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Interactive comment on “The importance of different spatial scales in determining structure and function of deep-sea infauna communities” by J. Ingels and A. Vanreusel

Anonymous Referee #1

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The paper by Ingels & Vanreusel analyzes the spatial distribution of nematode diversity at different spatial scales in deep-sea ecosystems, in particular canyons and slope systems in two regions: Irish margin and Western Iberian margin. The dataset presented here is based on previously published data but analyze with a new approach. The paper suggests large efforts both for the field and laboratory activities to analyze nematode diversity (including functional diversity and standing stock). The paper is very interesting but needs a major revision before the final acceptance for publication. I find that some topics should be clarified to make the paper publishable. Authors conclude that the main source of variability occurs at small scale but the analyses carried out do not consider the difference at larger spatial scale, the comparison between the two

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regions IM and WIM. In the introduction (lines 17-18): “.... IM and WIM (ca 1550 km apart)...” but this spatial scale has not been investigated. Authors should select their dataset to make available also this kind of comparison. Moreover, I do not think that it is correct to compare a horizontal distribution with a vertical distribution of biodiversity. Please clarify this topic. Any role of the use of different sampling gear??? I would suggest to clearly explain that “their” small scale variability is referred to a vertical distribution. Sampling scale at “core level”. I have understood that core is a replicate (?) but is 1-200 m the spatial interval? This spatial interval is very large to be considered replicates from the same site. It seems that there is also an important variation of depth among corers. The dataset is based on data already published, but the authors should show their data to make more easy the comprehension of the manuscript. These data could be included in the Table 1 or in a table in the supporting online material. Table 1 reports 0-5 cm: is the meaning 0-1, 1-2, 2-3, 3-4 and 4-5 cm? Please explain and indicate in which station the vertical distribution has been investigated. Community structure or composition? Please explain Most of the discussion is based on the trophic composition of the deep-sea sediments. Again the authors should summarize their environmental data and present in the supplemental material . Most of the discussion is referred to environmental and trophic conditions to explain the observed spatial variability. I think that the authors should utilize an appropriate statistical tool to support their discussion. I would suggest DISTML analyses to analyze the link between biodiversity and potential drivers at different spatial scales. Any role of the bathymetric, latitudinal and longitudinal gradient? Authors should clearly tested the potential role of these gradients that could influence the spatial distribution of biodiversity at large spatial scale. Fig 3 and 4 show MDS outputs that are not very clear, I do not think that these figures show clear results. It seems that the comparison between sediment layers is between 0-1 and 4-5 cm. I think that the comparison should be carried out considering all sediment layers. Please explain.

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