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Discussions
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Interactive comment on "Bias in CMIP6 models compared to observed regional dimming and brightening trends (1961–2014)" *by* Kine Onsum Moseid et al.

Anonymous Referee #1

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Moseid et al. compare surface downwelling shortwave radiation from CMIP6 models and from ground stations. They show the discrepancy between modeled and observed SDSR is partly caused by erroneous aerosol and aerosol precursor emission inventories, thus providing important information for the evaluation of ESM. While the research topic is essential, the methodology can be improved to clarify the impacts of clouds and cloud-aerosol interaction. Instead of using all-sky SDSR, I would suggest the authors compare the sunny-day SDSR from CMIP6 and from ground stations throughout the whole text. To be more accurate, I would also suggest the authors compare the SDSR conditions on the atmospheric relative humidity, which is associated with the scattering from water vapor. Note that the clear-sky SDSR from climate models is usually used

for calculating cloud radiative forcing and is not the same as sunny-day SDSR. Other comments: The title: I would not use the "1961-2014" in the title. It provides little information. The title: compare to -> compare with The title: maybe the authors should include "aerosol", which is the theme of the paper Figure 3: Please double check the cloud fraction and the calculation of anomaly. If the trend is reversed, it explains everything.

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