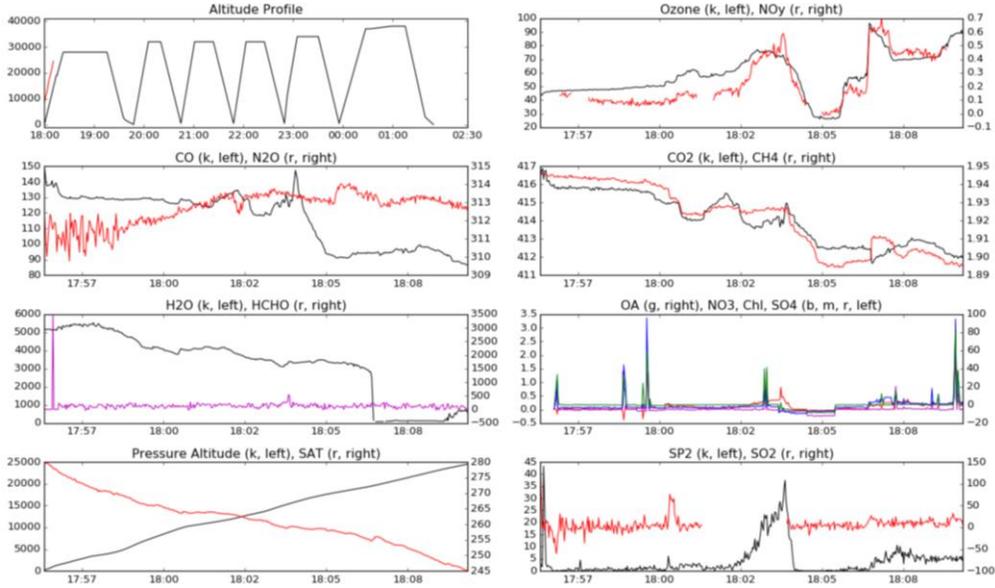


RF03 Log 2018-04-29
Prather

1755 Rotation



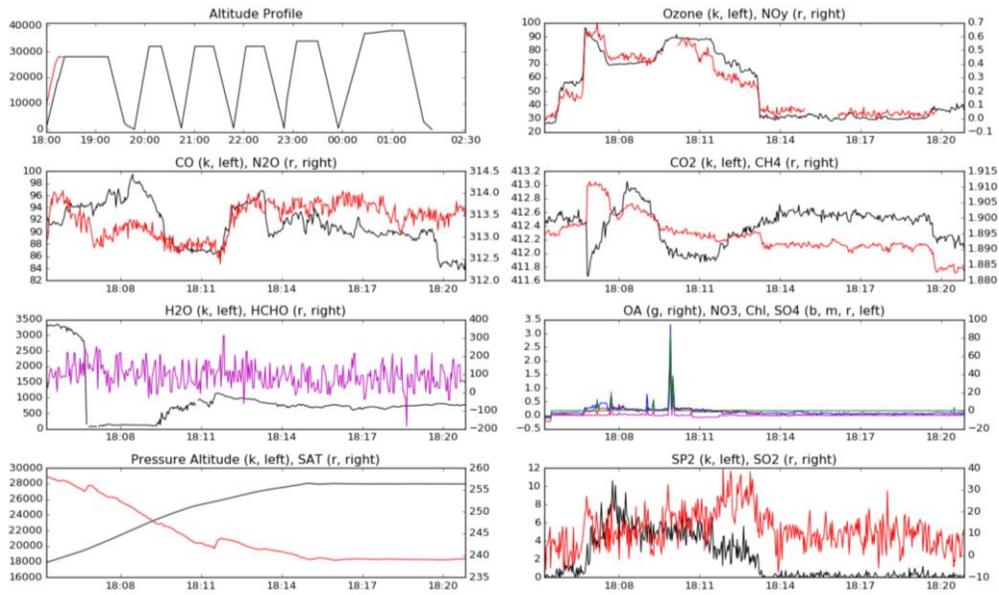
1757- O3 rises from 40 to 75 (15 kft) then drops to tropical 25 ppb (1805, 18 kft), then back up to the climb (90 at 20 kft). SP2 rises up to the O3 drop! does not pick up much after O3 rises,. Not quite a wofsy-dish.



1807 Where, O3 jumps to 90, H2O drops dramatically, and CO2/CH4 hiccup also. H2O recovers (1810) when O3 peaks again at 90.

1806-1815 CO2/CH4 drop into the 30 ppb O3 layer, but continue to drop after O3 up to 90+, O3 back down to sub-tropical 30 ppb for this, climbing to 28 kft

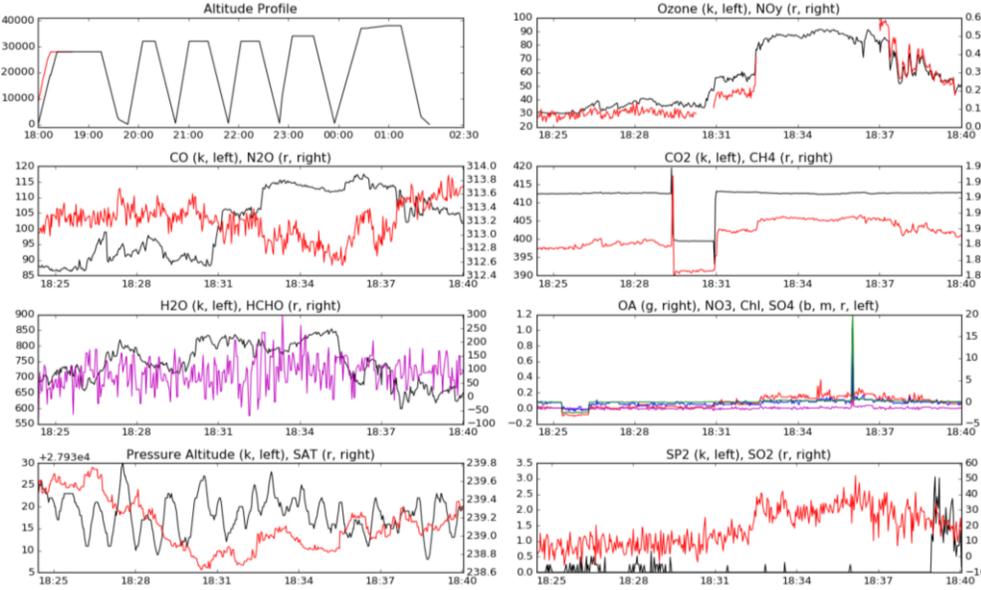
1820 RH_i >110%



1823 in hazy sunlight, out of deep cloud. cams are still no details
 1831 clear the clouds, blue sky



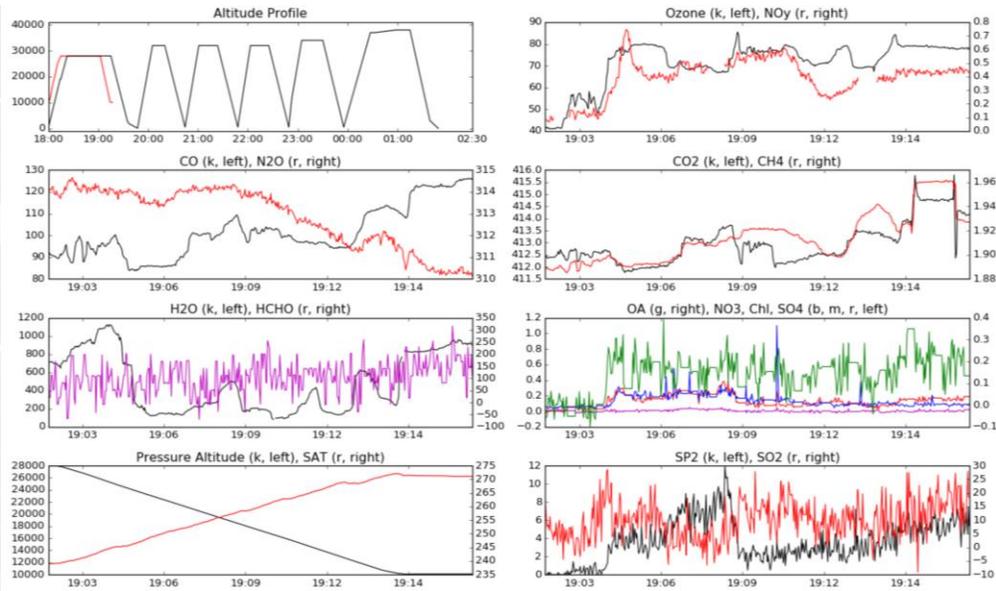
1813 (27 kft) – 1829 (28 kft) very homogeneous chemistry (see above)
 1831-1834 begin slow rise of O3 30 to 90, no SP2 but SO2 rising 40+ ppt!, CO (&CH4) rise matches O3. Possibly MidNH air?



1841 As O3 drops from 80+ppb to 45, large SP2, CO drops 110 to 90, SO2 drops also. Occurs at SAT jump from 230 to 240K at level flight.
 1841 - A lot of high freq variability in O3, CO, H2O,
 1902 begin descent from 28 kft, at 25 kft, O3 jumps to 75 . Hwo drops from 800 to 100 at 24 kft!, SP2 also picked up. RHw 7% !! H2O and SP2 match. CAPS & PALMS see particles, dust, pollution (Pb).
 1909 RHw 5%
 The air starting at 24 kft (1905) has large pollution signals, but is super dry. Descent



1916 into ColdBay, 10 kft and holding, SP2, SO2 climbing during level flight. OA rises at end

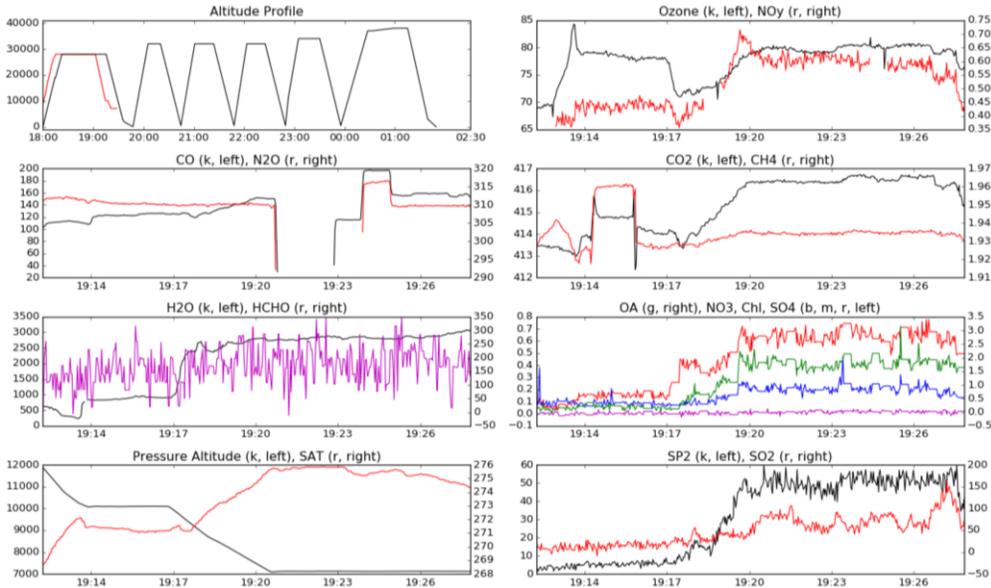


1920 pollution rising, layer seen in forward cam.



1920 descend to 7 kft, particles jump! H2O jumped at 1917 when left 10 kft.

1924 -davefedors- 'There is a haze layer visible out the front, at approx our alt – 7000'



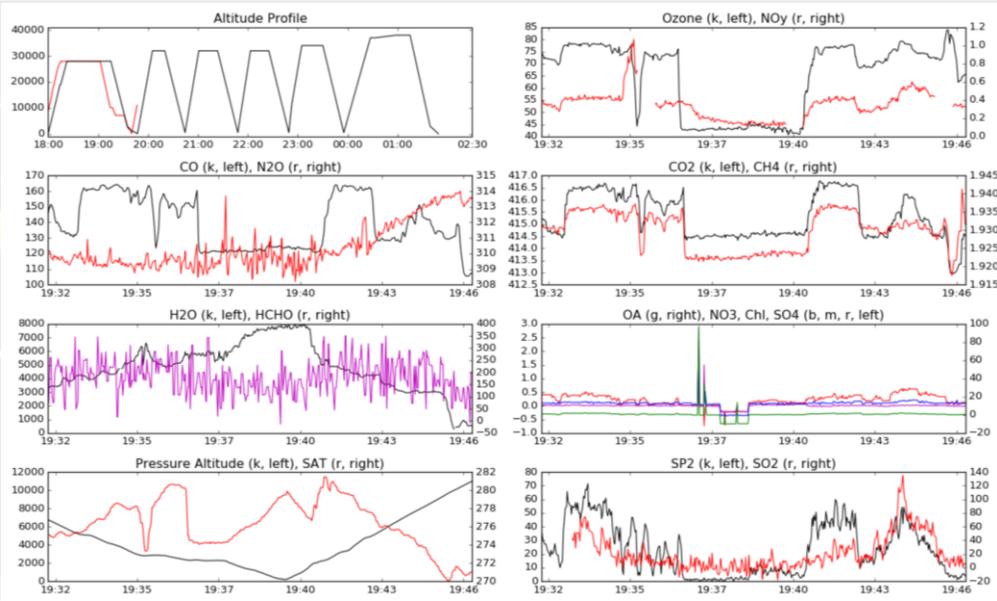
getting into Cold Bay PACD – whoop - whoop



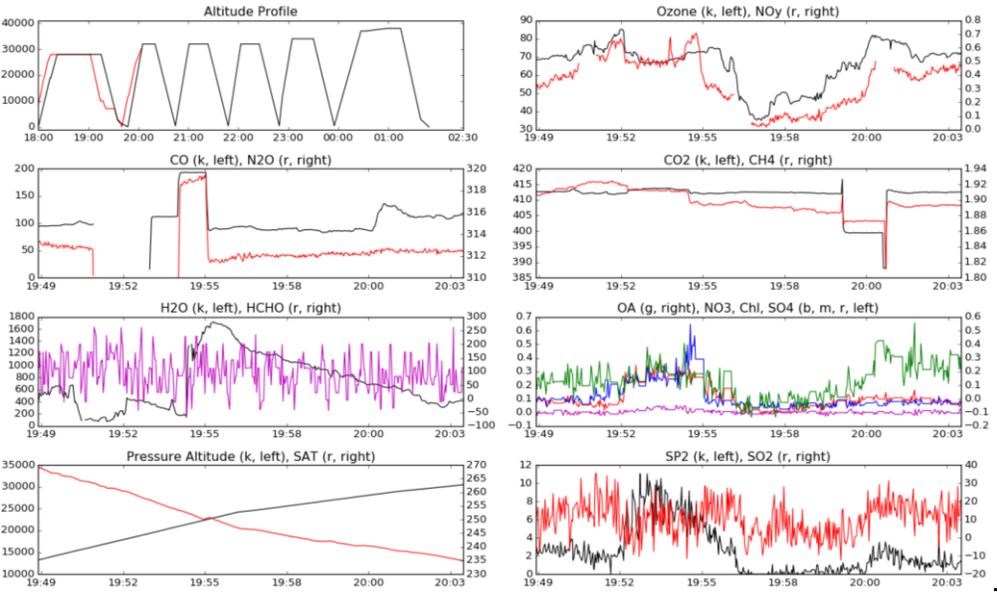
1935 & 1936+ PAN dropped out with O3



1936-1940 Cld Bay - very clean O3, CO/CO2/CH4, SO2, SP2, high levels imed at 2 kft
 1946 at 10 kft, O3 high at 75, but CO/CO2/CH4 /SP2 large drops H2O dropped, 5% RHw.
 1951 now 2% RHw.

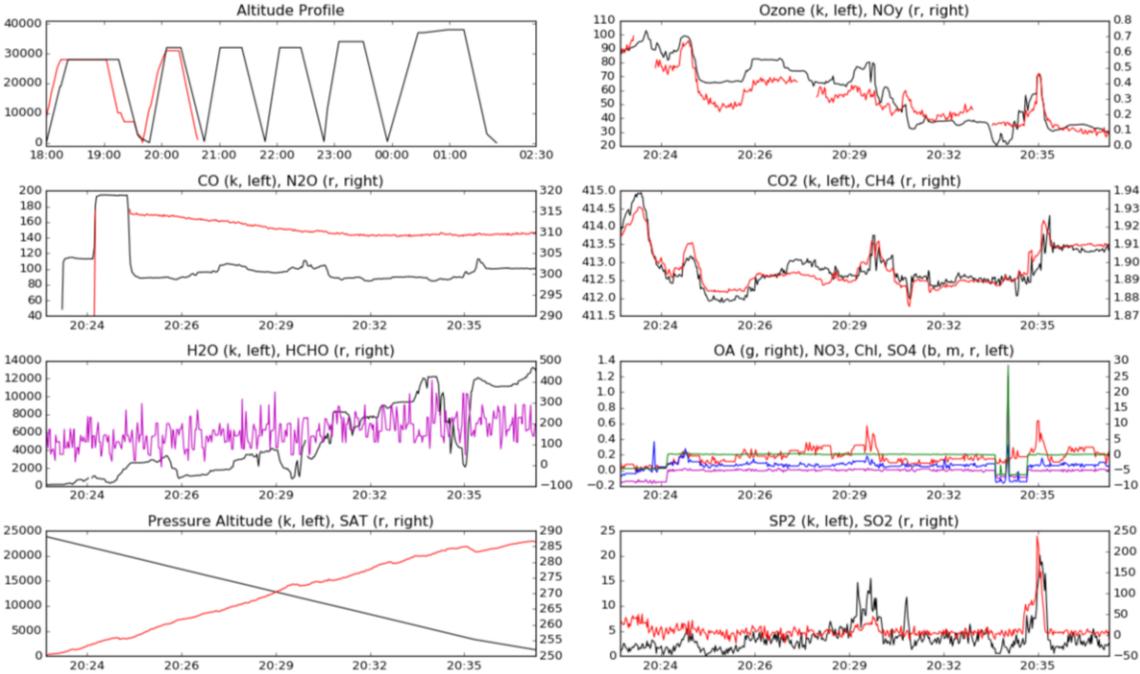


1955-1956 high particle pollution builds at edge (22 kft) of O3 boundary (75 – 40). Leave dry air at 1955 with the pollution as H2O jumps

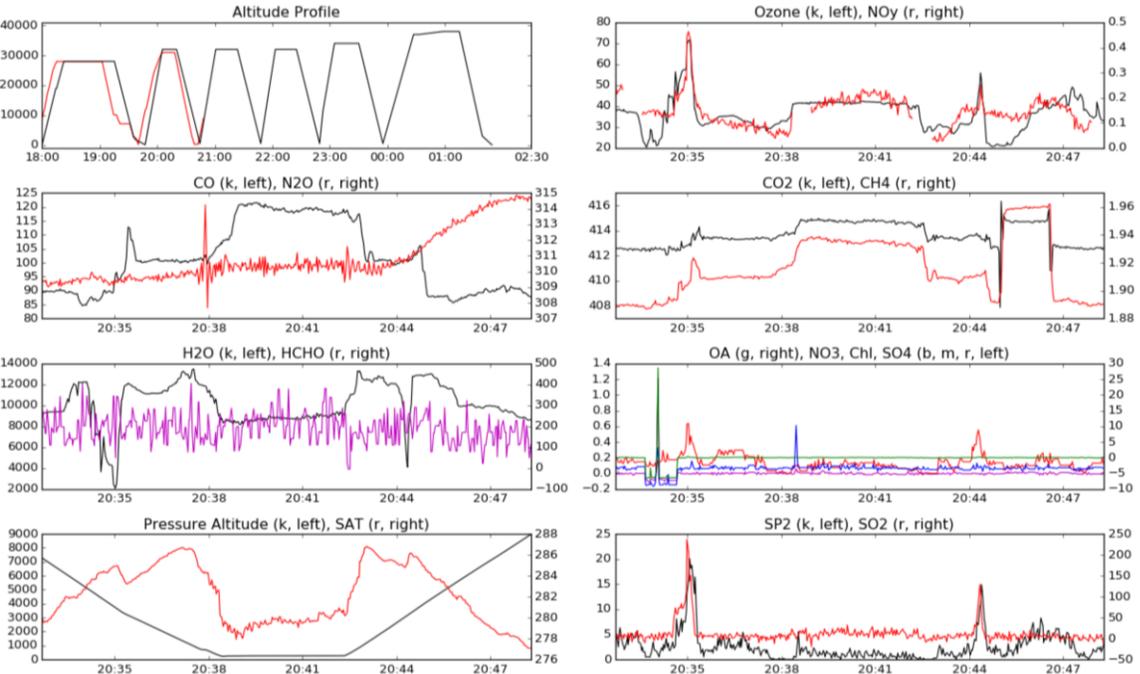


2004-2016 at FL310, no clearance to go down, not good for 2nd point. A lot of variability in O3 and CO, H2O dropped at 2010 to 5% again,
 2018 head down to dip #1. RHw 5% holding thru 29 kft, rising 11% at 28 kft (2020)
 2020, big jump down in O3 (75-55), CO/CO2/CH4, particles

2030-2034 again particles peak in layer adjacent to large O3 drop during descent, about 12 kft to 4 kft O3 is 30 ppb!, particles bunched on the high side



2039 made it to 500 ft, just at cloud top, 100% RHw.
2038-2042 MBL has very high CO (120 vs 85-100)
2045 at 4 kft, the O3 & Particle layer reappears as on the way in, but at 1/2 the intensity.



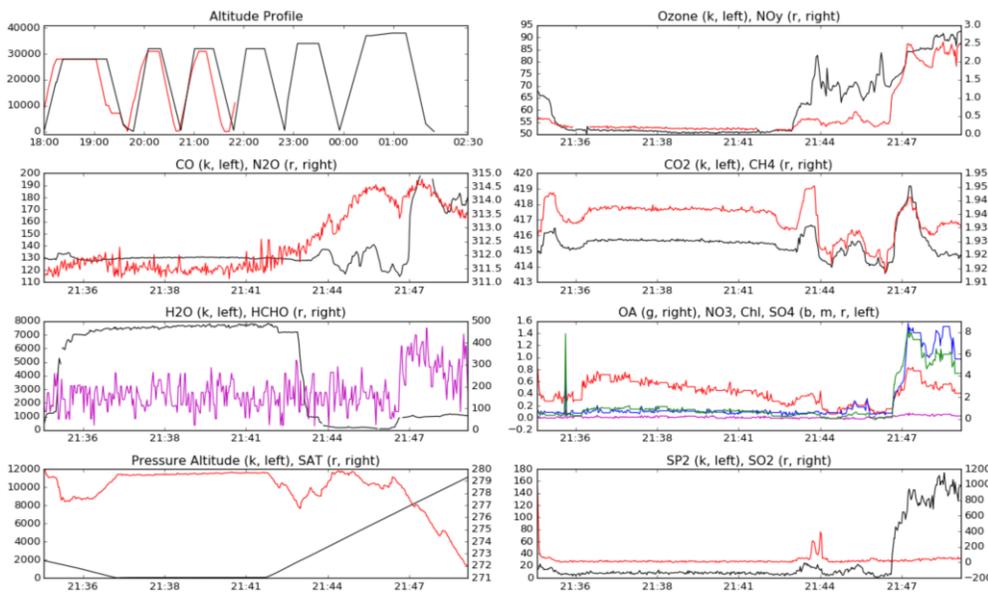
2050 at 14 kft, see jump up in O3 (40 to 80) and also particles, drop in H2O. Particles recover, O3 stays high, currently 25 kft.

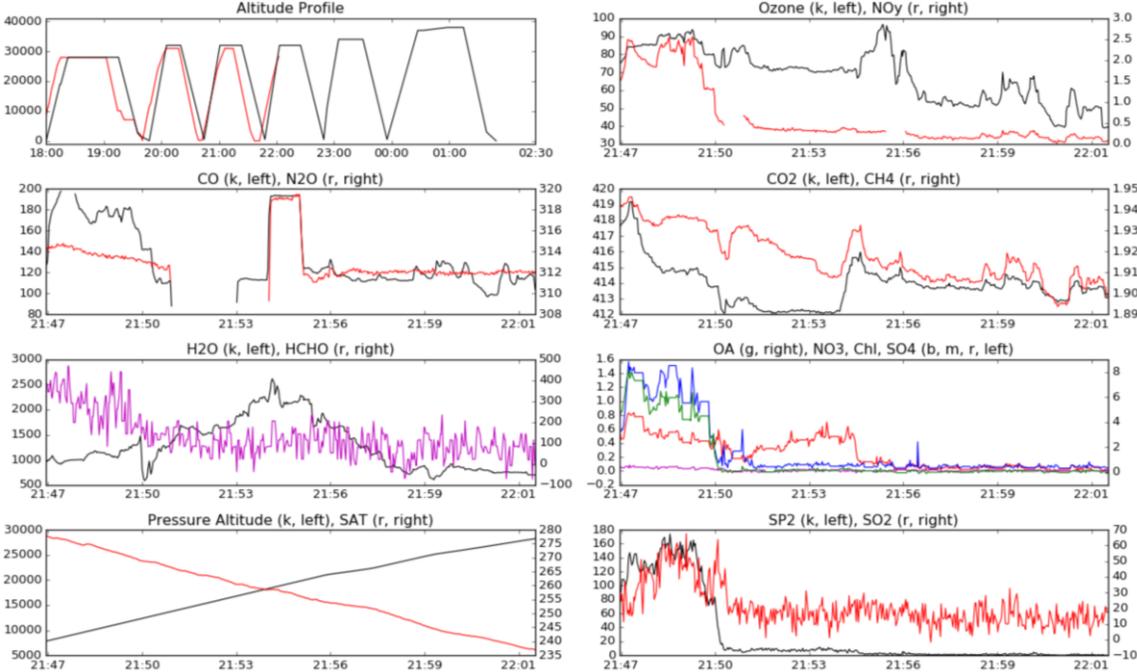
2107 – at FL310. RH_i > 100%. 2110 > 120%. Quiet, CO at 125+-, O₃ at 70+-5. Particles at measurable levels considering altitude.
 2111 – O₃ drops 10 while level at FL310. CO variability follows O₃ (from 130 to 110)
 2115 – head down.
 2118 – 2124 a burst of particles.(24 – 20 kft)
 2124 – 2126 PALMS – very very low particles.
 2127 –

2137-2142 at 500 ft



2147-2150 (8-12 kft) A lot of action in plume on way up, HCHO up to 400, SO₄ at 50, O₃ at 90, CO 180, CO₂ 415, CH₄ 1930



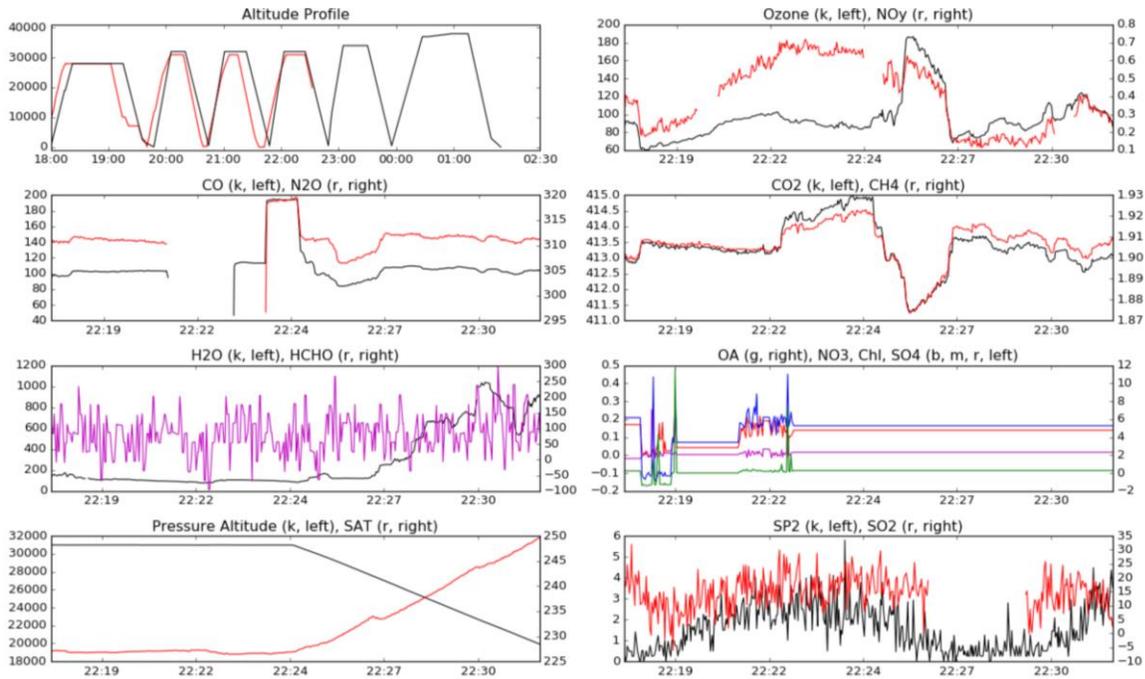


2206 reach FL 310. (ETA 0045Z)?
 2207+ as we get into jet, turbulence and the O3 keeps up and the CO/CO2/CH4 keeps going down. Still far from pure strat even at 111 ppb
 2214 O3 peaks at 165, CO min at 80. still FL310

Water Vapor (DLH)	256.968	ppmv
RH/Water	60.44	%
RH/Ice	93.62	%
NO		ppb
NOy		ppb
O3	111.56	ppb
CO (QCLS)	99.2364	ppb
CH4 (QCLS)	1872.22	ppb
N2O (QCLS)	310.097	ppb
CO2 (PICARRO)	412.334	ppm

Water Vapor (DLH)	182.19	ppmv
RH/Water	46.68	%
RH/Ice	72.88	%
NO		ppb
NOy		ppb
O3	166.09	ppb
CO (QCLS)	85.0677	ppb
CH4 (QCLS)	1862.3	ppb
N2O (QCLS)	308.145	ppb
CO2 (PICARRO)	411.182	ppm

2225 start descent from FL310, immediately his quasi-strat air with 180 O3, but CO at 80-100, H2O increases.

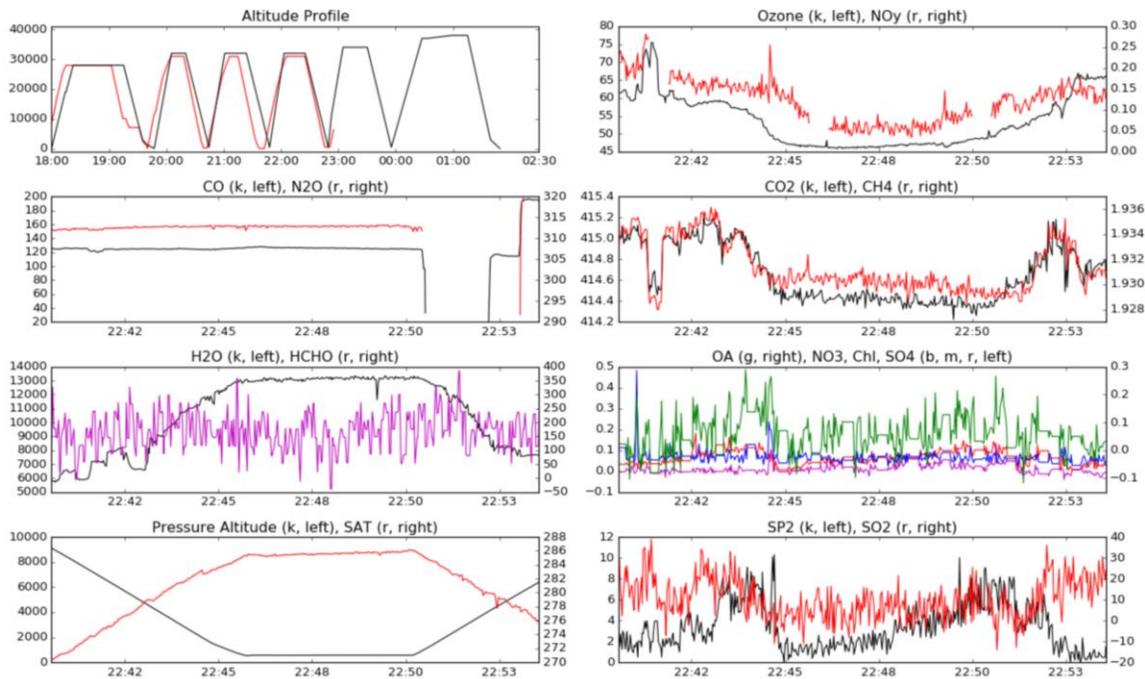


2231 at 20 kft.

2246 MBL, bouncy, whitecaps, distinct chemistry but not largely different, fewer aerosols.
Rain, mm drops in CAPS

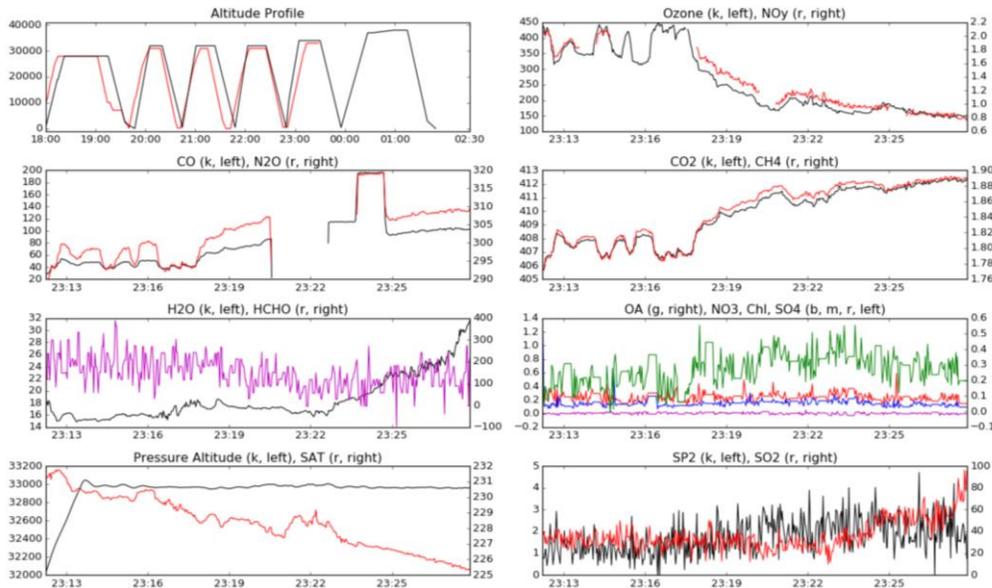
2251 climb out to FL330, 1550 ft/min.

2242-2254 typical Wofsy-dish for MBL runO3/CO2/CH4/particles lower in MBL

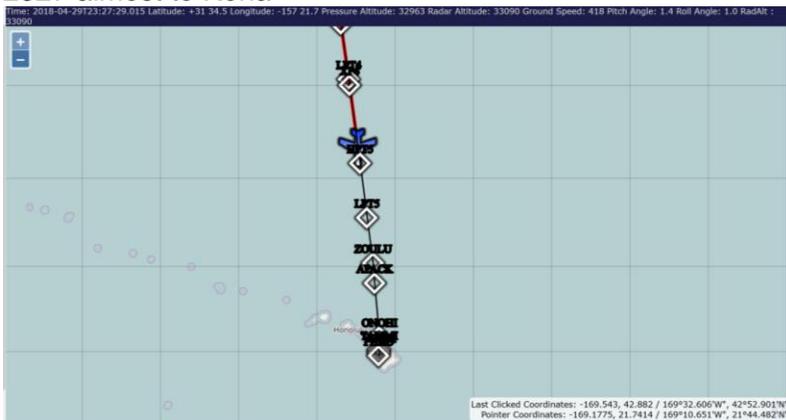


2302 AMPS sees 1000s/cm3 of small particles. RHw 16%, O3 93, CO 130.

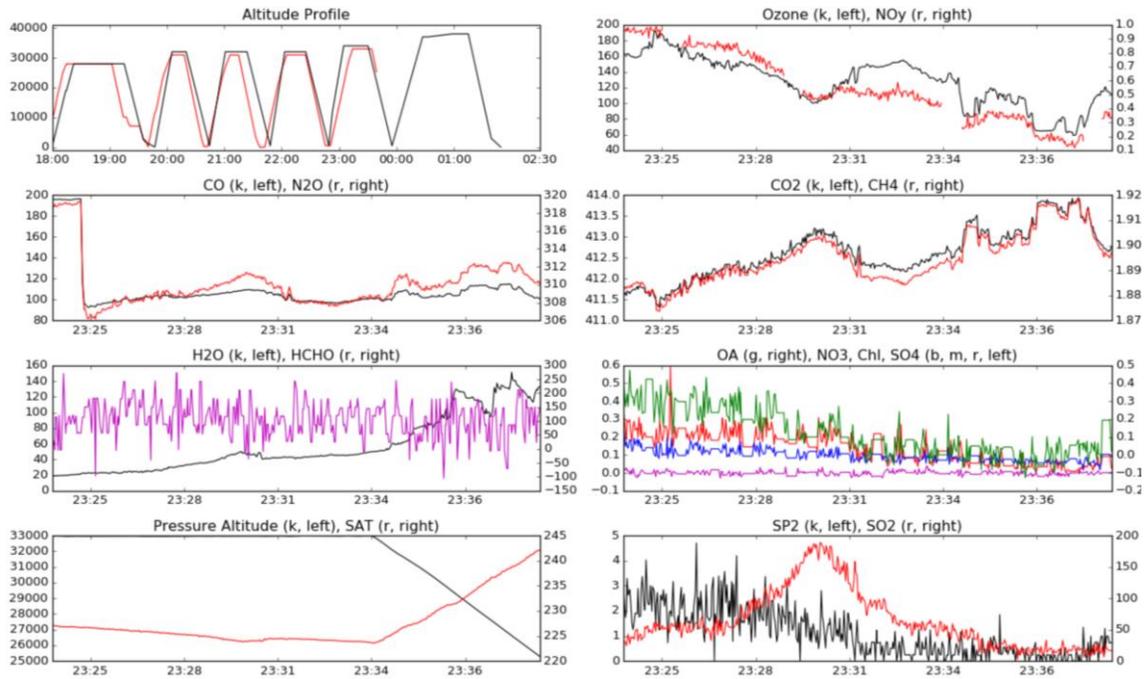
2310-2317 rapid O3 to 480, H2O to 18, strat + some trop, went thru middle of cutoff low. CO drops 120 to 20, CO2/CH4/N2O anti-corr with O3, but SP2 and SO2 jumps up to 1.5 & 35. Lots of clear 'correlation wiggles'. FL340 reached at 2114.
 2318 coming out of cutoff, O3 dropping, holding at 180 and H2O holding at 17 ppm.



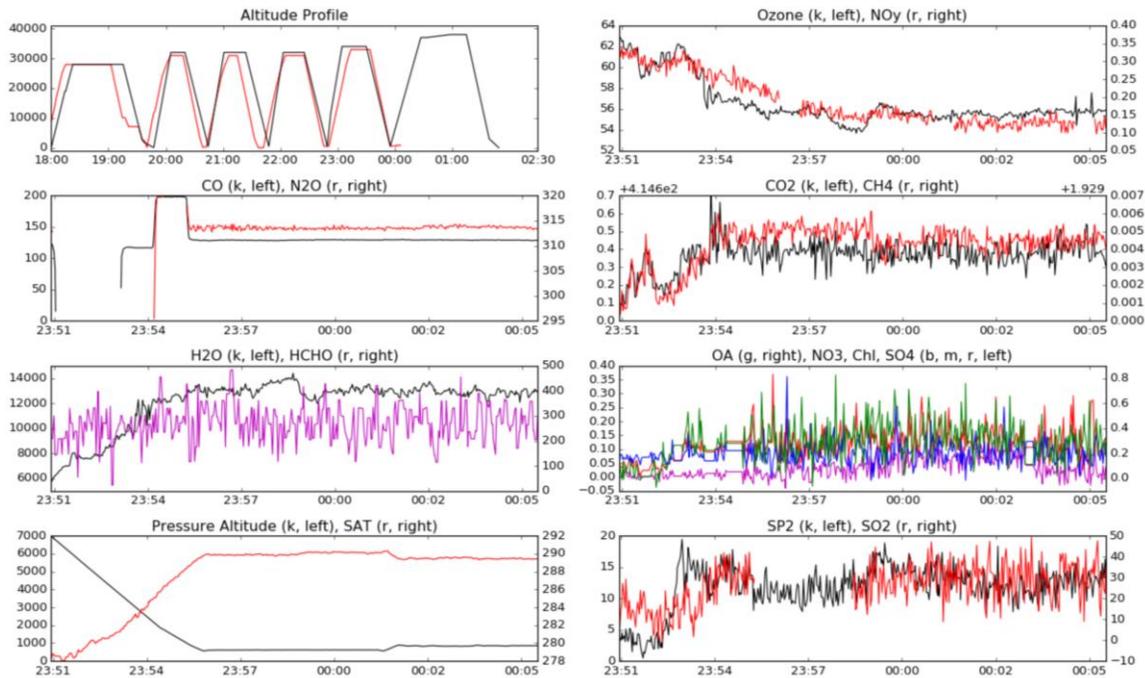
2327 almost to Kona



2329 H2O goes up to 50, SO2 goes up to 180, many small particles ! then SO2 drop to 50 and then bigger (20 nm) particles.
 2336 descend, increase 14K in 6 kft. The 5 nm particles are still increasing, even as SO2 drops below 20.



2334 descend to flux leg. at 2348 it is very dry for 580 ppm but 6% RHw
 2354 2500 ft, bouncy, SO2 & SP2 pop up (40 & 15). OA to 0.4



2356 begin 500' flux leg (77% RHw), will go back to 800 and final at 1200.

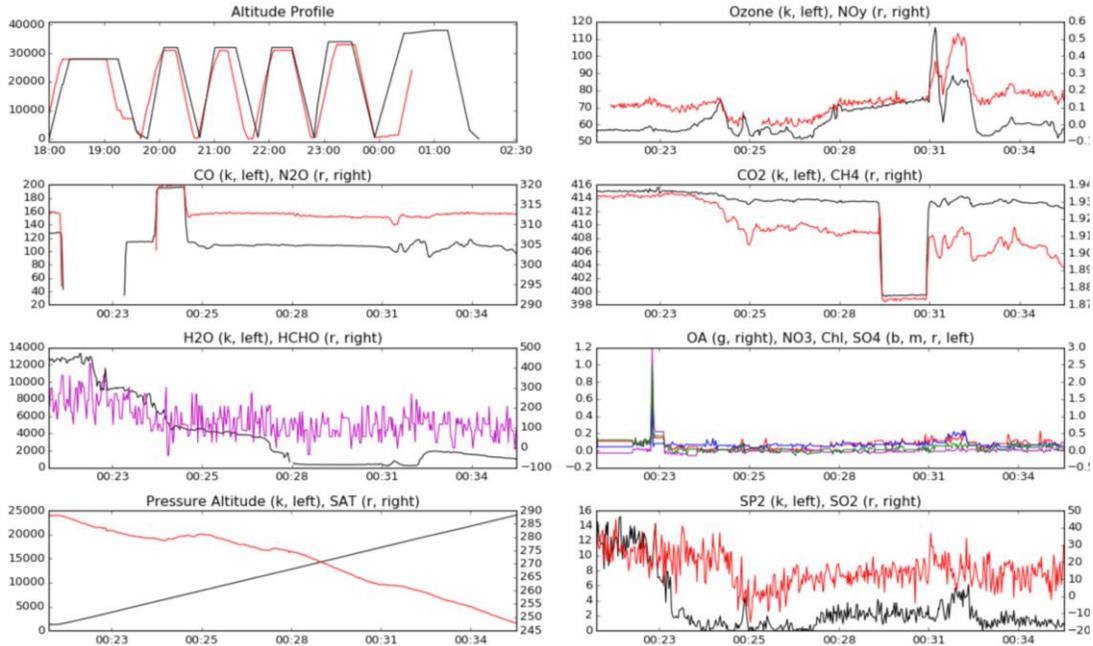


0005 2nd flux leg at 800'. RHw 74%..

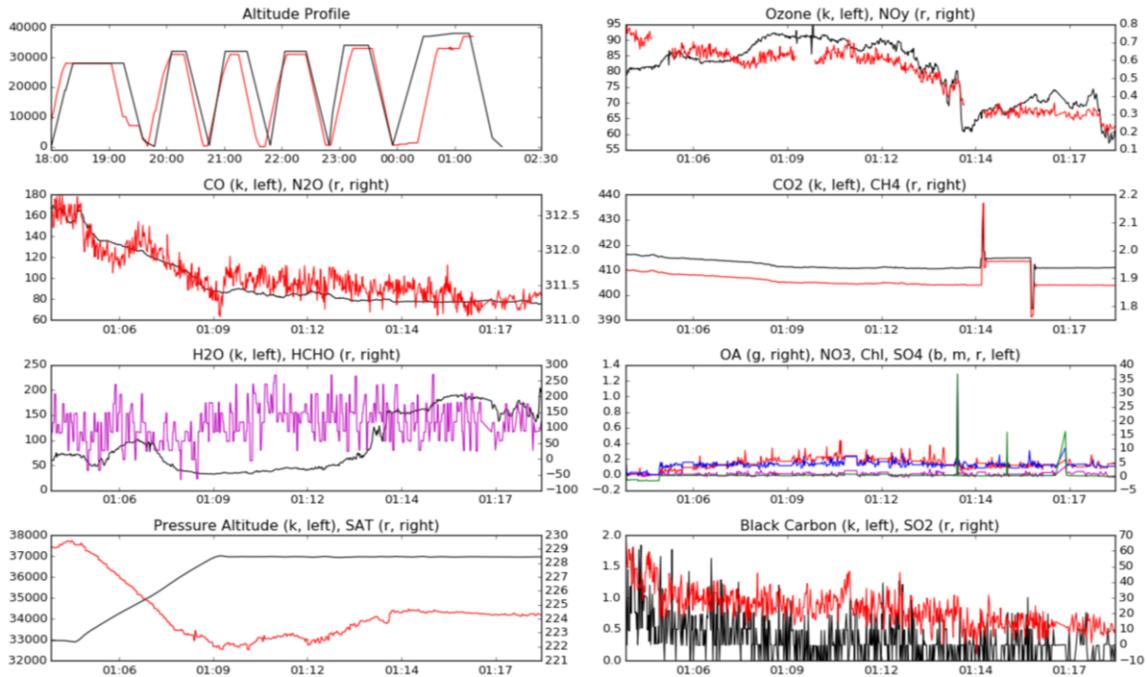


0017 final flux leg at 1200'

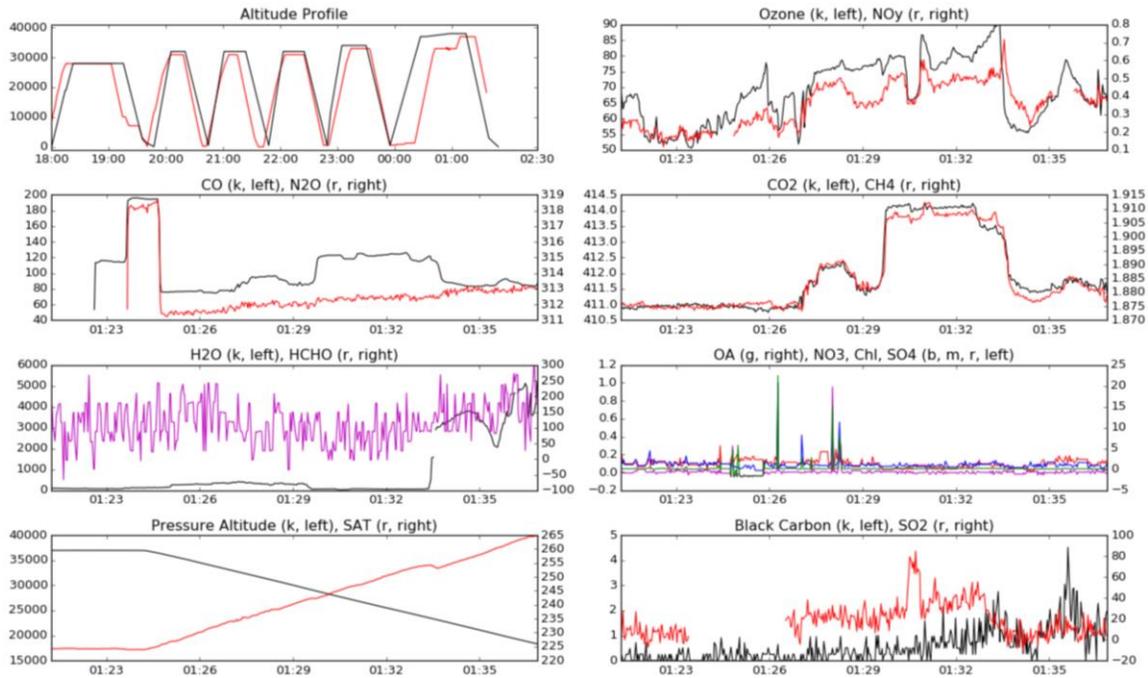




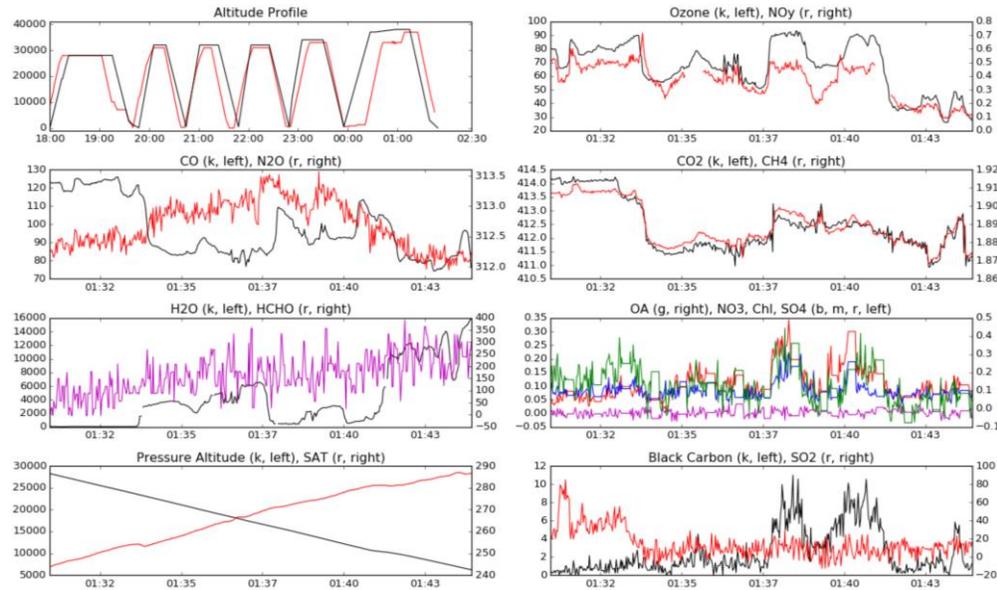
0037 at 27 kft, large SO2 (60) again, goes along with spike in CH4/CO2/CO/O3, H2O low then.
 0043 at FL330 after 10 min do MMS
 0109 to FL370 for 10 min



0124 start descent from FL370 to Kona! Aloha



Large fluctuations on descent, high SO2 at the top, O3 layers from 50 to 80, highest CO aloft (120 above 24 kft), at 10 kft, O3 drops quickly from 80 to 40 or 30. Very high O3 (80) from 10-20 kft.



Instrument debrief: All doing well, lost about a 90m from PALMS(?), else just fine.

0202 Landed

