Atmospheric
Chemistry
and Physics

Supplement of

On the differences in the vertical distribution of modeled aerosol optical depth over the southeastern Atlantic

Ian Chang et al.

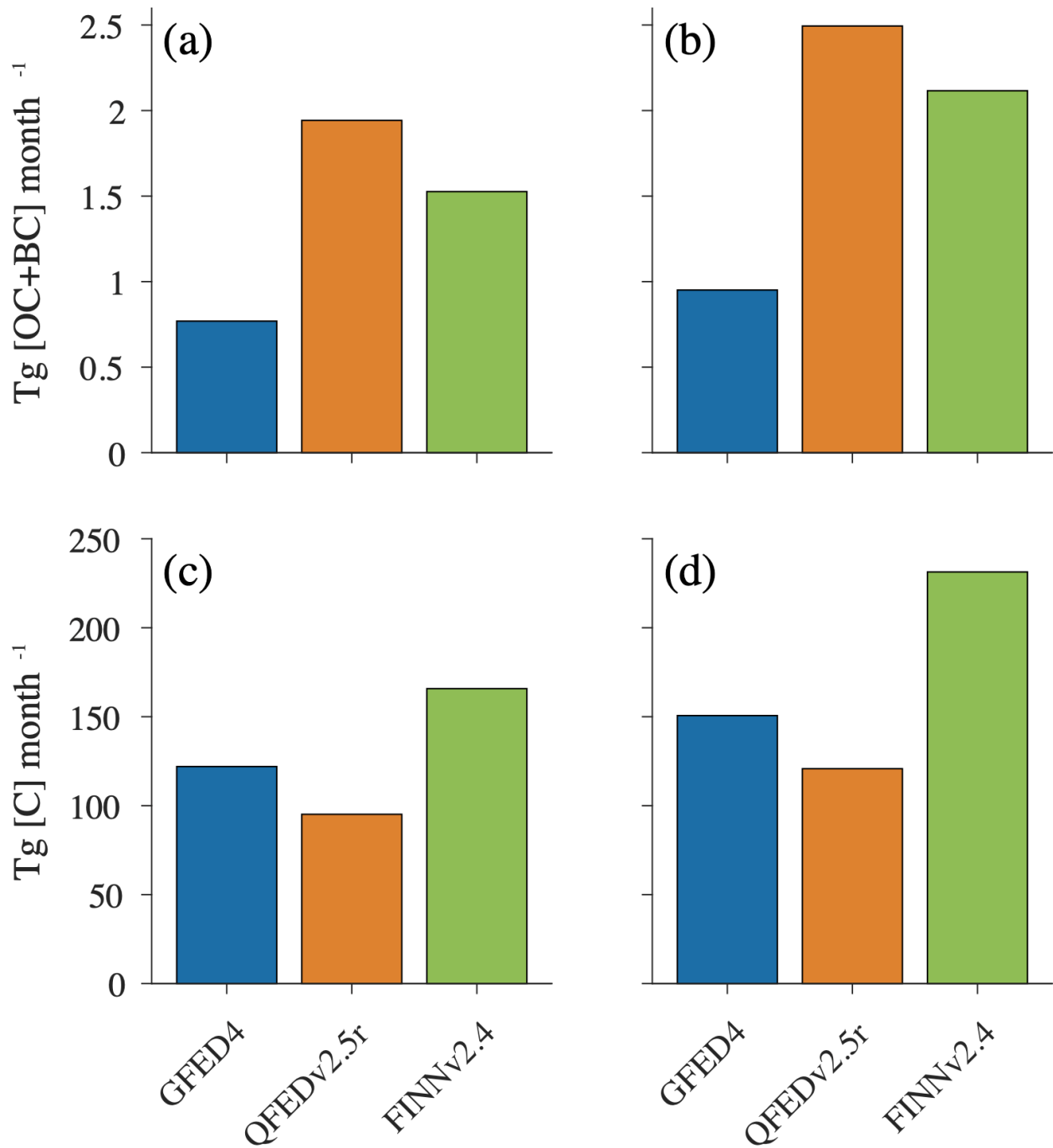*Correspondence to:* Ian Chang (ian.chang@ou.edu) and Lan Gao (lgao@ou.edu)

Figure S 1. Comparison of biomass burning emissions (Tg month^{-1}) from GFED4, QFEDv2.5r1 and FINNv2.4 within the region 19° W−53° E, 36° S−22° N during (a) September 2016 and (b) August 2017 for emissions from only OC+BC. Total carbon emissions for (c) September 2016 and (d) August 2017, which include the carbon parts of CO, CO2, CH4, OC, and BC.
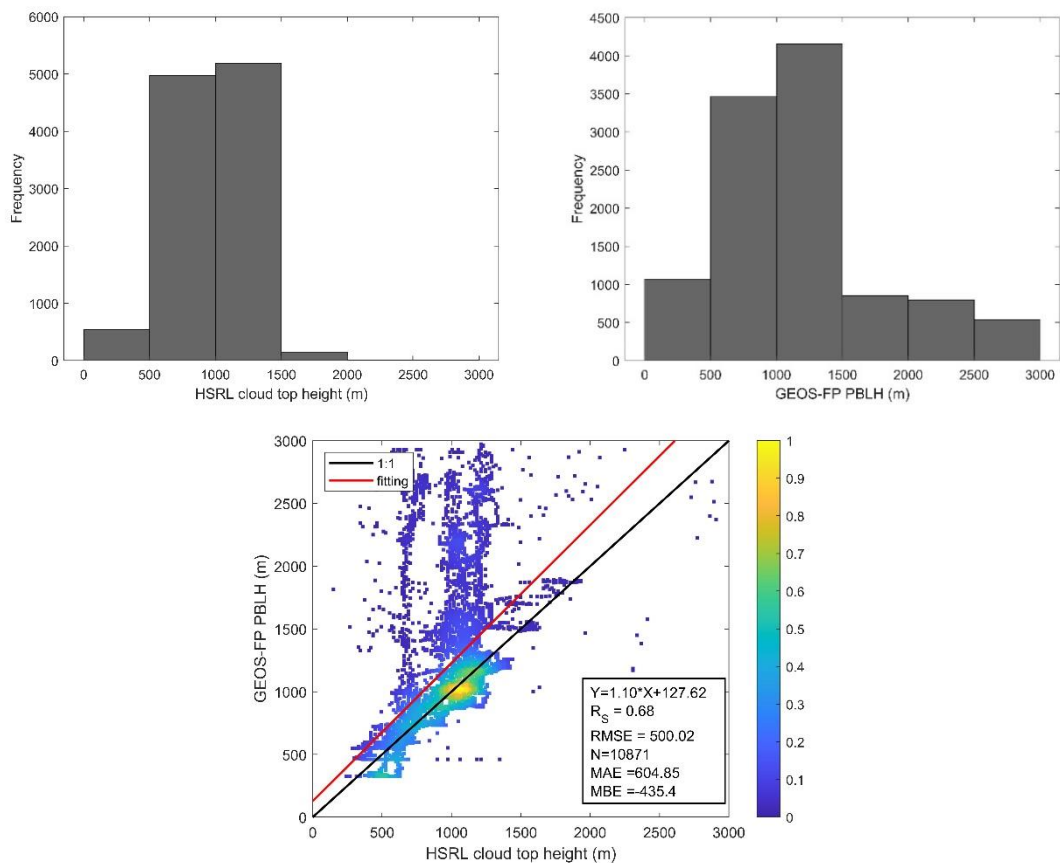
Figure S 2. Histograms and normalized density-gradient scatterplots comparing GEOS-FP PBL height against HSRL-2's cloud-top height during September 2016 of NASA ORACLES.
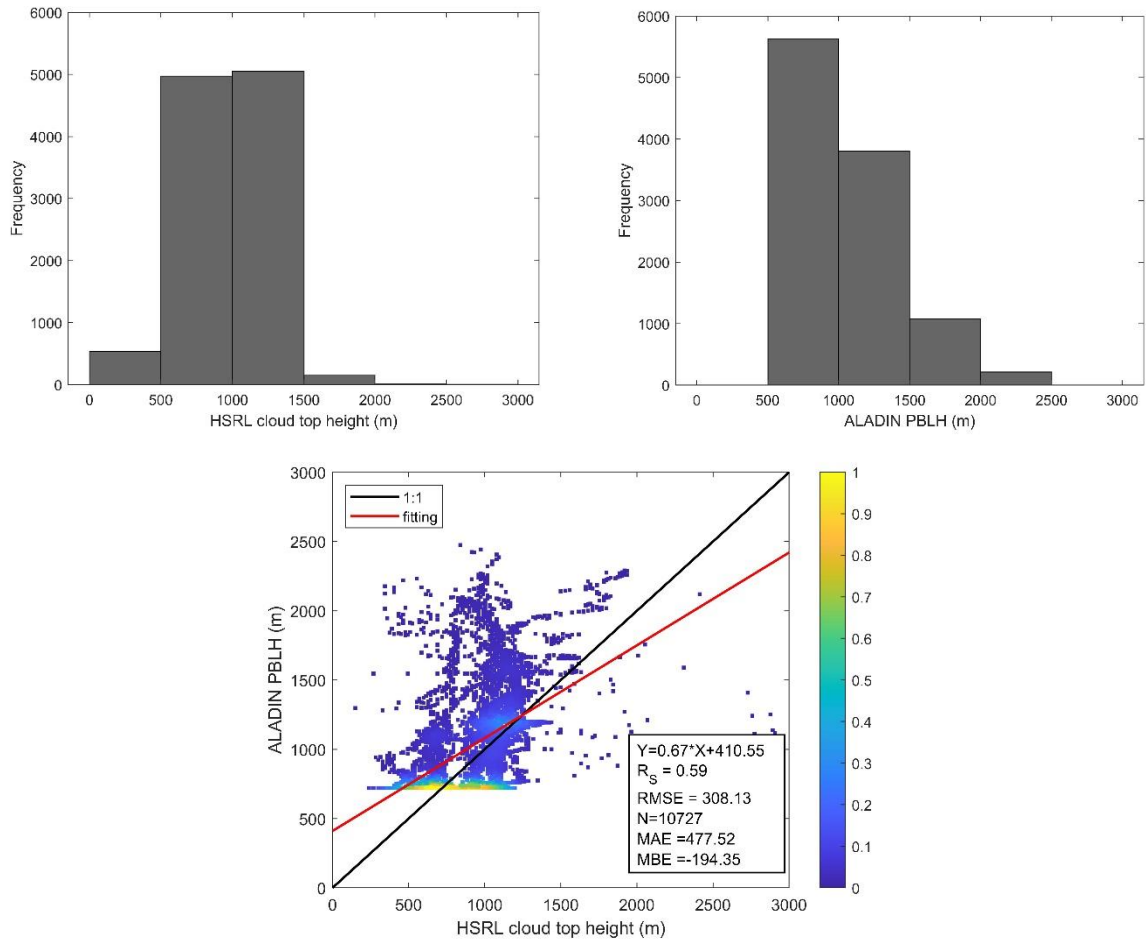
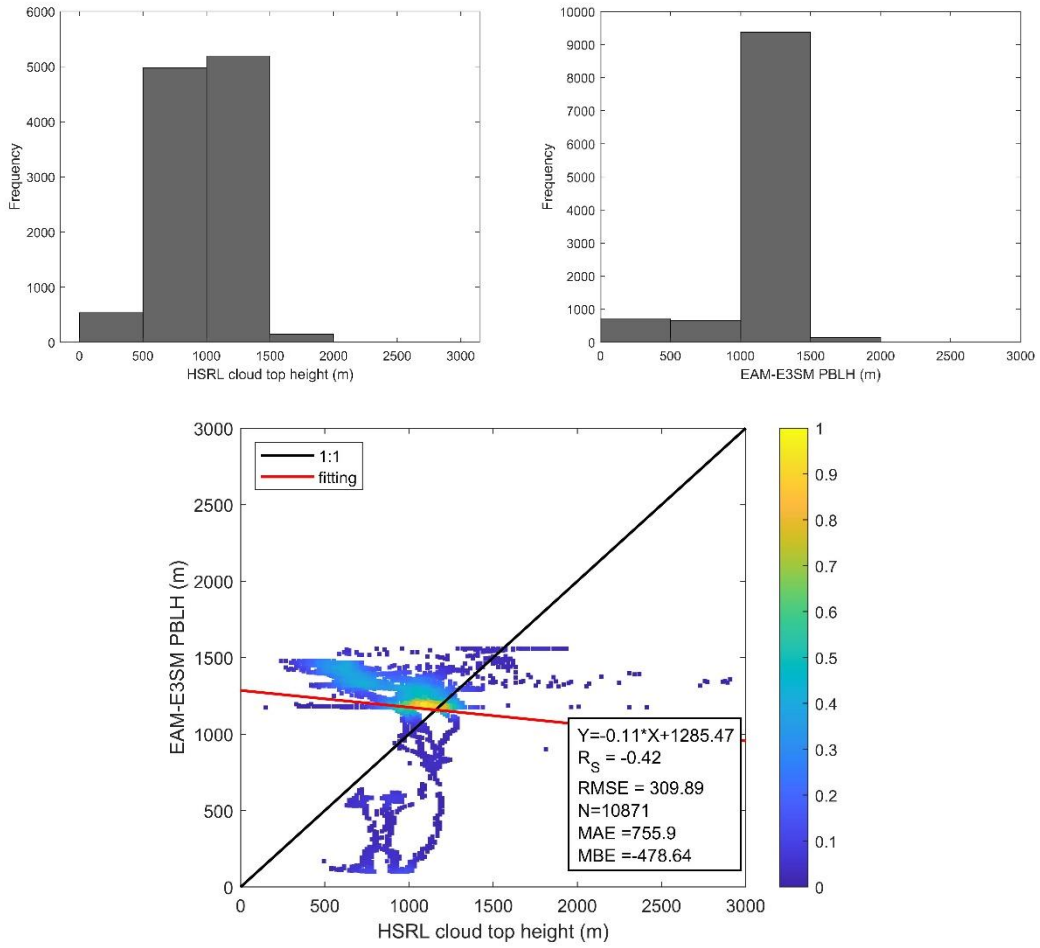Figure S 3. As in Figure S 2, but for ALADIN PBL height.

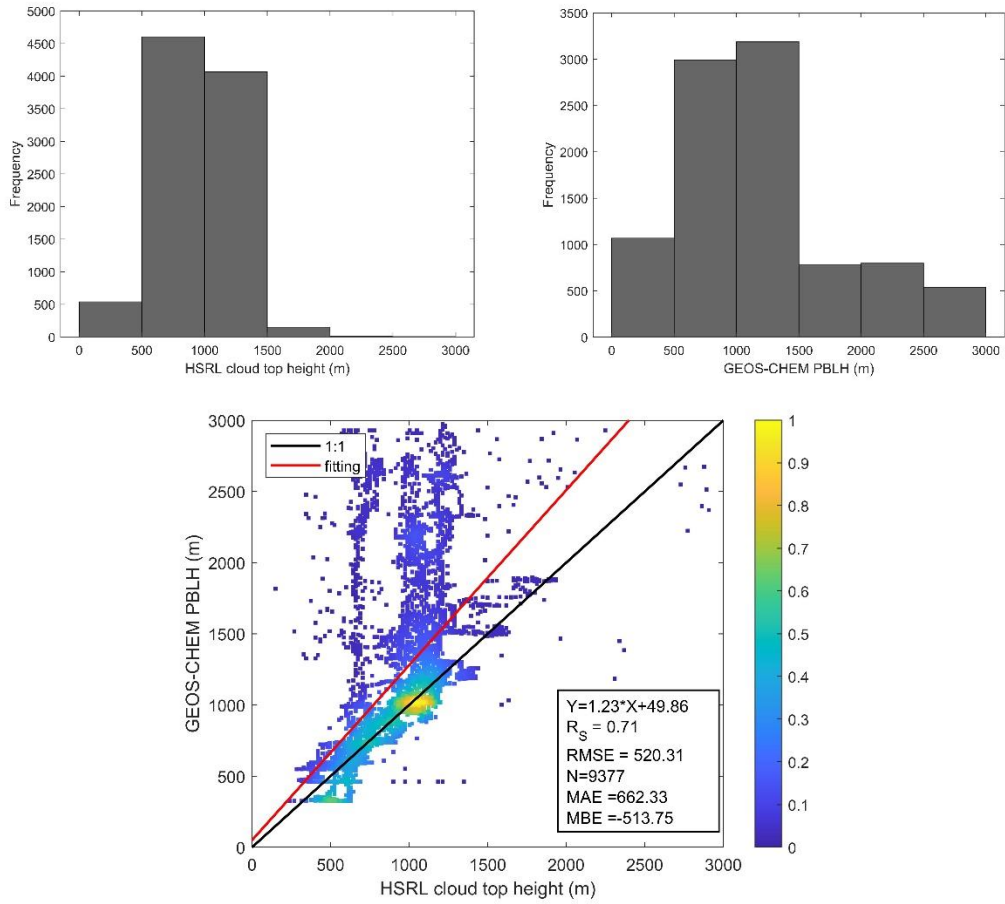Figure S 4. As in Figure S 2, but for EAM-E3SM PBL height.

Figure S 5. As in Figure S 2, but for GEOS-Chem PBL height.
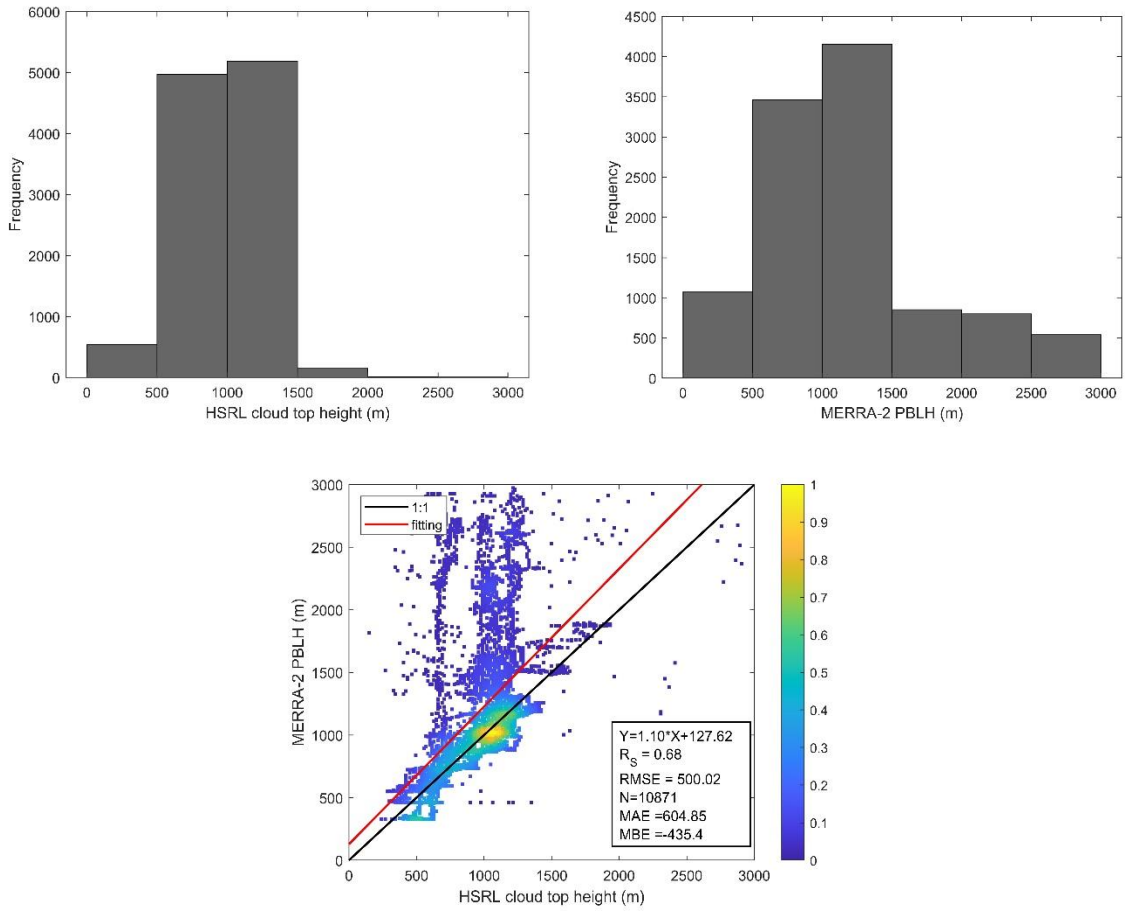
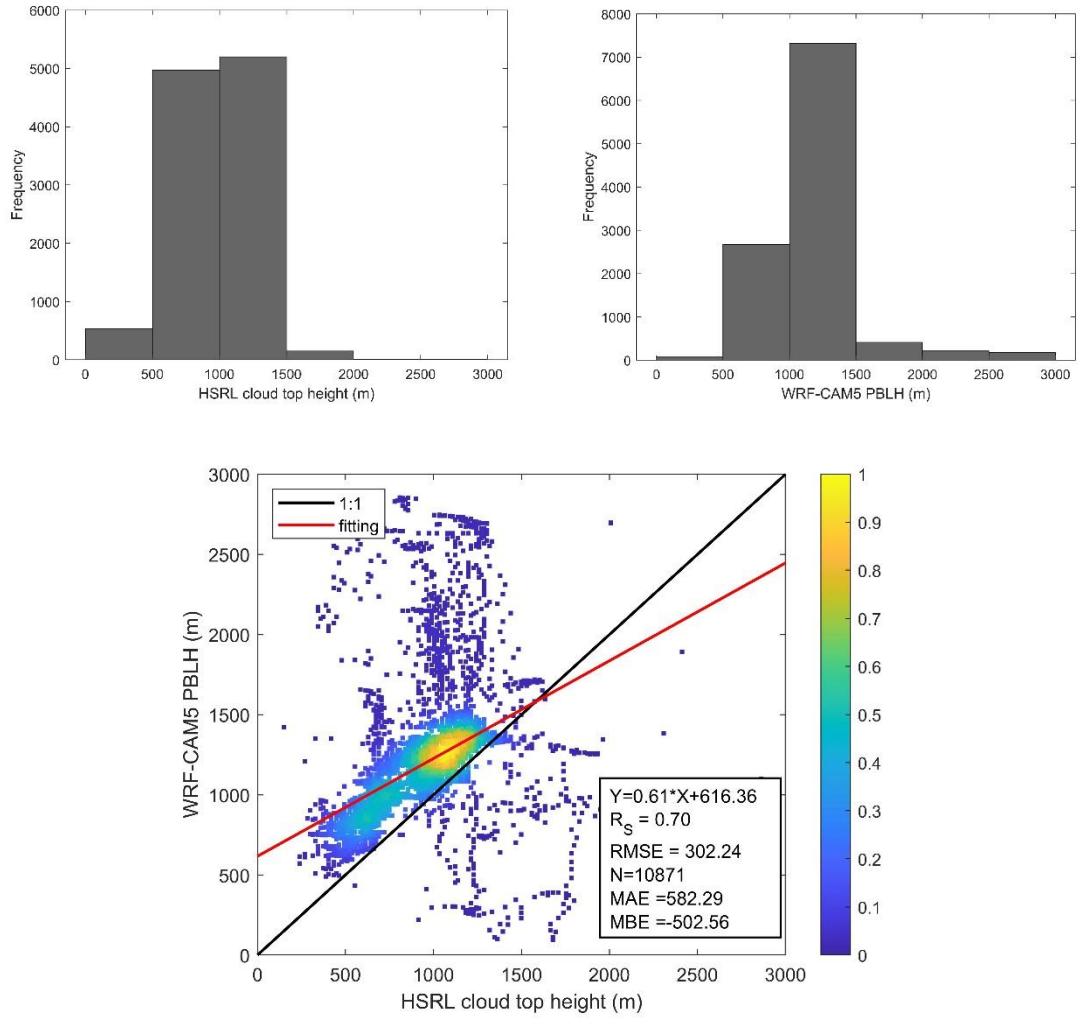Figure S 6. As in Figure S 2, but for MERRA-2 PBL height.
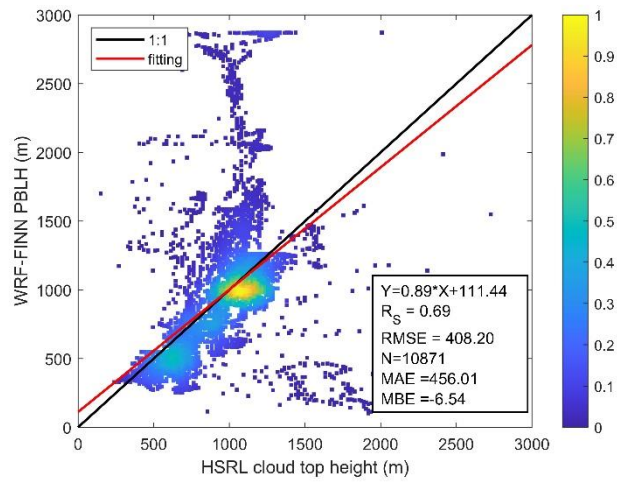
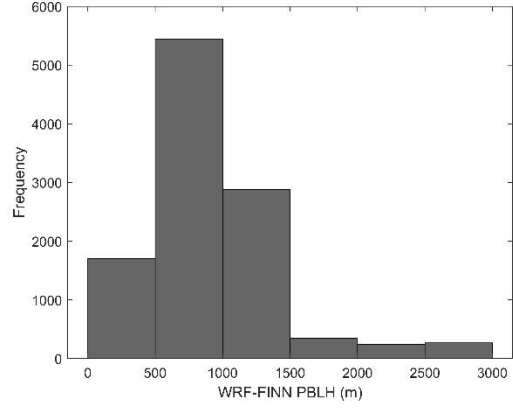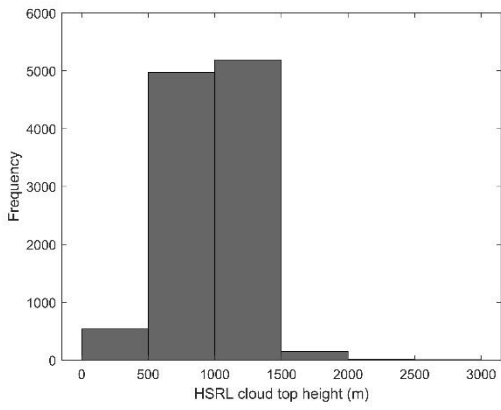Figure S 7. As in Figure S 2, but for WRF-CAM5 PBL height.

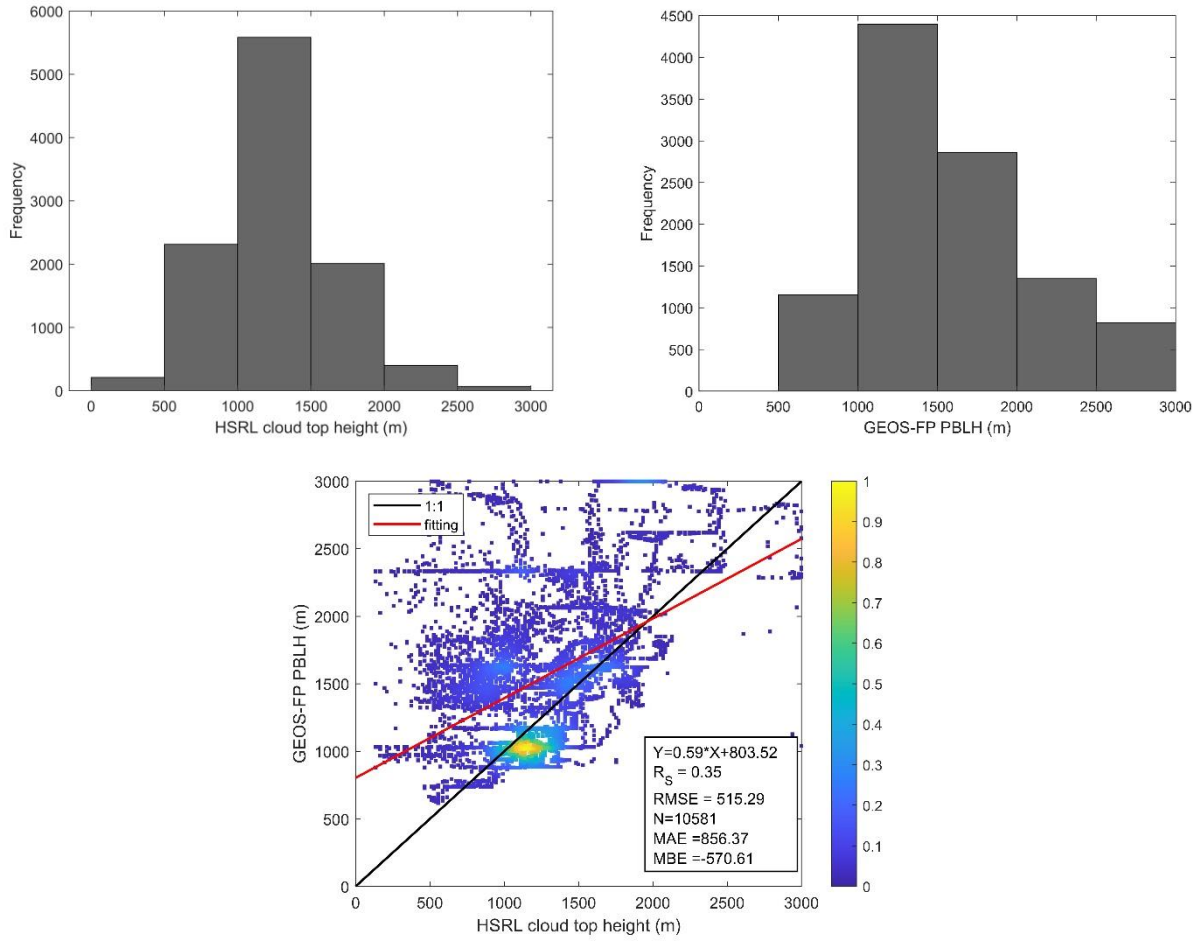Figure S 8. As in Figure S 2, but for WRF-FINN PBL height.

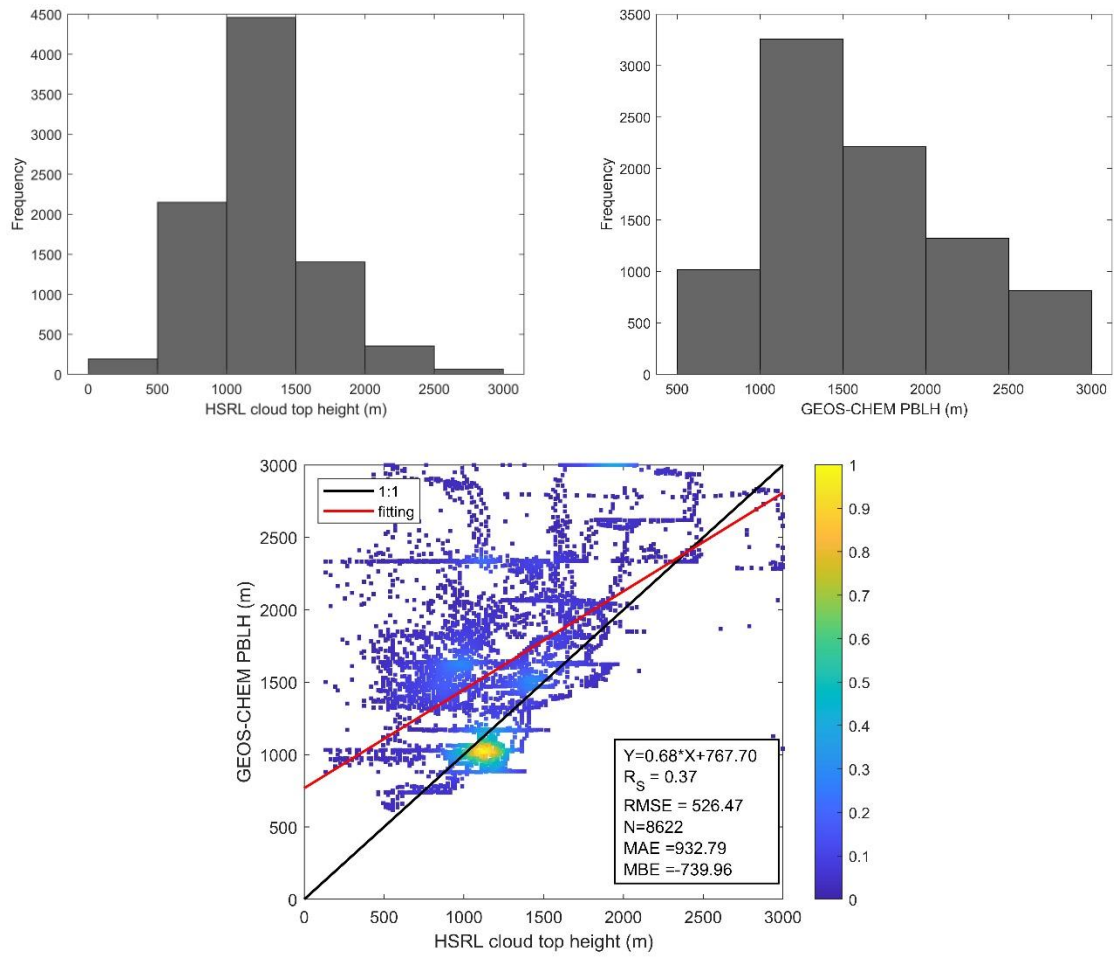Figure S 9. As in Figure S 2, but for GEOS-FP in August 2017.

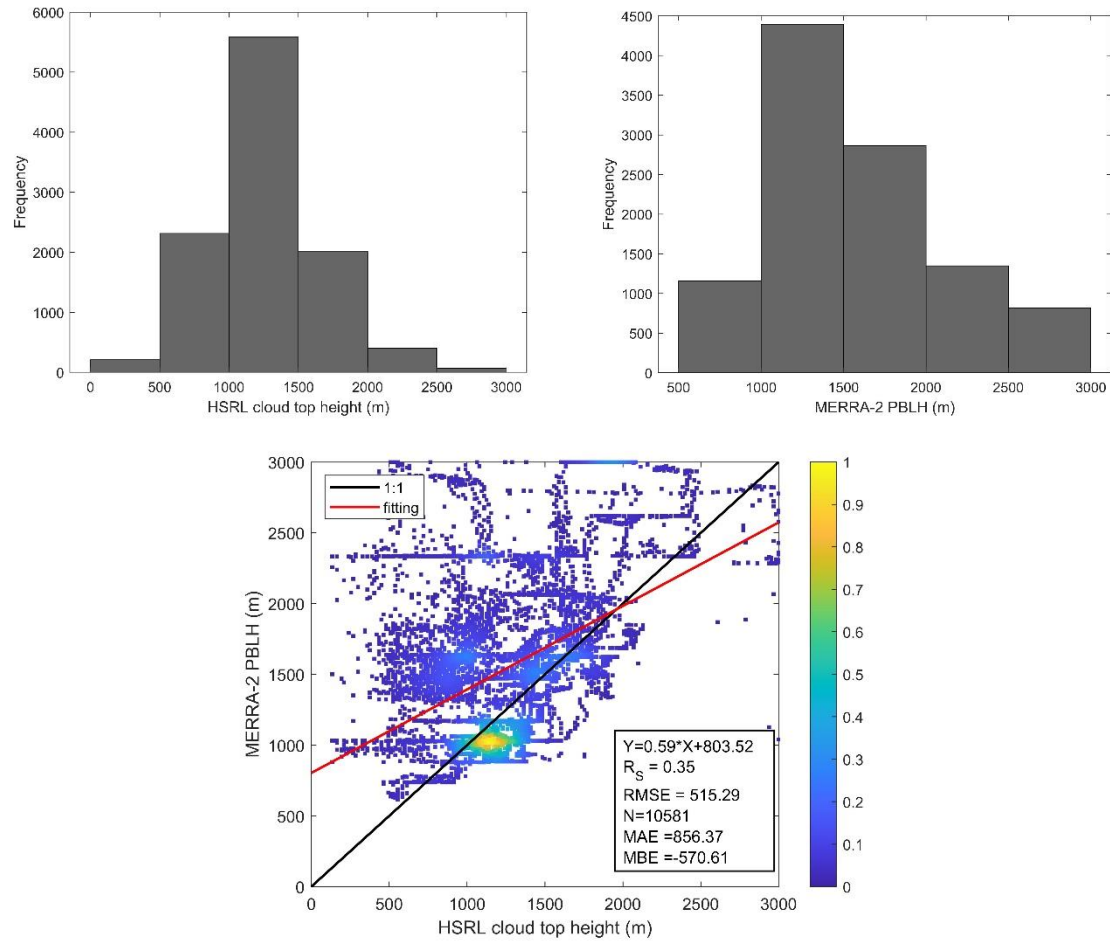Figure S 10. As in Figure S 2, but for GEOS-Chem in August 2017.

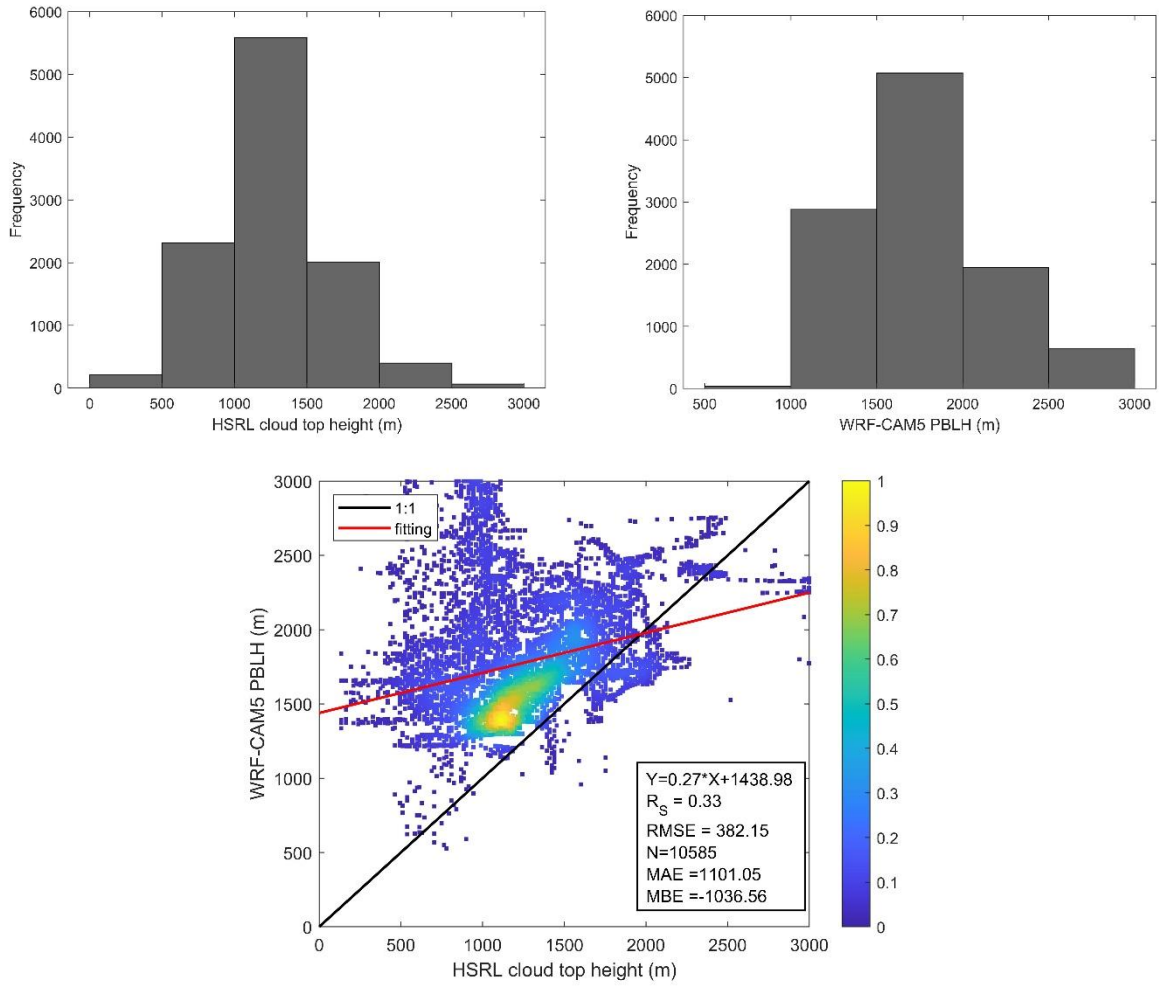Figure S 11. As in Figure S 2, but for MERRA-2 in August 2017.

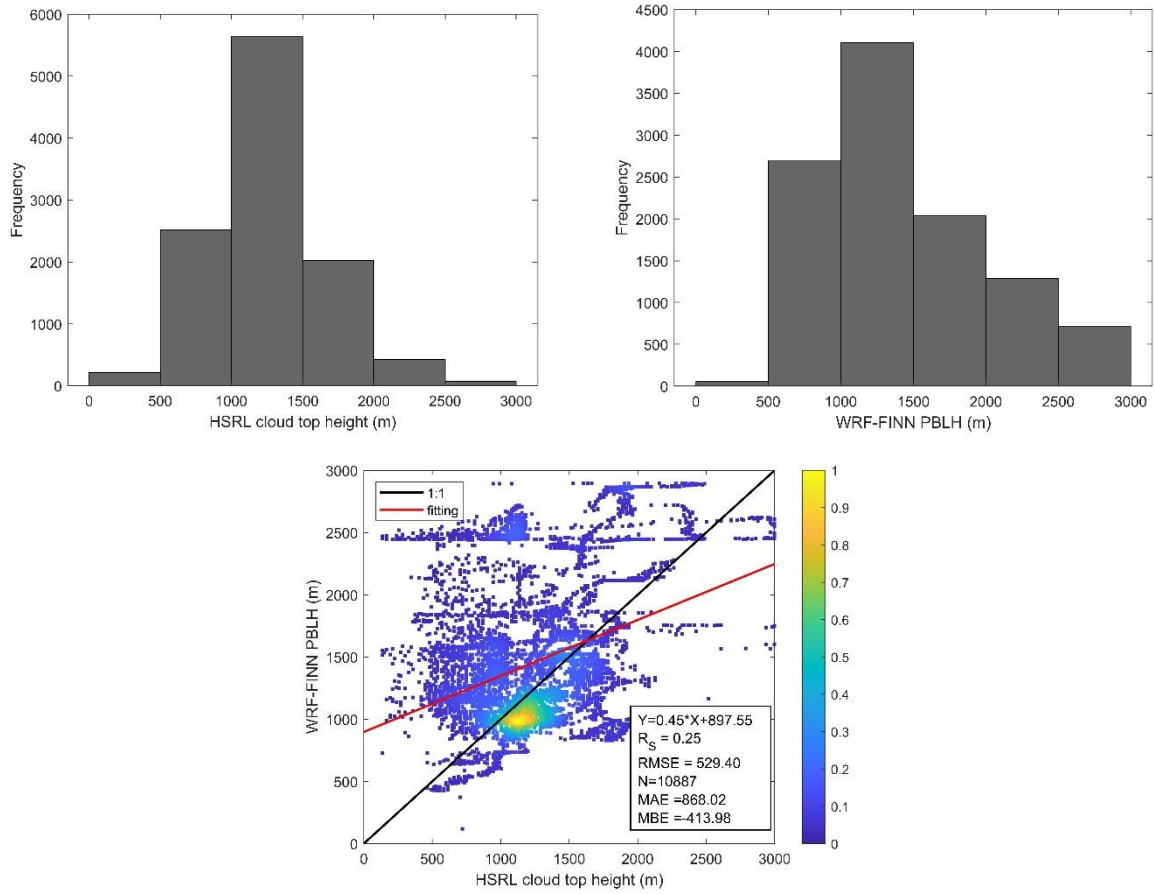Figure S 12. As in Figure S 2, but for WRF-CAM5 in August 2017.

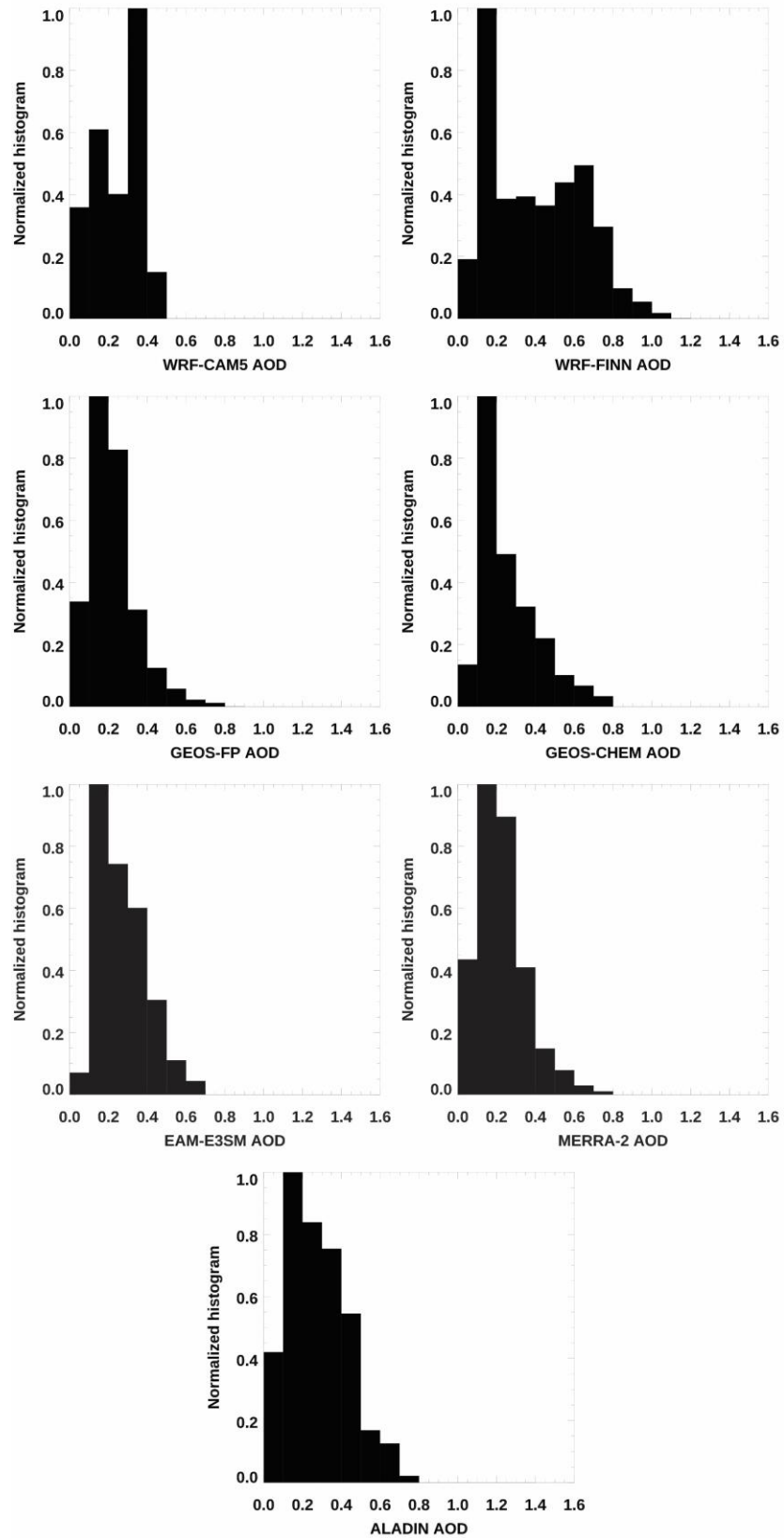Figure S 13. As in Figure S 2, but for WRF-FINN in August 2017.

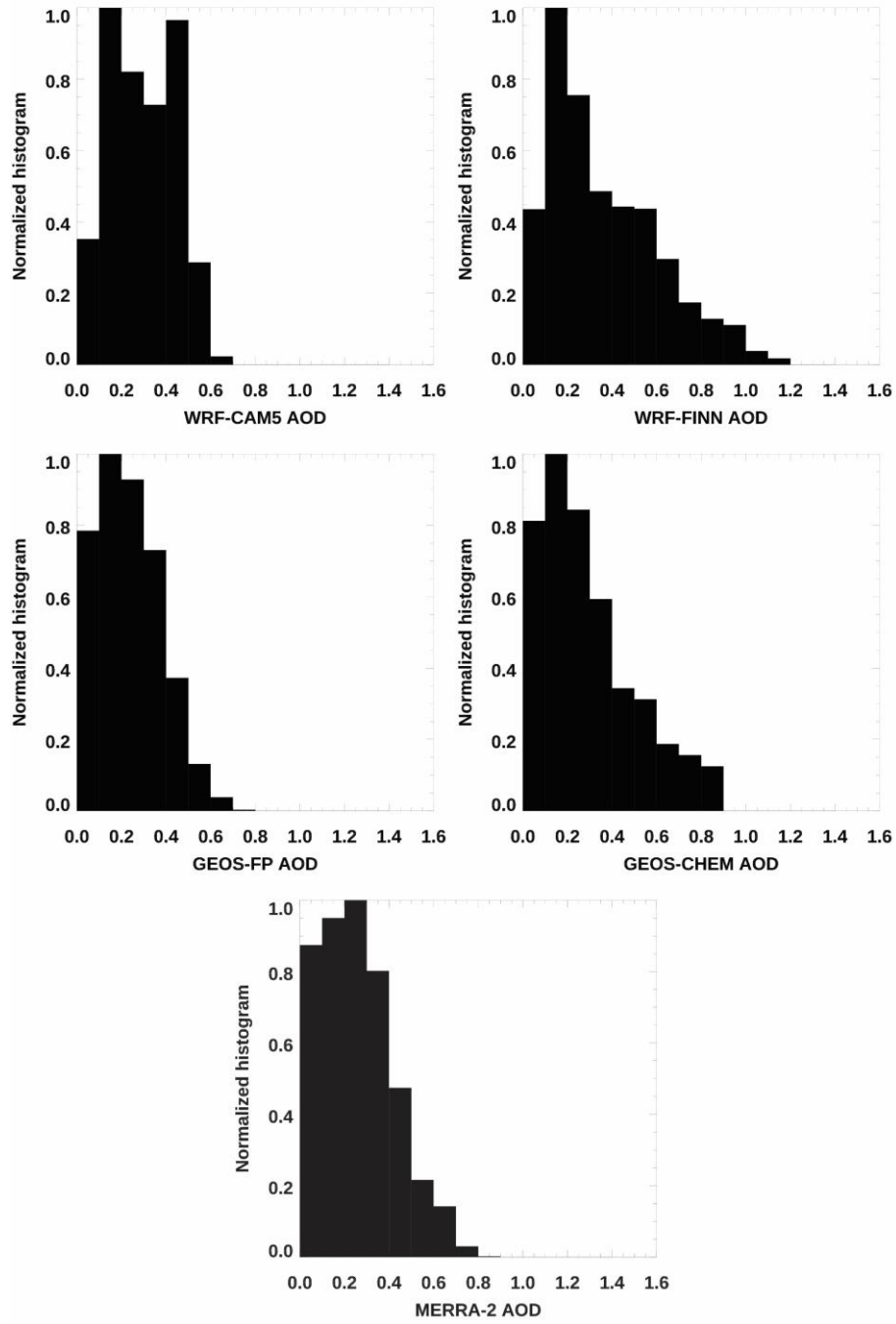Figure S 14. Normalized histograms of the modeled AOD in Figure 6.

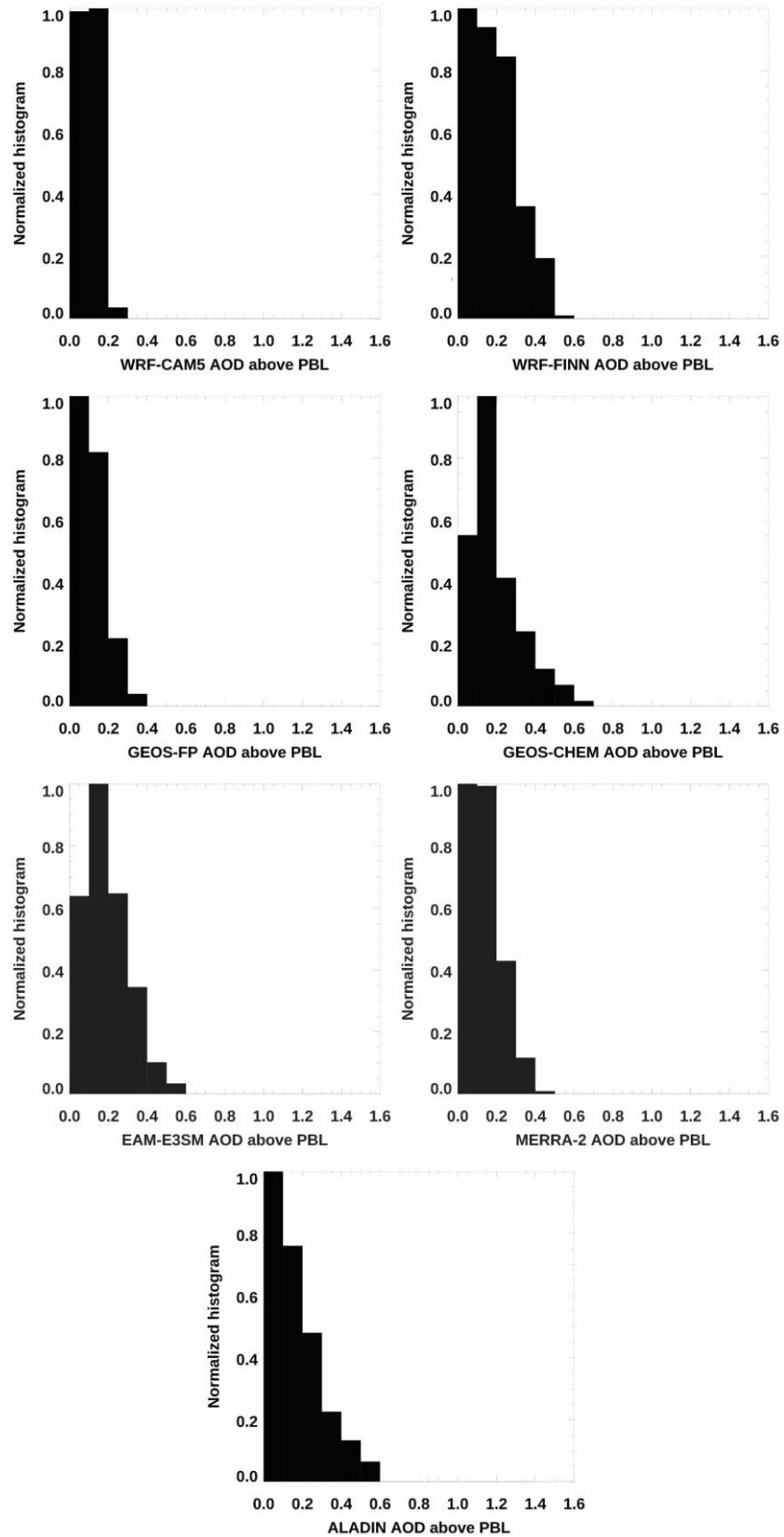Figure S 15. Normalized histograms of the modeled AOD in Figure 7.

Figure S 16. Normalized histograms of the modeled AOD above PBL (i.e., FT) in Figure 8.
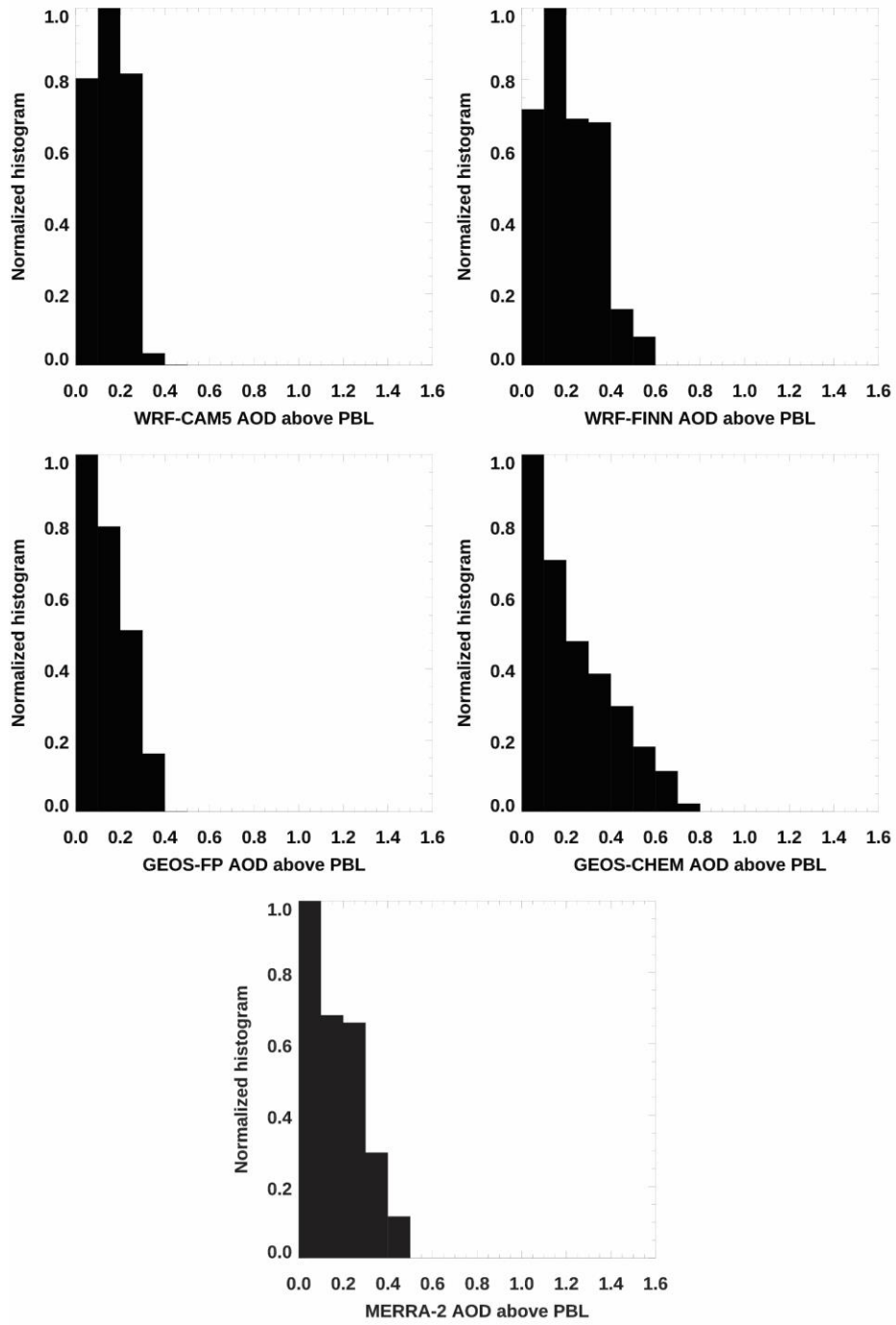
Figure S 17. Normalized histograms of the modeled AOD above PBL (i.e., FT) in Figure 9.
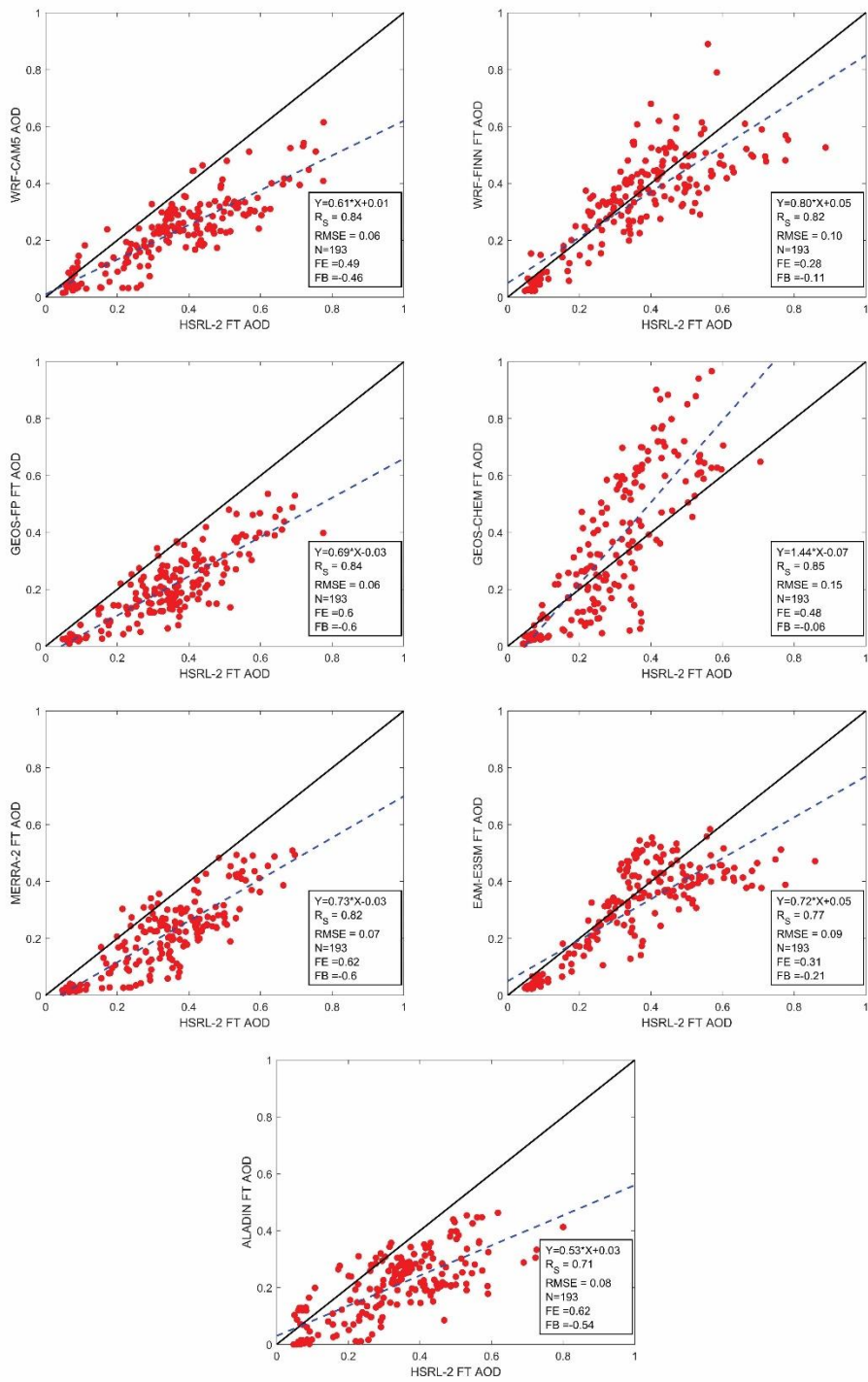
Figure S 18. Scatterplots comparing FT AOD among the models and the HSRL-2 during September 2016 of the ORACLES field experiment.
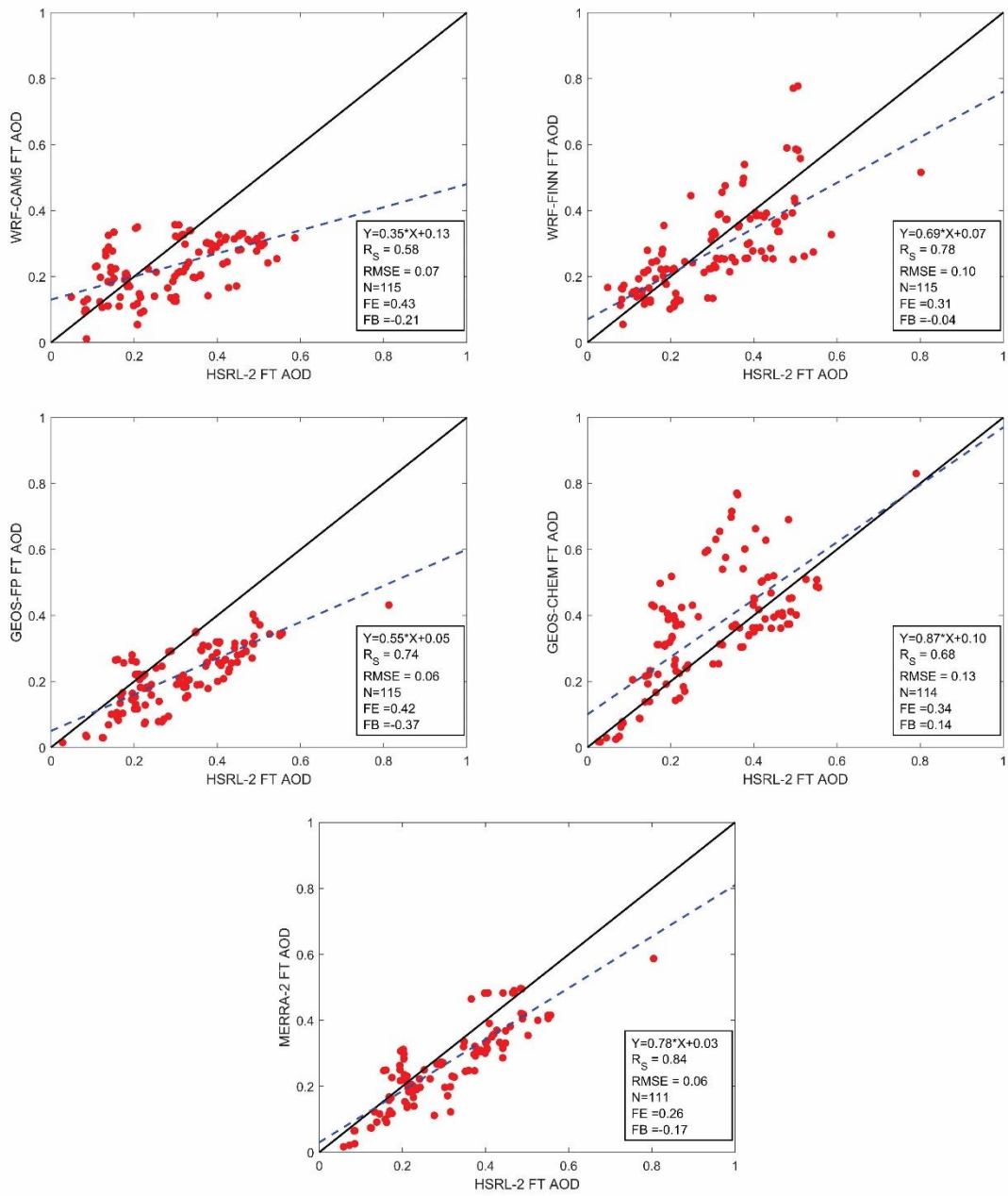
Figure S 19. Scatterplots comparing FT AOD among the models and the HSRL-2 during August 2017.