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Comment

Interactive comment on “The effect of optically thin cirrus clouds on solar radiation in Camagüey, Cuba” by B. Barja and J. C. Antuña

Anonymous Referee #3

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General comment

The manuscript focuses on the evaluation of the radiative forcing of optically thin cirrus clouds at a tropical location. For that, experimental cloud measurements derived from lidar technique have been used. In addition, modeled data using a RT code have been also utilized to simulate the cirrus clouds effect on the solar radiation. The topic is highly appropriate for ACP. In my opinion, the work is interesting, and it only needs minor corrections before publication. Please find my specific comments listed below

Specific comments:

1. Page 8781. Line 13. The UV spectral band is strongly affected by changes of the total ozone column (TOC). The authors must explain what climatological TOC values

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are used as input in the RT simulations.

2. Page 8781. Line 28. The authors should indicate if this value of surface albedo is used as a fixed value for the different spectral bands. For instance, it is known that the surface albedo in the UV region is low (typical values between 0.02 and 0.08) compared to the surface albedo in the visible spectral range (Feister and Grewe, 1995).

Feister, U., and R. Grewe (1995), Spectral albedo measurements in the UV and Visible region over different types of surfaces, *Photochem. Photobiol.*, 62, 736-744.

3. Page 8787. Last paragraph. All these results should be included in a table, adding the percentages of the contribution of the spectral band (the near infrared, visible, and ultraviolet) in upward broadband irradiance in TOA and downward broadband irradiance in SFC.

4. Page 8788. Line 7. Please replace “In the other hand the case of....” with “By contrast.”.

5. Page 8788. Lines 9-11. The scattering processes in the troposphere also have a significant influence on the differences between the downward irradiance in SFC and the downward irradiance in the base height. Please comment this subject.

6. Page 8790. Lines 9-14. If Jensen et al. (1994b) reported the slope of the linear relation between SCRF and the cloud optical depth, please indicate this value in the text in order to be compared with the values shown by the authors.

Interactive comment on *Atmos. Chem. Phys. Discuss.*, 11, 8777, 2011.

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