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## ***Interactive comment on “Coral Patch seamount (NE Atlantic) – a sedimentological and macrofaunal reconnaissance based on video and hydroacoustic surveys” by C. Wienberg et al.***

### **Anonymous Referee #1**

Received and published: 2 February 2013

#### General comments

This paper is an interesting contribution to enlarge our knowledge on seamounts physical and biological features using non invasive methods. The paper is nice to read and supply with interesting information and good quality figures and maps which contribute to our knowledge on sea mounts physical features. The paper offer also some qualitative interesting information on megafauna. I think that after some small changes and amendments it would be adequate for publication in Biogeosciences. There are some aspects to improve, specially related to the biological component of the paper. In the discussion chapter the arguments explaining the megafauna scarcity should be re-

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vised and re-worked. It would improve the paper to add some more recent references in order to offer a more comprehensive literature review.

Please find below my suggestions which I hope would help to improve some sections of the paper.

Title I consider the word “megafaunal” more appropriated for this paper than “macrofaunal”, as most of the paper is based on video analyses; only megafaunal organisms (large animals visible to the naked eye) should be visible in most of the occasions.

Introduction Page 18079 L 15-20 Maybe it could be also mentioned its important role as “fish concentration points” as demonstrated by several authors (e.g. Koslow, Morato etc.) L 25 It would be nice to complete the reference list with some more recent works Pg 18710 L5-10 I would recommend to include the locations cited here also in the map (Fig. 1) L10-15 there are some more recent references dealing with this thematic, it would be good to include some, (e.g. White et al. 2005) Pg 18712 L5-10 It would be important to mention that only two dredges have been analysed

Mat & Met To my opinion it would be better to organize Mat& Met (and hence Results) starting with the “large scale survey” (Hydroacoustic mapping, Backscatter) followed by the “smaller scale survey” (Video survey, Video analyses) and the last point the CTD. Pg 18713 L10-15 As already mentioned for the title, I consider more adequate “megafauna” L25 How did the authors calculate the scale of the images and the covered area of the transects? Laser pointers? Please add the used methods/tools to the Mat&Met chapter Pg 18714 L5-10 There is a problem with the figure citation: here you refer Figs. 2, 5, but you need to change the number of the figures through the paper. Please use consecutive numbers for the figures. Fig. 5 should be Fig. 3 and so on. L10-15 I think it is better to use “qualitatively analysed” than “visually” L15-L20 It would be important to define which is include in each category, for instance, Water column components include biotic and abiotic elements? Please specify L20 please define what you consider as “Biological characteristics” to make more clear what you mean

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L25 it would be helpful to describe a bit the aspects described in a “general manner”. I think that in this context it would be better to use “occurrence” instead “abundance” (the latter refer to a defined area). Pg. 18717 L5 “. . .to generate predictive habitat maps which can be applied. . .” This is true, but only if video surveys and/or biological sampling encompass the hydro acoustic surveys. L20-25 I wonder why just one CTD survey has been conducted. This offer very limited information on the description of the water column in the area. The potential variability could not be documented with only one CTD cast. Please justify why only one CTD has been conducted.

Results Pg18718 Please change the numbers of the figures in the text, following the correct sequence. Pg 18719 L20-25 Replace “macrofaunal” by “megafaunal” L25 I would suggest to formulate in another manner this sentence, hence no biodiversity analyses have been conducted it is not possible to assert that the biodiversity is low. Same applies to abundance because no quantitative analysis of the video transects have been presented in the paper. Pg18720 L5-10 how did you estimate the colony sizes? Please define “polyp generations” L15-20 please replace “sometimes” by “frequently” L20 how did you collect the samples? With a core? Please specify this part of the sampling in the Mat & Met section. If the work has been conducted with a core and you have been able to analyse the 0.5 mm fraction, the term “macrofauna” would be correct. L25 I would suggest to include this information explaining where the Victor Hensen Grabs have been collected in the Mat & Met section Pg18723 L0-5 it would be good to add percentages in order to have a more clear idea about the dominances of the different classes. Pg18724 L5-10 “to be dominated be exposed bedrock” do you mean “by”? It is interesting the information you offer for the suitable habitat for CWCs. It would be good to have the information for this kind of “relation” between substrate and fauna for the different substrate categories as well as faunal groups. L10- I think it is important to mention that due to the limited CTD sampling (just one cast) the information offered here should be consider with caution, hence there is not information on the variability (nor temporal, nor spatial).

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Discussion Pg18725 L20-25 did you recorded current velocities? Please support this assertion with data or references. Pg18726 L10 if necessary replace “macrofaunal” by “megafaunal”. I would suggest changing the name of this chapter by “Macrofaunal/Megafaunal description”. L15 As before mentioned, due to the lack of abundance and diversity studies in this work, I would suggest to avoid the use of both concepts. L15- This is one of the aspects which should be re-worked in the discussion because it is contradictory: on one side you offer arguments (e.g. geographic isolation, unfavorable environmental conditions which reduce recruitment, oligotrophic conditions. . .) to explain the scarce occurrence of macrofaunal/megafaunal organisms. On the other side you mentioned later in the discussion the large amounts of long lines which are related to intensive fisheries pressure. If fish is abundant in the seamount are, they would be attracted by food which consequently would be results of high primary productivity levels. Please re-work this part of the discussion. Pg18727 L0- 10 Even if as you mentioned, knowledge of environmental limits is still incomplete, in the last 10 years, several paper have been published offering results on the ecophysiology of CWC species, which supply with information on, for instance temperature tolerance etc. Please add these references here (e.g. Dodds, Oreja, van Oevelen, Naumann. . .) L10 what about the density envelope? (Dullo et al.) L15 not only linked to primary production, also to for example, resuspension mechanisms. Pg18728 L10 how is this situation in other seamounts which elongated summit, for instance Le Danois? L15-20 please replace “pelagic tunas” by “tunas” Please add to Clark et al. 2010, Morato et al. L20-25 This argument seems contradictory to me, with the ones used to explain the scarce macro/megafauna. Please, re-work this part of the text too. Pg18729 L15-20 it would be good to complete this with some more examples, showing that this is not an isolated case Pg18731 L0-5 you give here the area of the video surveys. How did you calculate it? Please add in the Mat & Met section L10-15 contradictory with the information on high abundance of fishes. Please re-work.

Tables & Figures Table 1 if you have the information on the covered areas by each video surveys, please add this to the table Table 2 please change Fig. sequence

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following the needed changes in the figure citation in the text. Table 3 I think this table should be extremely shortened keeping just the categories which have been clearly recognized in the video images and/or dredges. All information like “unident. Pinnate hydroid” should be removed, hence each of them could include several species, the same happen with “unident. yellowish incrusting sponge” which could refer to several species. Please keep in this table just the species and genus identifications and keep all other uncertainties just as “porifera” in the case of the sponges and apply the same criteria for the rest of the groups. Table 4 Please define the meaning of the used values in the table legend or in the text (which is the meaning for 100 or -100 or for 5 and 45)

Figure 1 as already mentioned in the comments to the text it would be good to have the locations cited in the text also in the figure, as for instance, Canary Islands. Fig. 3 this figures should be figure 5 following the appearance in the text. Fig. 4 this figures should be figure 6 following the appearance in the text. Fig. 5 this figures should be figure 3 following the appearance in the text.

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**BGD**

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