

## ***Interactive comment on “NORPERM, the Norwegian Permafrost Database – a TSP NORWAY IPY legacy” by H. Juliussen et al.***

**H. Juliussen et al.**

havard.juliussen@unis.no

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### AUTHOR RESPONSE TO COMMENTS BY REFEREE 2

Some of the terminology (pg. 32 1st paragraph for eg.) utilized is a bit confusing and perhaps differs from that that might be used by others. I would suggest that the term study region be utilized instead of permafrost areas to avoid confusion with the permafrost zones (continuous, discontinuous etc). The term observatory should probably be used for individual monitoring sites (probably equivalent to what the authors now call Permafrost Areas) rather than these broad regions which perhaps are administrative/political units covering several hundred square km. Additional comments are provided below. AUTHOR COMMENTS: We agree that ‘permafrost area’ could be replaced with a better term. Instead of ‘study region’ proposed by the referee, we propose

C75

‘study area’ being more in agreement with the geographical scale of objects in discussion. The term ‘observatory’, on the other hand, should not be used for individual monitoring sites as suggested by the referee. We refer to the International Permafrost Association’s statement “The International Network of Permafrost Observatories (INPO) will consist of a network of sites coordinating and integrating permafrost and permafrost-related measurements” (<http://ipa.arcticportal.org/index.php/INPO/>). Many measurements from one area are thus needed, and the term ‘permafrost observatory is used for this area, in consensus with the International Permafrost Association.

Specific Comments Pg 29 Line 14 – It isn’t so much the number of sites that is the issue but rather the uneven distribution of sites and the large areas that are not represented. AUTHOR COMMENTS: We agree and will change the text accordingly in the final revised paper.

Line 24 – This ancillary data are not collect at all sites. It would be better to say that at some sites additional data such as air temperature, snow depth, etc. are also collected. AUTHOR COMMENTS: We agree and will change the text accordingly in the final revised paper.

Line 27-28 – suggested revision “The objective is to maintain observatories after IPY...” AUTHOR COMMENTS: We agree and will change the text accordingly in the final revised paper.

Pg 30 Line 1-3 – SAON is more of a process rather than an observation program AUTHOR COMMENTS: This may be correct at the moment, but again we refer to the International Permafrost Association’s (IPA) statement about the International Network of Permafrost Observatories: ‘It (i.e. the network of permafrost observatories) will form the basis for the contribution of the IPA to global observing programs, including the Sustaining Arctic Observing Networks (SAON) and the Pan-Antarctic Observing System (PantOS)’ (<http://ipa.arcticportal.org/index.php/INPO/>).

Line 10-13 – The intention of GTN-P (including both TSP and CALM components) and

C76

its associated web site was never to be an archive for all data that may be collected at the monitoring sites. It was only meant to provide key summary data and is fulfilling the criteria it was meant to fill. The data archives are the responsibility of national agencies etc. and some of this is handled by the National Snow and Ice Data Centre. AUTHOR COMMENTS: We agree and will make this section clearer in the final revised paper.

Pg 31 Line 19 – Are you referring to the discontinuous-continuous permafrost transition or the southern boundary of permafrost? AUTHOR COMMENTS: altitudinal transition, referring to line 18.

Pg 32 Line 11 – Do you mean 16 sites within these larger study areas? AUTHOR COMMENTS: 16 study areas within one observatory, referring to the first comment. Within each of these study areas, one or more individual measurement sites are clustered. We will make this clearer in the final revised paper.

Line 21 – The subtitle should perhaps be “Borehole Instrumentation”. Reference to IPY ground thermal instrumentation implies that these monitoring sites are only operational for a short period when in fact the intention is to operate them for several years. AUTHOR COMMENTS: This entire section is about the instrumentation obtained during the IPY campaign, just as the section 2.1 is about pre IPY this is about the recent status obtained thanks to IPY, so we keep this timing in the title. Also, the suggested subtitle ‘borehole instrumentation’ is not suitable as there are also miniature temperature dataloggers outside boreholes included. We therefore suggest to keep the subtitle.

Line 22 – suggested revision “...include continuous monitoring of ground...” AUTHOR COMMENTS: We agree and will change the text accordingly in the final revised paper.

Line 23-24 – Are you referring to temperature measurements in air, snow and ground surface etc.? AUTHOR COMMENTS: Yes, we will replace the term ‘micrometeorological’ with ‘temperature’ in the final paper.

C77

Pg 33 Line 2 – instrumented with permanent temperature cables? AUTHOR COMMENTS: Yes

Line 14-17 – It is unclear why the total length of boreholes is relevant. The distribution of boreholes and how well this represents the various conditions in a region as well as the depth of individual boreholes (especially if they allow measurements below level of seasonal variation) would seem to be more important. One 570 m borehole is not equivalent to 10 boreholes each approx. 50 m deep and distributed to represent the terrain and climate conditions in a region. AUTHOR COMMENTS: This is just an overview of the entire length of boreholes drilled and instrumented, so we like to include this information in a rewritten form: In total 570 m of boreholes were drilled and instrumented in Norway (281 m) and Svalbard (289 m) during the IPY TSP Norway campaign. We will in addition slightly expand the description of the previous section end on the distribution and depth of the boreholes with respect to climatic and microclimatic conditions and ground properties, although this can also be found in Christiansen et al (2010).

Line 19-20 – PYRN needs to be defined (program should probably be described). How deep are the holes? AUTHOR COMMENTS: PYRN will be defined briefly in the final paper, while the TSP project is well-defined in the present paper. Regarding the depth of the holes, we refer to our previous comment. It will be elaborated in the final version of the paper and is also given by Christiansen et al (2010).

Pg 33 line 24-Pg 34 line 3 – Is this description of instrumentation applicable to all boreholes or just the PYRN boreholes? AUTHOR COMMENTS: Applicable to all holes. Will be made clearer in the final paper

Pg 34 line 28-29 – Repeating information presented earlier? AUTHOR COMMENTS: These are the instrumentations for the temperature monitoring in the air, snow, ground surface and upper ground (outside boreholes), while the borehole instrumentations are listed at page 33 line 24-27.

C78

Pg 35 Line 3 – Basal Temperature rather than Bottom Temperature? AUTHOR COMMENTS: We agree and will change the text accordingly in the final revised paper.

Line 23 – Suggested revision “Prior to this, all data on permafrost temperature were stored only locally by individual scientists.” AUTHOR COMMENTS: We assume the referee refers to line 24, and agree to change the text according to his/her suggestion in the final paper to be “prior to this, all permafrost data were stored only locally by individual scientists”.

Pg 36 Line 2 – suggested revision “... Norwegian ground temperature database.” AUTHOR COMMENTS: We agree and will change the text accordingly in the final revised paper.

Line 8 – suggested revision “... with identification of the data types..?” AUTHOR COMMENTS: We assume the referee refers to line 9 and we agree to use the suggested revision in the revised text version.

Line 15 -16 – Using language that is future tense, but hasn’t this already been done? AUTHOR COMMENTS: The import of these data has just started. The Geological Survey of Norway has a large amount of such data that will be included in the future.

Line 17-18 – suggested revision “Important criteria had to be defined and a suitable database structure developed.?” AUTHOR COMMENTS: We agree and will change the text accordingly in the final revised paper.

pg 37 Line 4-5 – suggested revision “... the database is able to contain data from throughout the Norwegian Kingdom.” AUTHOR COMMENTS: We agree and will change the text accordingly in the final revised paper.

Pg 40 line 8 – It is unclear why metadata would need to be reported annually. Do you mean the reporting of summary data? AUTHOR COMMENTS: We will change the text to “Reporting of metadata and annual data summaries. . .” in the final text version.

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C79

Interactive comment on Earth Syst. Sci. Data Discuss., 3, 27, 2010.

C80