Atmospheric
Chemistry
and Physics
Discussions

Open Access

EGU

Interactive comment on "A revisit of parametrization of summer downward longwave radiation over the Tibetan Plateau from high temporal resolution measurements" *by* Mengqi Liu et al.

Anonymous Referee #1

Received and published: 13 June 2019

Review of acp-2019-397: "A revisit of parametrization of summer downward longwave radiation over the Tibetan Plateau from high temporal resolution measurements" by Liu et al. This paper uses high temporal resolution measurements to evaluate the existing downward longwave radiation (DLR) parameterizations under clear-sky, cloudy and overcast conditions at the Tibetan Plateau (TP). The authors have done a good job in the literature review and the data is valuable. The careful discrimination of clear-sky is also meaningful. However, this manuscript does not report significant advances nor novel aspects of experimental and theoretical methods and techniques. The major

C1

conclusions, such as the best DLR parameterization scheme that is suitable for TP have been reached by other researchers, such as Zhu et al 2017, as mentioned in the paper. The detailed comments are listed below. Major Comments: 1. Improved DLR estimation: In the abstract, as well as in Ln 353, the authors state that the DLR estimation is notably improved after local calibration. I think this statement is misleading. The authors use existing parameterizations to fit the data measured at TP. And for sure, the same fitting equation but with different coefficients would give better results compared with the literature parameterization that uses coefficients derived from measurements conducted at different places or at different conditions. 2. Different parameters with Zhu et al (2017): Were the datasets of DLR, e, and T used in this manuscript measured at the same time and same sites compared with Zhu et al 2017? Otherwise, it might not be appropriate to say the difference is caused by cloud contamination (Ln 321-324). The difference can also be caused by different DLR magnitudes. Minor Comments: 1. Ln 27: 'highly sensitive'—-'high sensitivity' 2. Ln 34: 'by making maximal use of'—-'by making the maximal use of' 3. Ln 63: What is the '2-sigma uncertainty of DLR measurement'? 4. Ln 120: 'would expected'—-'would be expected' 5. Ln 141: 'since 2011'——Did you mean in 2011? 6. Ln 153: What the specific measurement periods for the three stations are? 7. Ln 156: The authors give detailed description of CG4. How about CM21? 8. Ln 269: '. Both used T...'—-'both used T...' 9. Ln 282: Add reference for k-fold cross-validation method. 10. Ln 369: Can you give examples of the 'specific meteorological and cloud conditions'? 11. Ln 371-372: What is the supporting evidence for the 'fact that that clouds in the TP with the same CBH as that in Girona have relatively lower temperature'? 12. Equations in this manuscript should be followed by definitions of each parameter and corresponding units.