

## ***Interactive comment on “De Long Trough: A newly discovered glacial trough on the East Siberian Continental Margin” by Matt O’Regan et al.***

### **Anonymous Referee #1**

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The Paper “De Long Trough: A newly discovered glacial trough on the East Siberian Continental Margin” addresses the existence of cross-shelf trough(CST) in the East Siberian Sea (ESS). Many CSTs are found on the Beaufort Sea, off Greenland, and Barents-Kara Sea of the Arctic Ocean, however, no direct evidence of CTS has been found on the ESS yet. This makes it difficult to understand glacial history in the ESS, even though many studies provided several proofs of Pleistocene ice sheet. Results from this paper are expected to contribute to reveal the existence of the fast-streaming ice sheet as well as the glacial history in the ESS.

In this paper, several images of SBP related to grounding-zone wedges(GZW) are presented. Because GZWs are generally found in CST or major fjord system, there is no doubt of the the existence of fast-streaming ice sheet in the De Long Trough.

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However, some evidences supporting the existence of CST need to be examined carefully. 1. One of evidences for CST is a topographical depression in the IBCAO chart. The IBCAO version 3.0 is known to be compiled using Digital Bathymetric Model (DBM) and collected bathymetric data. In the ESS, however, limited measured bathymetric data may give rise a limited accuracy of IBCAO data in the region. As this paper presented the maximum depth difference between field measurement and IBCAO data reached more than 100 meters. Considering this error range, the depression depth of 140 meter measured using IBCAO data may have another geologic interpretation than CST.

2. In this paper, trough mouth fan (TMF) was presented to support CST. The only supporting evidence of TMF is a topographical feature from IBCAO data. Like the previous reason of poor accuracy of IBCAO data in the ESS, it is not easy to accept as a supporting evidence of TMF.

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