General Response:

We sincerely appreciate your constructive suggestions and have revised our manuscript accordingly. In this version, we have mainly adjusted the structure of the introduction. The syntax and diction of some sentences are also modified to make them more standardized, coherent and precise. Some specific responses are detailed below. For other suggestions, we have updated the manuscript accordingly. We are grateful for your patient and meticulous review, and for even providing better phrasing.

1. L63: I would suggest to finish this paragraph here. I don't know exactly where I would put the next sentence, but probably earlier in this paragraph. And the last question can be included in the next paragraph.

Response: We have finished the paragraph here and moved our hypothesis to the end of the introduction.

2. L66: I would suggest to first write about what you've done, and after that write what your hypothesis is. You could start:

"In the current study, we want to investigate how vegetation green-up date responds to snowmelt time, and how that response varies regionally. In order to do so, we calculated and analysed the time difference between..."

L73: This can go in the Material and Methods. You can reduce it to:

"In addition, we emplyed exploratory spatial data analysis to examine the spatiotemporal variation of DeltaD".

What I would suggest is to write your hypotheses here, to finish the introduction. In that way you create a good link to the next section, the Material and Methods, where you describe how you are going to test your hypotheses.

Response: Regarding our hypothesis, following your suggestion, it was merged with the statistical analysis methods and presented at the end of the introduction.

This study aims to investigate how long it takes for D_{GU} to respond to D_{SOM}, and how this response varies regionally. To address this, we calculated and analysed the time difference between D_{GU} and D_{SOM} across the TP, denoted as ΔD. Accurate extraction of D_{SOM} and D_{GU} is essential for this analysis. D_{SOM} detection presents challenges due to the limitations of different remote sensing techniques: while optical remote sensing effectively detects the presence or absence of snow, it struggles to identify the melting state. In contrast, microwave remote sensing provides more reliable snowmelt detection but suffers from lower spatial resolution. To balance these trade-offs, we used a daily snow depth dataset with high spatial resolution to extract D_{SOM} for the TP from 2001 to 2018. Similarly, D_{GU} was derived from an existing high-accuracy dataset for the same period. We then calculated ΔD to assess the delayed response of vegetation green-up to snowmelt. Furthermore, we employed exploratory spatial data analysis to examine the spatiotemporal variation of ΔD, hypothesizing that regional heterogeneity in ΔD is influenced by multiple environmental factors.

3. L69-72: This can go in the Material and Methods

Response: As the technical details mentioned had already been covered in the original Methods section, we have directly deleted them.

4. L189-199: Well written, but I reckon this should go in the introduction? This gives the reasons behind studying this effect, so it would fit better in the introduction, for example between paragraphs 2 and 3I should have probably mentioned it in the first review, my bad.

Response: We split the content in Section 2.3.4 into two parts and incorporated them into the introduction. The first two sentences, concerning the meteorological factors of D_{GU}, are integrated into the second paragraph of the introduction. The remaining part, which deals with the correlation between snow phenology and environmental factors, was appended to the end of the third paragraph.

5. L230: Is this sentence missing a verb? "happened", maybe?

Response: After confirming that "green up" denotes the plant regrows after dormancy in ecology, we used it as a verb in the sentence.

Vegetation greens up earlier in the southeast and later in the centre and west.

6. L305: Do you mean “not significant”?

Response: Yes. We have modified the expression and redone the figure in line with your suggestions. Beside, Figure 4 also had this mistake so we redone this figure too.

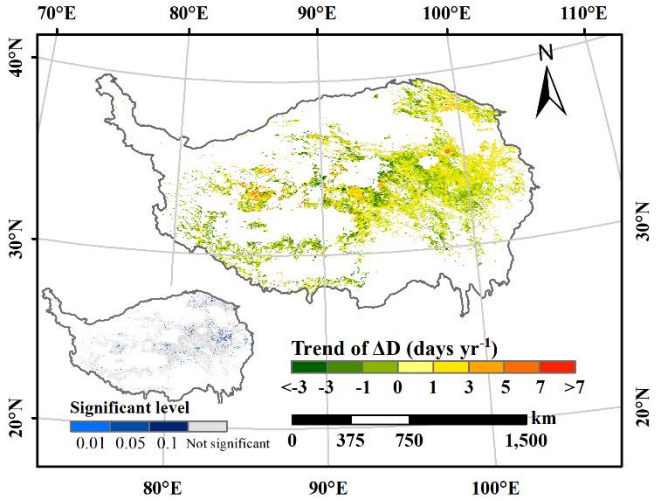

Figure 4: Interannual variation trend and significant levels of ***ΔD*** *on the Tibetan Plateau from 2001–2018.*

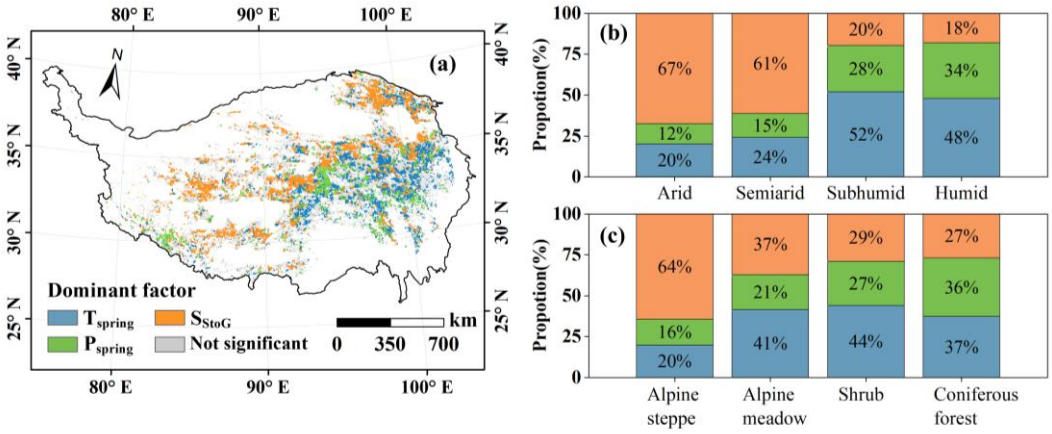

Figure 7: (a) Spatial distribution of dominant factor of ΔD *with a significance level of 0.05 and its proportion diagram among (b) different geographical zones and (c) different vegetation types.*

7. L376: Maybe better to write "R^2 = ..."? In the previous version you only wrote the number, which might be too little, but you don't need a full sentence either.

Response: We have modified as follow.

In warmer regions with mean annual temperatures above freezing, spring temperature correlates negatively with D_{SOM} $(r = -0.46)$ *and* D_{GU} $(r = -0.07)$*, indicating that temperature primarily influences snowmelt rather than vegetation growth, thus extending response times. In colder regions increased temperatures can reduce cold stress on vegetation, resulting in a larger effect on* D_{GU} $(r = -0.27)$*. However, consistent sub-freezing temperatures do not significantly lead to later* $D_{SOM}(r = -0.28$*, which is similar with* $D_{GU})$*.*