

Biases in VIIRS aerosol optical depth arising from solar band calibration biases

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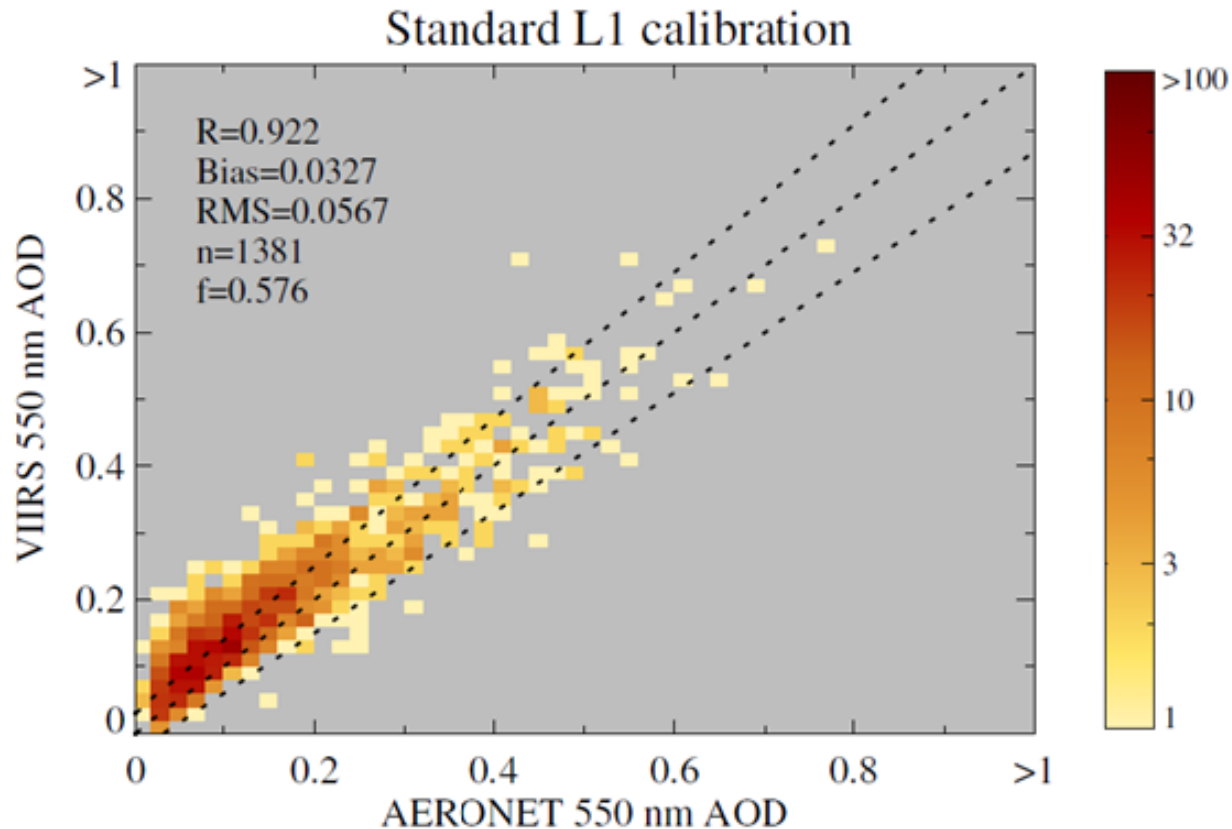
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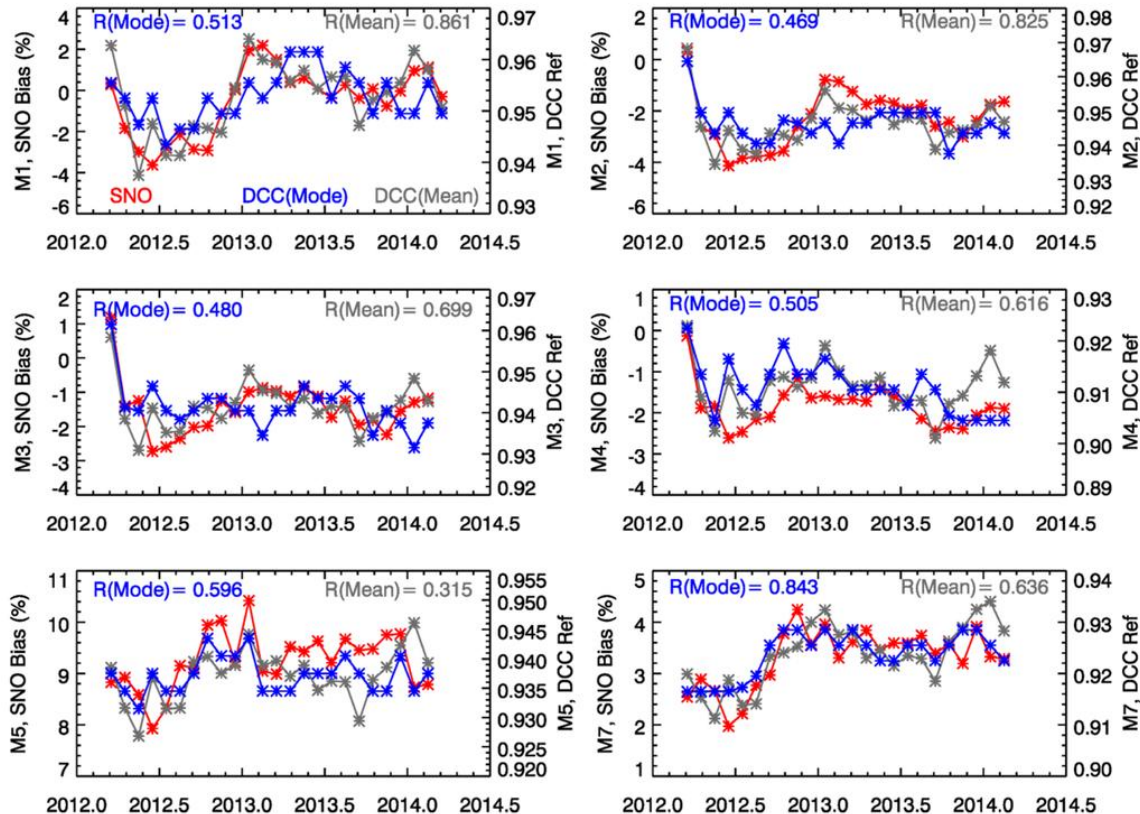


Aerosol optical depth (AOD) biases over ocean scenes are larger than expected



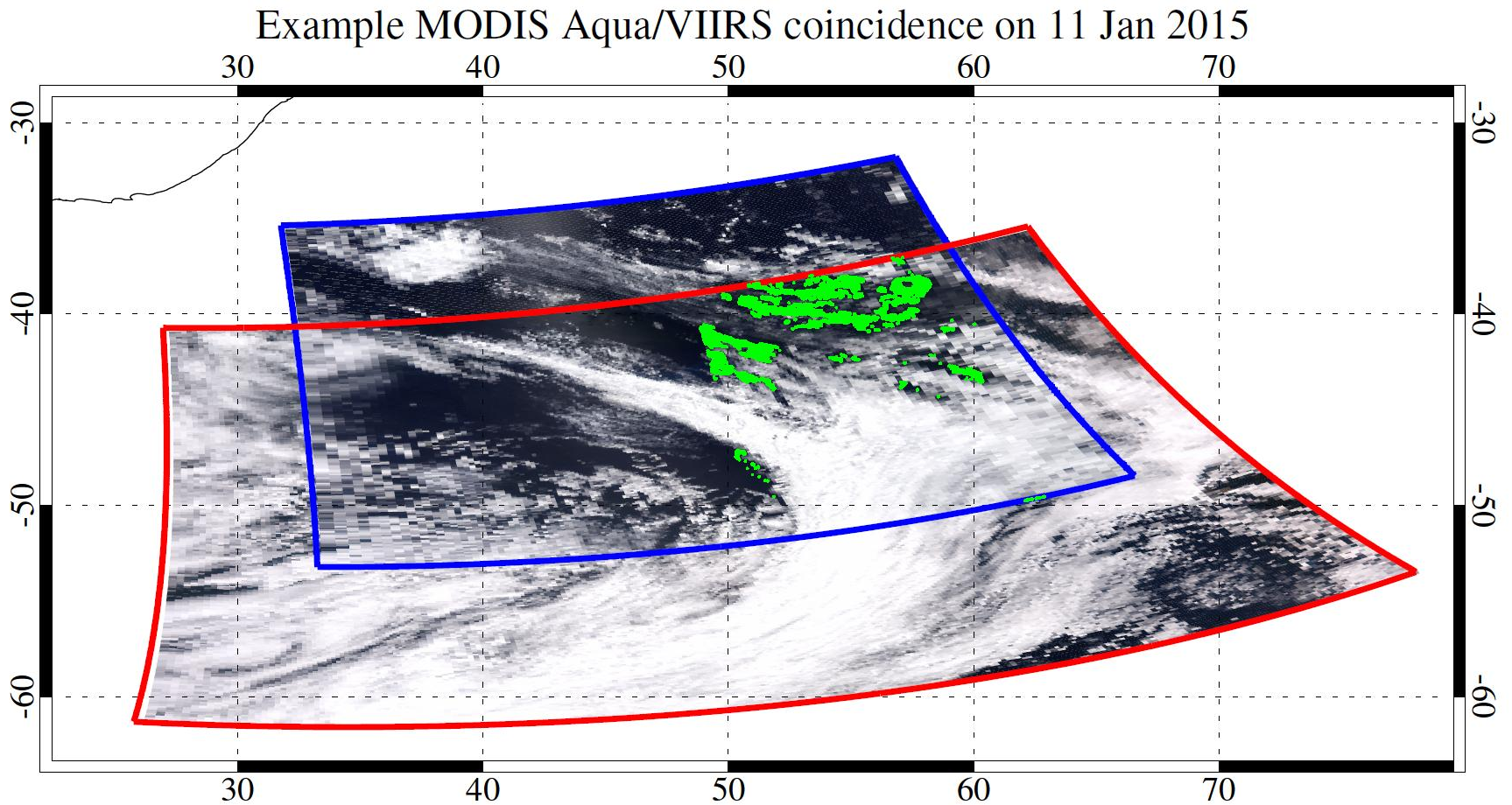
- Median bias = 0.0327; expected < 0.015

Several prior studies suggest some VIIRS solar bands are too bright

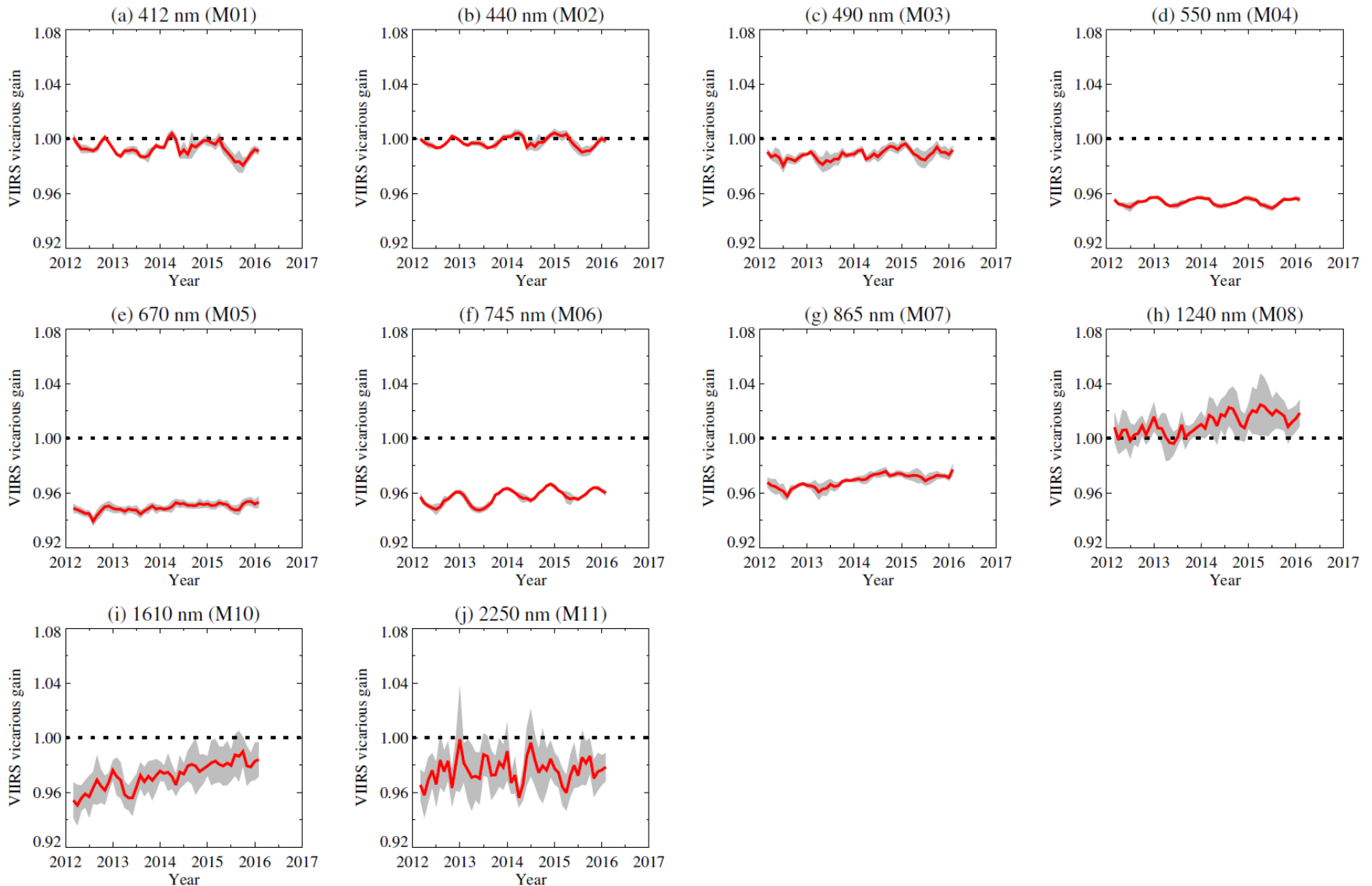


- Wang and Cao (2016), Monitoring the NOAA Operational VIIRS RSB and DNB Calibration Stability Using Monthly and Semi-Monthly Deep Convective Clouds Time Series, *Remote Sens.*, **8**(32), doi:10.3390/rs8010032.

The Atmos SIPS have created 'matchfiles' to aid MODIS-VIIRS cross-calibration

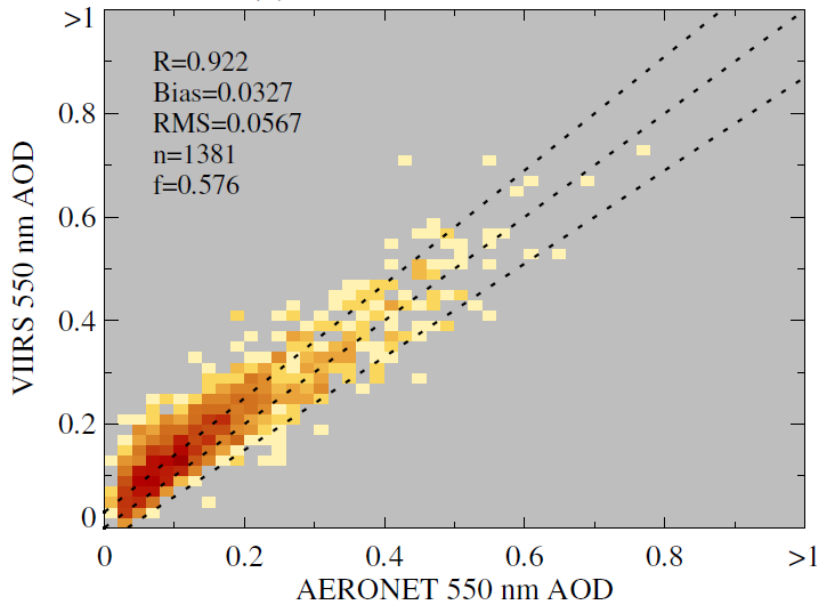


We cross-calibrated VIIRS against MODIS Aqua for open-ocean scenes

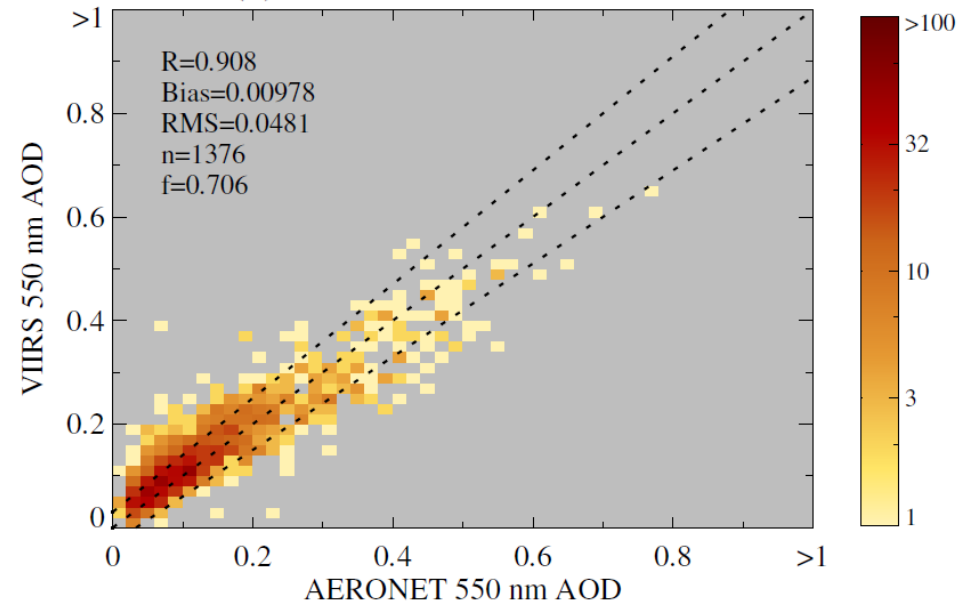


Applying these gains removes the bulk of the AOD bias

(a) Standard L1 calibration

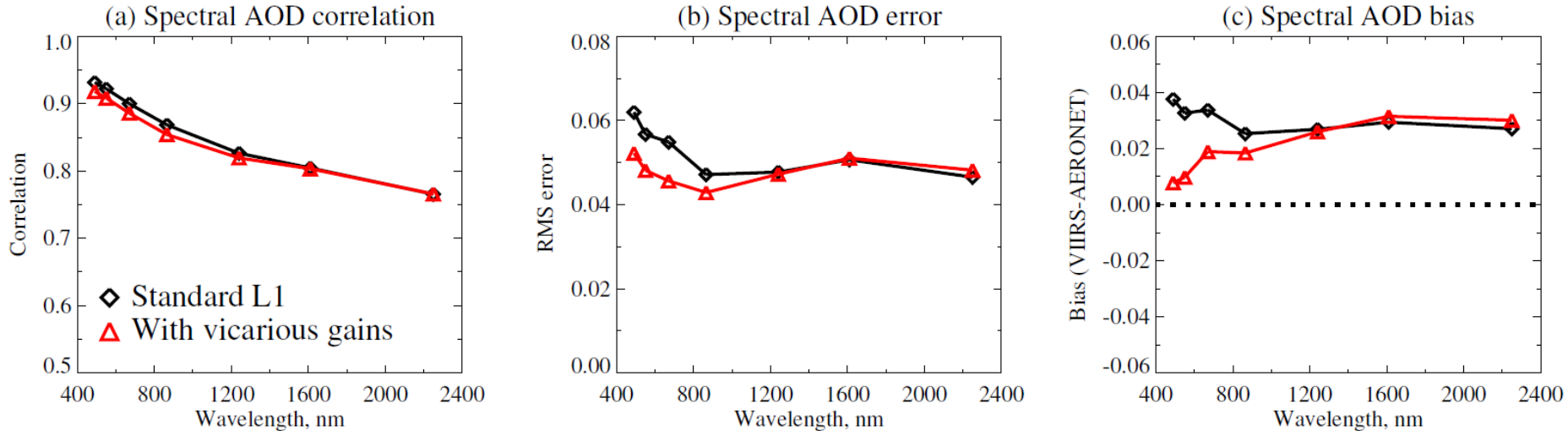


(b) With vicarious corrections



- Suggests MODIS absolute calibration is closer to the truth than VIIRS
- See my poster in the Atmospheres session for more information

Results for swIR wavelengths are not as settled



- AOD bias at swIR wavelengths remains ~ 0.03
- How much is due to retrieval biases, and how much is due to MODIS swIR calibration uncertainty?