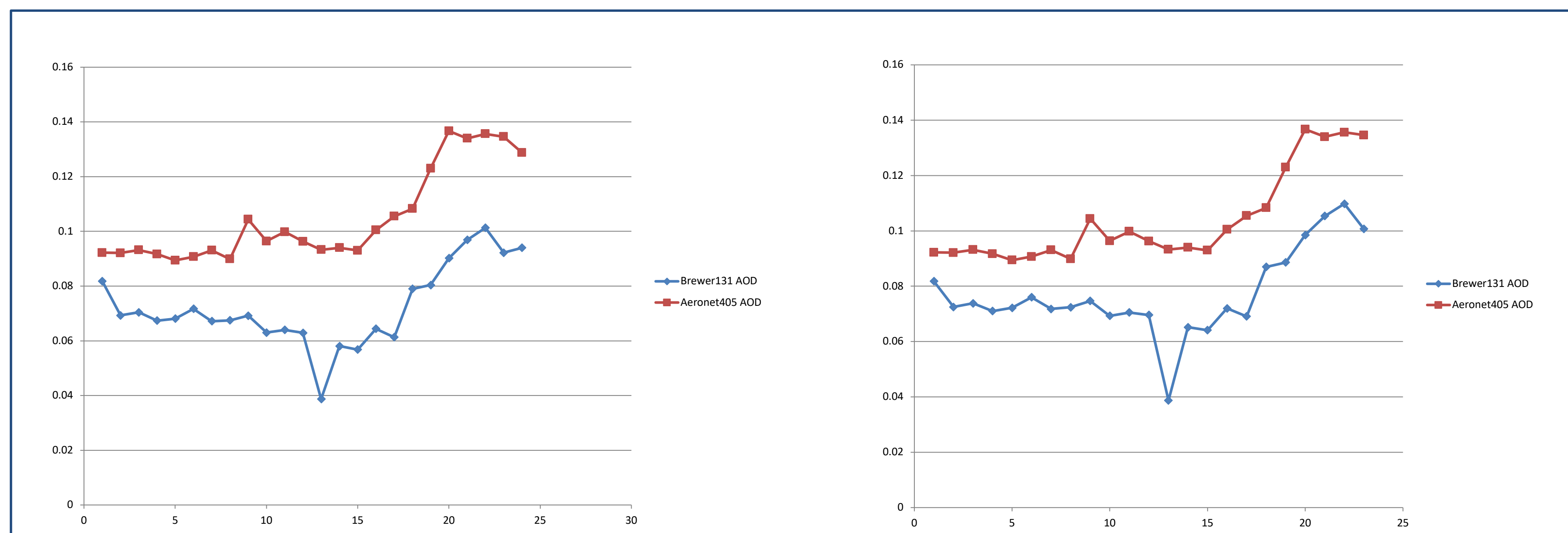
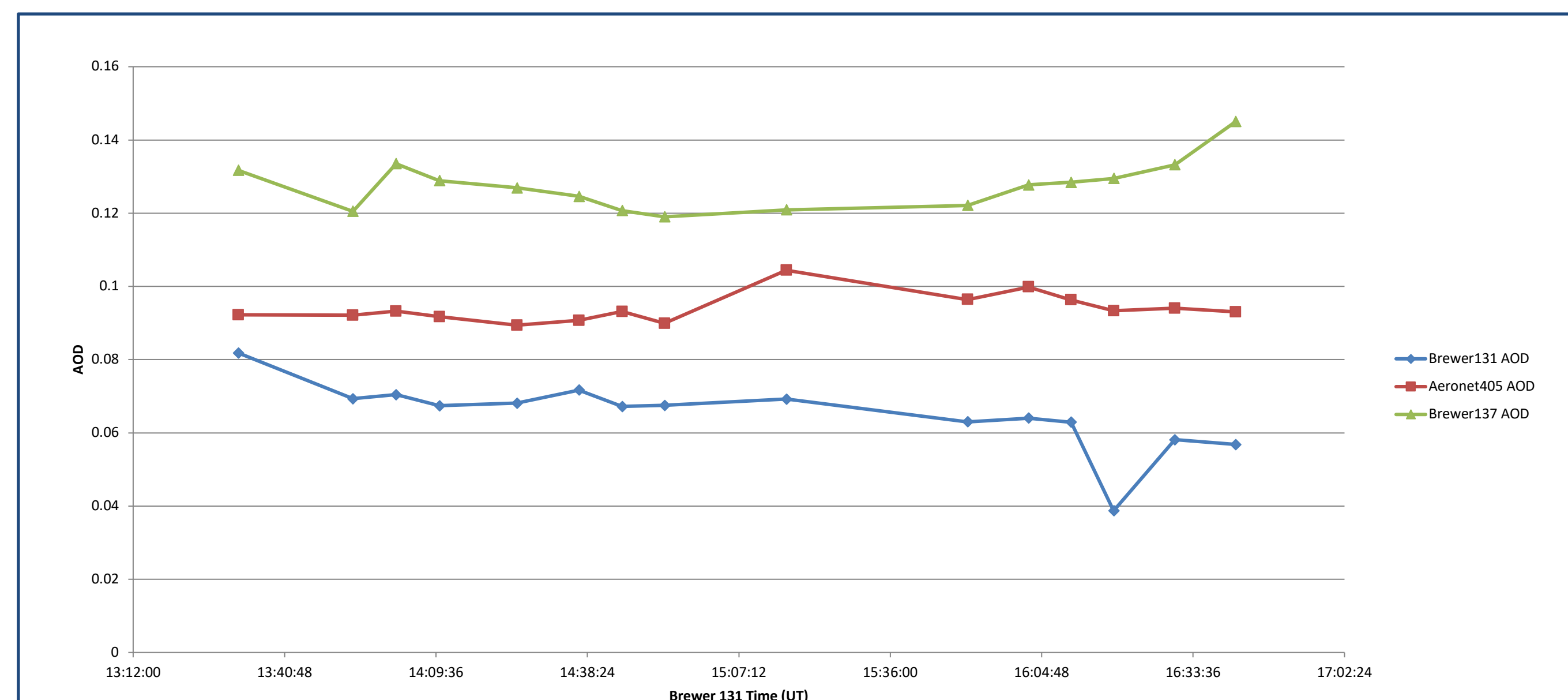


The Brewer Mark IV spectrophotometer is capable of making direct-sun (2.7 degree FOV) spectral scans from 286.5 – 363 nm at 0.5 nm steps. NEUBrew started two Brewers, 131 and 137 (non-network) making direct-sun spectral measurements (SS scans) all day long. Brewer 131 is located at the TMTF field site and Brewer 137 is located on the penthouse of the DSRC, approximately 15 km apart. Brewer 131 is collocated with AERONET's CIMEL sunphotometer #704 and a SURFRAD MFRSR. Measurements were made on a particularly calm and clear day, May 4, 2018 at both locations with a hand-held Microtops II sunphotometer calibrated for aerosol optical depth. The Microtops acted as a relative comparison reference. Results of these measurements along with the SURFRAD MFRSR AOD's at 500, 675, and 870 are compared to the Microtops.



Time series plot of Brewer 131 vs collocated CIMEL AOD's with and without Langley ozone and Rayleigh corrections. Clear skies April 22, 2018



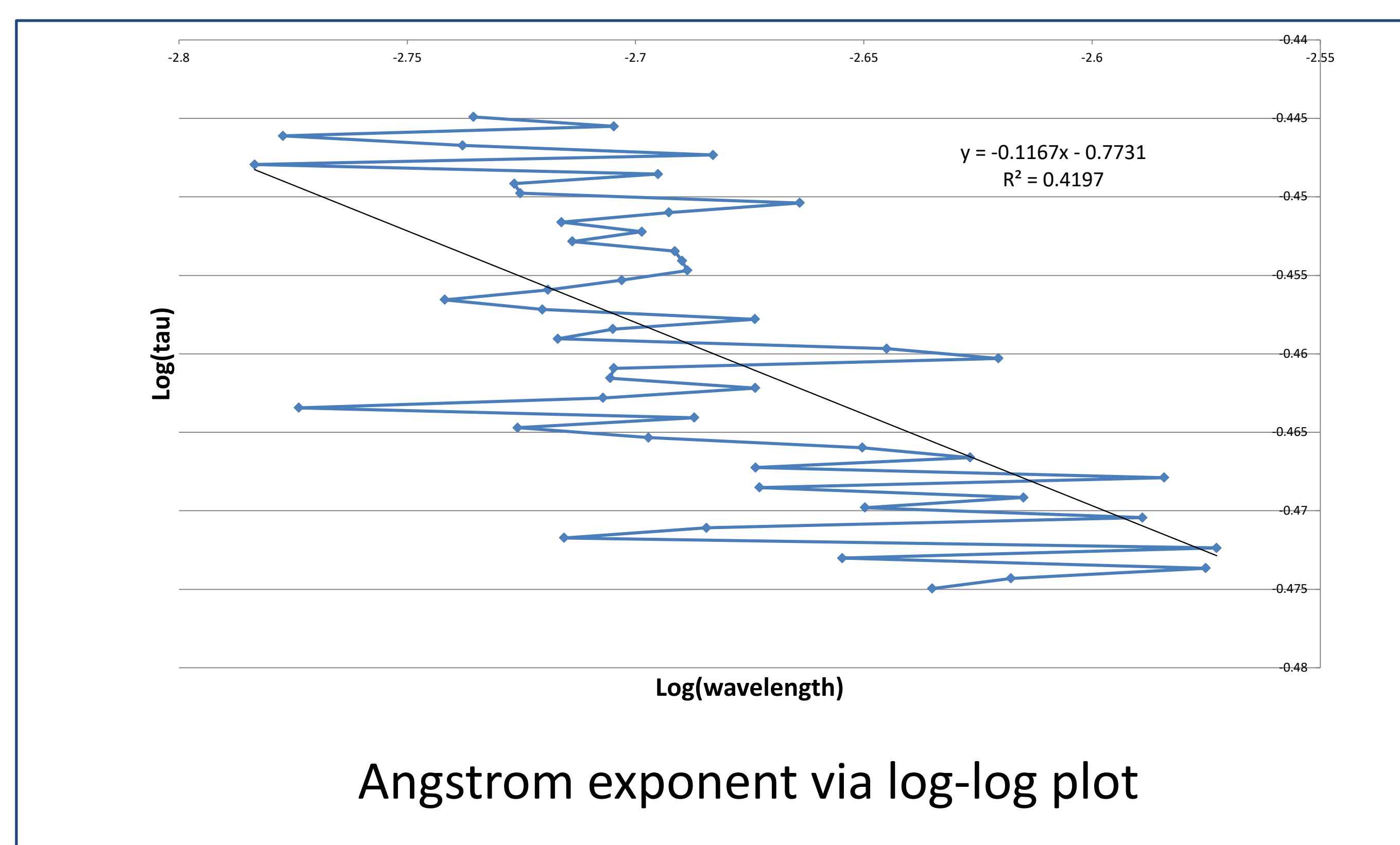
Time series plot Br131 (Table Mt) vs Br137 (Boulder-DSRC) AOD's. Clear skies, April 22, 2018

$\alpha = \log(\tau_1/\tau_2)/\log(\lambda_2/\lambda_1)$        $\tau = \beta * \lambda^{-\alpha}$

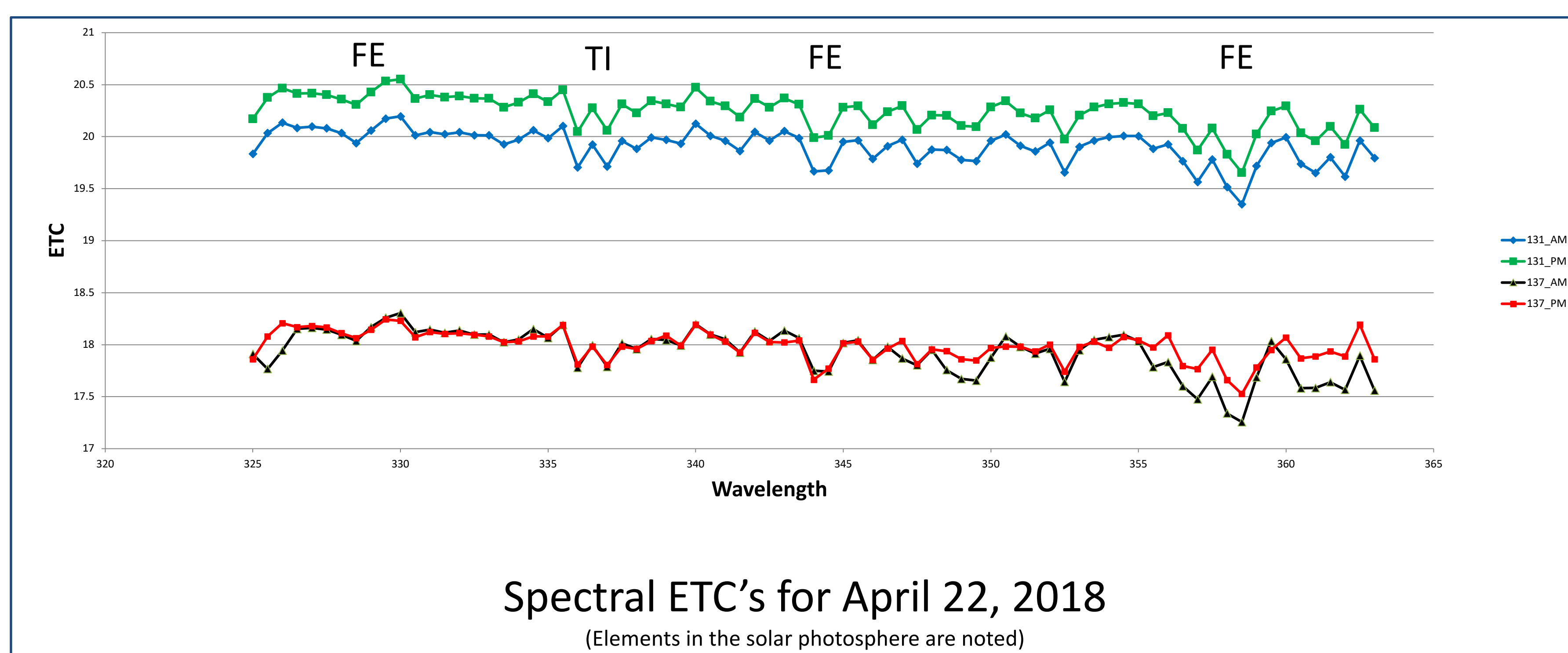
Wavelength (nm)	AOD ( $\tau$ )	Calculated	Measured	Difference
335.5	0.07297	345 nm 0.0695	0.06899	(0.74%)
359	0.06486	350 nm 0.0677	0.06593	(2.69%)

$\alpha = 1.7403$        $\beta = 0.0109$

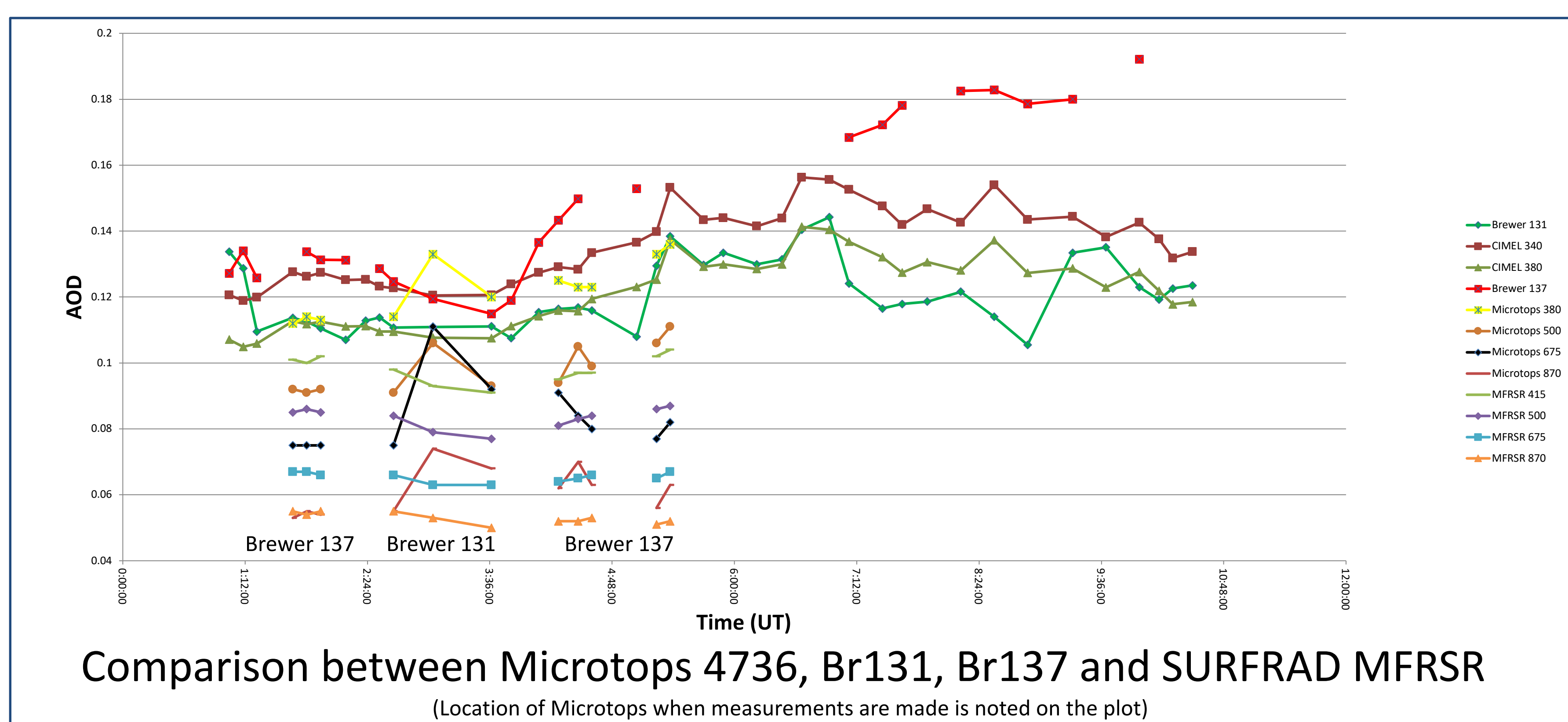
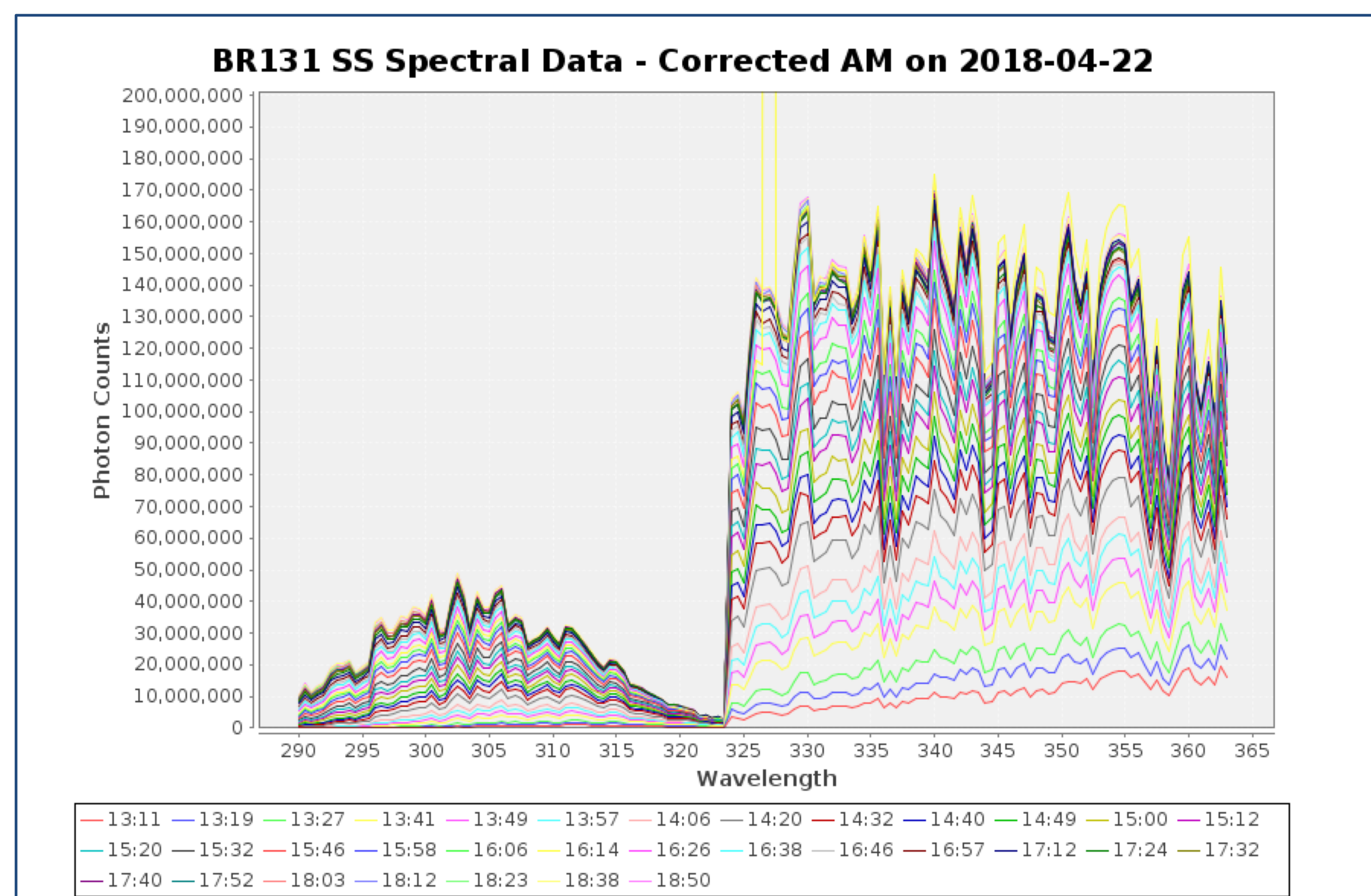
Angstrom exponent via calculation      Tau extrapolation to other wavelengths



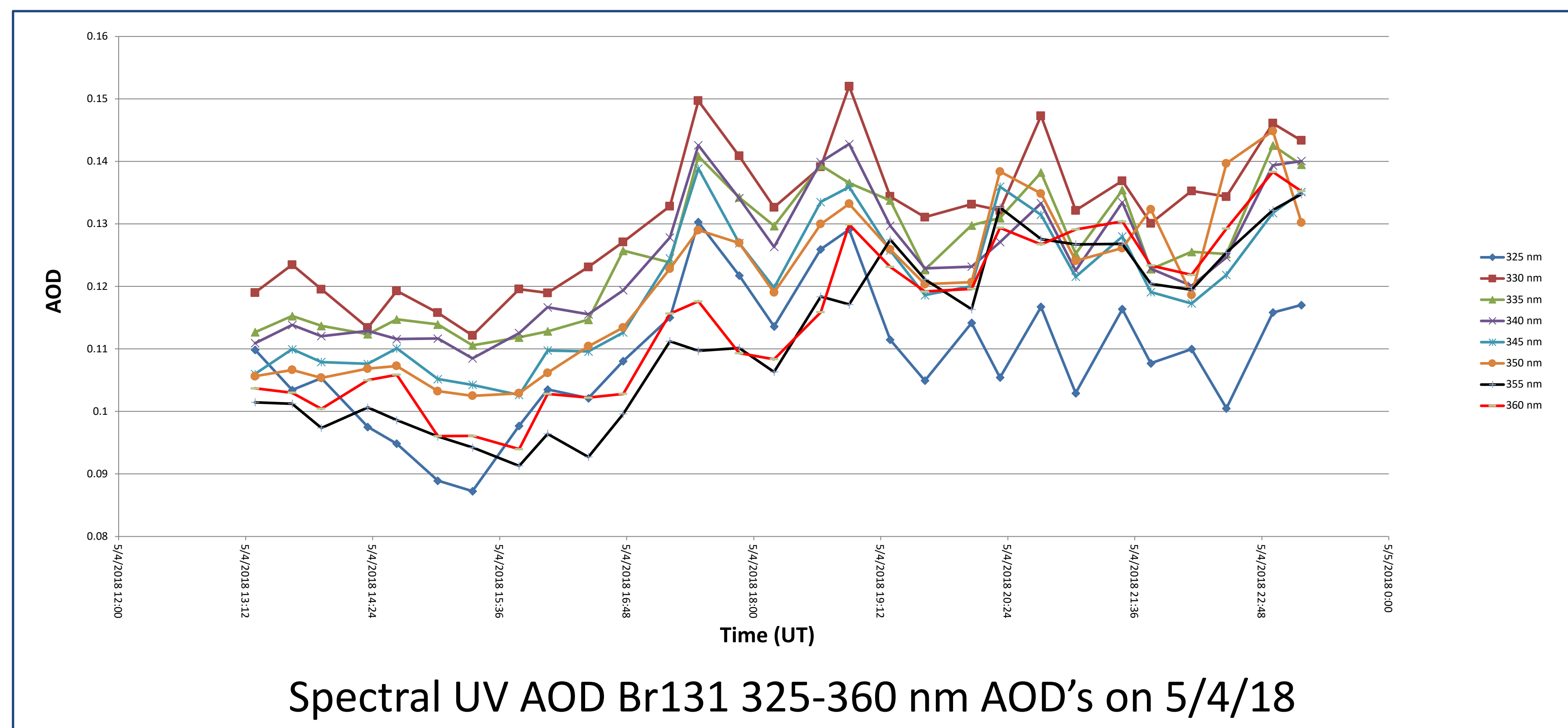
Angstrom exponent via log-log plot



Spectral ETC's for April 22, 2018  
(Elements in the solar photosphere are noted)



Comparison between Microtops 4736, Br131, Br137 and SURFRAD MFRSR  
(Location of Microtops when measurements are made is noted on the plot)



Spectral UV AOD Br131 325-360 nm AOD's on 5/4/18

Langley analyzer tool for Brewer Direct-Sun Measurements

- Future work:
- Add in 300-323.5 nm wavelength region
  - Resolve differences between Brewers 131 and 137
  - Estimate AOD uncertainties