

IODP 871-CPP: Lord Howe Rise Deep Stratigraphic Drilling Report on Proposal Development Workshop Tokyo, Japan, 25–28 August 2015

Background

Deep stratigraphic drilling on the Lord Howe Rise has been under discussion between Geoscience Australia (GA) and the Japan Agency for Marine Earth Science and Technology (JAMSTEC) since 2006. A significant step towards realising this deep drilling program was made with the submission of a pre-proposal to the International Ocean Discovery Program (IODP) on 1 October 2014. This pre-proposal was positively reviewed by the IODP Science Evaluation Panel (SEP) and recommended for development into a full proposal. The SEP suggested some areas to be addressed in more detail in developing the full proposal:

- Better define testable hypotheses that can be addressed by drilling;
- Strengthen links to IODP proposal 832 (drilling of post-Cretaceous sediments on and around the Lord Howe Rise); and
- Include a plan for drilling.

The Chikyu IODP Board (CIB) subsequently endorsed the SEP review and agreed to provide funds to support a workshop in Japan to further develop the full proposal.

In addition, an initial Science Workshop was held 8–9 April 2015 in Sydney, Australia. This workshop attracted about 40 participants who reviewed the pre-proposal and commenced planning for the full proposal. The workshop established three themes for the full proposal (Earth, Oceans/climate and Life) and debated the relative global importance of these themes. In order to address the SEP review comments, discussion also focussed on the key scientific questions and hypotheses.

Following the Science Workshop, an initial draft of the full proposal was circulated to the proponents in early August 2015. This draft was revised throughout August 2015 and formed the basis for discussions at the CIB-funded Proposal Development Workshop held 25–28 August 2015 in Tokyo.

Purpose of Symposium and Workshop

Two events to progress the IODP proposal for deep stratigraphic drilling on the Lord Howe Rise took place at JAMSTEC Headquarters in Tokyo (see Attachment 1 for Program):

1. 25 August 2015: A symposium to engage with and encourage further involvement from the Japanese scientific community; and
2. 26–28 August 2015: A workshop to finalise a draft of the full proposal in preparation for submission to IODP by 1 October 2015. The CIB provided funds (~US\$30K) that allowed the coordinators of each proposal theme (Earth, Oceans/Climate and Life) and several other key proponents from outside Japan to participate in the workshop.

Outcomes

Symposium

The pre-workshop symposium was attended by 69 scientists from JAMSTEC and other Japanese institutions (see Attachment 2). For most of these scientists, the symposium was their first exposure to the project. Several symposium attendees remained for the workshop and others committed to future involvement in the project.

Dr Andrew Heap, Geoscience Australia, presented an overview of the LHR IODP project as a lead-in to separate presentations, in Japanese, on each of the themes of the proposal:

- Earth, Dr Yasuhiro Yamada (JAMSTEC)
- Oceans/Climate, Dr Jun'ichiro Kuroda (JAMSTEC)
- Life, Dr Fumio Inagaki (JAMSTEC)

Dr Suiichi Kodaira (JAMSTEC) also presented an overview of the deep-crustal and site surveys that are planned prior to drilling.

Workshop

Eighteen scientists from Japan, Australia, the United Kingdom and the United States participated for the full duration of the workshop (Attachment 3). Several other scientists and technicians contributed specific input at various times (e.g. on planning for site surveys and drilling).

By the end of the workshop, a near-final draft of the full proposal was completed. This draft was refined following the workshop and circulated to all proponents for feedback and further input three weeks prior to the IODP submission deadline.

The revised objectives for each theme, as agreed at the workshop, were:

- **Earth:** To define the role and importance of elongate strips of continental crustal ribbons in plate tectonic cycles and continental evolution.
- **Oceans/Climate:** To recover new high-latitude data to better constrain the timing and nature of Cretaceous paleoclimate and linked changes in ocean biogeochemistry.
- **Life:** To test fundamental evolutionary concepts of sub-seafloor microbial life over a 100 million year timeframe.

Each of these objectives will be addressed by testing a number of hypotheses that were finalised during the workshop and included in the draft full proposal.

The full proposal, entitled "First deep stratigraphic record for the Cretaceous eastern Gondwana margin: Tectonics, paleoclimate and deep life on the Lord Howe Rise high-latitude continental ribbon", was submitted to IODP on 1 October 2015. The submitted full proposal includes 38 proponents from 20 different institutions in 7 different countries.

Other outcomes

The workshop also provided the opportunity to progress other aspects of the LHR IODP project. These included:

- Determining a preliminary drilling plan for inclusion in the IODP proposal with JAMSTEC's Centre for Deep-Earth Exploration (CDEX, responsible for Chikyu drilling operations).
- Planning for a pre-drilling deep-crustal geophysics and site survey (March–May 2016).

Benefits

A strong and ultimately successful IODP proposal that garners broad support from the international science community is an important step in realising the goal to obtain deep Cretaceous rock samples from the SW Pacific, arguably one of the last remaining geoscience frontiers on Earth. In this context, the CIB-supported LHR IODP Symposium and Proposal Development Workshop was a success. The workshop facilitated interaction between a diverse team of Earth, ocean, climate and life scientists. This interaction led to the preparation of a strong proposal to IODP. As an added benefit, the workshop generated additional awareness of and interest in deep stratigraphic drilling on the Lord Howe Rise.

Dr. Ron Hackney

Lead Proponent

4 November 2015

Attachment 1: Program

Date	Time	What	Participants
Tue 25 Aug			
	11:00	Meet in lobby of Remm Hibiya Hotel and move to JAMSTEC Tokyo Office for introductions and initial discussions	All available participants with Saito-san
	12:30 – 14:00	Lunch with Japanese participants	Optional
	14:00 – 15:00	Re-convene for initial review of pre-workshop draft proposal	All
	15:00 – 17:30	<i>LHR IODP Science Symposium (see flyer)</i>	<i>Optional, most talks will be in Japanese</i>
	15:00 – 17:30	Review of pre-workshop draft proposal and identification of remaining tasks	All except symposium participants
	18:00	Group dinner	All
Wed 26 Aug			
	9:00 – 9:15	Logistics and goals for the workshop	Host and Lead Coordinators
	9:15 – 12:00	Development of proposal	Theme groups
	12:00 – 13:00	Lunch	All
	13:00 – 17:00	Development of proposal	Theme groups
	17:00 – 17:30	Day 1 progress report from each theme	All
Thu 27 Aug			
	9:00 – 10:30	Development of proposal	Theme groups
	10:30 – 12:00	Discussion of drilling strategy	All, led by CDEX
	12:00 – 13:00	Lunch	All
	13:00 – 17:00	Development of proposal/drilling strategy	Theme groups, one CDEX specialist per group
	17:00 – 17:30	Day 2 progress report from each theme	All
Fri 28 Aug			
	9:00 – 11:00	Development of proposal/drilling strategy	Theme/break-out groups
	11:00 – 12:00	Development of proposal/drilling strategy	All
	12:00 – 13:00	Lunch	All
	13:00 – 14:00	Wrap-up, definition of next steps and allocation of tasks leading up to proposal submission deadline (1 st Oct)	All
	14:00	Close	

Attachment 2: Symposium participants

No.	Name	Institution
1	Alex Nichols	JAMSTEC
2	Marco Coolen	Curtin University, Australia
3	Andrew Heap	Geoscience Australia
4	Jessica Whiteside	National Oceanography Centre Southampton, UK
5	Ron Hackney	Geoscience Australia
6	Talitha Santini	The University of Queensland, Australia
7	William Orsi	Woods Hole Oceanographic Institution, USA
8	Maria Luisa Tejada	JAMSTEC
9	Dietmar Mueller	Sydney University, Australia
10	Kliti Grice	Curtin University, Australia
11	Richard J. Arculus	Australian National University, Australia
12	Sean Toczko	JAMSTEC
13	Hisako Imamura	JAMSTEC
14	Keita Umetsu	JAMSTEC
15	Shinji Oshima	JAMSTEC
16	Yoshihisa Kawamura	JAMSTEC
17	Shuichi Kodaira	JAMSTEC
18	Saneatsu Saito	JAMSTEC
19	Asahiko Taira	JAMSTEC
20	Yohei Hamada	JAMSTEC
21	Shinji Hida	JAMSTEC
22	Katsuyoshi Michibayashi	Shizuoka University
23	Yasuhiro Yamada	JAMSTEC
24	Yasuo Yamada	JAMSTEC
25	Tsuneyoshi Yamanishi	JAMSTEC
26	Masako Yoda	Australian Embassy, Tokyo
27	Fumio Inagaki	JAMSTEC
28	Takahiro Yokoyama	JAMSTEC
29	Yuka Kaiho	JAMSTEC
30	Yusuke Kubo	JAMSTEC
31	Nobuhisa Eguchi	JAMSTEC
32	Jun Takao	Nippon Marine Enterprises Ltd.
33	Jun'ichiro Kuroda	JAMSTEC
34	Takeshi Sato	JAMSTEC
35	Seiichi Miura	JAMSTEC
36	Yuji Yamamoto	Kochi University
37	Hiroshi Ichihara	JAMSTEC
38	Kazuyoshi Moriya	Waseda University
39	Shigemi Matsuda	JAMSTEC
40	Kazuno Arai	JAMSTEC
41	Yoshinori Sanada	JAMSTEC
42	Hiroko Sugioka	JAMSTEC

No.	Name	Institution
43	Takamitsu Sugihara	JAMSTEC
44	Masato Sugano	JAMSTEC
45	Ayumi Sumikawa	Nippon Marine Enterprises Ltd.
46	Hiroshi Nishi	Tohoku University
47	Kan Aoike	JAMSTEC
48	Shun Chiyonobu	Akita University
49	Shin'ichi Kuramoto	JAMSTEC
50	Toshikatsu Kuramoto	Marine Works Japan Ltd.
51	Noritaka Taniguchi	JAMSTEC
52	Yasuyuki Nakamura	JAMSTEC
53	Terumichi Inokawa	JAMSTEC
54	Shusuke Machida	Nippon Marine Enterprises Ltd.
55	Yoshihiko Tamura	JAMSTEC
56	Wataru Azuma	JAMSTEC
57	Go Fujie	JAMSTEC
58	Yasuhiro Namba	JAMSTEC
59	Taro Shirai	JAMSTEC
60	Yoshihisa Shirayama	JAMSTEC
61	Kazuya Shiraishi	JAMSTEC
62	Hikomichi Soejima	Nippon Marine Enterprises Ltd.
63	Jun Fukutomi	JAMSTEC
64	Hitoshi Kitamura	Nippon Marine Enterprises Ltd.
65	Hitoshi Hotta	JAMSTEC
66	Kiyoshi Suehiro	JAMSTEC
67	Masataka Kinoshita	JAMSTEC
68	Jun'ichi Kimura	JAMSTEC
69	Noriaki Sakurai	JAMSTEC

Attachment 3: Workshop participants

The main workshop participants are listed below, but several other scientists participated at various times throughout the workshop. Theme coordinators are shown in bold text.

	Name	Theme	Affiliation
1	Ron Hackney	Earth	Geoscience Aust.
2	Yasuhiro Yamada	Earth	JAMSTEC
3	Richard Arculus	Earth	Australian National University
4	Andrew Heap	Earth	Geoscience Australia
5	Jun-Ichi Kimura	Earth	JAMSTEC
6	Dietmar Mueller	Earth	Sydney University
7	Alex Nichols	Earth	JAMSTEC
8	Saneatsu Saito	Earth	JAMSTEC
9	Yoshihiko Tamura	Earth	JAMSTEC
10	Kliti Grice	Oceans/Climate	Curtin University
11	Jun'ichiro Kuroda	Oceans/Climate	JAMSTEC
12	Hiroshi Nishi	Oceans/Climate	Tohoku University, Japan
13	Jessica Whiteside	Oceans/Climate	University of Southampton, UK
14	Marco Coolen	Life	Curtin University
15	Fumio Inagaki	Life	JAMSTEC
16	Bill Orsi	Life	Woods Hole Oceanographic. Institute, USA
17	Talitha Santini	Life	University of Queensland
18	Sean Toczko	Operations	JAMSTEC (CDEX)