

IRF WG, Washington, DC 2006

RSS Status...

AOD's for ALIVE 2005

Stability Issue

Peter Kiedron

Status summary: performance, tasks...

- **RSS at SGP in continuous operation for 3 years and 4 months (2.5% downtime, 97% scans received daily)**
- **Instrument basic performance checked daily (P. Kiedron)**
Stat plots at <http://oink.asrc.cestm.albany.edu/~rss/RSS105/qc/>
- **Raw data ingested daily (ARM sub-Archives)**
- **Lamp calibrations performed bi-weekly (Mark Klassen)**
- **Responsivities and corrections generated off line (P. Kiedron)**
- **Lamp calibrated irradiances generated bi-monthly (Jim Schlemmer)**
- **RSS lamp calibrated ARM-archived bi-monthly (ECO-198 completed)**

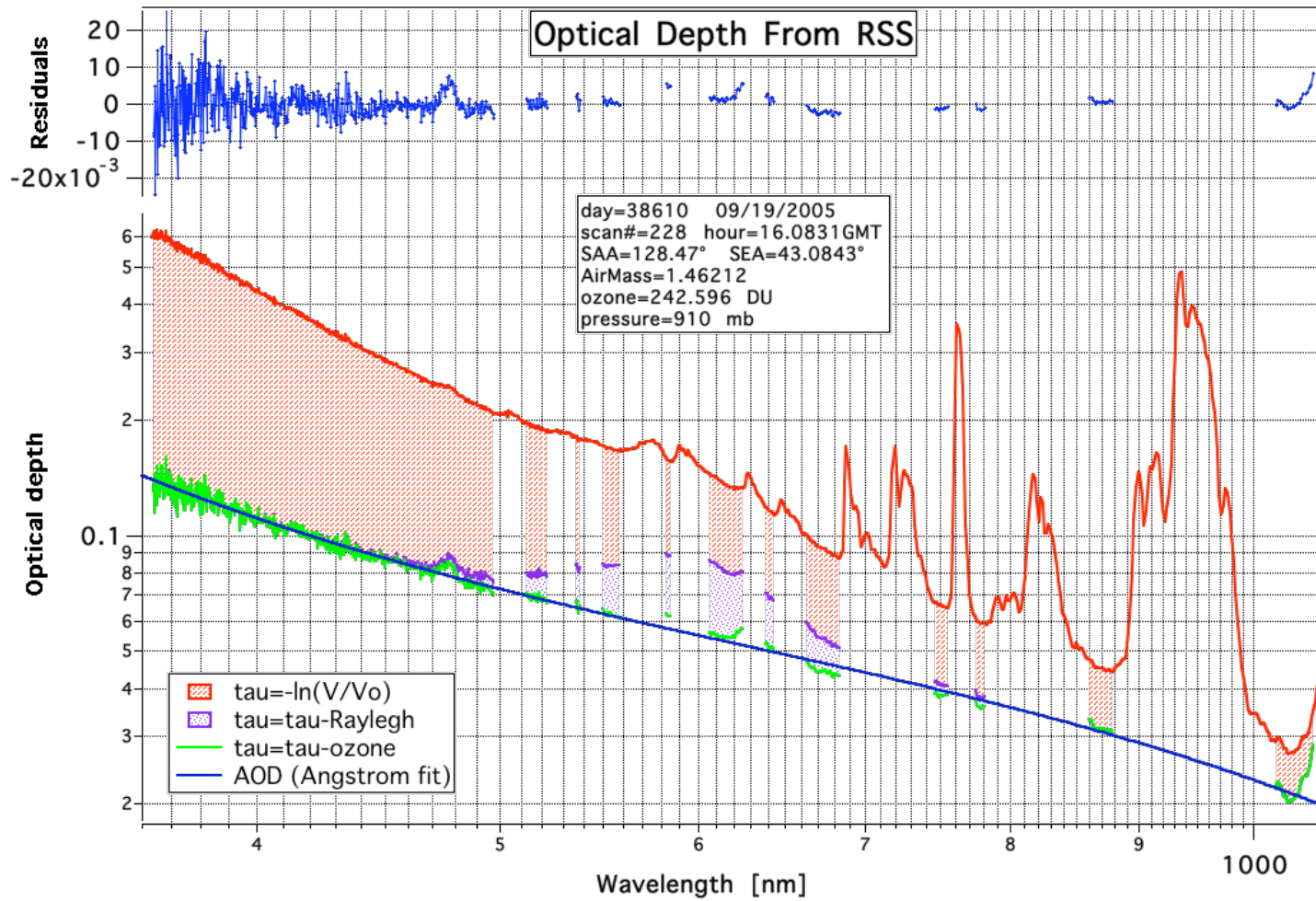
Status summary: performance, tasks...

- Instrument web pages updated in May 2006 (Rolanda Jundt and P. Kiedron) <http://www.arm.gov/instruments/instrument.php?id=rss>
- RSS documentaion, reports, publications updated in May 2006 (Rolanda Jundt and P. Kiedron)
http://www.arm.gov/publications/tech_reports/handbooks/rss/
- Langley calibration processed off-line bi-monthly (Jim Schlemmer and P. Kiedron). Saved on IOP server (Alice Cialella)
<http://iop.archive.arm.gov/arm-iop/0special-data/asrc-rss/rss105/langley/>
- Calibration files were uploaded to the knowledge data base (Sept. 2006)
- AOD intercomparison during ALIVE'05 paper in preparation (Connor Flynn and P. Kiedron)

AOD for ALIVE 2005

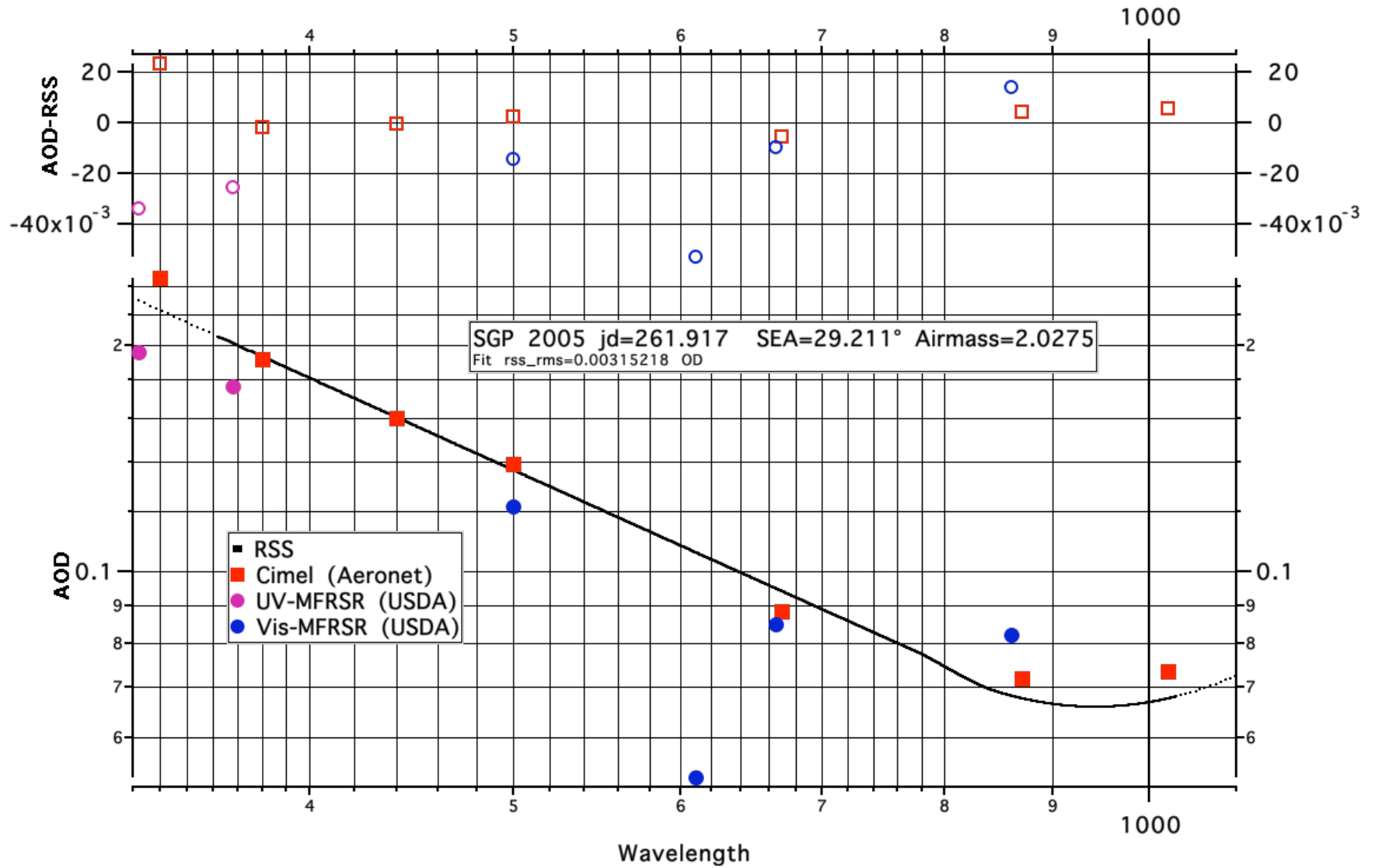
“good”

AOD retrieval from RSS105 360nm-1050nm

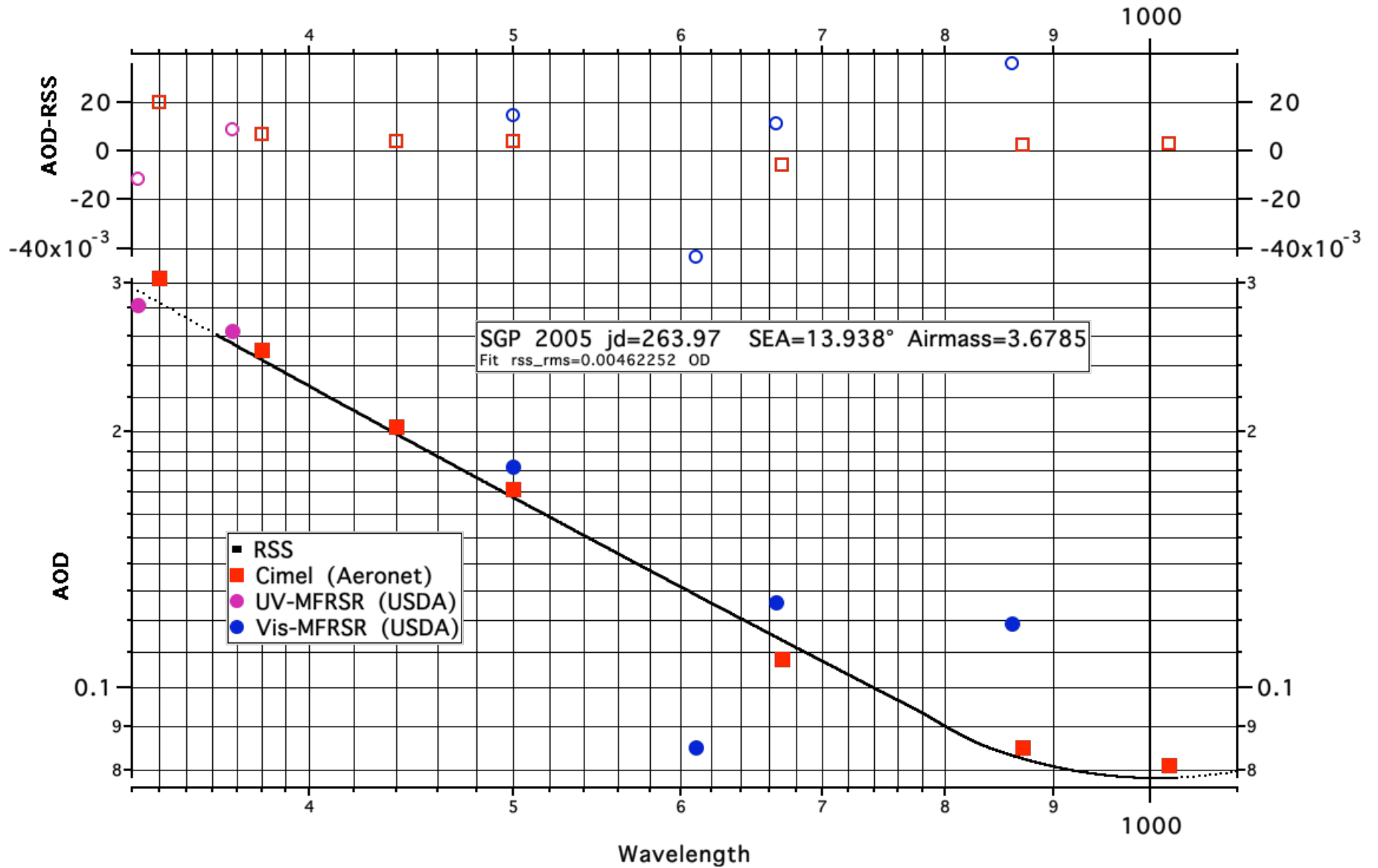


Ozone can be retrieved from Chappuis band but it may interfere with nonlinearity AOD function.

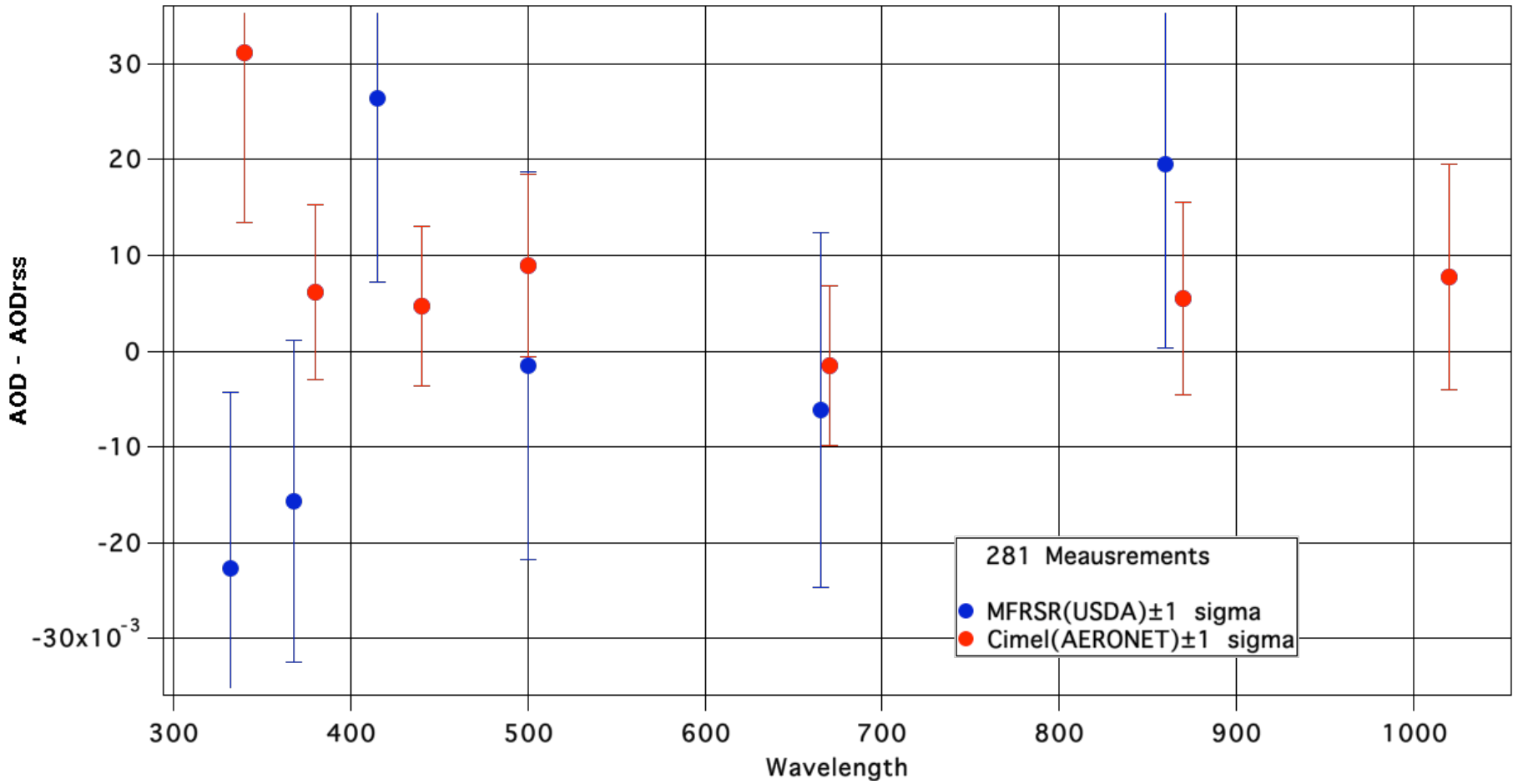
Examples from ALIVE 2005



Examples from ALIVE 2005



Bias and Standard Deviation



Pending data processing developments

- **On-line automatic calibration data processing!**
- **More comprehensive QC graphs!**
- On-line automatic Langley processing (VAP?)
- On-line automatic AOD retrieval (VAP?)
- Water vapor retrieval (VAP?)

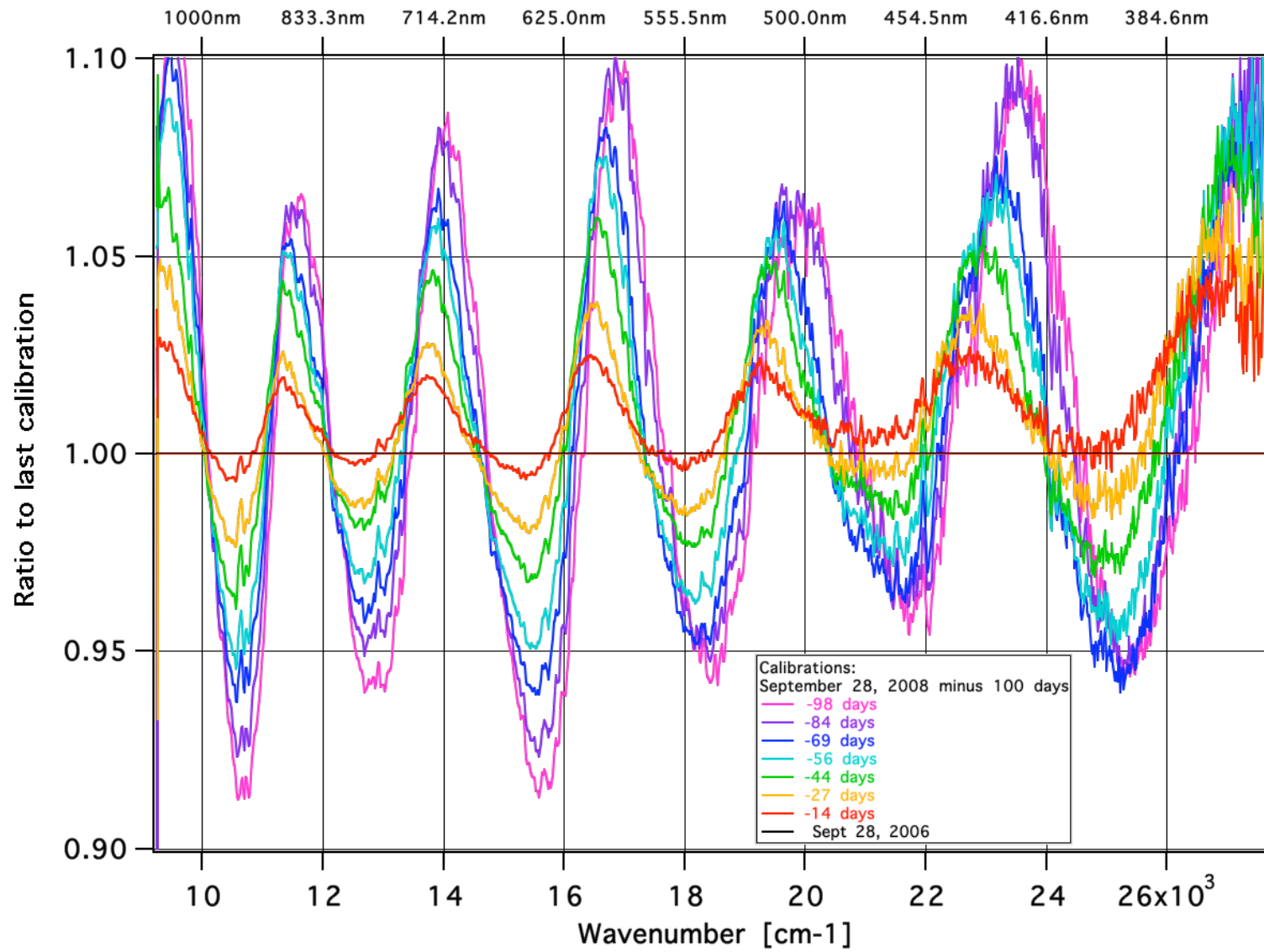
RSS Research possibilities

- **Verify mutual congruency of H₂O vapor bands (?)**
- **Develop robust NO₂ retrieval method (Scott Gianelli...)**
- **O₂ A-band studies (Qilong Min?)**
- **Single scattering albedo from Dir-to-Dif (Eli Mlawer?)**
- **Shortwave QME in transmittance and/or irradiance (Chris Gueymard...)**
- **Aerosol particle size distribution (?)**

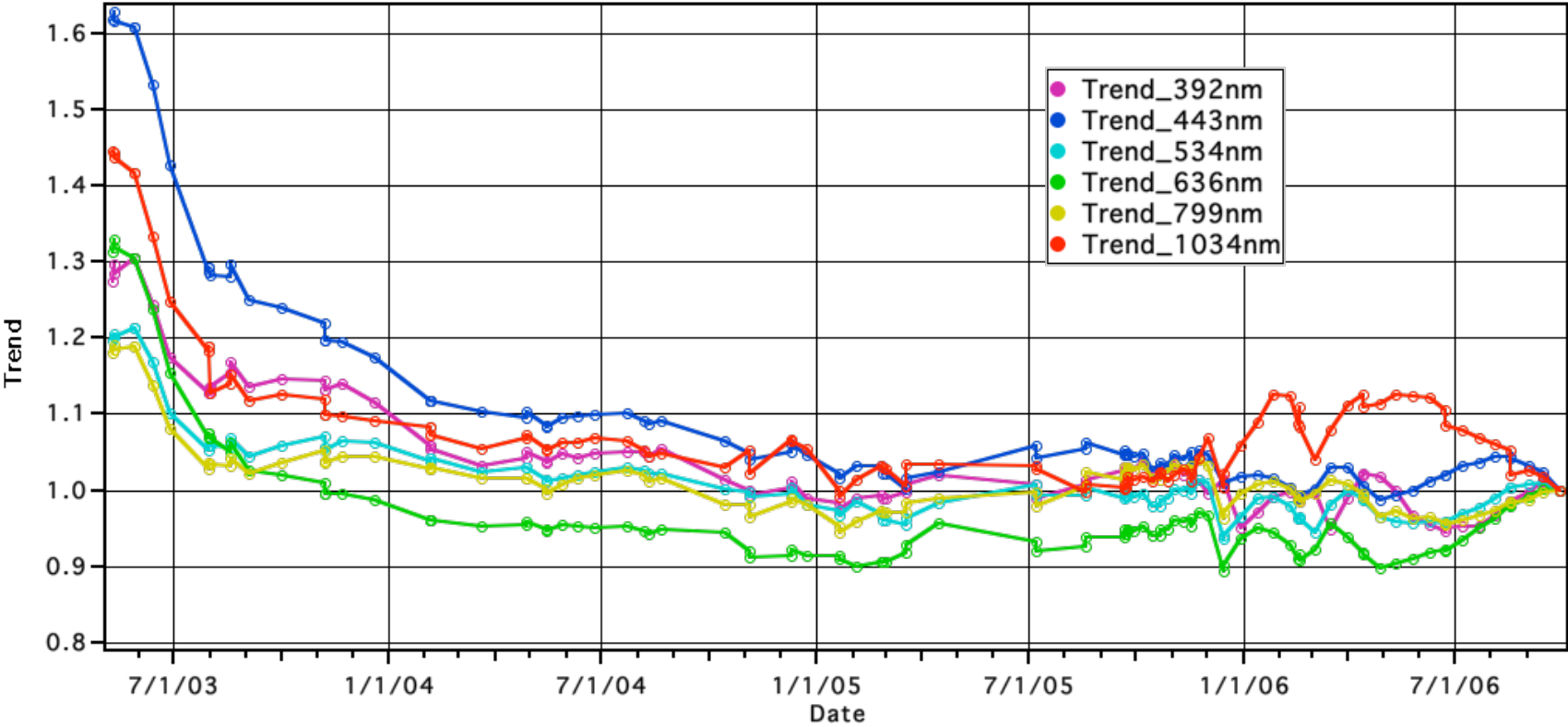
Persisting Instability

“bad”

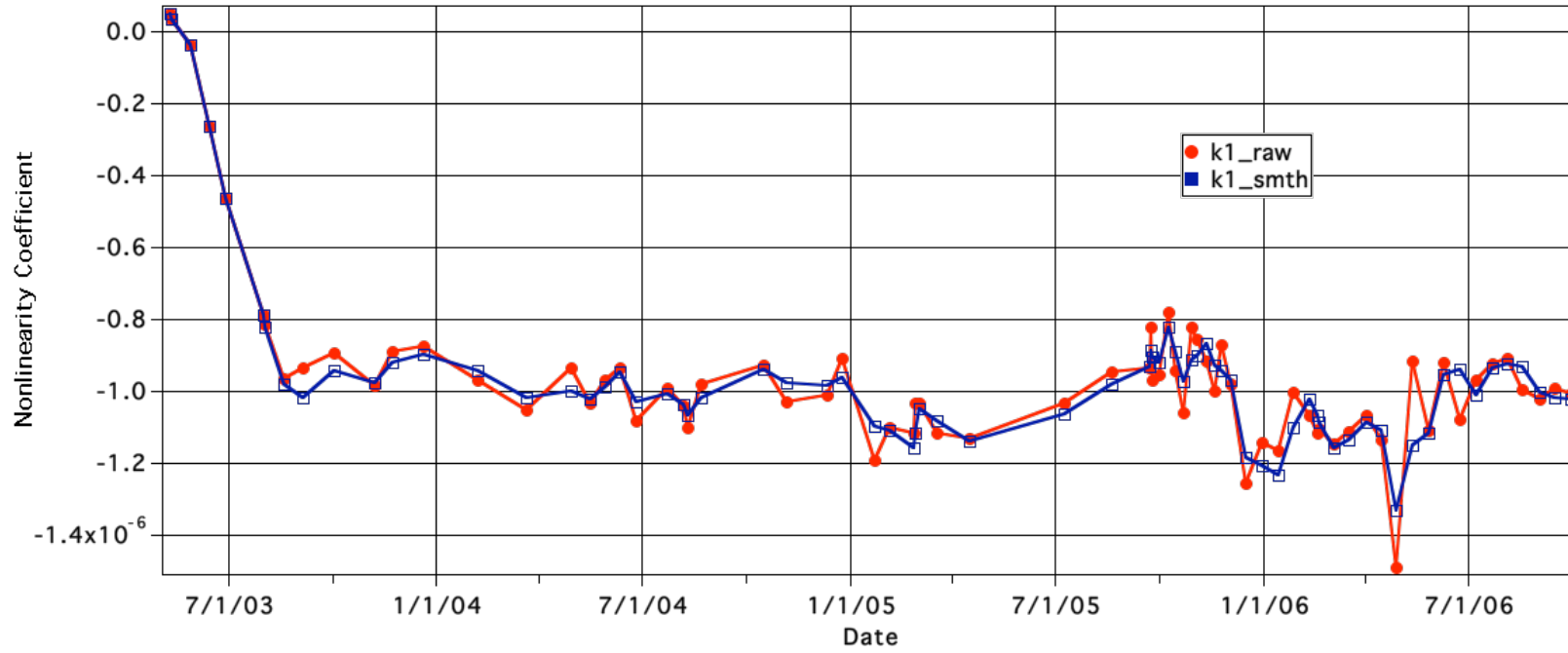
Responsivity Ratios



Responsivity Trends



Nonlinearity Trend



Questions

- **Should we make Langley calibration a VAP?**
- **Should we make AOD's from RSS a VAP?**
- **May we link QC's graphs to web pages?**
- **Should we overhaul RSS to fix the instability and more?**

(a) going off line for 2-3 months (≈\$70k)

(b) get new RSS (≈\$100k)

- run two RSS's together until the new one is running well (fixing it) (≈\$20k)

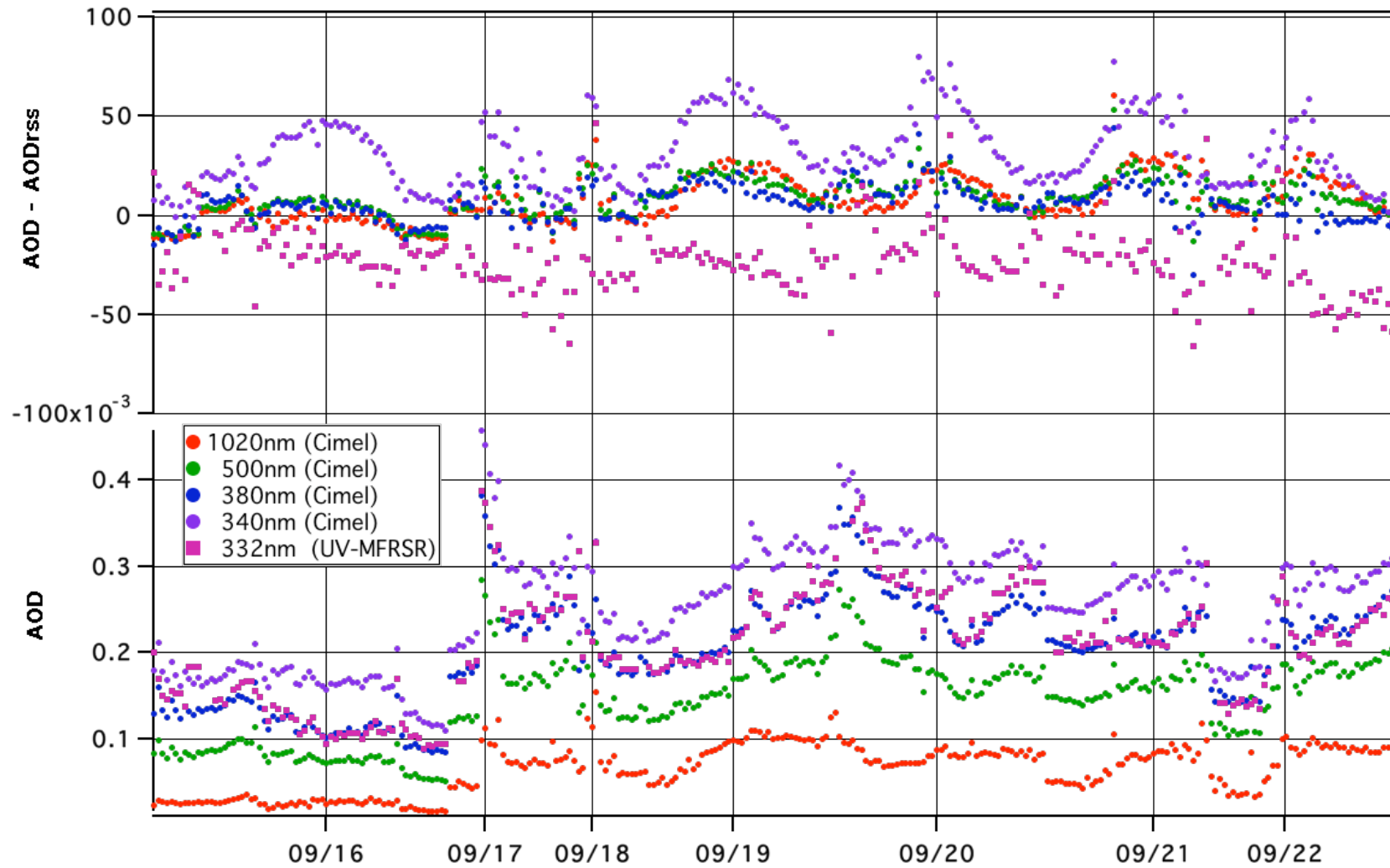
then fixing the old RSS (≈\$70k)

- retiring the old one (+\$0)

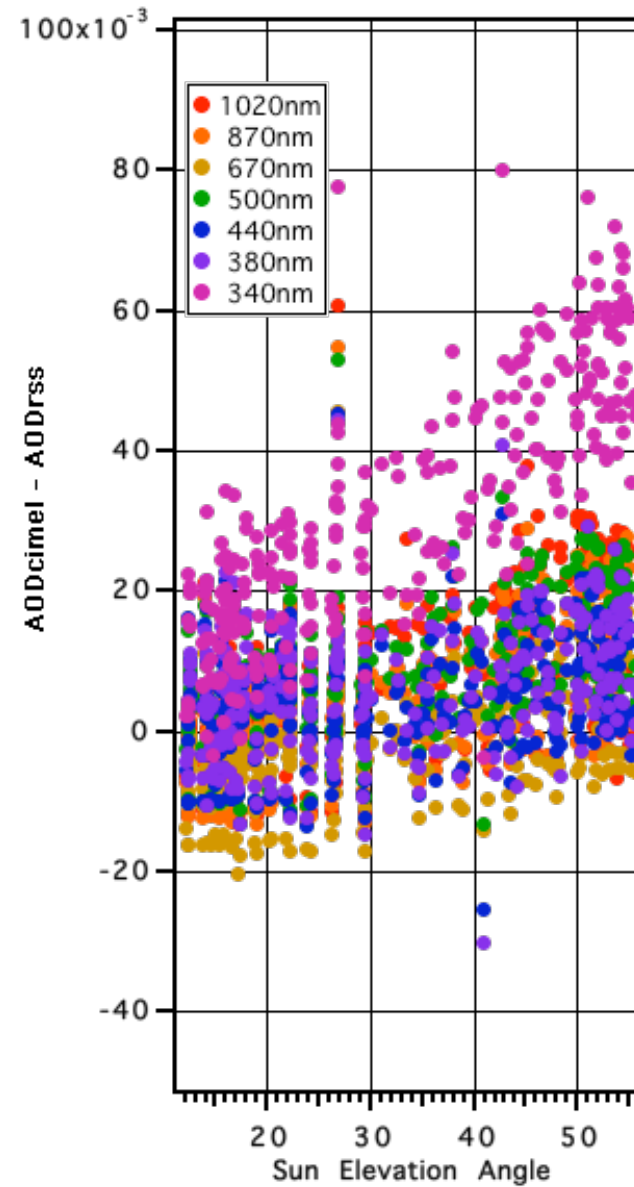
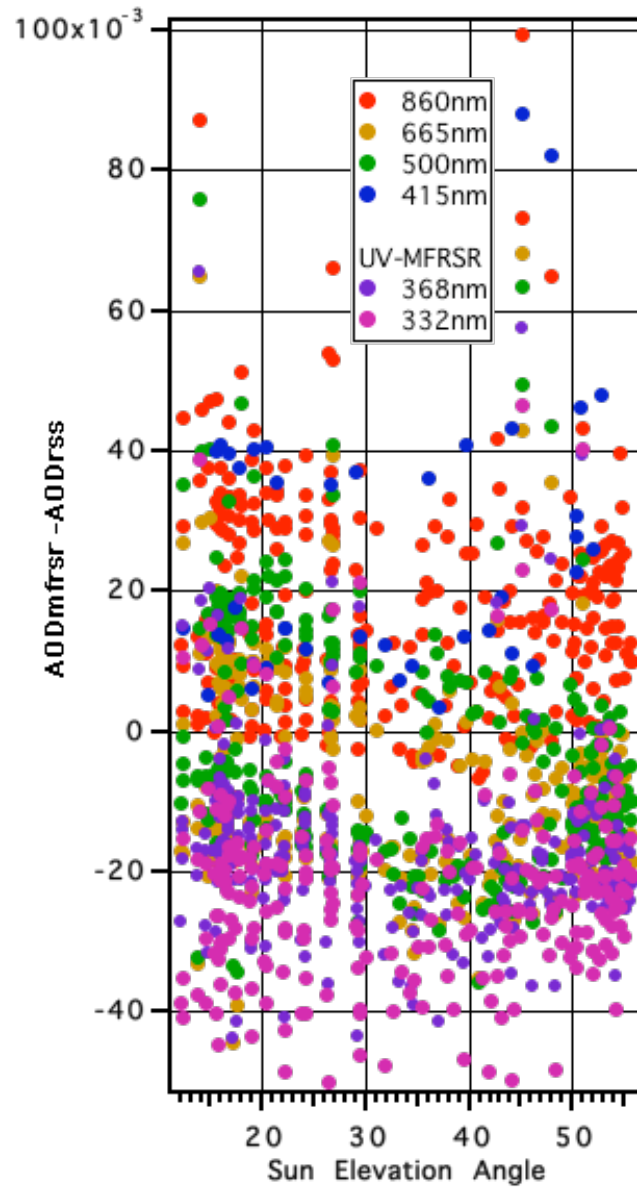
(c) do nothing and wait until RSS quits (\$0)

Extra Slides

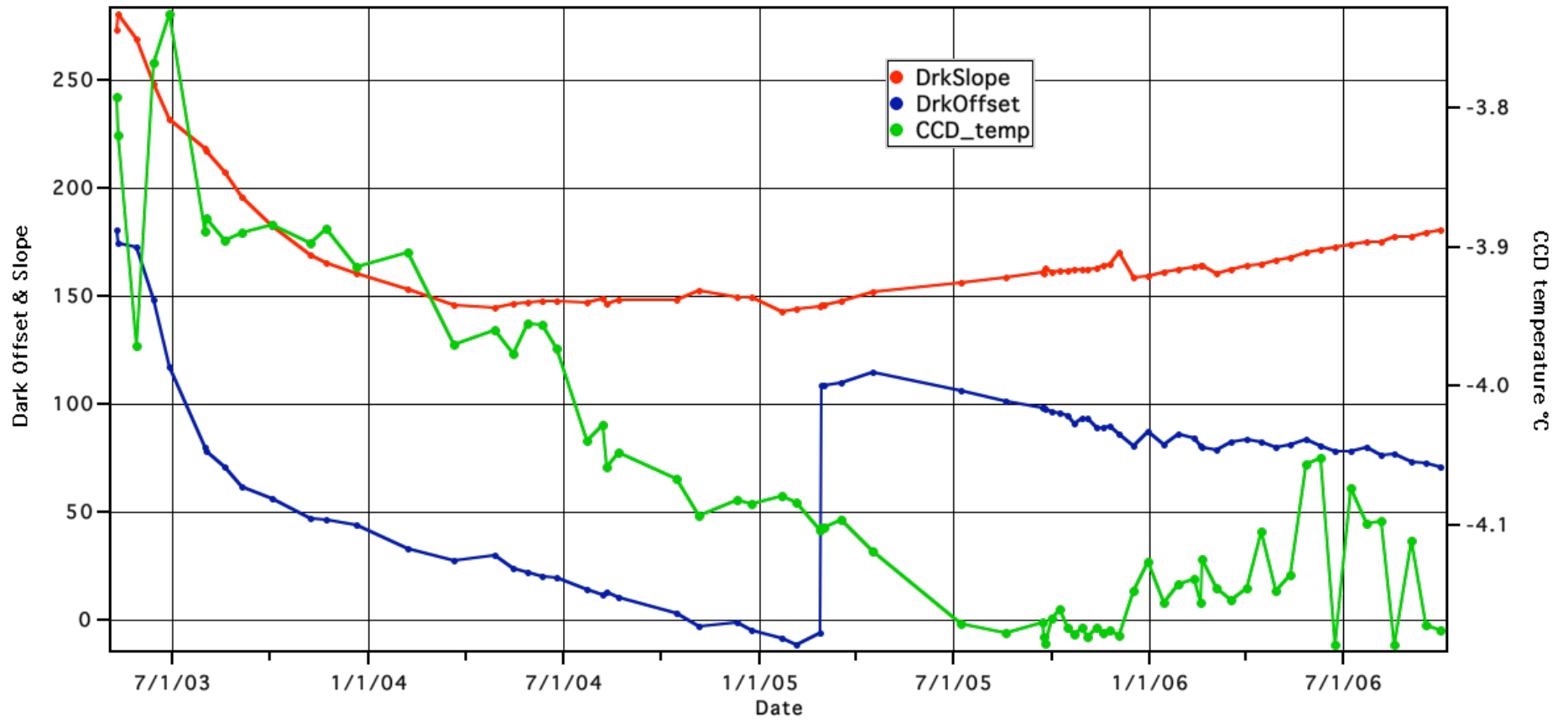
Six days in September 2005



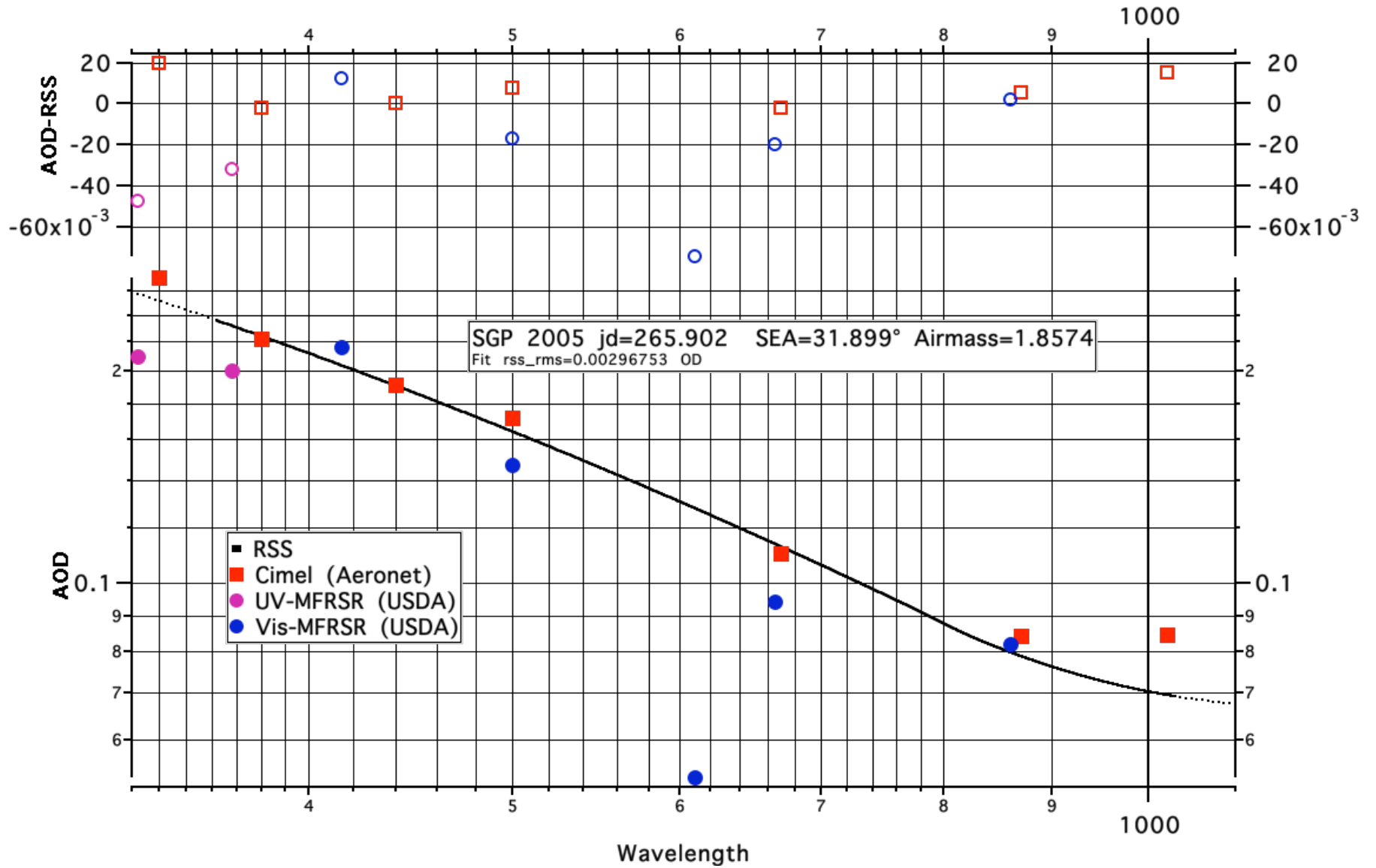
Sun Elevation Dependence



CCD Trends



Examples from ALIVE 2005



Examples from ALIVE 2005

