

Interactive comment on “Gas emissions at the continental margin west off Svalbard: mapping, sampling, and quantification” by H. Sahling et al.

Anonymous Referee #2

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Review of manuscript entitled “Gas emissions at the continental margin west off Svalbard: Mapping, sampling and quantification” by H. Sahling et al.

I was really glad to read this paper and I believe it contains valuable results that can be used as a baseline to study the dynamic and evolution of methane emissions off Svalbard. In addition, the results presented here constitute an excellent reference for future studies aiming at comparing different methods of gas flux quantification. The article also very clearly explains the various existing hypotheses proposed by different researchers about the causes of methane release offshore Svalbard, and it contributes to answering the questions that emerged from these hypotheses.

The methane quantification method is well described, and it could easily be reproduced. The article describes particularly well the many advantages of combining multi-

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beam and singlebeam systems with visual observations for flux estimation purposes. Finally, it is necessary to highlight the effectiveness of the flux quantification method used here with respect to acquisition time and area coverage.

In summary, the paper is clear and, in my opinion, it only needs minor corrections. I hope the authors consider these minor suggestions before publication:

-p 7197, lines 17-20: I miss an explanation for the reason to store the weighted sum of Sv values (maybe to classify flares between weak or strong?). I recommend either adding an explanation or simply avoiding this comment. Regarding the weighted sum: is it correct to calculate a normal weighted sum of Sv levels (i.e., with logarithmic values)?

-p 7197, lines 20-21: “Locations of flares were plotted with GMT using color coding for classifying strong and weak flares (Fig. 2)”. As I see in figure 2, there are 2 colors: red for strong flares and blue for weak flares. It would be good to specify the threshold where flares can be considered weak or strong. This could be explained in the main text or in the figure caption (e.g. red > -60 dB).

-Figure 3: at first sight the path of the bubble streams is difficult to visualize. It would be good to enclose the path of the bubbles to help the reader focus on the important features.

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