

## ***Interactive comment on “Overflow of cold water across the Iceland-Faroe Ridge through the Western Valley” by Bogi Hansen et al.***

### **Anonymous Referee #2**

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This manuscript is very interesting and stunning. It all verses on how weak the overflow on the Iceland-Faroe Ridge is and tries to find a logical explanation for it. To fulfill the longtime series, in situ hydrographic observations are combined with altimetry data. The paper concludes that even though the measurements took place on a low overflow period, in average low transports values should be expected. Another important conclusion arises from a model, the inflow of Atlantic Water is able to suppress the overflow. Even though I found this work interesting and easy to follow, I missed having error estimations and I also encountered with figures with bad caption or even turn around. Thus, my recommendation for this paper is to publish it after some changes. Beneath a list of the comments I have: Mayor Comments: - Section 2.2. We observe in one of the plots where each CTD section took place. However, it would be interesting

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to add a line here about what distance exists in between the profiles or a map of their location. - Supplemental Figure 4 is used to establish an important criterion to define overflow water on the manuscript. Thus, I think it should be included in the manuscript and not in supplementary material. It also highlights the distribution of overflow water. - Page 6 line 11. Maybe here it can be stated that even though throughout the manuscript the 3°C isotherm is used as upper limit for the overflow water, at the end of section 3 a sensitivity analysis is carried out. - Figure 6 needs to be turned upside down so the upper side is Bottom temperature and the lower velocities to be consistent with the text and caption. - The caption of Figure 7 is also opposite to the figure and text. - Figure 8. Could you also add a line for the 3°C on the sections to compare with the 27.8 kg m<sup>-3</sup> isopycnal. Could the map be slightly bigger so one can read the isobaths? - Using the terminology of transport density when part of your data has density and part not, even if it has nothing to do, creates confusion. Better use the terminology of (volume) transport per unit length. - Page 8 line 22 and Page 10, in lines 26 and 29, please add the uncertainty that these values have. - Table 4 add uncertainty.

Minor Comments: - I think that breaking the author breaks the flow of the reading by trying to have small paragraphs. I think the following paragraphs pairs can benefit from blending into one: (1) starting on page 2 from line 30, to page 3 in line 7, (2) page 3 starting on line 14 and ending in line 23, (3) page 3 starting on line 24 and ending in line 32, (4) page 10 from line 17 to line 23 - Page 6, Line 4 remove: "which appears to be", is it or is it not? - Figure 5. Please advise the reader that each figure has a different y axis on the caption.

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