

## ***Interactive comment on “Environmental forcing of the Campeche cold-water coral province, southern Gulf of Mexico” by D. Hebbeln et al.***

**D. Hebbeln et al.**

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Dear Editor and Referee #2, many thanks for the referee #2 comments. We will most definitely update our manuscript based on the valuable comments provided. Most specific comments will be followed accordingly, thus only the comments that we explicitly would like to reply to are listed here:

Specific comments A shortfall of the study is the insufficient analyses of the ROV data. Ecosystem or facies analysis of the ROV dives would significantly strengthen the study. As for the moment, all that is shown are some (unreferenced) snapshot of some spots on the seabed (fig 3 and 4). Analysis of the ROV video footage could add important information on cold-water coral system functioning.

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Response: As to the point of reviewer #1 we also here would like to point out that the focus of this manuscript is on the description of the entire Campeche CWC province within the overall environmental setting with some exemplary sea floor photographs and a very general description of the ecosystem and the facies distribution. A detailed small-scale facies/ecosystem analysis is out of the scope of this paper. Such an analysis is presently worked on, but it will take one to two years more, before all the videos will be evaluated in detail. Thus, the next step towards a more thorough analysis of the cold-water coral functioning will come, but in another manuscript to be written later.

- The NNE-SSW trending of the ridges cannot be observed from the map in Figure 2. An inset with a zooming in on part of the area would help to show the different orientations/V-shape/moats.

Response: Such an inset will be added to Fig. 2.

- P 18770 | 24-25: if possible, adcp bottom currents could be analysed to identify internal tides. 20m vertical fluctuation of isotherms is only a weak proxy for internal tides.

Response: Following your argument on the 20 m vertical fluctuation and following the arguments of reviewer #1 we will not any longer argue for the presence of internal tides. Instead, we will refer to some temporal variability.

Figure 1 highlights the productivity but only for a 10 days period. A long-term seasonal average would be more convincing.

Response: We will keep the Figure 1 as it clearly highlights the local upwelling center. However, in seeing the point of reviewer #2 we will add an inset showing a >10 year composite record also indicating enhanced productivity for the region.

Figure 2: Should maybe include an overview map

Response: we will add a hint to Fig. 1 in the figure caption to clearly define the position of the Campeche CWC province on a larger geographical scale.

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Figure 7 is in my opinion redundant and could be included in the online supplement material. It would be sufficient to mention the diurnal plankton migration in the text.

Response: as Fig. 7 clearly shows the diurnal migration of the zooplankton it adds – in our eyes – a significant information to the manuscript. And, seeing myself as a reviewer, I would as for some proof if any authors refer to zooplankton migration in their study. Therefore, we would like to keep it.

Thanks again for the very valuable comments! Dierk Hebbeln & co-authors

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Interactive comment on Biogeosciences Discuss., 10, 18757, 2013.

**BGD**

10, C8603–C8605, 2014

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