Geosci. Instrum. Method. Data Syst. Discuss., 4, C321–C324, 2015
www.geosci-instrum-method-data-syst-discuss.net/4/C321/2015/

Geoscientific Instrumentation Methods and Data Systems
Discussions

Interactive comment on "Simple, affordable and sustainable borehole observatories for complex monitoring objectives" *by* A. Kopf et al.

B. Orcutt (Referee)

borcutt@bigelow.org

Received and published: 15 March 2015

General comments:

This paper provides a very nice overview of the development of MeBoPLUG, MeBO-CORKs and MeBoPUPPI, which offer an alternative for instrumenting sediment boreholes that are drilled via seabed drill rigs as opposed to ocean drilling vessels.

While I very much appreciate the advances and simplicity of these systems, I think that the tone regarding how affordable and simple these systems are compared to the "traditional" CORKs installed via ocean drilling vessels misses the issue that those CORKs tend to target deeper depths than seabed drilling rigs can reach, and moreover, they

Full Screen / Esc
Printer-friendly Version
Interactive Discussion
Discussion Paper

target ocean crust, which requires different limitations on borehole sealing than can be afforded by the MeBo-based plugs and CORKs, which generally assume that sediment will fill in around the borehole. I bring this up not to diminish the accomplishments of the MeBo-systems, but to ask that the alternative be presented a bit more fairly.

There is considerable reference to these systems being more affordable than traditional CORKs, but there is never actually a comparison of any kind regarding costs. I know it is hard to tabulate some costs, but it would have been nice to see this addressed. How much more affordable? An order a magnitude? Two?

As a technical paper in an open access journal, it would nice to include actual technical schematics for these instruments, such as the hot stab or plug, or include information about how they can be accessed.

Specific comments:

Page 4, line 18: Technically it is not correct that MeBo can be operated from ANY research vessel, only those of a certain class with enough deck space, lifting capacity, etc.

Page 4, line 20: can the authors provide an update to the mention of the MeBo200 - was it tested in fall 2014?

Page, section 3.1.1.: I think it needs to be emphasized here that the eventual sealing of the system occurs via sediment infilling around the outside of the drill rods left in place, in addition to the seals at the top drill rod string. This is different to the “traditional” CORKs which rely on concrete seals, packers, and o-ring seals.

Page 8, line 2: it would be helpful to include an image that shows a photograph of the tubing coil and drop weight.

Page 8, line 7: Technically, some of the CORKs are connected to cabled networks (for example, 1026B), so they do not require ROV visits to access data.

GID

4, C321–C324, 2015

Page 10, line 14: Please provide full detail of “RBR data loggers” - full company name, model type, etc.

Page 11, line 14: how long can the PTFE coil be, or, how deep can it ascend?

Page 11, line 26: is it necessary to include the exclamation point?

Page 12, line 6: what sampling rate was used on SO222A?

Page 12, line 20: please include references for the statements about replacement of connectors on ODP/IODP CORKs.

Page 14, line 9: I imagine that quite a lot of effort went into getting everything ready. I think a more appropriate ways to characterize this is that it went according to plan, not “effortlessly.”

Page 15, line 6: please provide full detail of “acoustic communication by develogic” - full company name, model, etc.

Figure 1 is somewhat rudimentary in presenting a CORK as only having one casing interval (instead of nested casing with multiple seals), only two pressure gauges (internal and external, instead of being able to monitor pressure at multiple intervals being umbilicals separated by packers), etc.

The caption for Figure 2 could be expanded to give a little more detail as to what is visible in the picture. An inexperienced reader may not be able to tell what is what. Or, provide reference to another paper where it is explained in more detail.

Figure 5 caption is not very clear on what piece belongs to which observatory type.

Figure 8: the left and right orientation of the images does not match the caption.

Figure 11: Without knowing the depth of the borehole pressure unit versus seafloor, it is hard to evaluate the claim about a problem with the hot stab connection. What did you expect the difference to be in terms of pressure (bar) and how does this relate to

GID

4, C321–C324, 2015

the extrapolated depth axis? Either include reference to text section where discussed, or include information in figure caption.

Technical corrections:

* please italicize “in situ” throughout paper

* Page 5, line 10: the sentence beginning “As consequence. . .” needs some attention to grammar.

* Page 5, line 21: please rephrase “. . .are being armed out. . .” to “. . .are extended out. . .”

* Page 7, line 23: no need for comma after “If. . .”

* Page 9, line 4: I recommend replacing “MeBo-corking” with a more traditional noun-verb pair. “MeBoCORK installation” or something like that.

* Page 9, line 8: I recommend including a reference for OsmoSamplers

* Page 10, line 4: replace “leaned” with “extended” or “expanded”

* Page 11, line 4: “losing” is the correct word

* Page 12, line 16: replace “contains” with “consists”

* Page 14, line 20: “bent” instead of “bend”

Interactive comment on Geosci. Instrum. Method. Data Syst. Discuss., 4, 653, 2014.