

The Cryosphere Discuss., referee comment RC2
<https://doi.org/10.5194/tc-2022-79-RC2>, 2022
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Comment on tc-2022-79

Philip Pika (Referee)

Referee comment on "Brief communication: Unravelling the composition and microstructure of a permafrost core using X-ray computed tomography" by Jan Nitzbon et al., The Cryosphere Discuss., <https://doi.org/10.5194/tc-2022-79-RC2>, 2022

This paper presents a thorough analysis and comparison of a permafrost core using both an innovative non-destructive computed tomography scan and a destructive laboratory based sampling method to address the composition of permafrost soils including gas, ice, and solids. The three-dimensional and high resolution CT scanning technique is a great tool for advancing our understanding of the state and history of permafrost soils. This study qualitatively showcases the strengths and weaknesses of CT scans and laboratory based analysis and their combination, and will be a milestone for future studies in this field. However, while I definitely support the publication of this study, I must also ask the authors to address several major points and comments made in the manuscript. Please see the attached document.

Please also note the supplement to this comment:

<https://tc.copernicus.org/preprints/tc-2022-79/tc-2022-79-RC2-supplement.pdf>