Review comments on "Estimating Solar Irradiance Using Sky Imagers" (Manuscript ID amt-2019-141)

This paper proposes a new model for estimating the solar irradiance using pictures. This method has some new ideas. In particular, this method may play an important role in the prediction of solar radiation. But, It seems to me that this research shows a kind of preliminary results, so more details and data are required to extract robust conclusions. Therefore, this version of the manuscript is not ready for a regular article.

General comments.

1. The most important problem to be explained is the calibration. Because the parameters of each WSIs are different, the new WSIs must be calibrated for six months to one year to achieve solar radiation estimation. This is very limited in practical application. Even so, what is the uncertainty of estimation result?

2. The method of determining the sampling points around the sun proposed in this paper is not the core issue in my opinion. In fact, with the sun as the center, the result of determining the sampling point by any method based on distance weighting will not be very different from the result in this paper. Or, the results of these methods should be compared in the paper.

3. Based on the current research, the paper hopes to further realize the prediction of solar radiation based on pictures obtained by WSIs. That's really a good idea. However, the predicted results should also be given in the article. Because if there is no next step to predict radiation, this paper has no practical application value. (Solar pyranometers are cheaper and more accurate than WSIs)

4. The author should pay attention to the prediction of solar radiation, Especially in the first step, cloud motion prediction. There are many problems in cloud motion prediction based on distorted images. How accurate the radiation prediction can be obtained from the predicted image should be explained together.

Specific comments

5. The references cited in this paper are incorrect.

6. Some abbreviations need to be given in full English and even explained. For example, DSLR (P3L29);

7. P4L4: Davis Instruments 7440 Weather Vantage Pro, References or detailed explanations are required.

8. How did the P6L9 formula come into being? Is it suitable for use here? Explanation is needed

9. P12, Figure 7. "Watt/m2" should be "Watt/m^2".