

## ***Interactive comment on “MODIS Collection 6 shortwave-derived cloud phase classification algorithm and comparisons with CALIOP” by B. Marchant et al.***

**B. Marchant et al.**

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Thanks a lot for the interest you have shown in our paper. We are glad you have appreciated it. Please find below our replies and changes:

(1) Title: I was a bit puzzled about the "shortwave-derived" since the algorithm combines shortwave and longwave (cloud top temperature, IR tests) channels.

We added "shortwave-derived" to distinguish with other MODIS cloud phase classification algorithms based solely on infrared (Baum et al. 2012: 'MODIS Cloud-Top Property Refinements for Collection 6').

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(2) pg, 11898, line 7 typo. "artcile" Corrected. Thanks for noticing.

(3) pg. 11900, line 13, "in more arid atmospheres [...] optically thick low altitude liquid clouds may have a significant contribution." This might be a silly question: At a first glance it seems clear that arid atmospheres are drier and hence more transparent. Nevertheless, if there is a water cloud, the humidity in the cloud is 100%, irrespective of the fact if the region is arid or not. Probably one should talk about "subsidence zones" where the air above the inversion is usually very dry?

You are right; in large-scale subsidence zones the air is unusually dry. So, in subsidence zones the 1.38 test should have more false ice detection. I added subsidence zone in addition to arid atmospheres in the manuscript.

(4) Electronic supplement: A caption would be helpful, explaining that this is the detailed new phase classification algorithm, reproduced from ...

A short caption describing the figure has been added.

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Interactive comment on Atmos. Meas. Tech. Discuss., 8, 11893, 2015.

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