

# ***Interactive comment on “Scotland’s Forgotten Carbon: A National Assessment of Mid-Latitude Fjord Sedimentary Carbon Stocks” by Craig Smeaton et al.***

## **Anonymous Referee #2**

Received and published: 6 October 2017

[General comments] This is the important study to estimate the national scale carbon stock of mid-latitude fjords. Although this estimation is a case study in Scotland, the methodology using seismic and biogeochemical data and the upscaling approaches are valuable and suggestive for estimating globally the carbon inventories of coastal waters. The upscaling methods contain uncertainties but the authors evaluate the uncertainties by IPCC protocol. I believe that this study is worth published in Biogeosciences. However, there are some points which should be addressed for publication. In my understanding, the authors compared the total quantity of sedimentary C calculated for five representative fjords by two upscaling approaches alongside detailed estimates of C stocks of each of the five fjords to check the accuracy of two upscal-

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ing methodologies. However, I cannot find any tables and figures about this point. I recommend adding a table or figure to certify the accuracy.

[Specific comments] Line180: What is Fresh/Tidal ratio in Table 1. How to calculate them? Line265: The large variation of %C in each fjord is found. Which is the dominant variation, vertical (sediment depth-related) or spatial variation? Line305: Please refer to “table 3”. Line307: In postglacial sediments, the contribution of IC is similar to that of OC. What is the origin of IC? Line337: Please clarify the meaning of “changing environmental change”. Line339: Please update the reference. If possible, please add the discussion about the origin of stored OC in the fjords. Figure 6: What is the meaning of shaded area? Is there any data in Maerl Beds and Biogenic Reef in Fig. 6A, B?

[Technical corrections] Line254: available “to” test Line295: by Little loch Broom? Line317: remove “ ) ” Figure 6: There are mistakes in the color of fjords. Vegetation -> Vegetation?

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Interactive comment on Biogeosciences Discuss., <https://doi.org/10.5194/bg-2017-360>, 2017.

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