

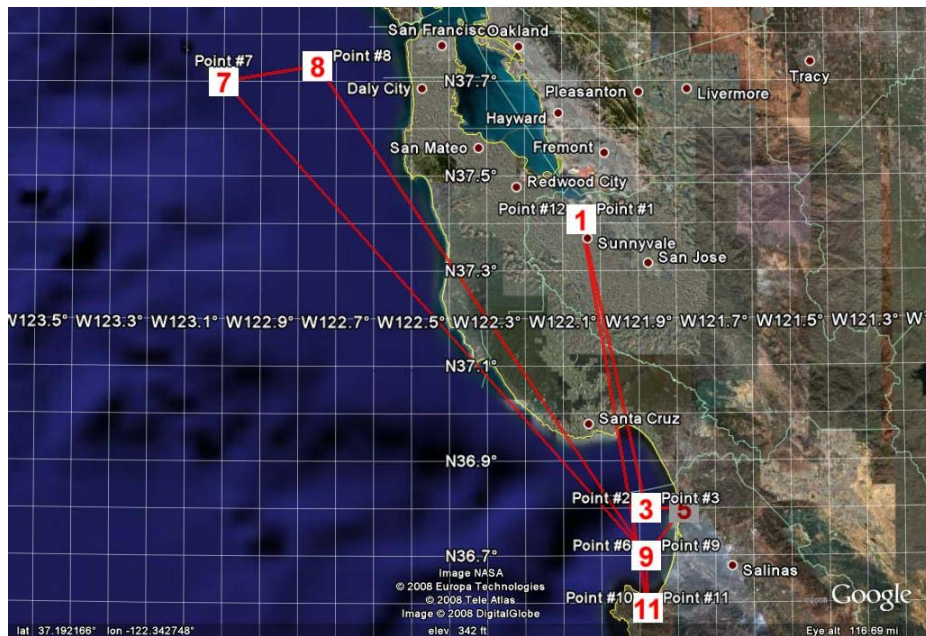
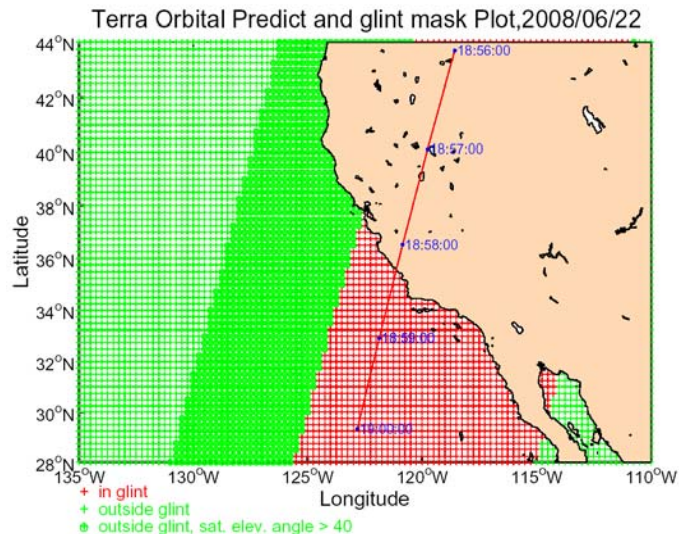
Flight Report

ARCTAS P-3B Data Flight 11, flown 22 Jun 2008 (Test/Science)

Submitted by Phil Russell

Objectives

- 1) Leak tests, other instrument preliminary checkout
- 2) Sample Moss Landing Power Plant plume
- 3) CAR circles, radiation legs
- 4) Look for ships & plumes near Farallon Islands & Golden Gate. Possible aerosol-cloud study.
- 5) AERONET, MPL comparison over NRL Monterey
- 6) CAR circles, radiation legs
- 7) Spiral up with radiosonde near Terra MODIS overpass time (1158 PDT)



Takeoff 1651 UT (0951 PDT). AATS measuring AOD(499 nm) ~0.15 on ground at Moffett Field (but unable to receive realtime nav data, so no realtime AODs on this flight). Moss Landing was clear on P-3 arrival, with power plant plume visible. P-3 circled plant several times & encountered CO & aerosol maxima (CO>500 ppb). Nearby stratus clouds were so brown they look like chocolate, because of Calif biomass fires. Large smoke column sighted rising S of Monterey Peninsula (Big Sur fire).

~1723 UT: Sampling near cloud boundaries in effort to get data for cloud-aerosol interaction study. PVM not responding to clouds—later discovered laser was off.

~1734-1740: 3 CAR circles over water; AATS tracking tests.

~1743: Heading inland to set up for CAR circles, CO ~500 ppb, aerosol peaks.

~1745-1753: 3 CAR circles over land.

~1756: 1,400 ft, at aerosol peak. O₃ ~93 ppb, CO ~540 ppb. Organics huge, ~11 µg/m³.

~1804: Heading toward Farallons; cloud penetrations for PVM tests.

~1807: CO ~337 ppb, particles peaking. Aerosol extinction ~700 Mm⁻¹ just above clouds.

While approaching Farallons above stratus top, we climbed to get a look ahead. Stratus extended to Farallons & Golden Gate; no breaks to allow P-3 to fly below stratus; ship study there not possible. Decided to head back to clearing over Monterey Bay.

While heading S over stratus, AIS display showed cargo ship YUEHE just off Santa Cruz & Point Ano Nuevo, heading N. AIS says : IMO9120750, 37 deg 02.5' N, 122 deg 36.48' W, heading for Oakland.

~1848: Several encounters of plume from ship YUEHE.

1858: MODIS Terra overpass.

1903: Low pass over Monterey Airport, next to NRL (with AERONET Cimel & MPL lidar). Monterey Airport is in hole in clouds. NRL released sonde near this time.

1905: Spiraling up over Airport. BB smoke column seen S of Monterey Peninsula. Brown clouds W of Monterey Peninsula.

1910: Elevated sulfate, GPS 8500 ft. Asian?

1921: GPS 18,100 ft. Pressure altitude 17,500 ft. Losing isokinetic flow. Increasing P-3 speed doesn't help.

1925: Isokinetic ratio = 0.78. Cause discovered: seat restricting exhaust line. Fixed.

1926: ATC altitude hold

1931: Resume climb, GPS 20,500 ft.

1934: GPS 23,000 ft. Aerosol, CO peak.

1935: Head S to try to sample BB smoke. GPS 24,300 ft.

1937: Isokinetic ratio 0.98. (Exhaust line fixed.)

1940: Over BB smoke off Big Sur coast.

1952: Descending to smoke over mountains. Big Sur?

1954: ATC won't let us descend into smoke, because of firefighting A/C in area. We're under ground control.

2000: GPS 9400 ft, heading for Ames.

2011: Land at Moffett Field.

Instrument Reports

AATS – 14 Worked well but was unable to receive nav data feed. (Next day reset A/C identity parameter; problem fixed)

AERO 3X Worked well, but experienced mirror degradation above 10K feet later in flight.

BBR Worked great, no issues

CAR Worked great, no issues

CCN Worked well, undergoing data quality check.

COBALT Worked great, no issues

HI GEAR Great flight, no issues

AMS Great flight, hose crimp found in flight and repaired

PDS Worked great, no issues

Reveal Xchat, iridium and RTMM worked well

SSFR Worked well, needs vacuum check

WFF Flight Report

Aircraft :	NASA P-3B
Operating Site(s) From / To :	KNUQ/KNUQ
Flight Date :	June 22, 2008
Flight Number / Data Flight # :	584/PCF/Science flight #11
Time out:	1645 (Z)
Time in:	2017 (Z)
Flight Time :	3.5
Flt Request # / PI:	8P301/ Phil Russell
Purpose of Flight :	Data [X] Ferry [] Functional Check [] Other []
Sensor Payload :	ARCTAS
Comments :	Aircraft is in an up status and ready for the next flight. Today's flight tested the ARCTAS instrument suite with all instruments operational and requiring only minor tweeking before the CARB flight scheduled for June 24. Today's flight included a Terra Modis underpass, marine boundary layer examination, powerplant and forest fire plumes, and check out of the AIS ship tracking system including a ship plume. BRDF's over water, land and clouds.

SUBMITTED BY: Dave Easmunt 22 June 2008

