

## ***Interactive comment on “Satellite ice extent, sea surface temperature, and atmospheric methane trends in the Barents and Kara Seas” by Ira Leifer et al.***

**Hutchings (Editor)**

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Dear Leifer,

You have received two negative comments on your paper, and I am in agreement that the interpretation of the satellite methane data may be an issue in your paper. As the spatial correspondence between atmospheric methane and expected location of ocean upwelling is a keystone of your argument for a hypothesised remote ocean floor source of methane, you do need to consider these points deeply. I am in agreement with the comment pointing towards the lack of rigor in your approach, without direct observations to support your hypothesis and a superficial discussion of the remotely

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sensed data. Please note the alternative hypotheses for the methane signal that are presented.

The paper is very descriptive, but does not find robust links between the ocean and atmosphere as claimed. It is my opinion that more analysis is required and evidence for methane in the ocean near surface where the shoaling occurs to support presenting your hypothesis.

I would like to hear your detailed response to the points raised regarding concern in interpretation of satellite data and the pathway of methane bubbles in the ocean. What evidence do you have that bubbles can persist without being absorbed along the full trajectory from your proposed source regions?

I am excited to see papers where various datasets across the ocean and atmosphere are used to understand geophysical phenomena. However for publication the analysis needs to be robust, demonstrate a full understanding of the limitations of methodology and measurements, and not be open to criticism of cherry picking.

Sincerely, Jenny

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Interactive comment on The Cryosphere Discuss., <https://doi.org/10.5194/tc-2018-237>, 2018.