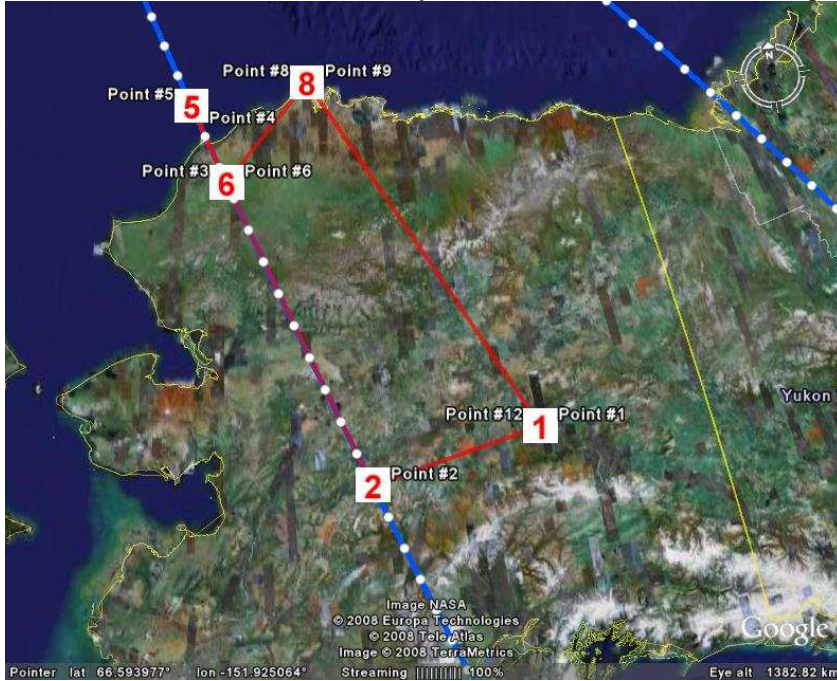


Flight Report
ARCTAS P-3B Flight 5, flown 6 Apr 2008
Submitted by Phil Russell

Goals: Sample along CALIPSO track. Fly radiometer legs high and low. Two spirals under CALIPSO with B200. Fly CAR circles over Elson Lagoon.



Planned flight track



Actual flight track

Takeoff 1929 UT. Encountered strong layer of CO (~350 ppb) and aerosols (high black carbon, apparently biomass burning) en route to CALIPSO track. Sampled 3 altitudes along CALIPSO track, plus 2 radiometer runs at 7500 m and 150 m. Made scientist-to-scientist IRIDIUM satphone contact with B200 before the radiometer legs.

For the first time attempted a square spiral for the descent between the 2 radiometer legs, in an effort to permit flux measurements for ~1 minute at each of 4 positions in each 360-degree turn. This appeared to work well for the flux radiometers (BBR & SSFR), but the first turn was sudden with a steep bank, causing AATS to lose tracking temporarily. B200 was in satphone contact for at least 50 minutes, providing verbal guidance on cloud and aerosol layer heights and apparent aerosol types.

Performed circular spiral ascent on the CALIPSO track, with CALIPSO overpass (2300 UT) during the spiral. AATS-measured AOD(499 nm) at bottom & top of spiral were 0.07 and 0.03, respectively. Aerosol layers sampled during descents and ascents included some evidence of dust. After working CALIPSO track, went to Elson Lagoon near Barrow and measured BRDF in CAR circles with the B200 above and AATS measuring AODs (0.065 at 6,000 ft, 0.10 at 640 ft). After completing the CAR circles, we followed guidance of B200 to look for an aerosol gradient north of Barrow, with increasing aerosol to the West. We found a small AOD increase, then headed home when it became constant.

Instrument Reports

AATS: Good flight, not perfect. Started tracking soon after takeoff & tracked for most of flight. Lost track in a quick, steeply banked turn when wing intercepted sun path. Regained tracking by flying short leg with tail to sun. Max AOD on flight: ~0.12. Request 8 hrs on plane tomorrow.

AERO3X: Some initial problems caused dirty mirrors. Did in-flight mirror cleaning 3 times. Got good extinction & scattering data on last low-level CAR circle. Lost some functionality in final climbout. Will remove instrument tomorrow; reinstall 2 hr before takeoff.

BBR: Worked well. Lost 5 minutes in computer glitch. Square spiral looks promising— data will tell.

CAR: First CAR science flight since Virginia. BRDF over Elson Lagoon at three levels (600 ft, 2000 ft and 6000 ft agl). Obtained excellent imagery of snow/ice features. Performed software tests for active roll correction. Prefers constant aircraft bank angle during BRDF. Will do cal from 8:00 tomorrow.

CCN: Ran entire flight. Data look good. Need ½ hr tomorrow.

COBALT: Very interesting pollution early: CO ~370 ppb. Had current supply dropout in turbulence. Will try to borrow from DACOM & also order replacement. Need power 8-noon tomorrow.

HiGEAR: Front rack: Least successful flight so far. Sampled cabin air on climbout. SP2 not recording at first (operator error). Venturi frozen at end. But still lots of data from instruments not mentioned. Need power 8-noon tomorrow. AMS: Working fine. LDMA was overheating.

PDS:.Worked well. Need few minutes after flight on APU to take data off.

REVEAL: Displayed some maps. RTMM in limited form. Good progress. Expect more next flight.

SSFR:.Worked fine whole flight.

WFF Flight Report

Aircraft :	NASA P-3B
Operating Site(s) From / To :	PAFA
Flight Date :	April 6, 2008
Flight Number :	545
Time out:	1923 (Z)
Time in:	0300 (Z)
Flight Time :	8.6
Flt Request # / PI:	8P301/ Phil Russell
Purpose of Flight :	Data [X] Ferry [] Functional Check [] Other []
Sensor Payload :	ARCTAS
Comments :	Today's science flight was fully successful and included an inter-comparison flight between the B-200 and the P-3 under a CALIPSO overpass. At this time the next scheduled flight is targeted for Tuesday and will either be a local science flight or a trip to Thule. This decision will be made by 11:00 AKDT tomorrow.

SUBMITTED BY: Cate Fairchild 6 April, 2008

Flight Hours for ARCTAS Campaign

Flight	Date	Flight #	Duration (hr)	Remaining Hours*
<i>Total Allocated</i>				75
Engineering Check Flt 1	3/14/2008	535	2.8	72.2
Engineering Check Flt 2	3/24/2008	537	2.3 (1.0)*	71.2
Project Check Flight 1	3/25/2008	536	3.0	68.2
Project Check Flight 2	3/27/2008	538	3.4	64.8
Transit to Yellowknife	3/31/2008	541	7.6	57.2
Transit to Fairbanks	4/1/04	542	6.5	50.7
Functional check flight	4/5/08	546	0.5**	50.7
Science flight	4/6/08	545	8.6	42.1

* Science only charged 1 hour for ECF #2

** Science not charged for 4/5/08 functional check flight