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Interactive comment on “Thermal state of the active layer and permafrost along the Qinghai-Xizang (Tibet) railway from 2006 to 2010” by Q. Wu et al.

Anonymous Referee #1

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General Comments:

It is always good to get the publication of new data, but the analysis here is not particularly insightful. A much shorter note more thoroughly describing the sites and the main statistical description of the data would be better. These sites are 30 to 80 meters from the centerline of the development and that raises questions as to if it is possible to consider these sites as "natural". There are a number of studies that document the impacts on vegetation and upper-soil characteristics out well over 100 m from development and these sites are clearly much closer than that. I would caution anyone from interpreting these results as being from a location that has not been impacted by this

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development.

Specific Comments:

I am not sure what a "sand protection facility" is that is mentioned in the discussion, but it does not sound like a naturally occurring feature, and should therefore not be included in this paper.

Why are only a few sites included in the Figures? If these are supposed to be representative of the 3 regions discussed on page 2468, there is no mention of it? Are they supposed to present a range of conditions? Some explanation for why these were chosen is needed.

There is no distinction between "climate" and "weather". It is simply not possible to see the effects of climatic change in a 5-year record, as that is too short of a period and is weather. Climatic impacts are those seen over longer time periods.

The authors seem to suggest that there should be a clear relationship between air temperatures and soil temperatures, and yet there are many, many papers that discuss that this relationship is only simple at and in perhaps the upper cm or two of soil. Further down, it is increasingly complex and dependent upon many factors. At depth one sees a relationship with climate over time, but only with much lag and much damping.

Technical Corrections:

Try to use "mean" instead of "average" whenever possible as average can refer to the mean, mode, or median statistically.

pg 2467 - line 22 - "whether" should be "weather"

pg 2468 - line 5 - "descript" should be "describe"

pg 2468 - line 24&26 - not sure what is meant by "exceptionally", but perhaps they mean "except for a few"?

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pg 2468 - there is a long discussion here of essentially 3 regions within the study area (mts, high plains, basins, etc.). It would be very helpful to indicate where those regions are on Figure 1 for those who aren't familiar with the study area.

Figure 1 - in the captions it says "after" but should be "since"

pg 2469 - line 6 - "data-log" should be "data-logger"

pg 2469 - line 7 - should say that "Use of thermistor strings is widely accepted and they have been used in this region since the early 1980s" or similar as there are several sentences which overlap and are difficult to understand.

pg 2469 - line 12-16 - "unobvious" should be "unclear" or perhaps "no trend"

pg 2472 - line 14-18

Figure 2 - histograms are not very useful. Why aren't they graphed as 5 lines on plot depth on side (though with 0 at the top) and then time on the bottom as is done in Figure 3a? And why aren't Figure 2 b and 3b that way also?

Interactive comment on The Cryosphere Discuss., 5, 2465, 2011.

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