

Response to Referee #2 (Round 2)

We would like to thank the reviewer for the comments and suggestions, which are all valuable and very helpful for improving our paper. We have made revisions and a point-to-point response is present in the following.

Summary and comments:

Hou et al. have posted his response to Referee #2. However, we still think that this article should be rejected for publication. A manuscript or similar contents submitted on two magazines is not only seriously against the innovative principle of academic research, but also against scientific morale. This article is highly repetitive with your previous article published on “Renewable and sustainable energy reviews” (<https://doi.org/10.1016/j.rser.2019.109327>). Even some figures are copied from the article on RSER.

Response:

Thank you for your friendly comments. We are so sorry for the terrible writing and existing similarity on contents in the submitted draft. In fact, we are carrying out a systematic project on solar radiation involving algorithm, data and applications. The published article present our developed algorithm for surface solar radiation estimation with an original intention to improve radiation accuracy by deep learning techniques. Luckily, we have achieved such goal. Based on the previous work, we further extend the deep network for estimation of diffuse radiation and generate long-term data series. It is what this paper concentrate on. After your first round discussion, we have reorganized the paper, rewritten related parts and revised all figures in the paper. The updated manuscript focuses on the data itself with some new findings discussed, and all potential repetitiveness is avoided.

Comments:

Meanwhile, Tang et al. (2019) have published an article named “A 16-year dataset (2000–2015) of high-resolution (3°h, 10° ~ 1°km) global surface solar radiation” on ESSD. He generated a global solar radiation dataset with high accuracy, high spatial resolution and high temporal resolutions. What is your merit of your global solar radiation data compared with that of Tang’s?

Response:

Thank you for your advice. We think the merits of our datasets are that: 1) it provides more accurate estimation of global solar radiation at finer resolution of 5km which is important to reveal regional differences and changes of solar radiation; 2) the proportion of direct and diffuse is also available for our datasets with high accuracy. In the revised manuscript, we also compare our datasets to that of Tang's during validation.

Comments:

AI method could not explain the physical mechanism of the radiation dumping process on solar radiation.

Response:

Thank you for your advice. Yes, it is difficult for deep learning to explain the definite physical mechanism behind its black-box operations. However, we think its mathematical principle is clear, i.e., implicitly construct the relationships between satellite signal and surface radiation through complex nonlinear expressions. We have also tried our best to explain its potential physical mechanism in combination with related studies. More details and discussions on its mechanism are added into the revised manuscript.

Comments:

The diffuse solar radiation dataset is very valuable for solar researches and application. Thus, we suggested the author deleted the duplicated part of this article and resubmitted.

Response:

Thank you very much for the encouraging suggestions. We will try our best to perfect the paper and improve our future work.