Comment on tc-2022-36
Justine Ramage (Referee)

Referee comment on "Accelerated Mobilization of Organic Carbon from Retrogressive Thaw Slumps on the Northern Taymyr Peninsula" by Philipp Bernhard et al., The Cryosphere Discuss., https://doi.org/10.5194/tc-2022-36-RC1, 2022

Dear authors,

General comments:

This is an in-depth study showing the increase in the number of abrupt thaw features (retrogressive thaw slumps) and associated mobilized carbon across a specific region in Siberia (Taimyr Peninsula). The originality of the paper is the use of SAR TanDEM-X data to identify such features and estimate volume loss as well as to include some optical imagery analysis to assess the number of RTSs after a heat wave event. The paper brings new insights into the impact of climate change on abrupt thaw events and their consequences on the carbon budget. The methods are clearly set and the results well described. I have one suggestion regarding the discussion (see below). The abstract and introduction’s flows should be improved to ease the read, I also added a few minor comments below.

Introduction


L38-39: I would suggest expending on a few more reasons explaining their expansion
Results

Figure 7. a) show the Area to volume scaling relation and obtained fitting parameter.

Discussion:

Substantial organic carbon mobilization from RTSs: you mention that the landscape change is mostly driven by RTSs were re-initiating. The sediments that are remobilizing might have lower carbon content since part of it was already mobilized. How do you think that this re-initiation affects your estimates of carbon mobilization? I suggest adding a few
sentences on this. There are a few studies on carbon mobilization on stabilized and re-initialized RTS that you could use:


Thank you for your contribution in this field. I wish you the best with the remaining work.