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Comment

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

### **Anonymous Referee #2**

Received and published: 15 January 2014

The manuscript ‘Environmental forcing of the Campeche cold-water coral province, southern Gulf of Mexico’ by Hebbeln et al. is mostly a descriptive paper that summarises the findings of expedition MSM 20-4 with the German RV Maria S. Merian in 2012. It presents a newly discovered cold-water coral mound province in the southern Gulf of Mexico.

With regards to cold-water coral system functioning, the manuscript offers little new information. Cold-water coral systems prefer areas of enhanced bottom currents, food supply and substrate are important factors. None of this is new. Also the diurnal migration of plankton is not a new observation. Never the less, the Campeche cold-water coral province manuscript describes a newly discovered cold-water coral mound province at the entrance to the Gulf of Mexico. As such it adds to the knowledge about

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the Atlantic-wide distribution of cold-water coral provinces and is a good contribution to cold-water coral research. Furthermore, the province is located in an area that can be potentially important for the recruitment of corals in the Gulf of Mexico. Consequently, future research can develop from this study. With moderate to major improvements it could be suitable for publication in bgs.

### 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.

P 18763 | 21: 21.5°N

P 18765 | 12-13: The ship-based IXSEA global acoustic positioning system (GAPS) coupled with the ship's differential global positioning system (DGPS)

P 18767 | 14-24 only phenomenological point information is provided in fig 3.

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.

P 18771 | 7&13: check units of current speeds. In fig. 8 current speeds do not exceed 1 cms-1

P 18773 | 22, p18775 | 16, p18776 | 18: Fig. 7 probably refers to Fig 8

### Figures

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

Figure 2: Should maybe include an overview map

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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.

Figure 8: check units for current strength (does this mean current speed?)

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

**BGD**

10, C7956–C7958, 2014

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