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Biogeosciences
Discussions

Interactive comment on "Changes in polychaete standing stock and diversity on the northern side of Senghor Seamount (NE Atlantic)" *by* A. J. Chivers et al.

Anonymous Referee #1

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[12pt]article

General comments

The present study sets out to investigate the polychaete communities, in terms of abundance, diversity and biomass, at Senghor Seamount, which is located at >3000 m depth in the NE Atlantic. The authors collected samples from 5 stations located across a transect running from the summit of the seamount (133 m) to a nearby basin station (3300 m). The subject of the MS is relevant to the scope of Biogeosciences and

presents new and unpublished data. Although the MS does not provide new ideas or concepts, due to the limited data used (see also first specific comment), I believe that the manuscript will be well received by ecologists mainly because it fills a gap in a field of deep-sea research (seamount research) for which information's are generally lacking. The authors used standard analysis methods and the conclusions are well supported by the data. The title is accurate and the MS is generally well written and easy to read, thus I recommend it for publication in BG after the following comments have been taken into account.

Specific comments

The main weakness of this MS is that it uses a very limited data set consisting of polychate abundances, diversity and biomass values only, thus results in a a paper of purely descriptive nature. It seems that despite the multidisciplinary nature of the cruise, no other data (e.g. environmental, oceanographic, other biotic etc.) were available by the time of writing, perhaps with the exception of a reference to oxygen levels (page 18455, lines 1-5). As a result, depth is the only available parameter to explain the observed patterns. Besides depth-related explanations any other discussion or conclusion is purely speculative and not supported by the data. It would have been much more interesting to include some other environmental data or at least provide some description of the physical properties of the seamount. For example, the authors mention a few times how flow around the seamount could affect ecological patterns and I wonder, if they took such measurements (e.g. CTD, current-meter measurements) shouldn't these be readily available? In conclusion, I strongly suggest the authors make an attempt to use other available environmental information, either from the cruise or published, to support their own data and conclusions.

Somehow related to the above comment, the authors many times prefer to follow an

almost journalistic approach, i.e. by just providing the facts, without trying to deepen into possible and meaningful ecological explanations. I'll give just one example. On page 18459 (lines 20-26) they attribute the large difference between the basin and the reference station to the fact that the two stations have different dominant species which however are absent from the other station. In my opinion, this is an extraordinary result as these two stations have almost identical depths approx. 3300 m). The authors being polychaete specialists, despite the absence of any other environmental knowledge, should be able to provide some explanations for the observed pattern based on their morphology, behaviour, functional traits etc.

It is not clear if the authors applied any statistics to support their conclusions. A fair amount of discussion deals with the fact that the abundance, biomass or diversity peaks at mid-slope depths but are these conclusions supported, for example, by ANOVA or any other test?

Technical comments

1. (Title and M&M). It is not clear why only the northern side of the seamount was sampled. Or did you sampled all sides but analyzed for the purpose of this MS only the northern samples?
2. (Page 18451, Line 1). As is is not clear how many replicates or cores per replicate deployment were taken I suggest to include in Table 1 a column with this information.
3. (Page 18453, Line 10 and Fig. 4). It is not clear if the cluster analysis was done on the species or the family data set. Please indicate both in the results and the Figure's caption. I assume that is is for the species data in which case however I do not see why it is needed as it provides almost identical results with the MDS graph (Fig. 5).

4. (Page 18459, Line 10). The statement that the base and reference station have no difference in diversity is exactly true as it is valid for some of the indexes measured (e.g. true for shannon but not true for J' and d').
5. (Table 3). Table caption indicates that dominant families are highlighted but I couldn't see any highlights in my pdf.
6. (Table 3). Lumbrineridae is not present in any of the 5 stations, so why is it in the list?