

Interactive comment on “Stability and biodegradability of humic substances from Arctic soils of Western Siberia: insights from ¹³C-NMR spectroscopy and elemental analysis” by E. Ejarque and E. Abakumov

Anonymous Referee #2

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The paper focuses on a very interesting topic which may also have major global climate implications. However, I have big concerns regarding the publication of the manuscript in its present state, especially in what concerns the structure of the paper. Before considering the manuscript for going through the peer-review process, a major restructure should be done. I started marking all the comments and suggestions which may have improved the quality of the paper, but the structure of the paper is too unclear and difficult to follow.

C1379

In section 2 there is a mixture of the description of the study area with the methods. The text in some subsections is also mixed, as subsection 2.2, which should be also changed to make it easier for the reader to follow it: location, geomorphological setting/environment, soil description. A major problem appears in this section with the concept of permafrost and active layer (and related terminology, e.g. permafrost table/border). These ideas should be clarified here and along the text (see French, 2007).

The results are completely mixed with the Discussion. The results should only show the findings of this paper, without interpretations, which should be discussed in a new Discussion section. Here, the results must be compared with similar studies in other environments, clearly showing the novelty of this research. More and more recent works on these topics can be cited. And the conclusions should clearly reflect the results achieved in this research; the references that appear in the conclusions should be discussed in the Discussion.

I'm not a native speaker but there are many mistakes in the text. It should be revised by a native-speaker since _____

p. 2, line 3 Polar? I don't think Antarctic soils could be included in this sentence. This is true for Arctic soils, but not for polar soils (including Antarctica), very poor in OC. For further information about this check: Bockheim (2015). The soils in Antarctica. Springer.

p. 2, line 5 “Quaternary” I am not sure to understand the meaning of this sentence. The Quaternary period has recorded tens of glacial-interglacial oscillations. But you mention here that this accumulation is only due to “cold”. Please rephrase. I guess you should mention here the role of permafrost preserving old organic-rich sediments from other glacial-interglacial phases.

p. 2, line 15. In line 15 you mention Arctic. Please homogenize along the text when it's clearly “polar” and when it is “Arctic”.

C1380

- p. 2, line 18 "Arctic" here and throughout the text
- p. 3, line 16-27 This is description of the Study Area. IT should be reallocated in this section.
- p. 4, line 20 missing "sediments deposited during the..."
- p. 4, line 21-22 minimal/maximal change by minimum/maximum I'm not a native speaker but I don't think "Where" is the appropriate conjunction here
- p. 4, line 22 change to "air temperatures remain positive"
- p. 4, lines 25-26 mentioned before, delete
- p. 4, lines 27- only, several international reports suggest a significant higher increase. Check recent references.
- p. 4, lines 29-21 to page 5 line 2 – unnecessary information for a scientific paper. Besides, the last sentence is methodology.
- p. 5 line 8 – change to "depth". And it is It is the active layer of the permafrost. Maybe it could be permafrost table, but I am not sure about that. You need to continuous monitoring (longer than 2 years at least) to state that the permafrost table is placed at 90 cm.
- p. 5, line o "border of the permafrost", what does it mean? I will not detail all the mistakes related to permafrost concept along each of these sites. This MUST be changed.
- p. 5, line 12 landscape are overmoisted? Please do not mix landscapes and soils!
- Etc.

Interactive comment on Solid Earth Discuss., 7, 3021, 2015.