

Interactive comment on “Comparing the cloud vertical structure derived from several methods based on measured atmospheric profiles and active surface measurements” by M. Costa-Surós et al.

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We really appreciate the referee #2 comments. We are also pleased that the referee had found the study interesting and that he/she liked some new features such as the inter-seasonal analysis. Finally, we also appreciate the detailed technical corrections to the article, which will help us to improve the final version of the paper.

Next, we will answer in detail some of the specific comments.

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- In the revised version of the paper, we will further discuss about the applicability of the methods shown. In particular, we will remark in the conclusions section that any of the methods are good enough to be used, with confidence, in climatological-oriented studies if a high accuracy of the CVS is sought. However, the present paper is interesting because it quantifies the ability of the methods based on radiosounding, which have been applied in the past in several studies; in addition, it clearly shows which are the best methods and even suggests an improvement of one of them.

- We agree with the reviewer that the Results and discussion section is a very important section of this –and any– research paper. However, Data and methodology section seems longer because a detailed description of the methods is essential in order to better understand our results and the subsequent discussion. Moreover, note that the Results and discussion section is in fact quite long too, since it also includes two tables with the overall results (tables 4 and 6), a table of seasonal results (table 5) and four figures (figure 3 to 6) for the four study cases. We think that after reading the methodological section, the reader will still be interested to know about the assessment of the methods, so he/she will go through the results section.

- We also would like to remark that the criteria to reject radiosoundings (RS) from the original database are based on the inspection of GOES images, not because the lack of similarity between the RS and ARSCL. Visible and infrared GOES images have been used to assess cloudiness (or the lack thereof) in the area (200km×400km eastwards of the SGP site), and in addition, we check that cloudiness derived from GOES images is compatible with what ARSCL produces over SGP. With this, 193 RS out of the initial 259 RS form the suitable dataset.

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