Flight Scientist Report
Tuesday 05/03/2022 ACTIVATE RF149

Flight Type: Statistical Survey Flight
Flight Route: KLFI-ATLIC-ZIBUT-ISLES-ZIBUT-ATLIC-TURET-KLFI
Special Notes: Today had some convective weather in various parts of our flight domain so we delayed our takeoff from 830 till about 945. Today was marked by relative high AOD and possible smoke influence from fires around the New Mexico area.

King Air

Pilot report (Wusk):
Single flight day, joint flight with HU25. Planned 0830 take-off was delayed at 0630 Brief due to Wx out on the track. Reconvened at 0830 for re-brief and set a 0945 take-off. UC12 to take off first. Taxi out and take-off RWY 08. Nominal climb out and on track. Planned route was KLFI-ATLIC-ZIBUT-ISLES-ZIBUT-ATLIC-TURET-KLFI. Initial cruise at FL280, first sonde at ZIBUT. North of ZIBUT high clouds prompted a descent to FL230. Early turn at north end to help with coincidence with HU (high level winds NW @50-60 kts). 2nd sonde at North End. 3rd Sonde at midpoint to Zibut, 4th sonde at ATLIC. Nominal descent for ILS 08 at KLFI. Solid cloud cover at KLFI tops 1500' with bases at 300'. Nominal taxi in and shutdown. Crew was Sandeen, Wusk, Harper.

Flight scientist report (Harper):

Takeoff: 13:55utc

Cloud conditions. High level cloud deck in the first hour of flight. Forced us to decrease altitude to 25kft.

Sonde 1: 14:35:20utc at ZIBUT

Sonde 2: 15:15:00utc at ISLES

Sonde 3: 15:34:00utc between ISLES and ZIBUT

Sonde 4: 16:31utc near coast.

No instrument issues. I did forget to turn on Applanix system before takeoff so there is no aircraft data until 20min after takeoff.

RSP data folder DATE is incorrect. Folder name is 12-31-2022. Should be 5-03-2022

Falcon

Pilot report ():

Flight scientist report (Crosbie):
Stat survey ZIBUT-NE. Complex cloud scene. A clear region was present in the corridor to ZIBUT. In the vicinity of ZIBUT, over the warm water and towards the SE, the inversion was breached and clouds were developing into deep convection. The upwind flank of this region of deep convection had shallow Cu that in places were merging into a more contiguous deck. The cloud base and top in this region was not well defined and further to the north the clouds trended upwards in altitude and overran a region with a near surface cloud deck. This near surface deck was broken to the south becoming fully overcast towards the turnpoint. The interpretation was that the southern airmass was over running a cooler surface layer that was wrapping around and advecting over the colder coastal water. There was a wind shift observed in this near surface layer to northeasterly winds. It was not possible to get below the cloud base at the turn point. A gradient in the aerosol was also observed where polluted conditions were in the corridor to ZIBUT and associated with the overrunning southwesterly flow, while in the northern northeasterly flow, the aerosol conditions were much cleaner, especially just above cloud top in the region near the turn.

From Eddie:
Takeoff = 13:48:45

Landing = 16:51:01

Notes:

After switch to aircraft power, scroll pump right behind my seat kept blowing the breaker on the pump after aft scroll was turned on. Every time I reset it, it would blow again. The forward scroll right behind my seat had been the only scroll running during the extended warmup. Flight had been delayed for 2 hours due to weather. During taxi, I was able to get the forward pump running. The aft pump breaker blew at the point, but continued to run after being reset. Both pumps were operating by the time we took off. Both pumps ran for the entire rest of the flight with no issues.

The WCM was not operating at the beginning of the flight. During flight, I was able to get the WCM working. It has one status light that was not green, so need to check that out. All other instruments working well.

13:55:02 PSAP flow turned on.

14:06 Green scattering approx. 45 at 500 ft

14:10 Green scattering approx. 40 at 2000 ft

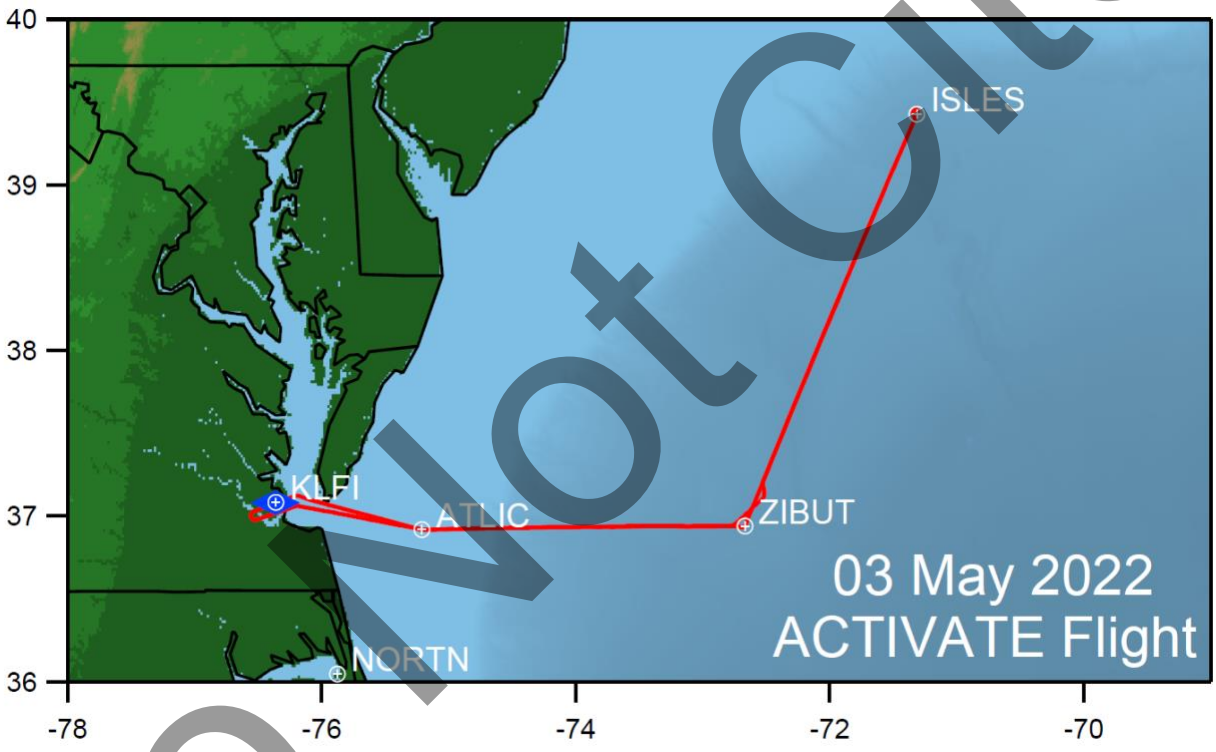
14:54 Two cloud layers

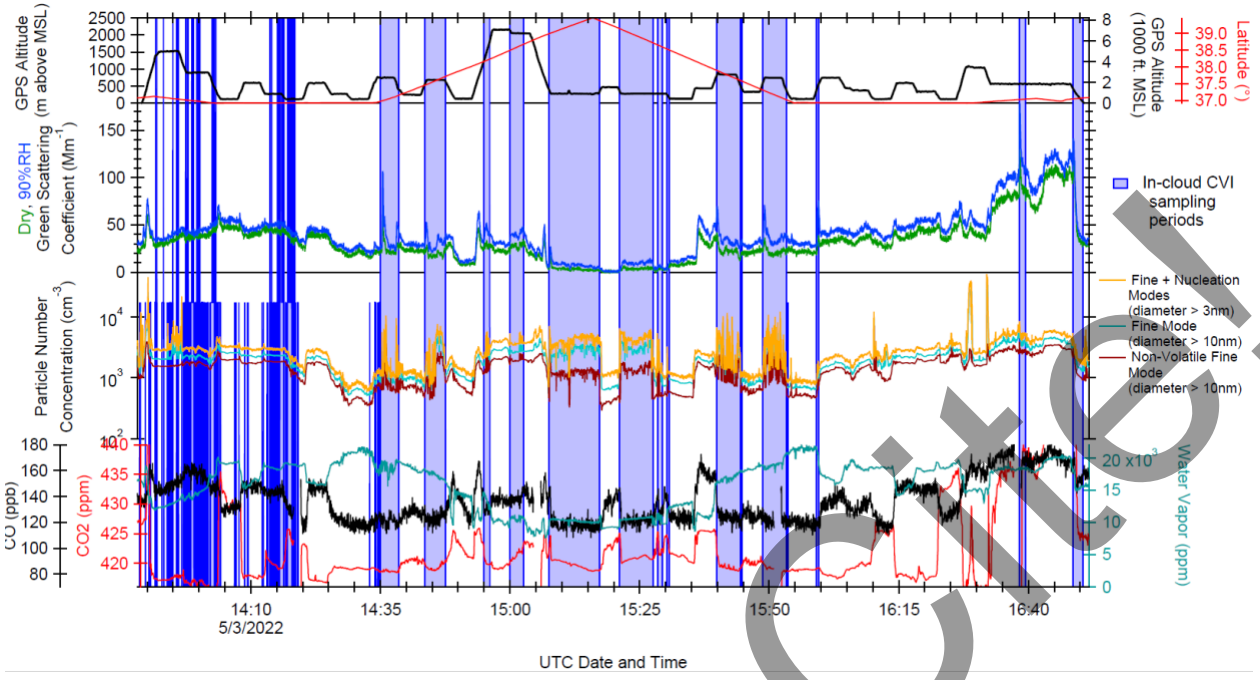
15:19 Above cloud top was clean; low aerosol conc

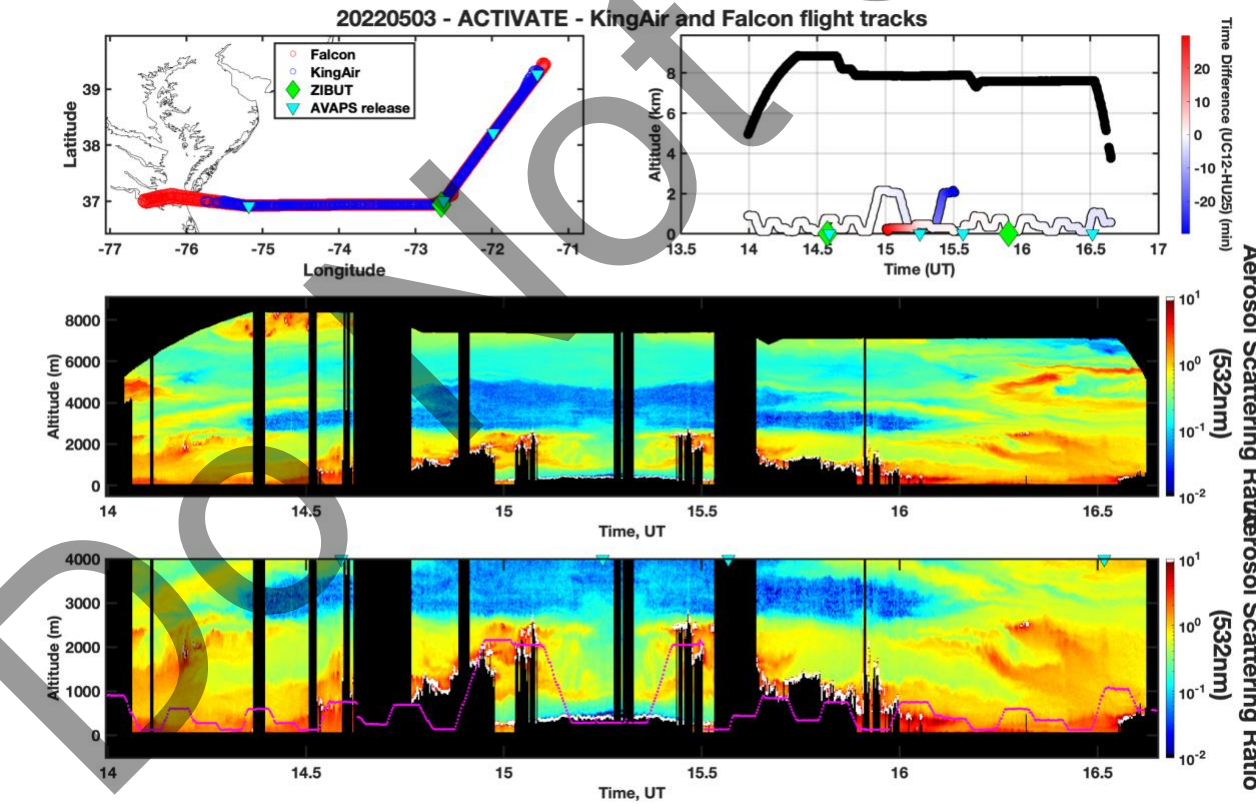
15:37 At approx. 1400 ft, green scattering at 40

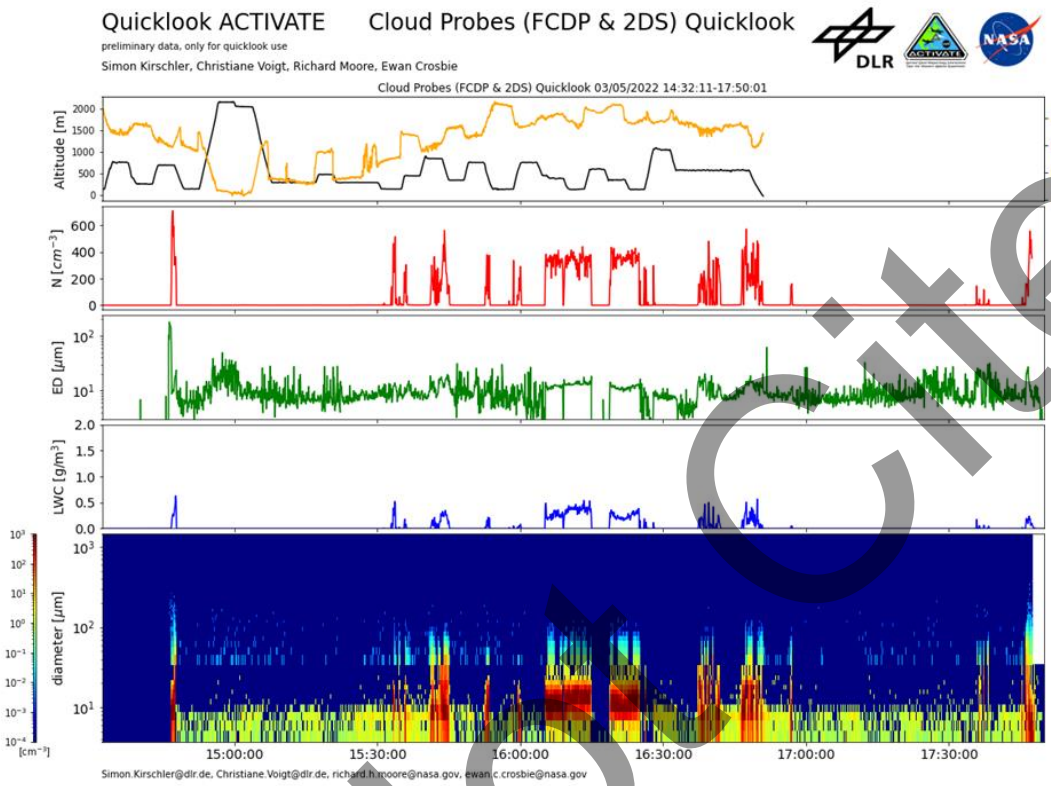
15:53 SMPS software locked up. Was able to close it and get it restarted after a couple of attempts.

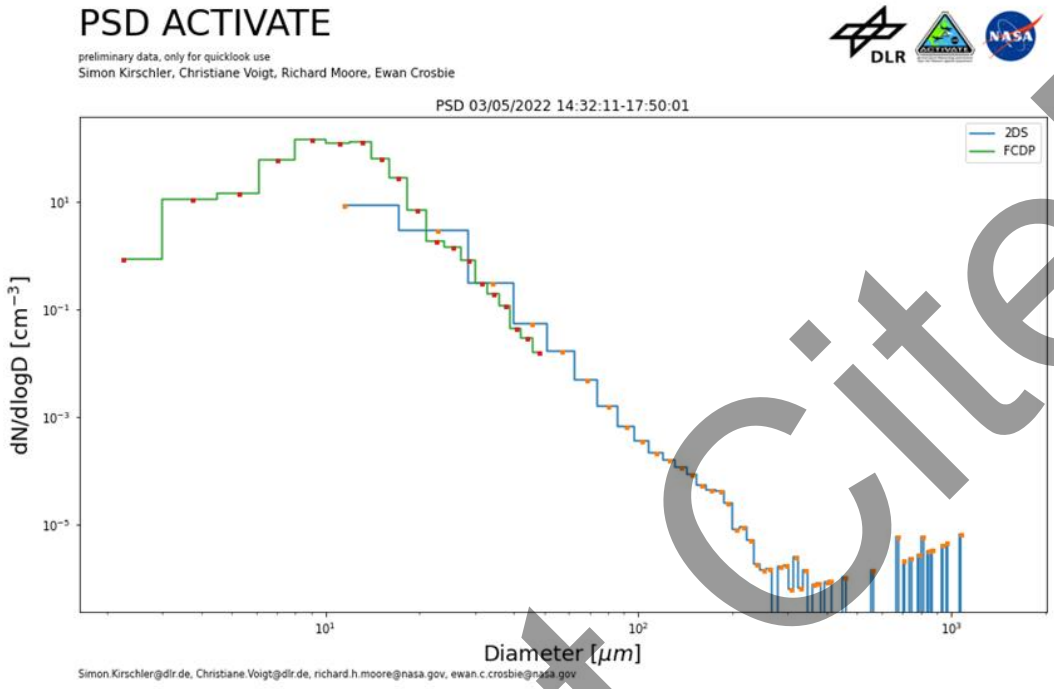
16:42:55 Humidifier and WCM turned off in preparation for landing

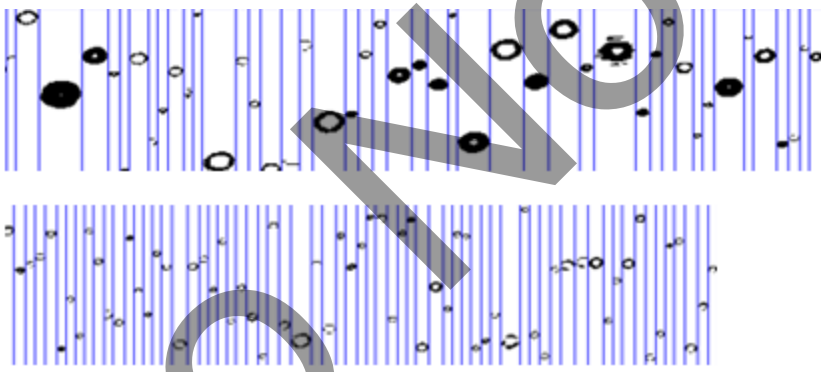



GPS Altitude (m above MSL)
Dry, 90%RH Green Scattering Coefficient (Mm-1)
Particle Number Concentration (cm-3)
CO (ppb)
CO2 (ppm)
GPS Altitude (1000 ft. MSL)
Latitude (°)
Water Vapor (ppm)
In-cloud CVI sampling periods
Fine + Nucleation Modes (diameter > 3nm)
Fine Mode (diameter > 10nm)
Non-Volatile Fine Mode (diameter > 10nm)
14:10
5/3/2022
14:35
15:00
15:25
15:50
16:15
16:40
UTC Date and Time


20220503 - ACTIVATE - KingAir and Falcon flight tracks
Falcon
KingAir
ZIBUT
AVAPS release
Latitude
Longitude
Altitude (km)
Time (UT)
Time Difference (UC12-HU25) (min)
Altitude (m)
Time, UT
Aerosol Scattering Ratio (532nm)

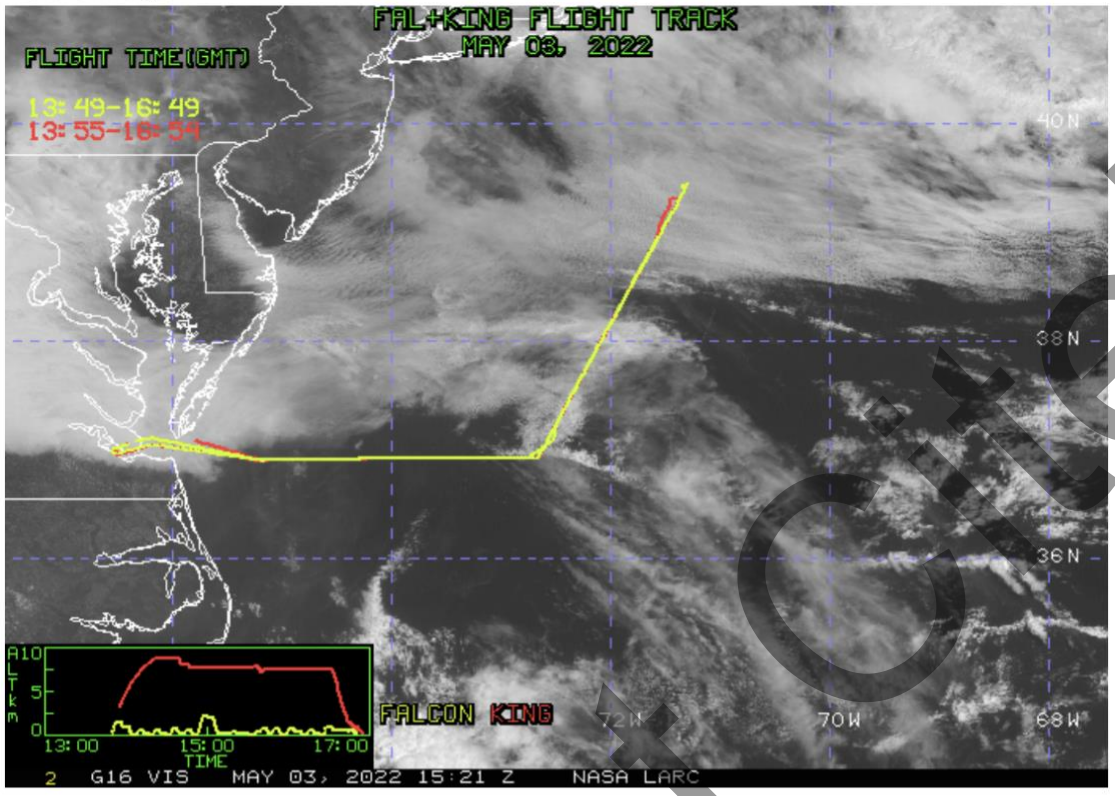

Quicklook ACTIVATE
Cloud Probes (FCDP & 2DS) Quicklook
preliminary data, only for quicklook use
Simon Kirschler, Christiane Voigt, Richard Moore, Ewan Crosbie
Cloud Probes (FCDP & 2DS) Quicklook 03/05/2022 14:32:11-17:50:01
Altitude [m]
Static Temperatur [°C]
N [cm⁻³]
ED [µm]
LWC [g/m³]
diameter [µm]
[cm⁻³]
15:00:00
15:30:00
16:00:00
16:30:00
17:00:00
17:30:00
Simon.Kirschler@dlr.de, Christiane.Voigt@dlr.de, richard.h.moore@nasa.gov, ewan.c.crosbie@nasa.gov



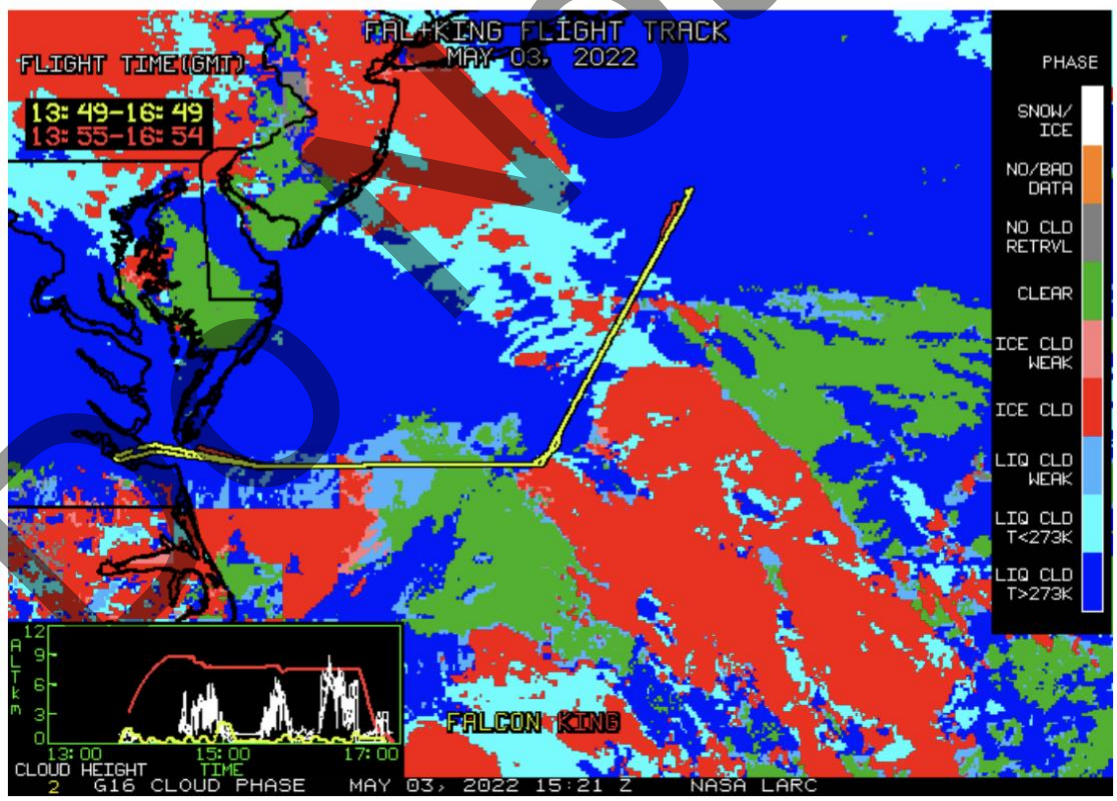


Only pure liquid clouds without precip.

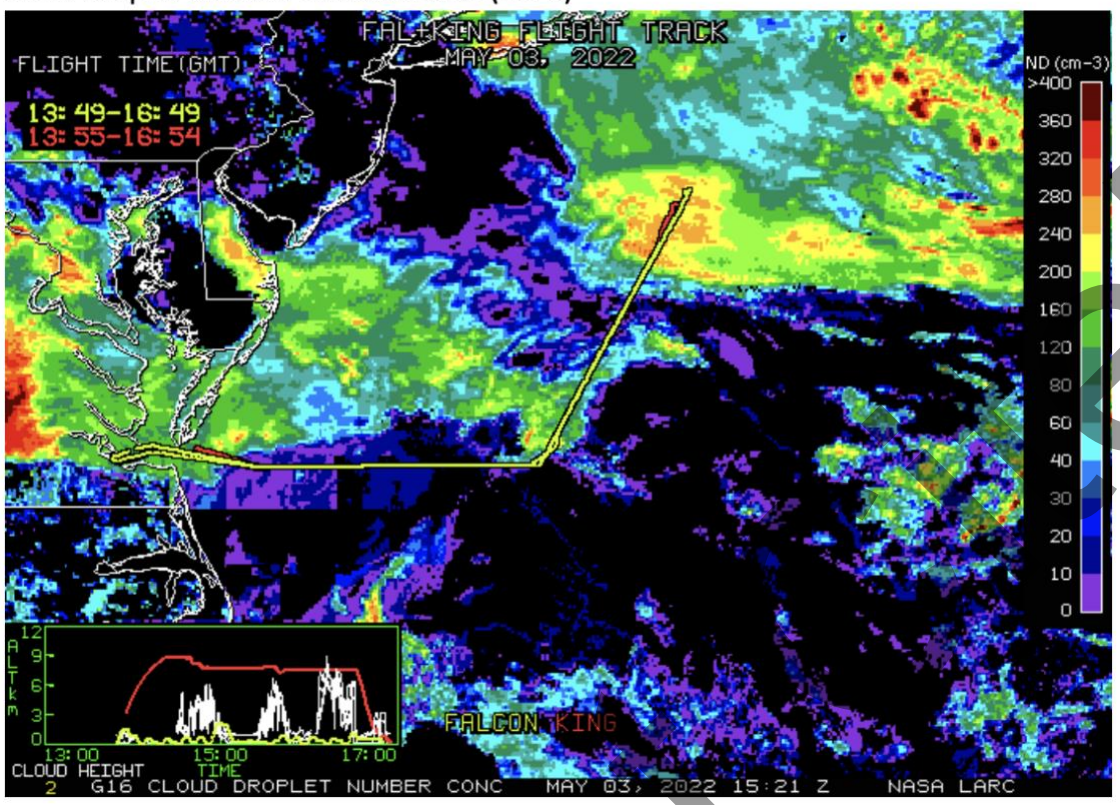
Visible Image



Cloud Phase



Cloud Droplet Number Concentration (cm-3)



Cloud-Top Height (Kft-ASL)