

Thank you for your comments, which we have addressed line by line below. Comments are indicated by boldface and italicized text; our responses in normal text and preceded by [Author response].

***L5: Are the “available weather station measurements” referring to air or skin temperatures? Or perhaps both? I think it would be useful to specify that here.***

[Author response]

Weather station measurements have been specified as air temperatures.

***L108: I believe this is an incomplete sentence, or needs to be rewritten for clarity.***

[Author response]

The sentence has been completed- whoops!

***Table 1: The MYD21 product does have a layer that reports LST error that could be added to this table (<https://lpdaac.usgs.gov/products/myd21v061/>). This would likely help to contribute to the arguments that the offsets that are calculated between MODIS LST and air temperature are not simply due to measurement error--if the difference is larger than the combined error of both datasets (MODIS LST and air temperature), which presumably it is.***

[Author response]

We chose not to alter Table 1, but instead to insert a statement that all measurement errors on the MODIS LSTs are  $<1^{\circ}\text{C}$ .

***L154: It would be useful to add what MYD21 version you are using. v006? V061?***

[Author response]

“v006” has been added.

***L173: Were MODIS LST values ever above  $0^{\circ}\text{C}$ ? If so, were they left as is?***

[Author response]

All MODIS LST values were left as is. A statement to this effect has been added.

***L256: “MODIS LSTs and melt” – I think the ability to use annual MODIS LST averages to approximate annual average air temperature extends beyond using it to determine potential correlations with melt (especially since the comparison with melt events isn’t explicitly done in this work). I think focusing more generally on how this linear regression could be used to approximate air temperature would broaden the applicability. Then I do think the focus on melt in the discussion section is reasonable and gives a specific instance where this might be useful. However, I do wonder if MODIS LST (unconverted) is more correlated with melt events than the approximated air temperature. I understand that the cited literature focuses on links between air temperature and melt, but it seems a surface temperature is in fact more directly linked to potential melt events. I am not sure if data exist to test this, but it could be mentioned in the discussion.***

[Author response]

The subsection heading has been changed to “Approximating air temperatures from MODIS LSTs” and broader context has been added before diving into surface melt.

***L262-266: This is simply an issue of wording, but I think calling the approximated air temperature***

***“LST\_{converted}” is a bit confusing. This is an approximation of air temperature based on LST. So calling it “T\_{air, approx.}” or something might be more clear.***

**[Author response]**

T<sub>converted</sub> has been changes to T<sub>air, approx.</sub>

***L379: Typo, should read “fall and winter”***

**[Author response]**

Now reads “fall and winter”

***L453: enabling --> enables***

**[Author response]**

“and enabling” has been changed to “, enabling”