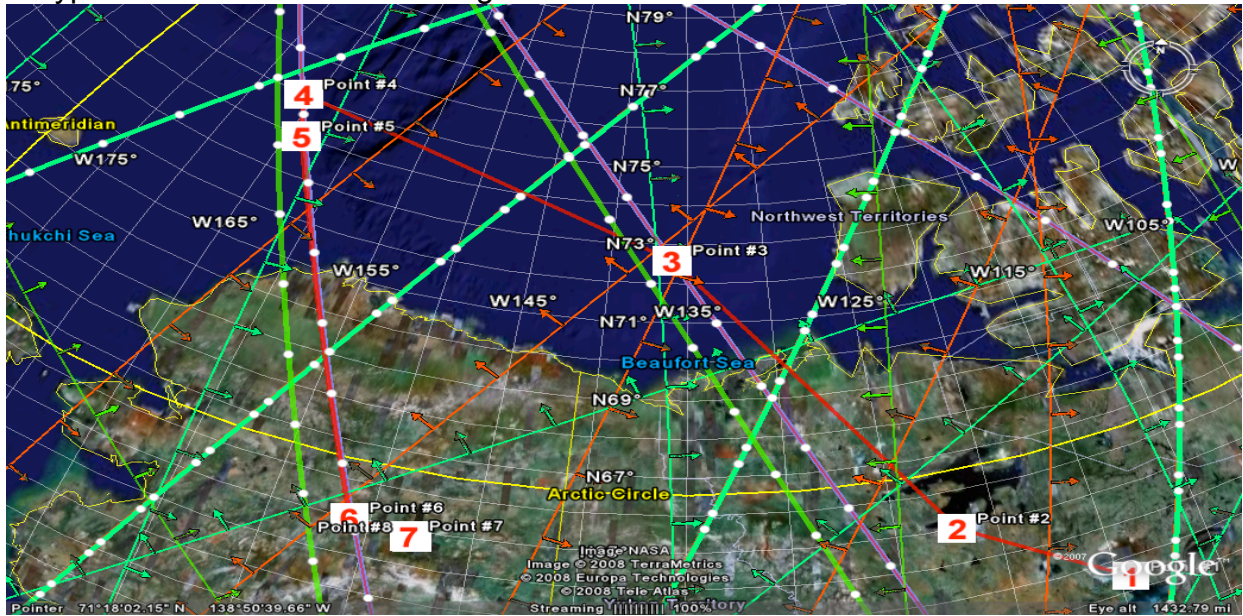


ARCTAS P-3 Flight of 1 Apr 2008 (Transit/Science)
WFF Flight Number: 542
 Submitted by Phil Russell

Goals: Sample haze East & North of Alaska, find & work cloud-free area near A-Train tracks. Depending on clouds, follow Track 10 back toward Fairbanks, or work between Waypoints 4 and 3 before heading to Fairbanks.

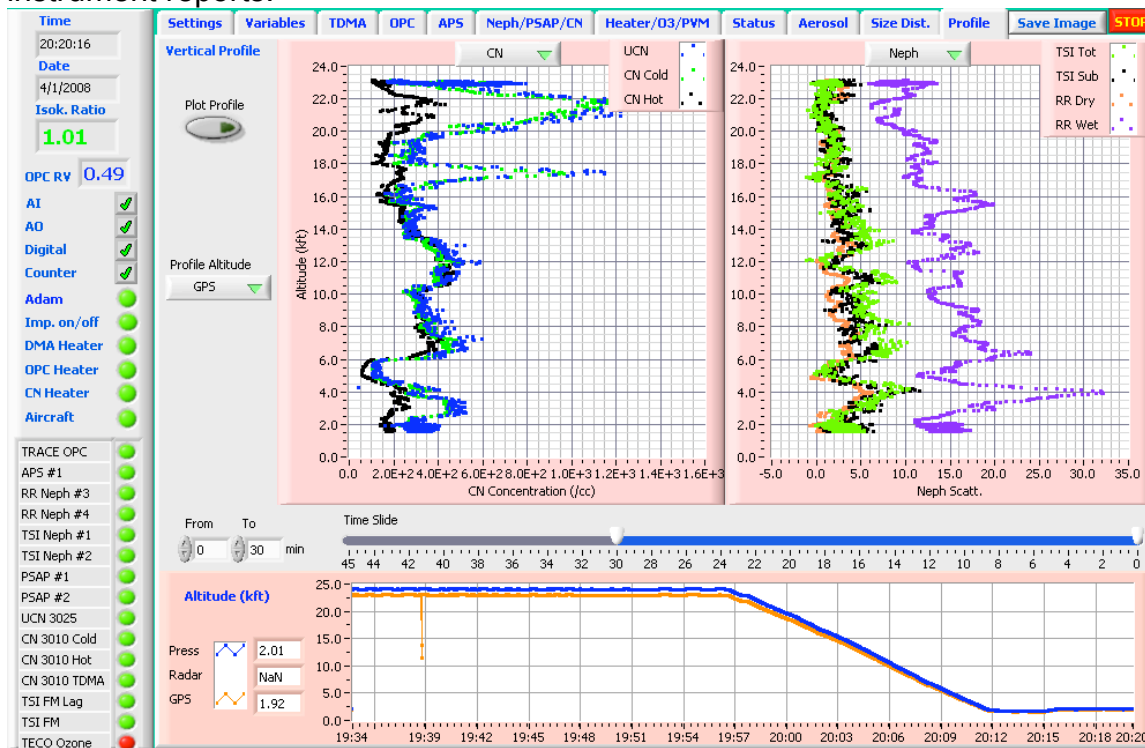


Planned flight track. A-Train tracks (purple, green) thru Waypoint 3 are Track 8 at ~2048 UT. A-Train points thru Waypoints 4 & 5 are Track 10 at ~2237 UT, SZA ~67°. Terra points (green with orange FOV) nearest Barrow are Track 10 at ~2218 UT, SZA ~66°.

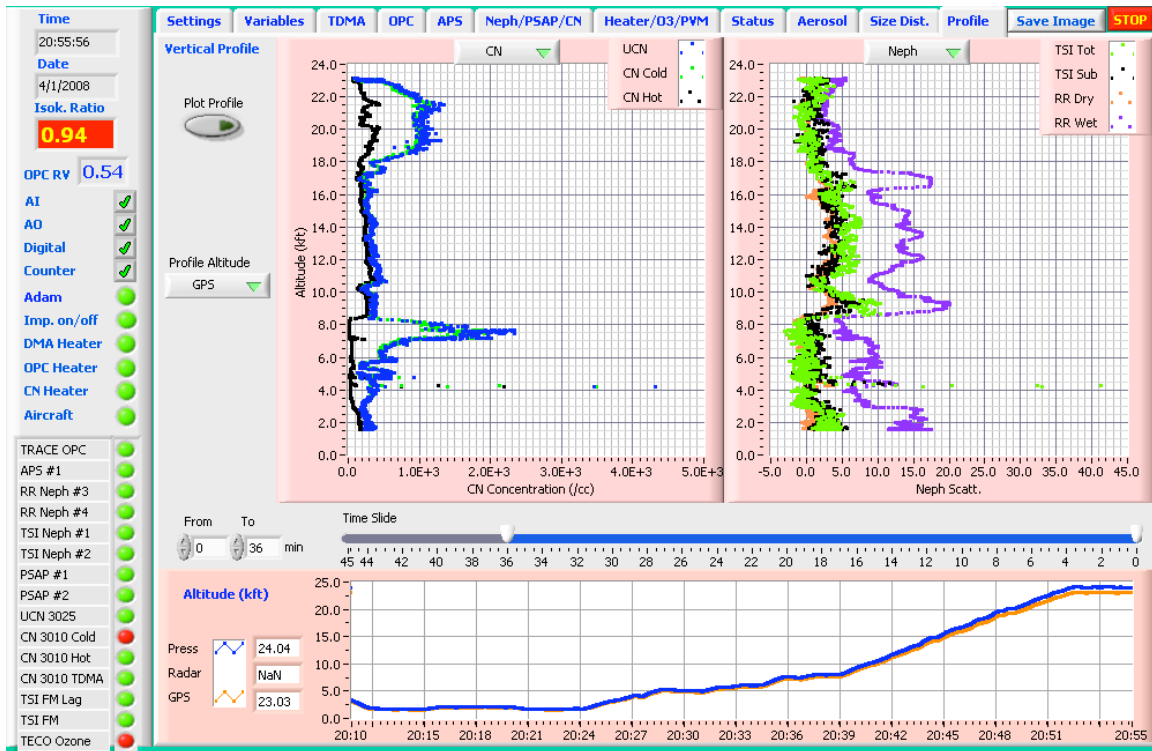


Actual flight track

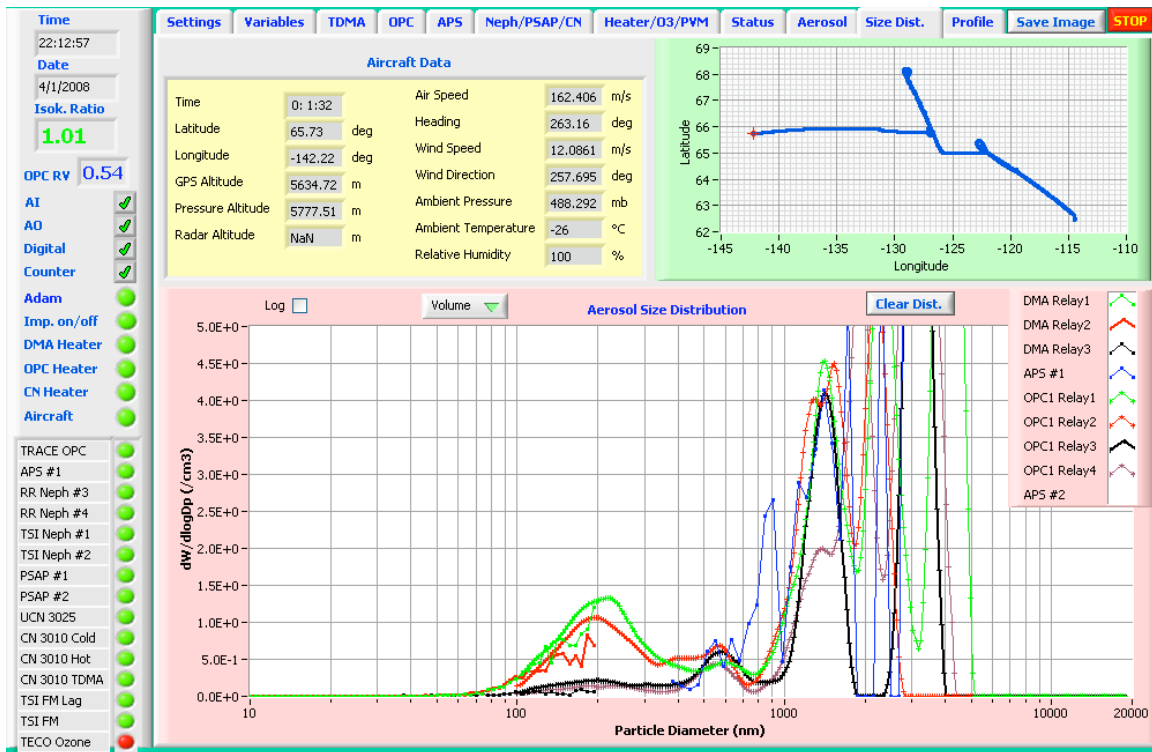
This was the most successful P-3 flight yet in ARCTAS. We found and sampled a predicted plume of CO and aerosols near Waypoint 2, found clear air over CALIPSO Track 8 and flew spirals and horizontal legs there, with 1 spiral in progress at CALIPSO overflight time. Thereafter we transited to CALIPSO Track 10 and did some sampling there under clouds before heading to Fairbanks. We were hampered by a lack of onboard cloud imagery, which caused us to reverse direction when we encountered persistent cloud when heading for a predicted clear spot at Waypoint 3. (We couldn't tell whether proceeding on plan would have brought us to a clear spot where predicted.) Most instruments performed well. See HiGEAR examples below, followed by the instrument reports.



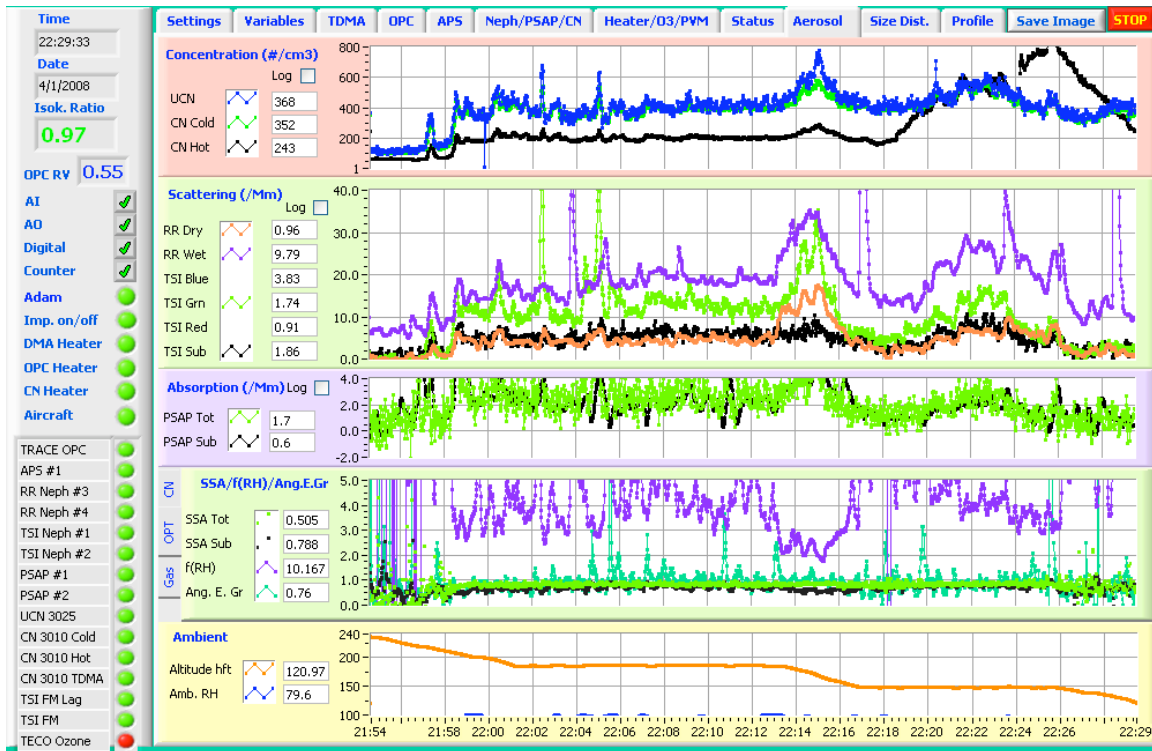
HiGEAR data from 20:20 - full profile CN & Scattering



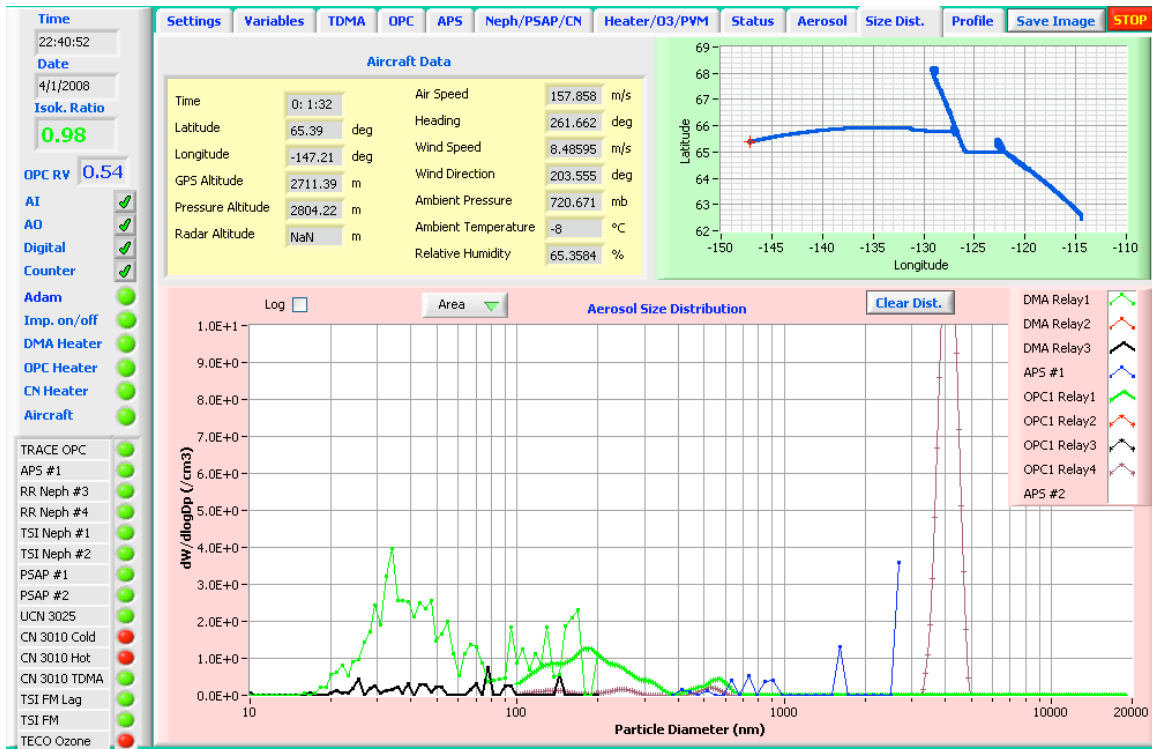
HiGEAR data from 20:55 - full profile CN & Scattering (number & scattering are out of phase at 7-10kft)



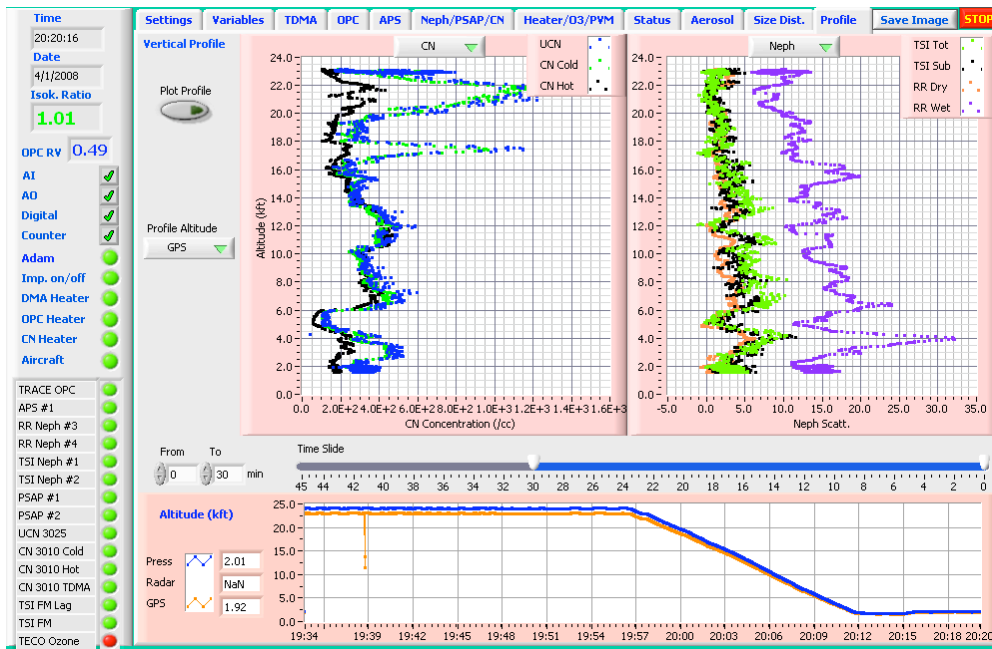
HiGEAR data from 22:12 - ~2 ug/m dust



HiGEAR data from 22:29 - 50% coarse mode scattering



HiGEAR data from 22:40 - Internal versus external mixing. All refractory number (~30 /cm³) are in the Aitken mode (DMA relay 3; OPC relay 4). These are likely internally mixed with the accumulation mode particles. Volatile Aitken mode number (~300) are probably homogeneous and externally mixed.



HiGEAR data from 22:29 - 50% coarse mode scattering

Instrument Reports

AATS: Tracked sun & measured AODs 5.5 hrs of flight. Initial tracking problem on runway was probably caused by faint sun. Tracked on runway after sun brightened.

AERO3X: f(RH) & aethalometer working. No extinction measurement because of dirty mirrors.

BBR: Worked fine whole flight.

CAR: Not operated on transit flights. But arrived in good shape. Doing ground dry run.

CCN:.Fine entire flight.

COBALT: Worked well, found CO plumes.

HiGEAR

Front: Sampling cabin air on climbout; after that everything worked well. Found interesting dust, often at high RH.

Rear (AMS): Seemed to work well.

PDS:.Everything went well. Will download serial data tomorrow.

REVEAL: No report.

SSFR: Worked well.

WFF Flight Report

Aircraft :	NASA P-3B
Operating Site(s) From / To :	CYZF / PAFA
Flight Date :	April 1, 2008
Flight Number :	542
Time out:	1659 (Z)
Time in:	2331 (Z)
Flight Time :	6.5
Flt Request # / PI:	8P301/ Phil Russell
Purpose of Flight :	Data [] Ferry [X] Functional Check [] Other []
Sensor Payload :	ARCTAS
Comments :	Transit/science flight from Yellowknife Canada (CZYF) to Fairbanks, AK (PAFA). The aircraft and all instruments (including AATS-14) performed well during the flight. Unfortunately the elevator was damaged while the aircraft was being pushed into the hangar. A replacement part is being shipped from Aero Union and should arrive and be installed tomorrow. A functional check flight is planned for Thursday and a science flight to Thule is scheduled for Friday.

SUBMITTED BY: Cate Fairchild 1 April, 2008

Flight Hours for ARCTAS Campaign

Flight	Date	Flight #	Duration (hr)	Remaining Hours*
<i>Total Allocated</i>				<i>75</i>
Engineering Check Flt	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

* Science only charged 1 hour for ECF #2,