Response to comments of reviewer 1

General comment	*Response*
This paper presents a method for retrieving cloud microphysics (cloud optical depth, effective radius, and liquid water path) from AERONET instruments operating in nadir mode. It enhances the previous cloud optical depth retrievals of Chiu (2010) by adding a water-absorbing wavelength to the non-absorbing wavelengths used in the previous retrievals (this is what enables the retrieval of effective radius and liquid water path). Retrieved results are compared to large eddy simulations of stratocumulus clouds, ground-based cloud radars and microradiometer retrievals at the ARM SGP site, short- wave flux with microwave retrievals, and MODIS satellite retrievals. The paper is well organized and well written; I only have a few minor comments.	• Thank you very much.

Specific comment	*Response*
1. Page 5, line 16: The authors state: "Overall, the comparison of transmittance-based retrievals to cloud radar retrievals is less conclusive and depends strongly on radar retrieval methods." I don't understand this sentence – less conclusive than what?	• Sorry about that. We have revised the sentence as the following. *Overall, the intercomparison results of transmittance-based retrievals with cloud radar retrievals depend strongly on radar retrieval methods; there is no clear positive or negative bias between these two types of retrievals*.
2. Page 7, line 22: Are these absolute or relative uncertainties?	• They are relative uncertainties.

Response to comments of reviewer 1 (cont.)

Specific comment	*Response*
3. Page 8, line 27: Here, and elsewhere, it sounds as though the transect is vertical in the figure. I suggest modifying the text slightly to "located at 3.1km..." .. or, alternatively, just refer to the dashed line in the figure, which is plenty obvious enough.	• Thank you for the suggestion. We have changed "transect" to either "cross-section" or "along the dashed line". Corresponding revisions were made in: Sect. 2.2 – Using the latter resolution, Fig. 4 shows an image of the overall cloud optical depth, and vertical features ***for a cross-section*** located at 3.1 km in the Y direction, … Zenith radiances for this particular ***cross-section*** were simulated using a backward Monte Carlo model. .. Using this ***cross-section***, we retrieve optical depth, cloud effective radius, and liquid water path (LWP) using the simulated zenith radiances. Sect. 2.3 – Fig. 7 shows the box plots for all locations along ***the dashed line*** shown in Fig. 4a. Sec. 4 – The ***cross-section*** we took for evaluation represented clouds with LWP less than … Captions for Figurer 4 – Taking ***a cross-section*** along the thick black-dashed line… Captions for Figure 7 – at locations along ***the dashed line*** located at 3.1 km in the Y direction…
4. Fig 1: The first sentence of the caption should be more descriptive. Mention that you are comparing transmittance-based retrievals to cloud radars or MODIS. Maybe use these terms in your axes labels, too, as the word "source" is not immediately descriptive.	• Thank you for your suggestion. We have revised x-label and the figure caption. To be more specific, the word "source" has been replaced with "cloud radar or MODIS". The figure caption now starts with the following sentence: *Scatter plot of effective droplet radii retrieved from ground-based transmittances versus those from either ground-based cloud radar (dot) or MODIS (triangle) observations.*

Response to comments of reviewer 1 (cont.)

Specific comment	*Response*
5. Fig 6: x-axis in Fig 6a,b is labeled τ effective radius and τ¯ effective radius; ref f,constv ref f shouldn't these be reff,constLWC effective radius and r¯eff effective radius? Two similar mislabelings appear in the caption.	• Thank you very much for spotting these errors. Labels and captions in Fig. 6 have been corrected as shown below.

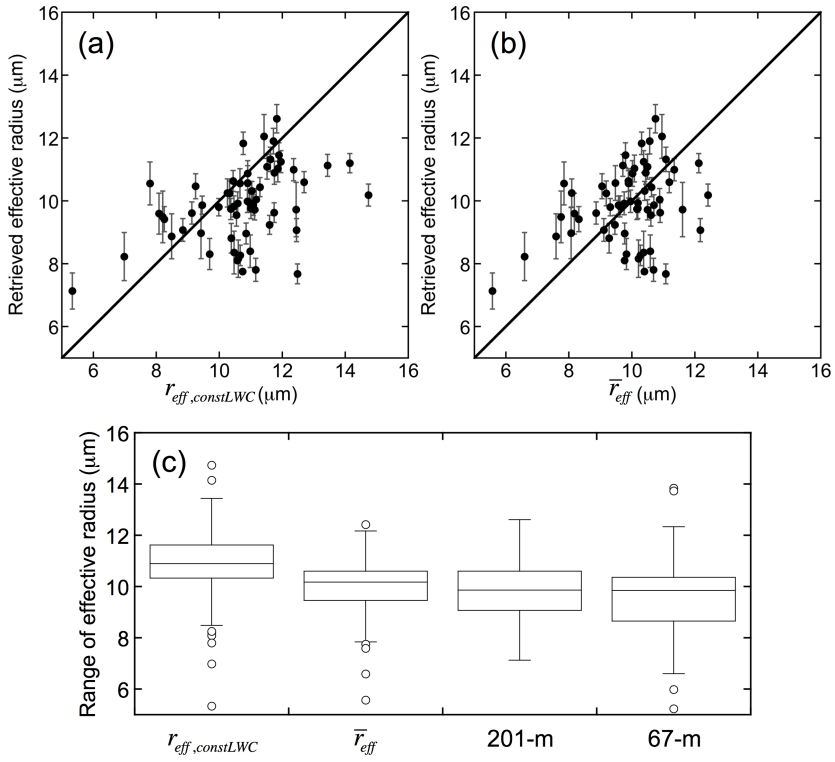

Fig. 6. Scatter plots of retrieved versus true effective radius from simulations. Two "true" effective radii are calculated: $r_{eff,constLWC}$ from the assumption of constant liquid water content in the vertical; $\bar{r}_{eff}$ from averaging droplet radii over all levels in the cloud layer. In addition, two sets of retrieved effective radii are used: one is based on simulation at 201 m resolution, the other is at 67 m resolution. **(a)** and **(b)** are retrievals at 201 m resolution plotted against $r_{eff,constLWC}$ and $\bar{r}_{eff}$. The error bars represent the standard errors (discussed in Sect. 2). **(c)** Box plots for the two types of the true effective radii, and the two sets of retrievals.