

Interactive comment on “DSCOVER/EPIC-derived global hourly/daily downward shortwave and photosynthetically active radiation data at $0.1^\circ \times 0.1^\circ$ resolution” by Dalei Hao et al.

Anonymous Referee #1

Received and published: 16 May 2020

General comments: This authors introduced their newly developed global surface SW and PAR products derived based upon DSCOVER-EPIC observations. A detailed evaluation is given by comparing the products with surface-based observations. The paper is organized and presented very well. The dataset is an advancement to the field and has the potential for more applications. From the Earth's L1 point, EPIC's view of the entire sunlit side of the Earth makes it very suitable for this work and the authors developed a convincing way to retrieve the SW and PAR info. I recommend publication of the paper after some minor revisions listed below.

Specific comments: 1) P3, Line80: “DSCOVER/EPIC has the potential to reduce signifi-

C1

cantly or eliminate completely the 3D radiative effects on the final products”. This is a good point, but I suggest more discussion and define the 3D effects you are referring to. 3D effect has different meaning for different discipline. For example, for cloud or surface property retrievals, one 3D effect pathway is that photons can come to the field of view when scattered by the surrounding clouds. This could happen regardless of the sun-view geometry. I see your point here and I agree that it is a big advantage of EPIC for this application. More elaboration will make this more clear. 2) P3, Line106: please check “gridded monthly, monthly hourly, daily,” is “monthly hourly” a typo? 3) P3, Line108: “However, the SYN1deg Edition 4.1 products are not suitable for inferring long-term trends of surface fluxes, due to limited climate quality”. Need reference or more elaboration. 4) Figure 10: vertical axis label missing 5) P13, Line307-308: “Although currently DSCOVER is temporarily in safe mode, it is expected to return to operations early in 2020 (<https://epic.gsfc.nasa.gov/>).” DSCOVER is back and operational since Feb. 2020.

Interactive comment on Earth Syst. Sci. Data Discuss., <https://doi.org/10.5194/essd-2020-19>, 2020.

C2