The Cryosphere Discuss.,
https://doi.org/10.5194/tc-2019-173-SC1, 2019

The Cryosphere Discussions
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EGU

Interactive comment on "GPS Interferometric Reflectometry measurements of ground surface elevation changes in permafrost areas in northern Canada" *by* Jiahua Zhang et al.

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Received and published: 22 December 2019

The manuscript presents a survey of existing GPS/GNSS stations potentially available for permafrost monitoring via Reflectometry. The application of GPS/GNSS-R for permafrost monitoring seems to be a promising area. The main merit of the present submission is the large number of stations considered. There does not seem to be any methodological innovations. Below I indicate major, moderate, and minor issues for consideration.

———— MAJOR

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Discussion paper

The GPS antenna foundation should be discussed in more detail. Currently only the distinction between buildings and steel pipes is given. But not all steel pipes are the same. At least the foundation depth should be given. For example, ALRT is 6-m deep while REPL seems to have concrete slab under the metal pedestal.

———— MODERATE

The pioneering work of Hu et al. (2018) should be compared and contrasted with the present submission.

More details of the GPS-IR data processing is necessary. For example, what GPS signal was employed – L1-C/A?

Authors should document the GPS receiver and antenna models used in each station, including the time of replacement, at least as supplementary material.

Authors should also acknowledge some of the possible error sources in the simplistic mathematical formulation of eq.(1), where the phase term (phi) is not necessarily constant and can actually vary with soil moisture, vegetation cover, etc.

———— MINOR

"The uncertainty of H-bar is represented by its standard deviation." -> It should be the standard error of the mean, i.e., the standard deviation divided by the square-root of the sample size.

replace bullet for dot in: °CâĂćday yr-1 -> °CÂůdayÂůyr-1

for a 2-m-height antenna -> for a 2-m-high antenna [or: for 2-m antenna height.]

As the monument is deep anchored (e.g. Fig. 2), the GPS antenna is stable with respect to the permafrost -> If the monument is deep anchored (e.g. Fig. 2), the GPS antenna is stable with respect to the permafrost

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