

Interactive comment on “Air pollution slows down surface warming over the Tibetan Plateau” by Aolin Jia et al.

Anonymous Referee #2

Received and published: 8 October 2019

1. I have pointed out that “No long-term observations of DSR and aerosol data support the long-term variations of DSR and anthropogenic aerosol developed in this study”, and the authors chose 5 sites from GEBA to support their main conclusion. But it should be noted that the 5 sites from GEBA is also from the observations of Chinese Meteorological Administration. This contradicts with your statement that “We didn’t include ground observations from Chinese Meteorological Administration stations due to data discontinuity and large uncertainty”. The obvious low values between 1980 and 1990 is the questionable observations, and this sites can not used to validate the long-term variations of your fused dataset (see Shi et al., 2008).

2. how did you reach that “estimated DSR driven by sunshine duration was not calculated either because the method accuracy may be not high enough to capture the

C1

influence of aerosols at low-level magnitude.”? In my opinion, the accuracy of DSR driven by sunshine duration is generally higher than those of satellite-based DSR and CMIP5. At least, the accuracy of DSR driven by sunshine duration is also higher than that fused by yours.

3. As you also known that TP is one of the cleanest areas in the world, and compared to other factors, such as cloud and water vapor, it’s effect on the DSR over the TP may be ignorable. Thus, it can not cause the phenomenon of solar dimming over the TP.

4. You did not answer my question fully: “Why did you use the CERES EBAF DSR to calibrate the CMIP5 DSR data since the satellite radiation products generally can not capture the long-term DSR variations. Or you can demonstrate that the CERES EBAF DSR can reflect the long-term variations of DSR?”. Even if the CERES EBAF DSR can capture long-term variations of DSR over the other regions, it not necessarily can capture long-term variations of DSR over the TP.

5. Because the 5 sites from the GEBA is measured by the Chinese Meteorological Administration and is the same as the observations of CMA. Thus, the question “The DSR over the Tibetan Plateau is decreased since 1950, which was different with the points derived based on the observations or based on the sunshine based DSR” should be re-answered.

Interactive comment on Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2019-553>, 2019.

C2