

# Response to Reviewer 1

To facilitate the readability of these revision notes for the editor and reviewers, the comments to the author are in blue, whereas the responses are in black.

## Comments to the Author:

The revised paper reprocessed the input data for HMRF modeling and added more extended time series and terrain-corrected Landsat images for validation. The new accuracy assessment demonstrates the effectiveness and potential applications of the new snow cover dataset. Several minor comments still need to be solved before publication.

## Comment 1:

In Figure 1, suggest changing the color of station symbols to more contrasting colors such as green, blue, etc. In addition, change ‘Stations’ to ‘Meteorological station’

**Response:** We appreciate the reviewer’s suggestion. In this revision, figure 1 has been modified as follows:

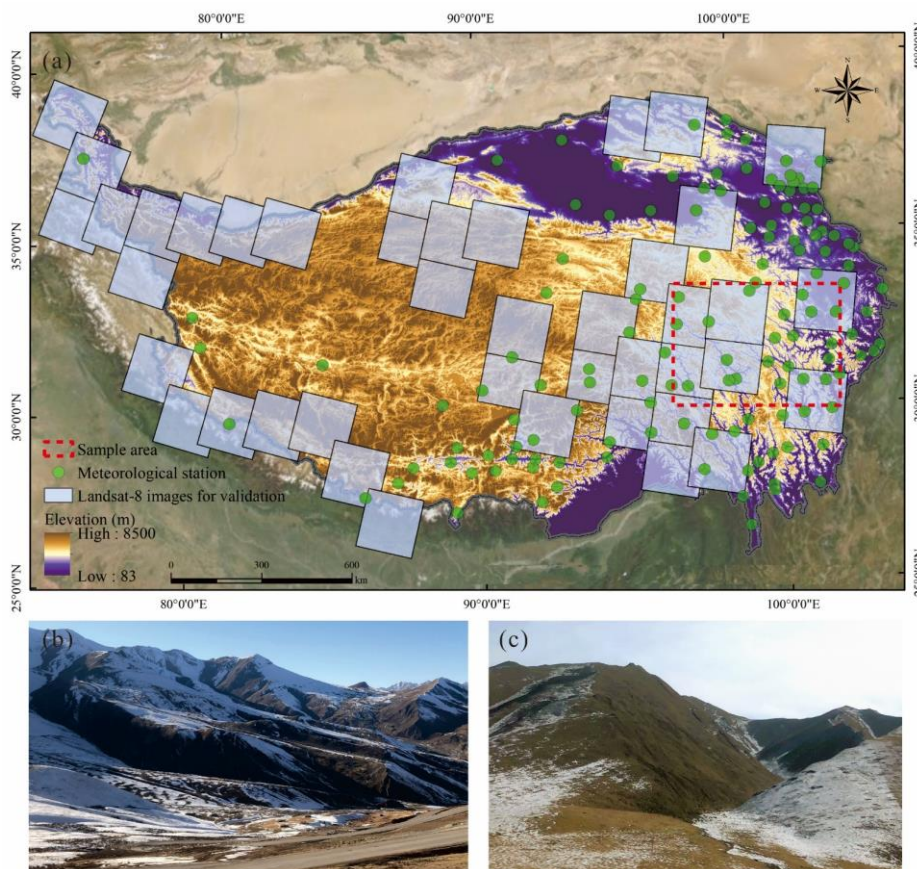


Figure 1: Topography, meteorological stations, and survey photos of the TP. (a) Surface elevation and distribution of meteorological stations in the TP. Landsat series data utilized for

validation and sample area are also shown. (b) and (c) in situ photos from field survey in the TP.

**Comment 2:**

Line 121: remove the comma after “237”.

**Response:** Removed.

**Comment 3:**

Line 192-193: change the previous sentence “The general snow fraction estimation method was derived over other regions, and many studies have shown that the derived linear relationship has limited accuracy in the TP” to “The general linear relationship between FSC and NDSI was derived over other regions, which has limited accuracy in the TP”, and remove “between FSC and NDSI” in Line193-194.

**Response:** Changed.

**Comment 4:**

Line 265: add “the” before “central pixel”.

**Response:** Added.

**Comment 5:**

Line 281, 312: add a space before the number.

**Response:** Added.

**Comment 6:**

In Figure 8, the solar-based SCP compared to ele-based SCP, another area that has been significant improvement can be seen is in the upper left corner, where highlighting is recommended.

**Response:** As suggested, we have highlighted the significant improvement area in the upper left corner in Figure 8.

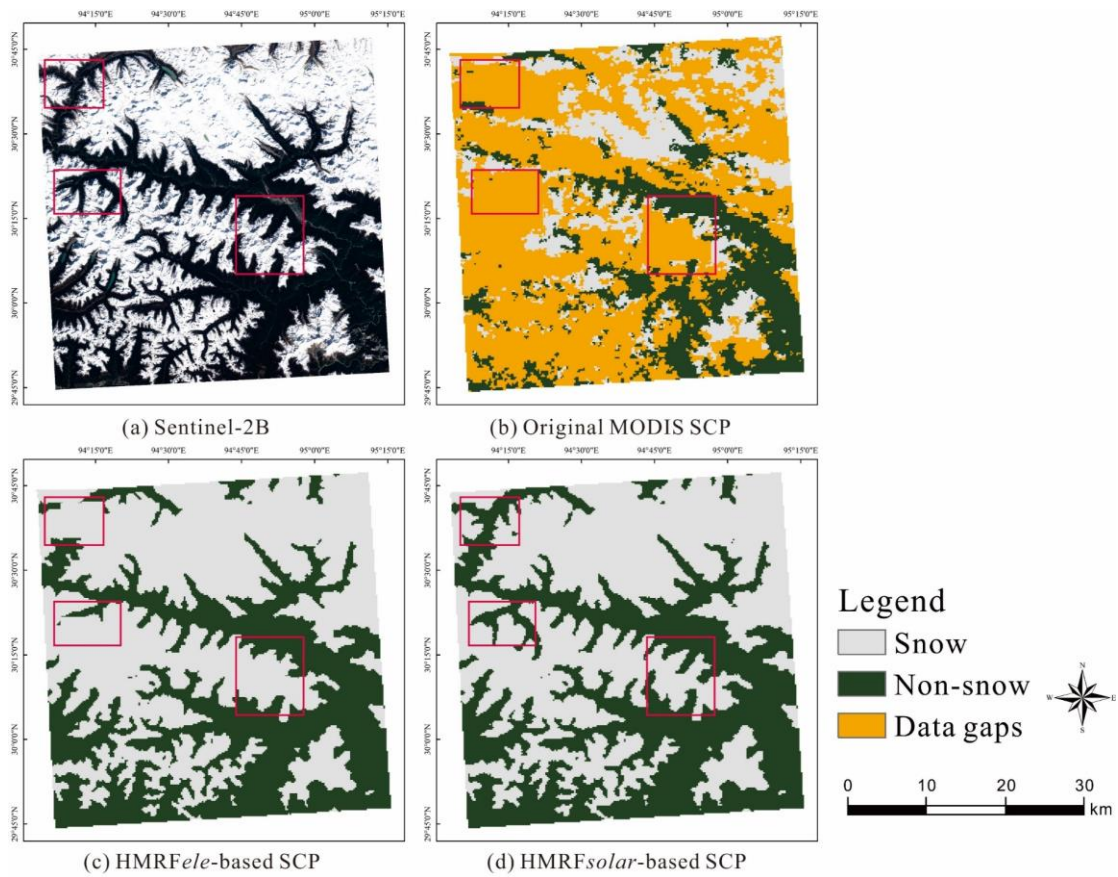


Figure 8: Comparison between true-color Sentinel-2B imagery and (a), original MODIS snow products (b),  $HMRFele$ -based snow products (c)  $HMRFsolar$ -based snow products.

**Comment 7:**

Line 415, 417, 466: change “omission error” and “commission error” into “OE” and “CE”, respectively.

**Response:** We have changed the text as suggested in Line 392, 394, 441.