Comment on essd-2022-289
Anonymous Referee #1


The paper of Attiah et al. „Lake Surface Temperature Dataset in the North Slave Region Retrieved from Landsat Satellite Series - 1984 to 2021” brings an interesting overview of long-term dataset in the high latitude regions where the historic (but also recent) in situ observations are scarce. It analyses more than 500 lakes which also allow to analyse spatial variability of the temperature across the whole region.

I appreciate the detailed description of the methodology including data quality control. As not being a remote sensing expert I can’t judge on every detail of the process. Therefore, I stress that this issue is hopefully reviewed by other reviewers.

I would suggest including more details on the validation of the dataset against the in situ observations. This is to me essential for the reader/user as this basically can tell us something about how reliable the Landsat-derived results are. As I understand, the observations are made manually but some of them with use of automatic loggers. You demonstrated that the individual datapoints are well represented, but are the statistical parameters derived from in situ and remotely sensed datasets comparable in terms of open water season average LST for example?

I think it is essential to distinguish between water LST and temperature of a frozen/snow covered lake. I think it would be worth including this information in the dataset. This would also allow the user to estimate changes in lake ice cover duration, date of freezing and melting.

You stated that the aim of your work is to distribute the data among the public/authorities. I don’t think that any of these people would be able to process or use the data in its present form. I think that it would be great if you can also provide the reader/user with processed dataset of LST average values (for example) – in a table form.
My suggestion would be to generate: annual average LST for open water season, length of the open water, melt date, freezing date.