Reviewer 1
Review of 'The water column of the Yamal tundra lakes as a microbial filter preventing methane emission'
By Alexander Savvichev, Igor Rusanov, Yury Dvornikov, Vitaly Kadnikov, Anna Kallistova, Elena Veslopolova, Antonina Chetverova, Marina Leibman, Pavel Sigalevich, Nikolay Pimenov, Nikolai Ravin, and Artem Khomutov

I totally agree with the authors that information on primary production, concentration of dissolved organic matter, microbial abundance and CO2 assimilation is important to the characterization of the studied systems, particularly if these lakes have never been studied before, as pointed out by the authors. However, in my opinion, this information could be presented as supplementary information or even in a different manuscript. There is no doubt that these data bring valuable information, but I believe they are not crucial to the main conclusions of the ms. As an example, I pointed out that Fig. 9, which summarizes the main findings of the ms, does not show these data, suggesting that they are not critical to arrive to the conclusions. But I understand this may be an issue of style, as it is my preference to read and write more succinct papers that present only the necessary data that take the readers to the main messages that are being conveyed.
We agree that some of the parameters studied had little effect on methanogenesis and methane emission (as demonstrated by Fig. 9), but this was by no means evident at the onset of the study. In our opinion, it is desirable to keep this information in the text to show the readers how we arrived at our conclusions.

On a similar note, I also prefer introductions that are straighter to the point, but I understand that the authors may have a different writing style.
The work was intended as a microbiological and biogeochemical assessment of the Central Yamal thermokarst lakes. The long Introduction was required to describe the diverse aspects of microbial processes and communities in thermokarst lakes.

Please add the reference Pimenov et al. 2006 where applicable in the Methods so that the reader can refer to it for more detailed methodology.
Added (line 141).

Please add in the Methods section that single cells and aggregated cells were visually differentiated under the microscope.
Added (line 163).

Fig 2 and 4: what are the light brown horizontal bars? I believe the bar plots (as original) with legends indicating which bar corresponds to the values in µgC L -1 d -1 and which bar corresponds to mgC m -2 d -1 are more appropriated. There is no need for a secondary y axis if both have the same range and are identical. A secondary y axis could be useful here if you wanted to show the per litter PP in a narrower range axis than the axis of the depth weighted PP. See below two fictitious figures showing how I think you could present your figures to make them clearer (first with one y axis, second one with two y axes):
The brown horizontal bars were termed "wavy bands" in the caption, since they are indeed wavy and therefore not strictly horizontal. They indicate the bottom location. In our opinion, such presentation is preferable, since lake depth is one of the most important parameters. The word "brown" was added to the caption. Bar graphs were replaced with XY ones in order to show how the rates of microbial processes vary from horizon to horizon. The data on integral rates (mg C m^{-2} d^{-1}) are presented on the figure as numeric values. The second Y axes were removed.

Reviewer 2

Review of: The water column of the Yamal tundra lakes as a microbial filter preventing methane emission

General Comments:

This manuscript contains information that appears to be of considerable value in understanding the role of methane production and consumption in both deep and shallow Yamal tundra lakes. It likely has valuable application to understanding these processes in thermokarst lakes across the arctic. However, there are some significant adjustments/edits needed. With some minor edits/changes, I feel it can be accepted.

Specific Comments:

Lines 93-95: As stated in my previous review, I think a more clearly outlined hypothesis/research statement at the end of the introduction would be helpful. There is a wealth of information presented here, but it is not immediately clear how some information relates to the stated goals. I would suggest using a number list, eg: "The present work was aimed at elucidation of the similarities and differences in the rates of the methane cycle processes by examining: 1) the rate of hydrogenotrophic methanogenesis, 2) the rate of methane oxidation, 3) .... Etc."

The present work was aimed at microbiological and biogeochemical characterization of the carbon turnover in Central Yamal small young lakes (constitutional ice thermokarst) and deep mature lakes (massive ground ice thermokarst) with a focus on the methane cycle processes. For this purpose, investigation of the following parameters was required: (1) primary production, (2) dark CO_2 assimilation, (3) the rate of hydrogenotrophic methanogenesis, (4) the rate of methane oxidation, (5) abundance and composition of microbial communities in the water column.

Line 165: In your response to my previous review, you stated "on the basis of our radioisotope studies, it is impossible to carry out a full-fledged balance calculation of methane production". I think it would be valuable to explicitly state this early on in the text. Be clear that only a small portion of the total methane production is actually being quantified here because any readers might not be aware of this.

Inserted (line 423).

Line 281: Table 3 – This is just showing hydrogenotrophic methanogenesis right? I assume yes? Clarify please. You use the symbol MG-h later in the text.

Replaced globally.

Technical Corrections:

Lines 44-47: "Thermokarst lakes are widespread in West and East Siberia, in Alaska and Northern Scandinavia (Grosse et al., 2013; Kravtsova and Rodionova, 45 2016; Vonk et al., 2015; Wik et al., 2016). Thermokarst lakes are also common in Northwestern Canada and the Hudson Bay Lowlands (Marsh et al., 2009)." Would read better as "Thermokarst lakes are widespread in West and East Siberia, in Alaska and Northwestern Canada, the Hudson Bay Lowlands, and Northern Scandinavia (Marsh et al., 2009; Grosse et al., 2013; Kravtsova and Rodionova, 45 2016; Vonk et al., 2015; Wik et al., 2016).

Corrected.

Lines 71-72: Consider changing: "they oxidize this greenhouse gas and decrease methane emission into the atmosphere" to "they oxidize methane, thereby decreasing emissions into the atmosphere"

Changed.

Line 165: (MG) should be (MG-h) to be consistent with further down in the text (eg. line 407)

Changed.

Lines 349 – 428: Paragraphs are indented, inconsistent w/ rest of the paper

Corrected