The Cryosphere Discussions

The Cryosphere Discuss., referee comment RC2
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Comment on tc-2021-226

Stig-Morten Knutsen (Referee)

Referee comment on "Review Article: Permafrost Trapped Natural Gas in Svalbard, Norway" by Thomas Birchall et al., The Cryosphere Discuss., https://doi.org/10.5194/tc-2021-226-RC2, 2021

The paper is a very nice compilation of data from Svalbard. It presents and discusses permafrost, trapped gas, migration, timing and petroleum systems - and climate. The relationship between the topics of the paper is intriguing but also very complex. The current set-up of the paper, especially the methods and the discussion part, is a bit unfocused, and the many different topics appears to be treated a bit lightly.

I would recommend the authors to focus on the observations of permafrost and maybe trapped gas, and how this is distributed in the Svalbard area. The distribution and timing of this might also be more elaborated. However, I am not sure if the link to petroleum system (or maybe release of gas to the atmosphere and climate implications) should be included. If the latter topics are to be included, the presentation and discussion of these should be strengthened.

Please also note my comments in the attached.

Please also note the supplement to this comment:
https://tc.copernicus.org/preprints/tc-2021-226/tc-2021-226-RC2-supplement.pdf