

Ocean Sci. Discuss., referee comment RC1
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Comment on os-2021-85

Anonymous Referee #1

Referee comment on "Autonomous methane seep site monitoring offshore western Svalbard: hourly to seasonal variability and associated oceanographic parameters" by Knut Ola Dølvén et al., Ocean Sci. Discuss., <https://doi.org/10.5194/os-2021-85-RC1>, 2021

The manuscript by Knut Ola Dølvén and colleagues is a very interesting in-situ study of methane seeps west of Spitsbergen. Its conclusions about variability of the dissolved gas concentrations are very important for planning any future measurement campaigns. The information on possible increase in methane seepage is interesting and its (cautious) discussion is correct, in my opinion. In short this study definitely publishable and should be published after only some minor corrections.

The few things I would like the authors to address are:

1) The salinity used in this study is obviously practical salinity (no unit), not absolute salinity (g kg^{-1}). This fact (the name "practical salinity") should be mentioned somewhere (something like "here and elsewhere in the papers the salinity values are practical salinity").

2) Are the CH₄ and CO₂ trends described in lines 110 and 115 statistically significant, considering the high variability of the measurement values? The former (methane)

probably is due to the large difference at the start and end of the time series, but I would not be sure about the latter (CO₂). Also, generally no tests of statistical significance or

3) A minor nitpick. The statement in line 115 can't be right as it is written: "CO₂ averaged 403 μatm with a decrease from mid-November 2015 (□400 μatm) until 6 May (□391 μatm) in 2016 (Figure 2a)". Looking at the figure I know what you mean but still something that decreases from 400 to 391 should not have on average 403. Please rephrase.

4) The cited literature is very rich and generally well chosen but I am surprised by the lack of a citation of the review paper James et al. 2016, <https://doi.org/10.1002/lno.10307>. It could be cited in multiple places in the manuscript as it covers many of its threads. For full disclosure I am one of its co-authors so please treat this as non-obligatory but I honestly think it's lack is puzzling.