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## ***Interactive comment on “Evaluation of CALIOP 532 nm AOD over opaque water clouds” by Z. Liu et al.***

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Pg. 23585 line 23 The authors seem unaware of recent significant progress on the use of passive sensors for the quantification of aerosols above clouds. Jethva et al [2014] published a comparative analysis of the performance of passive [POLDER, OMI, MODIS] and active [CALIOP] sensors in the retrieval of AOD of aerosol above clouds.

Pg. 23609 lines 10-14 The failure of detecting the full extent of the aerosol layer is not limited to the case of aerosols above clouds. As shown by recent publications [Kacenelenbogen et al., 2011; Torres et al. 2013] CALIOP's 532 nm measurements miss a significant fraction of smoke layers under cloud free conditions. No under-detection is apparent for dust layers. Also as noted by Torres et al [2013], the CALIOP

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under-detection problem of carbonaceous aerosols does not affect the 1064 nm measurements.

## References

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Torres, O., Ahn, C., and Chen, Z.: Improvements to the OMI near UV aerosol algorithm using A-train CALIOP and AIRS observations, *Atmos. Meas. Tech.*, 6, 5621-5652, doi:10.5194/amtd-6-5621-2013, 2013.

Jethva, H., O. Torres, F. Waquet, D. Chand, and Y. Hu (2014), How do A- train sensors inter-compare in the retrieval of above-cloud aerosol optical depth? A case-study based assessment, *Geophys. Res. Lett.*, 41,186–192, doi:10.1002/2013GL058405.

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