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Interactive comment on "Response of freeze-thaw processes to experimental warming in the permafrost regions of the central Qinghai-Tibet Plateau" *by* S. Chen et al.

Anonymous Referee #1

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Experimental warming is widely used in ecological research to help to understand changes in carbon stocks and fractions, and the related processes resulting from climate change. However, experimental research in the open field on the response of freeze-thaw processes and the active layer of permafrost-affected soils are rare, at least to my knowledge. In this respect, the paper is a valuable contribution to the scientific discussion on the consequences of global warming. The overall quality of the paper is good and I appreciate the large number of citations in the introduction which gives a very good overview of permafrost research on the Tibet plateau. I would be happy if some more findings from ecology and soil science could be added (e.g. Baumann et al. Global Change Biology 15, 3001-3017 (2009), doi: 10.1111/j.1365-

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Discussion paper

2486.2009.01953.x, He J-S et al. New Phytologist, 170, 835–848 (2006), Geng Y et al. PLoS ONE 7 (4): e34968. (2012), doi:10.1371/journal.pone.0034968).

The results section has many sentences that consist of data rows. I suggest to shorten the text and present the data in tables.

The introduction to the discussion (p7, l37 to p8, l8) could better be integrated into the introduction section. This holds true for quite some parts of the following paragraphs of the discussion section. As mentioned in the title of the manuscript, processes of freeze-thaw cycling would play a central role. I would suggest to extend the discussion of such processes. Instead, I would leave out the objectives to estimate the release of old carbon and to evaluate the stability of Qinghai-Tibet Railway/Highway since I couldn't find any own results on this issue in the manuscript.

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