

MoHole proposal meeting

Minutes compiled by Katsuyoshi Michibayashi and Benoit Ildefonse

DATE: Saturday 4 and Sunday 5, December

PLACE: Jamstec Office, Tokyo

Participants: Natsue Abe, Norikatsu Akizawa, Ryo Anma, Toshiya Fujiwara, Takeshi Hanyu, Yumiko Harigane, Benoit Ildefonse, Peter Kelemen, Jun-Ichi Kimura, Shuichi Kodaira, Hidenori Kumagai, Makoto Miura, Tomo Morishita, Toshi Nozaka, Yasuhiko Ohara, Tetsuya Sakuyama, Takeshi Sato, Eiichi Takazawa, Damon Teagle

1 Introduction (Ildefonse)

Benoit Ildefonse briefly introduced the meeting by summarizing the current situation regarding the submission of a new MoHole proposal to IODP. A draft was produced last September, but it was decided to postpone the submission, to allow more time to revise the scientific objectives, and re-discuss the need/pertinence to re-submit a MoHole proposal at this stage. This pre-AGU meeting was organized to allow co-proponents and interested scientists who attended AGU to discuss these items.

2 Information from IODP-MI (Suyehiro/Larsen)

Kiyoshi Suyehiro, President of IODP-MI, gave a rapid overview of what BEAM is, and supposed to do. This was just a general introduction to the BEAM scoping activity that is driven by IODP-MI, as a dedicated meeting was organized on Wednesday December 7 by Holly Given, manager of BEAM. BEAM stands for "Borehole into Earth's Mantle", and is a scoping project for ultradeep drilling to the mantle, funded by the Deep Carbon Observatory (dco.gl.ciw.edu). It is one of the follow-up on the 2010 workshops (Mohole & Mantle Frontier). It is a planning and feasibility exercise to develop scenario(s) to drill to the mantle; it is not related to any particular site, or to any particular proposal. IODP-MI is currently setting it up. The first step was the initial feasibility study produced by Blade Energy Partners (a company based in Houston), and available online

<http://www.iodp.org/weblinks/Featured-Publications-HOME-PAGE/IODP-Project-MoHole-Initial-Feasibility-Study-PDF->). Anyone interested in the BEAM activities can register to the BEAM online forum (homerian.iodp.org/beam/register.html).

Hans-Christian Larsen gave a quick overview of the new, simplified SAS structure, and reminded the commitment of funding agencies to operate their platforms in the frame of international scientific partnership (IODP). The details of how this collaboration will be organized and best achieved are currently being discussed. Most importantly for the MoHole project, IODP introduced the new MDP proposal format (which merges the previous CDP and Mission formats). MDP stands for "Multi-phase Drilling Proposal", and allow us to submit now an umbrella proposal for the MoHole, for describing the scientific rationale, and with no detailed information at this stage on the drilling site(s). This proposal, when submitted, will be evaluated by the PEP (Proposal Evaluation Panel).

Henry Dick commented that the proposal about an ultradeep hole in fast-spread crust should be clearly seen as a first step (in line with the propriety statement formulated by the community at the Mission Moho workshop in 2006) toward an integrated approach to fully understand/characterize the MoHo and the ocean lithosphere, that will encompass other efforts, including drill hole(s) in slow-spread lithosphere.

3 Information about the current Japanese activity on the MoHole project (Michibayashi)

Katsuyoshi Michibayashi summarized the activity conducted by the Japanese community in 2011 about future Chikyu Deep Drilling activities. This was done through monthly meetings in Tokyo from January to September 2011, hosted by JAMSTEC/IFREE and MEXT, of a group of 16 Japanese scientists and representatives of MEXT and JAMSTEC. A Japanese workshop was held in May 2011, with a session on the MoHole project chaired by K. Michibayashi and S. Kodaira. Scientific objectives of the MoHole were further reviewed and discussed at these meetings, and a report in Japanese is to be published in January 2012 (an abridged English version will be

produced). The carbon and water cycle have been identified as part of the main themes to be addressed by the MoHole. Also very important is the need for making a big project such as the MoHole very visible to the Japanese public (and taxpayers), and convince them of the importance of the project. A Japanese Scientist Group for the MoHole Project was recently set-up, that include S. Umino (leader), K. Michibayashi, N. Abe, S. Kodaira, N. Seama, J. Kimura, T. Morishita, H. Kumagai, T. Sakuyama, J. Maeda, S. Sato, T. Fujiwara, T. Hanyu, M., Yamashita, T. Yamazaki, T. Nozaka, E. Takazawa, and K. Nakamura. Katsu Michibayashi acts as the secretary of this group. Katsu has presented a draft table of scientists interested in the MoHole (organized by disciplines); it was thought that the idea could be extended to the international community. Katsu also presented first drafts of tentative logos and catch phrases (e.g., Lock-ON! Mantle).

4 Update on Site Survey (Kodaira)

Shuichi Kodaira presented a brief update on the site survey plans by JAMSTEC. A 4 Legs cruise (1 month each) was originally scheduled to start in December 2011, to conduct seismic survey of the region off-shore Baja California + 1 week on the Cocos plate. This cruise has been postponed following the Tohoku Great Earthquake, as the Japanese oceanographic fleet schedule was reorganized to implement a series of fast-response scientific cruises. Kodaira explained that it will be back on the schedule, but it is now too early to announce a date. 2013 might be possible.

NB : a proposal for a seismic survey of the Hawaiian Arch area has been submitted this year to NSF by Greg Moore and collaborators.

5 MDP Proposal

5.1 Some comments on the current proposal draft (Seama)

Nobi Seama presented three main comments on the current draft of the proposal; 1) lack of geophysicist' view, 2) lack of fairness to describe three candidate regions, and 3) broadening the scientific spectrum. The Mohole drilling should provide a deep reference hole for the ocean crust and the uppermost mantle as a product of a ridge system. This view is important

especially when recent high quality seismic surveys have indicated that the velocity structure of ocean crust and uppermost mantle is variable even if it was formed at a fast-spreading rate ridge system. Furthermore, geophysical surveys have revealed and will reveal structure beneath ridge system to propose models for its dynamics and for crustal formation. The MoHole site should be important reference for the structures and for the models. Three candidate regions that were identified at the Kanazawa 2010 workshop should be treated equally in the proposal. Nobi showed current available data and emphasized that the final MoHole site should be decided after discussions among the international community with enough geophysical data for all candidates. He also emphasized the importance of broadening the scientific spectrum and suggested that it could be useful to plan a workshop in the near future for minor communities of the current Mohole proposal such as bio-geochemists and microbiologists, to identify further the compared scientific merits and demerits among the three regions, which would result in broadening the scientific spectrum.

5.2 Proposed schedule for revising and finalizing the proposal (Michibayashi)

The meeting attendees discussed the reasons and motivations for submitting a proposal as soon as possible to IODP, and reached a consensus to submit an MDP proposal for the next April 1st deadline in 2012.

Katsu Michibayashi, on behalf of the Japanese group for the MoHole, explained that B. Ildefonse, P. Kelemen, and D. Teagle (three of the PI's of the former Mission Moho proposal) are kindly invited to Tokyo for a few days early February to work with the Japanese group on the proposal revision. It is anticipated that a new draft will be available for revision to a larger co-proponent (or supporters) group by the end of February.