Title: Atmospheric radiative profiles during EUREC^{4}A

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General Comments

This paper describes the creation of an atmospheric radiative dataset based on soundings taken during the EUREC^{4}A field campaign conducted in the trade wind regime near Barbados. The paper is concise, well-written, and does a nice job of conveying how the dataset was created and its importance for understanding the role of radiation in the dynamical and thermodynamical variability of a trade-wind regime. Below are a few comments and questions I have regarding the paper which could use some clarification.

Specific Comments

ECMWF analyses have been shown to have biases in different regions of the world (e.g., Nagarajan and Aiyyer 2004). Since you are merging observed sounding profiles with model analyses have the model biases been explored in this region. The paper mentions that the model analyses are merged with the soundings. How is this merging done? Is some type of blending of model and sounding data performed over some vertical layer or do profiles simply switch from observed soundings to model analyses where the sounding data terminate. Such blending may be important especially if significant model biases are present in this region.

In trying to understand how the sounding dataset was constructed and quality controlled, Stephan et al. (2020) briefly mentions the Yoneyama et al. (2002) paper regarding deck heating and cooling effect in sounding data from ships. However, it was unclear if the correction described in Yoneyama's paper was actually applied to the EUREC^{4}A ship sounding data. Those who work with ship sounding datasets know about these issues and their potential impact on analyses, so please clarify whether or not corrections for deck heating and cooling effects were applied to the sounding datasets. If they were not applied, I would recommend they be done and your radiative computations be revisited.

It would seem that aerosols from the Saharan dust layer could play an important role in radiative computations in this region. However, no mention is made of what, if any, aerosol profiles are used in the radiative computations. Please clarify this information.

Around line 140, it would be helpful if the four different mesoscale organization patterns (Fish, Gravel, Flower, Sugar) could briefly be defined. That is, what distinguishes one pattern from the next.

Even though including clouds in the radiative computations involves ad hoc assumptions, it would be extremely useful to include them in your computations to fully characterize radiative effects in this trade-wind regime. Thus I strongly encourage your team to pursue these computations.