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**Interactive
comment**

Interactive comment on "Evaluating the diurnal cycle in cloud top temperature from SEVIRI" *by* Sarah Taylor et al.

Anonymous Referee #1

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Review of "Evaluating the diurnal cycle in cloud top temperature from SEVIRI" by Sarah Taylor et al.

Using the CLAAS-2 dataset, the authors characterize the diurnal cycle of cloud top temperature for several regions within the SEVERI's observation disk. Retrievals from SEVERI are compared to CTT inferred from collocated CALIPSO observations in terms of bias and variability. As cloud top temperature is a frequently used quantity in radiative balance and cloud microphysics studies, I feel this is a useful contribution to the literature. I recommend that this study be published after the following minor comments are addressed.

Specific Comments:

P3, L17: "... images such as SEVERI observe the radiometric height of the cloud."

Perhaps it would be helpful to briefly expand upon what is meant by "radiometric height" in the context of a weighting function.

P9, L12: CALIOP doesn't observe the CTT, rather it is inferred from CTH measured by the instrument. Please phrase this differently.

P12, L32-34: This statement does not make sense to me. Why would a region with a lower surface albedo heat up more slowly? Could this be a consequence of a decreased sensible heat flux in Central Africa due to evapotranspiration?

P14, L12-13: While not incorrect, "temporal distance" seems like an unusual way of expressing this, especially since it is primarily a term used in psychology. Perhaps phrasing it as something like "within ±30 minutes of CALIOP observation" may be clearer.

Technical Corrections:

P2, L4: "cloud" should be plural

P9, L20: "night time" should be "nighttime".

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Interactive comment on Atmos. Chem. Phys. Discuss., doi:10.5194/acp-2016-878, 2016.