Flight Scientist Report
Saturday 6/26/2021 ACTIVATE RF88

Flight Type: Statistical Survey Flight
Flight Route: KLFI - ECG - OXANA - WILYY and reverse
Special Notes: This first of two flights was meant to partly survey the area around OXANA to set up for a process study flight for the afternoon flight; but in that flight the target(s) were not good so we made the real-time decision to change the 2nd flight today (RF89) to a statistical survey like this first flight (RF88)

King Air

Pilot report (Wusk):
Planned as a UC-12 double flight day; cooperative flight with the HU-25. Planned route: ECG OXANA 3300N07145W OXANA ECG. UC12 takeoff from runway 26 ahead of HU-25. Good ATC departure and climb to FL270. During the climb the aircraft generators still showed signs of significant load sharing fluctuations (problem has been noted on previous flights, was ground checked OK). The system split was about as extreme as been noticed on other flights and remained until the descent when it evened out. ATC offered and we coordinated/accepted a cut across W-72 from well prior of ECG straight to OXANA. Further down the AR8 corridor the researches asked for a different endpoint. An amended clearance for OXANA WILYY OXANA was requested and given. Profile up to WILYY and back to OXANA was nominal. Approaching back toward ECG we requested a offshore cut through W-72 allowing for more over water time and help avoiding over land storms. Proceeded to ATLIC for the descent into Langley. ATC gave vectors for a ILS 26 with a timing turn in order to let NASA524 in first. Normal landing at KLFI with some light to moderate rain approaching from the south, runway 26. 4x dropsondes deployed; OXANA EB, WILYY turn point, 1/2 to OXANA WB, south of ATLIC. Crew was Delaney, Wusk, Shingler. Second flight of day planned for a process study in W-72.

Flight scientist report (Shingler):

There was a fairly uniform scatter shallow cu cloud scene along the entire route today. Some potential Type B cloud targets were seen along the track between OXANA and WILYY. Potential Type B targets were also seen off the wings throughout the flight but it was mostly solid Type A cloud sampling today along the flight track. The W72 operating area was fairly quiet today and we were able to cut out some of the over land sampling in favor of flying direct to OXANA on the way out and cutting up to ATLIC on the way back. A total of 4 sondes were dropped along the route. The first at OXANA, the second near the end point, the third near the midway point between the end and OXANA, and one nearest to the coast in AR8. All instruments were operational.

Falcon

Pilot report (Slover):
Sortie 1:

Takeoff KLFI: 0830L

Landing KLFI: 1150L

Duration: 3.3

ACTIVATE cloudy statistical survey of low clouds over Atlantic from KLFI - ECG - OXANA - WILYY and reverse. Turned slightly early for fuel. Generally all clouds below 4500' MSL.

Flight scientist report (Crosbie):
Subtropical high conditions with light southeasterly winds through most of the flight. Fairly consistent SO4 with minimal ORG in the MBL, relatively low number concentrations. Cloud conditions were fairly typical and the module was simple to execute, there was some evidence of clusters of cumulus starting to form and some regions of more developed convection. One particular area was near the furthest SE extent of the survey (2 cloudy, 2 part cloudy, 1 clear)

Eddie:
12:33:25 Takeoff

13:06 Nephelometer humidifier humidifying flow turned almost entirely off because ambient RH very high.

13:20 As we travel east, ambient RH getting lower so now in range where humidifying control is possible

13:46 Conc low, but sizes larger than in recent flights

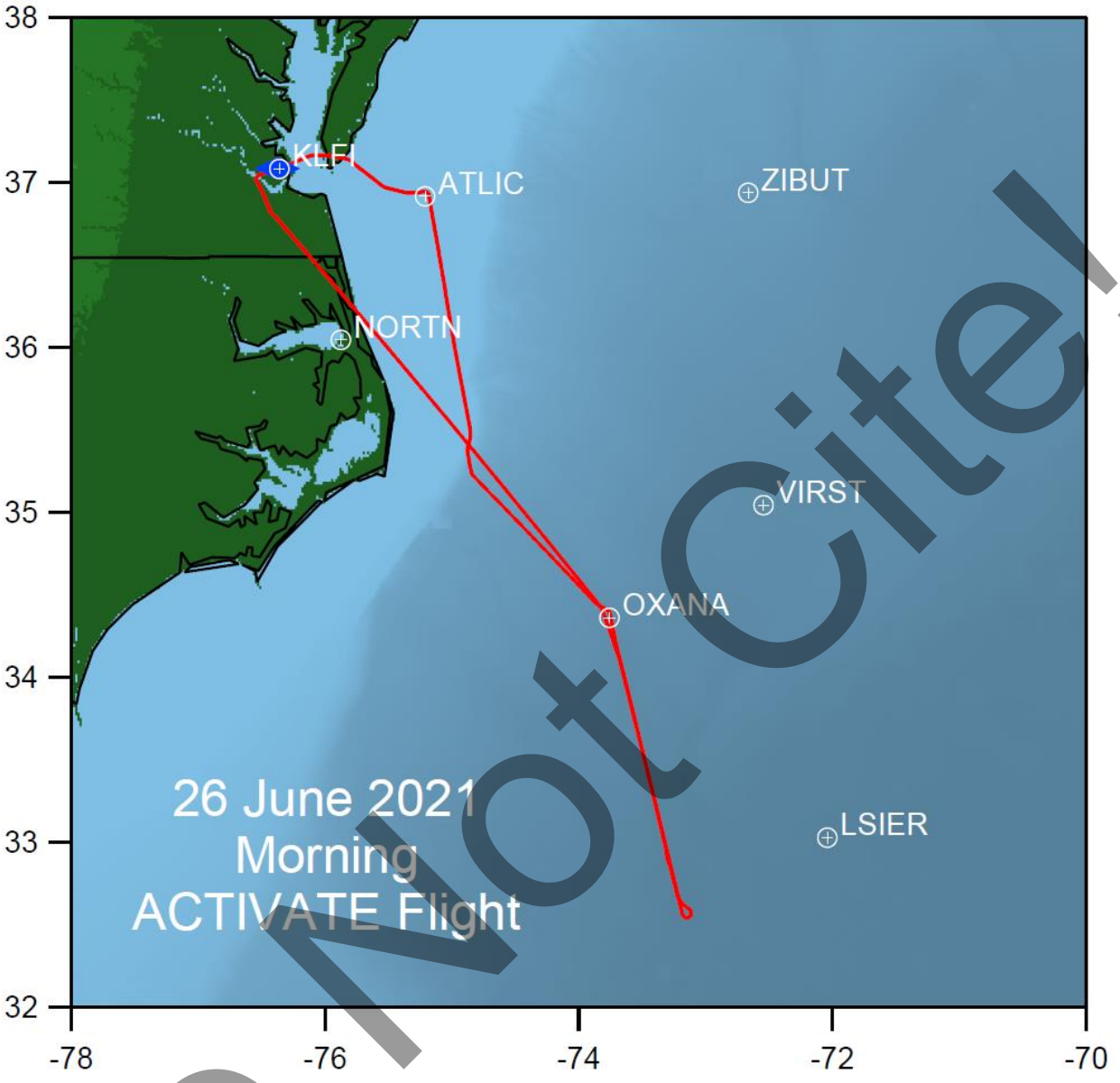
15:10 REVEAL feed lost

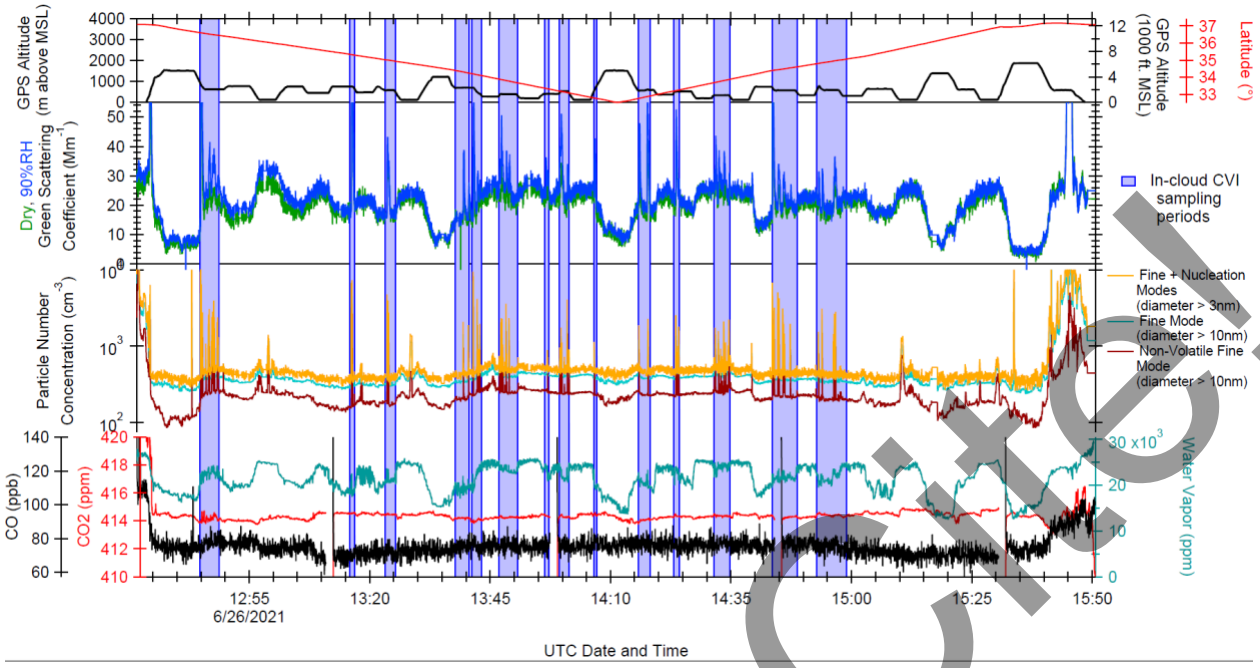
15:16 Was able to get REVEAL working again

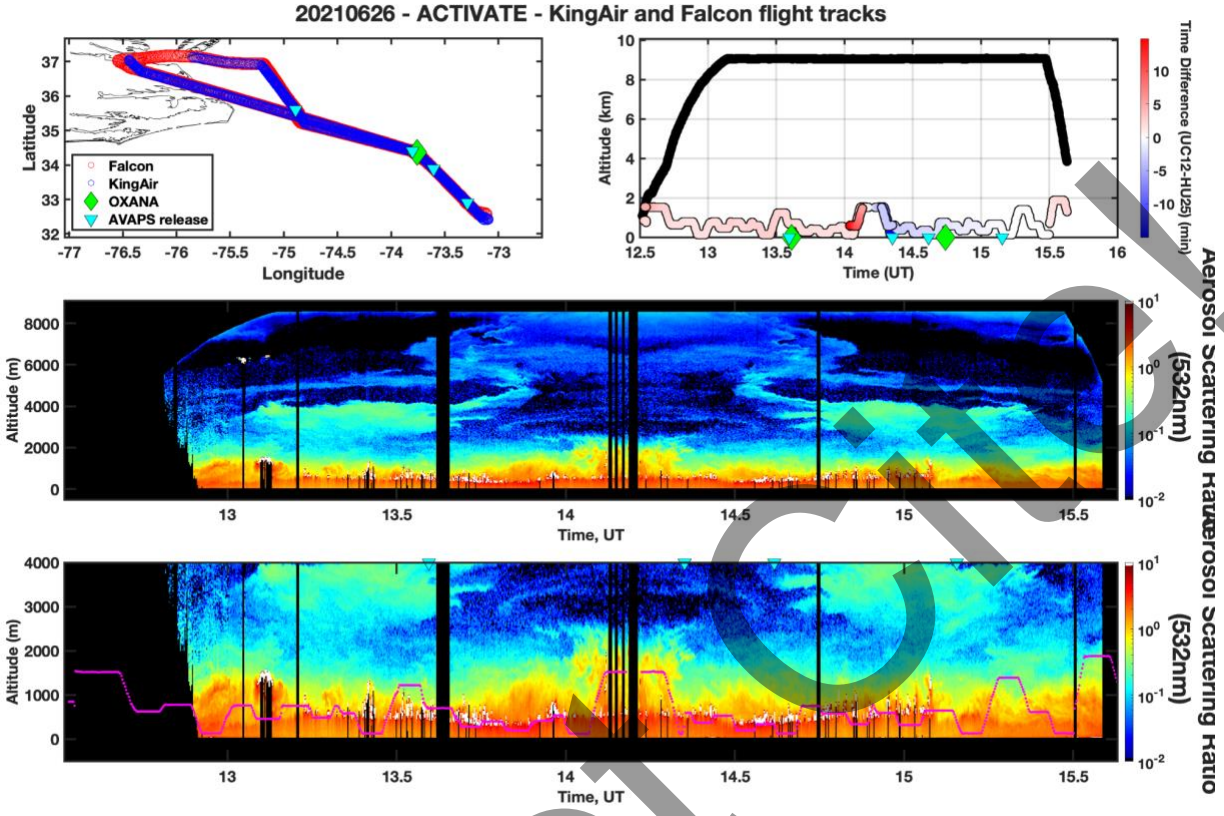
15:39 Humidifier & WCM turned off in preparation for landing

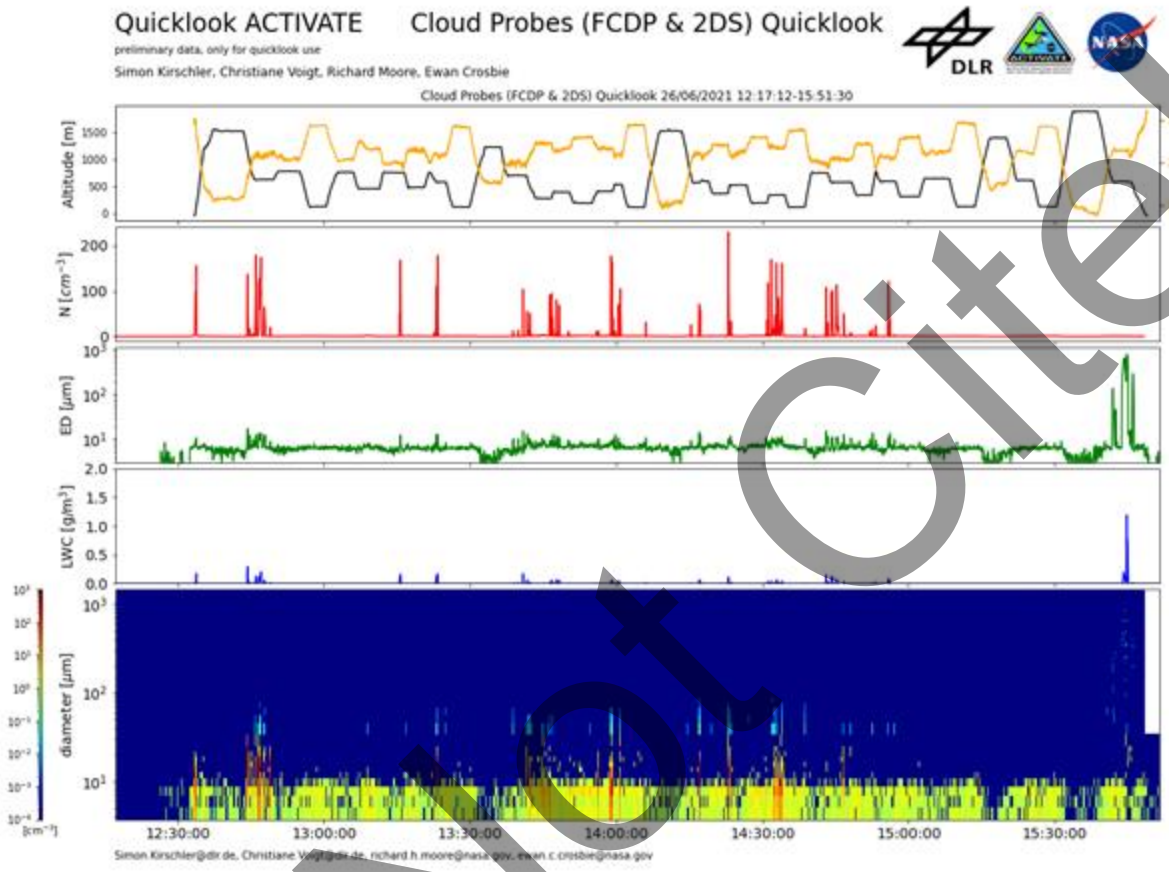
15:46 Rain during landing approach

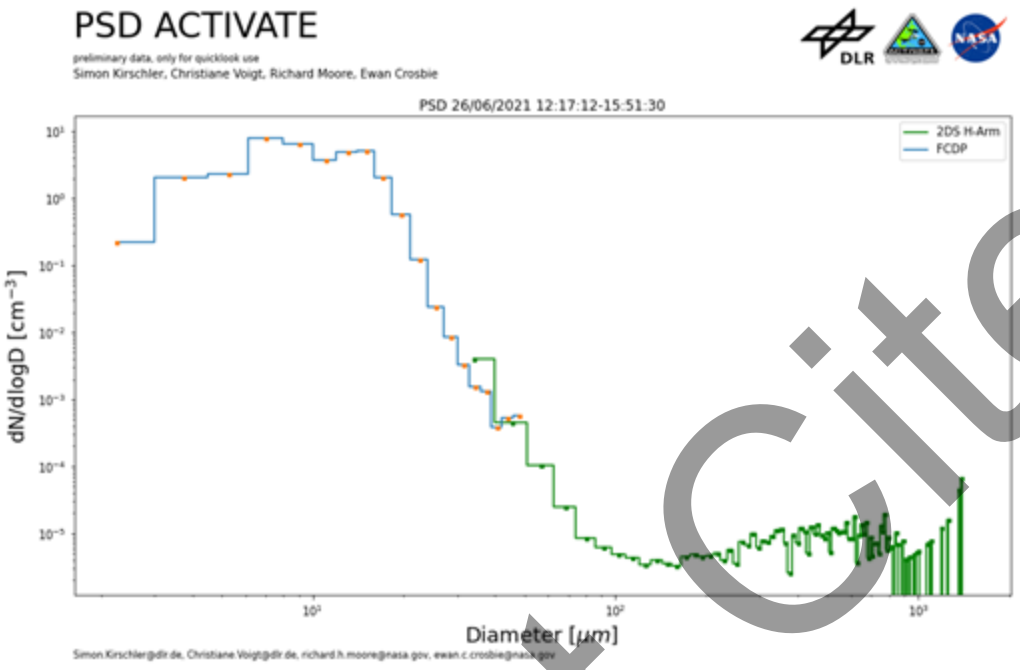
15:48:45 Landing

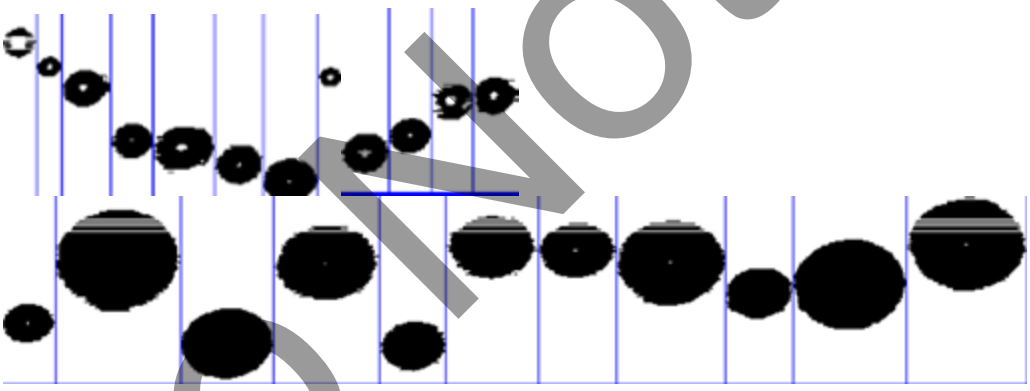

38
37
36
35
34
33
32
-78
-76
-74
-72
-70
KLFI
ATLIC
ZIBUT
NORTN
VIRST
OXANA
LSIER
26 June 2021
Morning
ACTIVATE Flight


GPS Altitude (m above MSL)
4000
3000
2000
1000
0
GPS Altitude (1000 ft. MSL)
12
8
4
0
Latitude (°)
37
36
35
34
33
Dry, 90%RH Green Scattering Coefficient (Mm-1)
50
40
30
20
10
0
In-cloud CVI sampling periods
Particle Number Concentration (cm-3)
10^3
10^2
Fine + Nucleation Modes (diameter > 3nm)
Fine Mode (diameter > 10nm)
Non-Volatile Fine Mode (diameter > 10nm)
CO (ppb)
140
120
100
80
60
CO2 (ppm)
420
418
416
414
412
410
30 x10^3
20
10
0
Water Vapor (ppm)
12:55
6/26/2021
13:20
13:45
14:10
14:35
15:00
15:25
15:50
UTC Date and Time


20210626 - ACTIVATE - KingAir and Falcon flight tracks
Latitude
Longitude
Falcon
KingAir
OXANA
AVAPS release
Altitude (km)
Time (UT)
Time Difference (UC12-HU25) (min)
Altitude (m)
Time, UT
Aerosol Scattering Ratio (532nm)

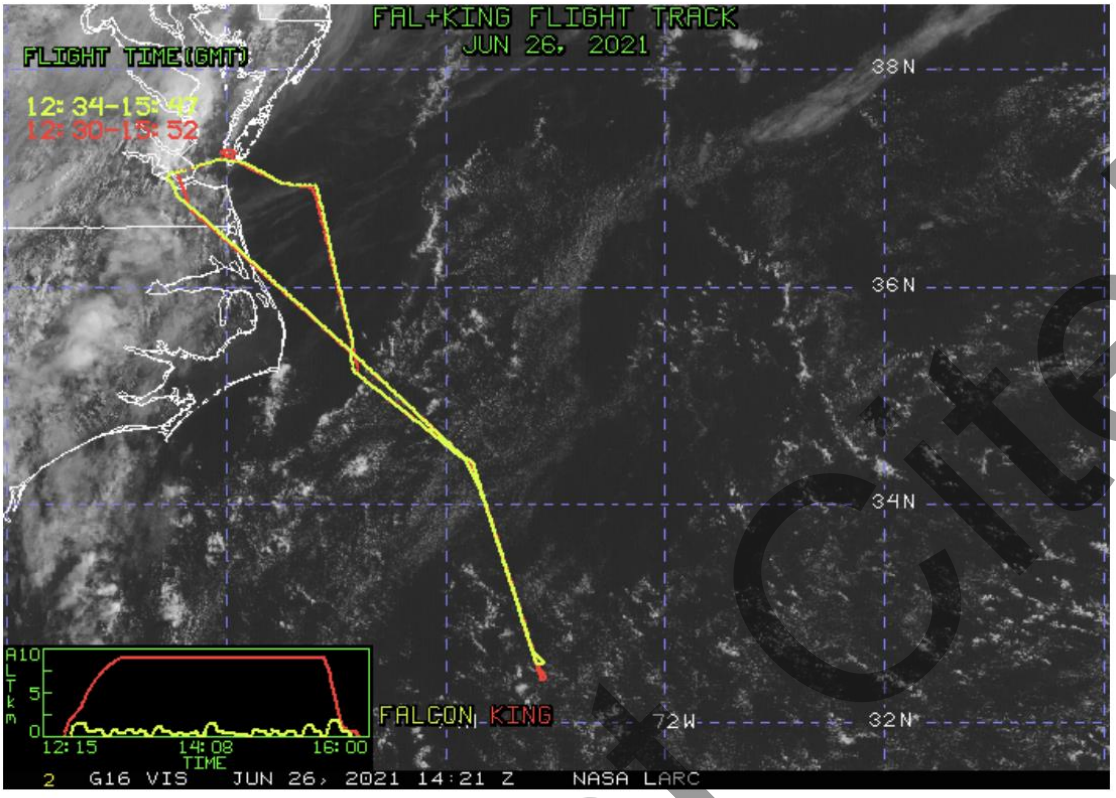

Quicklook ACTIVATE
Cloud Probes (FCDP & 2DS) Quicklook
preliminary data, only for quicklook use
Simon Kirschler, Christiane Voigt, Richard Moore, Ewan Crosbie
DLR
Cloud Probes (FCDP & 2DS) Quicklook 26/06/2021 12:17:12-15:51:30
Altitude [m]
N [cm⁻³]
ED [µm]
LWC [g/m³]
diameter [µm]
12:30:00
13:00:00
13:30:00
14:00:00
14:30:00
15:00:00
15:30:00
Simon.Kirschler@dlr.de, Christiane Voigt@dlr.de, richard.h.moore@nasa.gov, ewan.c.crosbie@nasa.gov



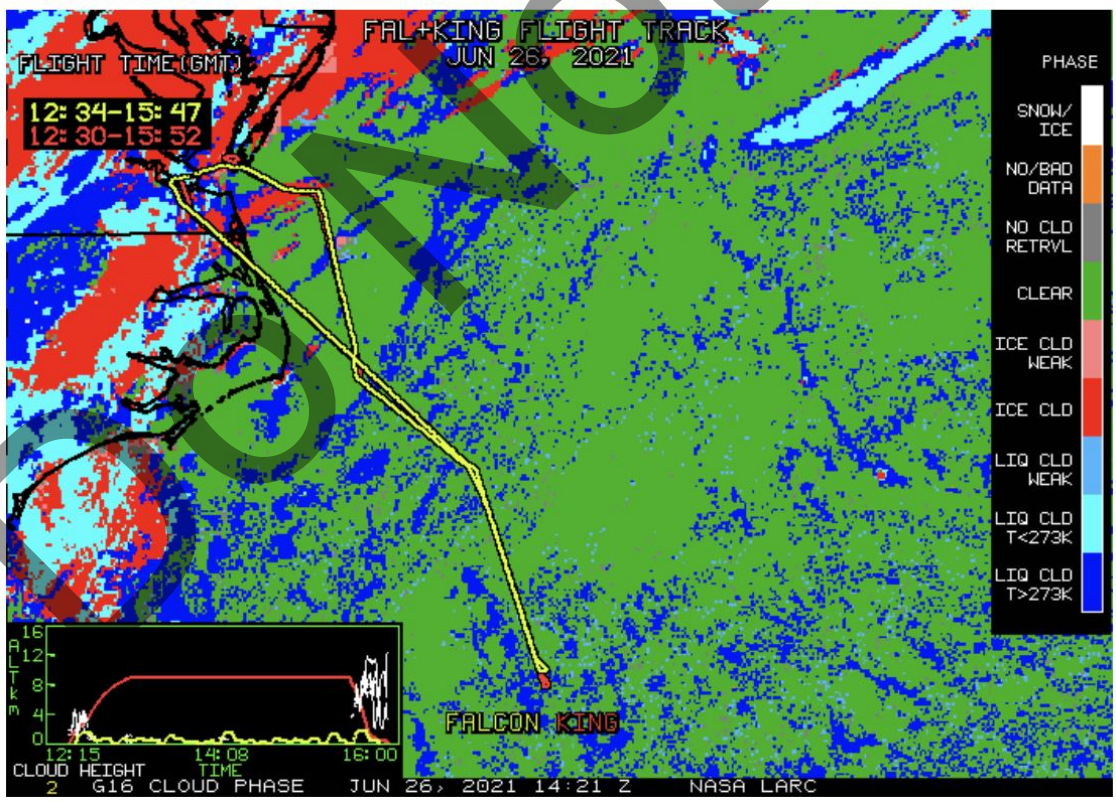


Only pure liquid clouds with precipitation ~ 15:44 UTC.

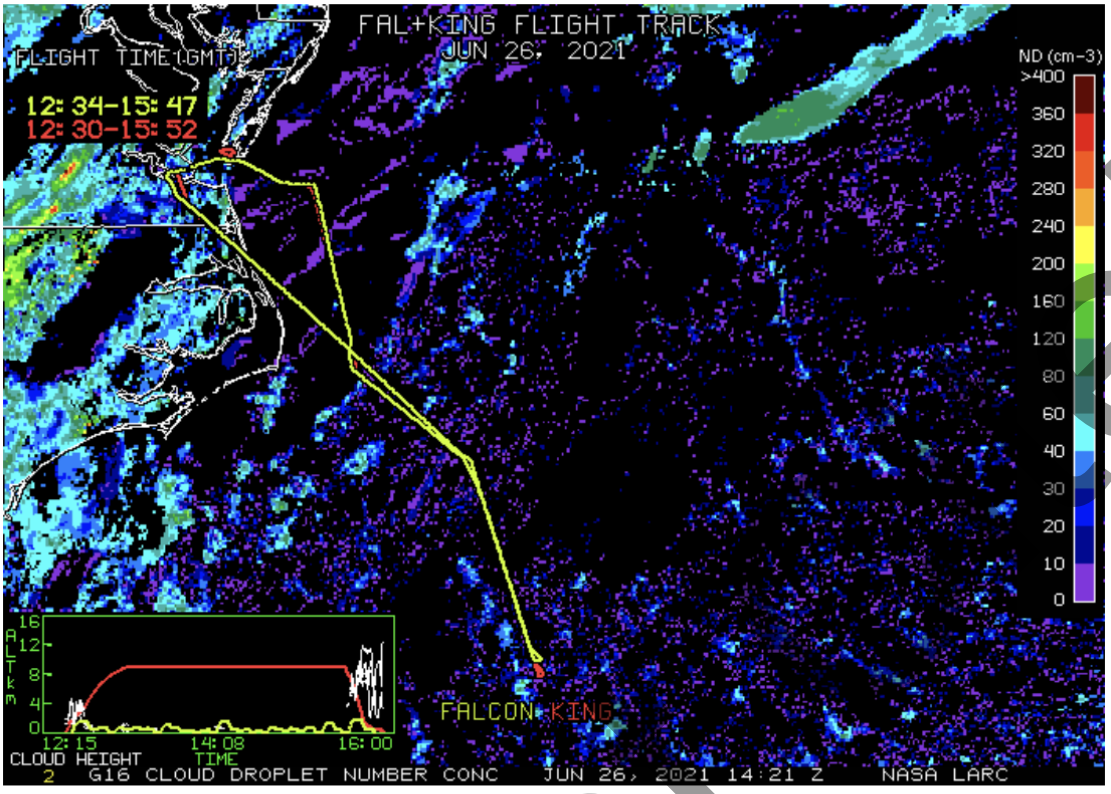
Visible Image



Cloud Phase



Cloud Droplet Number Concentration (cm-3)



Cloud-Top Height (Kft-ASL)