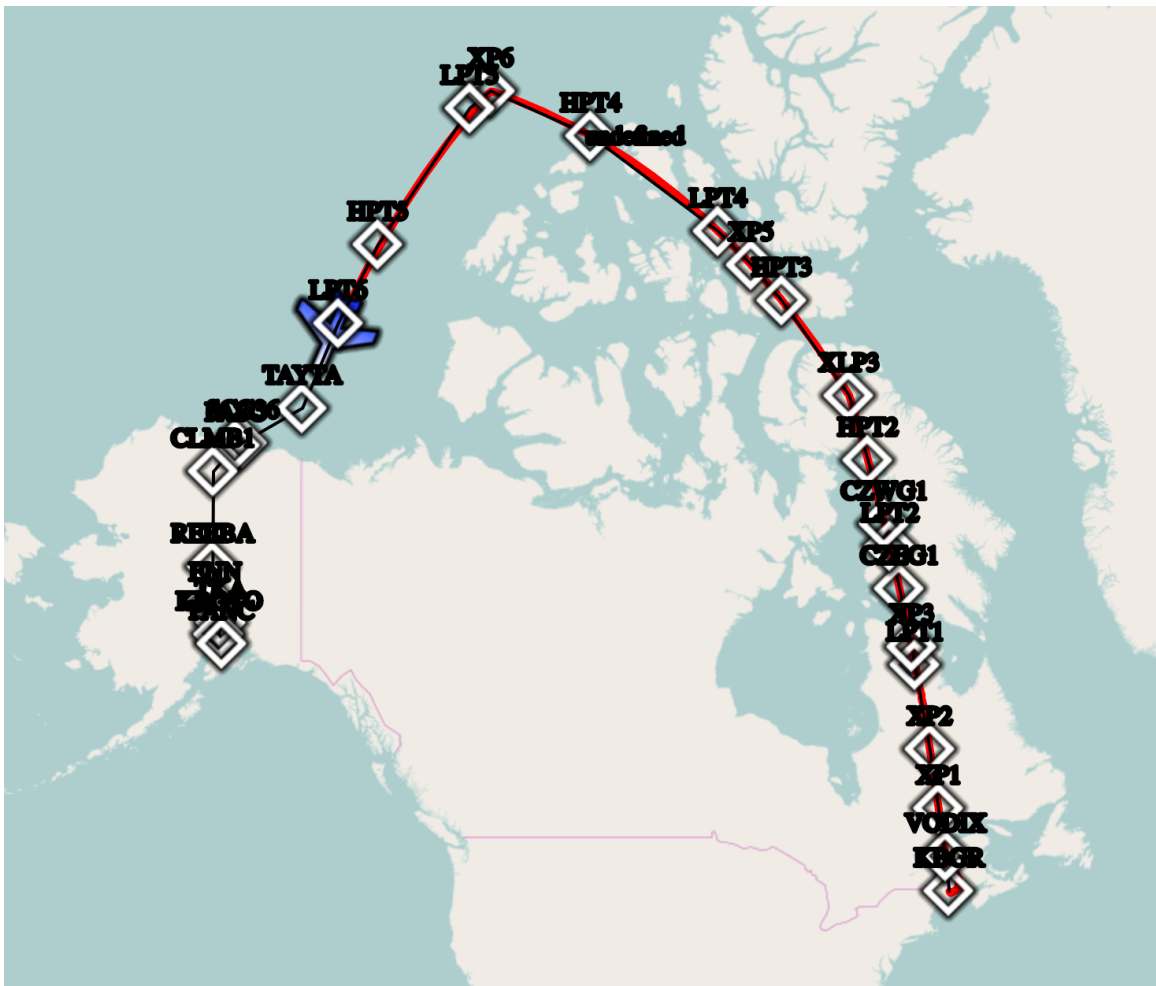
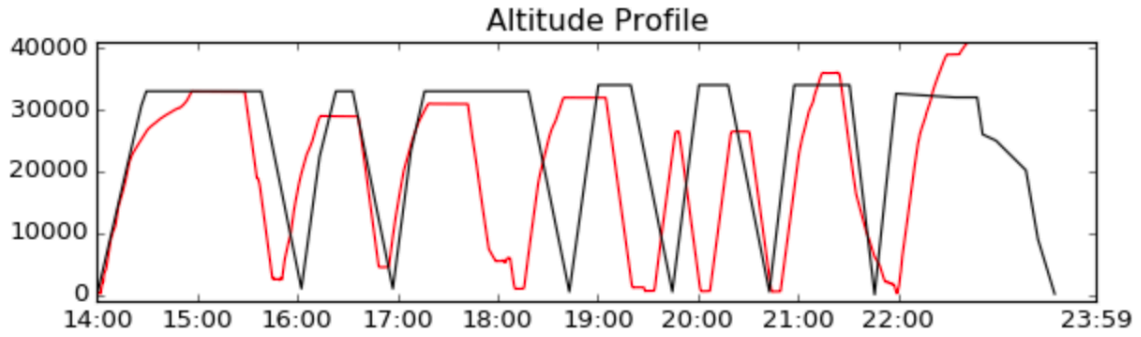


KBGR-PANC

On-time takeoff 14:02 LT (10:02 UT)

- Departure from Bangor in hard rain and gusty conditions. Zenith CAFS not working this morning. Plan to pull instrument tonight to repair. SP2 has read error on housekeeping channel.
- Very fast tail winds at FL300 –50-70 m/s. Forecast for clearing almost perfect, first below; then above.
- *Profile 1.* Picked our way through cloud on our way down to 1000 ft. 5 min at 1000 ft over rivers, ponds. Ponds/Lakes frozen, freezing, or still ice free. Lots of dead evergreens.
- Climb out thru a stratospheric fold. FL200 enter lower stratosphere. Level at FL290. QCLS had a hiccup, reset at 16:25 UTC. Exit stratosphere at FL290 before descent.
- *Profile 2.* Descend thru cirrus, broken below. Some biomass burning on descent. Unbroken stratus at 4kft – unable to get down.
- Climb out. Lower stratosphere (220 ppb ozone) at FL310.
- *Profile 3.* Exit stratosphere ~30kft. Lots of structure in CO₂ and CH₄. Reduced descent rate and arrived at Northwest passage at 500'. Mixture of ice and some open water.
- Ascend over Devon Island. Tropopause seems a bit higher here. Lots of structure in O₃, NO_y, CH₄ in the lower stratosphere here.
- *Profile 4.* Starting down just before 80N. Left the stratosphere behind at FL300. Biomass burning plumes around 15kft. Very thin. Level at 1000'. Clear and we proceeded to 500' for 5 min. Sun has just set.
- Ascend to FL265 to stay VFR and descend. Lower stratosphere sampled. Sun rise.
- *Profile 5.* Hit several biomass burning plumes at 20kft. Very low wind speeds here. Sun has just set again. Open leads here.
- Ascend to FL265 again. Sun rise. Lots of structure in CO₂ and CH₄ just below the tropopause. Skimming along the tropopause on this leg. A little biomass burning signals at flight level.
- *Profile 6.* Lots of sharp biomass burning features on descent. Cloud deck at 6kft. Sea ice here is nearly complete. Small particles here. Climbing to FL360.
- Sampled well into the lower stratosphere. 300 ppb ozone; 1.2 ppb NO_y. Interesting that NO_y isn't as well correlated with N₂O as O₃ is.
- *Profile 7.* Deadhorse missed approach. Very clear along Alaska coast. Sea ice is thin here. Almost no wind (4 m/s at 7kft). PALMS reports that sea salt has been nearly fully processed by HNO₃ (Chloride displacement by nitrate). Missed approach at 100 ft AGL. 10 ppb NO_y at surface (very shallow bl). Black carbon is a large fraction of total aerosol.
- Climb to FL390 and then to FL410. 320 ppb ozone; particles are 50:50 strat/trop according to PALMS.



Debrief

CAFS – Only nadir spectrometer works.

NOy – good.
DLH– good.
Picarro good.
QCLS good flight; lost 20 min due to ‘fitting’ issue.
SAGA good.
Panther/PFP/UCATs. good.
AO2/Medusa. good.
GT-CIMS good.
NOAA CIMS good.
WAS good.
MMS good.
TOGA – great.
AMP- good.
CAPS good. some fogging issues.
PALMS. good.
ATHOS. good.
ISAF. good.
SP2 – good.
HRAMS. good.
CITCIMS. good.

We had very good luck on this flight – both weather and ATC accommodating. With one exception, we achieved boundary layer to lower stratospheric sampling on each of the six profiles. Some biomass burning signatures were observed in the mid-trop over much of the trip.

Glacial valley on Northern Baffin Island. 72.9947N, 82.1327W. Photo – Paul Newman

