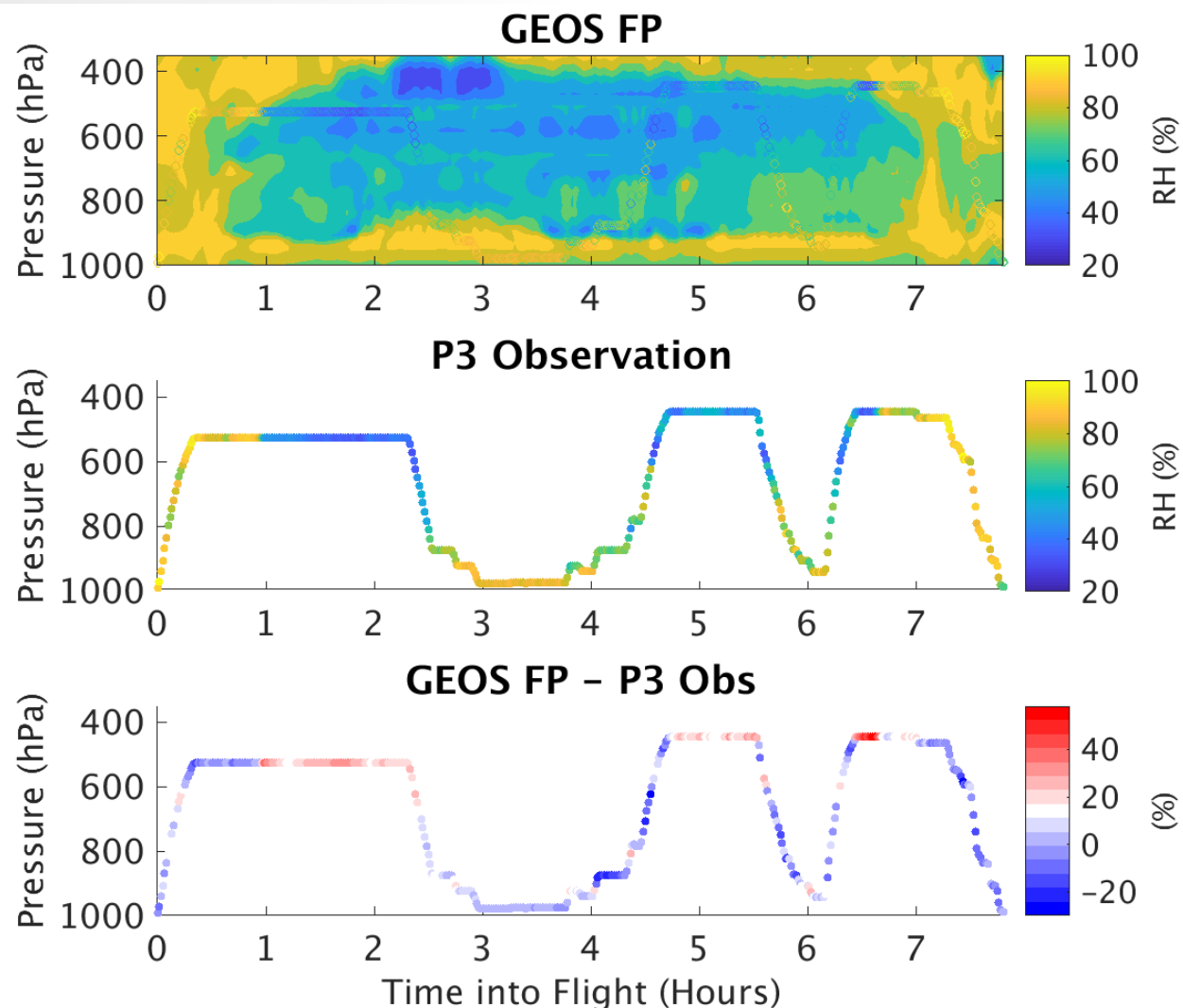


GEOS CAMP2Ex Reanalysis: Currently Available Data



- 0.25° simulations sampled along the trajectory of all CAMP2Ex flights using the 1-minute merges
- MERRA-2, “operational” version during the campaign, updated meteorology and aerosols
- <https://portal.nccs.nasa.gov/datashare/iesa/campaigns/CAMP2EX/>
- GEOS FP = GEOS 5.22, operational in 2019
- x0039 = GEOS 5.25, meteorology updates (convection, radiation)
- MODISonly = GEOS 5.25 + GOCART2G (includes brown carbon)
- Advised version for use is MODISonly
 - Extinction for individual aerosol species and at 20% and 80% relative humidity for $f(RH)$ comparisons

Allison Collow, Virginie Buchard, Pete Colarco,
Arlindo da Silva, Ravi Govindaraju, Ed Nowottnick

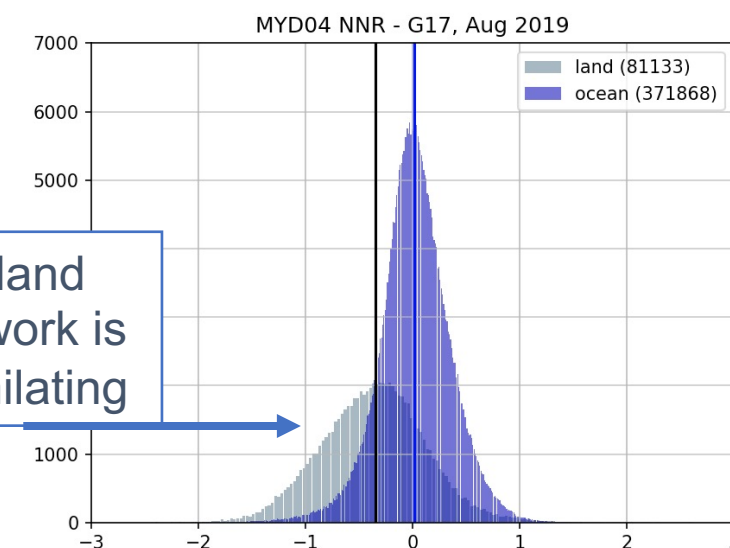
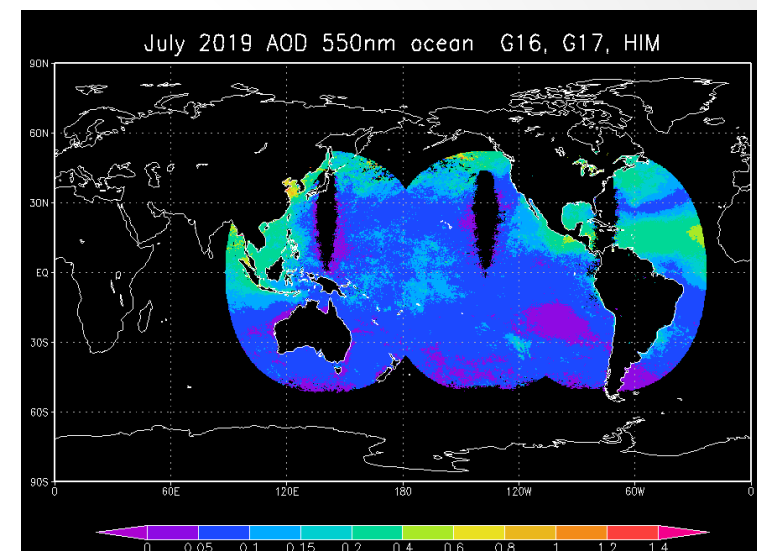
Assimilation of GEOSTATIONARY AOD over ocean (1)

■ *Advanced Baseline Imager (ABI) on GOES satellites and Advanced Himawari Imager (AHI) on HIMAWARI*

- Spatial resolution: 500m to 2km
- Temporal resolution:
 - Full disc image every 10 min
- >Observations of **diurnal aerosols**
- Retrievals algorithm adapted from MODIS and VIIRS (Dark Target)

■ *Data screening :*

- Cloud Screening:
 - Cloud fraction < 0.65 for $AOD < 2$
 - Cloud fraction < 0.25 for $AOD > 2$
- Sensor Zenith angle < 60 degrees
 - All retrievals with non-zero quality marks were included
 - Glint angle > 75 deg
 - Scattering angle < 170 deg
 - Solar Zenith angle < 65 degrees
- Over Land
 - Only retrievals with BEST quality mark included

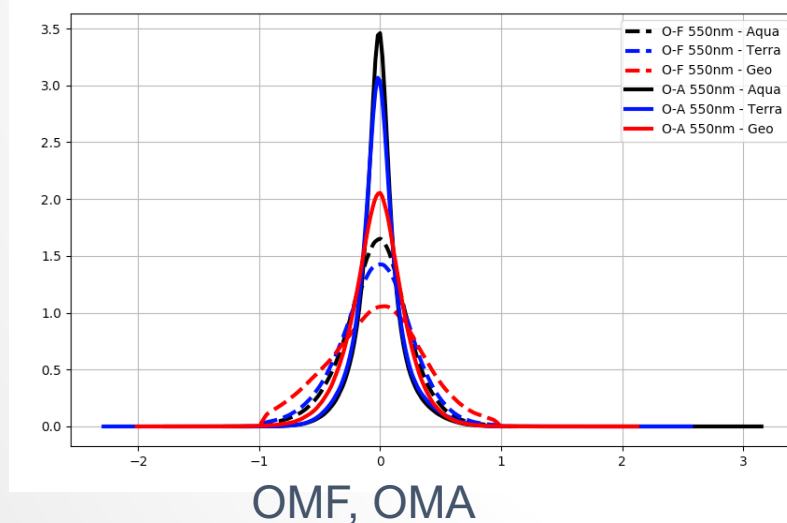


Assimilation of GEOSTATIONARY data over ocean (2)

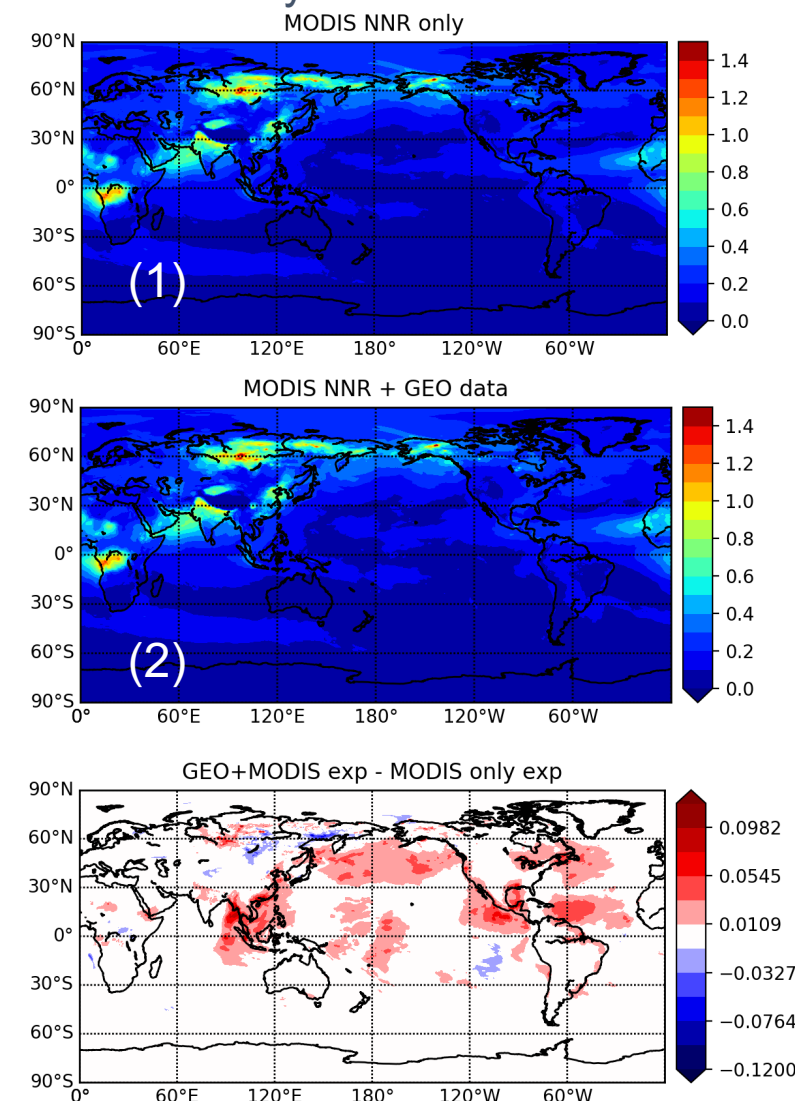
Experiments during CAMP2EX period using GOCART2G:

- 2D-PSAS aerosol analysis with Local Displacement Ensembles (Randles et al., 2016)
- *Observables:*
 - Exp (1) – MODIS NNR AOD at 550 nm only
 - Exp (2) – MODIS NNR + GEO AOD-550 nm over OCEAN

Innovation statistics:

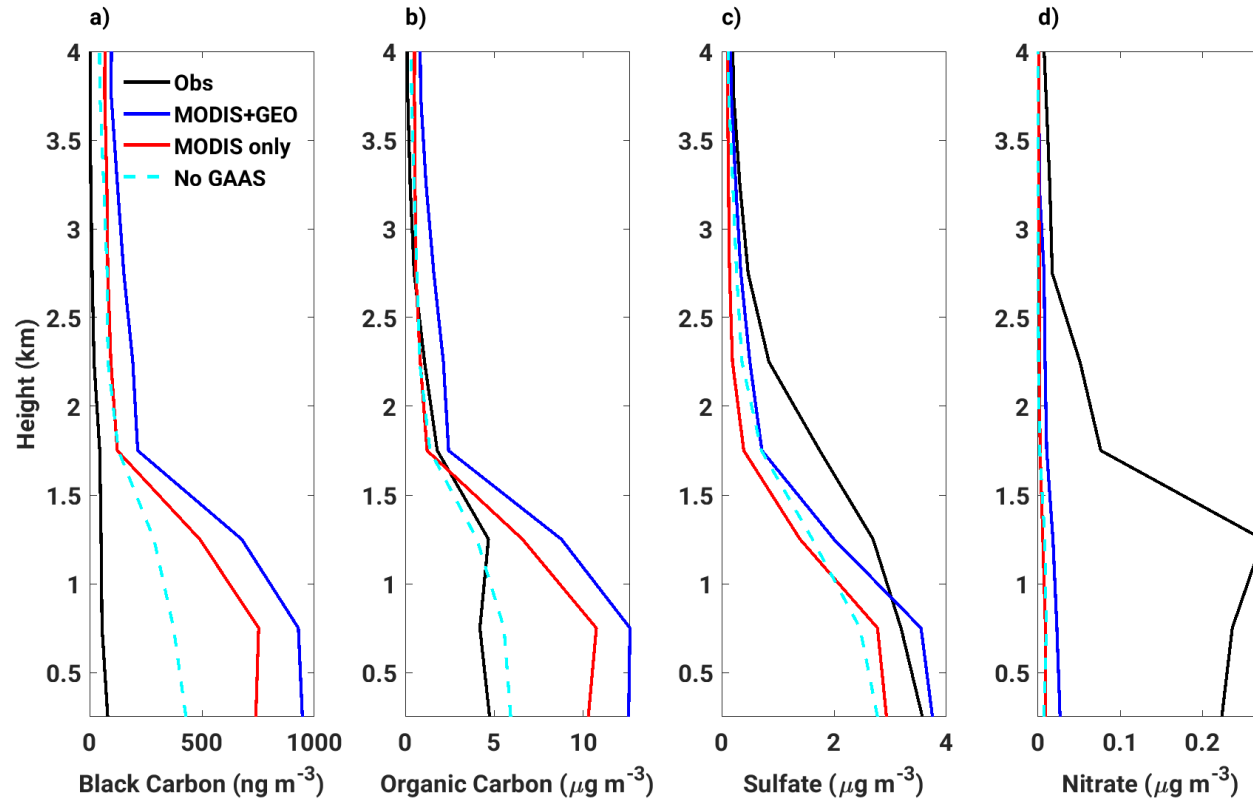


Monthly Mean AOD 550nm

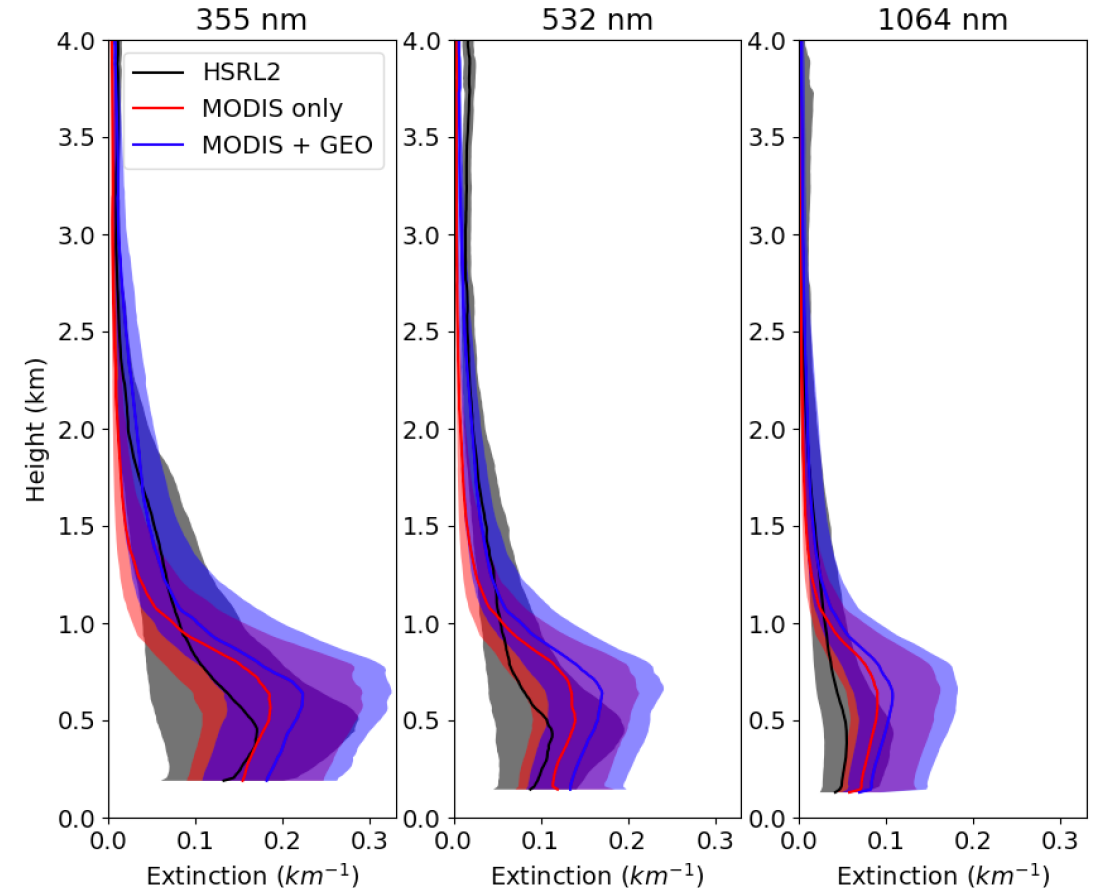


Assimilation of GEOSTATIONARY AOD over ocean (3): Comparison to CAMP2Ex Observations

LARGE Aerosol Mixing Ratio



HSRL2 Extinction



- AOD assimilation adds aerosol mass
- Median extinction does not improve with the assimilation of geostationary AOD
- Hint of improvement in variability of extinction at 355 nm and 532 nm
- More work is needed to optimize the use of Himawari