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Interactive comment on "Role of rainwater induced subsurface flow in water-level dynamics and thermoerosion of shallow thermokarst ponds on the Northeastern Qinghai–Tibet Plateau" *by* X. Pan et al.

Anonymous Referee #1

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The paper "Role of rainwater induced subsurface flow in water-level dynamics and thermoerosion of shallow thermokarst ponds on the Northeastern Qinghai–Tibet Plateau" by Pan et al. deals with the hydrology of thermokarst ponds in the Qinghai–Tibet Plateau. Although the topic, methods and results are very interesting, the paper has several flaws that should be carefully addressed. In particular:

1. the paper is very difficult to read and to follow. Although the introduction is well written, the rest of the paper is too dense of information and lacks of clarity. In addition, it is hard to find a correlation between the sections, and the figures are not clearly

explained in the text. More figures and tables should definitely be added to improve the understanding of the paper.

2. the English language is very poor, full of syntactical, orthographical and punctuation errors. This further complicates the paper readability. Short sentences should be preferred to long sentences. In addition, the British and the American standards should not be mixed. For example, you can write either "behaviour", "vapour" and "modelling", or "behavior", "vapor" and "modeling". An accurate revision of the text is needed.

Specific comments:

Line 22, page 6121: adding a summary of section 3 would be recommended to ease readability.

Line 3, page 6122: acronyms should be always explained: what is a.g.l.? I assume "above ground level", but you should write it.

Line 10, page 6122: put the depths in a separate table. I would also recommend describing sensors, depths and sites in separate tables.

Line 14, page 6123: what are the values of the constants? I mean the slope vapor pressure curve and the psychrometric (not psychometric!) constant. The same thing is also valid for the constants and parameters in equations 3 and 8.

Line 6, page 6126: I do not understand where the "mudstone with high clay content" is and which percolation is here meant.

Line 20, page 6126: Before starting with Section 4.1 a summary of Section 4 would be recommended.

Line 25, page 6126: Why can surface runoff occur at pond 2 only in some conditions? And at pond 1?

Line 1, page 6127: Could you describe better this subsurface seepage?

Line 3, page 6127: Add figures or tables where this can be better understood.

Line 14, page 6128: This sentence is not understandable to me, I can find no independent clause.

Line 20, page 6128: why are these sub-periods not described in separate bullets?

Line 24, page 6128: it is improper to say “since the intensive rainfall events could quickly reach the saturated layer”. It is not possible to compare inconsistent quantities.

Line 4, page 6129: This paragraph is particularly difficult to follow and should be reformulated. The soil above the water table is by definition unsaturated. What does it mean that the unsaturated layer is about 1.2 m thick? Also I do not understand “The wetting necks . . .. . . the water table”.

Line 9, page 6130: Maybe it would be good to indicate the three periods in the figure. Are the same periods discussed in the previous paragraph?

Line 17, page 6131: What is the mentioned microtopography? Is it just the topography mentioned in the previous section?

Line 5, page 6132: What does “The two bulges are consistent with the inlets of preferential flow” mean?

Line 10, page 6132: What is the freezing degree-day? This has not been defined. In addition, Figure 6 is not explained in the text. All the figures should be first of all explained in the text, not only in the caption.

Interactive comment on The Cryosphere Discuss., 8, 6117, 2014.