphere in Baltic Sea Basin (BSB) sediments.

The expedition set out to recover sediment sequences spanning the time period from MIS 5 to the present day at the highest possible resolution. In order to meet this aim, nine sites were drilled during the expedition. The geographic distribution of the sites aimed to register the in- and out-flows from the Baltic Sea Basin, as well as the sediments deposited within the basin itself.

Climate, sea-level and ice-sheet change

It is envisaged that the transect of drilled sites, from west to north east and from south to north, in this repeatedly glaciated and environmentally dynamic region will provide new scientific insights in a variety of research fields. Examples include regional and global issues on the timing and forcing

Greatship Manisha on station during Exp. 347

of rapid climate and sea level changes; mechanisms behind hypoxia-driven processes in intracontinental sea basins, and reconstruction of the glacial history of the Scandinavian Ice Sheet and its interaction with the climate system. The palaeoenvironmental information will be relevant on a semi-continental scale, due to the fact that the Baltic Sea drains an area four times its size.

Biogeochemical Processes

The drilled sites will also give new insight into the controlling mechanisms for prokaryotic communities and underlying biogeochemical processes in the seabed. New data will show how the highly variable environment has affected the phylogenetic diversity of the microbial communities and which biogeochemical processes predominate today in the deep glacial and interglacial deposits.

IODP
ECORD

For more information, visit our NEW website

... In June 2016

ECORD outreach

ECORD Management

ECORD
EUROPEAN CONSORTIUM FOR OCEAN RESEARCH DRILLING

ECORD Council
(Funding agencies)

NSF

JAMSTEC

EMA
(Managing Agency)

MagellanPlus Workshop Series (ECORD – ICDP)

ECORD FB
(MSP scheduling committee)

ESO
(Implementing Organisation)

ESSAC
(Scientific Committee)

Science community

Education / Outreach Task Force

Vision Task Force

ECORD ILP
(Industry Liaison)

Science community, Public, Medias, Teachers

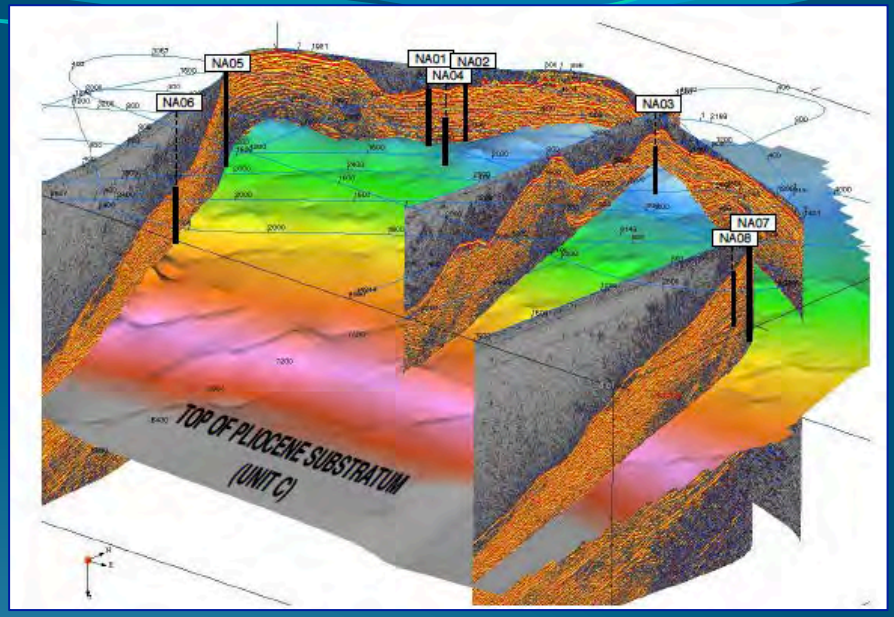
Industry

Other science programs, EC

Funding

Amphibious Drilling Proposals (ADPs)

ADPs are those for which full achievement of the scientific objectives requires scientific drilling at both onshore and offshore sites



ADP-796 Full - Nice Amphibious Drilling. In situ monitoring and risk analysis Landslide geohazards (A. Kopf et al.)

Amphibious Drilling Proposals

#4 CIB

MEXT Report

Eisho Sato

MEXT

MEXT
MINISTRY OF EDUCATION, CULTURE, SPORTS, SCIENCE AND TECHNOLOGY-JAPAN

Today's Presentation Items

1. Personal change in MEXT

2. Japanese Renewal Plan on IODP

3. JAMSTEC Budget Allocation Change since FY2011

MEXT
MINISTRY OF EDUCATION, CULTURE, SPORTS, SCIENCE AND TECHNOLOGY-JAPAN

1. Personal Change in MEXT

- Director, Ocean and Earth Division

changed

from Takashi Kiyoura

to Takahiro HAYASHI

MEXT
MINISTRY OF EDUCATION, CULTURE, SPORTS, SCIENCE AND TECHNOLOGY-JAPAN

2. Japanese Renewal Plan

- National research organization plans are reviewed every 5 years. The plans are designated by the Ministers.
- Current term of JAMSTEC's five-year-plan was started in April 2014, and will close in March 2019 (Current term is the 3rd term).
- By the end of FY 2018, JAMSTEC's five-year plan will be technically reviewed in the light of Chikyu/IODP operations by the committee that are designated by MEXT.
- Minister of MEXT makes a decision for the renewal.

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Contents of the current JAMSTEC's Five-year Plan

1. Focus on fundamental and strategic research based on general public needs
    1. Research on Marine Resources
    2. Research on global environmental change
    3. Research on seismo-genic zones
    4. Research on life science and technology
    5. Research on leading-edge engineering developments
2. Effective and efficient operation of infrastructures
3. Information sharing and it's management
4. COE of brain circulation and capacity building
5. Create marine science and technology innovations by collaborations with industries and academies

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Review Process in JAMSTEC

- The term of current JAMSTEC's 5-year plan has been started from 2014.
- JAMSTEC evaluates 5-year plan by its own review committee every year and sends report to Minister of MEXT.
- Science and technology achievements of the current term will be reviewed by 2018.
- Financial closing must be due by 31 March 2019. No budget shall be carried over between current term and the next term.

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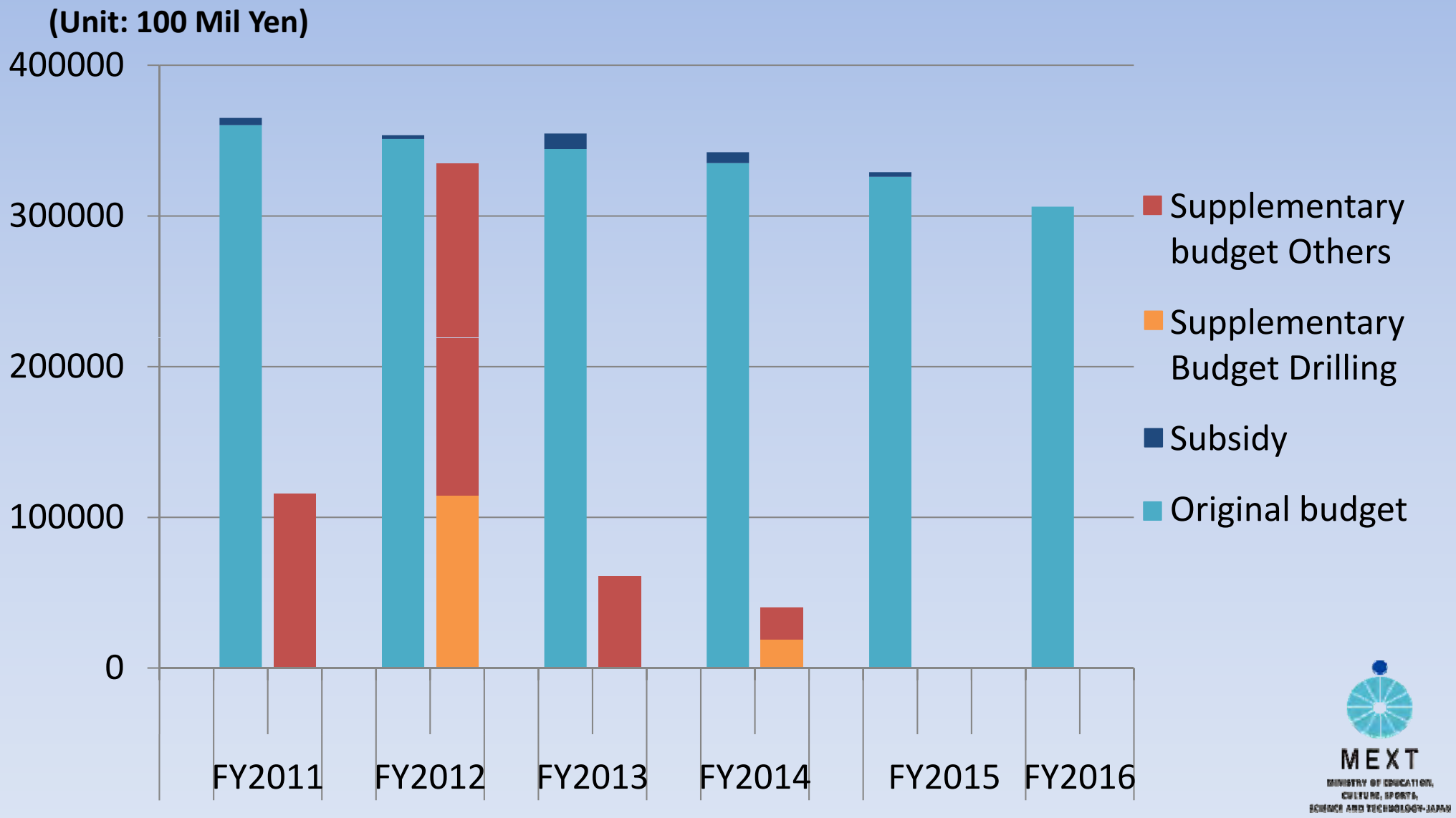
3. JAMSTEC Budget Allocation



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MOF evaluates CHIKYU project

- Ministry of Finance (MOF) is responsible for its budget allocation, and evaluates several sectors every year.
- MOF studied the implementation of *Chikyu* budget in FY2014, and recommended several actions for improvement on contract procedures from financial point of view.

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After the evaluation by MOF

- In 2015, MOF recommended that MEXT should advise JAMSTEC to:

- revise scope of work of the contract between JAMSTEC and Chikyu operator.

MEXT
MINISTRY OF EDUCATION, CULTURE, SPORTS, SCIENCE AND TECHNOLOGY-JAPAN

Thank you for your attention.

Eisho Sato

Director for Deep Sea Research

Ocean and Earth Division, Research and Development Bureau

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

eishosato@mext.go.jp

MEXT
MINISTRY OF EDUCATION, CULTURE, SPORTS, SCIENCE AND TECHNOLOGY-JAPAN

Japan Drilling Earth Science Consortium (J-DESC) Recent activities

Hiroshi Nishi

Tohoku University
(Chair of IODP section, J-DESC)

J-DESC representatives

- J-DESC President (JPFY2015-2016)
  Gaku Kimura/The Univ. of Tokyo
  (gaku@eps.s.u-tokyo.ac.jp)

- IODP section chair (JPFY2015-2016)
  Hiroshi Nishi/Tohoku Univ.
  (hnishi@m.tohoku.ac.jp)

- Continental drilling section chair (JPFY2014-2015)
  Yasufumi Iryu/Tohoku Univ.
  (iryu@m.tohoku.ac.jp)

Onboard scientists from J-DESC in 2015 and beyond

Exp. #	Title	Platform	Number of scientist
354	Bengal Fan	JR	4
355	Arabian Sea Monsoon (CPP)	JR	2
347	Baltic Sea Paleoenvironment	MSP	2
356	Indonesian Throughflow	JR	4
357	Atlantic Massif	MSP	4
359	Maldives Monsoon	JR	4
360	Indian Ridge Moho	JR	4
361	South African Climates	JR	3
362	Sumatra Seismogenic Zone	JR	4
363	Western Pacific Warm Pool	JR	3
364	Chicxulub K-Pg Impact	MSP	4
365	NanTroSEIZE shallow megasplay LTBMS	Chikyu	5
366	Mariana Convergent Margin	JR	4
		Total	47

Workshops, symposiums and PR activities 2015 and beyond

- New IODP brochure (in Japanese) published: Apr., 2015
- Symposium on Carbon Capture and Sequestration and Utilization (CCS/U) for public: Jun., 2015@Tokyo
- Symposium on Lord Howe Rise Project for scientists: Aug., 2015@Tokyo
- Chikyu ship tour for students and scientists: Nov., 2015@Yokohama
- Symposium on scientific drilling and logging school in Taiwan: Feb., 2016

Chikyu ship tour

Upcoming activities

- Booth exhibition in JpGU: 22-26 May, 2016@Makuhari
- 'Drilling Earth Science' Session in JpGU: 26 May, 2016@Makuhari
- J-DESC Town Hall Meeting2016: 24 May, 2016@Makuhari (JpGU)
- Int'l Scientific Drilling School on Chikyu: 3-6 July, 2016@Shimizu

Education program
-J-DESC Core School

Upcoming school

- Micropaleontology course: summer, 2016
- Paleomagnetism course: summer, 2016

Micropaleontology course

Latest schools

- Basic Core Analysis course
  10-13 Mar., 2016@Kochi Core Center
- Core Isotope Analysis course
  14-16 Mar., 2016@Kochi Core Center
- Basic logging course
  12-14 Jan., 2016@JAMSTEC Yokohama Institute

Basic Core Analysis course

Proposal of Chikyu-STP
background

During the previous phase of IODP, the STP worked as a program functionality regarding scientific technology. The activities include:

1) a continuous effort to maintain Scientific Technology Roadmap documenting technological elements required for IODP projects based on scientific demands and up-to-date technologies in the industry

2) technical review of measurement plans and post-cruise QA/QC for each drilling expedition conducted on multiple IODP platforms.

In the current IODP system, the CDEX Technical Advisory Team (TAT) was established under the CIB to assist CDEX in conducting operational plans from the engineering viewpoint.

However, We need expanding the functionality for harvesting scientific demands, knowledge, and solution ideas from the science community to CIB/CDEX

Proposal Chikyu-STP
potential Task

An expert group, serving as a coordinating role between science communities and the CIB/CDEX regarding scientific technology (enforcing of interaction between scientists and operations)

1)Identification and evaluation of “project-specific” needs including upgrade of drilling/coring/sub-sampling techniques (incl. QA/QC), downhole and shipboard measurements, material and information handling, based on demands from the proponent group and science community (translation of project-specific information) .

2）Recommendation of new or improved technologies to the science operator to make the maximum use of Chikyu’s capability and maximize scientific success of each project, by the mutual assistance of the TAT and Chikyu-STP in terms of technology development and engineering constraints.

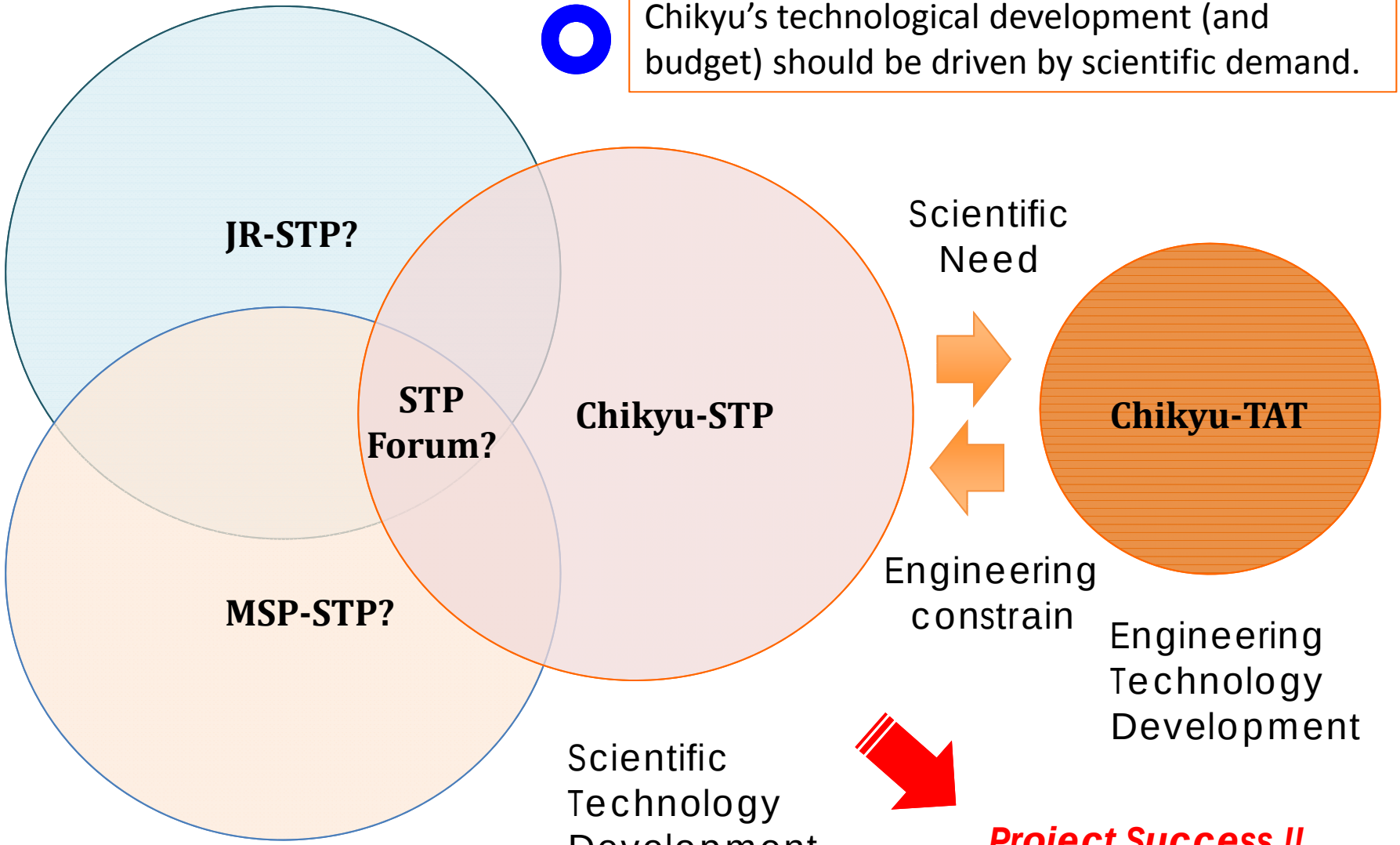
3）Further communication with the other “STP-like” organizations among the program through the facility boards and the IODP Forum for the future advancement and innovation of scientific ocean drilling (beyond the platforms)

4）Transforming new technologies or technological solutions with scientific communities and public societies through IODP publications, Scientific Drilling journal (outreaching roles).

- Effective use of web conference
- Increase function of SD journal

✖ Scientific demand should be driven by Chikyu's technological (and financial) capacity.

⭘ Chikyu's technological development (and budget) should be driven by scientific demand.



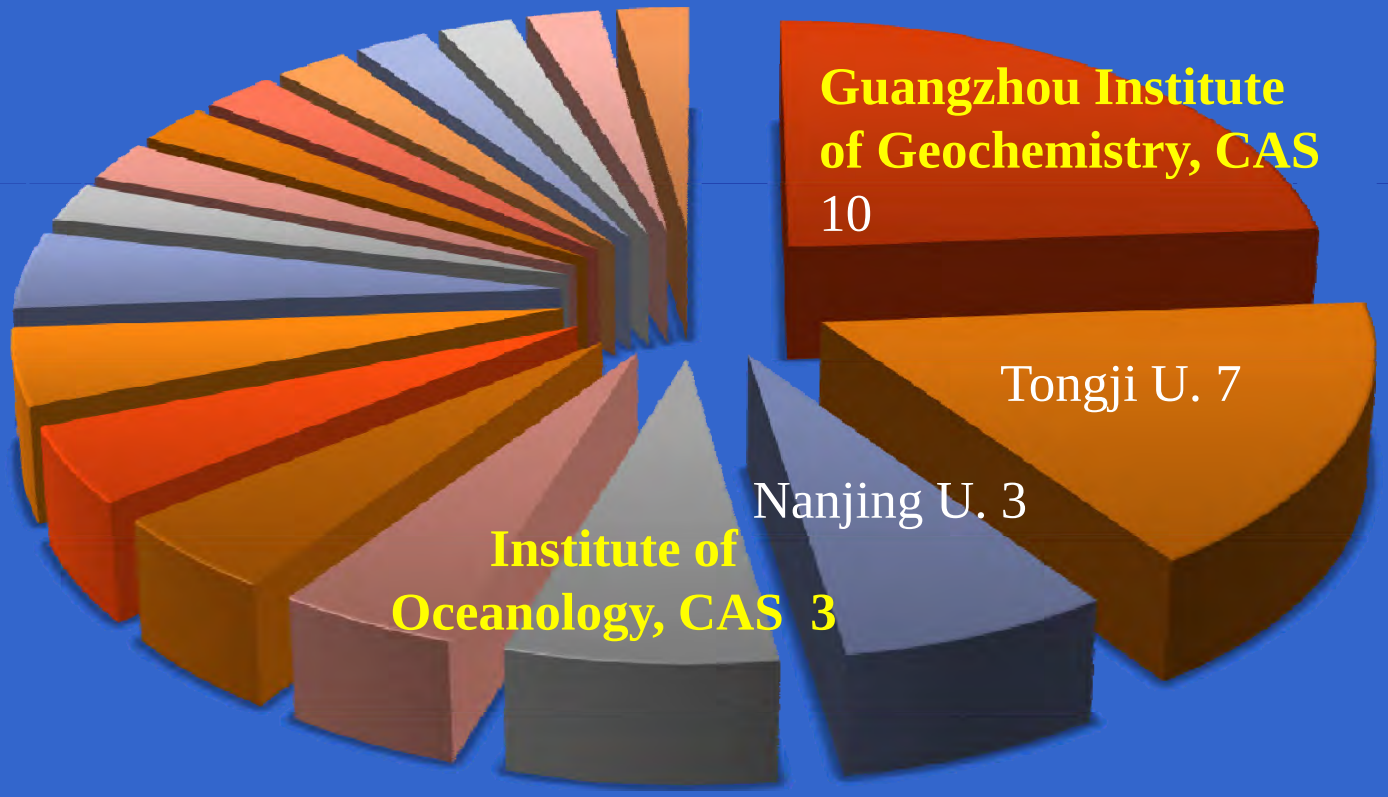
IODP-China Updates
2014-2016

Dr. Shouting Tuo

Science Coordinator of the IODP-China Office
Tongji University, Shanghai 200092, China

Chinese participating in 2014-2016 IODP Expeditions

42 scientists from 18 institutions/unversities



Institution	Num.
Guangzhou Institute of Geochemistry, CAS	10
Tongji University	7
Nanjing University	3
Institute of Oceanology, CAS	3
China University of Geoscience（Beijing）	2
China University of Geoscience（Wuhan）	2
South China Sea Institute of Oceanology, CAS	2
Second Institute of Oceanography, SOA	2
Institute of Geology and Geophysics, CAS	2
First Institute of Oceanography, SOA	1
Chinese Academy of Geological Science	1
Institute of Vertebrate Paleontology and Paleoanthropology, CAS	1
Institute of Geophysics, CEA	1
Peking University	1
Zhejiang University	1
Lanzhou University	1
Yunnan Normal University	1
The University of Hong Kong	1
Total	42

The Old IODP (2003-2013) totally 36 Chinese Scientists sail on IODP Expedition

Chinese contribution to JR operation in 2014-2016

- 2014-2016: Membership: 3 million US$ per year, 3 years= 9 million US$
- 2014: CPP Expedition: 6 million US$ for IODP Expedition 349
- 2017: CPP Expeditions: 12 million US$ for IODP Expeditions 367、368

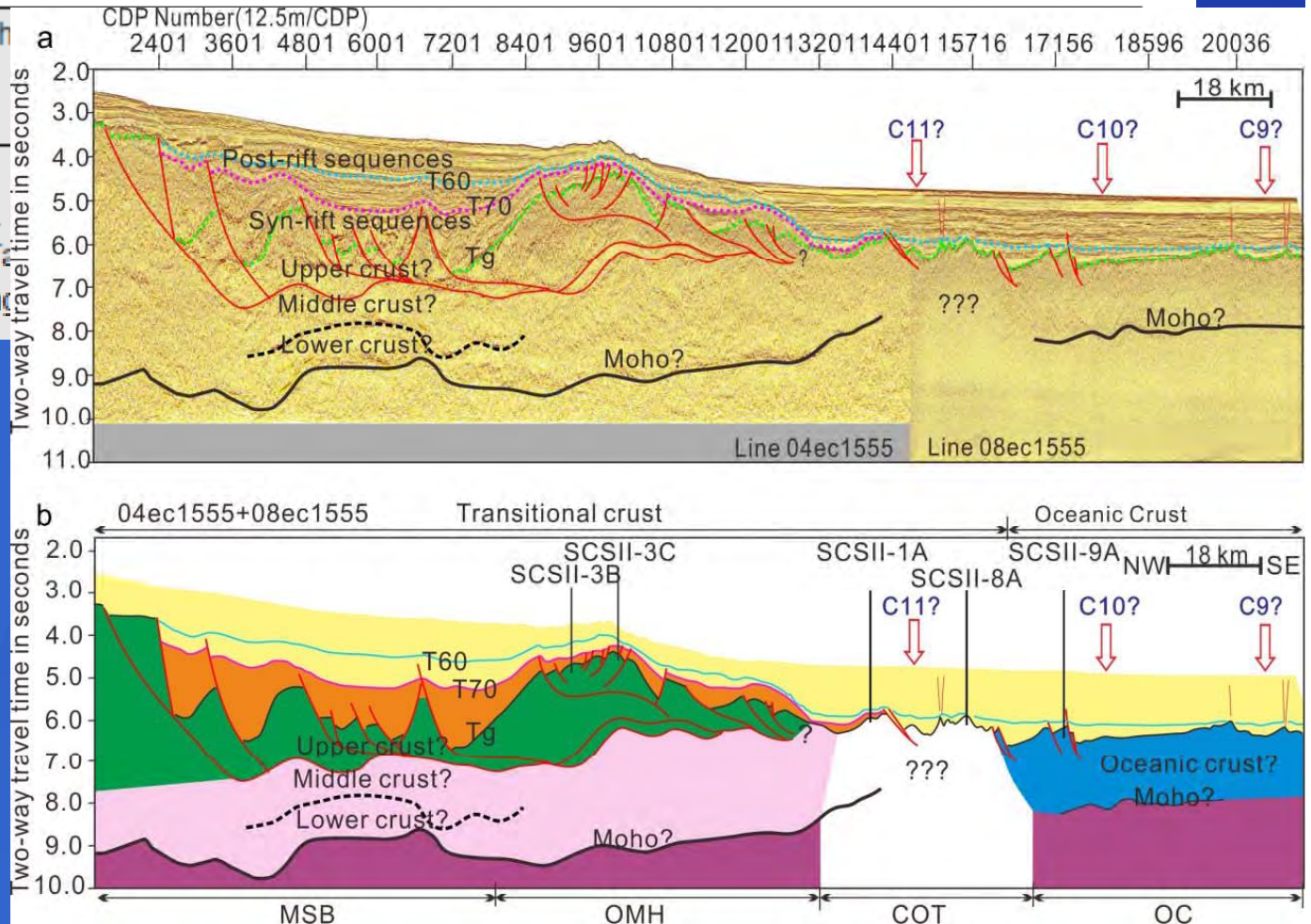
Testing Hypotheses for Lithosphere Thinning During Continental Breakup: Drilling at the South China Sea Rifted Margin

IODP Proposal Cover Sheet

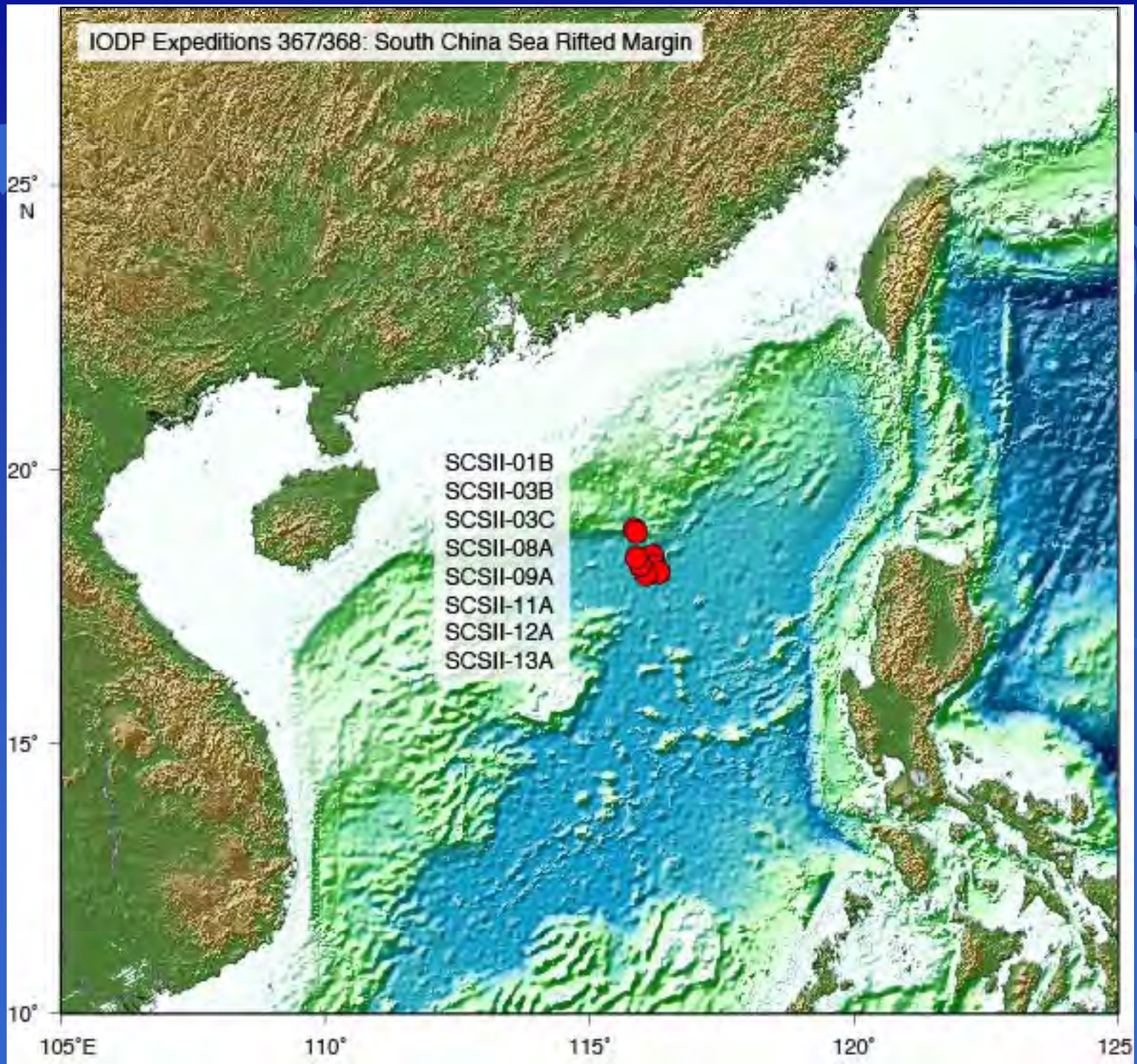
South China Sea Rifting

878 - Cpp

Title	Testing Hypotheses for Lith Rifted Margin
Proponents	Z. Sun, H. Larsen, C. Li, C. Lesher, J. Li, Q. Li, C. Shi, J. Stock, X. Su, X. Ta Zhang, M. Zhao, G. Zhong



IODP 367-368： 7 February- 9 June 2017



IODP Proposal Cover Sheet

My new proposal #1

855 - Pre

Title	Drilling an Active Hydrothermal System at an Ultraslow-Spreading Ridge		
Proponents	H. ZHOU, C. TAO, H. Dick, R. Binns, J. LI, Y. CHEN, Q. YANG, T. YANG, Z. WU, J. LI, H. WANG, F. JI, H. LI,		
Keywords	ultraslow-spreading ridge, hydrothermal mineralization, detachment	Area	Southwest Indian Ridge

Deactivate by SEP, lead proponents organized the international workshop plan to submit new proposal

China's renewal plans in the next phase of IODP (Beyond 2018)

- Domestic review in 2018 by MOST, mainly depends on the performance of 3 CPP Expeditions.
- If approved, keep the same contribution (US$3M/year), and potentially other CPP Expeditions;

IODP-China Strategy for the Next 10 Years

- First Step: to have 2-3 IODP CPP legs
  - -- 2014 IODP 349: spreading history of the SCS
  - -- 2017 Second IODP leg to the SCS: continental breakup and rifting history of the SCS
  - -- other: Southwestern Indian Ocean Ridge ?

  -- to construct the fourth IODP core repository in Shanghai

- Second Step: to self-organize IODP legs and become "platform provider"
  - -- 2018-20: "Sea level changes on the Sunda Shelf of the southern SCS" ?

- Third Step: to build Chinese scientific drilling vessel

IODP Expedition 365

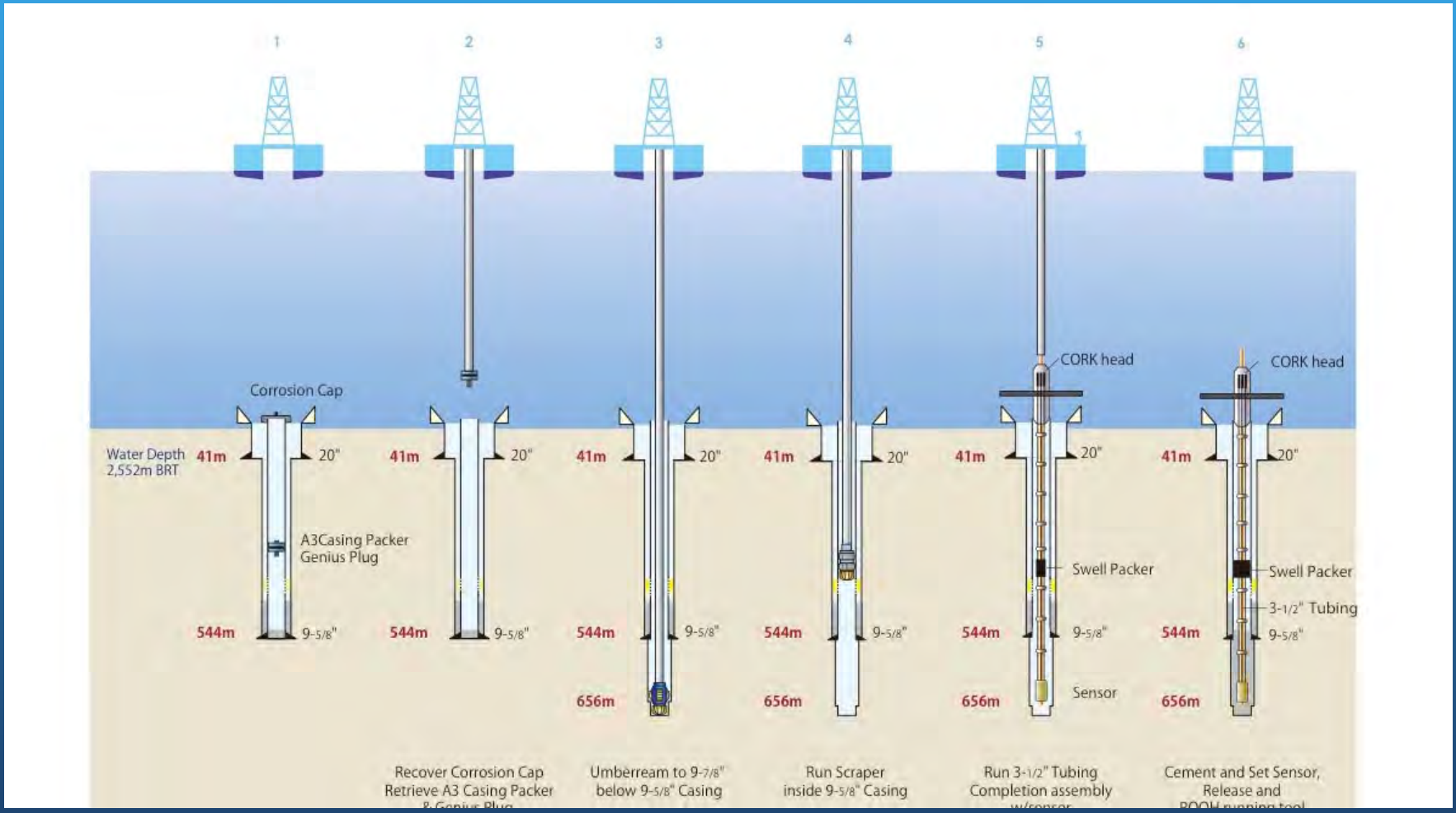
Sean Toczko, Expedition Project Manager

CDEX/JAMSTEC

IODP 365 Overview

- Expand NanTroSEIZE borehole observatories
- Recover GeniusPlug installed during IODP 332 (Nov 2011)
  - Pressure & temp sensors
  - Geochemistry & FLOCS experiement
- Install 2nd NanTroSEIZE LTBMS (~650 mbsf)
  - Strainmeter, tiltmeter, seismometers, and pressure ports

Operation sequence



Science Party – Co Chief Scientists

Achim Kopf _ MARUM
Exp 315, 319, 332

Demian Saffer - PSU
Exp 314, 319, 332, 338, 348

Science Party

Name	Speciality	Institution	Title
Stephanie Carr	Microbiologist	Colorado School of Mines	Postdoctoral researcher
Laura Wallace	Hydrogeologist	University of Texas at Austin	Research Scientist
Geoff Wheat	Inorganic chemist	University of Alaska Fairbanks	Research Professor
Alexander Rösner	Observatory specialist	University of Bremen (MARUM)	Graduate student
Eiichiro Araki	Downhole measurements	JAMSTEC	Deputy Group Leader
Yuya Machida	Geophysicist	JAMSTEC	Research Scientist
Reiji Kobayashi	Hydrologist	Kagoshima University	Associate Professor
Toshinori Kimura	Geophysicist	JAMSTEC	Research Scientist
Chihiro Kinoshita	Structural Geologist	Kyoto University	Ph.D. Student

Expedition Schedule

- 26 March – 27 April 2016; to/from Shimizu, Shizuoka
- 33 days for expedition, including 3 days contingency
- 29 March – Chikyu leaves Shimizu
- Co-Chiefs will switch & crossover

Project Coordination Team Meeting #1
Nankai Trough T Limits PCT

1-2 October 2015
MARUM Bremen, Germany

CIB_Consensus_0315-08: The CIB established a riserless Project Coordination Team for IODP Proposal 865, Nankai Trough T Limits, for scoping detailed implementation plan and preparation for its implementation in the future riserless operation window of D/V *Chikyu*. The CIB recommends Kai-Uwe Hinrichs (Chief Project Scientist; CPS), Fumio Inagaki (CPS), Masa Kinoshita (member), TBN (member) and Ikuo Sawada (CDEX), Nori Kyo (CDEX), Nobu Eguchi (CDEX) and Yusuke Kubo (CDEX).

Participants

Kai-Uwe Hinrichs (PCT, CPS)

Fumio Inagaki (PCT, CPS)

Masa Kinoshita (PCT, member)

Verena Heuer (PCT, alternate)

Ikuo Sawada (PCT, CDEX)

Nori Kyo (PCT, CDEX)

Nobu Eguchi (PCT, CDEX)

Yusuke Kubo* (PCT, CDEX)

Hinrich Villinger* (CIB Liaison)

Achim Kopf (MARUM, Observer)

PCT Consensus
Execution of this project

T-Limit PCT Consensus_1510-01
The PCT decides that to produce high impact science from the expedition, glass fiber casing installation (and full observatory installation) is excluded from the initial expedition objectives.

Background: As a general scope of this project, science member of the PCT strongly supported an earlier execution of this project; maximizing the scientific return is important, even if a shortened expedition means sacrificing some of the proposed objectives, e.g., observatory installation.

PCT Consensus
Alternate site selection

T-Limit PCT Consensus_1510-02
The PCT accepts the CDEX proposed alternate site (ODP11-74B) in exchange for the original ODP11-74A site.

T-Limit PCT ActionItem_1510-01
CDEX will look for an alternate site for ODP11-73A. The PCT recommends finding a site in a thicker sediment bed.

T-Limit PCT Consensus_1510-03
The PCT recommends that the PIs of this project obtain new heat flow data from the exact location of the alternate sites in order to refine the temperature model of the sites. For example, from the planned SONNE cruise scheduled in the area in October 2016.

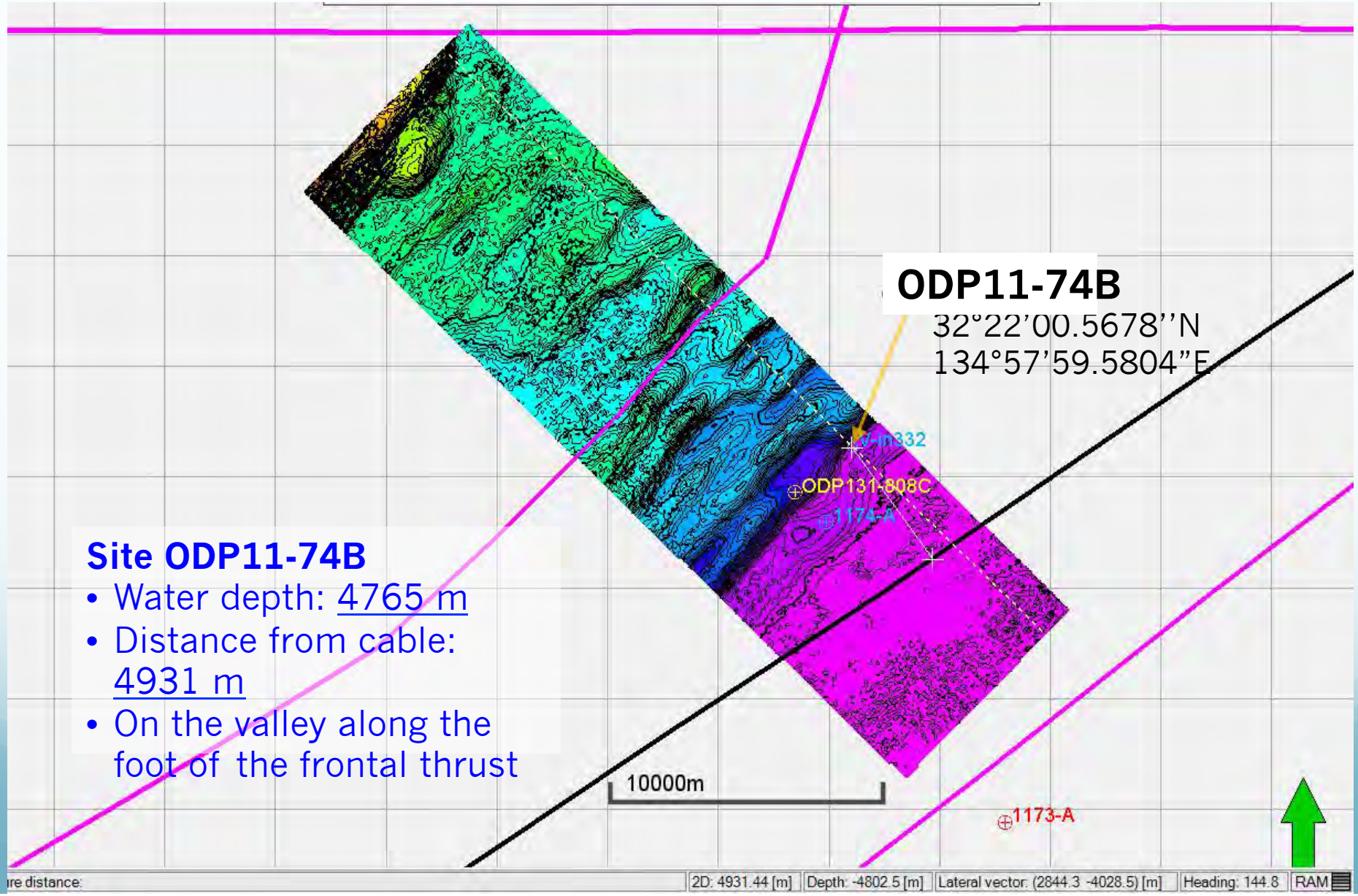
PCT Consensus
Alternate site selection

Background; The originally proposed sites (ODP11-73A and ODP 11-74A) will not be drilled due to their close proximity to existing seafloor cables (e.g., drill site distance from cables should at least equal the water depth). The following factors were considered when CDEX examined alternate sites:

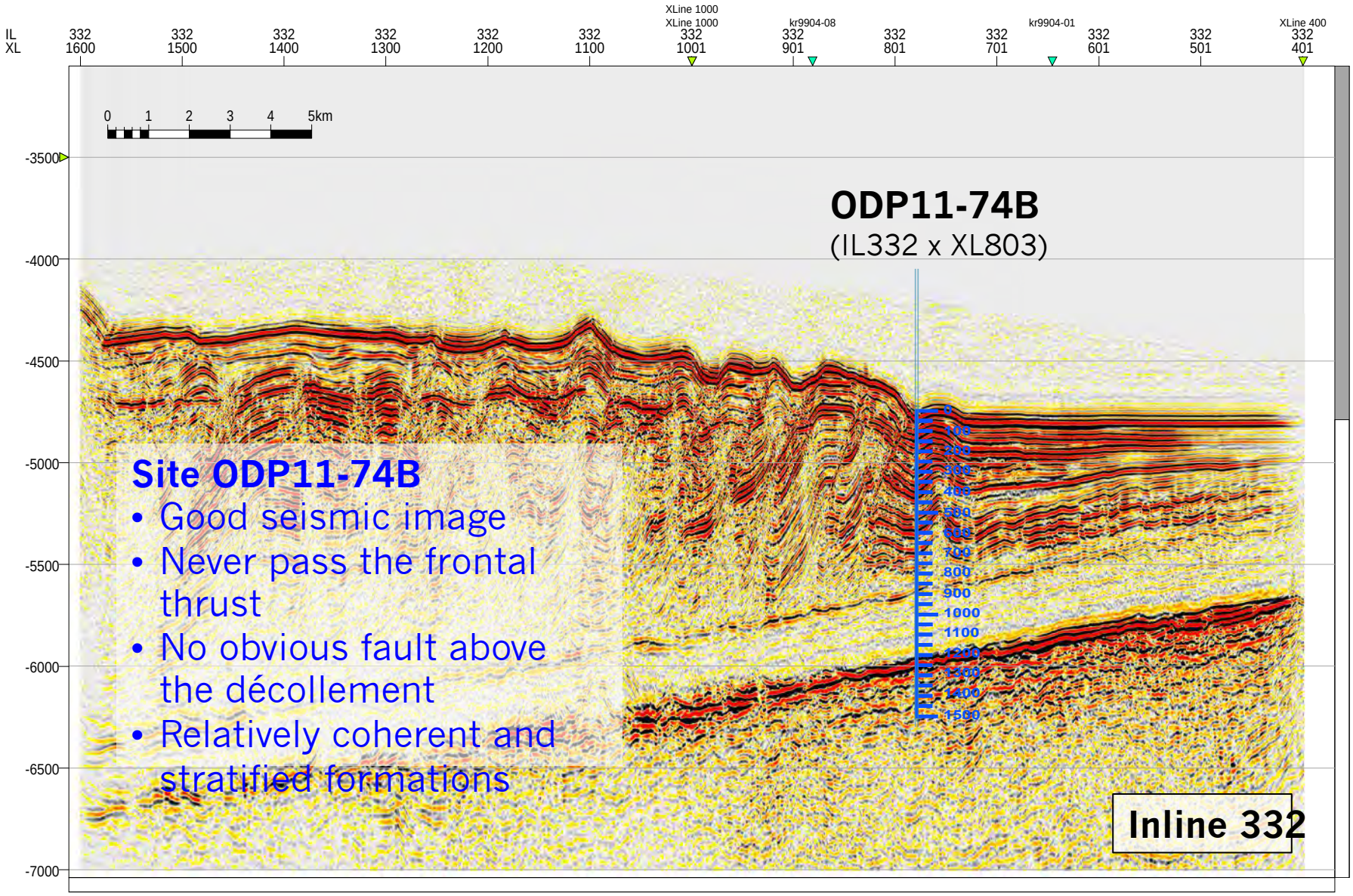
1. Within the Muroto 3D MCS box (a new site survey most likely will not take place),
2. Similar tectonic settings as the original site,
3. Minimal drilling risk, such as from formation disturbance,
4. High in-situ temperature at the bottom of the sediment layer.

The most important scientific requirement for site selection is the formation temperature at the bottom of the sediment layer, basically requiring greater than 120°C. The expected temperatures at the décollement zone and the bottom of sediment layer (basement top) are 103-106°C and 133°C, respectively. Hinrichs commented that if the accuracy of this temperature estimate is greater than 50%, the proposed alternate site is acceptable.

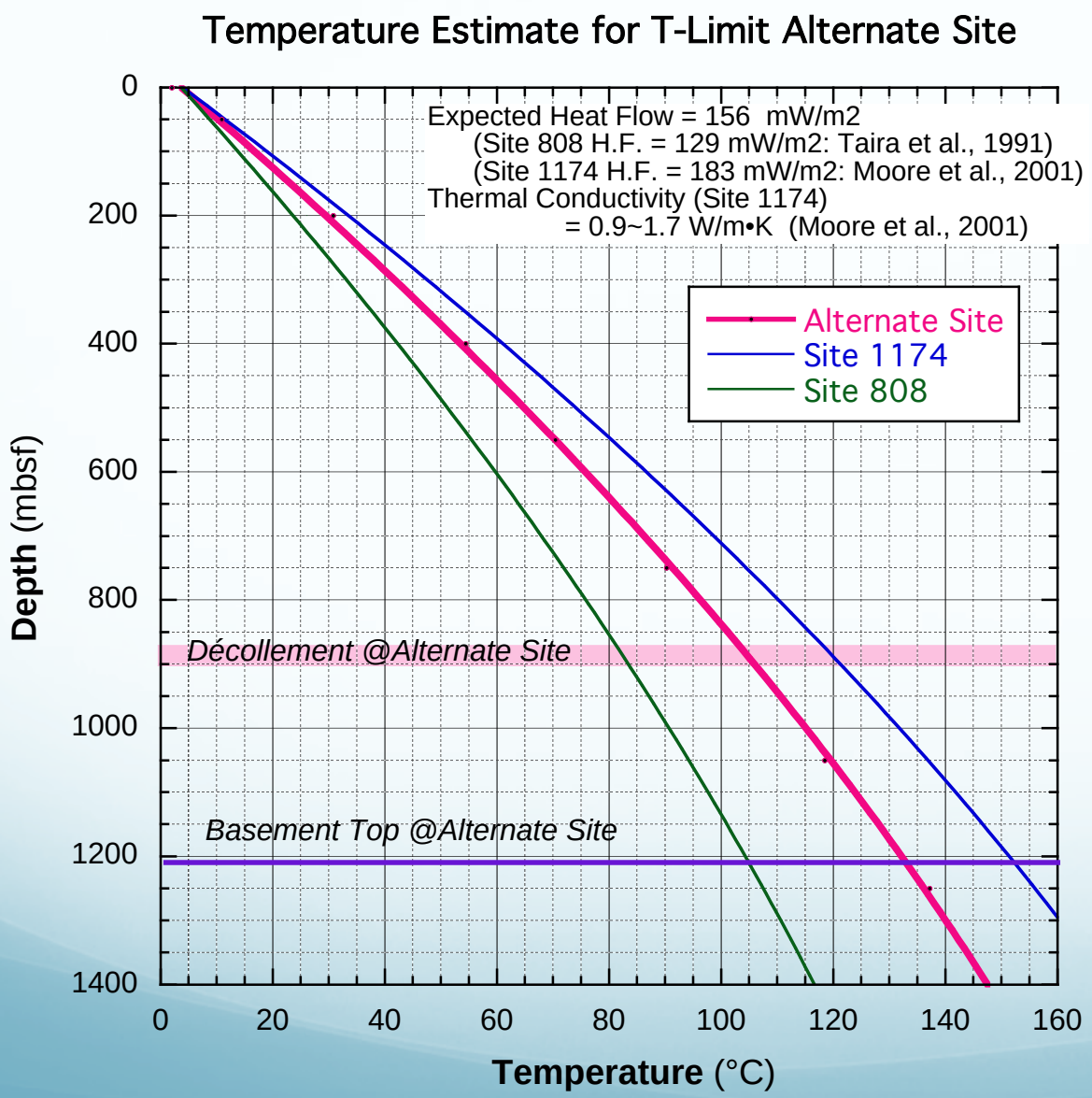
Alternate for Site ODP11-74A

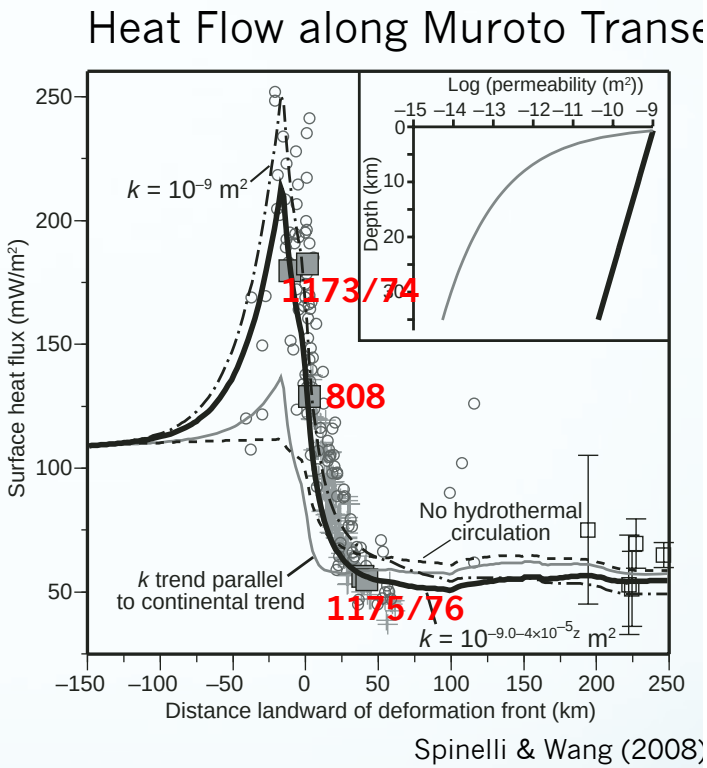


Alternate for Site ODP11-74A



Temperature Estimate for the Alternate Site





Spinelli & Wang (2008)

Expected Temperature

Décollement zone: 103-106°C

Basement Top: 133°C

Comparison

	Site 808	Site 1174	Alternate Site ODP11-74B (IL 332 x XL 803)
Frontal Thrust	Yes	No	No
Décollement Zone Depth	945-964 mbsf	808-840 mbsf	870-900 mbsf
Décollement Zone Temperature	88°C	110-115°C	103-106°C
Basement Top Depth	1290 mbsf	1194 mbsf	1210 mbsf
Basement Top Temperature	112°C	150°C	133°C
Formation Complexity	High v	Moderate ^	Low v
Distance from Cable	4855 m	3300 m	4840m
Water Depth	4674 mMSL	4751 mMSL	4731 mMSL
Total Pipe Length	6112.5 mBRT	6093.5 mBRT	6089.5 mBRT

PCT Consensus
Provisional Operation Plan

T-Limit PCT Consensus_1510-04
The PCT recommends that CDEX seek improvements of the current HPCS (e.g., shorter stroke and harder material for the cutting shoe) to recover better condition core samples from deep sedimentary sections (e.g., décollement).

Background; The PCT agreed that good recovery of high quality core samples, especially from deeper sections of the borehole, is important in the effort to detect the limits of life. An idea was raised about modification/improvement of the HPCS to recover high quality core samples from the décollement and beyond.

PCT Consensus
Science Party

T-Limit PCT Consensus_1510-05
The PCT recommends to CIB/CDEX that the call for participation for this expedition should open as soon as possible, to help ensure that a strong science party is created.

T-Limit PCT ActionItem_1510-02
Following Consensus_1510-05, Scientific Prospectus will be drafted by PIs and CDEX prior to the Goldschmidt conference in late July 2016.

Background; There will be several micro-bio related onboard measurements during the expedition. To ensure these time sensitive measurements are collected during the expedition, other onboard measurements would be reduced, and some might be conducted on-shore after the expedition. Organizing a good science party requires a long timeline, so the PCT agreed on making an earlier announcement of the call for application to the community, although the PCT also understands the current CDEX/JAMSTEC budgetary situation.

PCT Consensus
Scientific Priority

T-Limit PCT Consensus_1510-06
The PCT decides that scientific operation priority for this project will be ODP11-74 coring > ODP11-74 *Temporary Temperature Observatory* installation > ODP11-74 Basement coring > ODP11-74 Shallow coring > ODP11-73 coring.

T-Limit PCT ActionItem_1510-03
CDEX will create a decision tree and new time estimates based on the scientific operation priority mentioned in the Consensus_1510-06 and discussion during this PCT meeting.

Background; ODP11-74A had higher priority than the other; full sediment coring in the deeper section here also has the highest priority. Basement coring at this site is demanded, but has lower priority and the penetration depth is still under discussion. A Temporary Temperature Observatory (TTO) installation in the original hole has the next priority, and the PCT recognized that to measure the sediment/basement interface temperature, a minimum of 50 m drilling into basement is needed (as discussed under Agenda Item #7: Provisional operational plan). Wireline logging and shallow hole coring (shallower than 20-inch casing, different hole) has lower priority than TTO installation.

PCT Consensus
Future Observatory

T-Limit PCT Consensus_1510-07
The PCT agrees that the minimum deployment duration of the TTO would be 1 – 2 year. The full observatory configuration will be discussed based on the TTO and other data at the 2nd post expedition meeting.

Background; TTO deployment will be a minimum of 1-2 years. After retrieving the data from TTO, those data and data obtained from core samples will be compared and discussed at the 2nd post expedition meeting. Based on those comparisons/ discussions, the full observatory configuration will be discussed at the same meeting (or could be earlier than this meeting).

PCT Consensus

Onboard Measurement Plan & Science Party

T-Limit PCT Consensus_1510-08
The PCT recommends that CDEX consider use of shore-based facilities for maximizing the capacity to conduct time-critical onboard measurements and sample processing.

T-Limit PCT Consensus_1510-09
The PCT recommends to CDEX that the constitution of the science party for this expedition be a hybrid model of the JR and MSP. Scientists who only work on shore will be full members of the science party.

Background; the PCT considered using the KCC facility to maximize time-critical measurements onboard during the expedition. The science party of this expedition will be hybrid model of JR and MSP expeditions, i.e. those who only work on shore also will be a member of the science party

PCT Consensus

Any Other Business

T-Limit PCT Consensus_1510-10
The PCT decides that the next PCT meeting will take place after a scientific workshop of this project, scheduled in conjunction with the Goldschmidt conference in July 2016. The PCT also considered a telephone (Skype) conference after the next CIB meeting to discuss the outcome of that meeting.

T-Limit PCT ActionItem_1510-04
CDEX will investigate a suitable temperature logger for the TTO.

The PCT held a Skype conference on 19 February 2016.

Provisional Ops Plan w/o contingency csg

ODP11-74B Operation	Sub Total (days)	Total (days)
1) Transit from Shimizu to ODP11-74B (250nm)	1.5	1.5
2) Deploy transponders, Preparation	1	2.5
3) Set 20" Conductor casing and reentry cone & housing at 140mbsf	5	7.5
4) Drill & Cut core to 1210mbsf(Sed) + 50m(Base)	26.5	34
5) Completion	3.5	37.5
6) Retrieve transponders, Rig down Guide horn	1	38.5
7) Transit from the site to Shimizu	1.5	40
8) WOW, Mechanical Down Time	4	**44**

Provisional Ops Plan w/ contingency csg

	ODP11-74B Operation	Sub Total (days)	Total (days)
1)	Transit from Shimizu to ODP11-74B (250nm)	1.5	1.5
2)	Deploy transponders, Preparation	1	2.5
3)	Set 20" Conductor casing and reentry cone & housing at 140mbsf	5	7.5
4)	Drill & Cut core to 1210mbsf(Sed)	22	29.5
5)	OH to 17-1/2", set 13-3/8" casing	10	39.5
6)	Cut core 50m in the basement	4.5	44
7)	Completion	3.5	47.5
8)	Retrieve transponders, Rig down Guide horn	1	48.5
9)	Transit from the site to Shimizu	1.5	50
10)	WOW, Mechanical Down Time	4	**54**

Nankai Trough T Limits Project Coordination Team
Skype Meeting Executive Summary

February 19, 2016

Participants: Heuer, Hinrichs (Bremen), Inagaki (Kochi), Kinoshita (Tokyo), Eguchi, Kyo, Sawada (Tokyo), Kubo (Yokohama)
CDEX observers: Aoike, Ikawa, Nawate, Wakatsuki

T-Limit PCT Consensus_1602-01
The PCT will prepare for the possibility of earlier implementation of the expedition than expected in the last PCT meeting as January-March 2017

Background
After the last PCT #1 meeting, the possibility of earlier implementation of a shortened expedition popped up. The PCT confirmed that this is feasible, and the expedition will focus on the most high priority site ODP11-74B. The Chikyu schedule of 2016-2017 will be discussed and officially endorsed in the CIB meeting on Mar 23-24. Due to the very short lead-time, the expedition preparation will need a jump start once scheduled.

T-Limit PCT ActionItem_1602-01
PIs will prepare *Scientific Prospectus*, and CDEX will prepare *call for scientists* by mid March, in time for CIB meeting on Mar 23-24.

T-Limit PCT Consensus_1602-02
The PCT agrees that the drilling operation plan presented by CDEX needs to be revised not to miss some important scientific intervals for coring and to include details of temperature measurement while coring.

Background
CDEX presented a draft of drilling operation plan for coring and TTO installation at site ODP11-74B. This was based on the priority in T-Limit PCT Consensus_1510-06. The proposed coring plan was to take spot cores at 100 m interval between 140 – 700 mbsf and continuous cores from 700 – 1260 mbsf. Hinrichs and Heuer pointed out that the proposed spot-coring plan is too risky to meet major scientific objectives because it may miss some significant interfaces such as lower sulfate-methane transition and abiotic-biotic transition zones which may occur at around 40-60 ºC. For preliminary assessment of in-situ temperature, biomass and some chemical concentrations in pore water, importance of temperature measurement while coring and onboard cell count was emphasized. Coring of basement rock should also be reconsidered from the point of trade off between operation time and scientific benefits.

Note after the meeting
The available budget is still uncertain. The total cost includes not only drilling and science related costs, but also logistics and all other expenses. Therefore there will probably be adjustments and trade-off once the total budget is fixed.

In the scientific prospectus, we will need to describe the minimum operation, below which the expedition should rather be postponed until more fund will be available. Priorities of the additional operation should also be mentioned.

T-Limit PCT ActionItem_1602-02
PIs will make suggestions and comments on the first draft of the proposed coring plan to meet scientific objectives and CDEX will incorporate it in the revised drilling operation plan. *Scientific Prospectus* should be based on the revised drilling plan.

T-Limit PCT ActionItem_1602-03
CDEX will develop plans of temperature measurements while coring operation. APCT3 and T2P are the most preferable option for upper and middle coring intervals, respectively.

T-Limit PCT Consensus_1602-03
The PCT acknowledges the progress of planned modification of HPCS so far, and recommends CDEX to keep reporting the progress of modified HPCS to PCT.

Background
Following T-Limit PCT Consensus_1510-04, CDEX called for tender of design for modification of HPCS. It is still uncertain whether the improved HPCS will be available in time for the coming expedition, but CDEX plans to continue the effort.

T-Limit PCT Consensus_1602-04
The PCT defers the decision on the system of TTO until the result of JSPS funding to Kinoshita will be informed in April. Until then, CDEX continues seeking two options; MTL with either or both 1) HOBO or/and Antares and 2) new thermistor string with flat pack.

T-Limit PCT Consensus_1602-05
The PCT agrees that PIs cover the cost for observatory sensors as much as possible.

Background
Following the priority in T-Limit PCT Consensus_1510-06, -07 and T-Limit PCT ActionItem_1510-04, CDEX presented possible options for TTO. Nori Kyo showed two options of i) MTL with either or both HOBO or/and Antares and ii) new thermistor string with either mold cable or flat pack. The PCT agreed that although MTL would fulfill minimum requirements, the higher accuracy of thermistor is desirable. Kyo pointed out that PI is supposed to bring observatory sensors or otherwise bring some funds available for the sensor development. In particular, purchase of new thermistor requires more cost than currently available. Kinoshita responded that funding may be available if his application to JSPS will be successful.

T-Limit PCT Consensus_1602-06
The PCT agrees that, if possible, use of Kochi airport as the heliport would be scientifically beneficial.

Background
CDEX has been investigating options for port call and heliport for the expedition. PCT pointed out that use of Kochi airport would be the best option for the quick transportation of samples from Chikyu to Kochi Core Center. This would enable use of shore-based facilities and maximize the capacity to conduct time-sensitive measurements and sample processing in a super-clean lab, following T-Limit PCT Consensus_1510-08. CDEX pointed out that using KCC site for heliport offices may be required.

T-Limit PCT ActionItem_1602-04
The PCT recommends Inagaki to negotiate the possibility of using KCC site for heliport offices. If the possibility looks promising, CDEX will take over the communication for further negotiation and coordination with KCC and MQJ.

T-Limit PCT Consensus_1602-07
More discussion should follow to develop the hybrid science team (i.e., including both shipboard and onshore scientists), based on the initial draft presented by CDEX.

Background
Following T-Limit PCT Consensus_1510-08 and -09, CDEX presented a conceptual model of hybrid science team composed of shipboard and onshore scientists. The PCT acknowledged that the model was a good starting point, but some concerns were also pointed out. CDEX agreed that more discussions were needed to make the team and detailed work plan. The items discussed in the PCT include i) data sharing within the entire science party, ii) radioisotope analyses, and iii) data of immediate needs such as cell counts and incubation samples.

T-Limit PCT ActionItem_1602-05
CDEX will raise the discussion points to the scientists and develop the hybrid team plan.

T-Limit PCT Consensus_1602-08
The PCT agrees that the ideas of outreach program, if any, should be shared in PCT. Current ideas include inviting a sound artist and videographers, but this needs financial support (most likely from DCO).

T-Limit PCT Consensus_1602-09
The onboard workshop on June 25 should target the pool of expedition applicants. The *call for scientists* should mention about the workshop.

T-Limit PCT Consensus_1602-10

The PCT recommends PIs to continue exchanging information on heat flow data from SONNE cruise with Achim Kopf. This is a follow-up of T-Limit PCT Consensus_1510-03.

Project Coordination Team Meeting #4

NANTROSEIZE PCT REPORT

PCT Update

- 12 Dec 2015 – one day meeting
- San Francisco, USA
- 12 Attendees
- Main topics:
  - 3D Seismic reprocessing,
  - NanTroSEIZE science matrix,
  - IODP Exp 365

Consensus items (1/2)

- **NanTroPCT_Consensus_1215-01: “The PCT understands that Japanese political support needs to be better developed to help NanTroSEIZE and *Chikyu* IODP operations in general. The PCT will assist in any way to support this.”**

- **NanTroPCT_Consensus_1215-02: “The PCT recommends that the data from the C2 and C10 (and future) LTBMS observatories linked to DONET continue to be open access in real-time to the scientific community.”**

- **NanTroPCT_Consensus_1215-03: “The PCT requests that 3D Seismic processing results be shared by the PIs with the PCT for future C2 riser drilling planning.”**

Consensus items (2/2)

- **NanTroPCT_Consensus_1215-04: “The PCT endorses the concept of a special PEPS edition for NanTroSEIZE or more general subduction-related research.”**
- **NanTroPCT_Consensus_1215-05: “The PCT urges CDEX to determine, as soon as possible, which IODP proposal will be assigned to the proposed IODP window in Dec 2016.”**
- **NanTroPCT_Consensus_1215-06: “The PCT recommends that a “mini-PCT” meeting will be held among the PCT members joining the May 2016 JpGU.”**

Action items

- **NanTroPCT_ActionItem_1215-01: Review and approve NanTroSEIZE matrix by 15 Jan 2016 for translation to Japanese. Periodic updates should be made as required. Investigate making a “picture book” version.**
- **NanTroPCT_ActionItem_1215-02: Propose and organize a PEPS special edition on NanTroSEIZE.**
- **NanTroPCT_ActionItem_1215-03: Provide Drilling Program for C10 to PCT.**
- **NanTroPCT_ActionItem_1215-04: Provide Sekal drilling analysis to PCT.**
- **NanTroPCT_ActionItem_1215-05: CDEX chooses which IODP proposal will be assigned to the Jan-Mar 2017 IODP drilling window.**

PCT Members

- Gaku Kimura CPS University of Tokyo
- Harold Tobin CPS University of Wisconsin-Madison
- Demian Saffer PCT Member/365 CC Pennsylvania State University
- Eiichiro Araki Science Coordinator DONET, JAMSTEC
- Greg Moore Science Coordinator University of Hawaii-Manoa
- Michael Underwood Science Coordinator University of Missouri
- Masa Kinoshita PCT Member ODS, JAMSTEC
- Yasu Yamada Science Coordinator ODS, JAMSTEC
- Ikuo Sawada PCT Member CDEX, JAMSTEC
- Nori Kyo PCT Member CDEX, JAMSTEC
- Nobu Eguchi PCT Member CDEX, JAMSTEC
- Sean Toczko PCT Member CDEX, JAMSTEC

IODP Science Support Office

Scripps Institution of Oceanography
University of California San Diego

Brief Report to Chikyu IODP Board

23 March 2016

Holly Given, Executive Director

IODP
INTERNATIONAL OCEAN DISCOVERY PROGRAM

What is the IODP Science Support Office?

- Funded by US National Science Foundation
- FY2015 budget US$1,182K
- 5.3 persons/year (FTEs)
- Four Tasks:
  - Support the JRFB and its advisory panels
  - Oversee the proposal process for IODP
  - Manage the Site Survey Data Bank
  - Provide www.iodp.org

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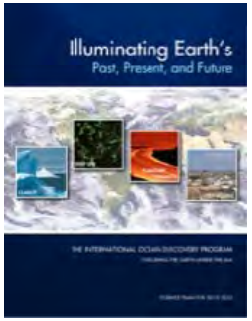
What Holds IODP Together Now?



Science Plan, MOUs on platform funding and staffing

Common policies, proposal process

Expeditions, public relations, workshops

Discoveries, publications, other outcomes

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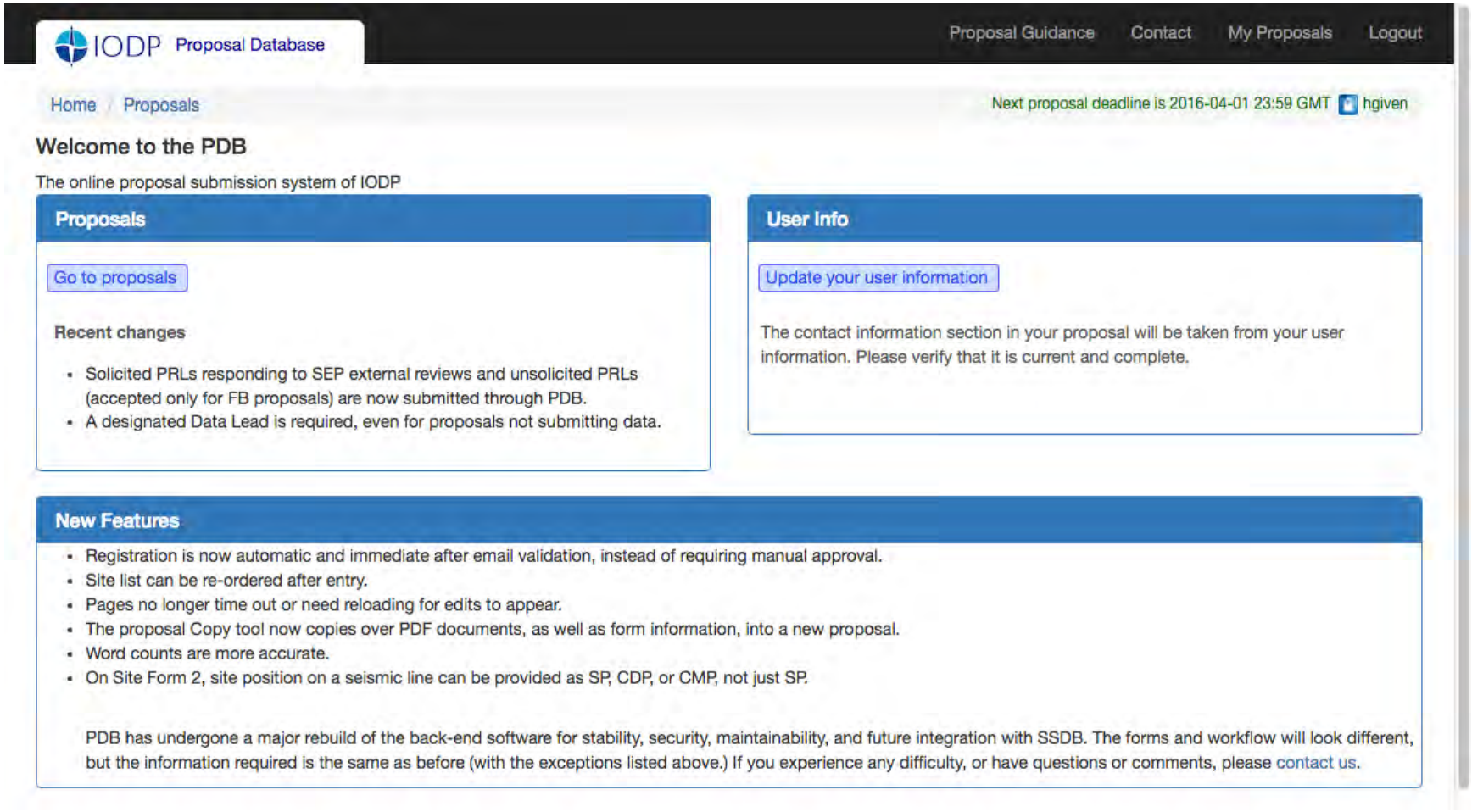
Since CIB in 2015

- Handled 35 drilling proposals
- Forwarded 4 proposals to FBs
- Accepted > 2000 data files into SSDB
- Major software revision to proposal submission system

Major Revision of Proposal Database System



proposals.iodp.org

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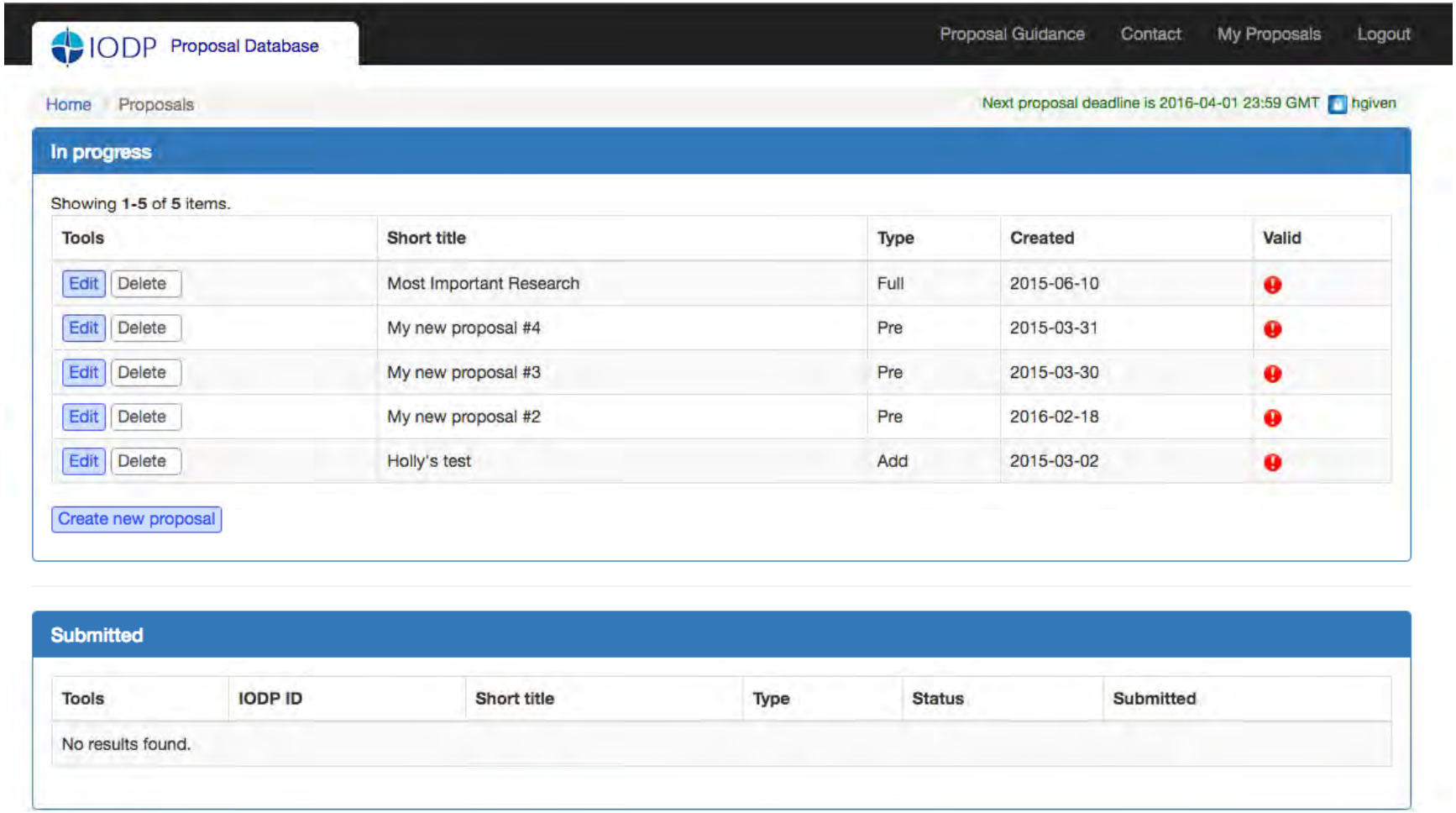
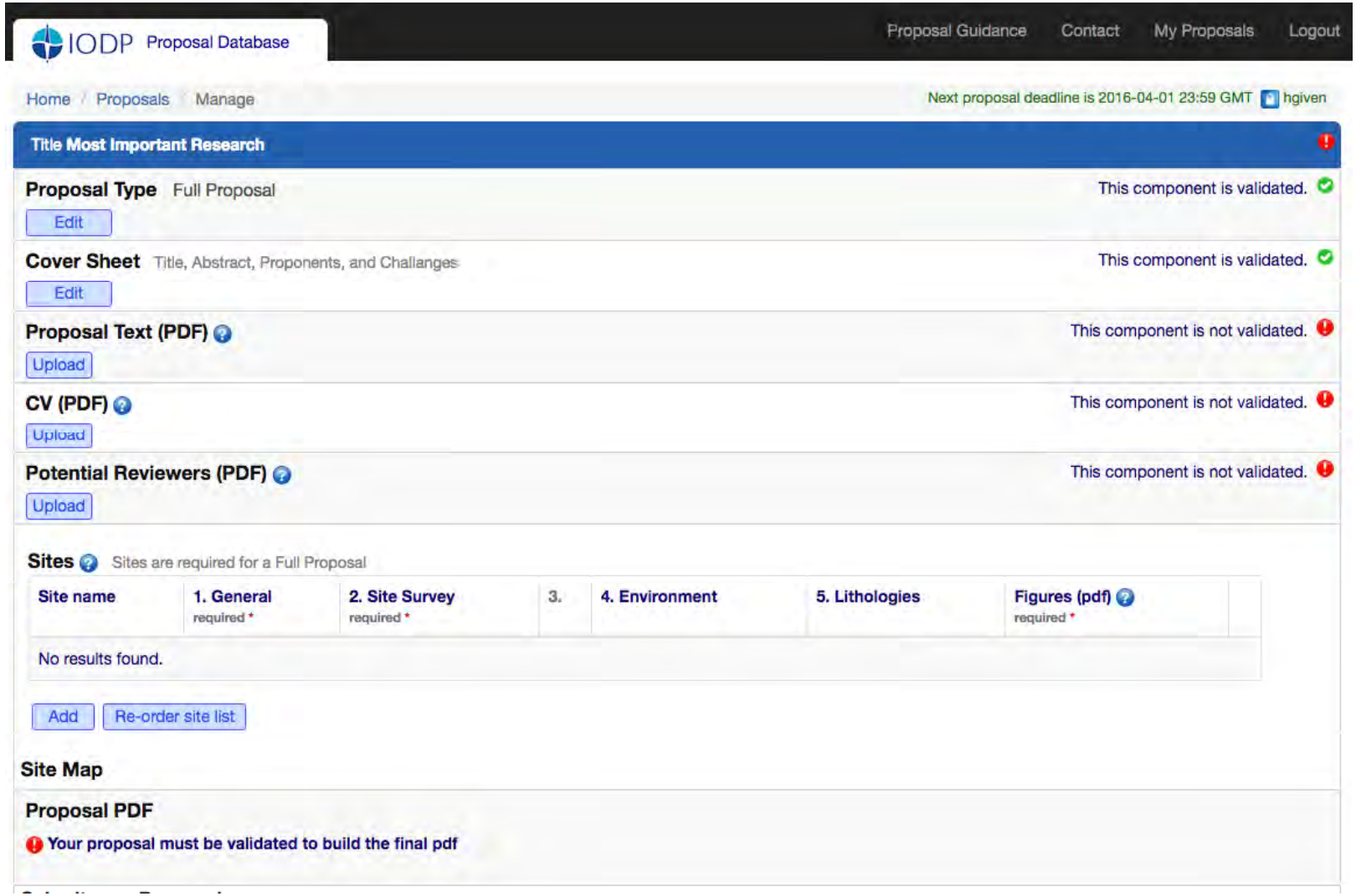
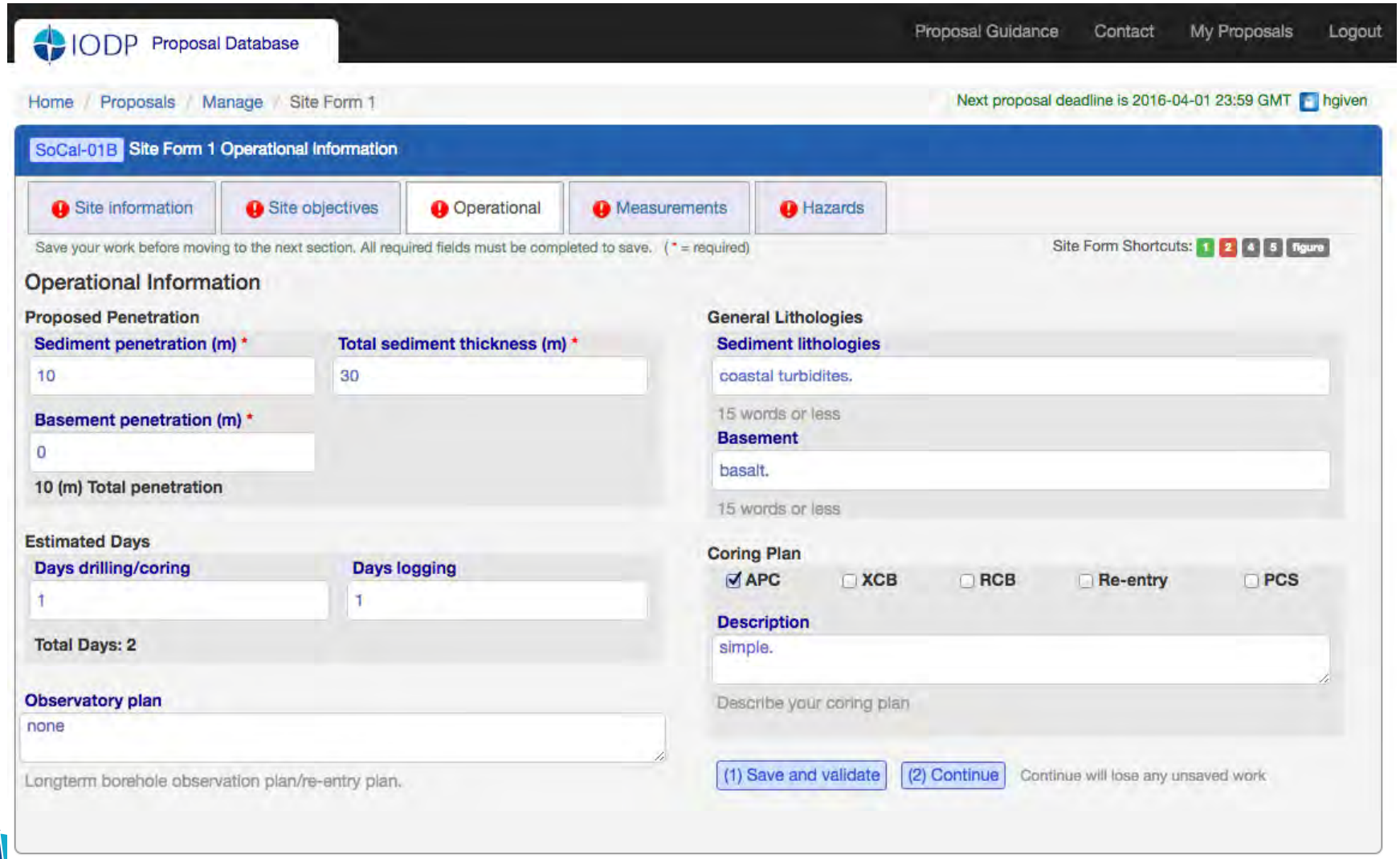
Work on Many Proposals at Once



Guides the creation of proposal pieces



Writes site parameters to a database



Minimalist new iodp.org

Introducing new features

You are here: Home › Proposals › View Active Proposals

Active Proposals

IODP proposals are considered Active when they are under review by the Science Evaluation Panel (SEP) or being considered for scheduling by the program's Facility Boards (JRFB, EFB, CIB). Full proposals under review by SEP may only be revised once.

This table is updated after SEP reviews are released and each Facility Board meeting. **Access updated proposal statistics graphs and pie charts.**

Access Proposal Cover Sheets

Proposal Number	Type	Short Title	Lead Proponent	Platform	Ocean Basin	Stage
892	Full	Reykjanes Mantle Convection	Parnell-Turner	JOIDES Resolution	Atlantic	SEP
890	Pre	Walvis Ridge Hotspot	Sager	JOIDES Resolution	Atlantic	SEP
888	Full	Aleutian Basin Formation	Stern	JOIDES Resolution	Pacific	SEP
887	CPP2	Gulf of Mexico Methane Hydrate	Flemings	JOIDES Resolution	Atlantic	SEP
886	Pre	NW Pacific Bend-Fault Hydrology	Morishita	Chikyu	Pacific	SEP
885	Pre	Ulleung Basin Gas Hydrates	Bahk	JOIDES Resolution	Pacific	SEP
882	Pre	Brazilian Equatorial Margin Tectonics	Bezerra	JOIDES Resolution	Atlantic	SEP
879	Full	Corinth Active Rift Development	McNeill	Mission Specific Platform	Mediterranean	HB
878	CPP	South China Sea Rifting	Sun, Z.	JOIDES Resolution	Pacific	Exp367/368
876	Pre	Bend-Fault Serpentinization	Phipps-Morgan	JOIDES Resolution and Chikyu	Pacific	SEP

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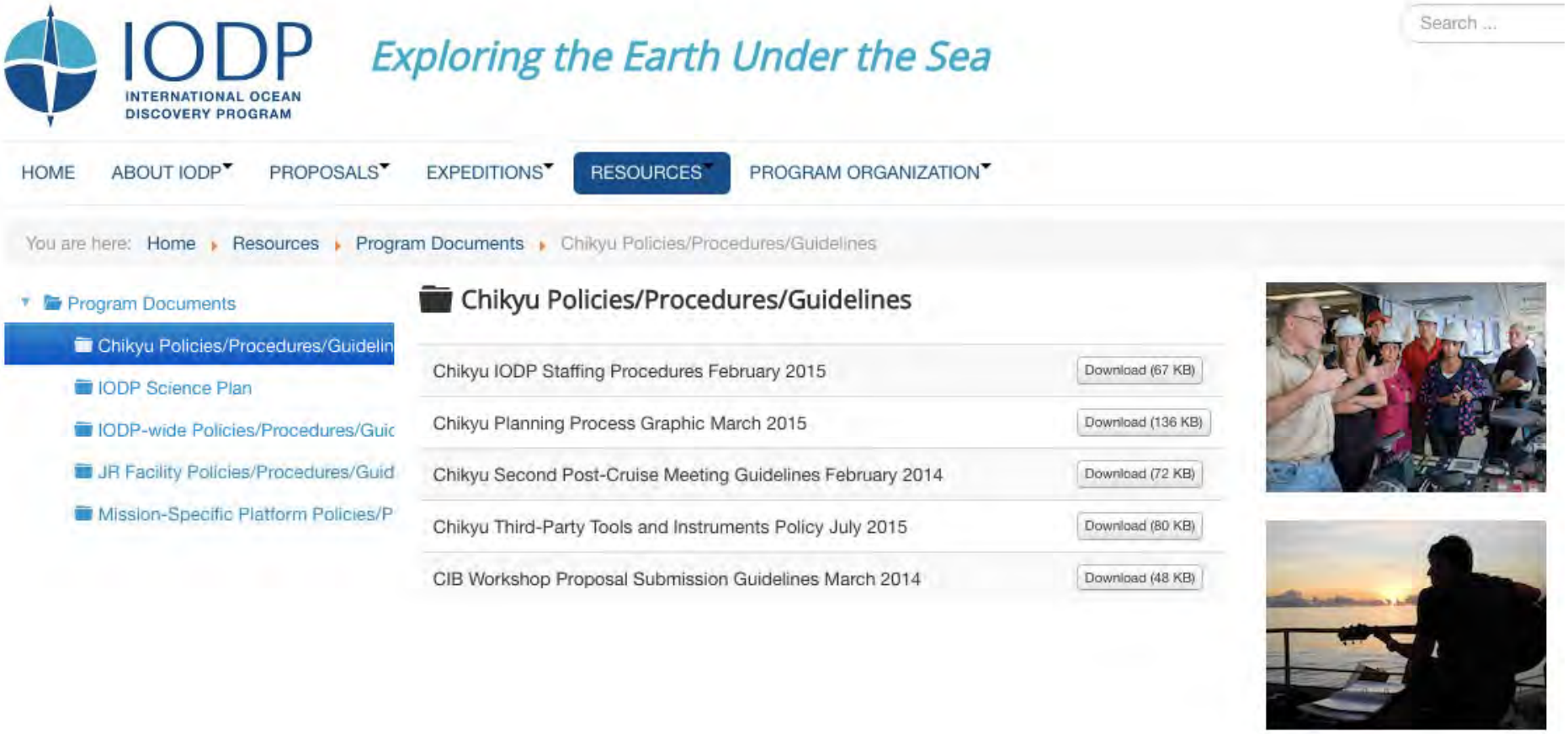
Using default Joomla tools



FY2107 Annual Program Plan

- Under development now
- Improve proposal handling / archive
- Maintain consistent policy documents
- Create SSDB “Submission package” concept
- Add expertise in site characterization data

IODP proposals at the CIB, March 2016

At CIB:

Number	Type	Short Title	Lead Proponent	Affiliation	Platform	
537	CDP7	Costa Rica Seismogenesis Project Overview	von Huene	USA	Chikyu+JR	
537B	Full4	Costa Rica Seismogenesis Project Phase B	Ranero	ECORD: Germany	Chikyu	
603	CDP3	NanTroSEIZE Overview	Kimura	Japan	Chikyu	
603C	Full	NanTroSEIZE Phase 3: Plate Interface	Tobin	Japan	Chikyu	
603D	Full2	NanTroSEIZE Observatories	Screaton	USA	NR-Chikyu	
698	Full3	Izu-Bonin-Mariana Arc Middle Crust	Tatsumi	Japan	Chikyu	
781	MDP	Hikurangi subduction margin	Wallace	ANZIC: New Zealand	Chikyu+JR	
781B	Full	Hikurangi: Riser	Wallace	USA	Chikyu	
865	Full	Nankai Trough Temperature Limit	Hinrichs	ECORD: Germany	NR-Chikyu	

At SEP:

707	CDP3	Kanto Asperity Project: Overview	Kobayashi	Japan	JR+Chikyu	
805	MDP	MoHole to the Mantle	Umino	Japan	Chikyu	
835	Full2	Japan Trench Tsunamigenesis	Kodaira	Japan	NR-Chikyu	Ext Rev
857	MDP2	DREAM: Mediterranean Salt Giant	Camerlenghi	ECORD: Italy	Chikyu+JR	
871	CPP	Lord Howe Rise Crustal Evolution	Heap	ANZIC: Australia	Chikyu	REVISE
876	Pre	Bend-Fault Serpentinization	Phipps Morgan	ECORD: UK	JR+Chikyu	
886	Pre	NW Pacific Bend-Fault Hydrology	Morishita	Japan	Chikyu	

Deactivations since last CIB:

857A	pre	DREAM: Deep-Surface Connection	Rabineau	
880	APL2	Experiment: Drilling parameters for Lithology	Moe	Resubmit after workshop
782	Pre	Kanto Asperity Project: Plate Boundary Deformation	Yamamoto	Dormant

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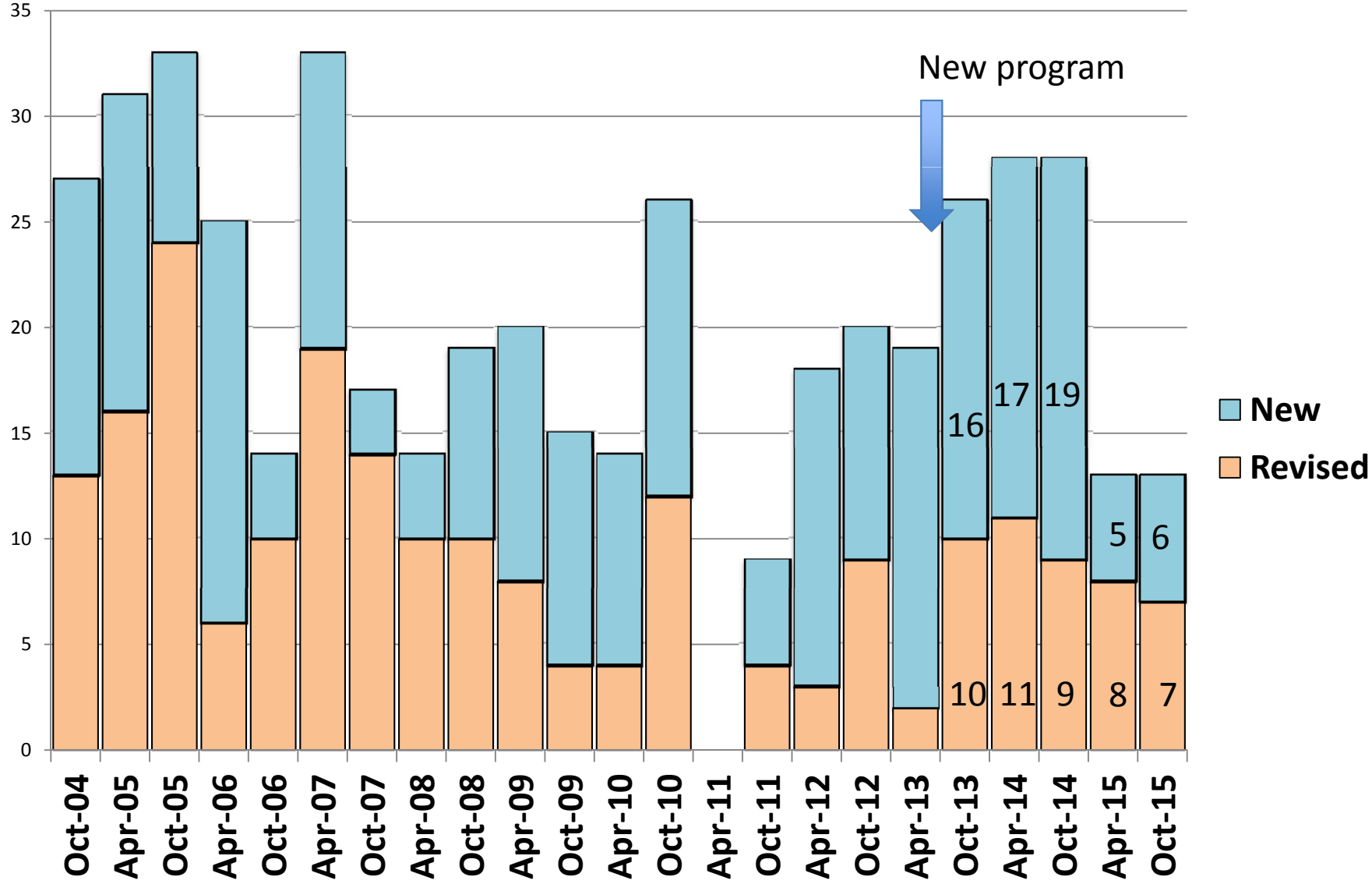
Proposal Submission History



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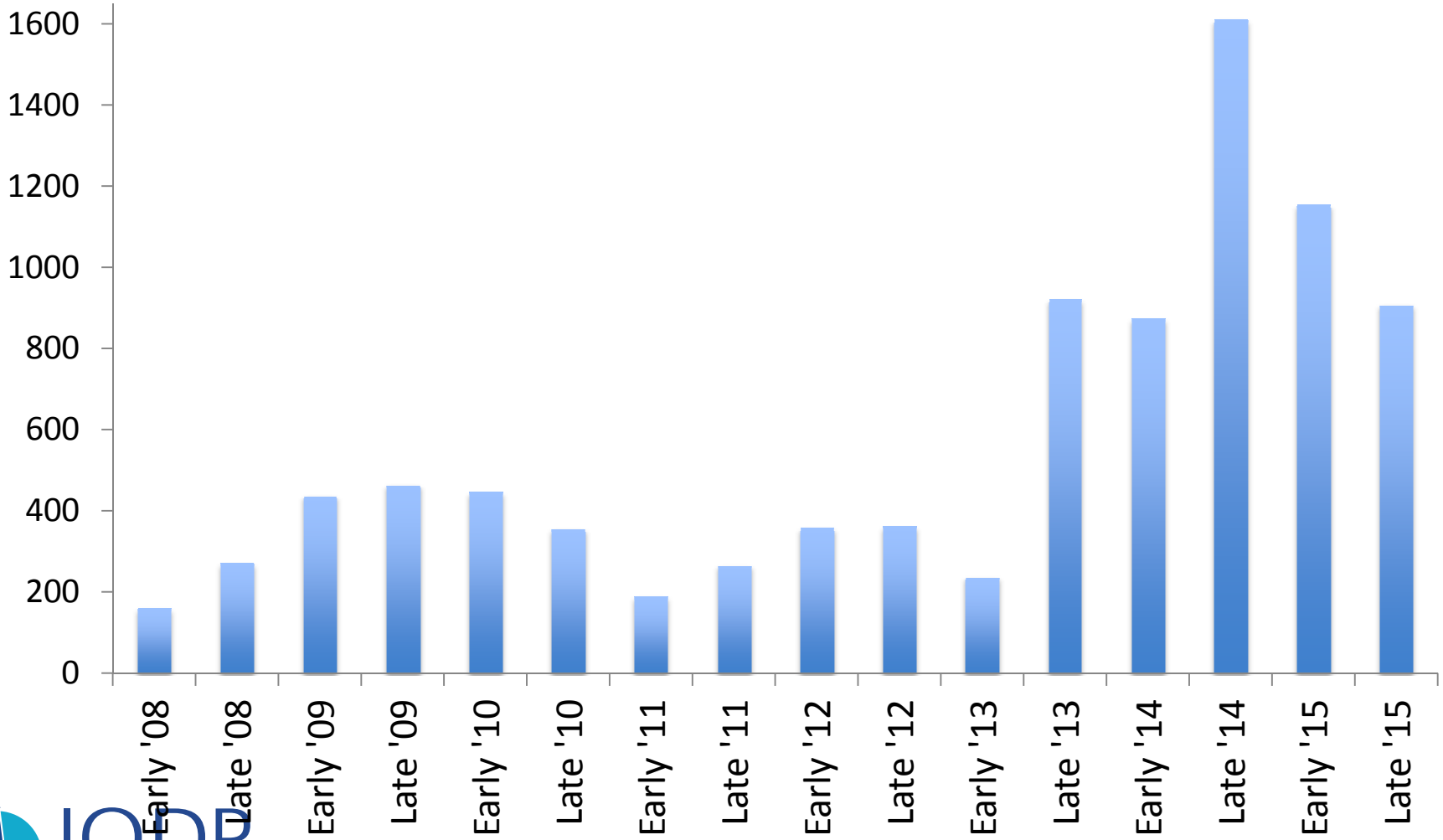
Increase in data file submissions



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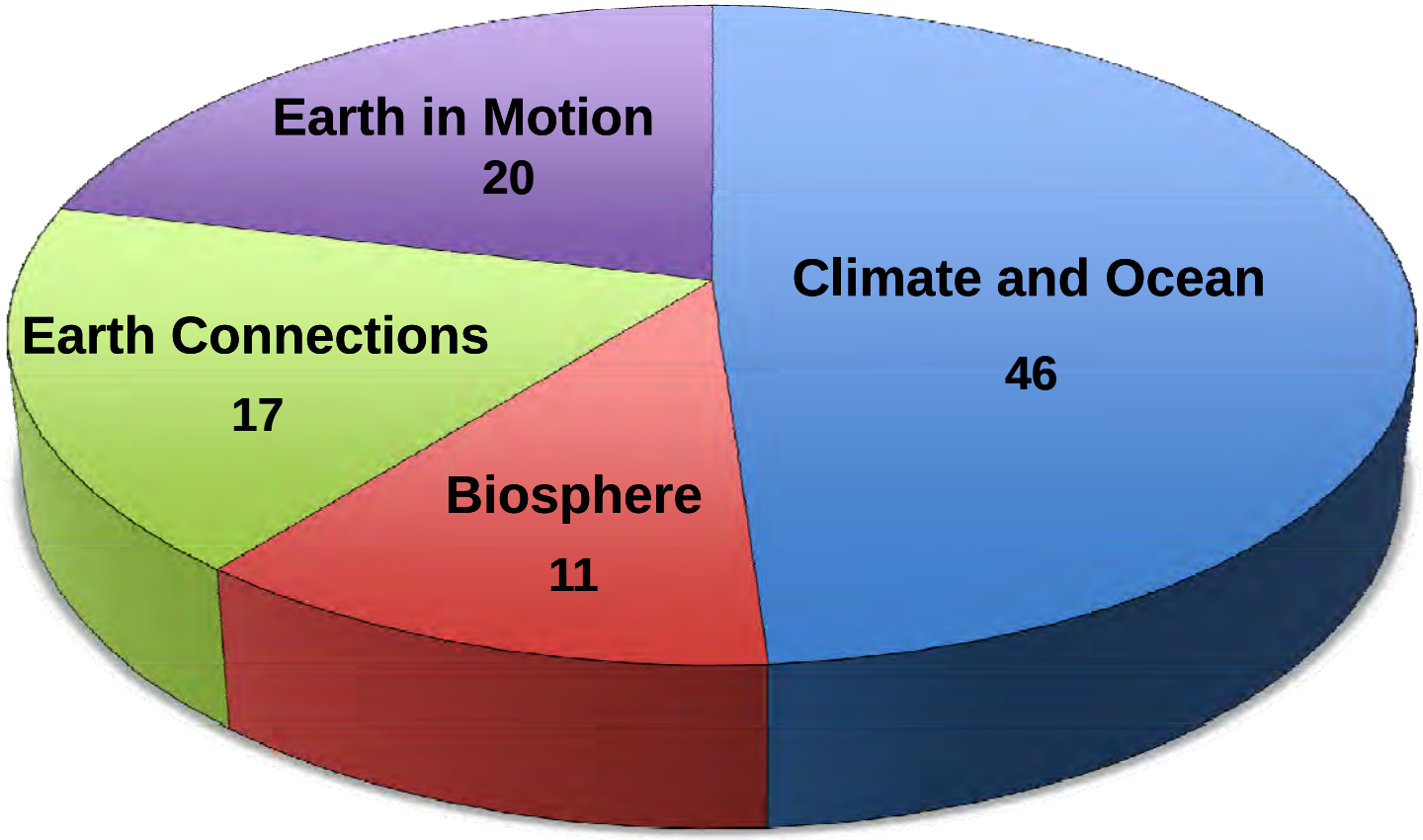
Active proposals: 94

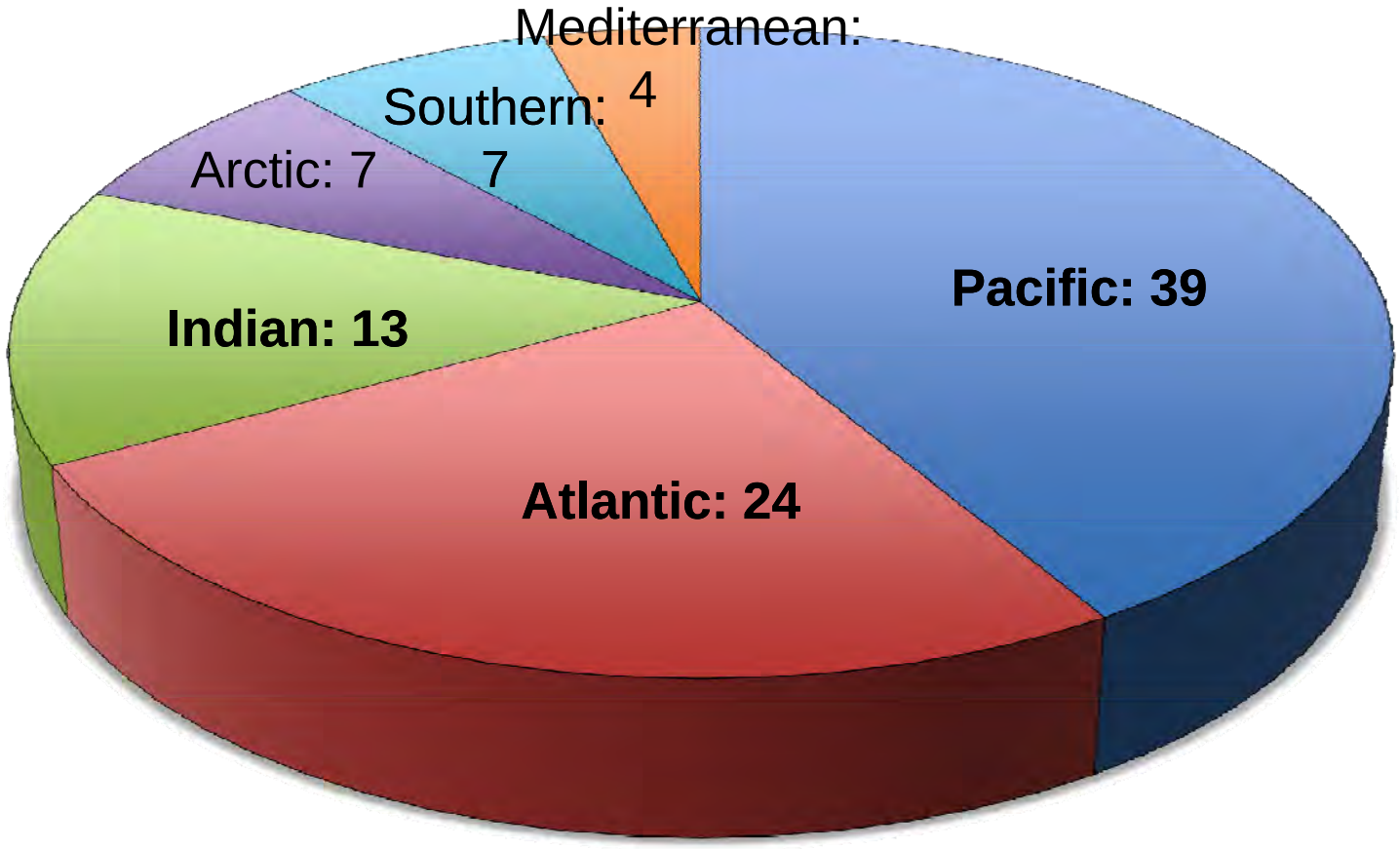
by science plan themes



As of 2 February 2016

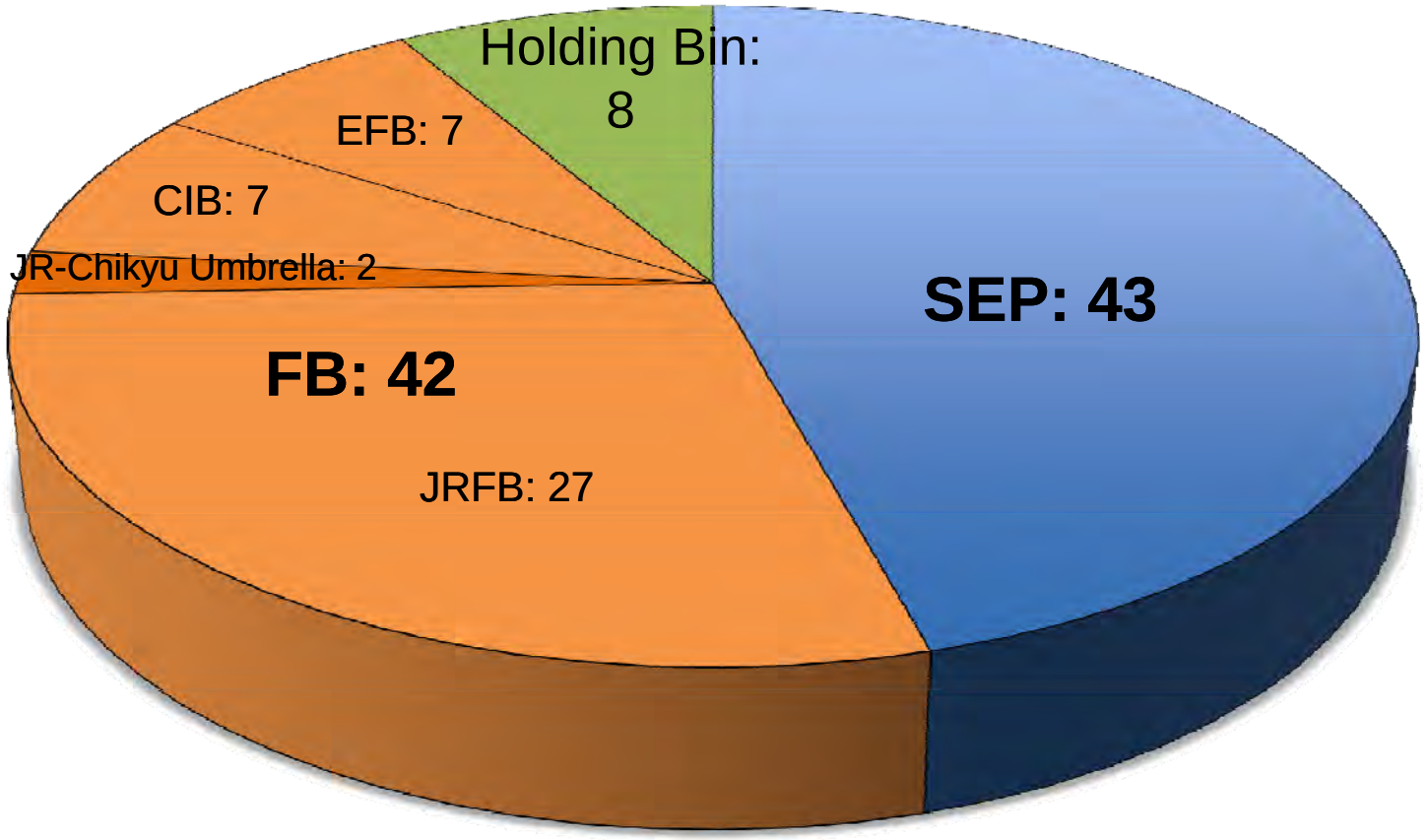
Active proposal status: 94

by target ocean



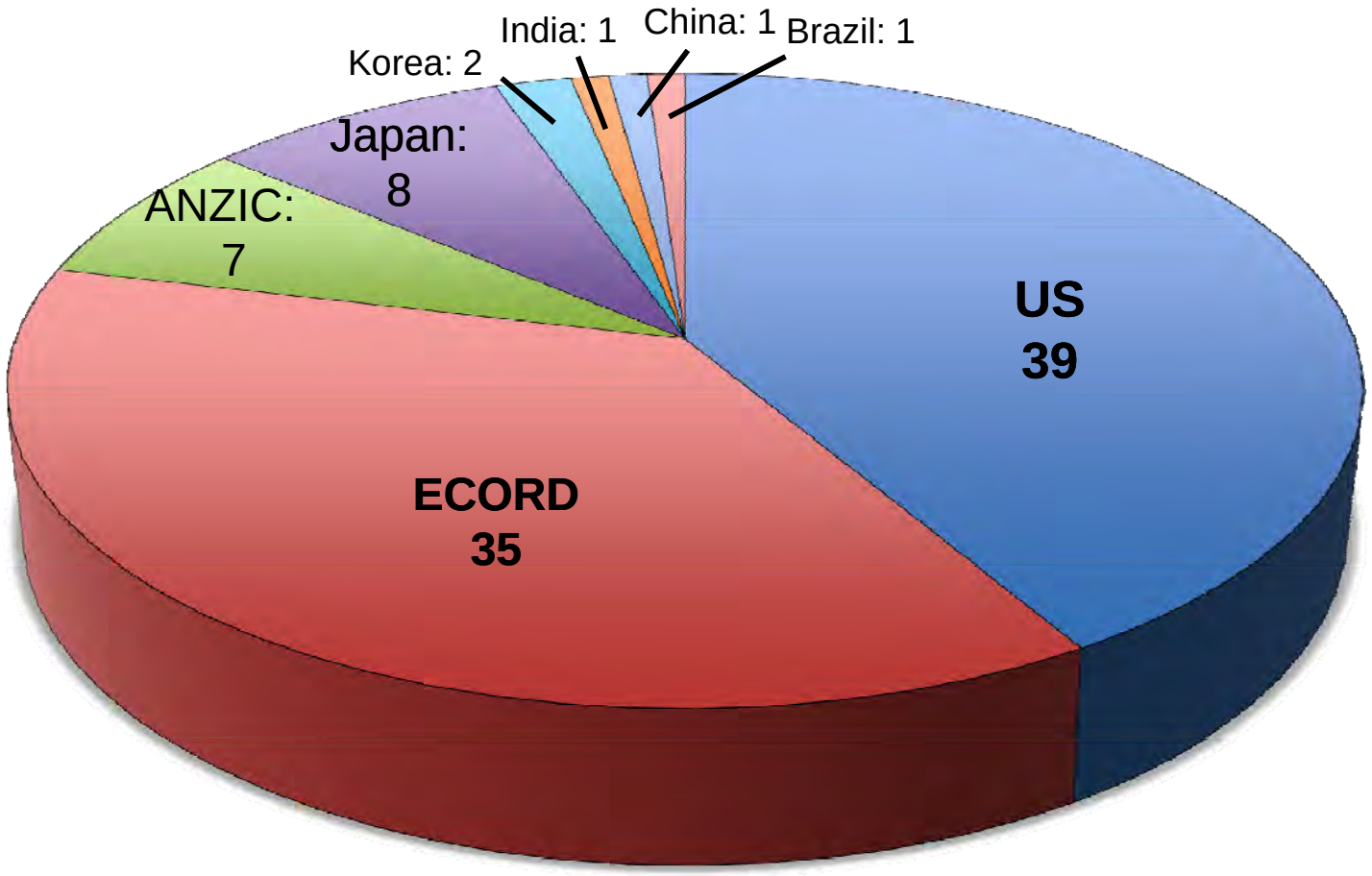
As of 2 February 2016

Active proposal status: 94
by review stage



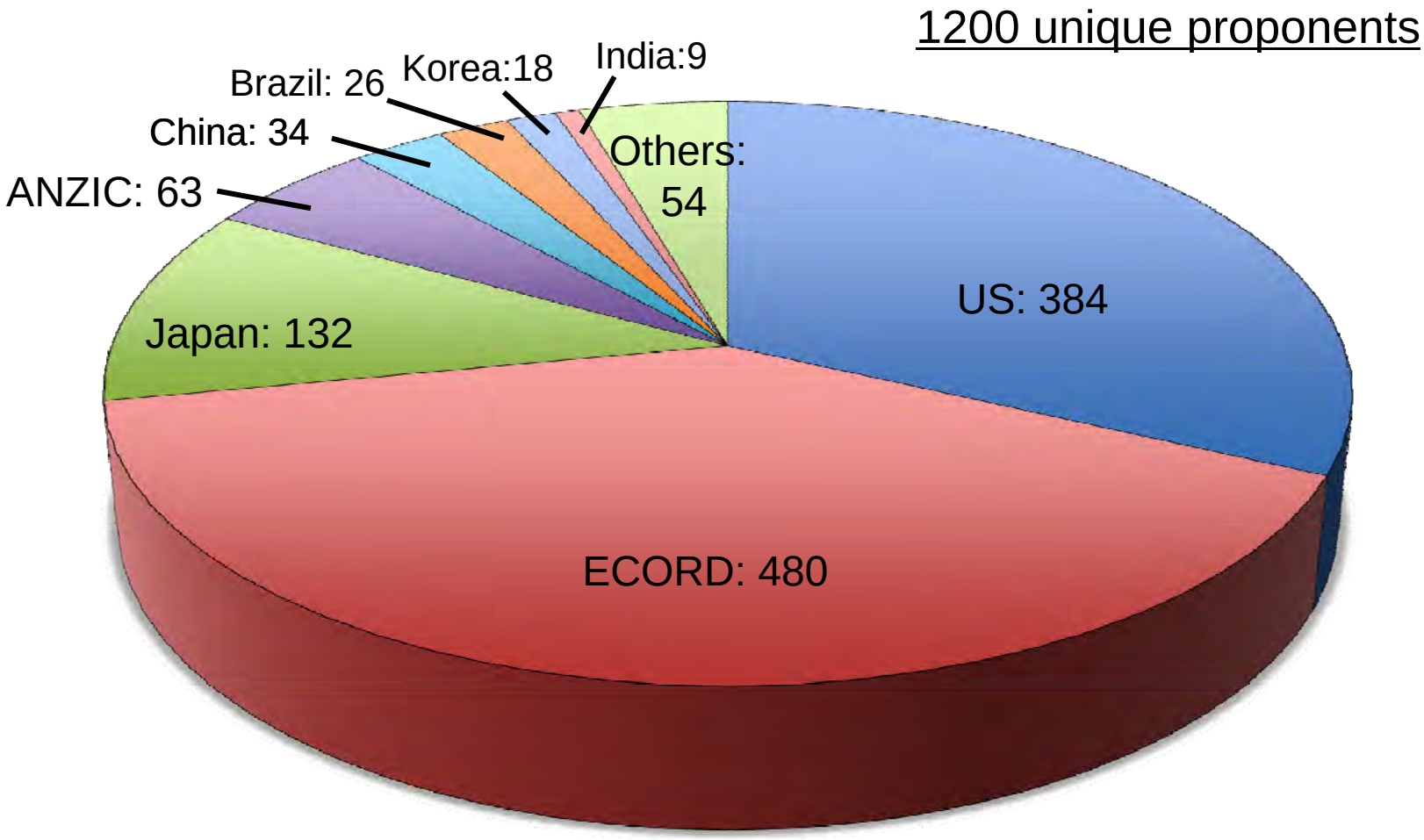
As of 2 February 2016

Active proposals: 94
by lead proponent's member affiliation



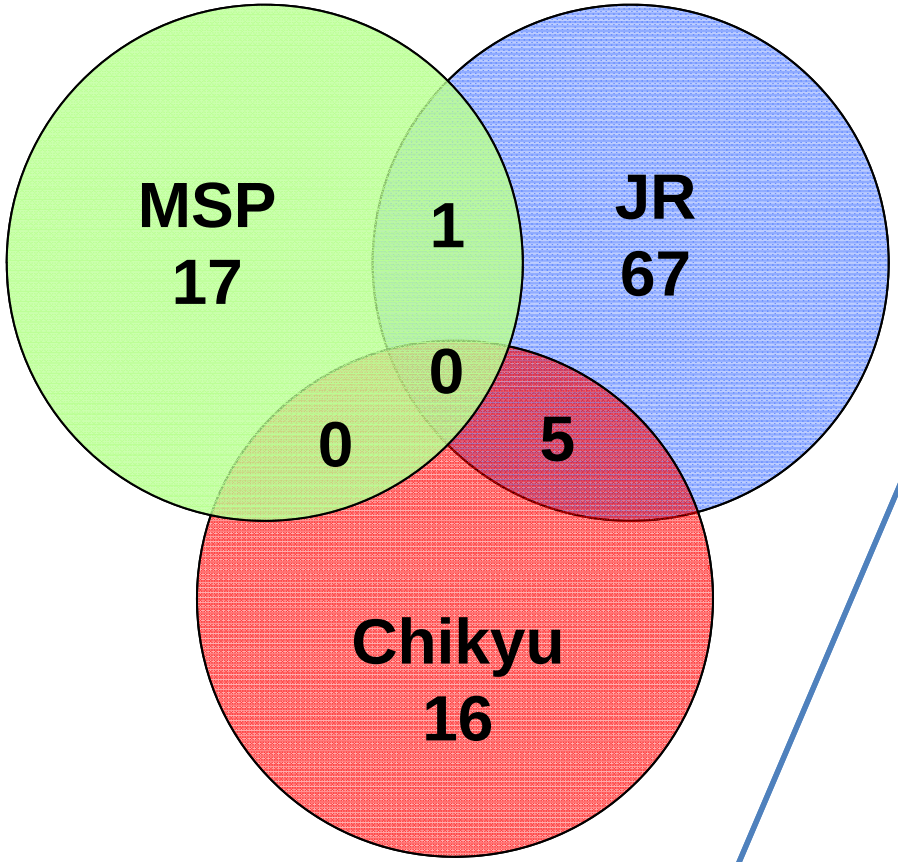
As of 2 February 2016

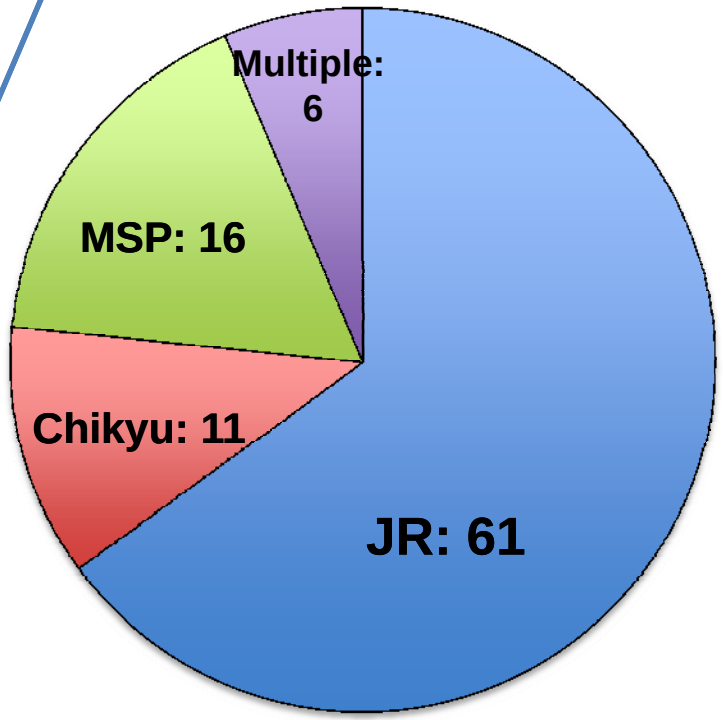
Active proponent distribution



As of 12 February 2016

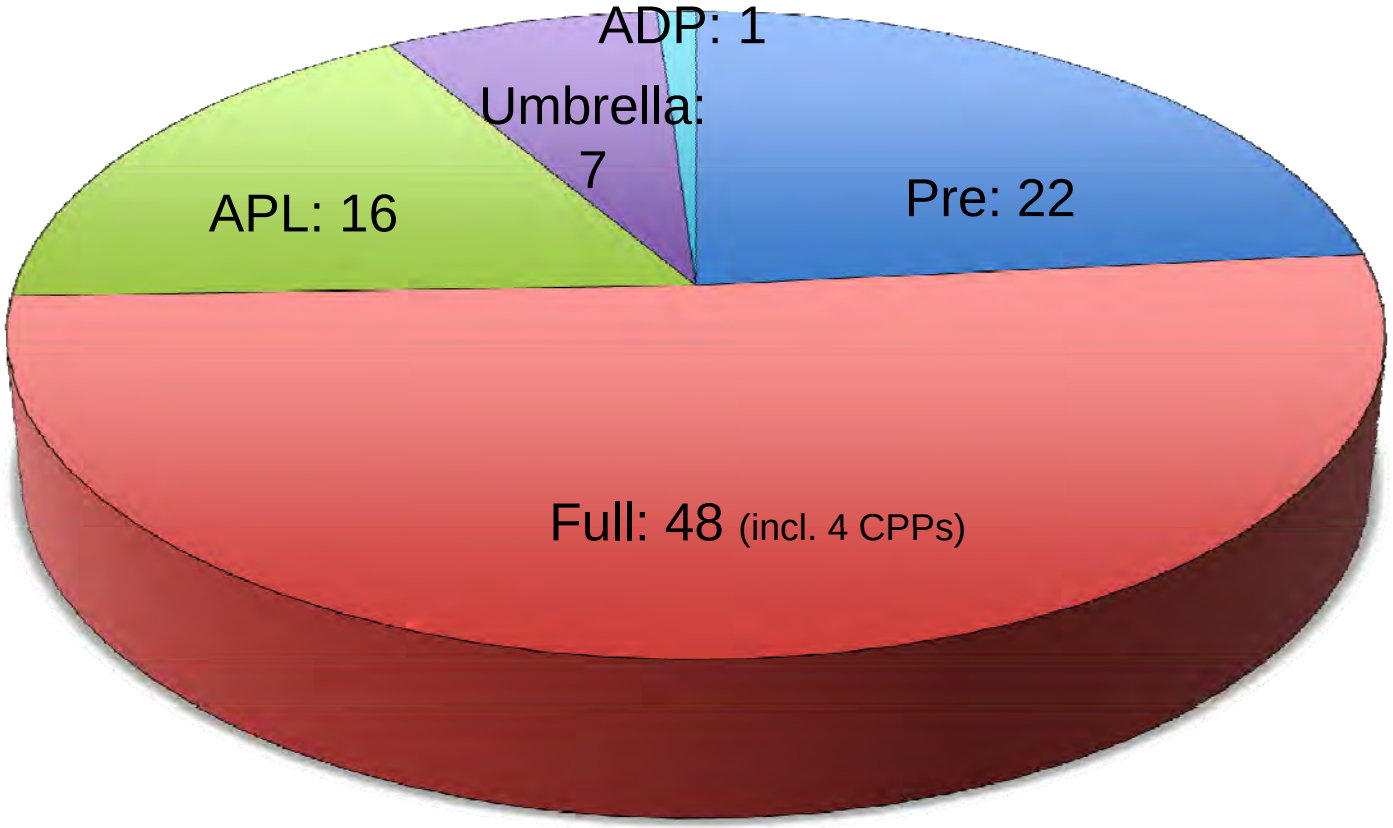
Drilling Platforms for 94 Active Proposals





As of 2 February 2016

Active proposals: 94
by proposal category



As of 2 February 2016

- **Chikyu IODP Board – March, 2016**

Proposals at CIB

- 537B-Full4: CRISP Stage 2
- 603C-Full: NanTroSEIZE Drilling and Observatory Phase 3
- 603D-Full2: NanTroSEIZE Observatories
- 698-Full3: Continental Crust Formation at Intra-Oceanic Arc
- 781B-Full: Northern Hikurangi Subduction Margin
- 865-Full: Nankai Trough Biosphere Temperature Limit

537B-Full4 Costa Rica Seismogenesis Project – Stage 2

- **Proponents: Cesar R. Ranero, C. Marone, et al.**
- CRISP Program B: The transition from stable to unstable slip at erosional convergent plate boundaries
- Objective: a detailed investigation of subduction earthquake processes and to sample and monitor the plate boundary where temperatures range ~100-200°C.

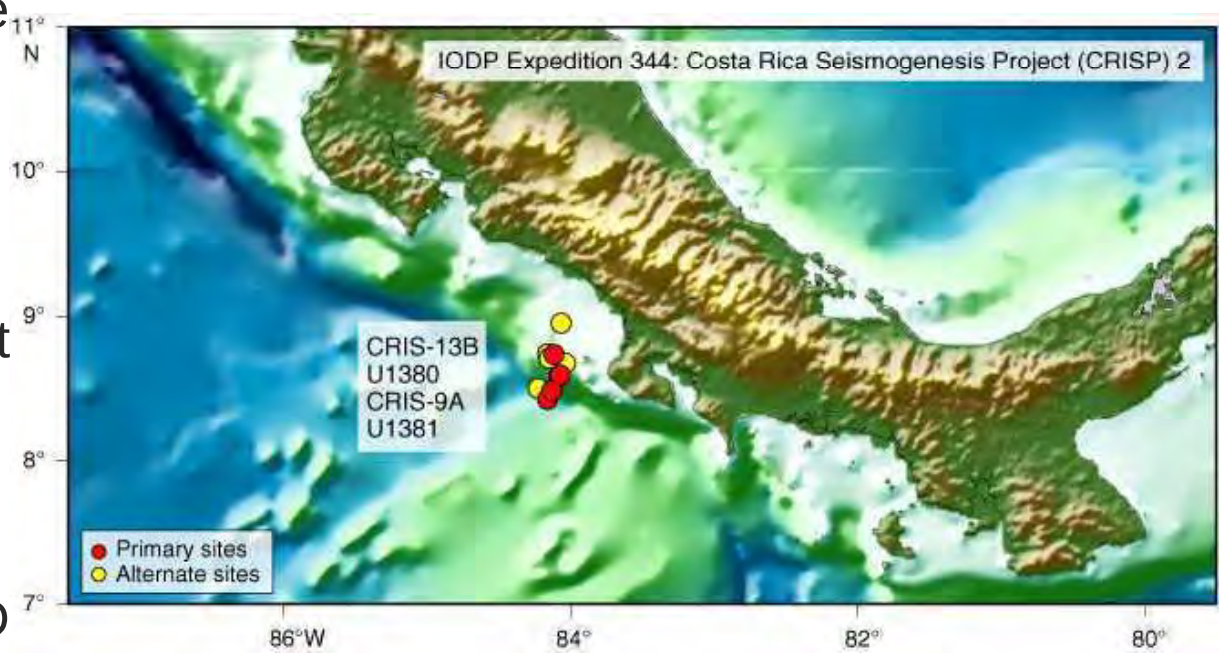
Riser drilling to:

1) Quantify effective stress and plate boundary migration

2) Determine the structure and fault mechanics of an erosional convergent margin and identify the processes that control the updip limit of seismicity.

3) Constrain how fluid-rock interactions affect seismogenesis.

4) Obtain physical properties of a 3D volume that spans the seismogenic zone.



537B-Full4 Costa Rica Seismogenesis Project – Stage 2

A principal objective of CRISP Program B **is to reach the plate boundary**, observe physical conditions, install CORKS, sample fault zone material (rocks and fluids) at two sites, and monitor seismicity and pressure before, during and after slip events.

Site Name	Position	Water Depth (m)	Penetration (m)			Brief Site-specific Objectives
			Sed	Bsm	Total	
CRIS-03A	84° 4.77852 W 8° 35.23956 N	530	700	2850	3550	Drilling and monitoring the plate boundary and subduction channel in the area of transition between aseismic and seismic slip and temperatures between 100°-150°C, updip, but near the end of the seismogenic zone.
CRIS-06A	84° 9.77076 W 8° 45.16602 N	500	1920	4080	6000	Drilling and monitoring the plate boundary and subduction channel in the seismogenic zone at temperatures between 150°-<200°C.

537B-Full4 Costa Rica Seismogenesis Project – Stage 2

Review Dates: Aug. 2004, Feb. 2005 (SSP); May 2005 (SSSEP); 2006, 2007, 2008 (SPC); ranked #7 out of 26 (Tier 1) and forwarded to CIB

Site Characterization – SSP Consensus (of Full2 proposal)

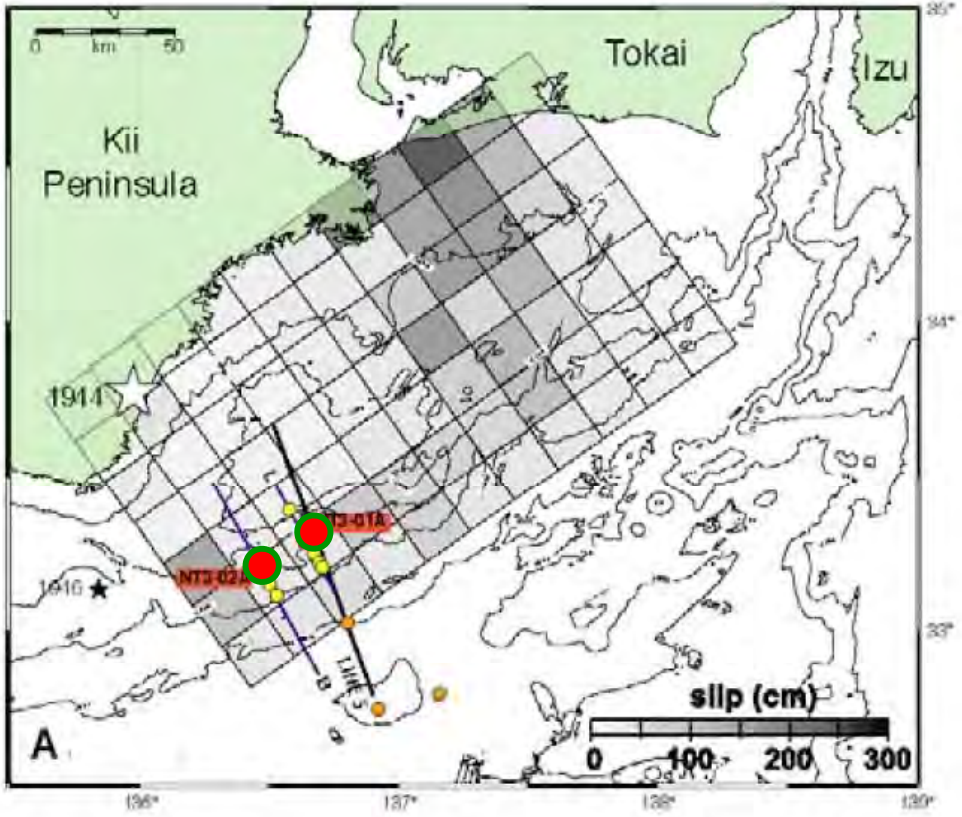
- The goal of obtaining physical properties of a 3D volume that spans the seismogenic zone….will require acquisition of a 3D MCS data set, which spans the aseismic to seismic transition.
- Further documentation of the velocity model at the target location.
- Need better definition of the updip limit of the seismogenic zone through further OBS and GPS studies.
- ***SPC noted in 2011:*** Pending site selection, to be decided by proponents and the operator, will incorporate the interpretation of newly acquired 3D seismic data, as well as the integration of results from **CRISP-A** drilled to date.
- ***CRISP-A1 (Exp. 334) and CRISP-A2 (Exp. 344) were drilled in 2011, 2012.***
- **CIB may want to request an Addendum, integrating the results from CRISP-A1 and -A2 and, if so desired, ask SEP to review.**

603C-Full: NanTroSEIZE Drilling and Observatory Phase 3

• Proponent(s): **Kiyoshi Suyehiro, Harold Tobin et al.**

Objective: To drill across the plate Interface into the Philippine Plate – intersect the mega-splay and decollement and study progressive change in fault properties.

Riser drilling.



The goal of this proposal is to address two key questions by a combination of logging, coring, down-hole experiments, and long-term monitoring:

- (1) What controls the nature of fault slip and its spatial variability (i.e. the updip transition from aseismic to seismogenic slip)?
- (2) What processes control temporal changes in slip behavior on a given fault?

603C-Full: NanTroSEIZE Drilling and Observatory Phase 3

- NT3-01A (primary): mega-splay and mega-thrust, 1950 m water depth, 6000 m sed., 200 m basement penetration
- NT3-02A (alternate): mega-splay and mega-thrust, 2100 m water depth, 6000 m sediments and 200 m basement penetration
- Proposed activities: (1) drilling, LWD, casing of a main hole - with drillstem tests performed at casing set points, (2) sidetrack coring hole w/ continuous coring from 4000-6200 mbsf, (3) well tests in perforated casing and installation of an observatory system for continuous monitoring of pore fluid pressure, temperature, strain, tilt, and seismicity.

Site Name	Position	Water Depth (m)	Penetration (m)			Brief Site-specific Objectives
			Sed	Bsm	Total	
NT3-01A	33°17.6'N, 136°38.6'E	1950	6000	200	6200	Study the progressive change in the fault properties by intersecting the splay fault at ~4.5km and the seismogenic fault at 5.8 to 6km depth
NT3-02A	33°12.9'N, 136°27.4'E	2100	6000	200	6200	Alternate site for NT3-01A

603C-Full: NanTroSEIZE Drilling and Observatory Phase 3

- Review Dates: SSEP and External review in 2004; SSP in 2004, 2005

Ranked #1 of 9

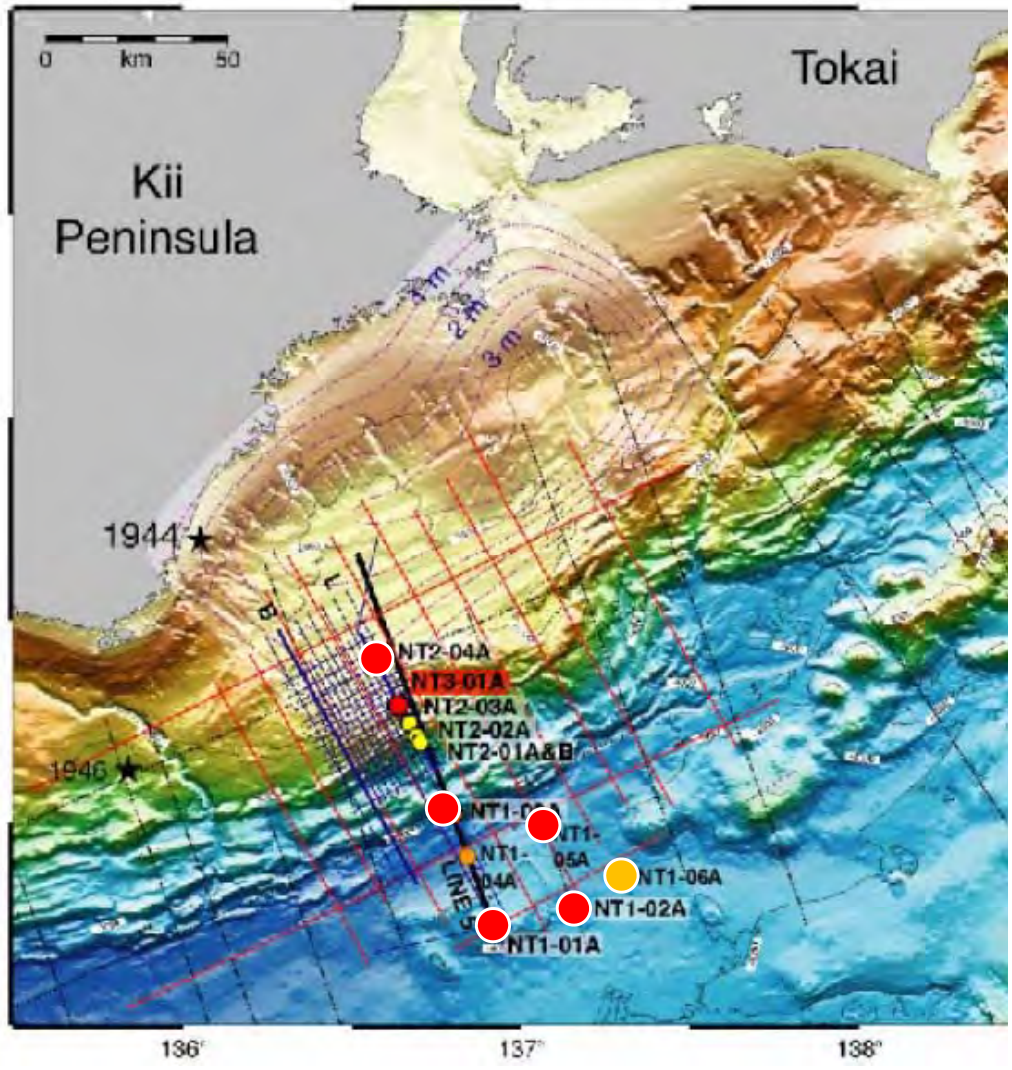
SSP Consensus (2005):

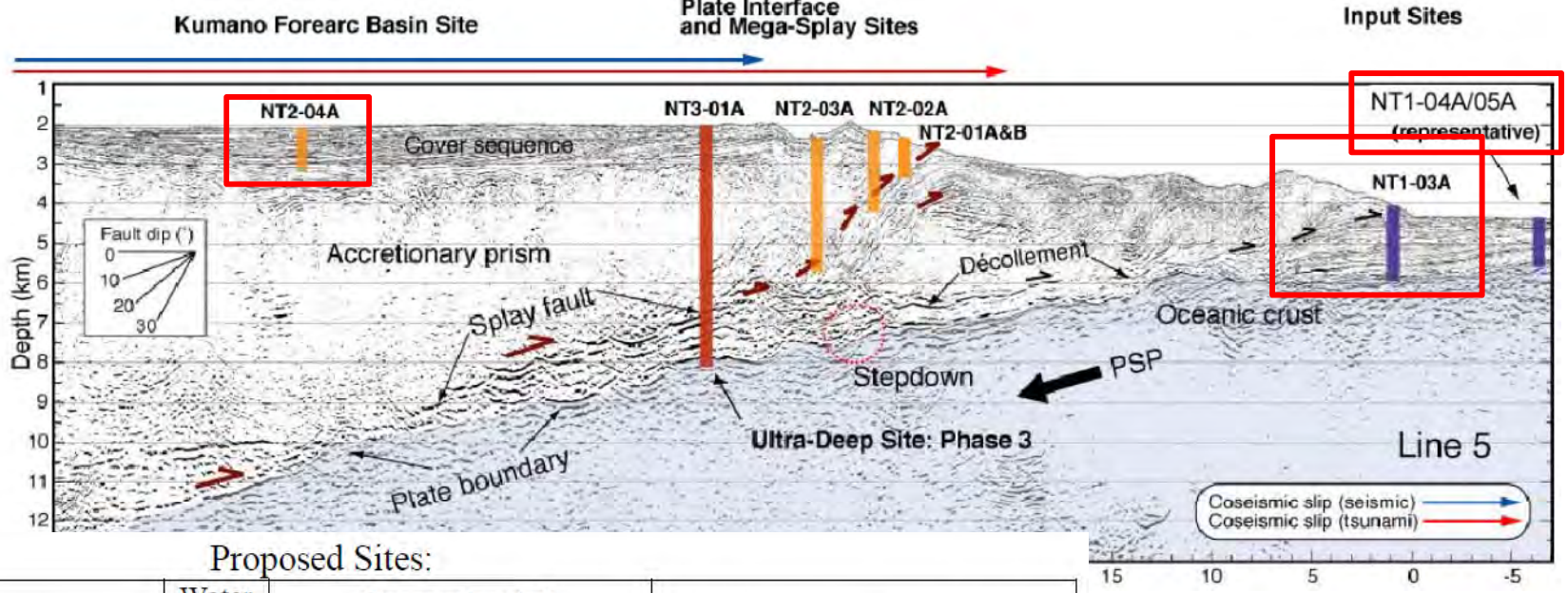
- **NT3-01A** classified as 2A (substantial items missing but believed to exist)
- **NT3-02A** classified as 2B (substantial items missing, not believed to exist, but cruise is scheduled)
- We recommend the proponents acquire 3D seismic data (done, but not reviewed) and show crossing orthogonal seismic sections (in depth) imaging the targets (mega-splay, decollement, top basement)
- Reservations regarding the proposed alternate site NT3-02A:
  - The p-wave velocity model (and thus all estimates of target depth) is less well constrained than the primary site, as the OBS velocity model is situated approximately 30 km from Line B.
  - Heat flow data would have to be recompiled for the western transect.
- **Nothing new to report since last CIB meeting.**

603D-Full2: NanTroSEIZE Observatories

- Proponent(s): E. Screaton, M. Underwood, et al.
- Objective: to map background properties of the incoming sediment and crust and to monitor temporal changes associated with the seismic cycle.

1) Monitor differences in hydrologic properties and fluid-flow signals where basement highs versus plains are subducting.
2) Determine the effects of excess pore pressure on early-subduction fault dynamics.
3) Compare hydrologic properties and fluid-flow signals in turbidite sand bodies, effects on drainage of deeper sediments, and impacts on plate boundary strength.
(4) Monitor hydrologic properties within the frontal décollement zone for comparison against properties and flow in subducted sand lenses.
(5) Determine how basement fluid flow influences patterns of heat flow.
(6) Monitor micro-seismicity, strain, and fluid flow response to tectonic events.





Proposed Sites:

Site Name	Position	Water Depth (m)	Penetration (m)			Brief Site-specific Objectives
			Sed	Bsm	Total	
NT1-01A	Lat: 32° 44.8878'N Long: 136° 55.0236'E	3540	460m	40m	500m	One CORK hole with screened interval in position equivalent to turbidites and sealed basement. Companion CORK hole with fully cased sediment & open basement.
NT1-02A	Lat: 32° 47.4996'N Long: 137° 09.2784' E	4210	730m	40m	770m	One CORK hole with screened interval in turbidites and sealed basement. Companion CORK hole with fully cased sediment and open basement.
NT1-03A	Lat: 33° 01.23258'N Long: 136° 47.9485'E	4125	1200m	0m	1200m	CORK monitoring of décollement and turbidites; will not extend to basement. Monitor micro-seismicity and strain.
NT1-05A	Lat: 33° 01.3482'N Long: 137° 3.3432'E	4310	1528m	40m	1568m	One CORK hole with screened intervals in turbidites and sealed basement. Companion CORK hole with fully cased sediment and open basement.
NT1-06A	Lat: 32° 51.35'N Long: 137° 17.58'E	4200	990m	40m	1030m	Alternate to NT1-02A. One CORK hole with screened interval in turbidites and sealed basement. Companion CORK hole with fully cased sediment and open basement.
NT2-04A	Lat: 33° 23.4'N, Long: 136° 34.6'E	1990	1400m forearc basin	40m acoustic basement	1440m	One CORK hole with screened intervals in sediments. Monitor micro-seismicity and strain.

5 primary sites
(3 with companion holes)
1 alternate
8 CORKs

603D-Full2: NanTroSEIZE Observatories

Review Dates: Feb. 2005 (SSP); March 2006 (SCP); SCP (2007)

- Ranked #2 out of 17 and forwarded to CIB

SSP Consensus (2005):

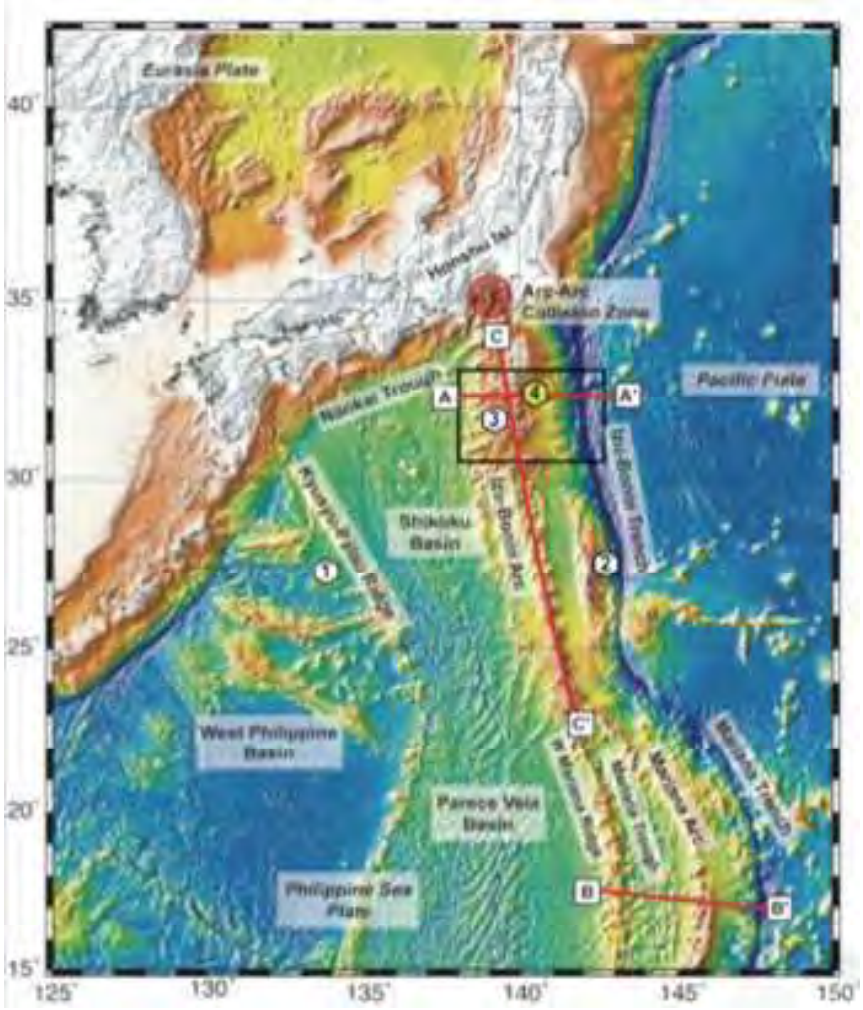
- All sites are 1A or 1B (few items missing)

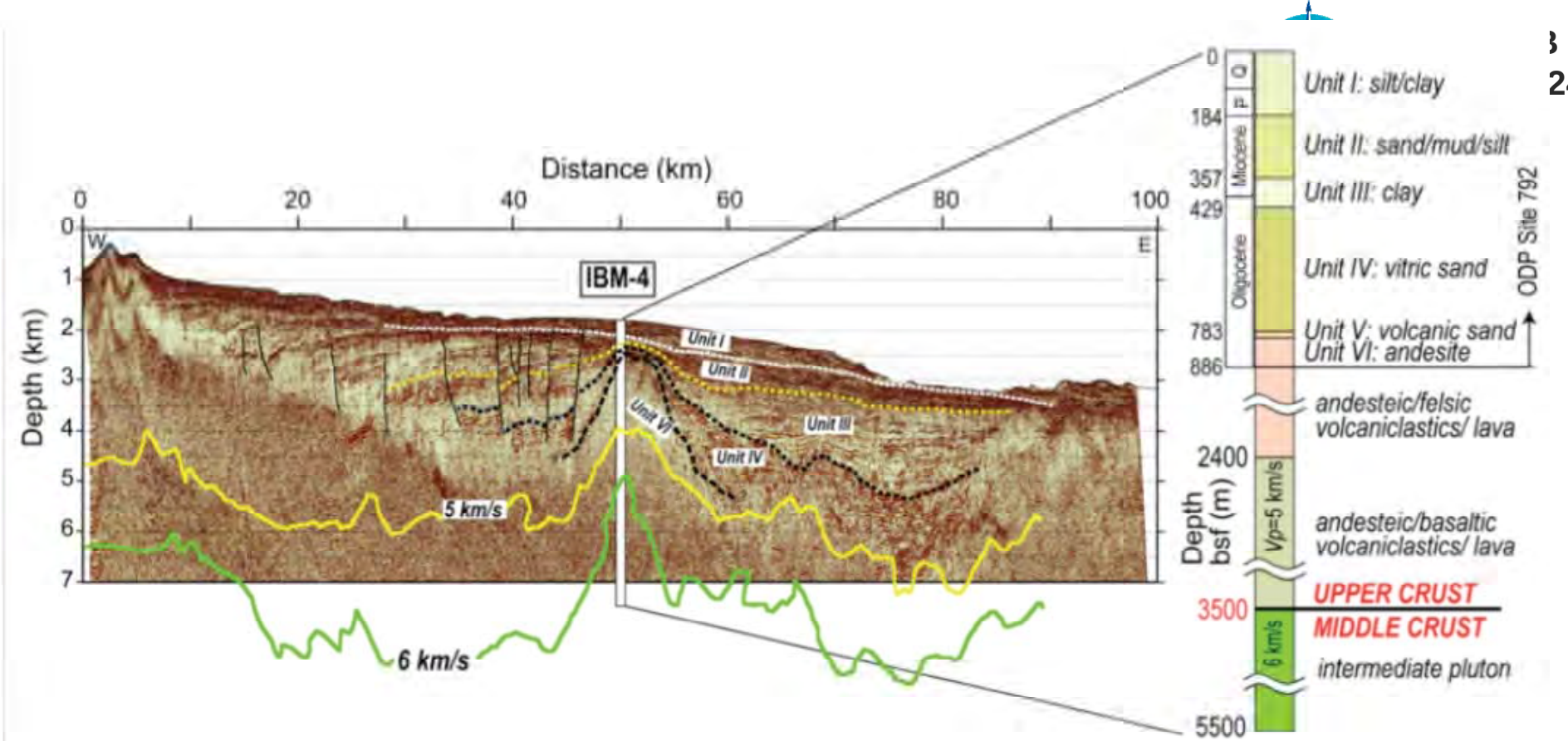
- The proponents are encouraged to submit to the Site Survey Data Bank: 1) migrated MCS lines for NT1-04A, -05AB, & NT2-04A, 2) cross-line (strike) should be acquired through proposed NT1-03A, 3) well-annotated base map, 4) and the interpretive mapping results (as noted in the August 2004 SSP review)

698-Full3: Continental Crust Formation at an Intra-Oceanic Arc

- Lead Proponent: Yoshiyuki Tatsumi
- This proposal is part of the Izu-Bonin-Mariana (IBM) project, which aims to answer questions of the long-term growth of continents.
- Riser drilling

Objectives
(1) to identify the structure and lithologies of the upper and middle crust,
(2) to test seismic models of arc crustal structure,
(3) to constrain the petrologic and chronological relationship of the middle crust to the overlying upper crust,
(4) to establish the evolution of arc crust by relating this site with other regional drill sites and exposed arc sections, and
(5) to test competing hypotheses of how the continental crust forms and evolves in an intra-oceanic arc setting.





Site Name	Position	Water Depth (m)	Penetration (m)			Brief Site-specific Objectives
			Sed	Bsm	Total	
IBM-4	32°24'N 140°23'E	1798	800	4700	5500	2000m penetration into the middle crust. 886 m of the necessary sampling at the IBM-4 Site has already been done by ODP Leg 126 Site 792

Mid-crustal layer is shallow; heat flow is low.
Will sample volcanic edifice.

698-Full3: Continental Crust Formation at an Intra-Oceanic Arc

- Review date: 29 January 2010 (SSP); Dec. 2011 (PEP)

- PEP 2011 stated: *It is the opinion of the PEP that this proposal is ready for drilling as all site characterization data have been obtained, the site selection strategy is well developed (and criticisms of it have been addressed), and the hypotheses to be tested show good traceability from the objectives, to the lithologies that will be drilled and the logging plan.*

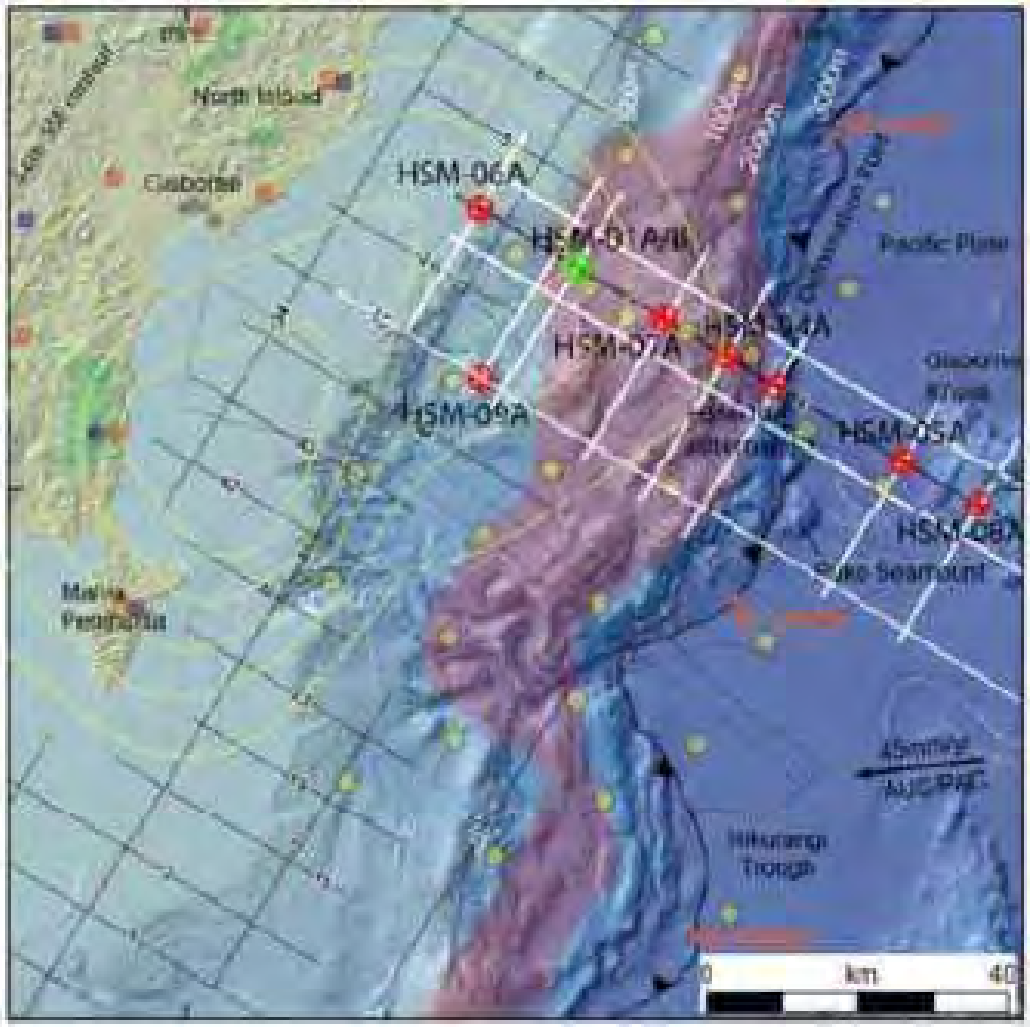
Site	Classification	Latitude	Longitude
IBM-4	1Ab	32°24'N	140°23'E

1A: All required data are in the Data Bank and have been reviewed by SSP.
b: Data image the target adequately but there are scientific concerns of drill site location or Penetration.

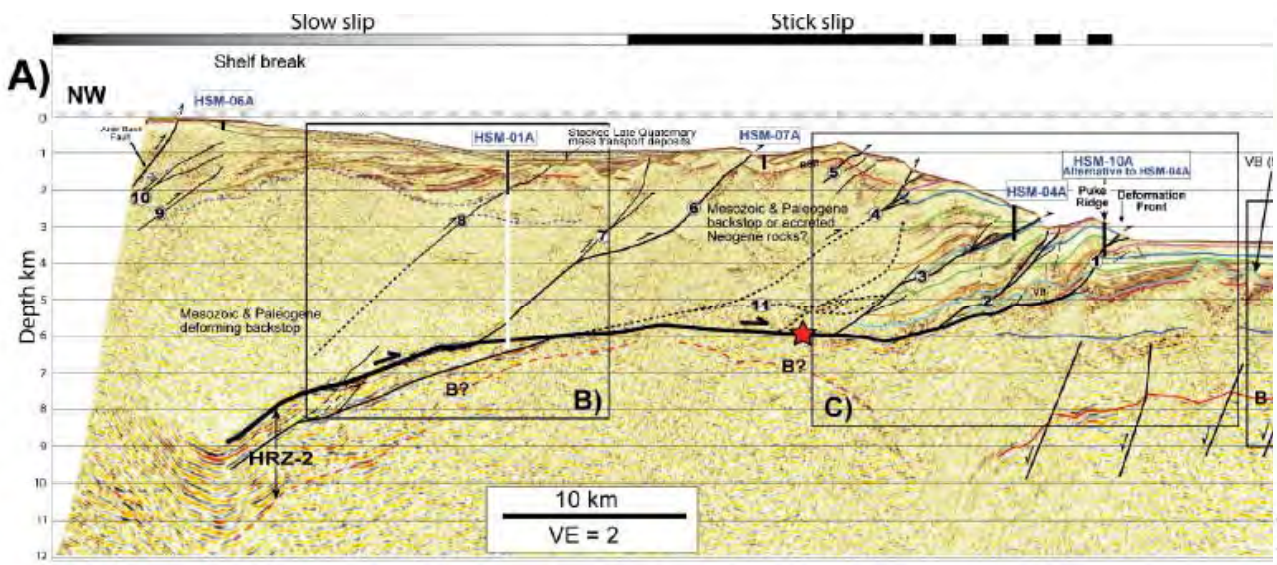
781B-Full: Northern Hikurangi Subduction Margin (Phase 2 of the MDP)

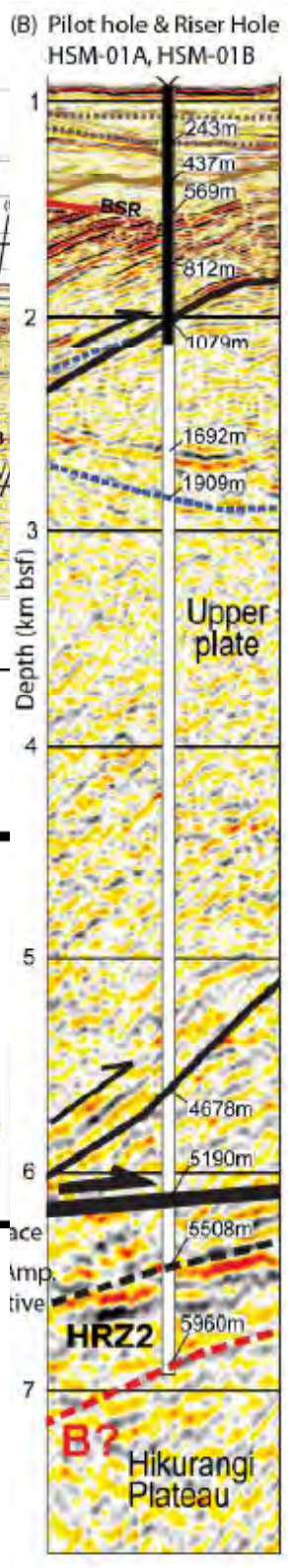
- Lead Proponent: Laura Wallace

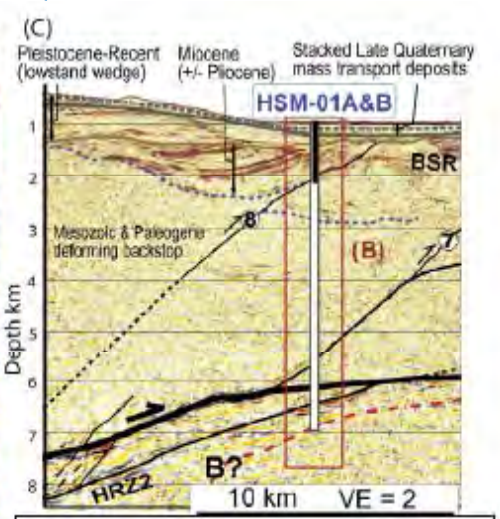
- Objective: Deep, riser drilling component of 781-MDP to discern the mechanisms of slow slip events (SSEs) by drilling in the region of shallow SSEs at northern Hikurangi. The primary objective is to sample, log, and conduct downhole measurements in the hanging wall and across the plate interface where SSE occur.



2. SLOW SLIP AT THE NORTHERN HIKURANGI SUBDUCTION MARGIN IS ACCESSIBLE USING RISER DRILLING







Site Name	Position (Lat, Lon)	Water Depth (m)	Penetration (m)			Brief Site-specific Objectives
			Sed	Bsm	Total	
HSM-01B	-38.727283, 178.614233	994	6000	0	6000	1.Coring and logging to assess physical properties and rock composition within and above the upper plate above SSE source region 2. Case and install temporary SSE observatory hole between drilling phases 3. Case and install long-term borehole observatory when the hole is completed

Figure 3: **(A):** Interpretation of depth converted seismic profile 05CM-04 across the upper plate and subducting Pacific Plate east of Gisborne. The bold black fault is the subduction interface. The stratigraphy of the subducting Hikurangi Plateau sequence is inferred from correlations to seismic reflection data and ODP borehole (1123, 1124) data from east of the trench. presented by Davy et al. (2008). Note that at the deformation front, the plate interface is developing in the upper part of the Hikurangi Plateau basement sequence (HKB) inferred to be 120 Myr old volcaniclastics and/or chert/limestone rocks. The high-amplitude reflectivity zone (HRZ2) below the interface is labelled and shown in more detail at the drillsite in the center panel. The red star shows the location of the March 1947 tsunami earthquake, which occurred up-dip of the SSE source area. The bold white vertical line near HSM-01A (the pilot hole) is the proposed deep riser hole. **(B):** zoom-in on proposed riser hole. HRZ2=High Reflectivity Zone; "B?" = inferred top of basement. **(C):** Expanded view of region surrounding proposed riser drill site.

781B-Full: Northern Hikurangi Subduction Margin

- Reviewed by SEP: January 2014; Forwarded to CIB with excellent rating
- **SEP Consensus: Site is 2Cc (substantial items missing, data do not image target adequately)**
- Require 3D seismic data files with crossing lines around the proposed drill site

BREAKING NEWS! From Laura Wallace

- NSF is funding a 3D survey in early 2018 – Nathan Bangs is lead PI
- A seafloor geodetic and OBS experiment in the drilling transect revealed slow slip at 2 km below seafloor. Based on these results, we have defined some new slow slip riser drilling targets ~2.5-3 km below the seafloor, where our seafloor geodetic experiment suggests large (5-10 cm) of slow slip.
- **An Addendum to include these sites is expected for the April 1 deadline.**

865-Full: Constraining the temperature limit of the microbial deep biosphere in the Nankai Trough subseafloor

- Lead Proponent: K. Hinrichs

Objective:

To study subseafloor sedimentary microbial communities situated in temperature ranges that span the temperature limit of microbial life in anoxic sedimentary systems (the biotic fringe)

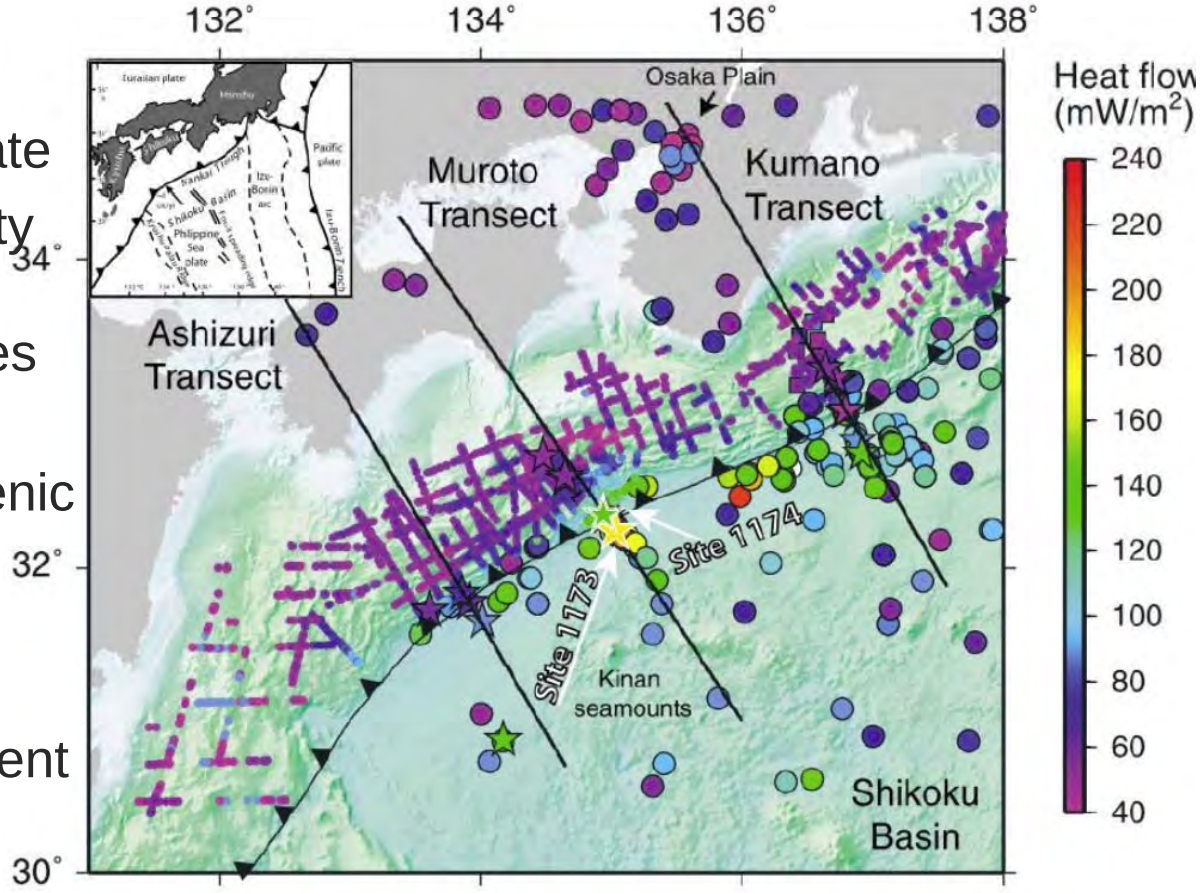
Non-riser

Propose to comprehensively investigate

(1) factors that control biomass, activity and diversity of microbial life in a temperature window that encompasses the biotic/abiotic transition,

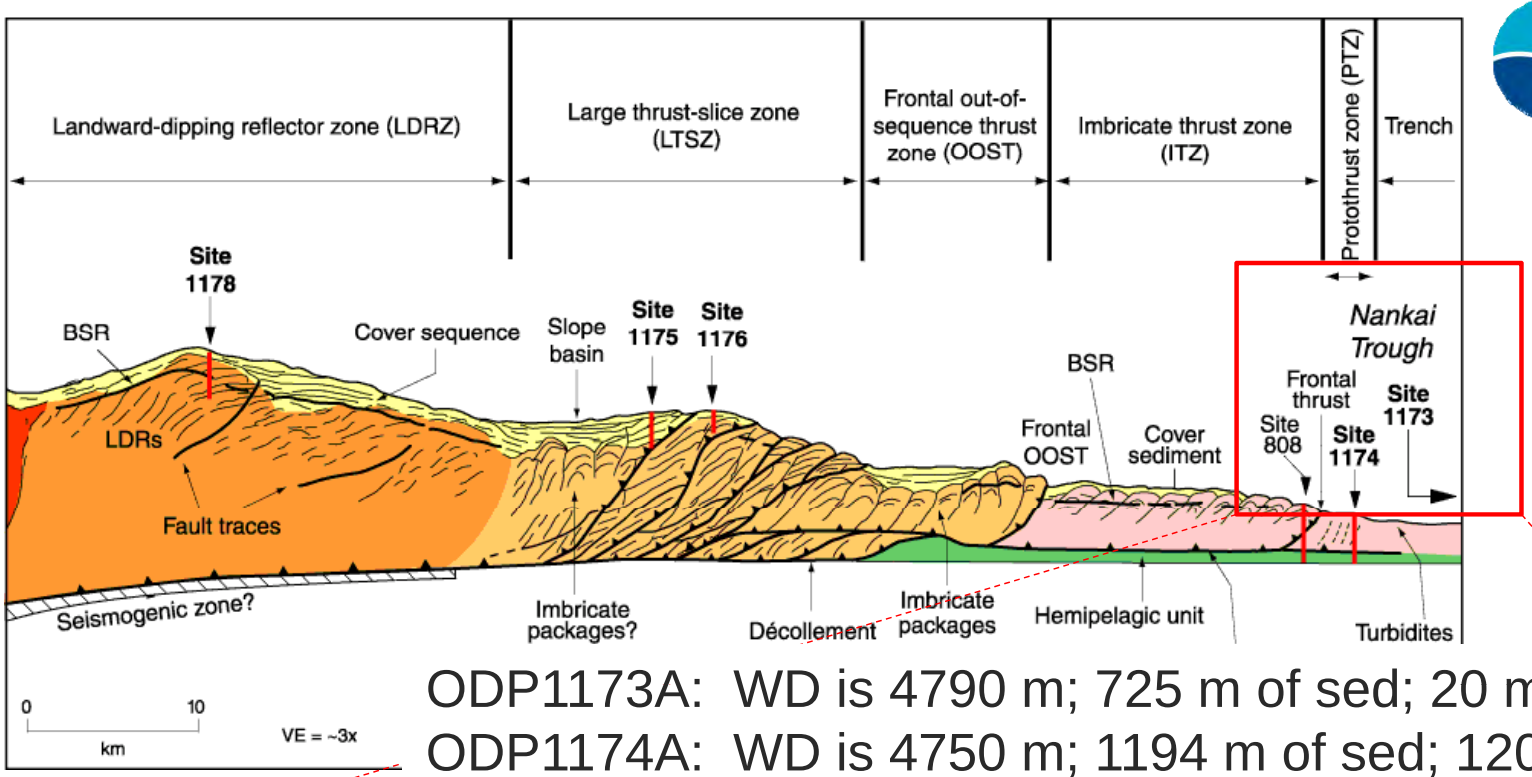
(2) the relationship between thermogenic release of potential substrates and microbial life, and

(3) the chemical and physical environment in sediments and basement rock at the biotic fringe.



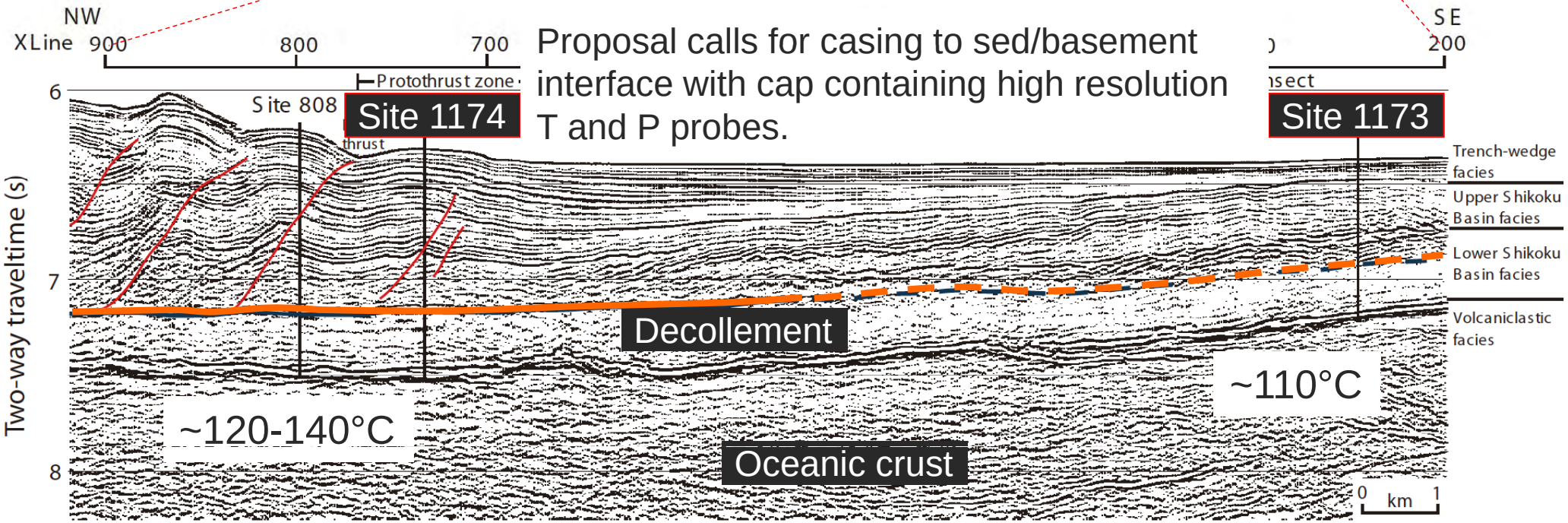
IODP – CIB
March 23-24, 2016

865-Full



ODP1173A: WD is 4790 m; 725 m of sed; 20 m of basement

ODP1174A: WD is 4750 m; 1194 m of sed; 120 m of basement



Proposal calls for casing to sed/basement interface with cap containing high resolution T and P probes.

Muroto Transect: after Science party (2001), Bangs et al. (1999), Moore et al. (1999)

865-Full: Constraining the temperature limit of the microbial deep biosphere in the Nankai Trough subseafloor

Site	Classification	Latitude	Longitude
ODP1173A	1Aa	32°14.66'N	135°01.51'E
ODP1174A	1Aa	32°20.54'N	134°57.39'E

Review date: The SEP reviewed this proposal at New Brunswick late June 2014
Last Reviewed: January 14, 2015 and forwarded to Facility Board with Excellent rating

Completeness and adequacy: 1Aa (1 by present system):

Revised operational plan from PRL indicates 65.3 days for coring, BHA change, casing, capping, logging, transits, and contingency time

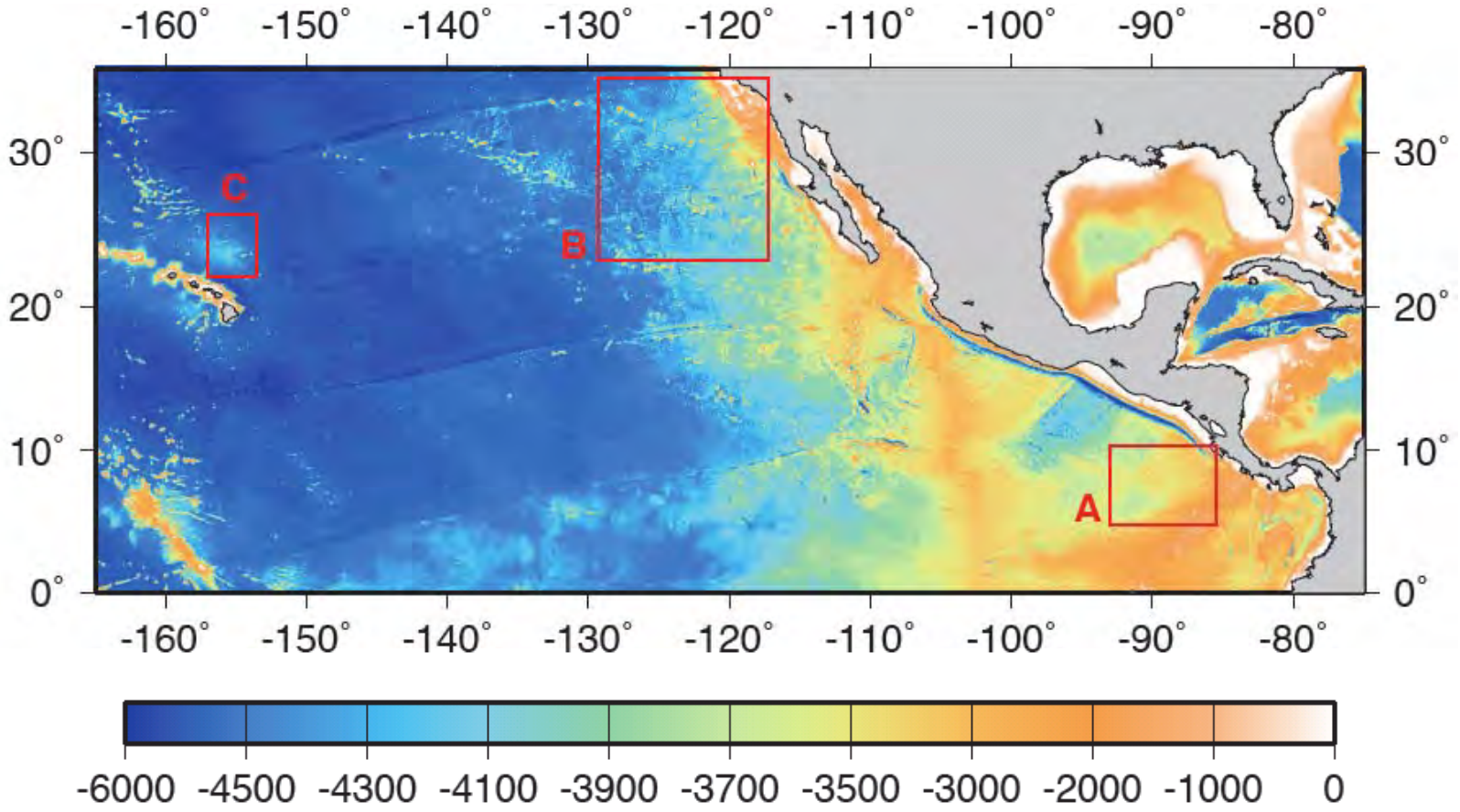
New sites now proposed to avoid submarine cables. Operational days reduced. See N. Eguchi presentation.

At SEP

- 805-MDP: MoHole to the Mantle
- 835-Full2: Japan Trench Tsunamigenesis
- 871-CPP: Lord Howe Rise Crustal Evolution
- 707-MDP: Kanto Asperity Project: Overview
- 857-MDP2: DREAM: Mediterranean Salt Giant
- 876-Pre: Bend-Fault Serpentinization
- 886-Pre: NW Pacific Bend-Fault Hydrology

805-MDP: MoHole to Mantle (M2M)

- Lead Proponent: Susumu Umino
- Objective: To drill a complete section through the oceanic crust and ~500 m into the mantle in a fast spreading environment using Chikyu, to understand bulk composition, fluids, heterogeneity, accretion history, limits of life, seismic properties, magnetic anomalies, etc.



805-MDP: MoHole to Mantle (M2M)

- Lead Proponent: Susumu Umino
- PEP review date: May 2012
- Recommendation: submit revised proposal (not yet received)
- **No site survey data have been uploaded to the SSDB**

3 potential sites considered: A) Cocos Plate; B) Baja area; C) Hawaii area

Technological challenges related to high temperature (300°C) and deep water.
Too deep for riser drilling.

Proposed Sites:

Site Name	Position	Water Depth (m)	Penetration (m)			Brief Site-specific Objectives
			Sed	Bsm	Total	
Cocos Plate	6.7-8.7°N 89.5-91.9°W	3400-3650	250-300	>6000	>6000	
Off Southern/Baja California	20-33°N 120-127°W	Mostly 4000-4500	80-130	>6000	>6000	**MoHole site is yet to be determined, and other options may be considered**
NE Hawaiian Arch	22.9-23.9°N 154.5-155.8°W	4050-4500	~200	>6000	>6000	

835-Full2: JTRACK: Tracking the tsunamigenic slips across and along the Japan Trench

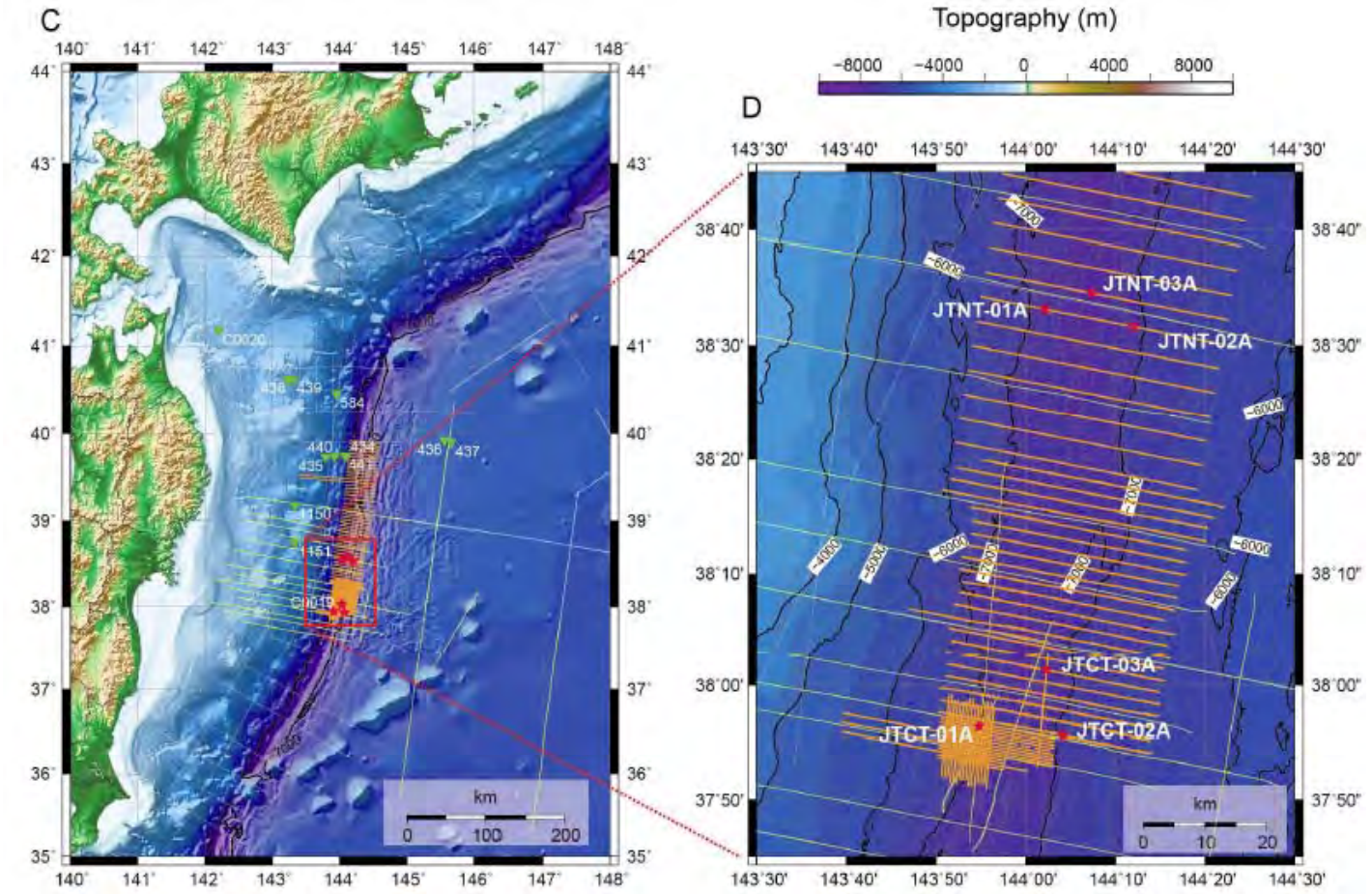
Lead Proponent: Shuichi Kodara

Objectives:

JTRACK proposes to investigate processes leading to catastrophic, tsunamigenic earthquakes and the history of such events along the margin; builds on success of Exp. 343

Non-riser

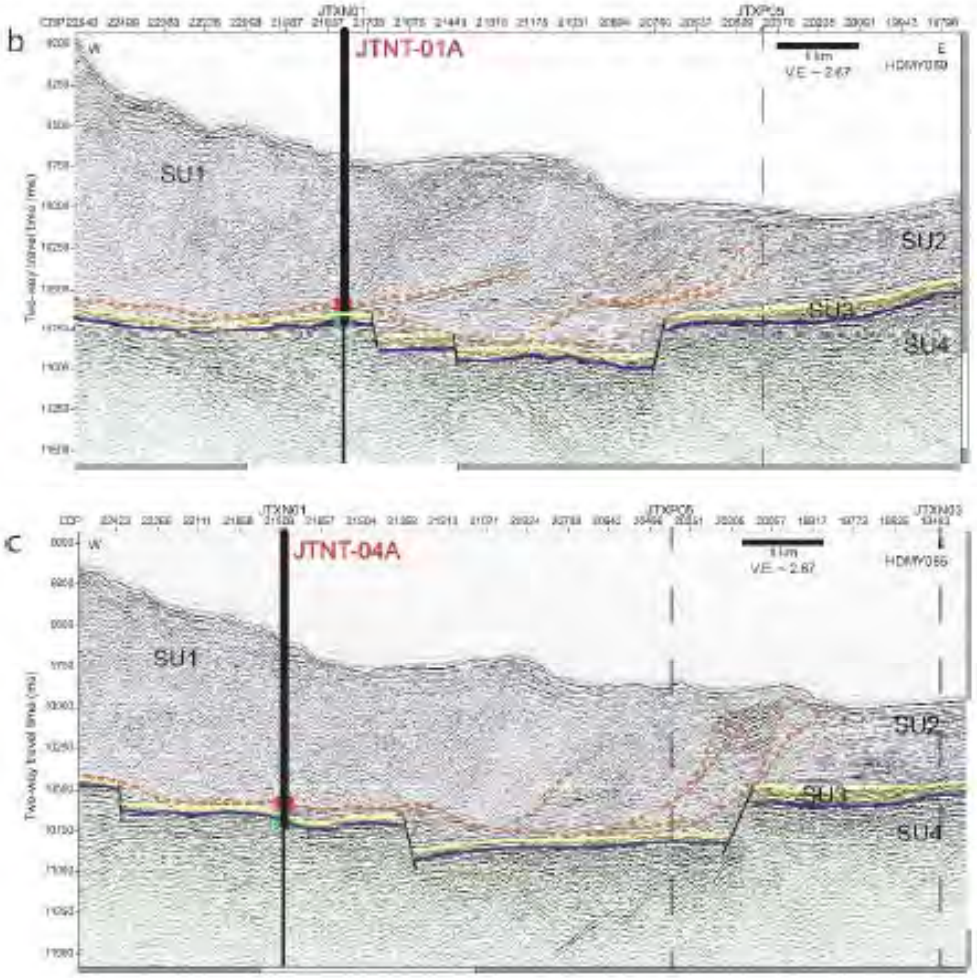
Specific objective: define how the spatially-varying physical, chemical and structural properties of the sediments and fluids of the near trench megathrust relate to the magnitude of fault displacements and very large tsunamis.

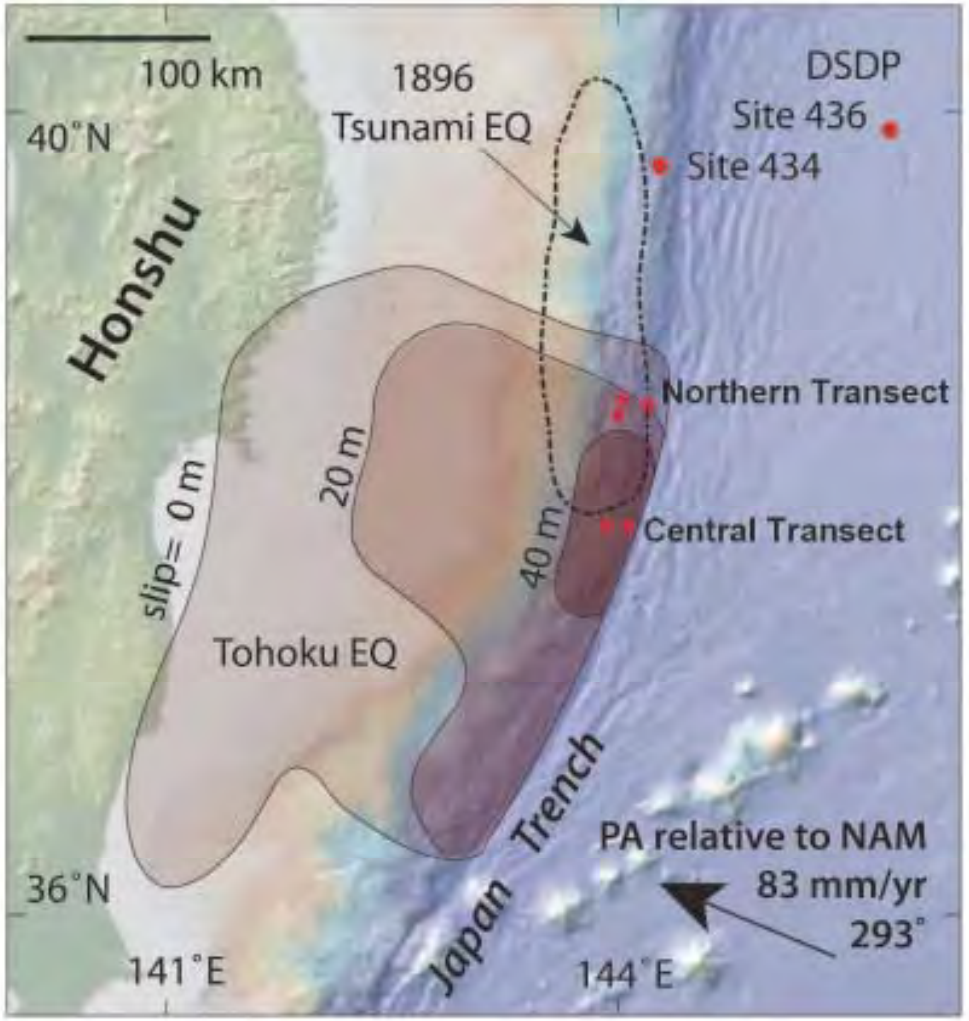


Site		WD	Sed	TD
JTNT-02A	Primary	7115	520	520
JTNT-04A	Alt	7300	1080	1080
JTNT-01A	Primary	7400	980	980
JTCT-02A	Primary	6945	450	450
JTCT-01A	Primary	6930	950	950

focuses on the
2011 Tohoku-oki rupture zone

LWD
2nd hole for coring
PT observatory at JTCT-01A





835-Full: JTRACK: Tracking the tsunamigenic slips across and along the Japan Trench

- SEP Review date: January 2014; forwarded the proposal to the CIB.
- A workshop was held in Japan (May, 2014).
- Full proposal was reviewed by SEP in Jan. 2015; Full2 reviewed January 2016.
- Sent for external review

- The panel supports installation of the strap-CORK observatory in JTCT-01A, which will complement the existing observatory in Hole C0019, but notes that the distance between the two holes necessary to avoid cross-formation communication needs to be quantified and included in site location data.
- All sites should be drilled to basement to ensure the entire sedimentary section has been sampled.
- Numerous data issues need to be addressed:
- Interval velocity questions, depth conversions, site positions, amplitude anomalies, faults, etc.

871-CPP: Lord Howe Rise Crustal Evolution

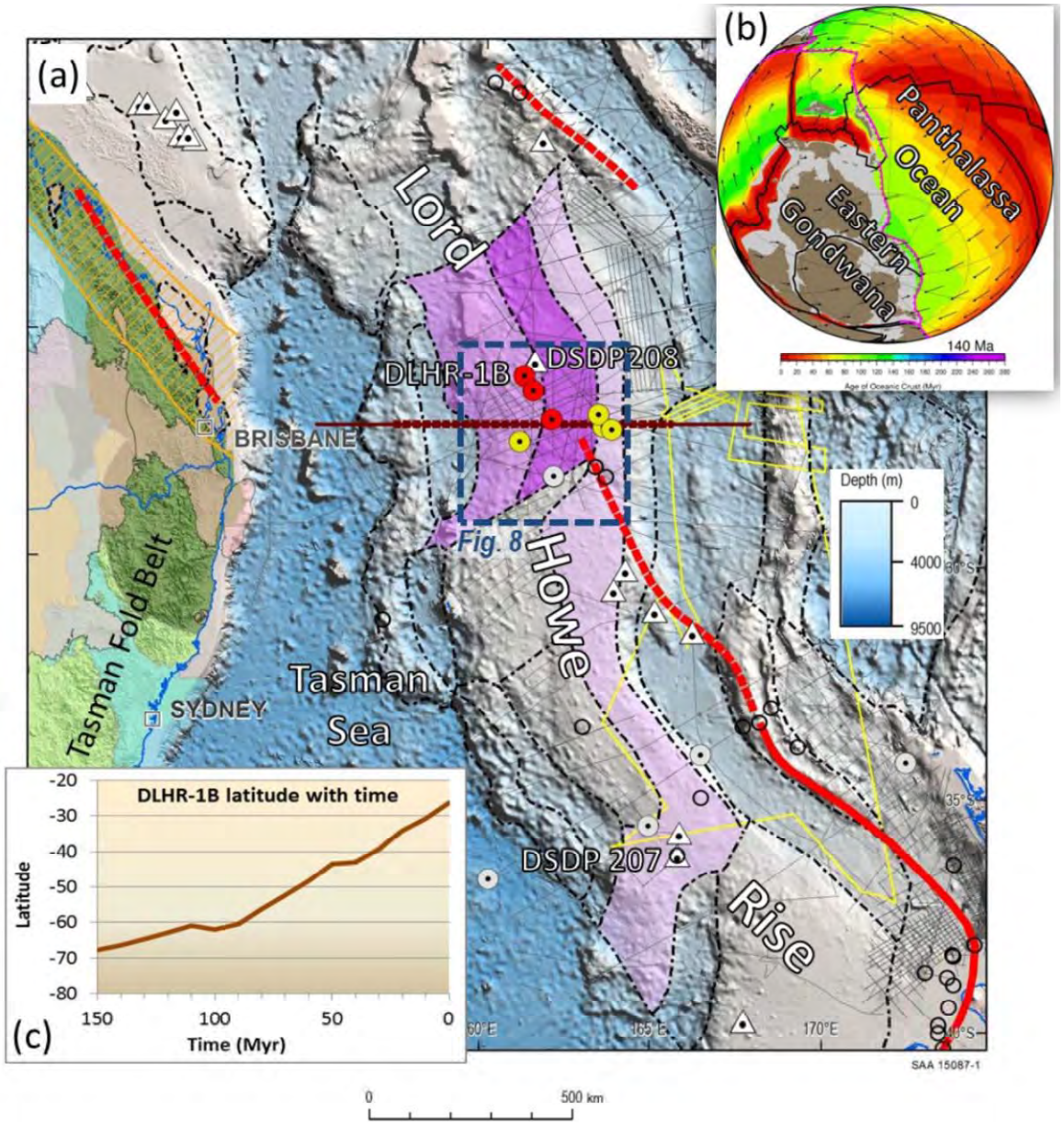
Contact Proponent: R. Hackney

Objective: Reconstruct the Cretaceous evolution of the eastern Gondwana margin during its final breakup.

Scientific questions:

Many; related to when and where subduction occurred here, what caused the transition to rifting, what successions exist in the LHR rift basins, what was the Cretaceous climate like here, what is the deep subsurface microbial life here, etc.

Objective is to recover Cretaceous stratigraphic record and 'layered' pre-rift basement.

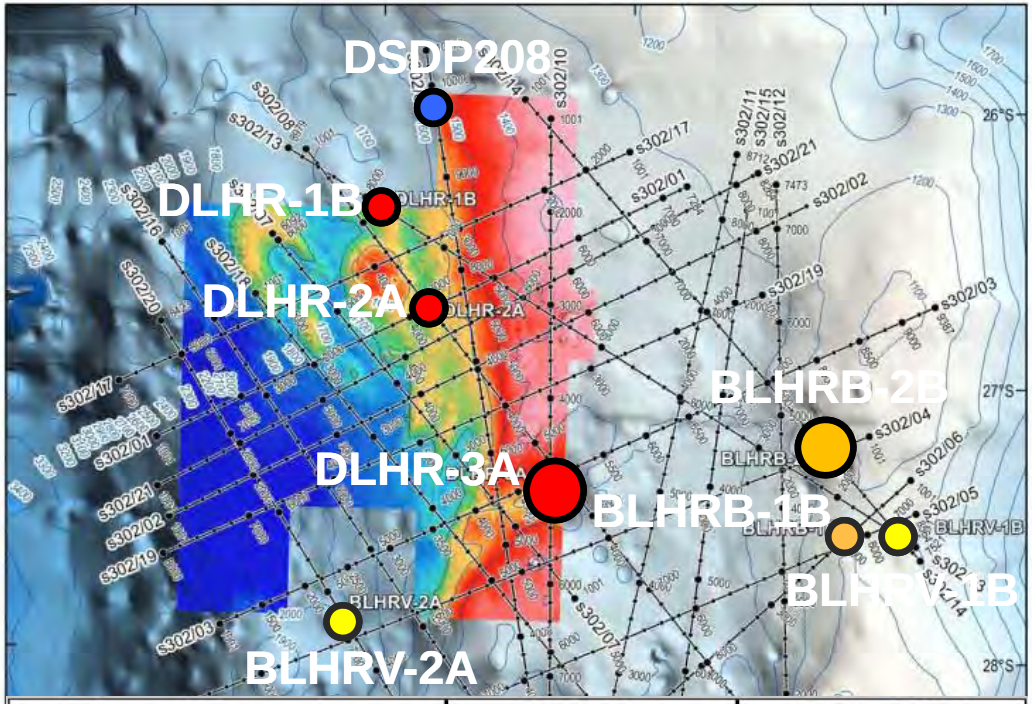


871-CPP: Lord Howe Rise Crustal Evolution

Contextual framework:

- **7 proposed sites: 2 primary and 5 alternates**
- **Primary sites:**
- **DLHR-3A: 1915 m of sed, 300 m of basement**
- **BLHRB-2B: 263 m of sed, 300 m of basement**

- Proposal 871-CPP complements proposal 832 “Tasman Frontier” led by R. Sutherland, which aims to date and quantify deformation in the southwest Pacific

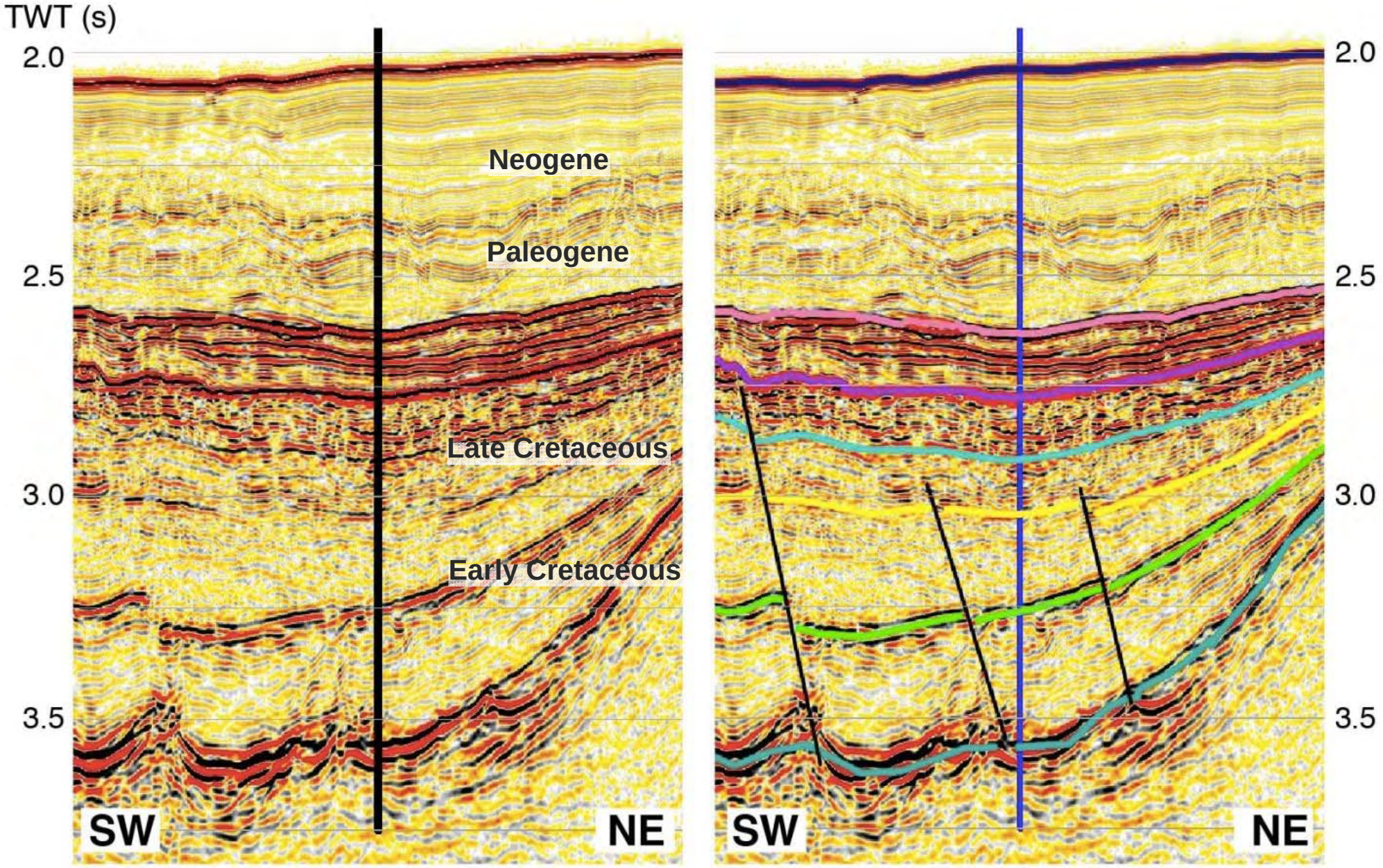


Riser/Non-riser	871-Pre	871-CPP
Deep riser	DLHR-1A	DLHR-1B
	DLHR-2A	DLHR-2A
		DLHR-3A
Shallow non-riser (volcanic)	BLHRV-1A	BLHRV-1B
	BLHRV-2A	BLHRV-2A
Shallow non-riser (bland)	BLHRB-1A	BLHRB-1B
	BLHRB-2A	BLHRB-2B

Deep riser hole

Shallow basement hole

DLHR-3A (currently-preferred site)



871-CPP: Lord Howe Rise Crustal Evolution

Reviewed by SEP in Jan. 2016

Recommendation: Revise

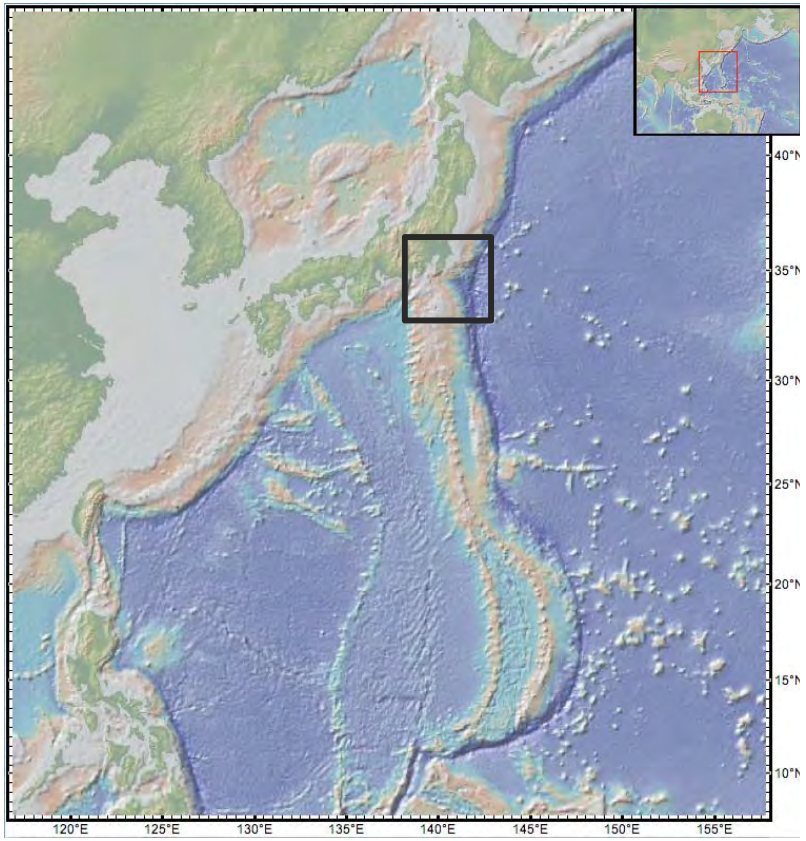
- Strengthen hypotheses and methodology for testing hypotheses.
- Revise list of geochemical and biogeochemical methods.
- Prepare a prioritized sample distribution plan for the analyses.
- Provide grid of 2D or 3D MCS data (cruise planned for 2016, 2017); and position sites on crossing lines.
- May be potential for elevated pore pressure at primary site.
- Provide structure contour maps; upload neighboring seismic lines in the vicinity of the proposed sites.
- Provide maps of the relative locations of "bland" and "volcanic" basement and documentation of how these maps were created.
- Provide backscatter or side-scan sonar data around each site.

Site	Classification	Latitude	Longitude
DLHR-3A	4	-27.384797	161.663069
DLHR-2A	3	-26.759528	161.197392
DLHR-1B	4	-26.394283	160.98976

4 – Data reviewed by SEP are insufficient to support the drilling effort, and additional data are not believed to exist

3 – Data reviewed by SEP are insufficient to support the drilling effort, but other data are believed to exist; and/or data are not annotated or organized sufficiently to fully review, or there are scientific concerns

707-MDP: Kanto Asperity Project: Geological and Geophysical Characterization of the Source Regions of Great Earthquakes and Slow Slip Events



Lead Proponent: R. Komayashi et al.

- Objective 1:
  To understand why the three different types of slip events occur laterally, at similar depths in the Sagami Trough (i.e., under the same P–T conditions).
- Objective 2:
  To establish realistic earthquake-generation models using data obtained at each step of the generation cycles of natural earthquakes.

Three Programs to test hypotheses:

- *Program A:* Ultra-deep drilling to intersect plate boundaries in the Taisho asperity and the SSE region to compare core materials, diagenetic and metamorphic conditions, pore-water chemistry.
- *Program B:* Long-term monitoring for recording tilt, pressure, and seismicity during 2-3 cycles of Boso SSEs.
- *Program C:* Coring and logging at four sites on the Philippine Sea Plate just before subduction to identify and characterize the input materials.

Kanto Asperity Project (KAP)

- Geological and Geophysical Characterization of the Source Regions of Great Earthquakes and Slow Slip Events

Nothing to evaluate
At this time

707-MDP
Kobayashi et al.

KAP-Program A

782-Pre
Yamamoto et al.

Riser proposal
Deactivated

KAP-Program B

770-Full3
Sato et al.
JR proposal in SEP HB

KAP-Program C

in prep (?)

Expected submission
April 2013

857-MDP2 Umbrella proposal of the Deep Sea record of Mediterranean Messinian events (DREAM)

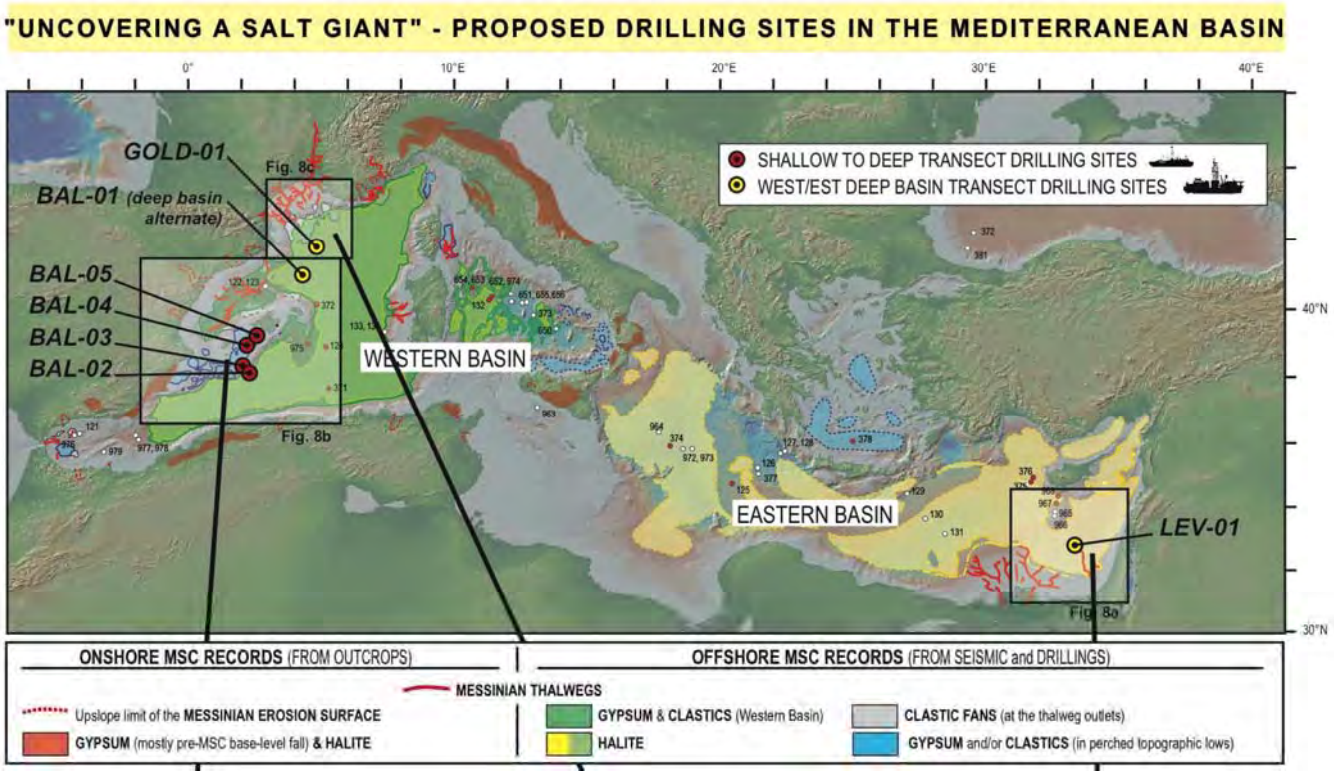
- Lead Proponent: Camerlenghi

Objectives:

Four site-specific drilling proposals are conceived under this umbrella:

- DREAM: Deep-Sea Records of the MSC;
- Deformation and fluid flow in the MSC salt giant;
- Probing the Salt Giant for its Deep Biosphere secrets;
- Probing deep Earth and surface connections (857A-Pre)

Riser Drilling:
2 extremely deep holes in deep salt basins (west and east; GOLD-01, LEV-01)
4 less deep non-riser holes on small-scale slope basins (BAL-02 to BAL-05)



857-MDP2 Umbrella proposal of the Deep Sea record of Mediterranean Messinian events (DREAM)

- SEP Review date: June 2014, January, 2015

- SEP Summary Statement:

- *The SEP members and watchdogs were excited about the scientific potential of this umbrella proposal, but feel that the umbrella proposal has exhausted its usefulness and that the time for specific drilling proposals has come.*

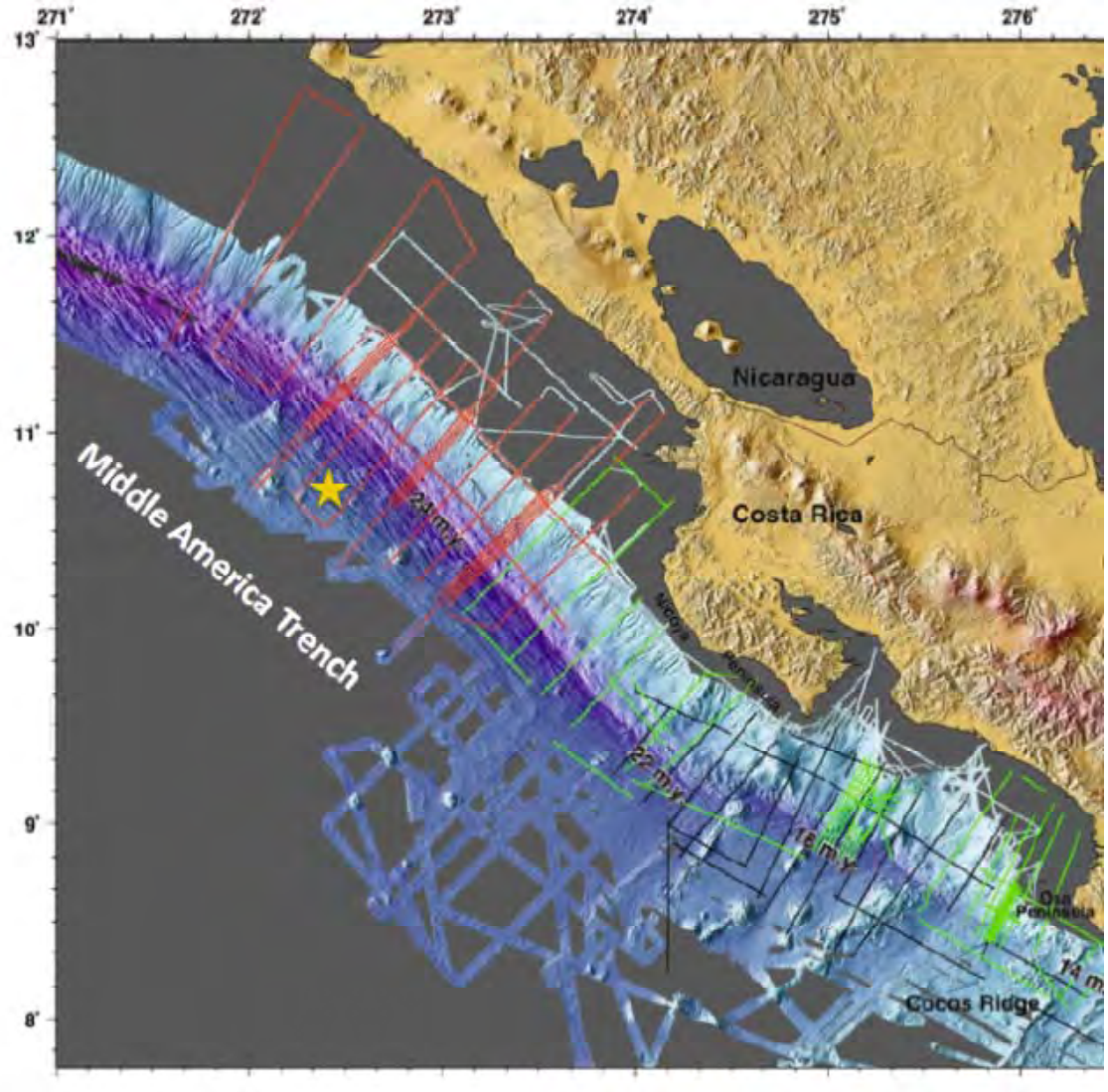
- 857A-Full DREAM: Deep-Surface Connection (riser drilling) was deactivated in June, 2015
- 857B-Pre is a JR proposal: full proposal requested

876-Pre: Bend-Fault Serpentinization: Oceanic Crust and Mantle Evolution from Ridge through Trench

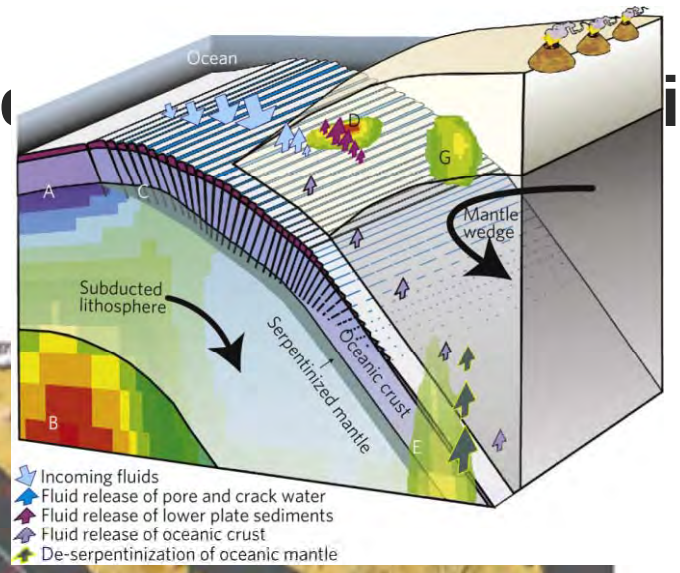
Lead Proponent: J. Morgan

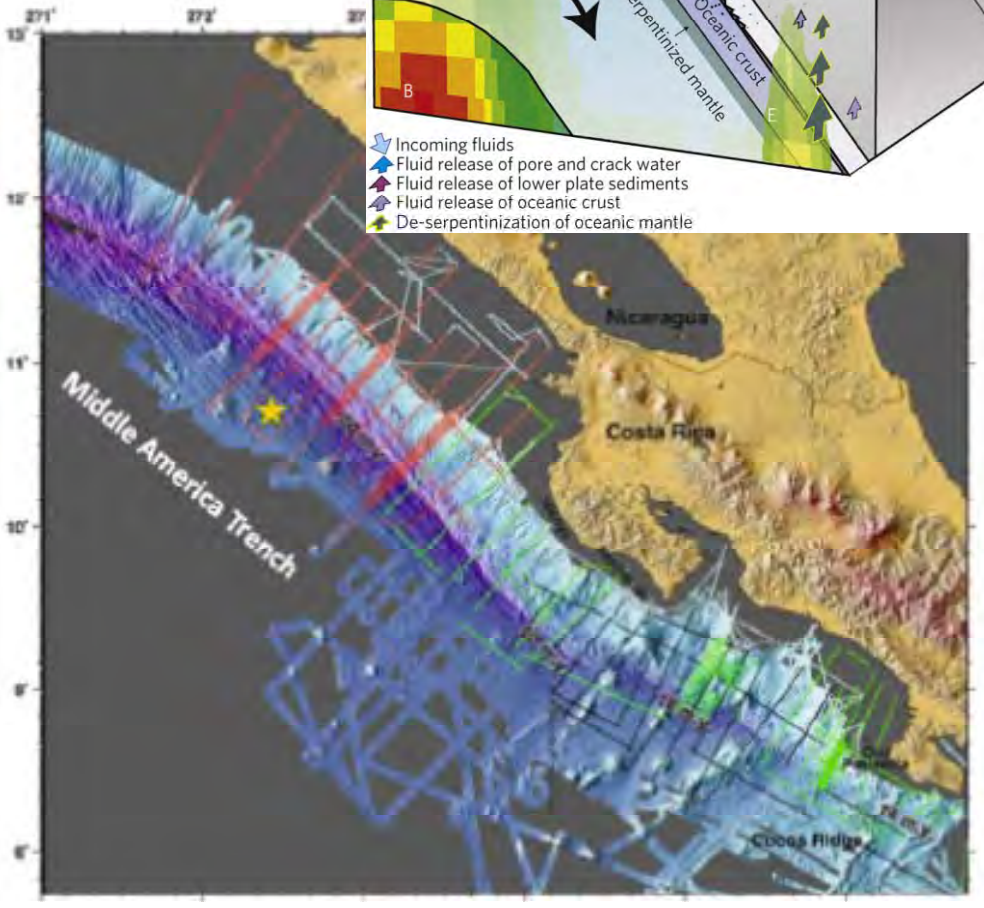
Objectives:

- Recover in-situ sections of ocean crust and serpentinized mantle from a region undergoing Bend Fault Serpentinization.
- Establish if any Alpine-type ophiolites are actually preserved 'fossil' BFS systems.
- Determine the limits and activities of chemosynthetic communities in this environment related to hydrothermal activity.
- Establish the extent, timing, and rates of carbonation-related reactions that take place during mantle bend-fault serpentinization, and whether these reactions are a large player in the global carbon cycle.



876-Pre: Bo…ization





- Site 1a – WD 3200 m; 500 mbsf

  Drill through active bend-fault in the sediment section, coring and CORKing
- Site 1b - WD 3250 m; 2400 mbsf

  Drill through bend-fault in the upper part of the gabbro section, spot coring, LWD, CORKing
- Site 1c - WD 3300 m; 7000 mbsf

  Drill through bend-fault just below the Moho, fast-drill first, LWD, then side-wall coring (lower ~2/3), CORKing
- Site 1d - WD 3300 m; 7000 mbsf

  Same as 1c, but more coring of crustal and mantle sections, CORKing

876-Pre: Bend-Fault Serpentinization

- Proposals for site survey have been submitted to UK-IODP and JAMSTEC Large-scale Planning workshop 2014
- A workshop is planned for June 2016.

SEP Review: January 2015

- Recommendation: Develop full proposal (Nothing submitted yet)
- Issues to address
  - Riser drilling at this WD is beyond Chikyu's capability
  - Development of full scientific plan with strategy to achieve their goal
  - Need specific plans for coring, logging, and observatory
  - Contact IOs for building feasible drilling plan
  - Alternate sites
  - Justification of multiple holes (especially deeper holes)

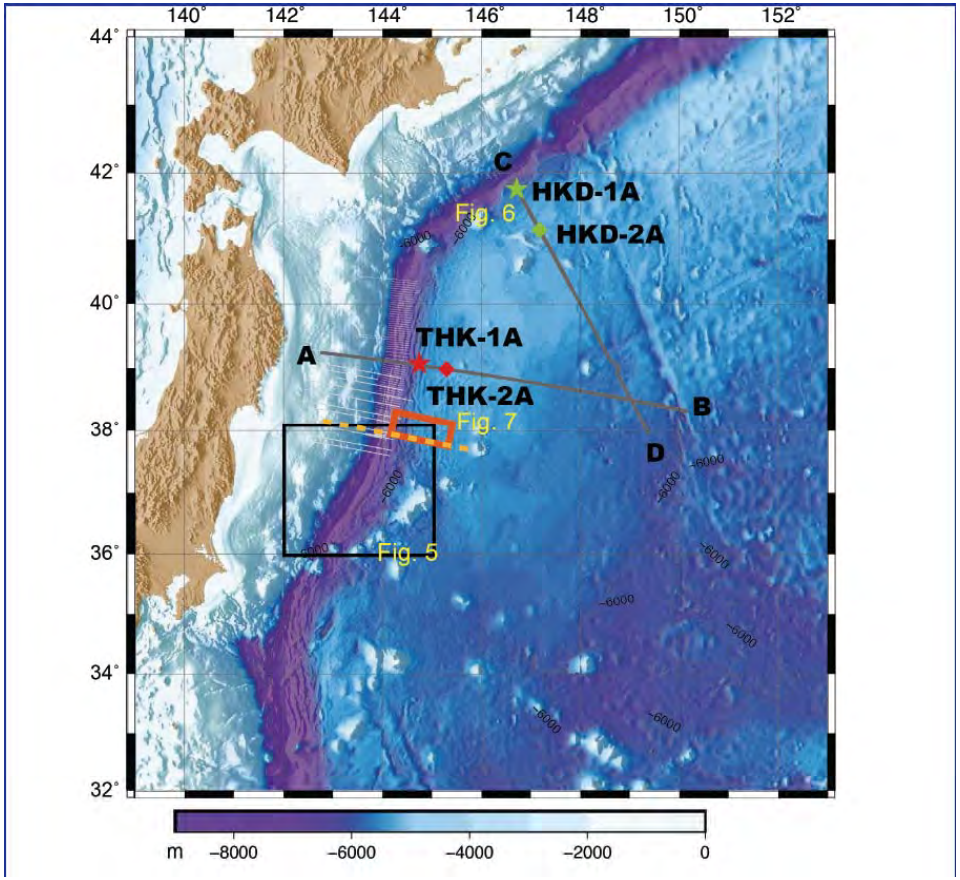
Estimated Days:	Drilling/Coring: 300	Logging: 100	Total On-site:

886-Pre Bend-fault hydrology in the old incoming plate

- Contact Proponent: Tomoaki Morishita

Objectives:

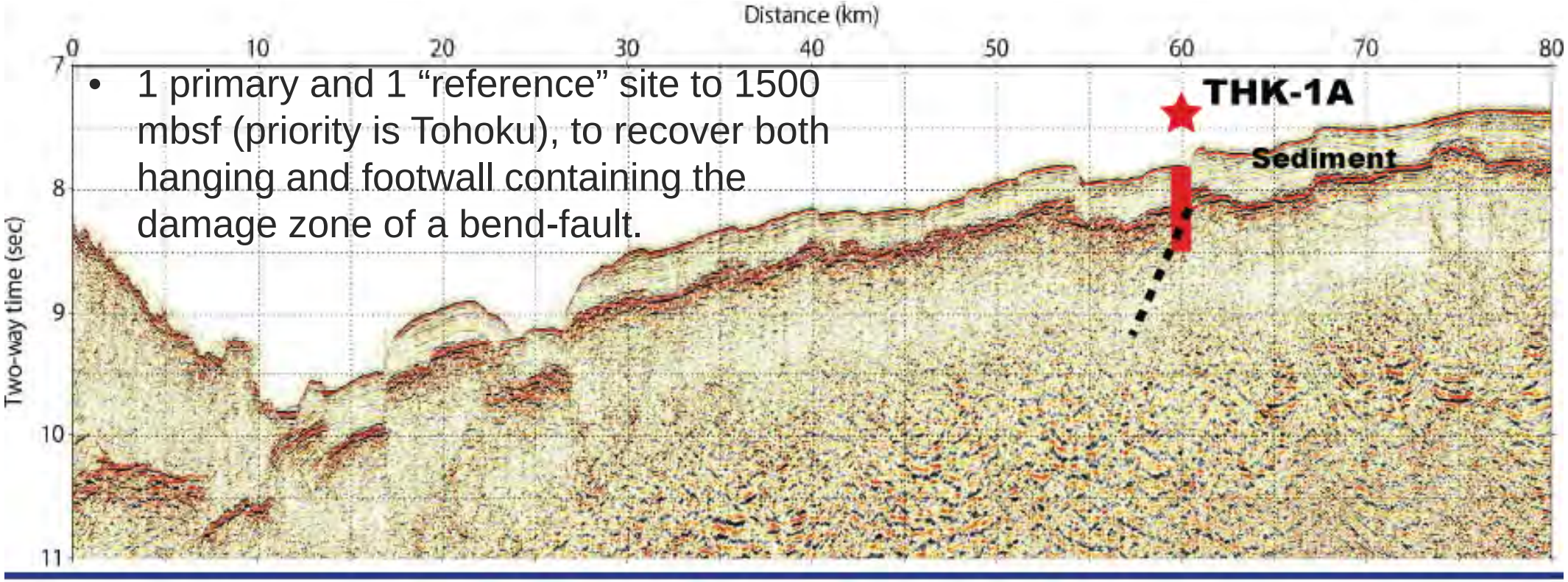
1. Understand the nature of horst-and-graben bend-fault hydration:
   - What are the mechanisms that enable seawater to penetrate to large depths in the incoming plate at outer rise region in spite of the high pressure and high temperatures at large depth?
   - How much water lies within the incoming plate?
   - What are the factors changing Vp/Vs in the incoming plate?
2. Characterize physical properties of plate interface in incoming plate:
   - What are sediment compositions, permeabilities, and stress fields, and how do they relate to plate-boundary fault/megathrust behavior?



IODP – CIB
March 23-24, 2016

Site Name	Position (Lat, Lon)	Water Depth (m)	Penetration (m)			Brief Site-specific Objectives
			Sed	Bsm	Total	
HKD-2A	41.15, 147.17	5180	500	1000	1500	
HKD-1A	41.77, 146.715	6210	500	1000	1500	
THK-2A	38.99, 145.25	5400	500	1000	1500	To sample basaltic rocks from an area where the bend-faults are not observed but seismic structures are altered by the bend-faults induced small cracks and to obtain in-situ geophysical properties for comparing core-samples with the primary site and establishing the relationship between the degree of the development of bend-faults and the structural evolution.
THK-1A	39.04, 144.77	5890	500	1000	1500	To recover complete coring around a bend-fault, to sample sediments focusing on the chert and clay-rich layer, and to obtain in-situ geophysical properties.

Planned:
3D MCS
Workshop



- 1 primary and 1 “reference” site to 1500 mbsf (priority is Tohoku), to recover both hanging and footwall containing the damage zone of a bend-fault.

886-Pre Bend-fault hydrology in the old incoming plate

- Reviewed by SEP: July 2015
- Recommendation: develop Full proposal

Recommendations and Issues to be Addressed

- High-density 3D seismic survey is necessary.
- Provide evidence that under such conditions minerals will form that are suitable for chronology?
- Develop the microbiology component.
- Questions re: “Reference sites”
- Details are missing in the proposal, diagrams were not explained, the relevance of JFAST and JTRACK were not explained.
- Is there a deep fault zone and can we ensure that it will be hit by drilling?
- Drilling of the oceanic crust will not get to the serpentinized mantle and quantification of this process will not be possible.
- Can we expect sufficient core recovery in the fault zone with riserless drilling?

Proposals at CIB

- 537B-Full4: CRISP Stage 2
- 603C-Full: NanTroSEIZE Drilling and Observatory Phase 3
- 603D-Full2: NanTroSEIZE Observatories
- 698-Full3: Continental Crust Formation at Intra-Oceanic Arc
- 781B-Full: Northern Hikurangi Subduction Margin
- 865-Full: Nankai Trough Biosphere Temperature Limit

At SEP

- 805-MDP: MoHole to the Mantle
- 835-Full2: JTRACK - Japan Trench Tsunamigenesis
- 871-CPP: Lord Howe Rise Crustal Evolution
- 707-MDP: Kanto Asperity Project: Overview
- 857-MDP2: DREAM: Mediterranean Salt Giant
- 876-Pre: Bend-Fault Serpentinization
- 886-Pre: NW Pacific Bend-Fault Hydrology

800-MDP: Nature of the Lower crust and Moho at slower-spreading Ridges

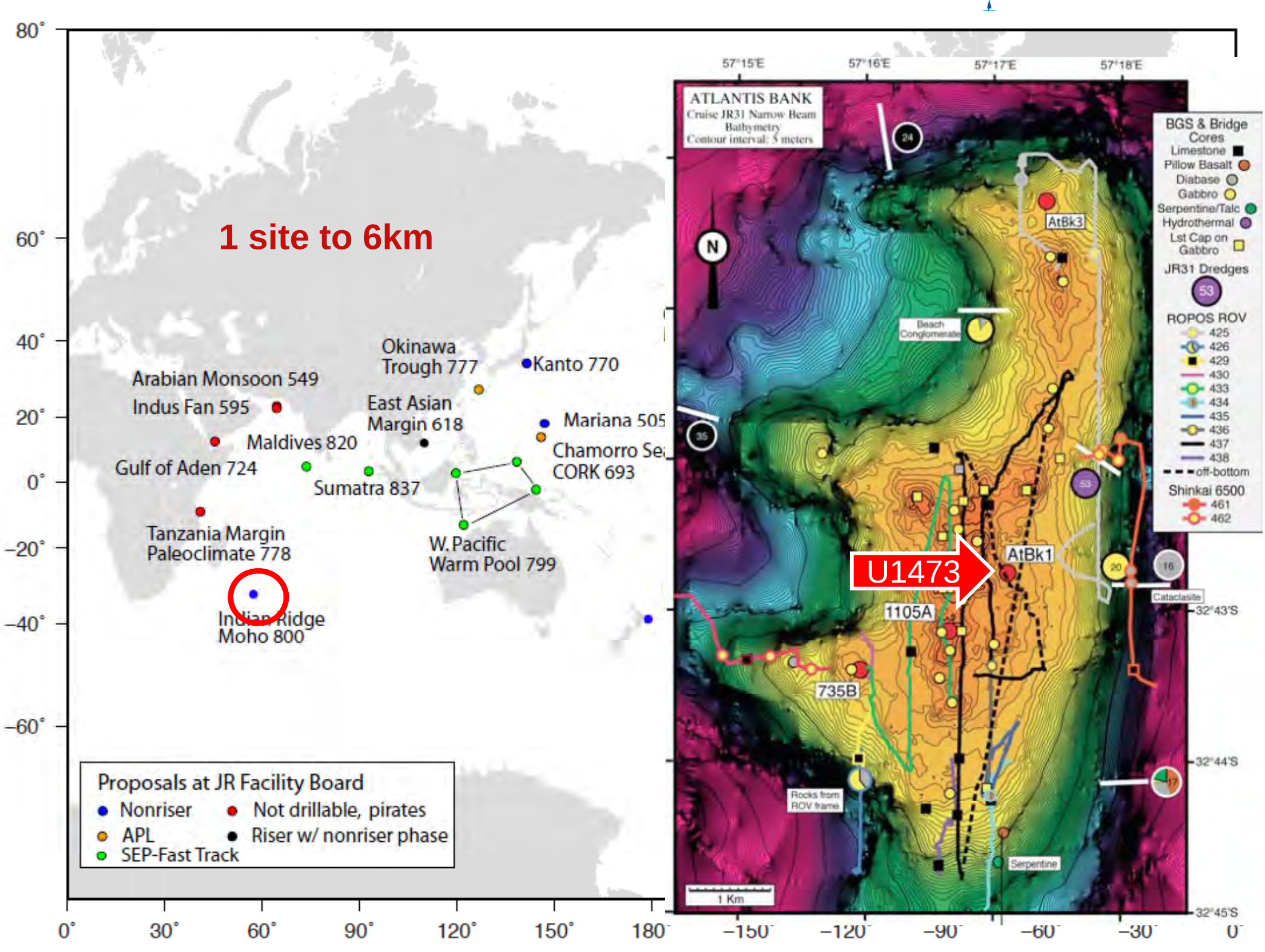
Lead Proponent: Henry Dick

Objective is to drill through the Atlantis Bank gabbroic massif into mantle near site 735B to 500-m below Moho. 2 major objectives:

1) recover the lowermost gabbros and crust-mantle transition to understand the processes creating Mid-Ocean Ridge Basalt and lower crust
2) resolve the controversy as to whether the Moho at slow spreading ridges can be a serpentinization front.

Site Name	Position (Lon, Lat)	Water Depth (m)	Penetration (m)			Brief Site-specific Objectives
			Sed	Bsm	Total	
AtBk-3	57.29166, -32.6716	700	0	1000	1000	AtBk-3 lies on the northernmost lip of the Atlantis Bank Platform and has the objective of examining the shallow igneous and high-temperature detachment deformation history at a significantly later point in its history (~500,000 yrs) than at either AtBk-1 or 1105A or 735B. We would occupy this location in the event that we were unsuccessful in spudding in at AtBk-2.
AtBk-2	57.339166, -32.68333	1700	3	1000	1003	Drill the dike-gabbro transition in ultraslow spread crust to examine the history of alteration, deformation and intrusion
AtBk-1a	57.28516, -32.7125	700	0	6000	6000	I. Test the hypothesis that the Moho beneath Atlantis Bank is a serpentinization front. II. Recover the igneous lower crust and the crust-mantle

U1473


1 site to 6km
Okinawa Trough 777
Kanto 770
Arabian Monsoon 549
Indus Fan 595
East Asian Margin 618
Mariana 505
Maldives 820
Chamorro Se
Gulf of Aden 724
CORK 693
Sumatra 837
Tanzania Margin Paleoclimate 778
W. Pacific Warm Pool 799
Indian Ridge Moho 800
Proposals at JR Facility Board
Nonriser
Not drillable, pirates
APL
Riser w/ nonriser phase
SEP-Fast Track
ATLANTIS BANK
Cruise JR31 Narrow Beam Bathymetry
Contour interval: 5 meters
BGS & Bridge Cores
Limestone
Pillow Basalt
Diabase
Gabbro
Serpentine/Talc
Hydrothermal
Lst Cap on Gabbro
JR31 Dredges
ROPOS ROV
425
426
429
430
433
434
435
436
437
438
off-bottom
Shinkai 6500
461
462
AtBk3
AtBk1
U1473
1105A
735B
Beach Conglomerate
Cataclasite
Rocks from ROV frame
Serpentine
1 Km
57°15'E
57°16'E
57°17'E
57°18'E
32°43'S
32°44'S
32°45'S

800-MDP: Nature of the Lower crust and Moho at slower-spreading Ridges

PEP Review, Dec. 2012: proposal was extremely well written with excellent objectives. The PEP applauds the proponents for expanding the science goals to include the subsurface biosphere. Has the potential to produce transformational science that would address at least two challenges in the new science plan.

The PEP asked the proponents to design a multi-phase drilling program; i.e. using the JR for two legs, or even the Chikyu if needed

Externally reviewed in Feb. 2013 – excellent reviews.
PEP rated it as 'excellent' and forwarded to JRFB.

Expedition 360 (Phase I of the SloMo Project) sailed 30 Nov, 2015 – 30 January, 2016

- Site U1473 - Penetrated 789.7 mbsf and recovered 469.4 m of core (ave. 59% recovery). 89% recovery from 519-789 mbsf.
- Lost 5.5 days to a medical emergency and helicopter rendezvous.

Phase II proposes to use the Chikyu to drill to 6 km – awaiting a proposal.

537B-Full4 Costa Rica Seismogenesis Project – Stage 2

Four Major Goals of Program B Drilling, Monitoring and Laboratory Experiments are:

- **1)** Quantify effective stress and plate boundary migration via focused investigation of fluid pressure gradient and fluid advection across the erosional plate boundary.
- **2)** Determine the structure and fault mechanics of an erosional convergent margin and identify the processes that control the updip limit of seismicity.
- **3)** Constrain how fluid-rock interaction affect seismogenesis by studying fluid chemistry and residence time, basement alteration, diagenesis, and low grade metamorphism.
- **4)** Obtain physical properties of a 3-D volume that spans the seismogenic zone.

603D-Full2: NanTroSEIZE Observatories

Specific objectives include:

(1) Monitor differences in hydrologic properties and fluid-flow signals where basement highs are subducting versus where basement plains are subducting.

(2) Determine if, where, and why compartments of excess pore pressure develop seaward of the deformation front; determine their effect on early-subduction fault dynamics.

(3) Compare hydrologic properties and fluid-flow signals in turbidite sand bodies before and after they pass beneath the toe of the accretionary prism. Assess the role of sand bodies in drainage of deeper sediments, and impacts on plate boundary strength.

(4) Monitor hydrologic properties and fluid-flow signals within the frontal décollement zone for comparison against properties and flow in subducted sand lenses.

(5) Determine how basement fluid flow influences margin-scale patterns of heat flow and fluid flow.

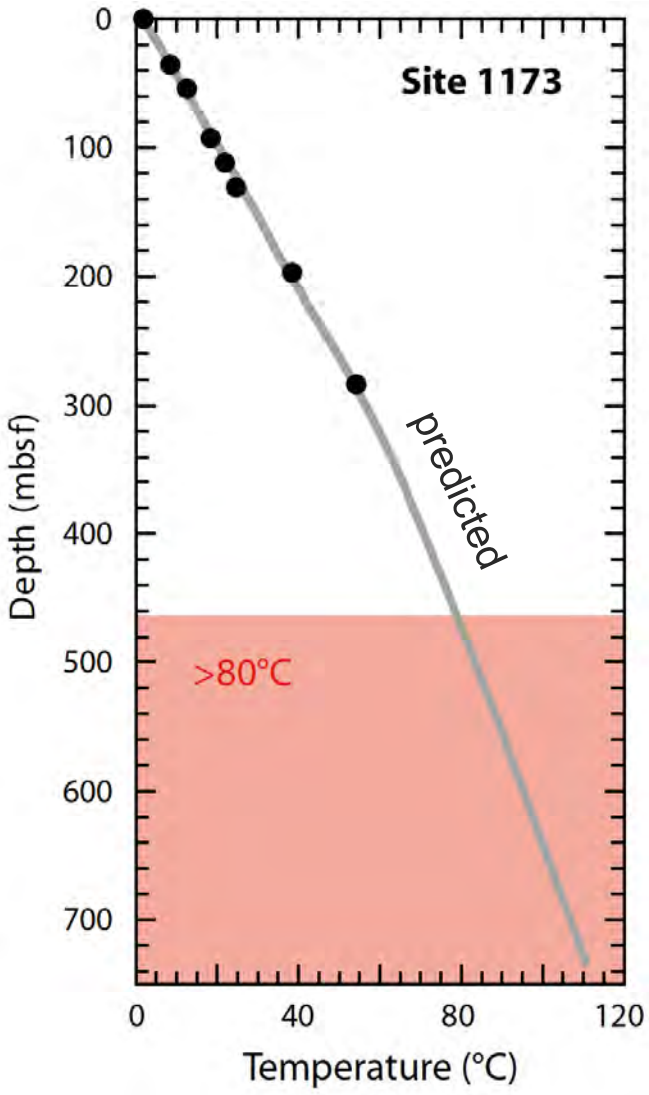
(6) Monitor micro-seismicity, strain, and fluid flow response to tectonic events.

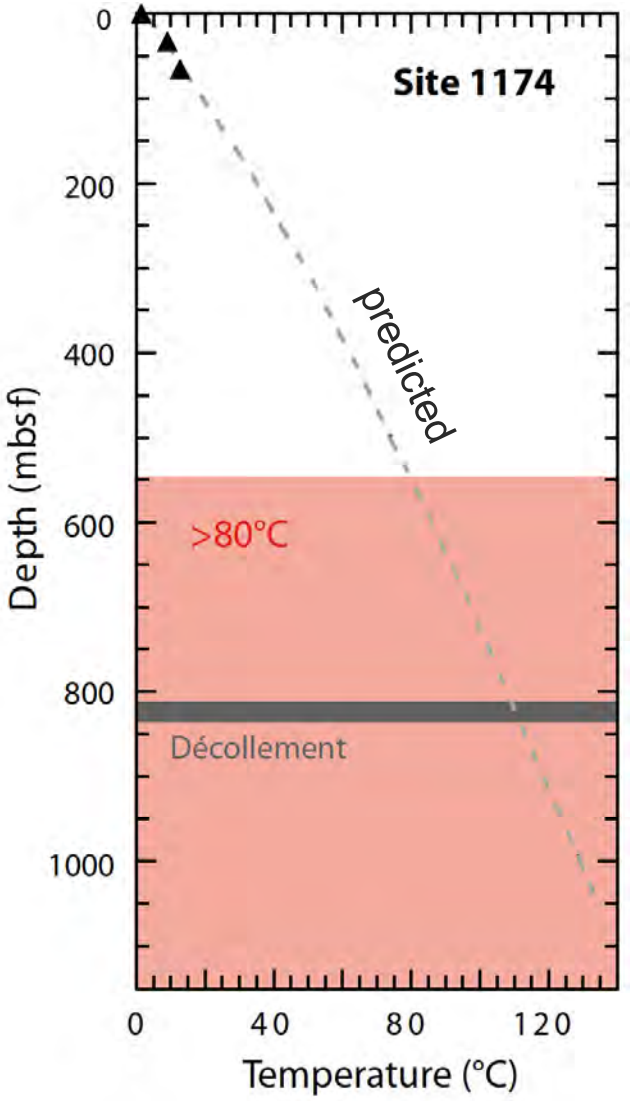
Temperature window of site 1173 and 1174

865-Full

Focusing on the temperature range for 110-140 ºC.

● ▲ measured

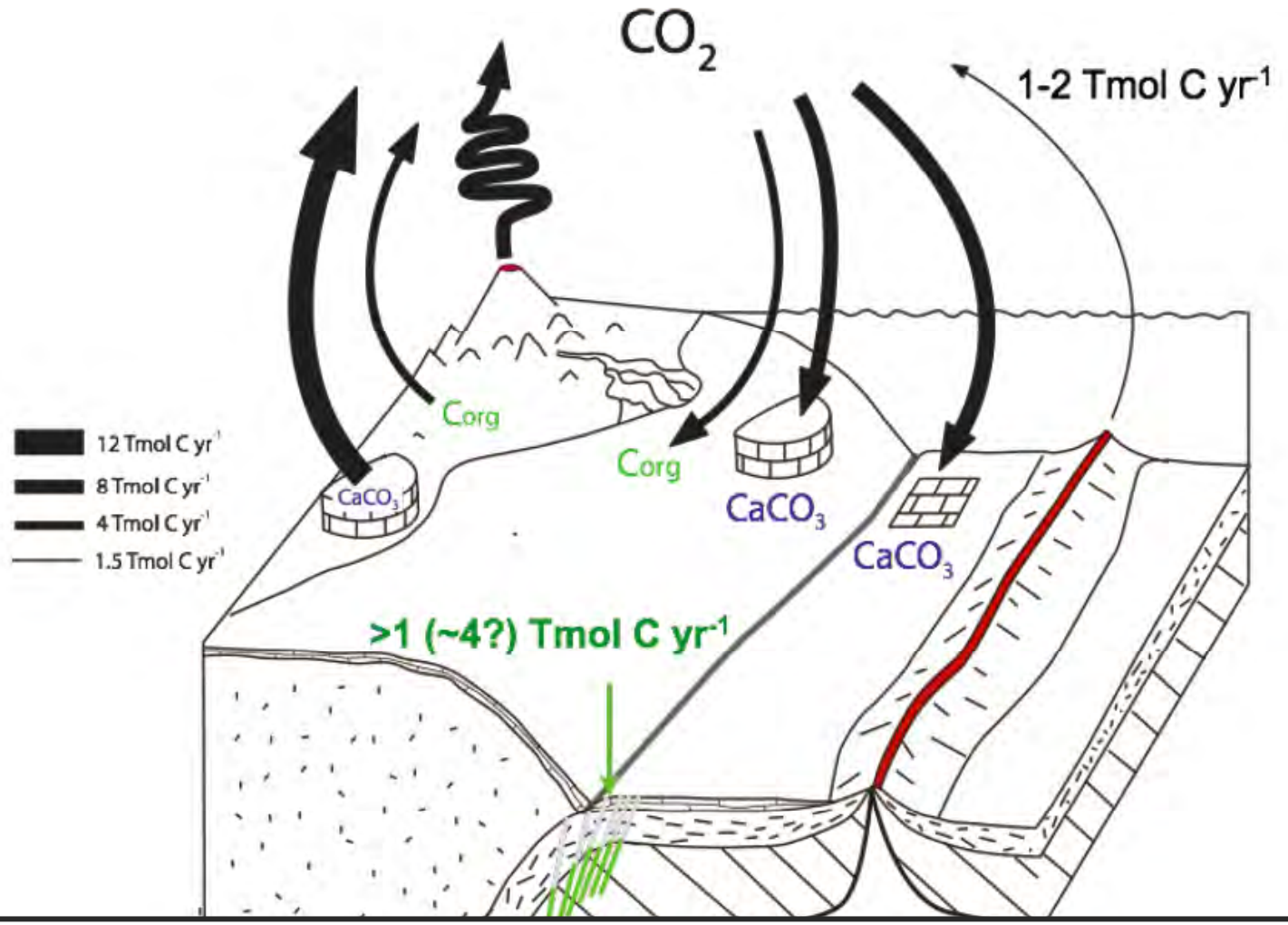




2 extremely deep holes in deep salt basins (LEV-01, GOLD-01)
4 less deep holes on small-scale slope basins (BAL-02 to BAL-05)

876-Pre: Bend-Fault Serpentinization

Serpentinization and connected carbonate precipitation has large impact on Earth climate study



Subducted carbonate (commonly ~1%) associated with BFS would recycle water and CO_2 into the mantle comparable to that emitted by plate spreading or consumed by crustal alteration, weathering and mountain building

DLHR-1B

IODP – CIB
March 23-24, 2016

DSDP Site 208 | MCS GA302-13

Foram Nanno OOZE

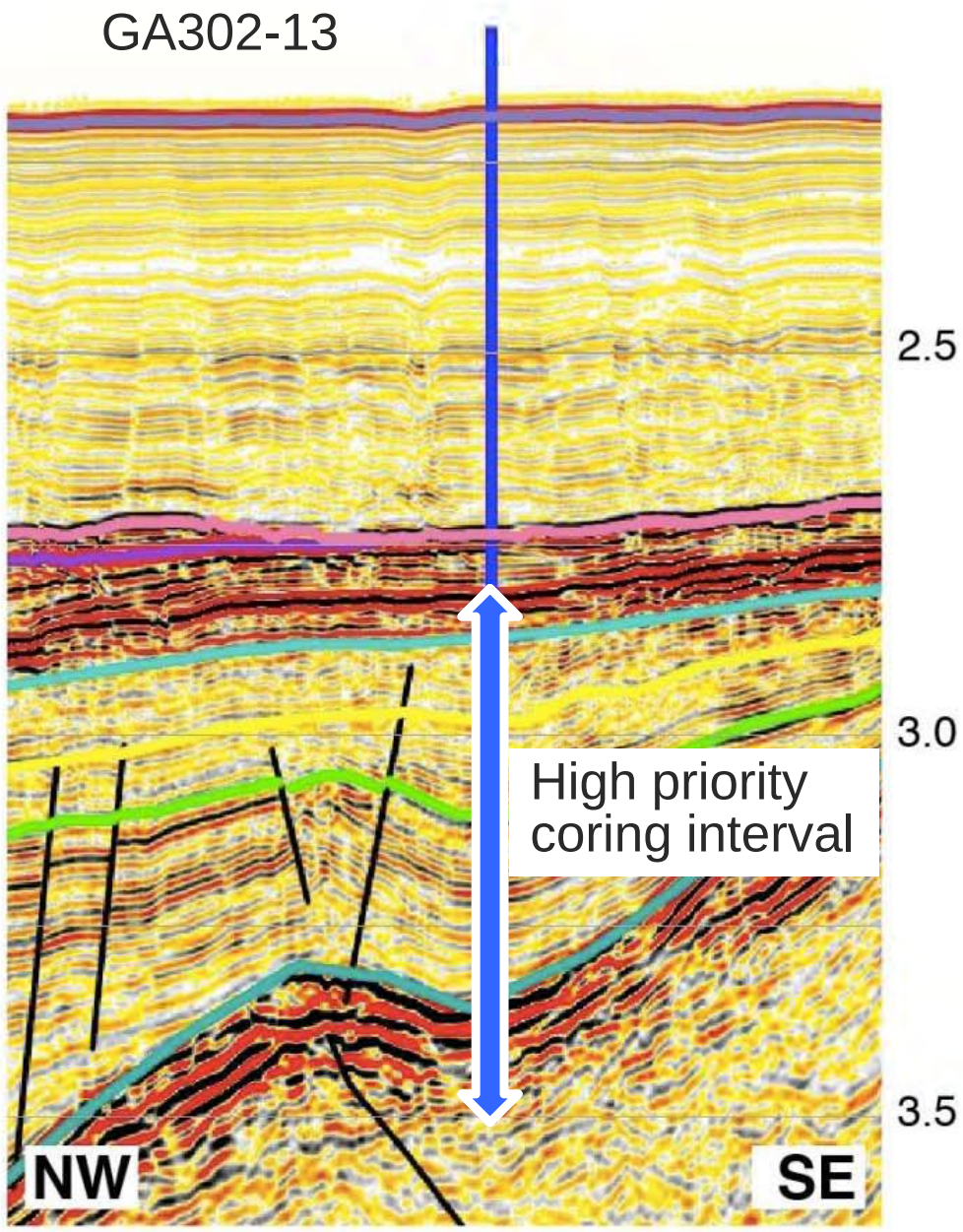
Foram Nanno CHALK

Radiolarite
Diatomite
CHALK

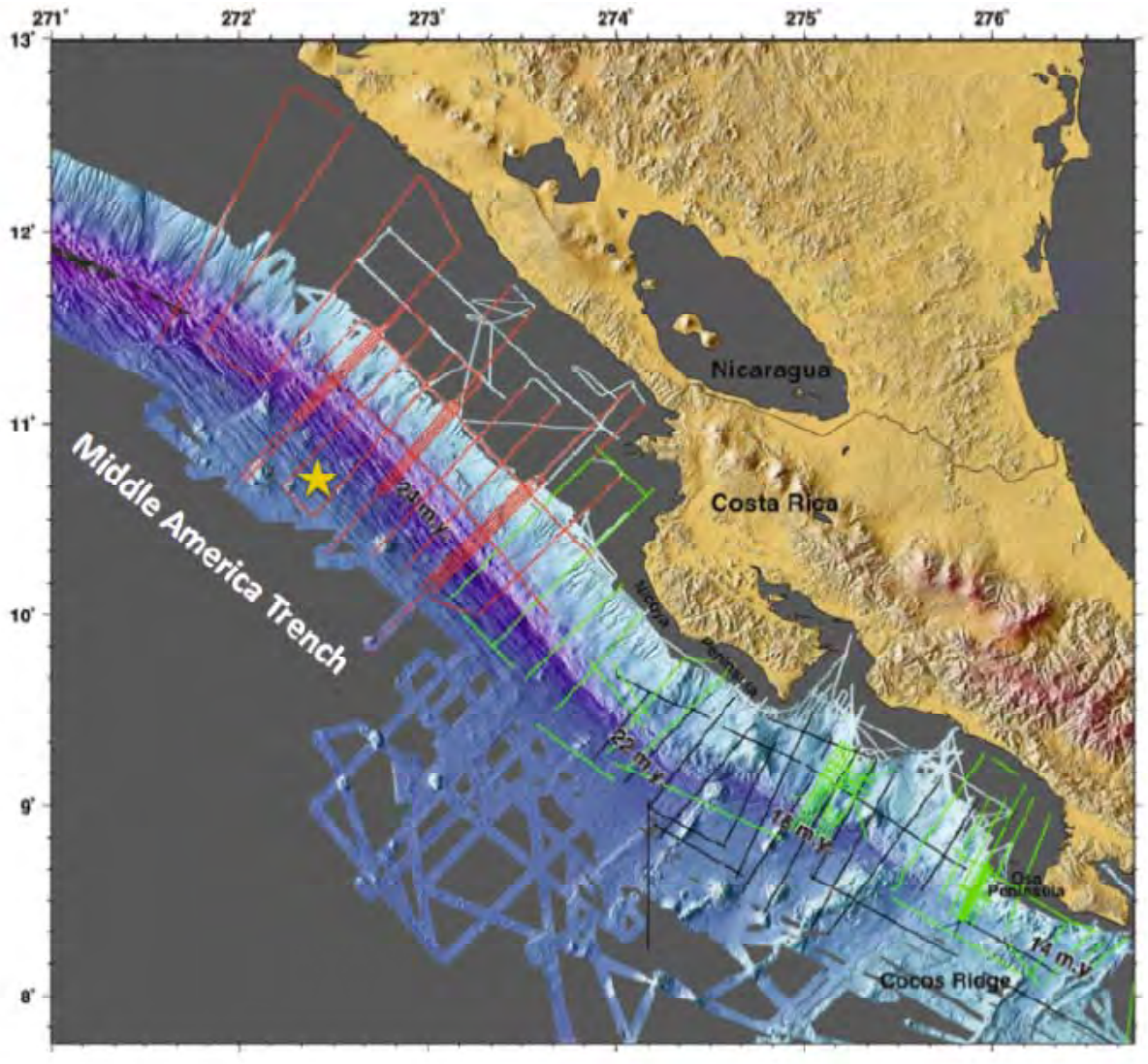
Radiolarite Diatomite
CHALK with CHERT bands

Mid-Eoc.
-Late Olig unco.
Mid-Eoc. unco.
Top Lower Sag
Top Syn-rift 2
Top Syn-rift 1

pre-rift basement



876-Pre: Bend-Fault Serpentinization

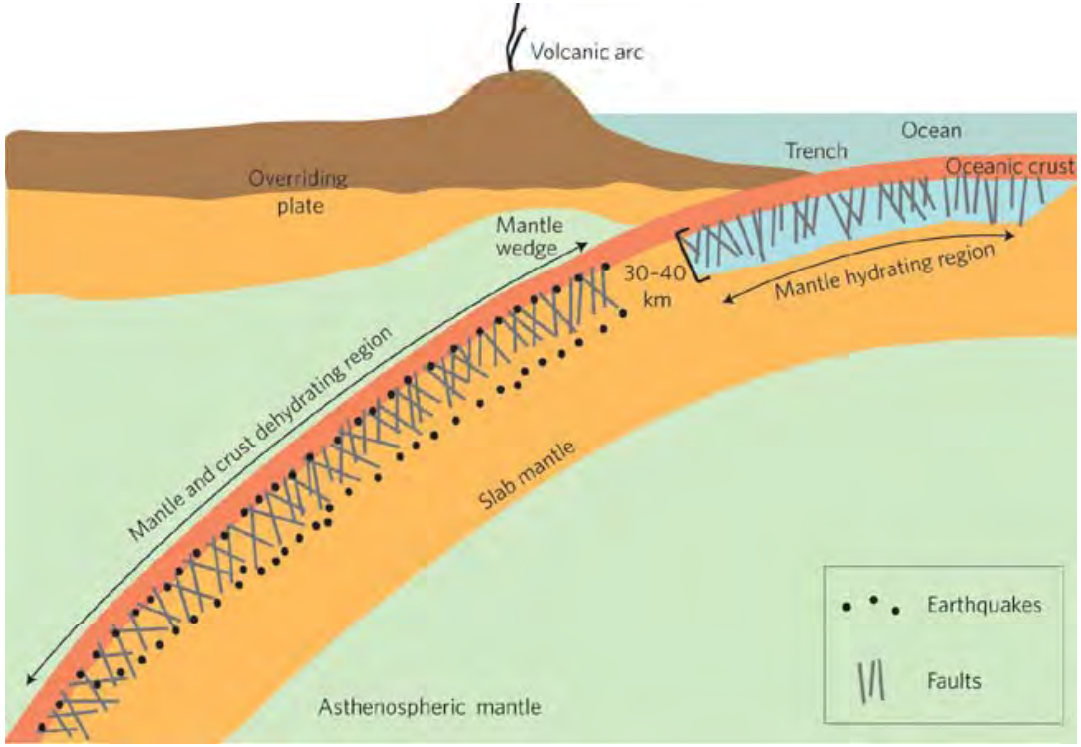


Proposed site: offshore Nicaragua

Several lines of geophysical evidence for Bend-fault Serpentinization (BFS)

- Direct seismic imaging
- Bend-fault earthquakes
- Low regional heat flow
- etc.

876-Pre: Bend-Fault Serpentinization

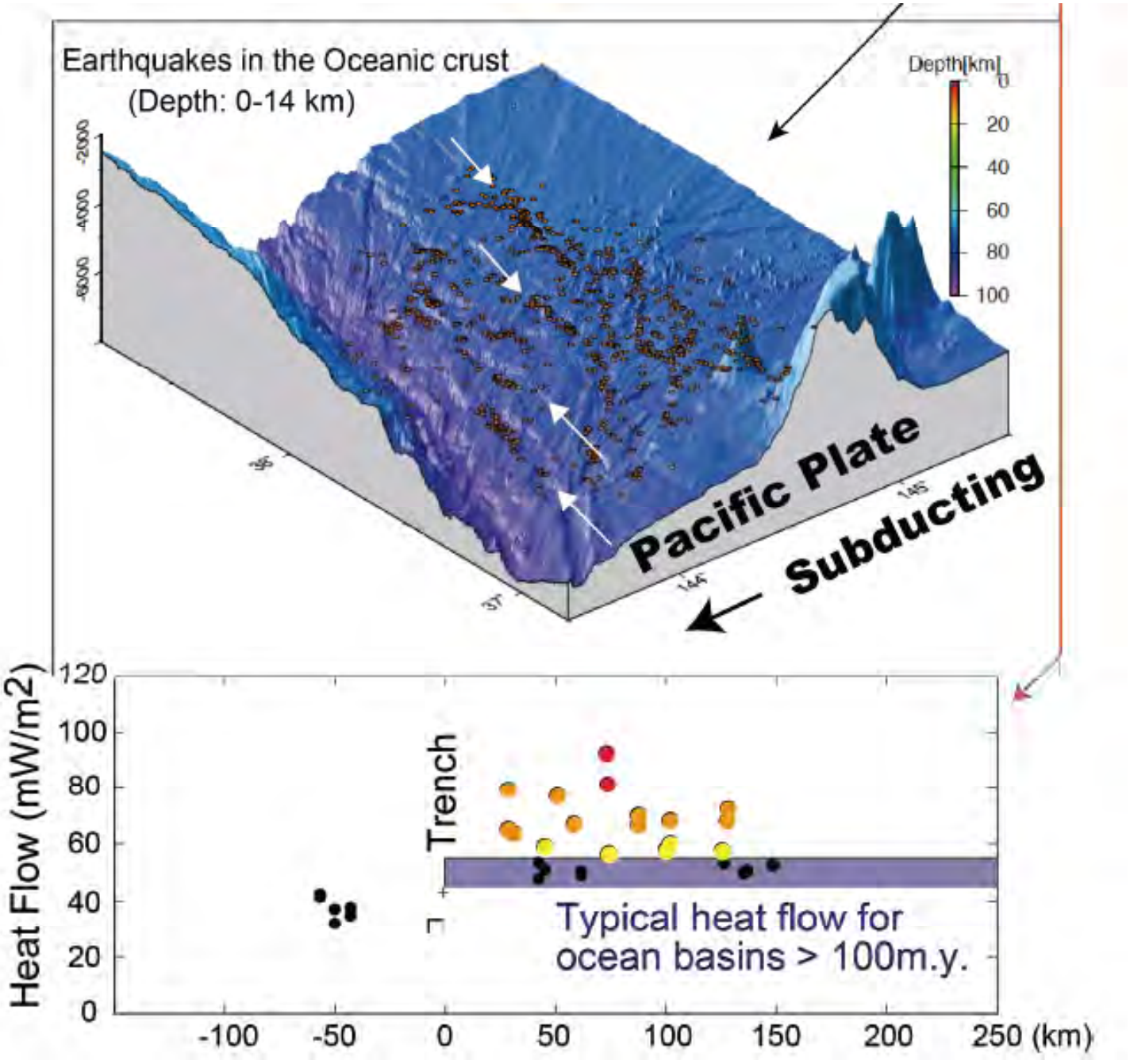


Billen, Nat Geo (2008)

Hydration of Mantle

- Subducting plate bends and develops faults as it sinks into the mantle.
- Water can be pumped into the lithospheric mantle along faults; allows hydration of the slab while it is at the trench and chemical hydration-linked reactions.
- In order to determine the composition of the oceanic crust and mantle recycled into subduction zones, we need samples of the oceanic crust and mantle after it has experienced the chemical transformations linked to bend-fault serpentinization.

886-Pre Bend-fault hydrology in the old incoming plate



Support for bend-faulting at Japan trench

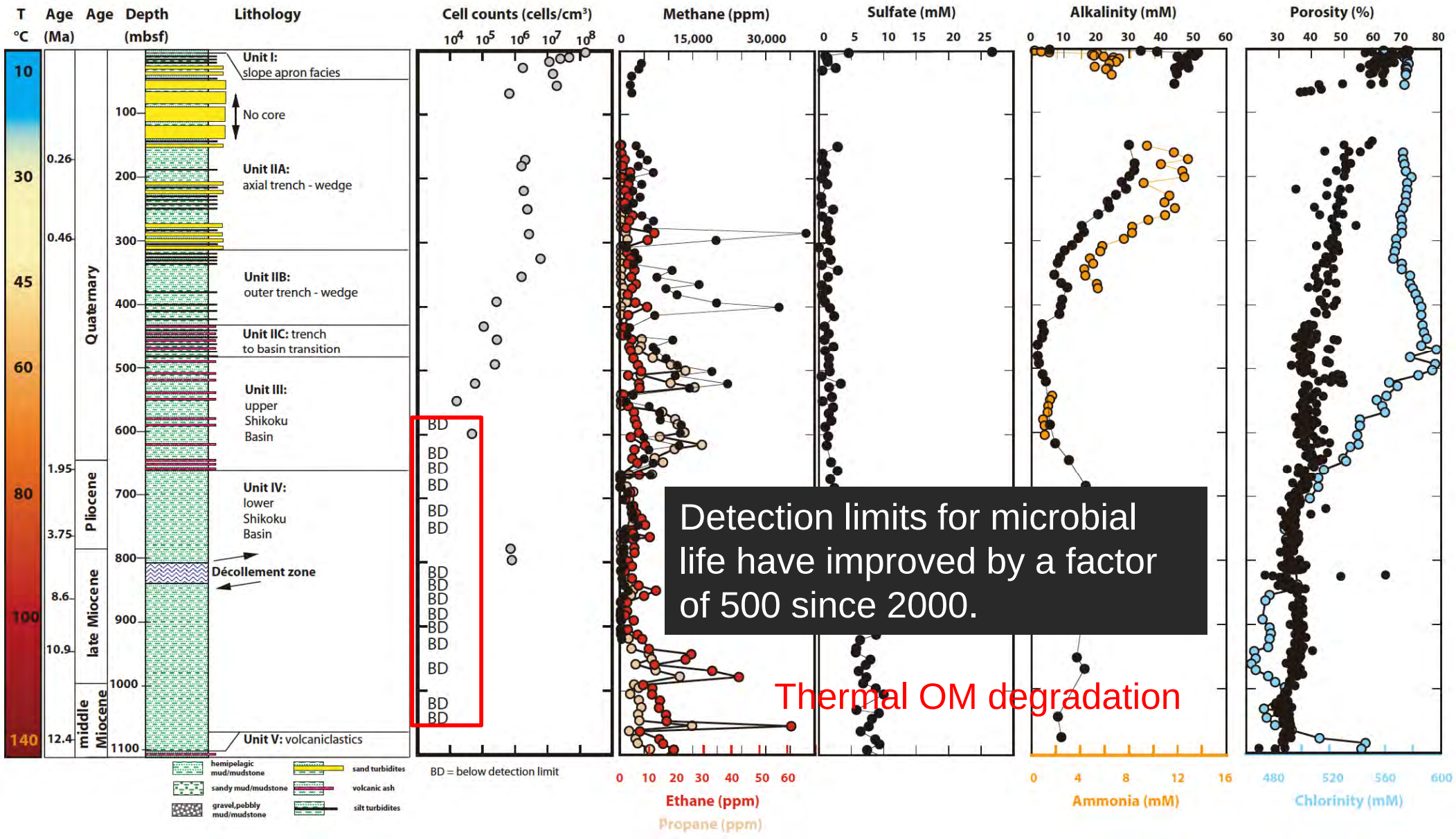
Projection of epicenters of micro-earthquakes align with topographic lineations of horst and graben structures.

Increased heat flow

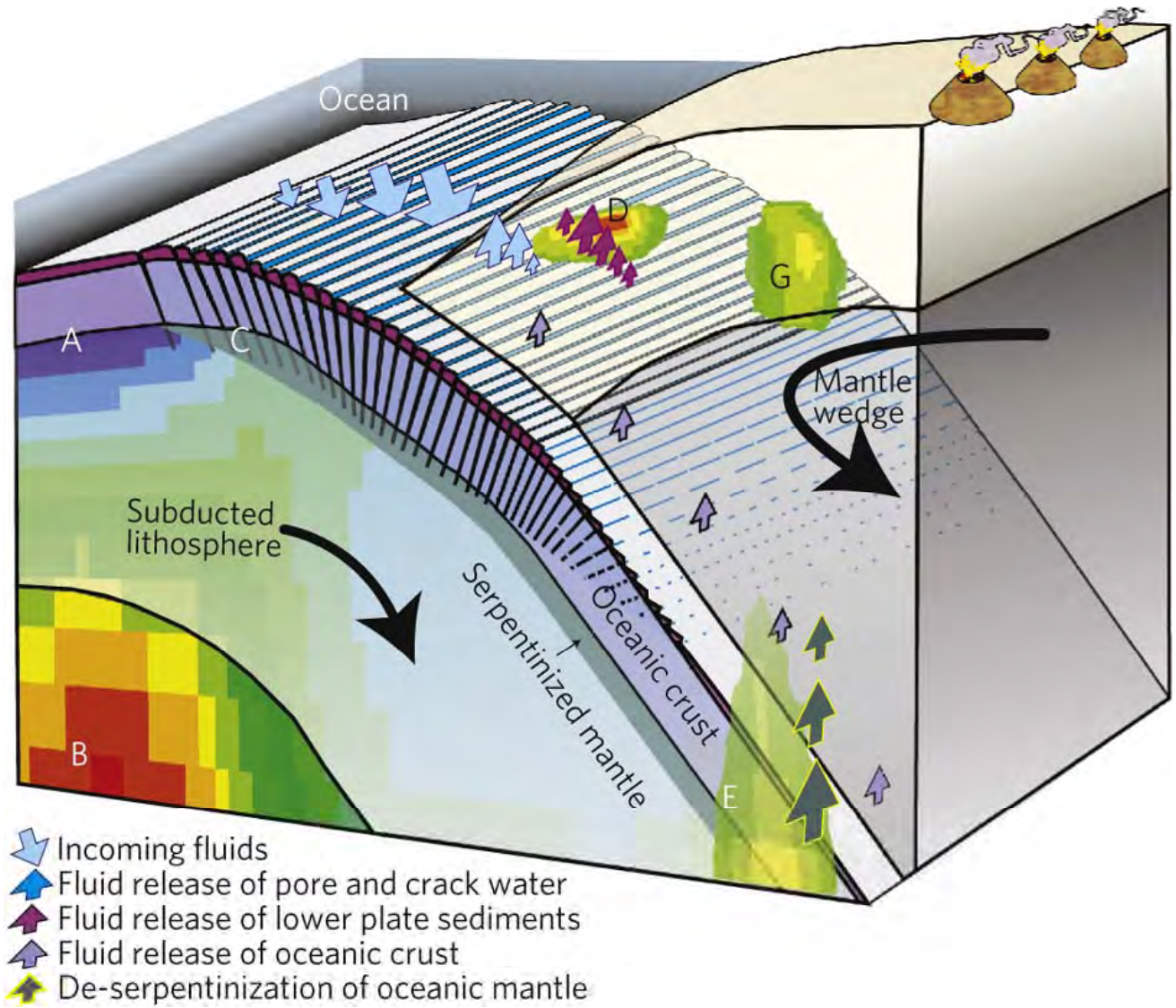
Overview and lesson from Exp 337

865-Full

Site 1174

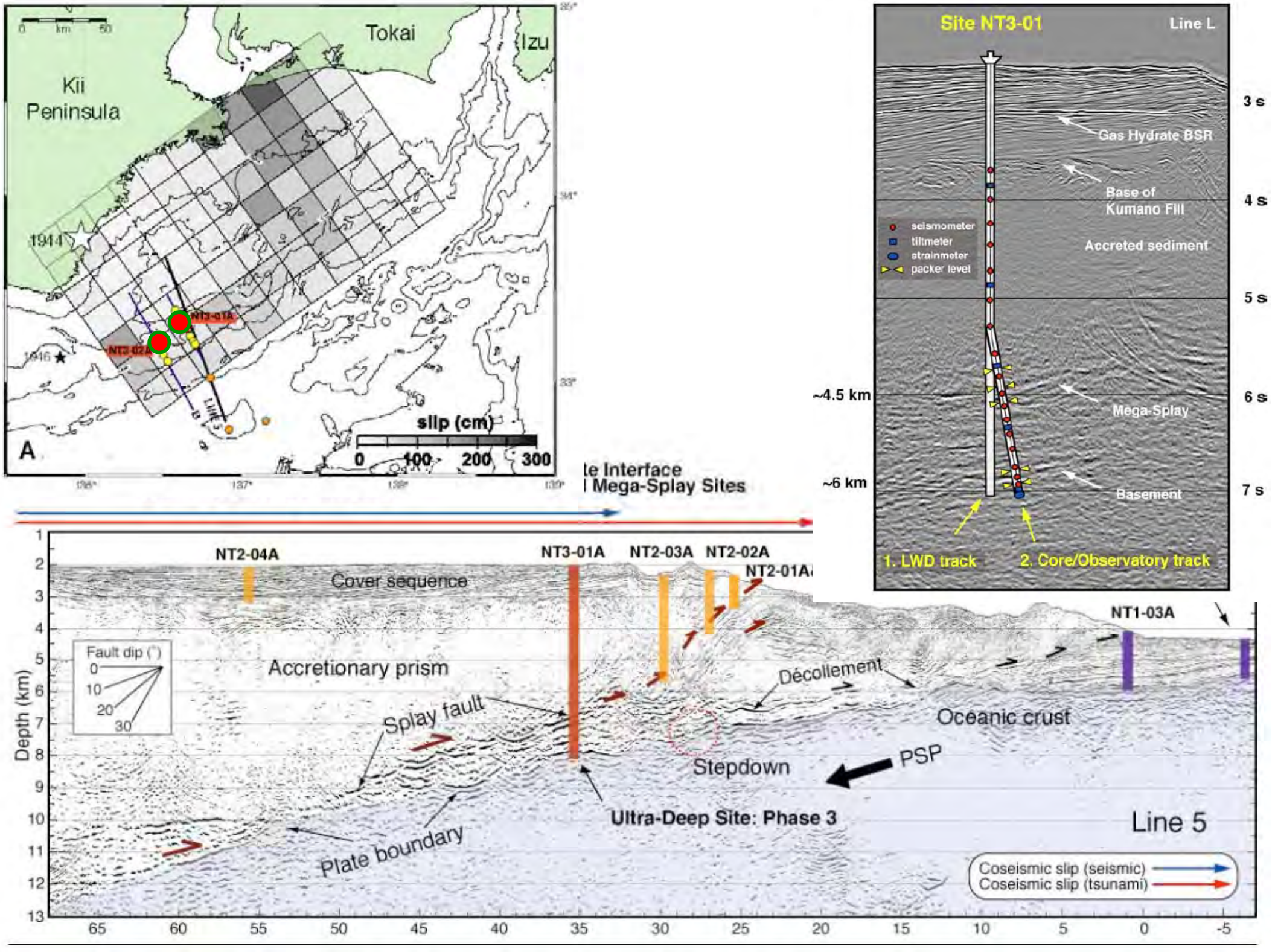


Bend-Fault Serpentinization



Worzewski, Nature Geosci (2011)

- The subducting plate bends and develops faults as it sinks into the mantle beneath the overriding plate
- Water can penetrate into the mantle part of the slab along these faults and result in metamorphic reactions, i.e. serpentinization of the mantle


Tokai
Izu
Kii
Peninsula
1944
1946
NT3-01A
NT3-02A
Line 5
slip (cm)
0
100
200
300
A
Site NT3-01
Line L
Gas Hydrate BSR
Base of
Kumano Fill
Accreted sediment
seismometer
tiltmeter
strainmeter
packer level
Mega-Splay
Basement
~4.5 km
~6 km
3 s
4 s
5 s
6 s
7 s
1. LWD track
2. Core/Observatory track
le Interface
Mega-Splay Sites
NT2-04A
NT3-01A
NT2-03A
NT2-02A
NT2-01A
NT1-03A
Cover sequence
Accretionary prism
Fault dip (°)
0
10
20
30
Splay fault
Décollement
Oceanic crust
Stepdown
PSP
Ultra-Deep Site: Phase 3
Plate boundary
Line 5
Coseismic slip (seismic)
Coseismic slip (tsunami)
Depth (km)
1
2
3
4
5
6
7
8
9
10
11
12
13
65
60
55
50
45
40
35
30
25
20
15
10
5
0
-5

876-Pre: Bend-Fault Serpentinization

- Strength
  - Scientific question has global relevance of Earth's global carbon and water cycles
  - Scientific team is very strong including world leading experts in the relevant fields
  - Great potential to address multiple challenges of IODP science plan
- Issue
  - Drilling at this WD is beyond Chikyu's capability

Proposals for site surveys were submitted to UK-IODP and the JAMSTEC Large-scale Planning workshop 2014.

Proponents will be organizing an international workshop to assess drilling plans with discussion and input from the broader scientific community.

781B-Full: Northern Hikurangi Subduction Margin

- Reviewed by SEP: January 2014; Forwarded to CIB with excellent rating
- **SEP Consensus: Site is 2Cc (substantial items missing, data do not image target adequately)**

Require 3D seismic data files with crossing lines around the proposed drill site….The proponents have acknowledged the need for these data and have a plan to acquire them, but have not yet scheduled a cruise (funding request was unsuccessful).

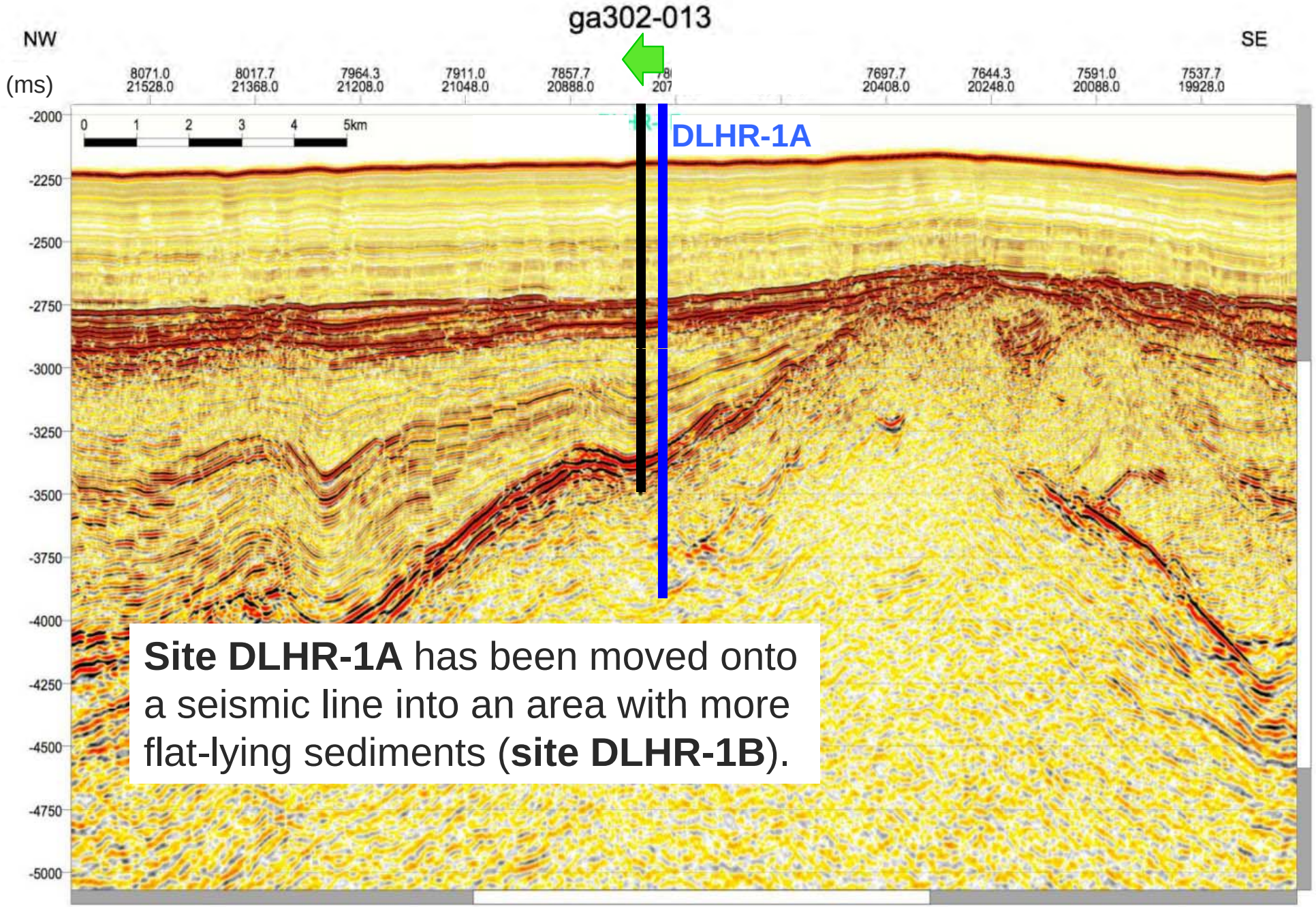
NSF funding provided for 34 OBS and active pressure gauges deployment beginning in March.

Require digital files for the backscatter and multibeam bathymetry grids, and velocity data as tables.

Suggest uploading (copying) all data from 781A as well.

Concerns regarding site location (anticlinal structure with bright spots) which can only be addressed with more 3D MCS.

DLHR-1B (former DLHR-1A) – Alternate



Proposals at CIB

- 537B-Full4: CRISP Stage 2
- 603C-Full: NanTroSEIZE Drilling and Observatory Phase 3
- 603D-Full2: NanTroSEIZE Observatories
- 698-Full3: Continental Crust Formation at Intra-Oceanic Arc
- 781B-Full: Northern Hikurangi Subduction Margin
- 865-Full: Nankai Trough Biosphere Temperature Limit

At SEP

- 707-MDP: Kanto Asperity Project: Overview
- 805-MDP: MoHole to the Mantle
- 835-Full2: JTRACK - Japan Trench Tsunamigenesis
- 857-MDP2: DREAM: Mediterranean Salt Giant
- 871-CPP: Lord Howe Rise Crustal Evolution
- 876-Pre: Bend-Fault Serpentinization
- 886-Pre: NW Pacific Bend-Fault Hydrology
- 800A-(Full or Pre?): Phase II of the Nature of the Lower crust and Moho at slower-spreading Ridges – Not yet received; Riser follow-on to Exp. 360.

At SEP

- 707-MDP: Kanto Asperity Project: Overview
- 805-MDP: MoHole to the Mantle
- 835-Full2: Japan Trench Tsunamigenesis
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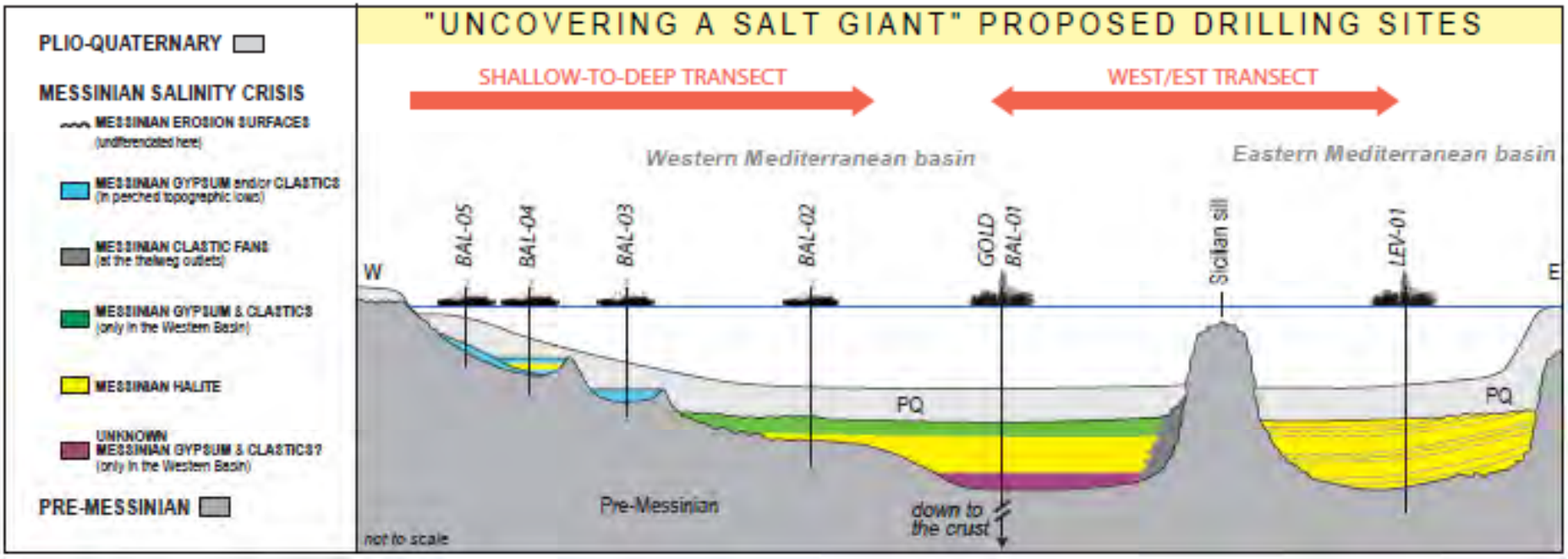
- 886-Pre: NW Pacific Bend-Fault Hydrology

- 800A-(Full or Pre?): Phase II of the Nature of the Lower crust and Moho at slower-spreading Ridges – Not yet received; Riser follow-on to Exp. 360.

Drilling Proposals	JOIDES Resolution riserless drillings				Chikyu riser drillings	
	BAL-05	BAL-04	BAL-3	BAL-02	GOLD-01/BAL-01	LEV-01
Messinian Salinity Crisis (DREAM)	★				★	
Salt Tectonics and Fluids				☆	☆	★
Deep Biosphere		★		☆	☆	★
Deep Earth to Surface connexions		☆			★	

★ drilling site(s) required to achieve the objectives of a given proposal. The proposals objectives cannot be achieved without drilling thesthese site(s)
☆ drilling site(s) helping to achieve the objectives of a given scientific proposal



835-Full: JTRACK: Tracking the tsunamigenic slips across and along the Japan Trench

All sites are rated as “2”- Data reviewed by SEP are sufficient to support the scientific objectives of the drilling effort, but minor concerns require follow-up by proponents.

Issues that need to be addressed:

- Maps of key horizons need to be provided
- 1. JTCT-01A- The location provided is slightly different from C0019 (reoccupied location) and the CDP positions provided in the navigation files supposedly located at a crossing line differ from each other.
- 2. JTCT-02A- There is a depth conversion issue between JTXC-02 (cross line) and HDMY-001 (dip line). Different interval velocities were used for the upper layer in the two lines- 2000 m/s in JTXC-01 and 1700 m/s in HDMY-001. Amplitude anomalies exist at the proposed site.
- 3. JTNT-01A- Reflector depths given on Form 5 do not match seismic data on HDMY-069. Different interval velocities were used for the upper layer in the two lines- 2000 m/s in JTXN-01 and 1700 m/s in HDMY-069. Possible faults higher in the sequence should be identified.
- 4. JTNT-02A- Amplitude anomalies occur at the proposed site.
- 5. JTNT-04A- CDP number on Forms 2 and 6 are incorrect. Possible faults higher in the sequence should be identified.

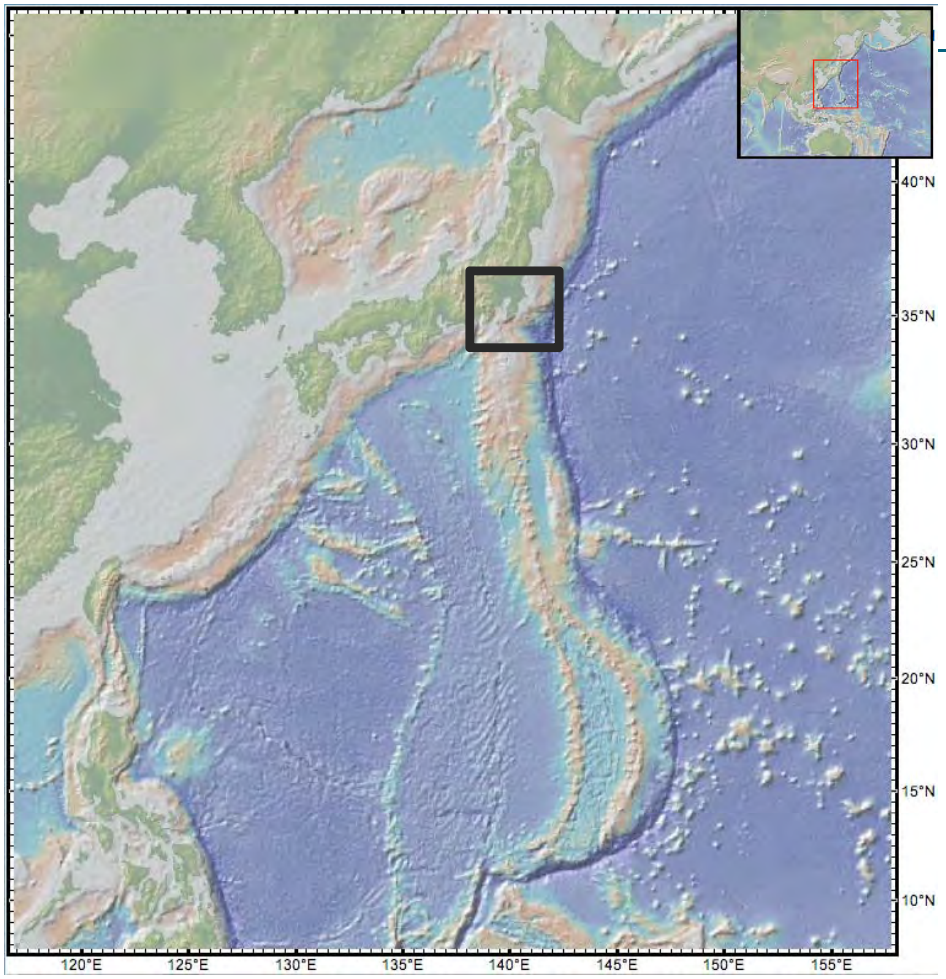
Revised operational plan from PRL

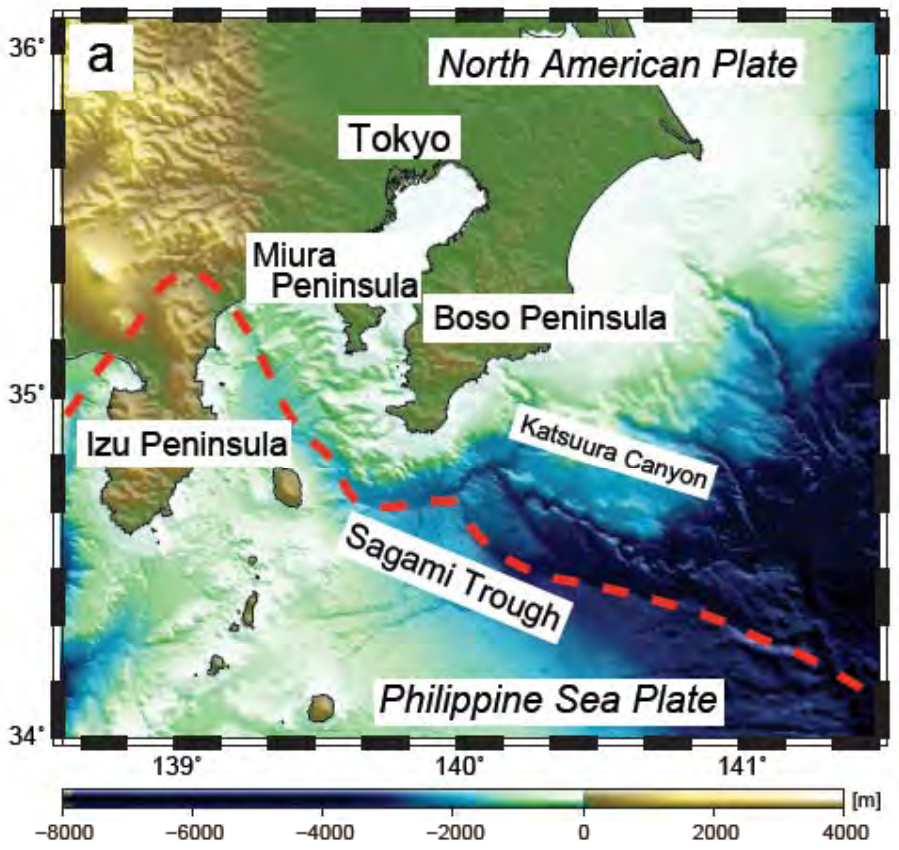
Indicates 65.3 days for coring, BHA change, casing, capping, logging, transits, and contingency time

Table PRL1. Revised operational plan for proposed sites ODP11-73A and ODP11-74A. The following assumptions were made for this estimate: **HPCS & ESCS** (for sediment): 80 m/day; **RCB** (for basement): 70 m/day; **BHA change**: 2 days (including UWTV, cleaning, and re-entry); **Casing**: 5 days per site (including drifting due to Kuroshio current); **Borehole cap and sensor installation**: 3 days per site; **Logging operations**: 3 days per site; **Contingency time**: 20% of total. **Note:** To accomplish all planned operations successfully during the proposed project, we would like to avoid rainy and typhoon seasons from June to October.

Site Name	Latitude N Longitude E	Water Depth (m)	Penetration (m)	Location	Operations	Transit time (days)	Coring time (days)	Log time (days)	Total time (days)
Prot call in Japan						4.0			4.0
Transit from port to site						1.0			1.0
ODP11-73A	32°14.66 'N 135°01.51 'E	4790	725 sed 20 bsmt	Nankai Trough incoming sediment	Location of site		0.2		0.2
					Trip in		0.5		0.5
					HPCS coring to 250 mbsf		3.2		3.2
					ESCS coring to 725 mbsf		6.0		6.0
					Change of BHA		1.5		1.5
					RCB coring to 745 mbsf		0.3		0.3
					Logging			2.0	2.0
					Casing and cap		8.0		8.0
					Trip out		0.5		0.5
					Total for this hole		20.2	2.0	22.2
Transit to next site						0.3			0.3
ODP11-74A	32°20.54 'N 134°57.39 'E	4750	1194 sed 120 bsmt	Nankai accretionary prism, protothrust zone	Location of site		0.2		0.2
					Trip in		0.5		0.5
					HPCS coring to 250 mbsf		3.2		3.2
					ESCS coring to 1194 mbsf		11.8		11.8
					Change of BHA		1.5		1.5
					RCB coring to 1314 mbsf		1.7		1.7
					Logging			2.0	2.0
					Casing and cap		8.0		8.0
					Trip out		0.5		0.5
					Total for this hole		27.4	2.0	29.4
Transit from site to port						1.0			1.0
					Estimated Time	**2.3**	**47.6**	**4.0**	**53.9**
					Contingency Time (20%)				**11.4**
					Estimated Total Time				**65.3**

Target area – Kanto Region





Focused on the complex boundary between the Philippine, Pacific, and Japan Arc where the Izu-Bonin Arc is subducting.

Miura and Boso Peninsulas contain ophiolitic complexes and post-Miocene accretionary complexes, trench slope sediments and forearc basin sediments

CDEX Technical Advisory Team Report to CIB #4
TAT Meeting #2, Yokohama, 17-18 March 2016

- Review TAT purpose and membership
- Review results of first meeting in 2014, focused on:
  - NanTroSEIZE Exp 348 experience
  - Early planning for mantle drilling
- Second meeting reviewed wider range of projects, with special focus on engineering preparation for:
  - Resumption of NanTroSEIZE riser drilling
  - Eventual full crustal penetration to mantle project
  - Potential riserless Nankai Trough T-limit drilling
- Five specific consensus statements from TAT#2
- TAT response to Chikyu-STP proposal

TAT Purpose

- Reports to and assists CDEX on achieving scientific goals of IODP and other scientific Chikyu drilling through new/improved technology + drilling practice
- Provides advice to CDEX on achieving long-term engineering developments related to:
  - sampling, logging, coring
  - drilling and vessel infrastructure
  - borehole infrastructure
- Advises CDEX about scientific measurements, equipment, shipboard labs and procedures, and observatory measurements

TAT Membership

- External members:
  - K. Becker, Miami (chair)
  - Chanh Cao Minh, Schlumberger, Houston
  - David Castillo, Insight Geo Mechanics, Australia
  - Tomio Mizuta, JAPEX, Japan
  - Clive Neal, Notre Dame
  - Alister Skinner, ACS Coring Services, UK
  - John Thorogood, Drilling Global Consultant, UK
- CDEX members:
  - Shin'ichi Kuramoto
  - Nori Kyo
  - Nobu Eguchi
  - Ikuo Sawada
  - Eigo Miyazaki
  - Kazuyasu Wada
  - additional observers

TAT#1 Consensus re Deep NanTroSEIZE Drilling

NanTroSEIZE Expedition 348 faced many challenges ranging from weather to hole instability issues. TAT commends CDEX and the Exp 348 team for creative approaches to overcome these challenges and leave the C0002 deep hole cased to a scientific ocean drilling record 2922.5 mbsf, in good condition to advance to the ultimate megasplay fault target depth.

In order to plan the best technical approach for further riser drilling to achieve the ultimate goal, TAT recommends that a thorough forensic analysis be conducted to assess the causes of the hole instability issues and options to mitigate risks in advancing to the target.

This analysis should include all Exp 348 core, caving, cuttings, log data and operational observations, with the intent to interpret these observations in a geomechanical context. Specifically, these tasks include:

10 very specific tasks not repeated here

TAT#1 Consensus re Deep NanTroSEIZE Drilling

CDEX Action Item: In view of potential lead-time issues, while the recommended study is being conducted, CDEX should continue to investigate feasibility and availability of all potential technological approaches for deepening C0002, including, but not limited to:

- Enhanced LWD program
- Use of oil-based drilling muds
- Re-drilling with an optimum casing design and/or directional trajectory to minimize instability
- Managed pressure drilling
  - AGR dual gradient technology
  - NOV continuous circulation system

2014 Exp 348 Forensic Analysis by iGM

- Analysis confirmed role of time-dependent borehole failure partly induced by fluid penetration into steeply dipping beds initially penetrated without problem.
- Time-dependent borehole failure was probably related to unanticipated pressure spikes, which helped to trigger shear failure along geologically weakened bedding planes in formation.
- Analysis confirmed that reasonable mud weights were used in drilling to date, and provides target range of mud weights for future deepening.
- Future deepening will also require more comprehensive pressure monitoring and control to minimize any deleterious effects of unanticipated drilling events.

- In parallel, Blade Energy provided analysis of drilling fluid options for deepening C0002 to target depth, and CDEX is evaluating options for casing program.

TAT#2 Consensus re Resumption of NanTroSEIZE Deep Riser Drilling

TAT was pleased to note that CDEX and Insight Geomechanics have satisfied the detailed recommendations from the first TAT meeting. Given the importance of successful resumption of NanTroSEIZE Deep Riser Drilling at C0002, TAT recommends that the next steps include:

(a) full integration of the ongoing reprocessing of the 3-d MCS survey data to better define lithologies and structures expected to be encountered as the hole is deepened;

(b) fulfillment of the iGM recommendation for intensive "drilling-on-paper" simulation of multiple potential drilling scenarios; and

(c) careful evaluation by a recognized expert of the mud control plan for borehole integrity.

TAT#1 Consensus re Mantle Drilling

A wide range of technological approaches is being considered for an ultimate full crustal penetration through Moho into uppermost mantle. Some of these are potentially very expensive and long-term developments, while other simpler, less expensive approaches might also be feasible.

To focus the technological development roadmap and risk assessment for full crustal penetration to the mantle, greater clarity is needed on the specific scientific objectives and site characteristics. To provide such clarity, TAT recommends the formation of the equivalent of a project coordination team (PCT) including the scientific proponents, CDEX representatives, and a representative from TAT. Because very long-term developments might be involved, this should be done immediately even if the drilling proposals have not advanced to CIB for formal designation as a "project" and formation of a PCT. At this stage of planning, all technological options should be evaluated so that drilling a complete crustal section into mantle is ultimately successful.

TAT#2 Consensus re Full Crustal Penetration to Mantle Project

TAT supports the staged approach by CDEX to development of the technological capabilities and risk reduction required to achieve the goal of full crustal penetration to mantle. Such an approach should involve a sequence that includes: (1) initial development and verification of drilling and coring systems in an appropriate test hole, (2) riserless pilot hole drilling at the ultimate full penetration site, and finally (3) riser drilling to full depth. This approach would allow iterative testing and refinement of technological development priorities and hole design based on actual experience and fiscal realities. The pilot hole would provide key information about the subsurface structure that would allow progressive improvement of the drilling plan for achieving the ultimate goal of drilling to the mantle.

TAT#2 Consensus re Working Group for Full Crustal Penetration to Mantle Project

TAT reiterates its 2014 recommendation that a working group be formed soon to help evaluate technical options for such a staged approach to achieving the scientific goals of the long-term mantle drilling project. If the separate working group previously recommended by TAT and CIB is not formed, then another option might be for TAT to start this process at its next meeting with the addition of selected mantle drilling proponents to help define scientific priorities and expected hole conditions.

TAT#2 Consensus re Development of Carbon-Fiber Reinforced Plastic (CRFP) Riser

TAT considers that development of a 4000 m CFRP riser system to be the single most important development toward achieving full crustal penetration to mantle. TAT believes this system has great potential for many types of Chikyu operations, not just for the mantle drilling project. TAT is excited about early CDEX efforts toward this development and encourages CDEX to continue pursuing this option as well as possibilities for industry co-support.

TAT#2 Consensus re Nankai T-Limit preparations

After CDEX presentation of accelerated planning for possible Chikyu riserless drilling for the Nankai Trough T-Limit project, TAT made the following specific recommendations.

(a) The plan for onland testing this summer of the short-length HPCS should include careful evaluation of various options for core liner materials, shear pin materials, speed control, and simulated lithologies.

(b) Preparation for the MTL temperature string should include careful evaluation of the effect of anticipated in situ temperatures on the weak-link standard polypropylene rope and potential alternative materials.

(c) Reconsider wireline geochemical logging for the added information it provides about the chemical and physical environments that define the limits of life.

TAT#2 Discussion of Chikyu-STP Proposal

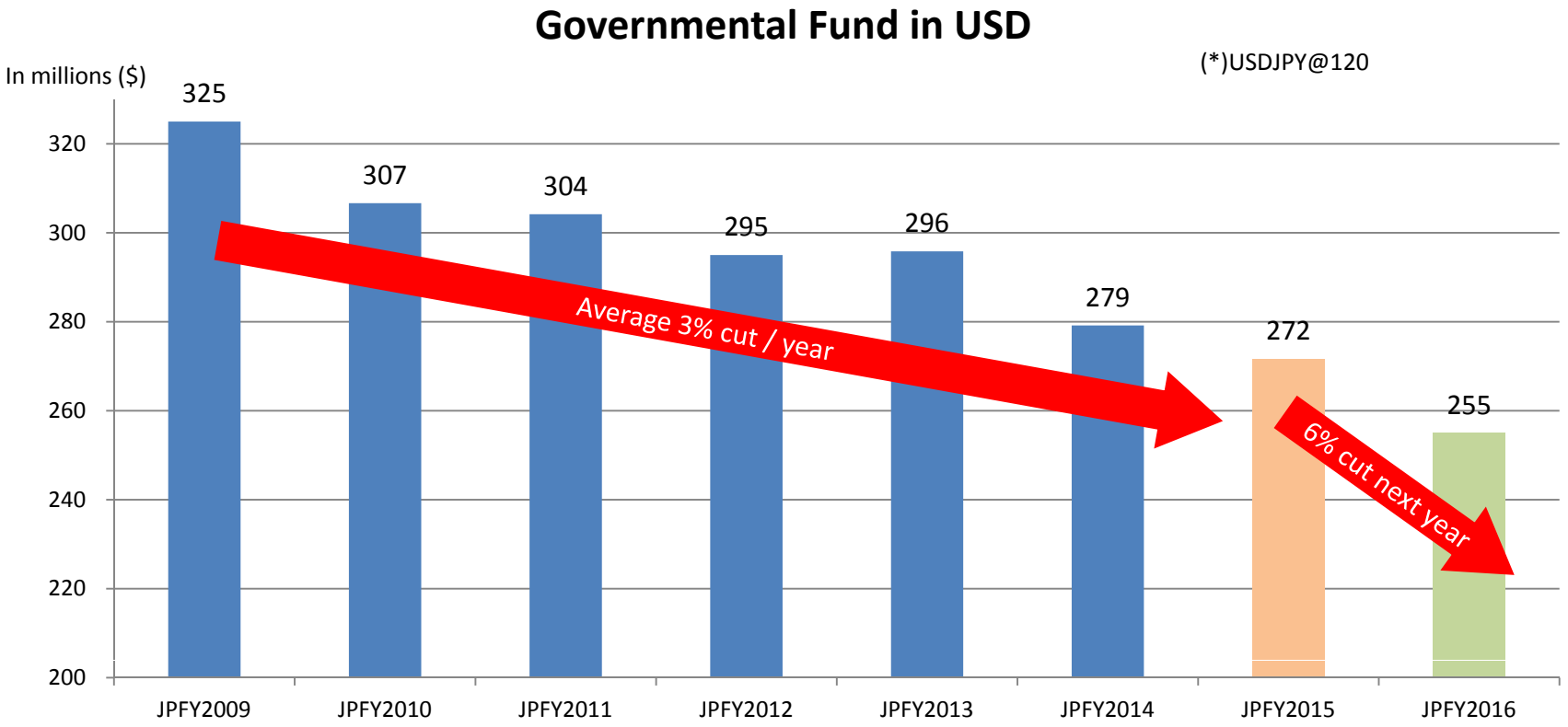
- TAT saw too much overlap between TAT purpose and proposed Chikyu-STP mandate, both for engineering development and also for shipboard measurements
- Current TAT mandate does not specify extensive communication to scientific community or "other STP-like bodies."
- Under current TAT mandate, TAT reports to CDEX, not CIB; would Chikyu-STP report to CIB?
- TAT saw two possible conclusions:
  - Two separate committees are not needed; TAT can handle tasks, if necessary with additional input on scientific measurements on ad hoc basis (coordinated by C. Neal).
  - But, if a decision is made to form Chikyu-STP, then the mandates of TAT and C-STP need to be more carefully written to define distinct responsibilities.

12. JAMSTEC Budget and Mid-term Plan-1

Shin’ichi Kuramoto

12-1. Background of Chikyu Operation

- Governmental Funding has declined over the last 7 years
- Average 3% cut every year
- Even deeper budget cut for the next FY2016: by 6%



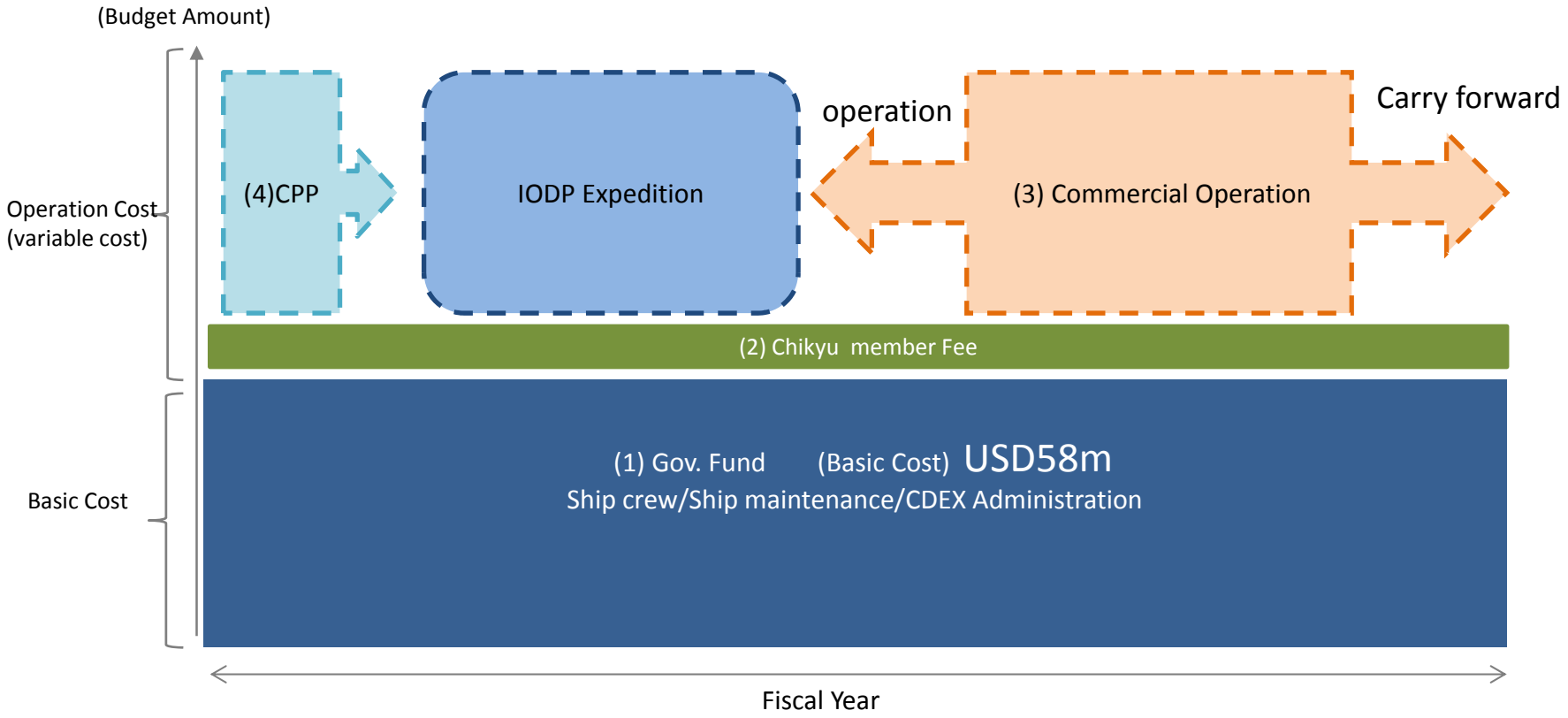
JAMSTEC Budget

Governmental funding for operating expenses
(excl. mission specific fund and supplementary budget)

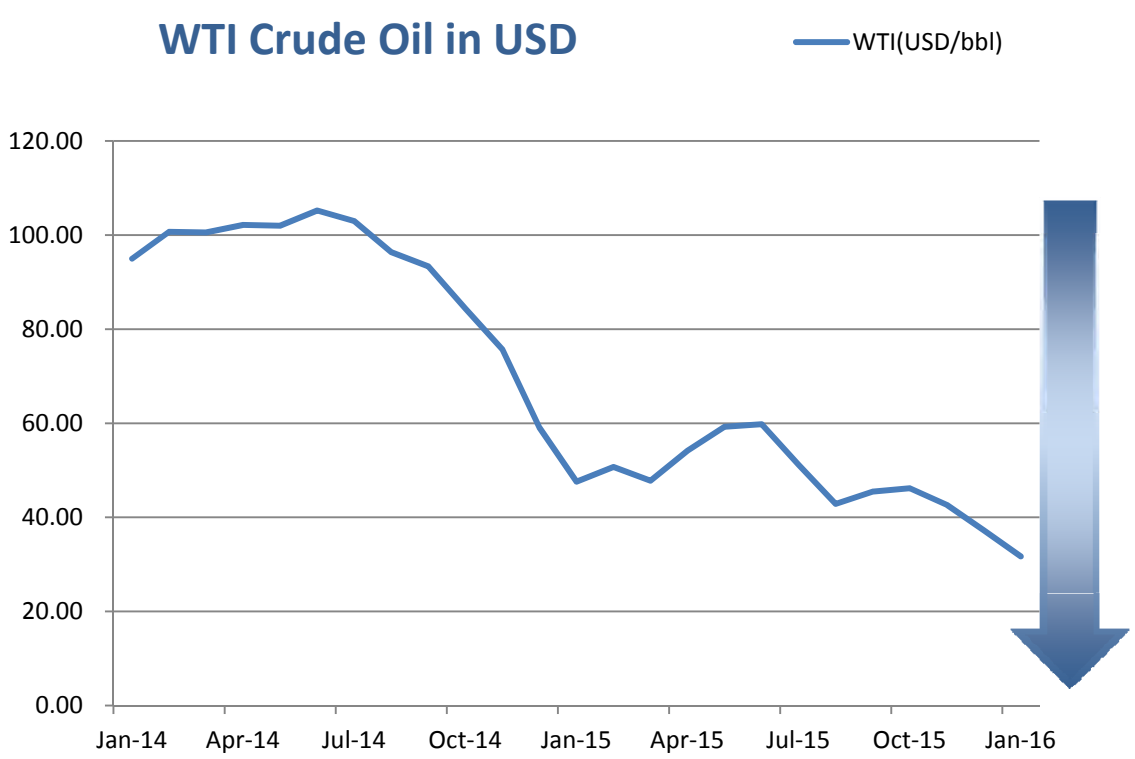
12-2. CHIKYU Funding Structure

Source of Fund

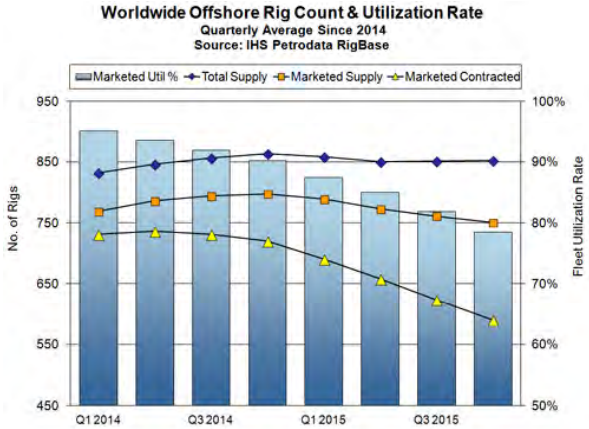
(1) Gov. Fund(USD58m/year)
(2) Chikyu member Fees
(3) Commercial Operation
(4) CPP
(5) Donation



12-3. Market conditions surrounding Chikyu Operation



Competitive Rig Fleet Utilization
(based on HIS Petrodata Weekly Rig Count)



- Rig utilization rate also declining.
- Rigs are, namely, working less.

Crude Oil Market has been down.

(Pros)

- Cost-cutting in operating expenses, i.e. personnel cost, fuel, subcontractors and so on.

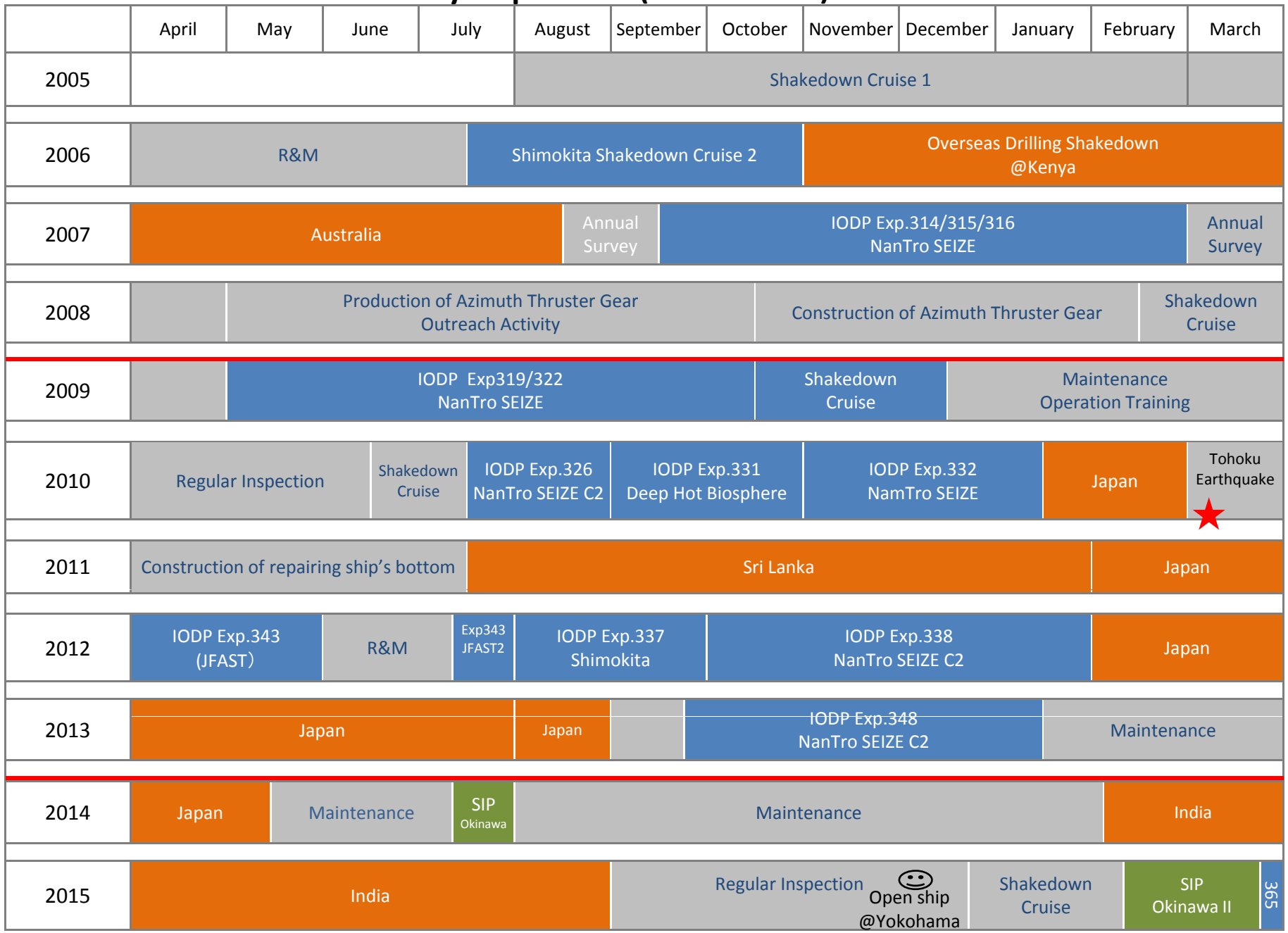
(Cons)

- Less opportunity for commercial drilling.
- Day rates will be much lower.

Pros & Cons: however, overall impact on Chikyu Operation rather negative

12-4. Actual Performance of Chikyu Operation (2005～2015)

=Commercial Operation



AF:62%　Science Opration:25%　Commercial Operation:25%　Other :12%　SIP: Cross-ministerial Strategic Innovation Promotion Program

12-5. Plan after NGHP-02 (Commercial Operation @ India)

=Commercial Operation

	4	5	6	7	8	9	10	11	12	2015/1	2015/2	2015/3	Retained Earnings carried forward
2014	Japan		R&M		SIP	R&M					NGHP-02 @India		10M

	4	5	6	7	8	9	10	11	12	2016/1	2016/2	2016/3	Retained Earnings carried forward
2015	NGHP-02@India					Regulatory Shipyard Maintenance					SIP	Nan Tro C10	20M

	4	5	6	7	8	9	10	11	12	2017/1	2017/2	2017/3	Retained Earnings carried forward
2016	NanTro C10		Japan			IODP or Commercial Operation Window							21M

	4	5	6	7	8	9	10	11	12	2018/1	2018/2	2018/3	Retained Earnings carried forward
2017		Japan			IODP or Commercial Operation Window						Japan	IODP or Commercial Operation	23M

	4	5	6	7	8	9	10	11	12	2019/1	2019/2	2019/3	Retained Earnings carried forward
2018	IODP or Commercial Operation Window			Regulatory Shipyard Maintenance			IODP or Commercial Operation Window						13M

Estimated costs: 10M

SIP: Cross-ministerial Strategic Innovation Promotion Program

12-6. Plan with prospect for Commercial Operation

=Commercial Operation

	4	5	6	7	8	9	10	11	12	2015/1	2015/2	2015/3	Retained Earnings carried forward
2014	Japan		R&M		SIP		R&M				NGHP-02 @India		10M

	4	5	6	7	8	9	10	11	12	2016/1	2016/2	2016/3	Retained Earnings carried forward
2015	NGHP-02@India					Regulatory Shipyard Maintenance					SIP	Nan Tro C10	20M

	4	5	6	7	8	9	10	11	12	2017/1	2017/2	2017/3	Retained Earnings carried forward
2016	NanTro C10		Japan		IODP or Commercial Operation Window				Commercial Ops				34M

	4	5	6	7	8	9	10	11	12	2018/1	2018/2	2018/3	Retained Earnings carried forward
2017		Japan			Commercial Operation						Japan	IODP or Commercial Operation	56M

	4	5	6	7	8	9	10	11	12	2019/1	2019/2	2019/3	Retained Earnings carried forward
2018	IODP or Commercial Operation Window			Regulatory Shipyard Maintenance			IODP or Commercial Operation Window						46M

Estimated costs:10M

SIP: Cross-ministerial Strategic Innovation Promotion Program

CDEX/JAMSTEC

- JAMSTEC needs IODP expedition in 2016-2017 window.
  - No significant IODP operation in last two years.
  - Earlier execution of high scientific impact IODP project has big impact on MEXT budget allocation.
- Complementary Project Proposals (CPP) more than welcome.
  - Even a riserless proposal, CPP accelerates execution of future projects.
- “Road to Mantle” needs to be started.
  - Still the fundamental target of *Chikyu* IODP operation.
  - Basic engineering development funds requested.
  - No hard-rock drilling experience yet.
- Mediterranean Salinity Crisis (DREAM)
  - Several international workshops were held.
  - Expecting ECORD contribution and drilling proposal.

Approximate operation days and cost estimation

Proposal #	Proposal Title	Approx. days	Approx. cost (USD)
537	**CRISP**	**300**	**160M**
603	**NanTroSEIZE C2 Deep**	**100**	**35M**
698	**IBM**	**500**	**260M**
781	**Hikurangi**	**400**	**200M**
603	NanTroSEIZE C6/7 Obs.	45	10M
865	T-Limits Min.	40	9M
865	T-Limits Full	90	20M

NB: **Bold text = Riser expedition;** Normal text = Riserless expedition.
781 Hikurangi costs do not include mob/demob costs.

Science Theme Categorization@ Chikyu+10 WS

Science Theme	Flagship (Large) Project	Discovery (Small) Project	Other Opportunities
Dynamic Fault Behavior	NanTroSEIZE CRISP Hikurangi Margin	Japan Trench KAP	Faulting in Oceanic Crust Monitoring Nicoya Peninsula
Ocean Crust & Earth's Mantle	M2M Life Cycle of the Oceanic Lithosphere		Atlantis Bank Ontong Java Plateau IBM Godzilla Megamullion
Deep Life & Hydrothermal System	(Habitable Zone Drilling)		4500 m hole off Hachinohe Shikoku Basin (High Temp.) Décollement Hydrology (JFAST) Mud Volcano in the Kumano Basin Brothers Volcano (Kermadec Arc) Eastern Manus Basin Serpentinization System
Continent Formation	IBM		Aleutian
Sediment Secrets	Mediterranean Salinity Crisis (DREAM)	Lord Howe Rise Challenger Plateau Pegasus Basin South China Sea Santos Basin Bering Sea	Pacific Guyots Deep Pacific Somali Basin Eastern Mediterranean Santa Barbara Basin West Caroline Basin Bohai Basin Queen Maud Land

Mar 2016
Chikyu IODP Board

CDEX Outreach and Education, JPY 2015

Chikyu 10th anniversary events

Category	Title	Date, Outline
Symposium Event	Special symposium	12 Nov., Tokyo, 357 participants
	Event for youth	4 October Yokohama, 207 participants
Chikyu Open ship	For government agencies, related industries, and foreign embassies	20 & 23 November Port of Yokohama, 600 visitors
	For Mass Media	27 October at dry dock, 19 November at Port of Yokohama, 36 media outlets
	For general public	21-22 November Port of Yokohama, 6673 visitors
Publications and Video footage	"D/V Chikyu 10th Anniversary" special booklet Special "D/V Chikyu" volume of "Blue Earth" in English New promotional video for D/V Chikyu	

Mass media outlets

National Geographic Magazine (Japan)

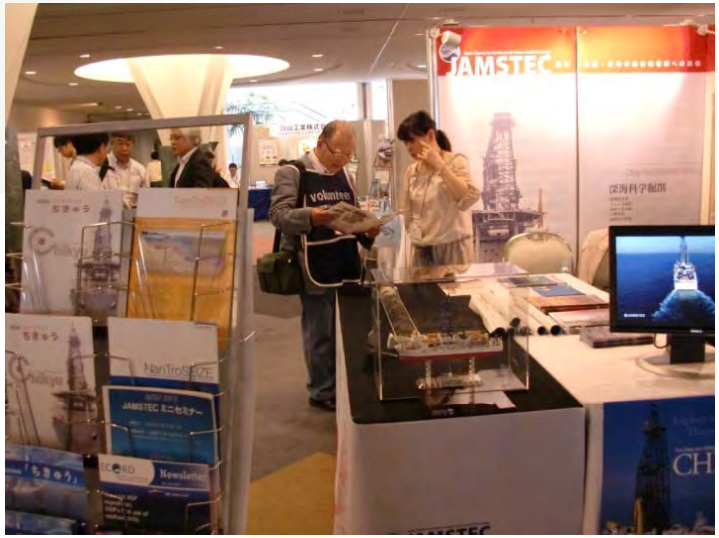
NHK

TBS

CDEX provided for:

- 16 media groups for opportunity of filming or interviews
- 56 companies or organizations for photographs or movies

Communication at science conference

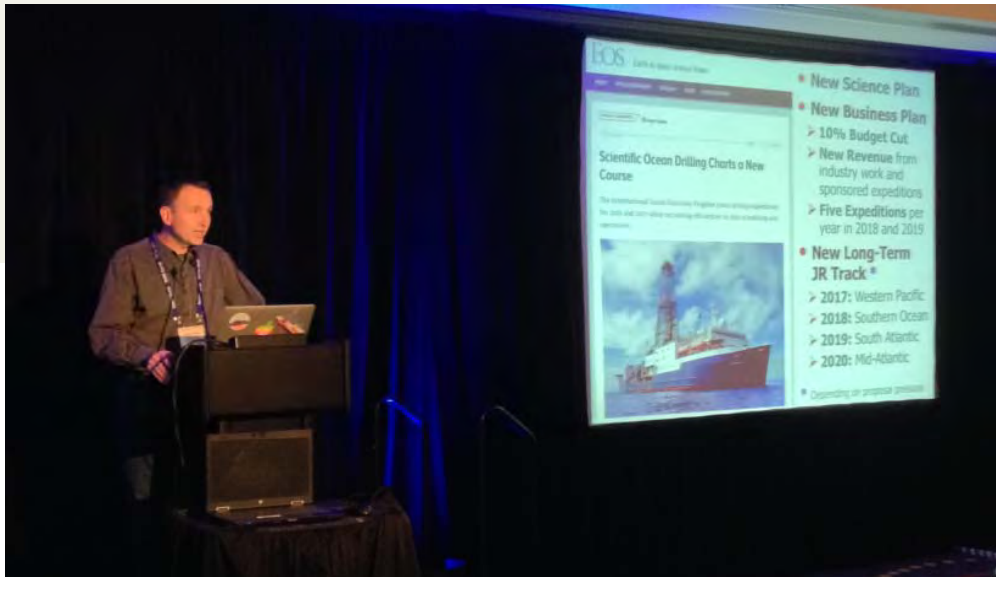


JpGU booth exhibition
May 24-28, 2015

AGU booth exhibition
Dec. 13-18, 2015

Face-to-face communication with scientists and broad stakeholders regarding D/V *Chikyu's* activities.

IODP/ICDP Town Hall Meeting



Co-organized with USSSP, CDEX/JAMSTEC, ECORD, and ICDP.

Approximately 400 participants.

Education

Kumano Geo-park lecture

Tagajo high school
Geological field excursions
and laboratory work for
disaster science

Open ship for International
Earth Science Olympiad

Special symposium

MayukoToyota
Parliamentary Vice-Minister of MEXT

Panel discussion

Event for youth

Lectures

Communication with attendees

Chikyu open ship (Nov. 21 & 22, Yokohama)

Pre-registration for 8,000 person. First come, first served.

Registration finished within three days.

6,673 person were onboard Chikyu for open ship.

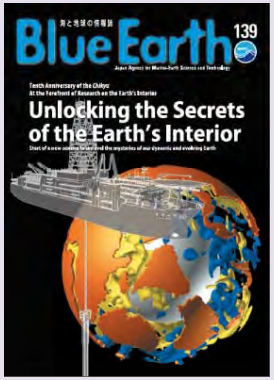
Publication

JAMSTEC magazine: Blue Earth summarized version for *Chikyu* articles (in Japanese)

"D/V *Chikyu* 10th Anniversary" special booklet (in Japanese)

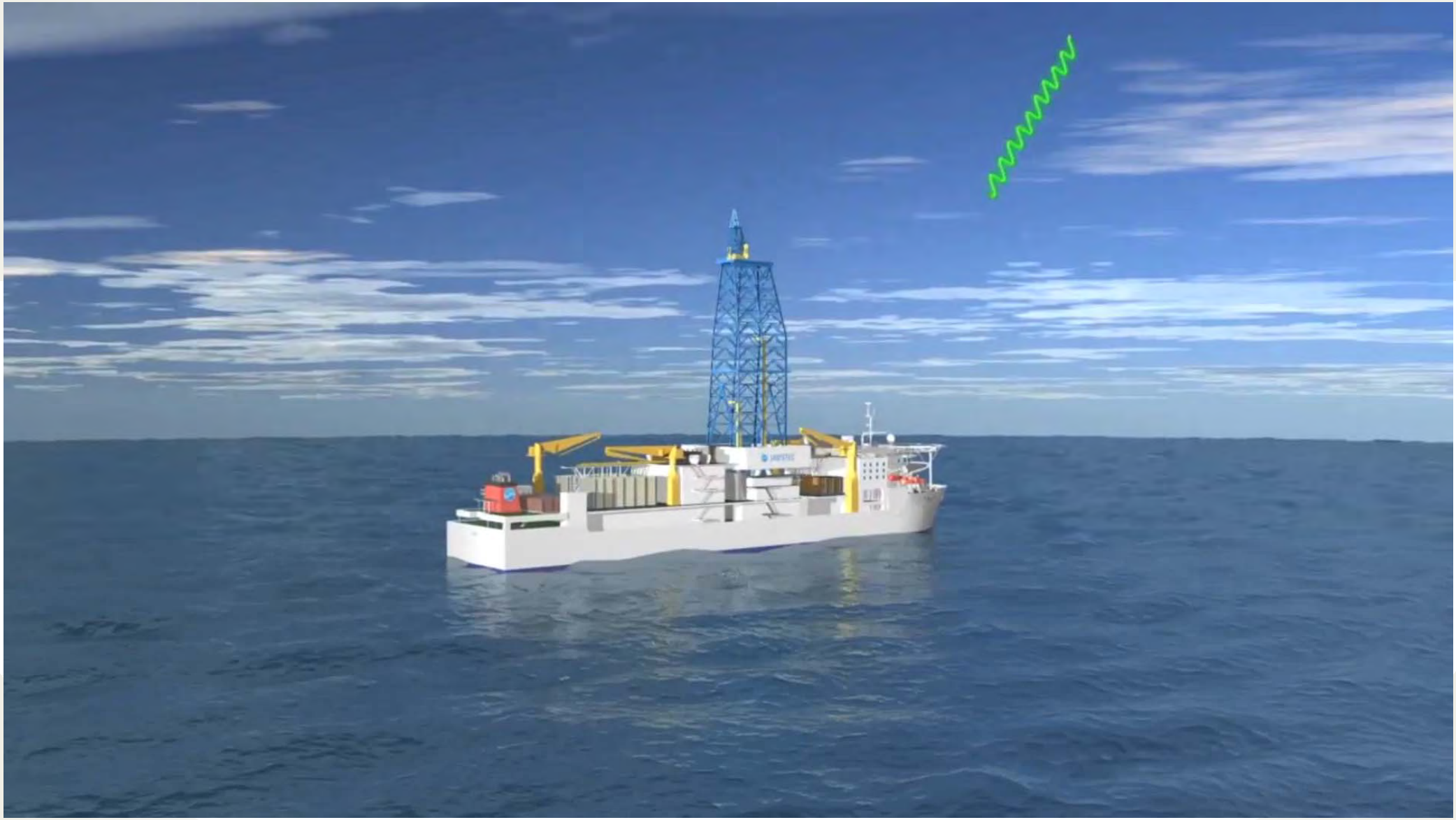
Chikyu special volume of Blue Earth

English versions were distributed at AGU



Chikyu drone filming

Chikyu CG animation



Upcoming activities

Promotion video of Chikyu:

IODP Exp. 365 promotional videos of the vessel and its operation by Science Media

Exhibition booth

Organize:

JpGU (22 – 26 May, Makuhari)

Goldschmidt (26 June – 1 July, Yokohama)

AGU (12 – 16 December, San Francisco)

CDEX will support ECORD-organized booth at EGU and IGC.

Chikyu onboard school:

JAMSTEC and J-DESC are co-organizing a Chikyu onboard school soon after the Goldschmidt conference for international young scientists, students, and educators.

IODP core curation at Kochi Core Center (KCC)

KCC's Role & Responsibility

As a member of CIB, we at the KCC conduct following tasks:

- Curation of core samples as per IODP geographical model
  - Legacy & IODP cores, cuttings and DeepBIOS
- Chikyu mirror site
  - Complement sampling & measurements pending from Chikyu expeditions
- Encourage intensive use of core and related information
  - Core inventory, Virtual Core Viewer, and Sample availability
- Provide access to KCC analytical facility for IODP core study
- Contribute in Pre-cruise training and J-DESC core school
- Collaborate with 2 other IODP core repositories: BCR and GCR

Curation tasks

- Core storage management
- Sample request evaluation
- Sampling plan for Chikyu IODP expeditions
- Organize sampling party
- Sample data management
- Education & Outreach

Curation of core material in KCC

IODP Expedition → IODP core curation

Including Legacy (DSDP/ODP) core curation

Non-IODP Expedition → JAMSTEC core curation

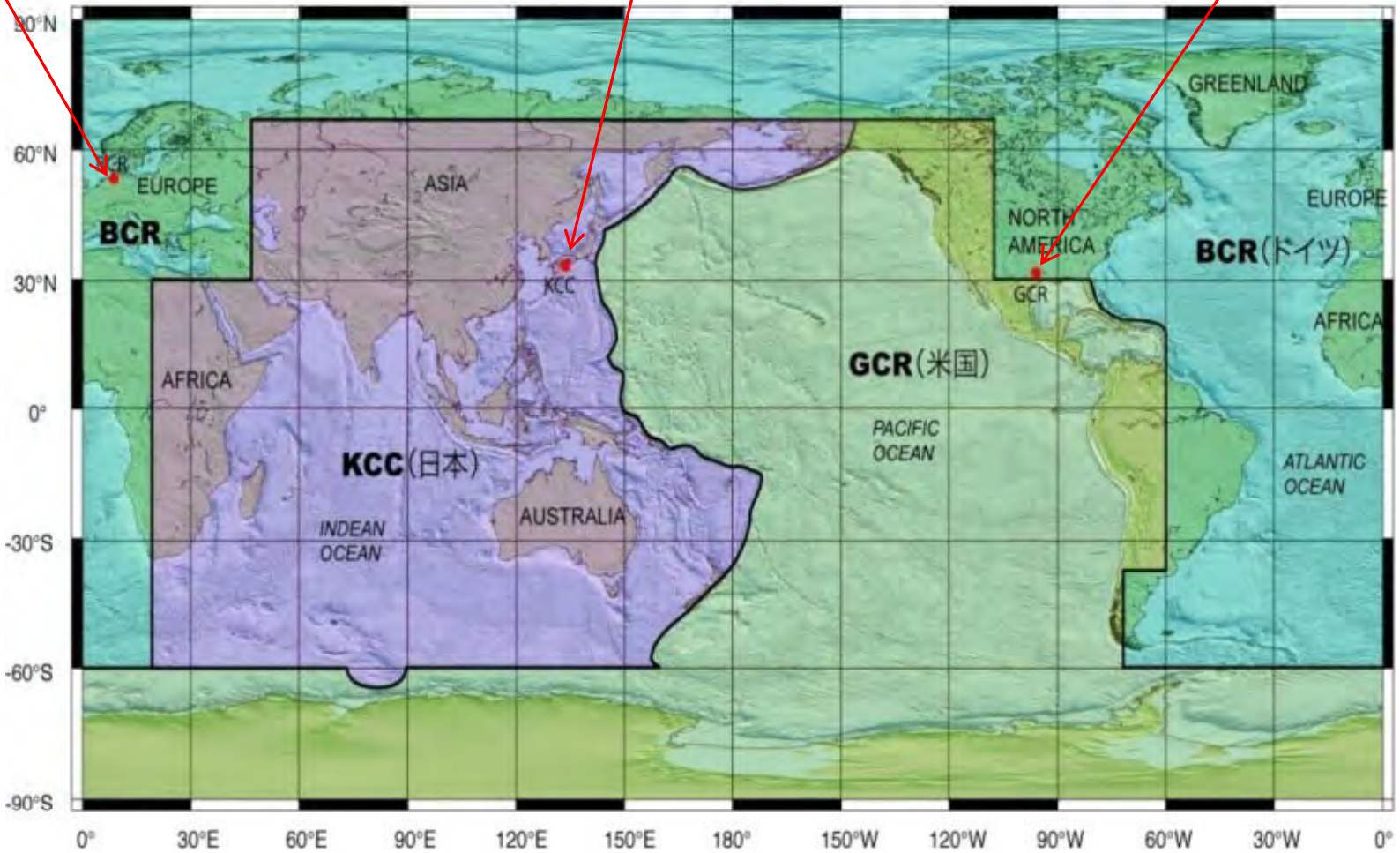
including

- Chikyu shakedown cruises
- Chikyu domestic cruises by non-IODP budget
- Sediment cores taken by JAMSTEC fleet

Bremen Core Repository

Kochi Core Center

Gulf Coast Repository



Geographic model: 3 oceanic regions, 3 IODP core repositories

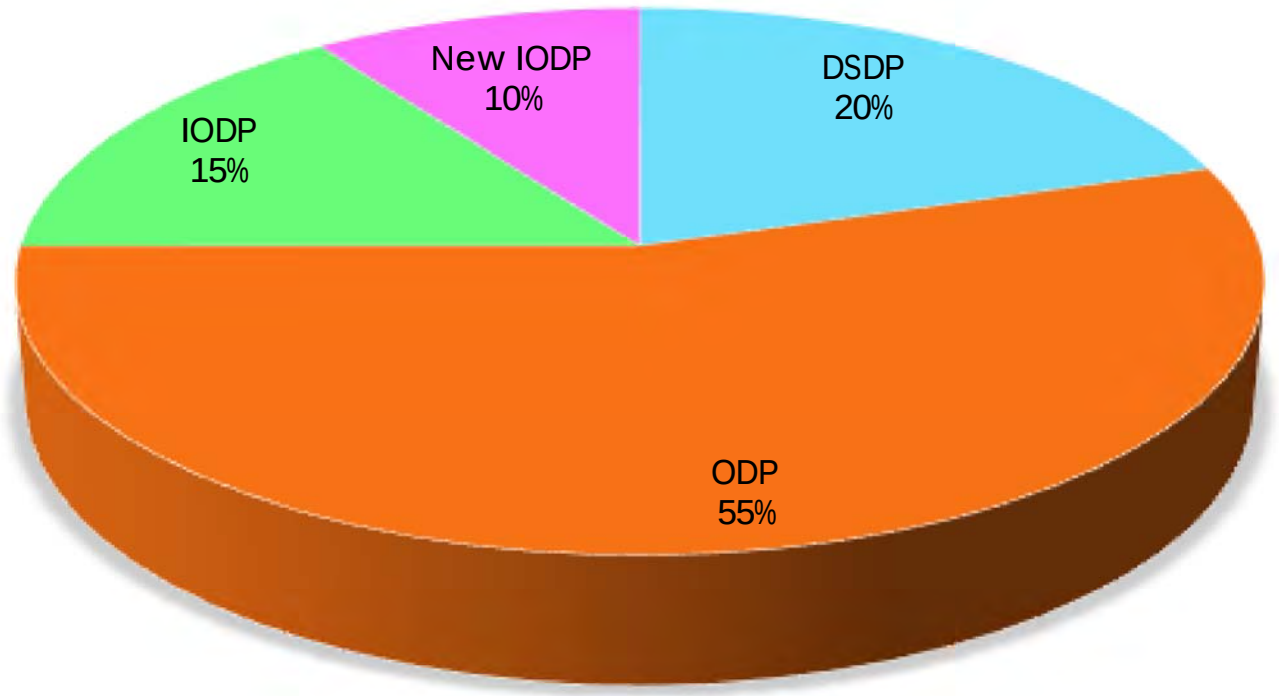
IODP & Legacy (ODP/DSDP) cores

Repository	Institution	Amount of core
BCR	University of Bremen	154 km
GCR	Texas A&M University	128 km
KCC	JAMSTEC & Kochi University	111 km
NJ Geological Survey	Rutgers University	0.62 km ODP Leg 150X

(as of Feb. 2016)

Curation of core material

IODP cores (including Legacy cores) : ca. 111 km of core



(as of Feb. 2016)

Curation of core material

~1.5 m long core sections (AH & WH)
at +4˚C, ~80% humidity
ca. 111 km

10 cm long whole rounds
(DeepBIOS) at -80˚C
296 nos.

Cuttings
at +4˚C, ~80% humidity
1242 nos.

Shipboard sample residues and unused samples returned by sample requesters
Stored in +4˚C reefer and air-conditioned container

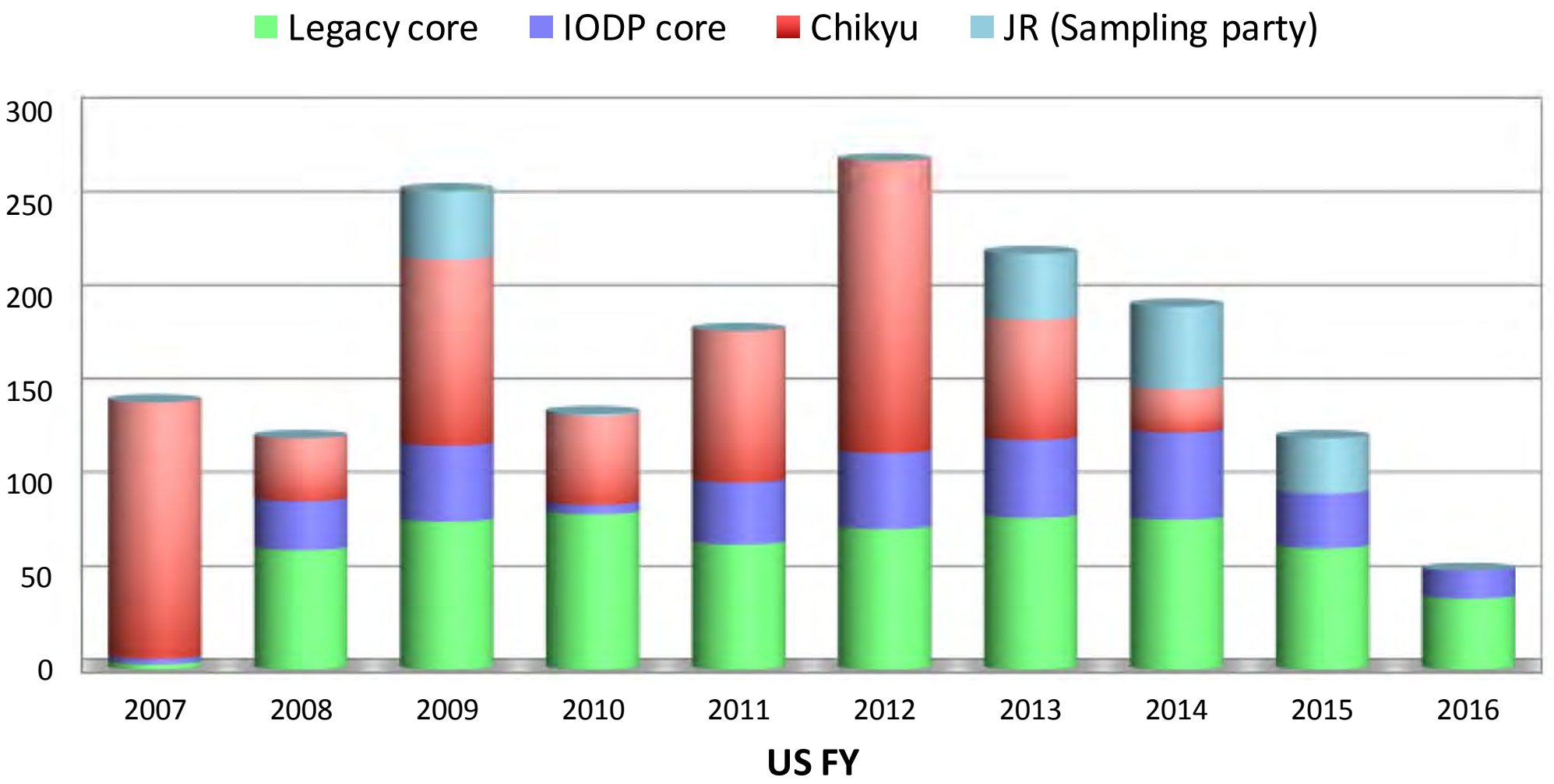
(as of Feb. 2016)

IODP Sample Data & Obligation Policy Implementation plan

- KCC implements the new IODP policy approved by the 3 FBs
- Curatorial Standard Operating Procedure (SOP) is available through the KCC website

http://www.kochi-core.jp/en/iodp-curation/curation-sop.html

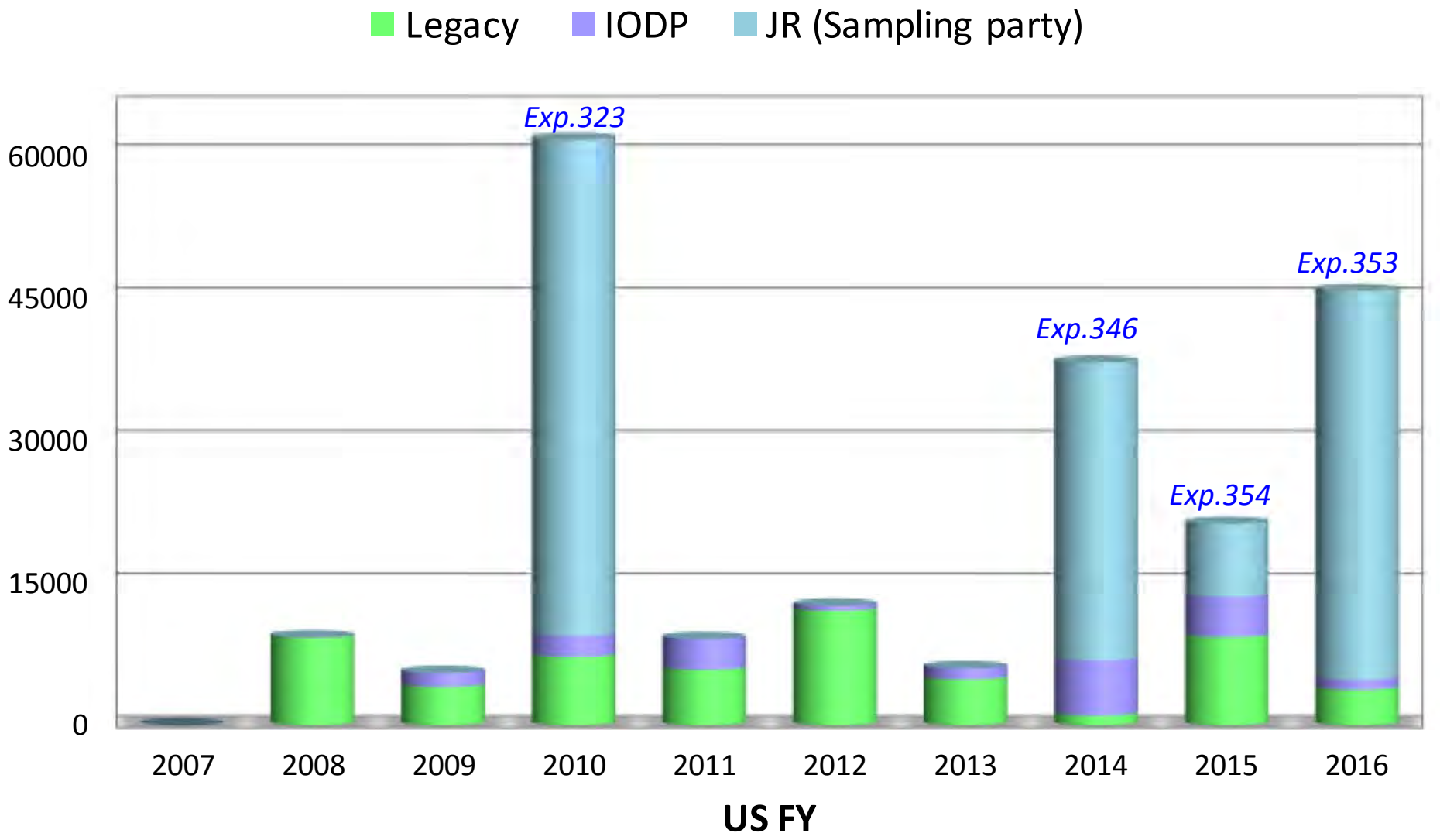
Sample requests



Total	1706

(as of Feb. 2016)

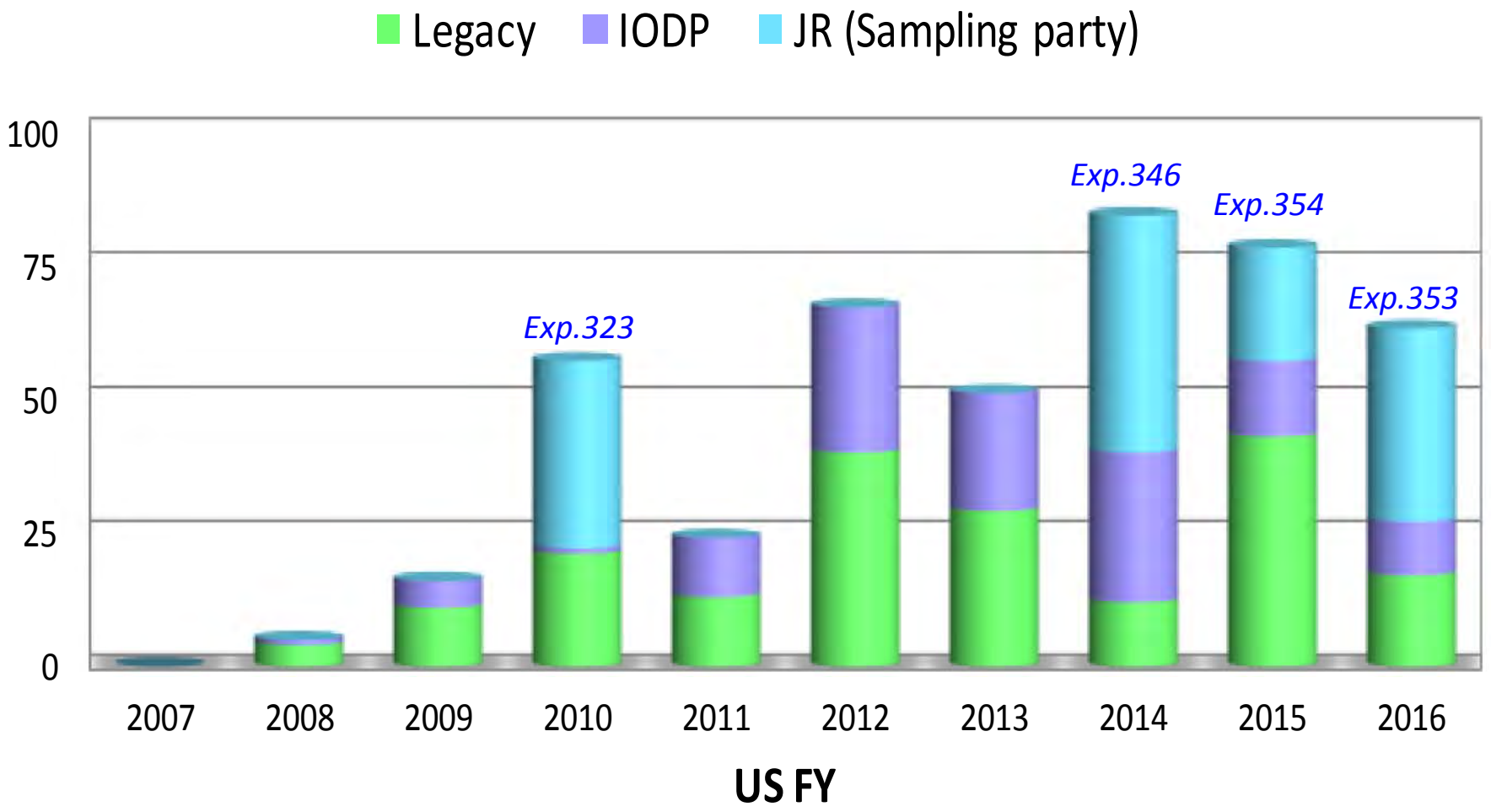
Samples shipped



Total	208,515

(as of Feb. 2016)

Visitors



Total	445

(as of Feb. 2016)

Additional repository

since October 2014

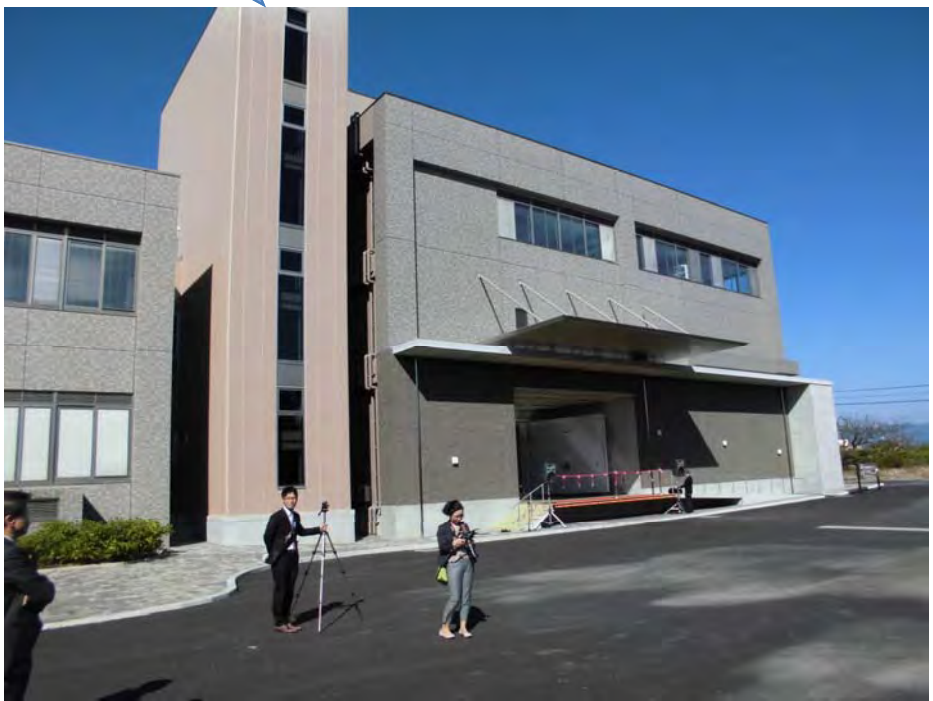
Aerial view of KCC

Core racks in new reefer

Extra storage space for 150 km of core material
Total capacity : 250 km

New IODP cores being stored in new reefer

Transfer some Legacy cores from old to new reefer



Exp. 353 and 354 sampling party

	Exp. 354	Exp. 353
Total core length	1727 m	4280 m
Number of core sections	3704	7464
Number of sample requests	24	32
Sampling party schedule	Sep. 2015	Oct. 2015
Number of sampling party members	21	36
Number of samples taken	7706	40822*

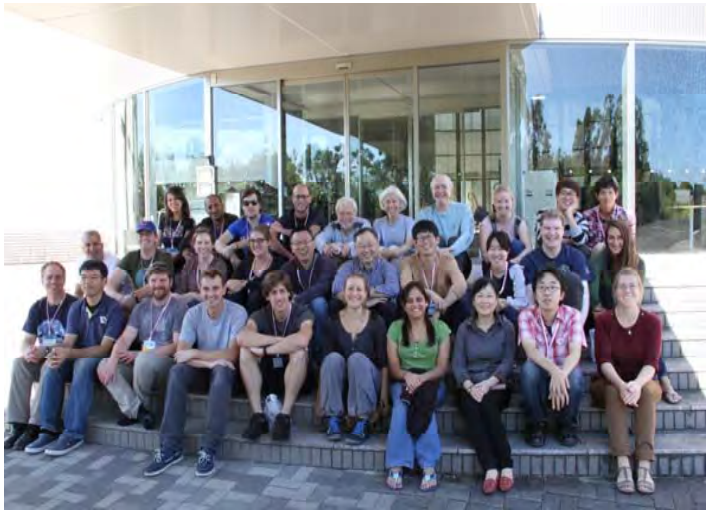
*>10000 samples remained to be taken

Sampling by the KCC staff in progress, expected to complete in Mar. 2016

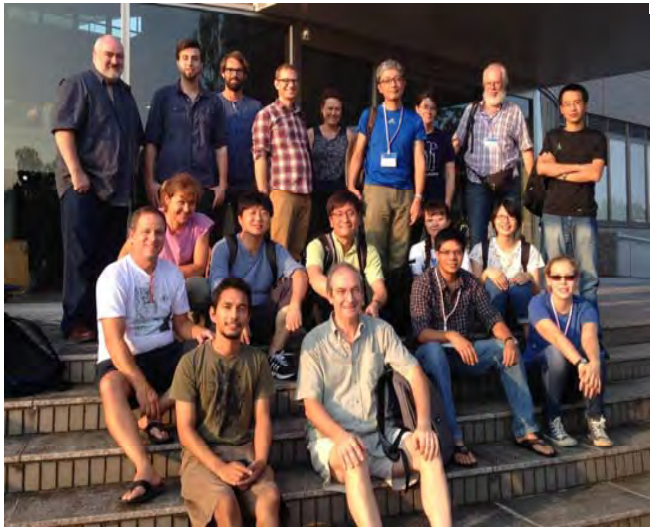
2nd sampling party for Exp. 353 cores scheduled in April 2016 due to new splice

Exp. 353 and 354 sampling party

Exp. 353 (Indian Monsoon)



Exp. 354 (Bengal Fan)



IODP cores to be received

	IODP Expedition	Exp. #	Core delivery in	Drilling Vessel
Received	Arabian Sea Monsoon	355	Mar. 2016	JR
Received	Indian Ridge Moho	360*	Mar. 2016	JR
	Indonesian Throughflow	356	May 2016	JR
	Maldives Monsoon	359	July 2016	JR
	Southern African Climates …	361	Sep. 2016	JR
	Sumatra Seismogenic Zone	362*	Oct. 2016	JR
	Western Pacific Warm Pool	363	Mar. 2017	JR

Note: Onshore sampling party for JR expeditions will be implemented at GCR. *No sampling party onshore

IODP cores received

Exp. 360 core samples received
on March 17, 2016

Exp. 355 core samples received
on March 18, 2016

Education and Training

About IODP policy and shipboard measurements basics

- Pre-cruise training for IODP participants in Japan

  IODP Expeditions: 356, 357, 359, 360, 361

- J-DESC core school (basic course)

  Once every year

- Sakura Science Program (Asian young scientists)

  skipped this year

Sample management system

Pilot study with Tsukuba University (2015)

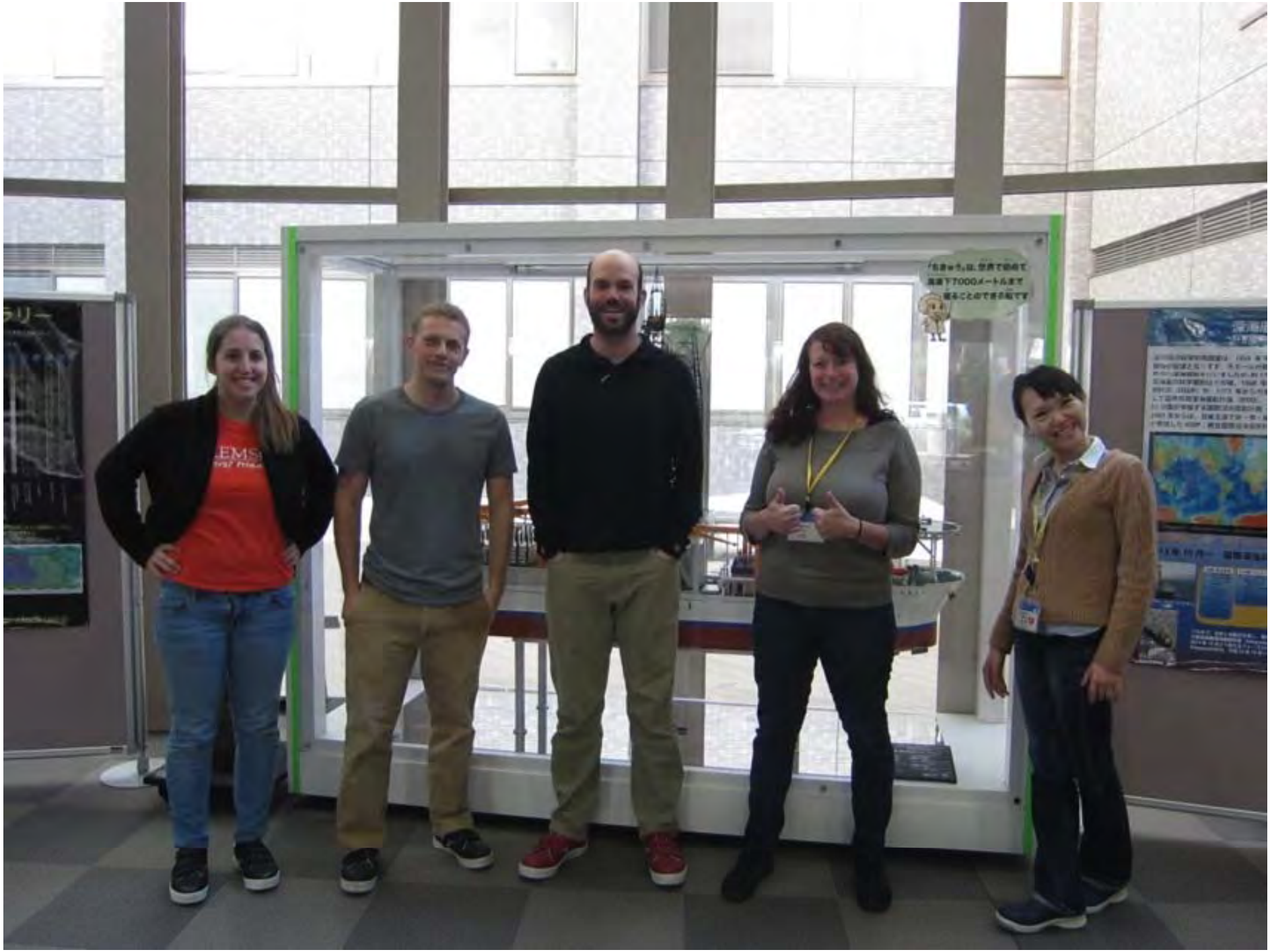
- Mobile input-interface (Android Tablet)
- Print server unit for sample label
- Sample check function for shipping
- Shipping document generator

Collaboration with BCR & GCR

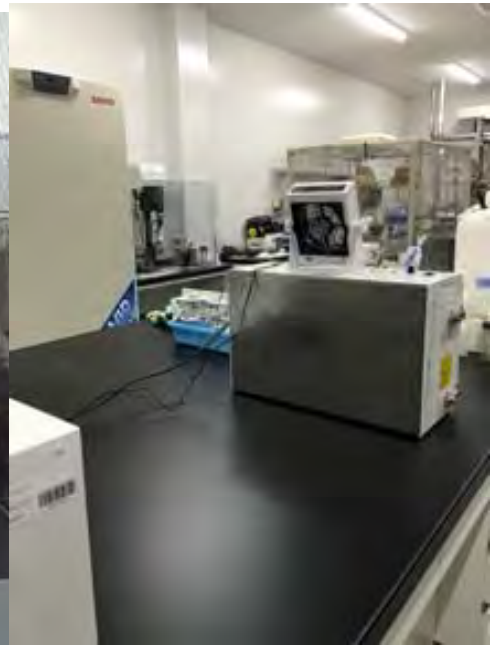
- Sample request evaluation
  - Multi-repository sample requests
- Curatorial policy /procedure related discussions
  - Uniform policy and procedures across the repositories
- Sample shipping coordination
  - Cores from JOIDES Resolution or GCR / MSP or BCR
  - Archive Half scanning by XRF core loggers in Europe / USA
- Technical assistance

  - Assistance for sub-sampling of frozen microbiological samples from MSP Exp. 357 (Atlantis Massif)
- Curatorial meeting – occasionally

Exp. 357 Atlantic Massif Frozen Rock Sampling in Kochi Core Center



- Beth Orcutt (co-chief scientist) and David Mclnroy (ECORD) requested our technological assistance because only KCC has the facilities and techniques to do frozen core sampling.
- 3 science party members of Exp. 357 with 2 students visited KCC from Feb. 22nd -26th.
- DeepBIOS curator (Nan Xiao) used the diamond tipped bandsaw to cut off the surface of the rock samples. Scientists hammered and smashed the remaining samples and separate them for 9 scientists for their 15 different kinds of analyses. All the process was carried out in clean booth or Koach clean system.
- Sample shipment was finished in 2 weeks after the sampling party.



Processing the precious samples appropriately for the post-cruise research is just as important as procuring the samples.
This kind of collaboration between core repositories was the first time, and was extremely succeed. Shall we do this more?

Feedback from the scientists

Without a doubt, our experience at KCC was one of the most enjoyable and productive experiences I have had within the expedition to date. Nan was a true pleasure to work with - gracious, flexible with her time and approach to working on the samples, extremely helpful, and very tolerant of the loud noise we made everyday in the lab with our hammering. The facilities available to us were beyond compare, and allow us great confidence in the quality of the subsamples that were generated.

----------Beth Orcutt (Co-chief scientist)

The experience at Kochi was extremely positive. It was a treat to work in a laboratory that was designed with an eye towards this kind of work. Nan went out of her way to make sure everything went smoothly and was just pleasant to be around. Some of the rock cores were tricky to deal with since they were oddly shaped and very dense but she was patient and careful and did a great job removing all the external bits while maximizing the internal sample volume. The time at Kochi was one of the highlights of the expedition. I'm incredibly thankful that we could be accommodated.

----------Susan Lang (Organic geochemist)

Our work in Kochi has, by far, been the most productive and satisfying experience of this expedition so far. I was really impressed with Nan - she was very skilled with the rock saw and also very willing to help us with anything we needed, including fetching reagents and calling taxis for us. I would definitely do this again and will tell everyone good things about Kochi.

----------William Brazelton (Microbiologist)

Analytical facility utilization

Open for IODP community outside Japan since June 2012

Logging equipment : ***XCT scanner***

MSCL-S, -color, -NGR

XRF core scanner

Core Image Scanner

Some researchers showed interest in utilizing it; some have actually utilized it.

Two to three requests fulfilled annually.

Curatorial budget

especially for the Legacy and JR cores

USFY 2014: supported by the COL and NSF

USFY 2015: supported by the TAMU and NSF

USFY 2016 onwards: supported by JAMSTEC
(based on the interim agreement between TAMU and JAMSTEC)

Chikyu Partnership may be another funding source for additional service (e.g., capacity building) in future.

Further actions

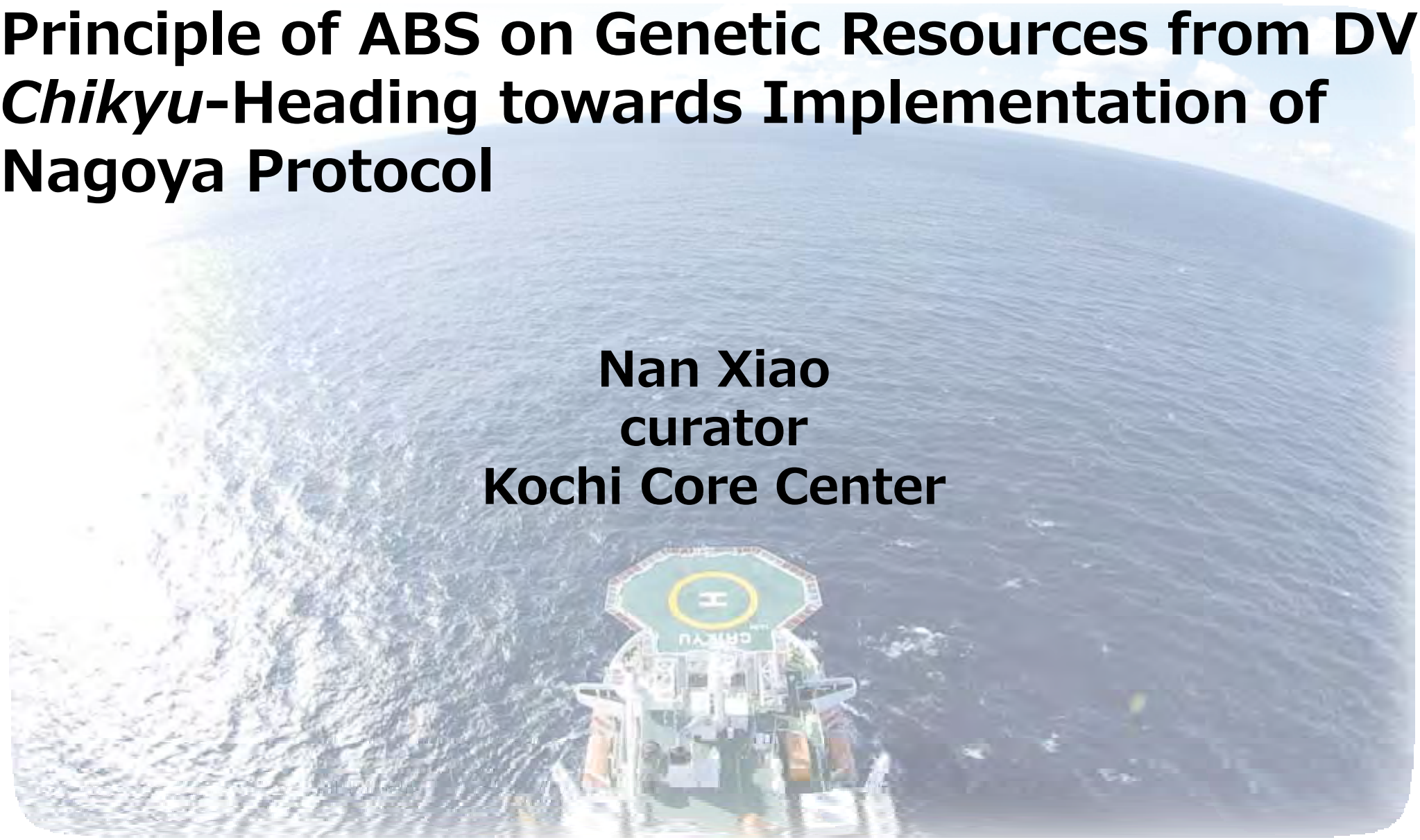
- Secure the budget for curatorial activities
- Streamline the IODP and JAMSTEC core curatorial activities for more simple implementation
- Transfer some Legacy cores from old to new reefer
- Test / develop new database for sample registration
- Promote utilization of cores and DeepBIOS in the science community
- Discuss how to deal with the Nagoya Protocol on Access and Benefit-sharing (ABS) of genetic resources

Expected activities in JPFY2016

- Handle ~100 sample requests
- Support core sampling/measurement for ~50 visitors
- Take ~10,000 samples for requesters
- Receive core materials from 5 JR and 1 Chikyu expeditions
- Ship sample material including 1 cargo transfer
- Support Chikyu expedition
- Rearrange reefer space for optimal use

Principle of ABS on Genetic Resources from DV *Chikyu*-Heading towards Implementation of Nagoya Protocol

Nan Xiao
curator
Kochi Core Center



JAMSTEC

Kochi Core Center 高知コアセンター

IODP INTERNATIONAL OCEAN DISCOVERY PROGRAM

The Nagoya Protocol

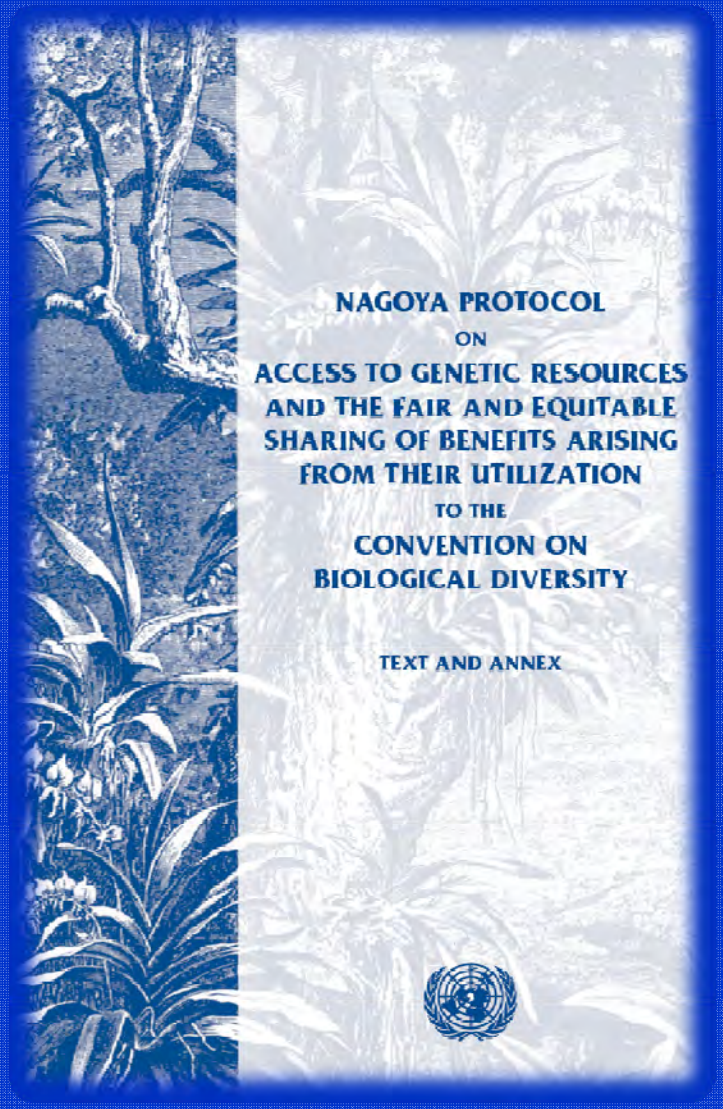
www.cbd.int/abs

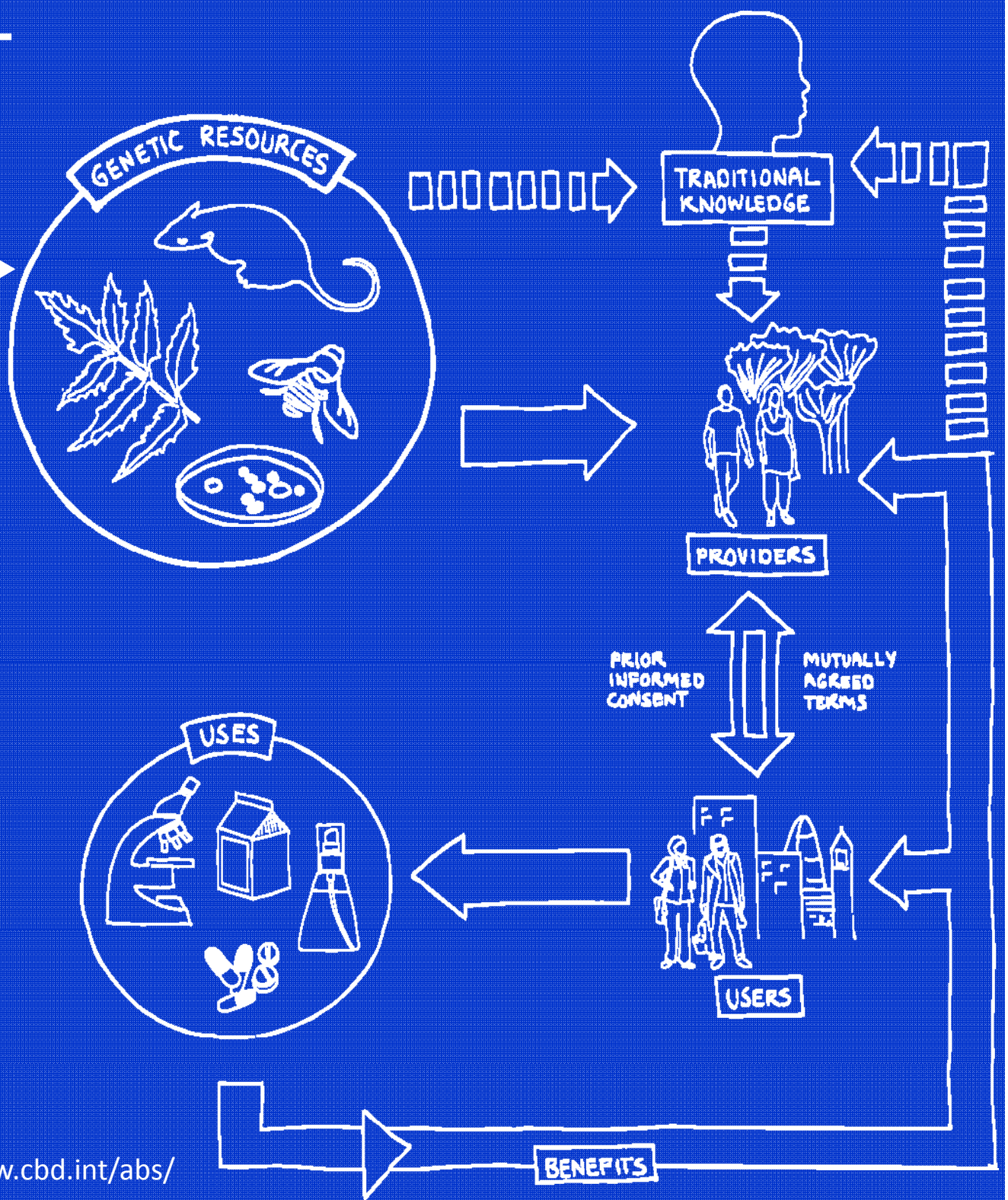
What is the Nagoya Protocol?

- A new international treaty on access and benefit sharing (ABS) to support the implementation of **the fair and equitable sharing of benefits arising from the utilization of genetic resources**
- **Entered into force on Oct 12, 2014**

Convention on Biological Diversity: http://www.cbd.int/abs/

Nagoya Protocol
its effect to IODP





Convention on Biological Diversity: http://www.cbd.int/abs/

Introduction on access and benefit-sharing

What are genetic resources?

- All living organisms (plants, animals and microbes) carry genetic material potentially useful to humans
- These resources can be taken from the wild, domesticated or cultivated
- They are sourced from:
  - Natural environments (in situ)
  - Human-made collections (ex situ) (e.g. botanical gardens, genebanks, seed banks and microbial culture collections)

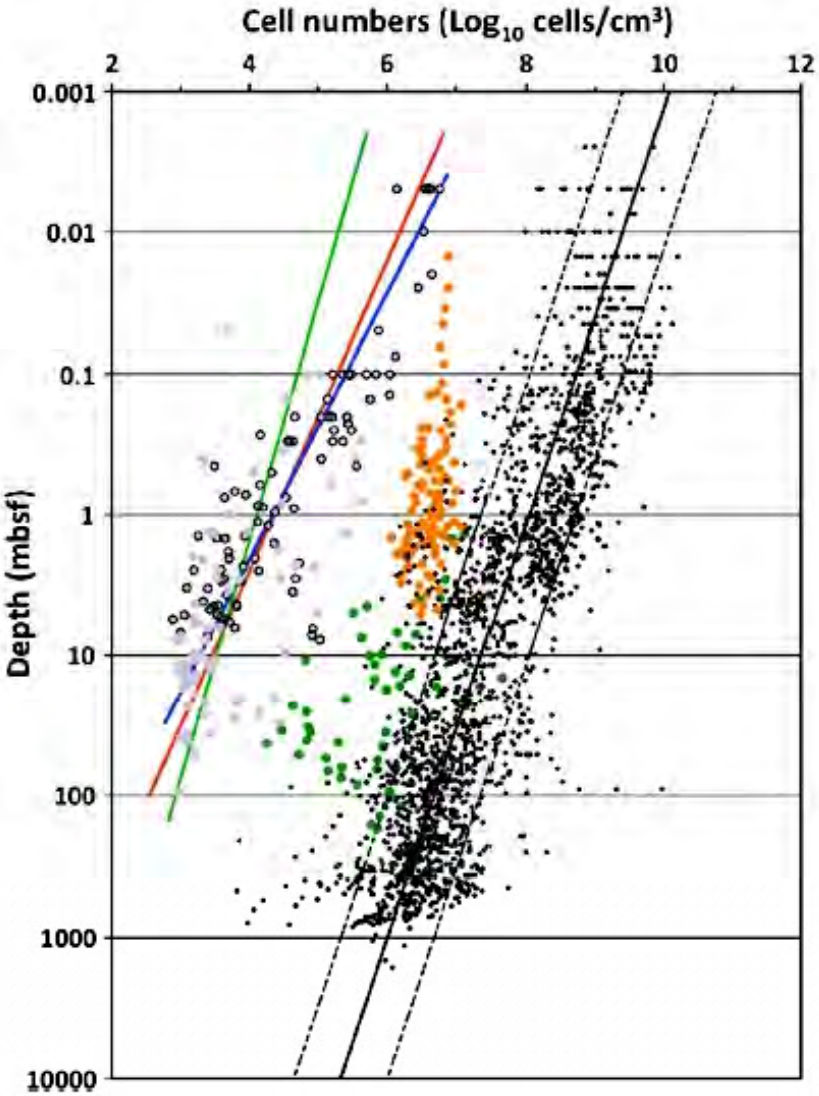
Convention on Biological Diversity

gef

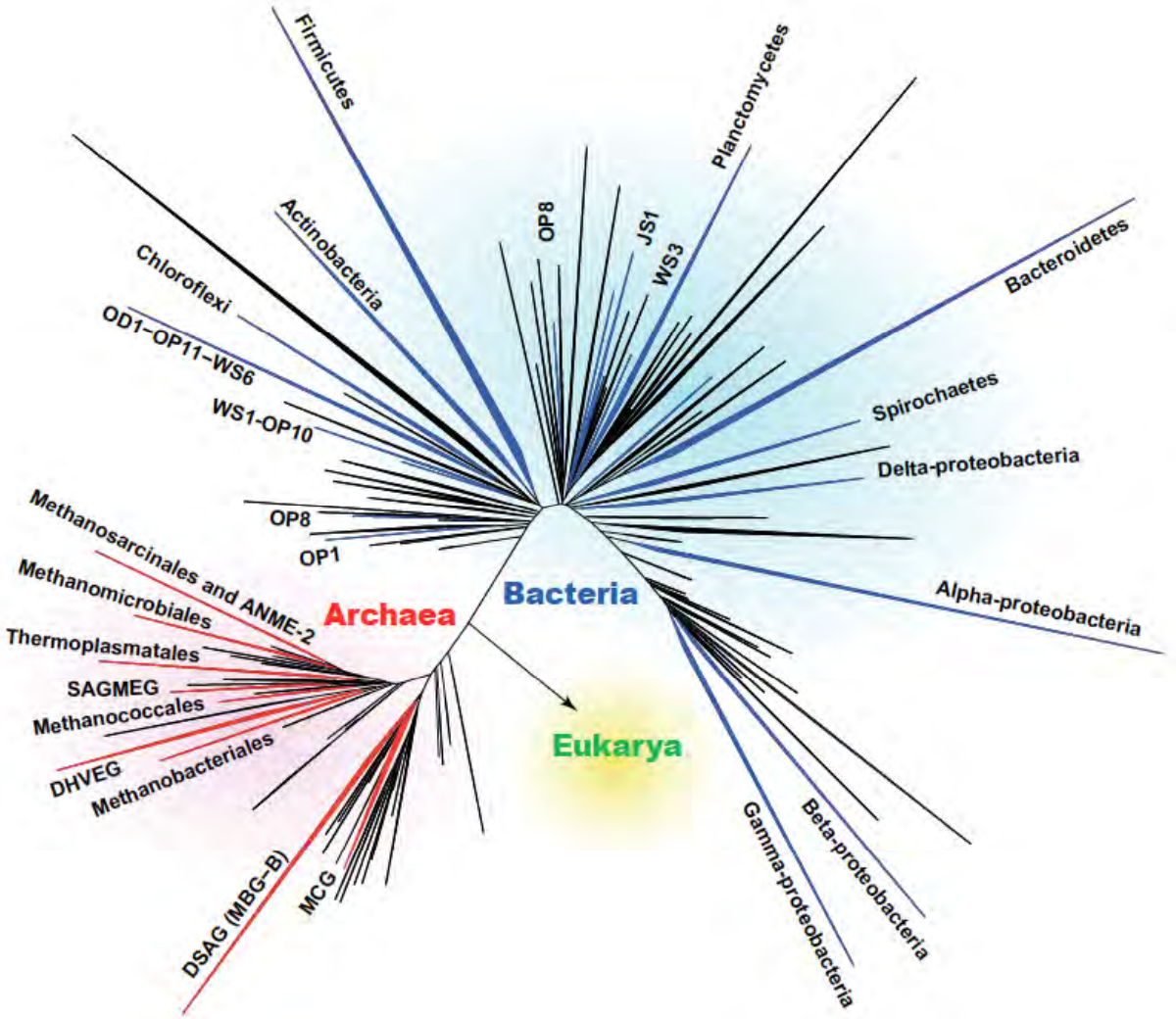
e.x. of Genetic resources in IODP

Biosphere Frontiers

Deep Life, Biodiversity, and Environmental Forcing of Evolution



(Parkes et al. 2014)



(Inagaki et al. 2010)

e.x. of Genetic resources in IODP

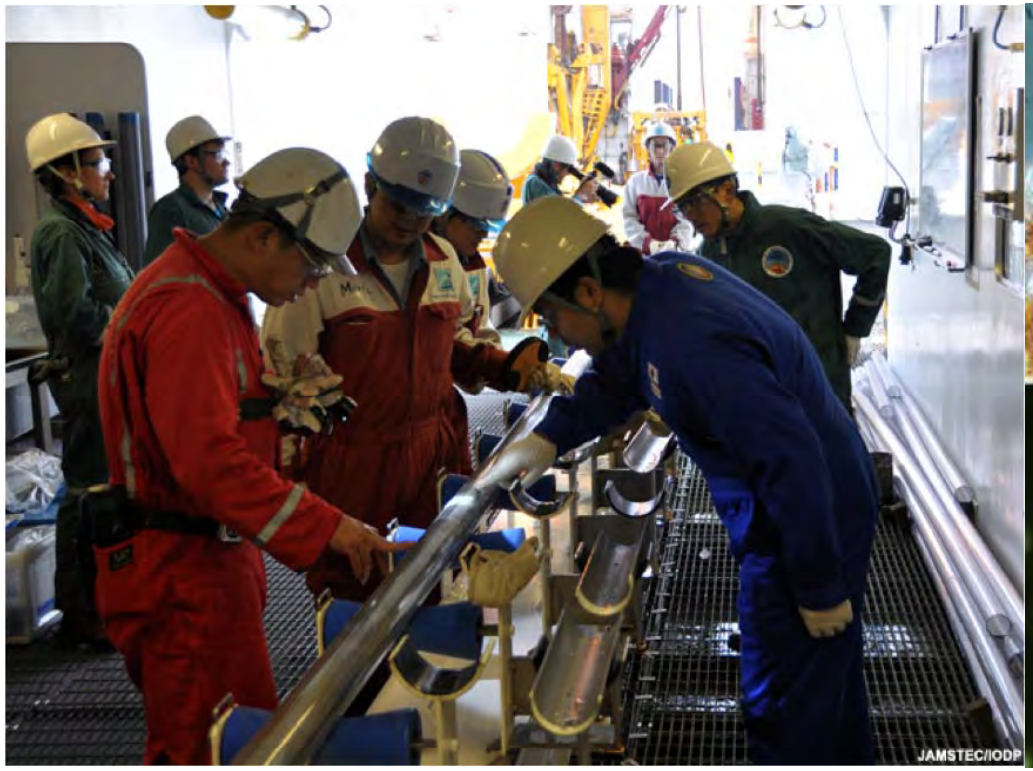
Biosphere Frontiers

Deep Life, Biodiversity, and Environmental Forcing of Evolution

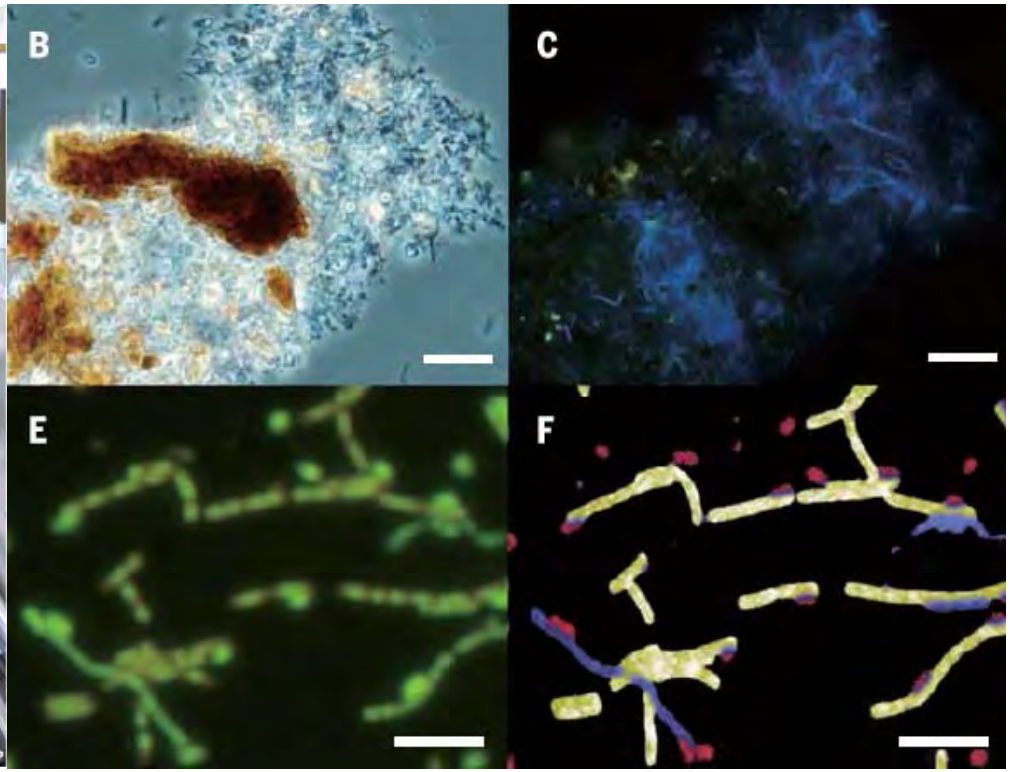
What are the origin, composition, and global significance of subseafloor communities?

What are the limits of life in the subseafloor?

How sensitive are ecosystems and biodiversity to environmental change?



(Photo credit: IODP)



(Inagaki et al. 2015)

The Nagoya Protocol

Article 6. Access to Genetic Resources

1. In the exercise of sovereign rights over natural resources, and subject to domestic access and benefit-sharing legislation or regulatory requirements, access to genetic resources for their utilization shall be subject to the prior informed consent of the Party providing such resources that is the country of origin of such resources or a Party that has acquired the genetic resources in accordance with the Convention, unless otherwise determined by that Party.
2. In accordance with domestic law, each Party shall take measures, as appropriate, with the aim of ensuring that the prior informed consent or approval and involvement of indigenous and local communities is obtained for access to genetic resources where they have the established right to grant access to such resources.

Article 15. Compliance with Domestic Legislation or Regulatory Requiements on Access and Benefit-sharing

1. Each Party shall take appropriate, effective and proportionate legislative, administrative or policy measures to provide that genetic resources utilized within its jurisdiction have been accessed in accordance with prior informed consent and that mutually agreed terms have been established, as required by the domestic access and benefit-sharing legislation or regulatory requirements of the other Party.

Discussions about ABS in IODP

- Xiao presented a summary of ABS to scientists' community in "Advancing Subsurface Biosphere and Paleoclimate Research Workshop" in 2014.

- Yuki Morono presented the general background of ABS at SEP meeting in 2014.

- Yuki Morono presented the general background of ABS at 2015 CIB meeting.

- Mitch Malone presented a summary of ABS at JRFB in 2015.
  Mitch stressed that while the timeline for getting microbiological sampling approvals will be highly variable for each country and will likely not match the timeline for clearance and staffing, we need to identify microbiological studies as far in advance as possible.
  Holly Given mentioned that the programs has the mechanism of the PDB site forms to track this early in the process, and Susan Humphris suggested that the SEP should mention this issue to the proponents.

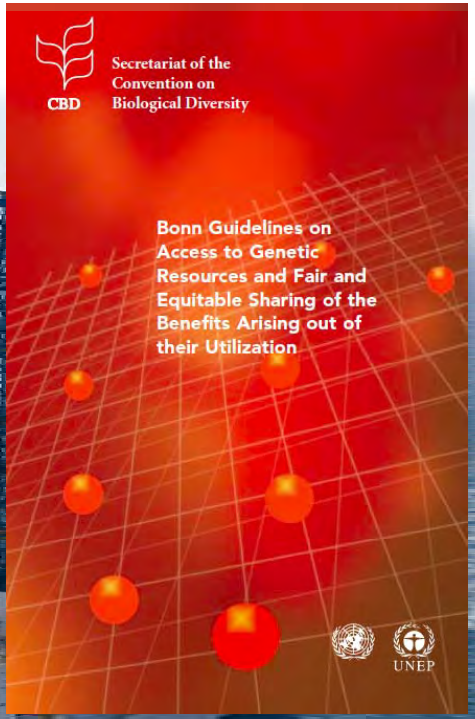
- Ursula Rohl presented general background of ABS at EFB in 2015.
  Mitch Malone commented that it is a real challenge if the operation is takes place in a country that is a part of Nagoya Protocol.

It is a challenging and growing issue for all IOs!

Implementation of ABS measure for *Chikyu* IODP expeditions

Situation of biological samples from *Chikyu*

- All from Japanese territorial sea by now
- Expeditions of next fiscal year will still be in Japanese territorial sea
- IODP and JAMSTEC do not have an ABS policy



Bonn Guideline assists Parties, Governments and other stakeholders in developing an overall access and benefit-sharing strategy.

Prior Informed Consent

Japanese focal point has answered that NO PIC is required when providing Japanese genetic resources to outside Japan.

CDEX will seek PIC from other countries when required.

Material Transfer Agreement

KCC and CDEX drafted the MTA together for samples from Japan

plan

MTA Contents

Agreement, Definitions of Terms,
Access to genetic resources
Utilization of the genetic resources
Transfer of genetic resources to the third parties
Recording and reporting
Dissemination of knowledge
Benefit-sharing
Other laws to be respected
Responsibilities
Warranties
Duration of the agreement
Termination of the agreement
Applicable law
Dispute settlement
Signatures

plan

Measures of ABS for supplying genetic resources taken by DV *Chikyu*

>Guidance on Access and Benefit-sharing to Subseafloor Genetic Resources from DV *Chikyu*

1. *Preamble*
2. *Property right;*
3. *Acquisition of genetic resources;*
4. *Utilization of genetic resources*
5. *Supply genetic resources to third parties for their utilization*
6. *Use of written agreements*
7. *Benefit-sharing*
8. *Curation and data management*
9. *Institutional Policy*
10. *Staff training*

Guidance will be distributed to participate scientists.
MTA will be made between JAMSTEC and scientists during the expedition.

plan

Important points

The format of MTA follows the global ABS standard, Bonn Guideline.

MTA requires more paper work, but does not limit any scientific research.

The main benefit-sharing will be scientific results dissemination considering the features of IODP.
Our policy does allow the utilization for intellectual properties of the genetic resources, the benefit-sharing in that case will be further negotiated.

KCC will keep the records of our genetic resources and keep tracking them after transfer to the recipients.

We need a common ABS guide included in “IODP data & sample policy” in the future.

FUTURE

INTERNATIONAL UNION FOR CONSERVATION OF NATURE

CBD Nagoya Protocol

- Applies to GR within scope of Art. 15 CBD
  - –Art. 15 CBD does not expressly exclude MGR in ABNJ, but refers to GR subject to national sovereignty
  - –Art. 15 CBD requires prior informed consent of provider of GR

- Provides for development of specialized international ABS instruments, such as an ABS regime for MGR in ABNJ

- Introduces idea of global multilateral benefit-sharing mechanism
  - – Could be developed in order to address situations where it is not possible to grant or obtain prior informed consent

19. Chikyu Safety Review Committee Report

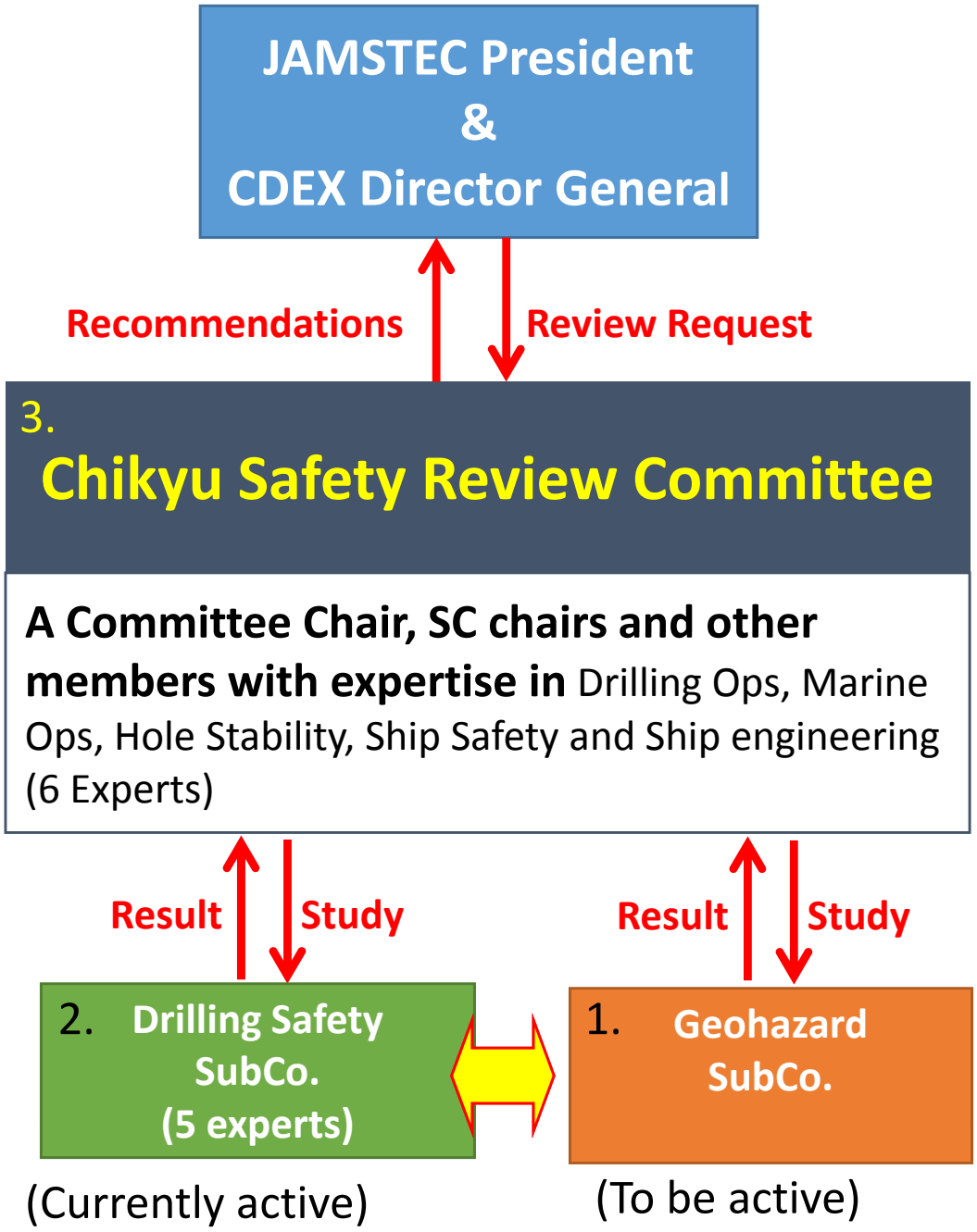
Safety Review Committee Update

- The Committee Structure and Recent activities

4th Chikyu IODP Board (CIB) Meeting
23–24 March 2016

Shigemi Matsuda (CDEX-HSE)
Committee Secretariat

Chikyu Safety Review Committee Structure 2016



Sub-committees (responsibility):

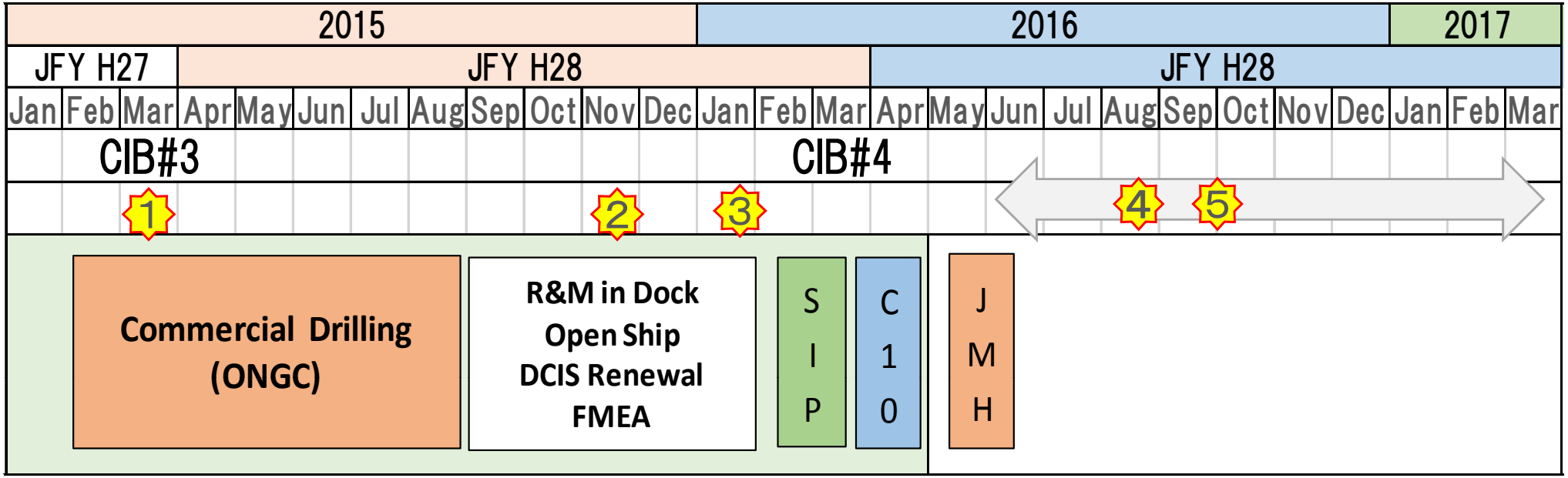
1) Drilling Safety SubCo. (Riser and Riserless)
2) Geo-hazard SubCo. (Riser)

Mandate : After the project is shifted to the implementation stage,

1. **Geo-hazard SubCo** shall study the site survey data submitted by the proponent to review potential shallow geo-hazard and deep geological safety.
2. **Drilling Safety SubCo** shall study the drilling plan, drilling hazard and the technologies employed in that drilling to verify drilling safety
3. **Chikyu Safety Review Committee** shall provide advice and suggestion based on the committee meeting discussion and the feed back from each sub-committee prior to carrying out the expedition

Activities ::
Chikyu Safety Review Committee and Sub-committee

#	
1	**Drilling SubCo mtg.** was held in Mar. 2015 to discuss the possible countermeasures CDEX so far studied for **NanTroSEIZE final stage drilling**
2	**CSR Co mtg.** was held in Nov. 2015 to discuss the operation plan of SIP Hot II and **Exp-365 : Shallow Megasplay Long-Term Borehole Monitoring System (LTBMS)**
3	**Drilling SubCo mtg.** was held in Jan. 2016 to investigate the possible causes of **Drill Pipe failure & drop incident during DCIS commissioning**
4	**Drilling SubCo mtg.** will evaluate CDEX Incident report made and review Drilling plan if any
5	**CSR Co mtg.** is planned this year after JMH commercial drilling job to review the safety of the possible scientific drilling scheduled this year.



Follow up action by Chikyu Safety Review Committee and Sub-committee

Year	Safety Review Committee	Drilling Sub-Committee	Action
2014	CSR Co mtg. was held to review the result of Exp 348	1st Drilling SubCo mtg. was held to investigate Borehole Instability problem encountered C2 drilling in Ex348.	348 Result review
2015	2 CSR Co mtg. was held in November to discuss the operation plan of SIP Hot II and **Exp-365 : Shallow Megasplay Long-Term Borehole Monitoring System (LTBMS)**	1 Drilling SubCo mtg. was held in March to discuss the possible countermeasures CDEX so far studied for **NanTroSEIZE final stage drilling**	Evaluation of future scientific drilling plan
2016	5 CSR Co mtg. is planned this year after JMH commercial drilling job to review the safety of the possible scientific drilling scheduled this year.	3 Drilling SubCo mtg. was held in January to investigate the possible causes of **Drill Pipe drop incident during DCIS commissioning** 4 Drilling SubCo mtg. will evaluate the final Incident report made by CDEX this year	**Drill Pipe drop Incident investigation**

19. Chikyu Safety Review Committee Report

Safety Review Committee Update

1. NanTroSEIZE Exp. 348 C2 riser hole problem
2. Drill Pipe failure & drop incident during offshore commissioning

4th Chikyu IODP Board (CIB) Meeting
23–24 March 2016

Shigemi Naganawa
Chair of Drilling Safety Sub-Committee

1. NanTroSEIZE Exp. 348 C2 Hole Problem

NanTroSEIZE Exp. 348 C2 riser hole in 2013/2014 encountered **drilling problem caused by borehole instability with time-dependent borehole breakout** in complex structured Nankai accretionary prism

At the 1st Drilling SubCo meeting **on 28 March 2014**, **following actions were recommended**

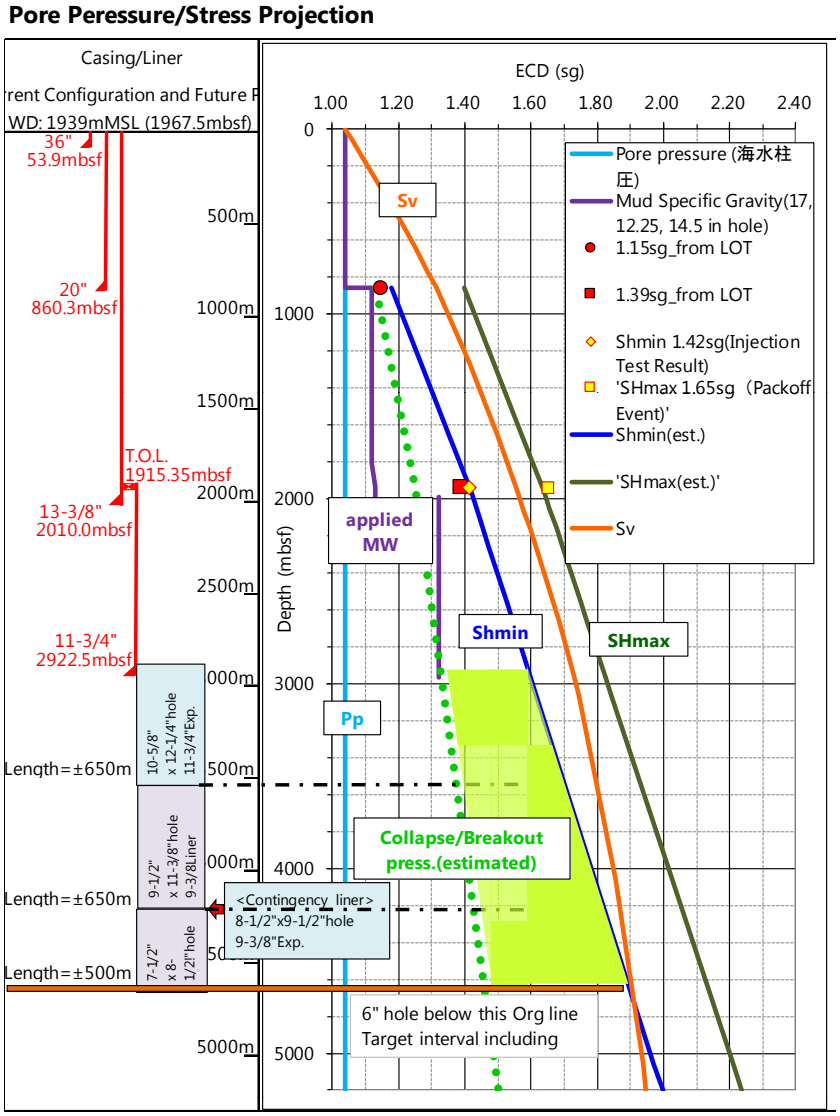
1. KNPP (water-base inhibited) mud system with sealing additives to prevent shale instability
2. Real-time downhole monitoring for early detection of borehole breakout, update of formation pressure/stress prediction and prompt action to maintain mud weight (MW) range (Collapse/breakout press$<$MW$<S_{h\min}$)
3. As management issue, making the most use of in-house engineering studies
4. Feasibility of new technologies, expandable casing, for contingency

1. NanTroSEIZE Exp. 348 C2 Hole Problem

At the 2nd Drilling SubCo meeting **on 13 March 2015, following actions were recommended**

1. Prof. Morita gave an important comment on geomechanical interpretation report from iGM
2. Pore pressure/stress predictions and MW window should be updated
3. Improved drilling fluid management proposed was agreed
4. New drilling plan and casing program proposed by CDEX were discussed

Further improvements are ongoing for future C2 riser operation

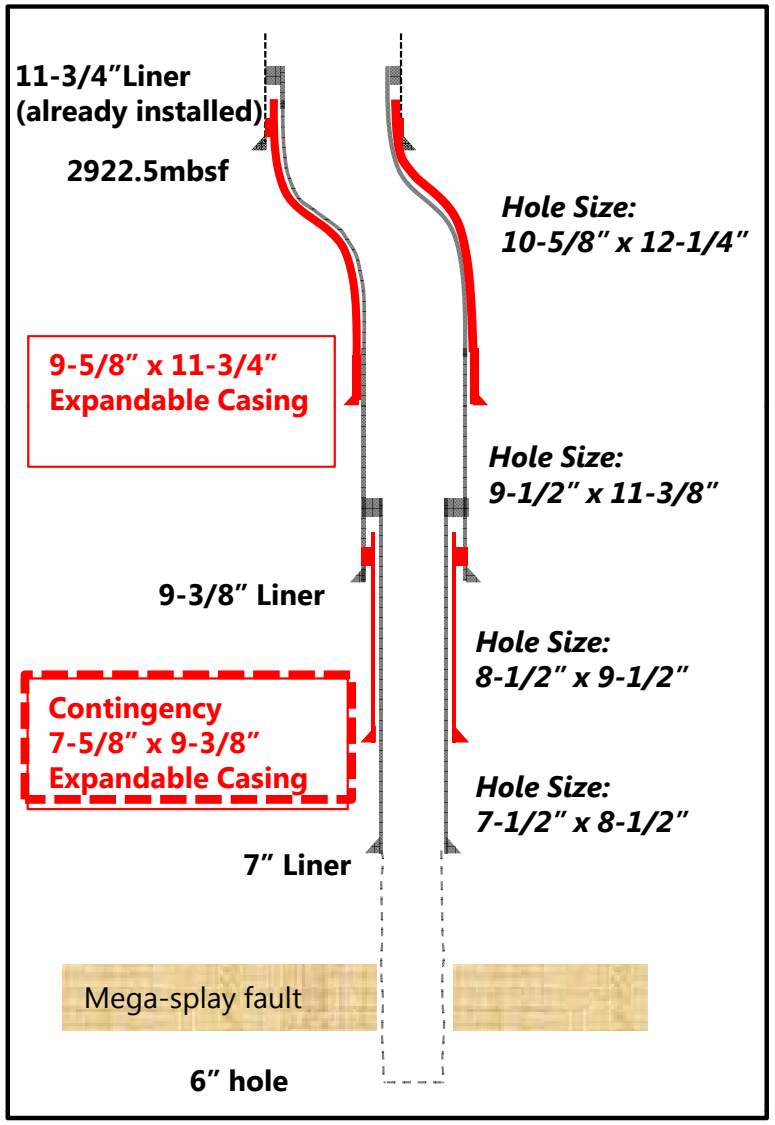


New Drilling Plan and Casing Program

- New drilling plan **Case A** is most realistic one
  - **Drill fast and immediately set casing every 650m interval (⇨3 casings+1 contingency)** to maintain safe mud window

6" hole will be drilled through target formation of mega-splay fault

- Following recommendation was provided: To reduce time for under-reaming and the risk of using expandable casing, **drill 1,000m in one interval (⇨ 2 casings+1 contingency)**



2. Drill Pipe Drop during DCIS* Commissioning

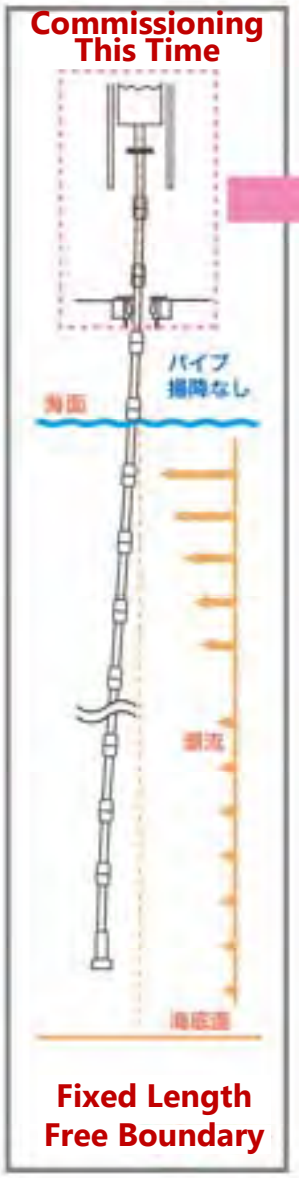
- On 16 January 2016 **during DCIS commissioning, drill pipe failure & drop incident occurred** and approximately 1,400 m of drill pipes lost in the sea

*DCIS: Drilling Control Instrumentation System

- Estimated possible causes
  - Bending moment was generated at the fixed contact point of drill pipe with insert bowl as the fulcrum because of tidal current during commissioning
  - Drill pipe rotation in the seawater without vertical movement resulted in **repeated bending stress at the fixed point of drill pipe and in fatigue failure** within a relatively short time
  - Frictional heat might have reduced the material strength of the drill pipe in the vicinity of the contact point

2. Drill Pipe Drop during DCIS Commissioning

Incident Circumstances and Estimated Causes



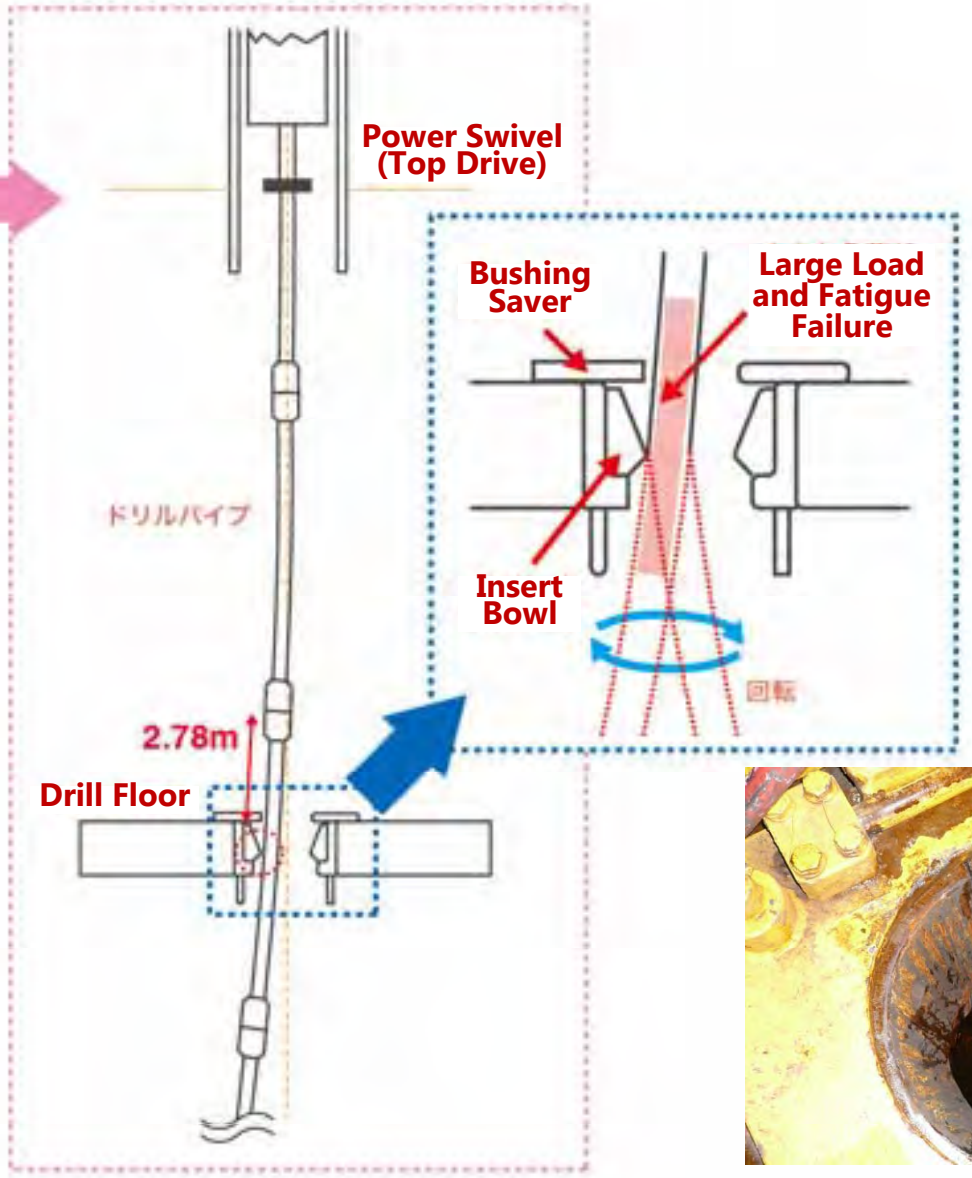


Photo after Hoist Up

Uneven Contact/Wear inside the Insert Bowl

Recommendations for Future Actions

- At the Drilling SubCo meeting **on 28 January 2016, following recommendations were provided**

- Detail technical investigation, analyses and simulation work for specification of the cause should be continued
- Commissioning under similar offshore operation condition should not be conducted until the incident cause will be completely specified
- It was concluded that **occurrence of similar incident during Chikyu riser/riserless drilling operations was extremely low**
- Sufficient and careful risk assessment, and review of operation plan, procedures and monitoring system should be properly implemented for effective HSE management