

## ***Interactive comment on “Surface deformation detected by the space-observed small baseline SAR interferometry over permafrost environment in Tibet Plateau, China” by F. Chen and H. Lin***

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General Comments: In this paper the authors apply topography corrected small baseline SAR interferometry algorithm to the permafrost regions in Tibet Plateau, China. The paper is well written, concise and generally sound. There are couple technical points that I would like to see answered, which are listed below as "Specific Comments".

Specific Comments:

P4078L4: How are the InSAR results validated with leveling? How many leveling points does the cross in Fig. 3 represent? If the points fall within a very small area in the C2406

SAR image, it may be possible to talk about calibration or referencing of the results to leveling, but for validation, multiple points spread around the study area is required.

P4079L1: "...uplifts in Fig. 3 are highly related to slopes..." It would be nice to show the correlation between slope and surface deformation to back this claim. For a reader it is hard to verify this point, especially if the effects of topography are not removed from the time series.

P4080L28: "For instance, in this study, we detected a decreased trend (–50 mm yr to –30 mm yr ) of Gulug Co inland lake in the 3.5-yr observation span (from June, 2007 to December, 2010) in case of the signature separates from ground movements."

Sentence is not clear. Please re-write to improve clarity. It is not clear if the ground (lake bottom) movements are removed from the lake trend, or if they are assumed to be zero.

P4083L15 and P4085L7: "PS points" The term "PS" and "PS-InSAR" are trademarks of TRE. Please use write out "persistent scatterer" instead, unless the analysis you are referring here was done by TRE. In that case a reference to the study is necessary.

Technical Corrections: P4076L25: "After careful checking by manual, another..." Please correct: "After careful manual inspection another..." P4077L13: "we unwrap" Please correct: "we unwrap" P4079L16: "calibrated by a stable Eurasian reference frame" Please correct: "relative to the stable Eurasia reference frame" P4080L1: "In other hand" Please correct: "On the other hand" P4080L18: "are potential for" Please correct: "have potential for" P4082L8: "To make a summary" Please consider: "In conclusion " or "In sum" P4083L11: "-30 mm yr-1 to -30 mm yr-1" Please correct: "-30 mm yr-1 to 30 mm yr-1"

IF POSSIBLE Fig. 1: Please change the overlaid text color to increase readability. It may also be possible to add a shadow. Especially it is very hard to read Fenghuo Mount Tunnel and Qinghai-Tibet Railway signs. Fig. 7: Change the colorscale on the

shaded DEM to display more of the mid-values.

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Interactive comment on The Cryosphere Discuss., 6, 4071, 2012.

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