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Interactive comment on "Characterising the ocean frontier: A review of marine and coastal geomorphometry" *by* Vincent Lecours et al.

Vincent Lecours et al.

vlecours@mun.ca

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Dear Dr. Mitchell,

We thank you very much for your comprehensive and helpful review of our manuscript. We are currently working on addressing the three reviewers' comments while awaiting the decision of the editor.

Please find below a point-to-point summary of your main comments and how these will be addressed. In general, the text will be thoroughly revised to make it more succinct. As can be observed in our answers to the reviewers' comments below, this will entail a reduction of chapter 2 and a revision of chapters 6 and 7.

Specific comments:

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1. “I found the graphs in Figure 1 interesting. However, the terms ’geomorphometry’ and ’geomorphometric analysis’ are not widely used in marine geology and geophysics, so the shapes of the graphs in Figure 1b, as the authors acknowledge, strongly reflect how these terms have been adopted, rather than representing the rise in practice in this subject area. Researchers began frequently measuring aspects of ocean floor shape from at least the 1960s onwards if not earlier, e.g., the work in characterizing how the seabed subsides with crustal age (some of the original articles cited by Parsons and Sclater (1977)).”

We will clarify that Figure 1 shows how the terms ‘geomorphometry’ and ‘geomorphometric analysis’ have been adopted in the last two decades.

2. “There is a lot of text in this new article devoted to data collection and processing, which is fine (and important), though I thought distracting and left little room for meaningful insight into marine geomorphometry, considering the term in its general sense. The authors have already invested significant effort in generating the present version of the article, so they may not wish to invest much further time, though I thought the basic practical steps and data issues (for sonar methods, for example) could be strongly reduced and relevant sources for this information cited, leaving more space for developing insight into how the analysis of bathymetry has evolved.”

We agree to remove the excessive details on data collection and processing and focus on the characteristics of the data collected within each technique, which is still very relevant to geomorphometry.

3. “I would also like to encourage the authors to repeat Figure 1b after attempting to find out how many articles measured shape characteristics from bathymetry in practice. This may take some effort, but the tables presented suggest they have already got part of the way. I have suggested some articles at the end of this review from my own experience. I suspect there are many more, sponsored in part by the US navy (Office of Naval Research). The results would hopefully show how efforts compare with the

history of instrument development and number of research vessels. There are at least data on the history of geophysical research cruises to compare against (Wessel & Chandler, 2011) and there may be other information on, for example, the sales of multibeam sonars available from the sonar companies."

Figure 1b will be revised to include articles measuring shape characteristics. This will be based on data from Table 2 and the literature suggested by the reviewer.

4. "As the term "geomorphometry" is not widely used, it may be better to use the title to clarify the meaning for readers not familiar with it (as the aim of the article stated in the conclusions section is to raise awareness). I suggest: "A review of marine geomorphometry, the quantitative study of the shapes of seabed features""

The title will be modified as suggested by the reviewer.

5. "The logic in the text needs to be tightened - some examples below, though I have not captured all problem text."

We thank the reviewer for all the examples provided (page 1 line 10 to page 27 line 7; figures 2, 3, 4, 6). We will carry out all these modifications.

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