

## ***Interactive comment on “Orbiting Carbon Observatory-2 (OCO-2) cloud screening algorithms; validation against collocated MODIS and CALIOP data” by T. E. Taylor et al.***

**Anonymous Referee #2**

Received and published: 22 December 2015

Review of amt-2015-322 Title: Orbiting Carbon Observatory-2 (OCO-2) cloud screening algorithms; validation against collocated MODIS and CALIOP data Authors: T. E. Taylor, C. O'Dell, C. Frankenberg, P. Partain, H. Cronk, A. Savtchenko, R. Nelson, E. Rosenthal, A. Chang, B. Fisher, G. Osterman, R. Pollock, D. Crisp, A. Eldering, M. Gunson

### General Comments to the Authors

The authors describe the operational cloud screening algorithm for the OCO-2 instrument. Validation is performed against collocated MODIS cloud mask (MYD35) and CALIOP cloud data. The OCO-2, MODIS, and CALIOP instruments are all on board

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one of the A-train suite of polar orbiting satellites. With very few exceptions the text is clear and very well written. Tables and figures are well chosen and add clarity to the text. Explanations of the algorithm, methods of validation, and results are very thorough with an appropriate balance between details in the text and those left for extra reading in the references. I am recommending the manuscript be published with minor revisions which I list below in the specific comments to the authors.

### Specific Comments to the Authors

Line 241: I would begin the sentence with, “In the middle panel, at  $TOD = 0.25, \dots$ ” Line 252: I’m not sure that “robust” is the word that should be used here. Perhaps “effective” would be a better choice. Wait at least until the validation results are discussed! Line 277: What is “B7”? Please insert a few descriptive words. Line 292: It becomes clear later in the text, but please indicate here what it means to “pass” the cloud flag (is a given pixel is clear or cloudy if it passes?) Line 360: Are the bins  $2^\circ \times 2^\circ$  or  $4^\circ \times 4^\circ$  as indicated in the figure caption? Line 412: Since the quantity Throughput is a percentage, shouldn’t the eqn. for it include a “/Ntotal”? Line 429: “expensive” should be “expense” Line 435: “sounding” should be plural Line 483: I don’t agree that  $TNR > TPR$  means that the OCO-2 cloud mask is more sensitive to cloud than MYD35. It might be the case but I believe all it means for sure is that the OCO-2 cloud detection thresholds are set “tighter” than those of MYD35. Line 556: Please include a few words explaining why the cloud screening thresholds are different for the CALIOP comparison.

Figure 1: Please label panel a and b.

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Interactive comment on Atmos. Meas. Tech. Discuss., 8, 12663, 2015.