January 20, 2023

- REVIEW 1

Concerning my comment at line 31:
31 – Forward direction is around 0 o , while backscatter direction is by definition around 180o.
with the he authors Answer 5: “In astronomy another definition of phase angle is used and the forward scattering is close to 180 deg – see “Phase_angle_(astronomy)” (Wiki)”.
REVIEW:
I do not agree with this explanation, as this is not an astronomy paper, but an Earth remote sensing one. In this context people expect to preserve their conventions, otherwise it is confusing. Even your own reference to DSCOVR EPIC (https://doi.org/10.3389/frsen.2021.719610) explicitly mentions "reaching 178°. This provides a unique opportunity to observe bi-directional effects of reflectance near backscattering directions".
So 180 deg is considered backscatter in your own reference. I propose to stay consistent and use remote sensing convention, to make sure there is no confusion in the remote sensing community. You may eventually also provide the definition of the phase angle convention in a footnote, if you want to avoid confusion to a larger audience.

ANSWER 1.

Apparently, the reviewer is mixing up “scattering angle” and “phase angle”. In the mentioned article (https://doi.org/10.3389/frsen.2021.719610) (its first author is a co-author of our paper and the deputy project scientist for the DSCOVR mission), the phrase "reaching 178°" refers to "scattering angle", which is associated with “phase angle” following relation (quote from mentioned article):

”We will be using “scattering angle” here which goes from 0° (forward scattering) to 180° (backward scattering). We will be also using Sun Earth Vehicle (SEV) angle (a.k.a. Phase angle) = 180°–scattering angle.”

To avoid confusion, on the first page of the new version of the manuscript, we made an addition:

“The L1 location, however, limits phase (i.e., Sun-Earth-Camera) angles to a nearly backscattering direction (up to ~178°).”

- REVIEW 2

Concerning the authors Answer 10. The conclusion section has been revised. In particular, the following items have been added:
“1. Due to lunar libration, the center of the Earth for an observer on the Moon moves in a rectangular area with dimensions of 13.4° × 15.8°. The density of the location of the Earth in this rectangular area is an average of 8.6 per square degree over 6 years (2191 days). The density for different parts of the area varies from 1 to 20."
REVIEW:
Please specify what the density units are, otherwise it is meaningless. In order to help this out, you also need to do the following:
Figure 9a - remind that each point is the averaged Earth location over one day (or location at noon, or whatever you actually did).
Figure 9b - provide units for the density of points (i.e. days spent in that pixel of 1x1 deg solid angle). Also <N>=8.6 should be with the average sign, while the actual N is from 0 to 34. They are not the same thing.

ANSWER 2 about Fig.9a:

This figure (now numbered 8a) shows the line (without points) along which the Earth moves for 6 years.

ANSWER 3 about Fig.9b:

In the caption to this figure (now 8b), we marked the mean value of N with the traditional sign for the arithmetic mean: $\bar{N}$. Added to the figure caption:

"(or how many days the Earth spent in a 1°×1° pixel)".