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Interactive comment on "A high-quality hourly, daily and monthly solar irradiance dataset in China during 1981–2014 based on MERRA-2 Reanalysis products" *by* Wenmin Qin et al.

Anonymous Referee #1

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<A high-quality 1 hourly, daily and monthly solar irradiance dataset in China during 1981-2014 based on MERRA-2 Reanalysis products>

In this paper, the authors generated a high-quality hourly, daily and monthly solar irradiance dataset in China from 1981 to 2014 based on MERRA-2 data, and shown a high accuracy of estimated GHI, DNI and DIF compared with the ground-based measurements. Overall, this manuscript is clear and well written. However, the following minor questions are not satisfactorily answered:

(1) L85-86, duplicated word "Wei et al. Wei et al. (2019)". (2) L90-91, "Qin et al. (2015) developed an efficient physical parameterization (EPP) for estimating GHI val-

ues using MODIS land and atmospheric products and evaluated the EPP model at 91 CMA stations in China. However, the spatial resolution (1°x1°) and spatial continuity of the estimation results by the EPP model could not meet the requirements of solar energy research, which requires SI records with high spatial resolution". You mean the spatial resolution of Qin et al. 2015 is 1°x1°? (3) L138. How do you control of quality of CMA measurements? (4) What's mean of the MBD in eq. (12)? (5) There are too many indicators (eq. 4-20) for accuracy evaluation, the authors should write some brief introduction for these indicators. (6) L226. "Xianghe stations" means Xianghe have more than one stations? (7) Fig. 3. How many points used for evaluation of estimated hourly and daily GHI, DNI and DFI? (8) Why there are few strange points in the Fig. 8? (9) What's the MERRA official algorithm for estimating GHI? And why they daily GHI results with very high error (RMSE=85.78Wm-2) in Fig. 3.

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