New-generation geostationary satellites have provided us with more chances to investigate diurnal to seasonal vegetation dynamics. Recently, more and more studies have widely used high temporal resolution geostationary satellite datasets and solar radiation data is one of the most required products in many topics. Although this study has no strong novelty for generating DSR and PAR Although this study has no strong novelty for generating DSR and PAR, providing a high temporal resolution product itself has a strong advantage.

Major comments

The author highlight "GeoNEX ...". Considering the unique geostationary satellite network, the strong advantage should be the larger spatial scale integrating the full disk of each geostationary satellite. For example, even if there is no significant improvement in the performance, providing global hourly DSR/PAR itself would have great importance. In this context, this study needs to include Meteosat which covers Europe and Africa. As the authors know, several studies already reported continental-scale hourly solar radiation products using a single geostationary satellite, not GeoNEX data. If the focus of this study is limited to generating continent-scale geostationary satellite-based radiation products, further novelty of the study is required.

We thank the reviewer for the valuable suggestions! GeoNEX is a collaborative project to provide the enhanced data access to new generation geostationary satellites across the world. The current archive includes imagery data from Himawari, GOES-East and GOES-West. The recent launch of the first Meteosat Third Generation (MTG) satellite will enable us to expand the spatial coverage to Europe and Africa in the future.

As the reviewer pointed out, several data sets of DSR and/or PAR from ABI or AHI have already existed. Through literature survey, we have found at least six geostationary DSR/PAR products produced by various institutes. However, the existing products are usually produced from a single source of satellite data. Some data sets are not operational and do not provide convenient data access. In terms of data accuracy, there is also space for improvement. The new GeoNEX DSR/PAR product is an operational gridded high spatiotemporal resolution product with improved accuracy derived from multiple satellites. It has the following strengths:

1. *The new product has higher accuracy than other existing products.*
2. *The new product is gridded and structured by tiles (600 by 600km), convenient for data transfer and analysis.*
3. *The GeoNEX data have gone through strict geometric correction to remove residual georegistration errors and terrain effects.*
4. *A consistent data product is provided across various satellite sensors.*
5. *It is an operational product and will provide continuous coverage.*
6. *The data are made publicly available through the NASA GeoNEX data portal. It is freely accessible to all the users and no registration is needed.*

Minor comments

Line 78-80: Too vague expression.

The sentence will be rephrased in the revision.

Line 82-83: To highlight this point, the author should consider global coverage.

Thanks for the suggestion! As discussed in the response to the general comment, this is exactly our goal. More details will be provided in the revised text.

Line 82-85: Just using one more geostationary satellite cannot be the novelty of this topic.

As elaborated in the response to the general comment, we will provide additional justification here.

Line 85-86: Out of context.

It will be removed from the revision.

Line 87-89: How LUT method address the research gap which the author mentioned in the above paragraph?

We will rephrase this paragraph in the revised text. The justification to use the physical LUT-based approach is to provide the highly accurate DSR/PAR retrieval when the products of atmospheric parameters from these geostationary data are limited.

Table1: The author highlights the higher spatial resolution (1km) of this study, but input TPW from MERRA2 has over 50km spatial resolution. Is it acceptable?

This is a great point! The coarse resolution TPW data were used in the current version, given the relatively low spatial variability of TPW. We will consider directly predicting TPW from the geostationary data and evaluate its impact on the DSR and PAR estimation in the future.

Section 3.1.3 is well examined the uncertainty of large VZA, which is critical in geostationary satellites. Section 4.1 also well highlighted the advantage of the geostationary satellite-based product.

Thanks for the encouraging comments!