

Review of "A coarse pixel scale ground "truth" dataset based on the global in situ site measurements to support validation and bias correction of satellite surface albedo products" by Fei Pan et al.

The authors constructed a global albedo database in coarse pixel scale based on the high-resolution Landsat7 ETM+ images and 368 in situ sites from sparsely distributed observation networks globally. The results showed that the new database overcomes the shortcoming of in situ albedo measurements and can be used as ground truth, which captures spatiotemporal variations of surface albedo. However, there are many mistakes in the current manuscript which are due to the carelessness of the authors. Moreover, some parts of the content have indications of plagiarism. Therefore, before the current manuscript can be published, the authors should reply to the following comments diligently.

Major comments:

1. As described by the authors, one criterion of the methodology in this manuscript is the spatial resolution of high-resolution albedo observation should be equivalent to the footprint of in-situ observation (lines 205-207). However, the authors also highlighted that the footprints of in-situ sites are not fixed. It depends on the height of the albedometers (Lines 113-115). Have the authors compared the size of the footprints of a total of 368 in-situ sites with that of the Landsat7 ETM+ (30 m)? How about the results? Please discuss this issue with figures or tables.
2. In the manuscript, the coarse spatial resolution of the albedo product is 500 m (MCD43A3 V061) and the high resolution of the albedo is 30 m (Landsat7 ETM+). Therefore, the authors retrieved the upscaling coefficients to upscale the surface albedo from a high resolution of 30 m to a coarse resolution of 500 m. However, since 500 cannot be divided by 30, there should be some high-resolution observations partially covered at the edge of the coarse grid. How to deal with this issue? Please explain.
3. Figure 3: The label of x-axis is wrong. According to line 292, Fig. 3 is the scatter plot of $\theta_{\text{upscaling}}$ and $\theta_{\text{reference}}$, none of them should be the "Pixel scale ground truth". Please check.
Meanwhile, the six subpanels represented six land cover types according to the caption of Fig. 3. However, the authors didn't mention their locations (Lon/Lat) as well as the land cover types. Please add.
4. Figure 4: Please add line $x=0$ in the subpanel of Bias. Meanwhile, I don't agree with the expression "the biases concentrated around 0" in the conclusion (Line 482). Please revise the relevant content.

5. Figures 5-9: I cannot find the description of the mean of the boxplot. What is the meaning of the line in the center box? The mean of median value? Please describe it clearly.
Meanwhile, what's the sample number of each boxplot? Please add the description and tables.
6. Lines 225-226: how to choose the $\theta_{\text{ETM+}_{\text{in situ}}}$? Do you mean the nearest Landsat7 ETM+ pixel to the in situ site? Please explain.
7. According to Fig. 1, there is a large portion of regions without in situ sites, especially for the regions covered with snow (e.g., Siberia) or with high elevation (e.g., Tibet). Therefore, how can the authors announce that their database can be used globally (in the abstract and conclusion)? Please explain.
8. Results and Discussion: The bias and RMSE of the upscaling results seems equivalent to the typical uncertainty of the surface albedo coarse resolution satellite products. Why are the authors satisfied with their results? Please explain.
9. Methodology: The content and the structure of the methodology in the current manuscript are quite similar to those of Wu et al., (2020). I also find the reference "Peng et al. (2015)" in line 240 is not included in the References part of the current manuscript. So, I believe the author who wrote the current manuscript plagiarized the whole content of methodology from Wu et al., (2020) and just modified some keywords. I leave the decision to the editor to decide whether to reject the current manuscript.
10. The current manuscript should be polished before resubmission.

Minor comments:

1. Please check the number of equations throughout the manuscript. I found **two** "equation (4)" and "equations (10-12)". Moreover, I found the size of the equation numbers is different. Please explain the reason.
2. Line 220: the right side of this equation is wrong. A comma is missing in the subscript. Please refer to the paper Wu et al., (2020), and fix it.
3. Line 226: the size of the words "indicates the" is smaller than the others, please explain the reason.
4. Line 237: What does the $\theta_{\text{in situ}}$ stand for? Please describe it in the main content clearly.
5. Line 240: I cannot find the reference "Peng et al. (2015)" in your "References".
6. Line 273: the metric "coefficient of determination (R^2)" was introduced in line 269, but the equation only gave "R". Please explain the reason.

7. Line 292: Please make sure it is “Fig.2” or “Fig. 3”? The same problem also can be found in line 299 (Fig. 3 or Fig. 4).
8. Line 335: the lowest RMSE around “0.3”? Are you sure?

References:

X. Wu, J. Wen, Q. Xiao and D. You, "Upscaling of Single-Site-Based Measurements for Validation of Long-Term Coarse-Pixel Albedo Products," in *IEEE Transactions on Geoscience and Remote Sensing*, vol. 58, no. 5, pp. 3411-3425, May 2020, doi: 10.1109/TGRS.2019.2954879.