

Interactive comment on “Pan-Eurasian Experiment (PEEX): Towards holistic understanding of the feedbacks and interactions in the land–atmosphere–ocean–society continuum in the Northern Eurasian region” by Hanna K. Lappalainen et al.

Anonymous Referee #1

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Recommendation

Dear editor and authors. Based on my analysis I recommend to accept the current paper subject to only minor revisions.

General comments

The paper aims at describing the mega-project “PEEX”, and how the project leaders use an approach of research, infrastructures, societal impact and stakeholder com-

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munication to address the environment issues in the northern Eurasian area in the atmosphere, soil and water ecosystems. But, the main goal is to review and identify these environmental issues. I think that this is invaluable information, which will be used as a reference for coming PEEX-papers and other authors using this paper as look-up reference for their own studies. Hence, this paper will be referenced multiple times. This paper is also an ethically correct and timely construction, since it can serve as an eye-opener for the public and for stakeholders and decision makers of the local or regional authorities, and can be used for mitigation or adaptation. Namely, this paper comprehensively summarizes the negative environmental impacts in the current geographical region, where there has been little motivation, attention or pressure on the authorities to act on the different environmental issues to date.

I base my review on my experience mainly related to the atmospheric environment, but am able to comment and understand also the other parts of the manuscript due to the easily understandable explanation provided by the authors. I think that the language does not suffer from any flaws, but is very easy to follow, and has a clear structure. I can see that the structure and language of the paper has been thought through with high rigor. The paper is written in a very general manner, without too detailed explanations of the environmental issues at hand. This is perhaps the largest drawback and strength of the paper at the same time. I reckon the readability of the paper would suffer very much if the text would be much longer. It is already long as it is. Hence, I think that the current length of the paper is a well justified compromise.

Specific comments

A number of misspellings in the article. Please revise accordingly. But, no sentence structure problems.

Introduction, line 100: Please replace "will" with "is". We are already facing issues with the grand challenges.

Introduction, lines 103-104. "These changes are also reflected from and linked with the

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natural environments at large spatial scales.” This sentence doesn’t give added value to the paragraph. Please, consider removing.

Please create a table of contents, despite that this layout is not familiar to journal articles.

Chapter 2, lines 132-135. Maybe a little bit too much talking without concrete information. Consider removing.

Chapter 2, line 250. What does figure 2 have to do with the information in the paragraph? Please explain.

Chapter 2, lines 251-252. What does “turnover of soil carbon stocks” mean? Please explain.

Chapter 2, lines 275-284. Arctic “Browning” vs “greening”. Which process is today dominating area-wise? On line 1168 you are stating that the greening dominates, but this is not clear here. Please clarify.

Figure 3. Very low picture resolution of map. Please improve.

Chapter 2. Lines 508-510. The stable atmospheric stratification, is that high pressure subsidence inversions, or other types? Please mention which type of large-scale stratification it is.

Chapter 2.2.3.2. How can the general electric circuit be used as diagnostic tool for climate studies. Please explain and give references.

Chapter 2. Line 625. “fall-winter energy loss from the ocean”. What is this?

Chapter 2. Line 774-775 “The higher temperature response of aquatic ecosystems compared to terrestrial ecosystems...”. How do you know that the temperature response is higher for aquatic ecosystems?

Chapter 2.4.3. “The impact of climate parameters, such as temperature (including sea-

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sonal, weekly and daily gradients, and extreme values), strong winds, snowfall, snowstorms and precipitation should be investigated. Both the frequency and the duration of weather events should be considered. These climate parameters influence human health, tincidence of diseases, . . .”. Not convincing that the climate change has major negative effects on human health in northern Eurasia. If your conclusion is that climate change is not affecting human health in a major negative way in northern Russia, please write this out.

Chapter 3.2. The acronyms NPP and HSR should be defined the first time these are mentioned.

Lines 1191-1194. Serious misspellings.

Chapter 3.4. Lines 1276-1283 is a repetition of the previous paragraph.

Chapter 4. Lines 1378-1393. What is it that you are really trying to communicate in this paragraph. It is so general, that it becomes very hard to understand. Please concretize.

Introduction: Please write at the end of the introduction chapter what is the outline of your report. In other words: describe shortly what is the goal of the different chapters in order for the reader to get a full picture of how the report is organized and how the different parts connect.

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