

---

# CATZ-I Summary

DelMarVa • August 29th, 2007

---

A very successful medium-size campaign was conducted on Aug 29th comprised of 4 on-track (day overpass in yellow) Cimel sites primarily located in Eastern MD, plus an additional Cimel collocated with the MPL (SMART) in Pennsylvania about 4 km off track (see image map). The Cimel locations were distributed about 12km apart.  $AOD_{500nm}$  was moderate (ranging from 0.4 - 0.5) for the day across the region.

The sites were within 50-150m of the projected overpass track. All sites acquired cloud-free or nearly cloud-free principal plane measurements about 5-10 minutes before the satellite overpass as well as numerous cloud-free AOD measurements over the course of the day including near overpass. Successfully retrieved almucantars were also acquired at the start of the day.

The conditions were frequently favorable for joint inversion purposes (minimal cloud contamination of principal plane measurements).

## Day overpass sites

Morgnec Road (Joel)

39° 13'57.20"N

76° 1'42.09"W

Church Hill Road (Mikhail)

39° 8'4.72"N

75° 59'47.73"W

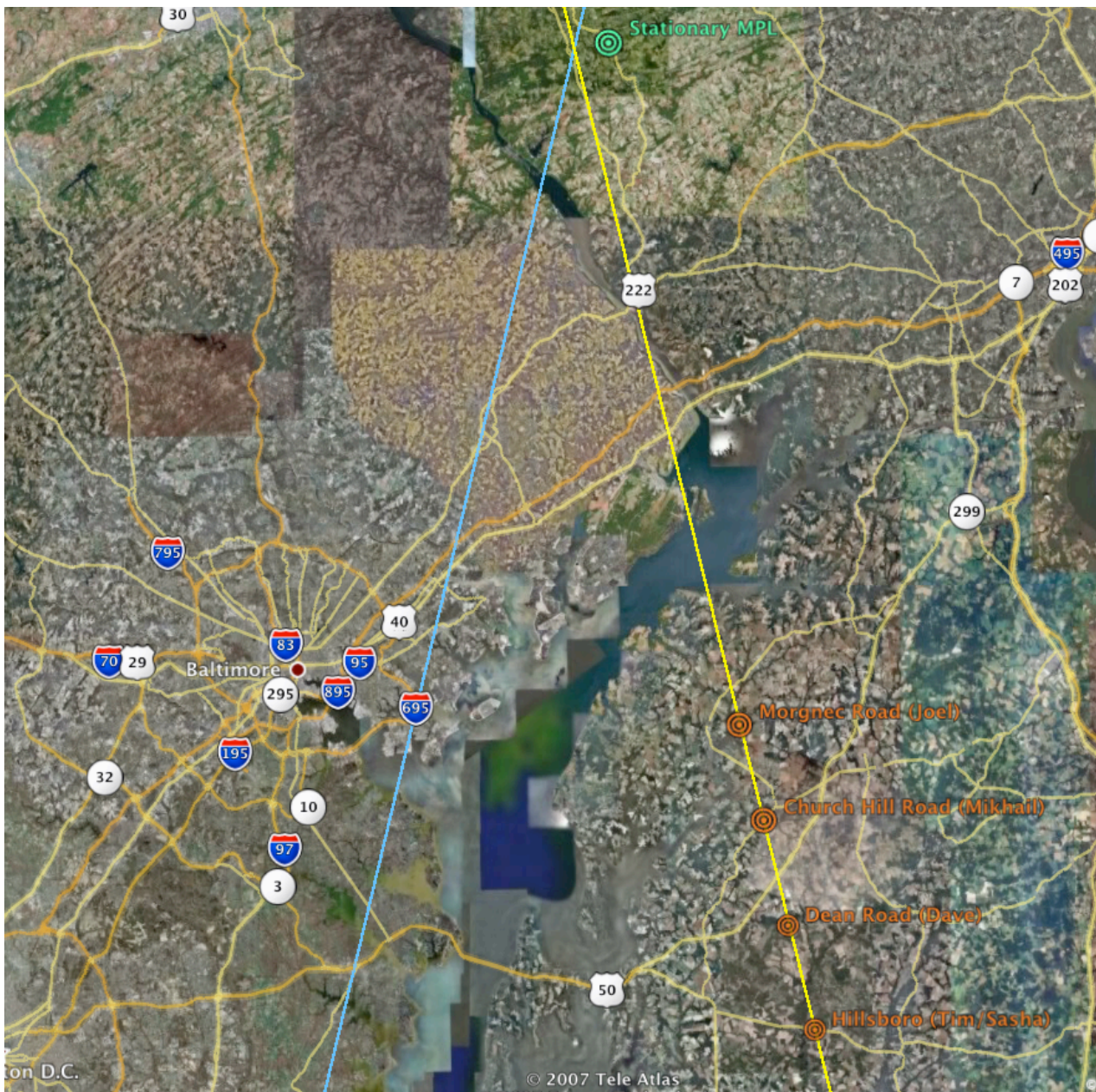
Dean Road (Dave)

39° 1'36.36"N

75° 57'55.71"W

Hillsboro (Sasha/Tad)  
38°55'10.27"N  
75°55'50.08"W

No lidar was involved. Tim Berkoff was prepped and ready to go, but we were unable to acquire a rental vehicle to transport it :( He was able to carry out his lunar photometry measurements as usual.



## Site Reports

### Morgnac:

Set-up @ 9:45

First manual almucantar- 9:55 Fully cloud-free conditions.

Cloud cover was quite variable all day. Mostly limited to a deck of thin cirrus haze, or small cumulus around the periphery.

10:00 Completely cloudless

11:00 Some scattered cumulus with hazy cirrus covering the solar disk and vicinity.

All AOD measurements have some cirrus contamination

From 11 to 12: A complete transition from nearly cloudless to 90% overcast back to cloudless in less than an hour.

11:50 Several very good -cloud-free- principal plane (PP) measurements followed by a very good almucantar

12:00 Clear, but with the faintest layer of uniform cirrus including the area of the solar disk

13:00 Clear, but with continued cirrus deck

14:00 Clear, cirrus dissipating

14:05 to 14:15- Most PP were perfect during this period with only a solitary small cumulus in the middle of the scan path

14:20 (Overpass) Cirrus fully gone. AOD measurements are all good through at least 15:00

15:00 Partly sunny, some shallow cumulus increasing, still no cirrus influencing AOD

16:15 Final almucantar (good quality), followed by PP (perfect)

### Hillsboro:

(notes Tad Anderson took during our joint endeavor)

Instrument #409 Hillsboro, near Butler Rd

Aug 29, 2007, CALIPSO overpass near Hilltop MD set up at corner of Hillsboro Rd and Butler Rd

10:30 EDT turn on Cimel, do almucantar, very clear

11:30 Ci approaching from west

11:45 thin Ci in front of sun

12:35 sun clear but still scat Ci all around

13:05 Ci in front of sun  
13:15 sun clear  
13:30 Ci in front of sun  
13:40 sun clear, scat Ci nearby  
14:00 sky mostly clear  
14:05 Prin. Plane scan (should be all clear)  
14:15 PP scan  
14:20 overpass (18:20 UTC), isolated Cirrocumulus near sun but not in front of sun  
14:25 PP scan; lots of scattered Ci (or maybe Altocumulus) toward back horizon  
14:28 sun blocked briefly by edge of Ci  
14:30 sun in clear again  
14:35 PP scan but Cirrocum on both sides of sun plus more on back horizon  
14:38 sun blocked briefly  
14:40 sun blocked by fairly thick Ci  
14:58 sun in clear (barely)  
15:00 back to auto mode operation of Cimel  
~ 15:20 shut down due to extensive, cumuliform clouds in all parts of sky  
- no chance for 4pm almucantar

#### Dean Road

I setup at the Ruthsburg community center near Dean Road (~130 meters from the predicted track). The day was characterized by light morning haze with cirrus and mid-level clouds developing and diminishing periodically throughout the day with cumulus forming later in the afternoon. The initial almucantar and principal planes should be good, while later principal planes were usually cloud contaminated at large scattering angles. A good principal plane may have been taken just before the overpass. The AOD measurements should be good at overpass time. The late principal plane and almucantars were not possible due to cumulus clouds blocking the sun.

#### Dave

##### Calipso\_Dean\_Rd:

EDT

9:30 - setup; taking AOD measurements

9:37 - ALM; clear skies with light haze

10:07 - ALM, clear skies with light haze

10:15 - PP, clear for PP; cirrus clouds developing

10:30 - PP, potential cirrus contamination near sun

10:58 - PP, some cirrus contamination at large scattering angles

11:04 - increasing cirrus coverage near sun

11:10 - PP; no cirrus near sun but cirrus contamination at large scattering angles

11:30 - cirrus overhead  
11:40 - cirrus and alto cumulus forming overhead  
12:05 - clouds diminishing near sun  
12:10 - remnant hydrated aerosols (twilight zone?) in wake of dissipating clouds; PP, no apparent cloud contamination  
12:17 - BCL\_SUN affected by cloud  
12:21 - PP; early scan OK but clouds formed near sun for later wavelengths  
12:23 - mid-level cumulus now redeveloping near sun  
12:26 - clouds near sun  
12:29 - altocumulus dissipating near sun  
12:36 - PP; some possible cloud contamination at large scattering angles  
12:39 - BCL\_SUN  
12:43 - PP; some possible cloud contamination at large scattering angles  
12:47 - BCL\_SUN resumed; cirrus and alto cumulus clouds developing overhead and near sun  
12:52 - started BCL\_SKY  
12:57 - resumed BCL\_SUN  
13:01 - clouds dissipating near sun  
13:13 - BCL\_SKY; significant altocumulus overhead and blocking sun  
13:27 - Resume BCL\_SUN  
13:30 - PP; light haze and clouds dissipating in most of principal plane; some cloud contamination at large scattering angles  
13:34 - resume BCL\_SUN  
13:41 - PP; cloud contamination at large scattering angles  
13:46 - BCL\_SUN - no clouds blocking sun  
13:50 - PP; some cloud contamination at large scattering angles  
13:55 - BCL\_SUN; no clouds blocking sun  
14:05 - PP; some clouds at large scattering angles  
14:10 - cirrus clouds developing near sun  
14:14 - PP; apparently no cloud contamination  
14:18 - BCL\_SUN; no clouds blocking sun but nearby  
14:20 - Overpass; clouds near but no blocking sun  
14:25 - PP; some cloud contamination at large scattering angles  
14:29 - BCL\_SUN; no clouds obscuring sun; light haze  
14:33 - clouds blocking sun  
14:40 - clouds dissipating near sun  
14:44 - PP; cloud contamination at large scattering angles  
14:48 - BCL\_SUN; clouds not obscuring sun  
15:00 - Automatic mode - clouds near sun and increasing in coverage  
15:07 - ALM - clouds in the east  
15:15 - PP - clouds in the east  
15:41 - Cumulus clouds blocking sun  
15:43 - Cumulus clouds developing overhead; start BCL\_SKY

15:45 - Almuqantar not possible

16:00 - Significant cumulus and cirrus clouds blocking sun; PP and ALM not possible

Church Hill Road:

Site location: 39.1326N 75.9991W

On east shoulder of Church Hill road, mowed off strip of field, no trees but one pole. Start measurements around 14:20GMT, clear sky, haze, cirrus-stratus and alto-cumulus on horizon around.

15:10GMT Low density, thin clouds move in against the sun.

15:20 Clear sky, haze.

16:40 Scattered developing cumulus.

17:10 Clear again.

18:10 Single thin cloud in SUN view.

19:00 clear in sun direction, scattered clouds around.

20:10 Finished the measurements after ALM and PP.

SERC- night measurements:

Due to equipment issues a lidar was not available for measurements (day or night). I did however, go to the top of the SERC tower for Cimel lunar measurements, approximately 1 km east of the nighttime track, and recorded several measurements. The conditions were partly cloudy at the time of overpass (07:16:32 UTC), but there was a clear opening a couple of minutes before and after when transmission measurements were possible. The Cimel will remain at SERC for routine day observations, and could be used again for future nighttime CALIPSO overpasses. The CALIPSO nighttime track is expected to pass very close to SERC every 16 days.

Tim