Flight Scientist Report
Tuesday 6/29/2021 ACTIVATE RF91

Flight Type: Statistical Survey Flight
Flight Route:
Special Notes:

King Air

Pilot report (Wusk):

Planned as a UC-12 single flight day; cooperative flight with the HU-25. Planned route: KLFI ATLIC ZIBUT 3715N06915W ZIBUT ATLIC KLFI. UC12 takeoff from runway 08 ahead of HU-25. Good ATC departure and climb to FL280. Generators held a acceptable balance (although significant split during climb out). Profile out to TP and back to ATLIC was nominal. Started the descent into Langley just prior to ATLIC. ATC gave vectors for a VISUAL 26. Normal landing at KLFI, runway 26. 4x dropsondes deployed; ZIBUT EB, turn point, 1/2 to ZIBUT WB, East of ATLIC. Good coincidence throughout flight. Crew was Delaney, Wusk, Seaman.

Flight scientist report (Seaman):

Approx. takeoff: 08:17 EST

Approx. landing: 11:34 EST

Summary: Single sortie on the UC12 was a **statistical survey** joint flight with the HU25 Falcon.

Flight plan: KLFI ATLIC ZIBUT 3715N 069715W ZIBUT ATLIC KLFI

QNC(s): Shane Seaman was the operator for HSRL-2, RSP, the cameras, and the sondes.

HSRL-2: nominal operation.

RSP: nominal operation.

Cameras: nominal operation.

Sondes: A total of 4 sondes were dropped.

Falcon

Pilot report (Baxley):
Takeoff (Z): 1218 / Land: 1540

Science flight for the HU-25 in support of ACTIVATE Campaign #4, conducted cooperatively with the UC-12. Route of flight planned for KFLI-ATLIC-ZIBUT-3715N06915W-ZIBUT-ATLIC-KLFI. Departed Rwy26 with climbing left turn direct to ATLIC climbing at 5k ft MSL for initial transit, then descending to 500' MSL approximately 20 nautical miles east of KLFI. Winds were light (<10 kts) out of the west throughout the flight, with clouds primarily in the vicinity of ZIBUT and farther east from 1000' – 6000' MSL. Time coordination with the UC-12 was always within 10 minutes, and usually less than 2 minutes. The auto-pilot failed the last ¼ of the flight, which had a small impact on maintaining tight heading and altitude parameters. All objectives were achieved and with no other discrepancies noted.

Pilots: Elder/Baxley

QNCs: Crosbie/Winstead

Flight scientist report (Crosbie):
This flight was similar to RF90 in almost all aspects. There were a few developed regions that were encountered but the broad appearance of the clouds was similar to RF90. One minor difference was in the appearance of the shallow Cu – in this flight, there appeared to be more clumping of the shallow cloud elements rather than a more distributed field. Aerosol conditions were very similar (modules TBD)

Eddie:
12:19:55 Takeoff

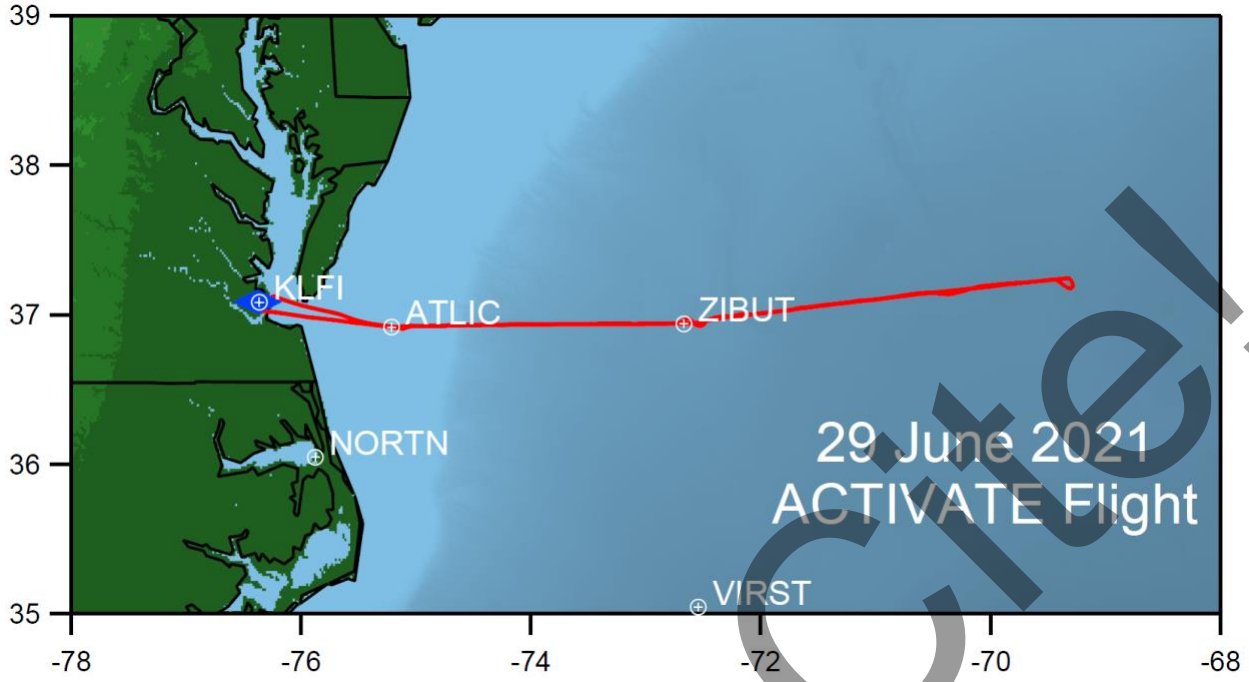
12:31:30 Humidifier turned off. High ambient RH.

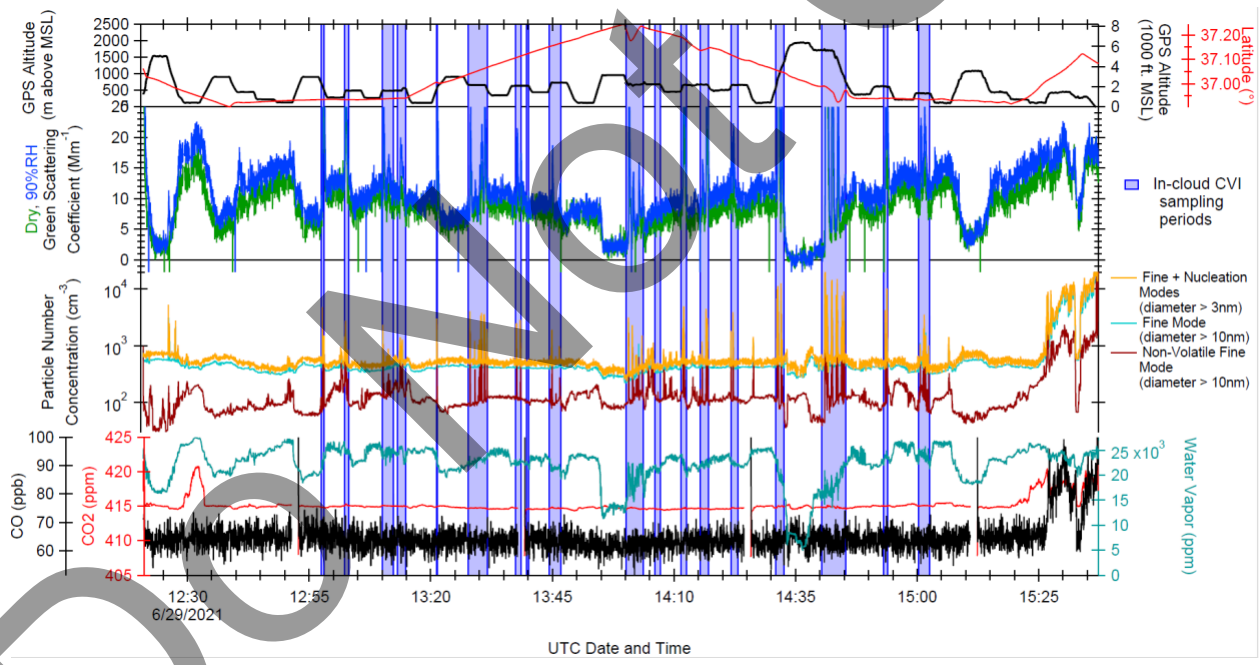
12:45 Humidifier off & still wet neph RH > 94%

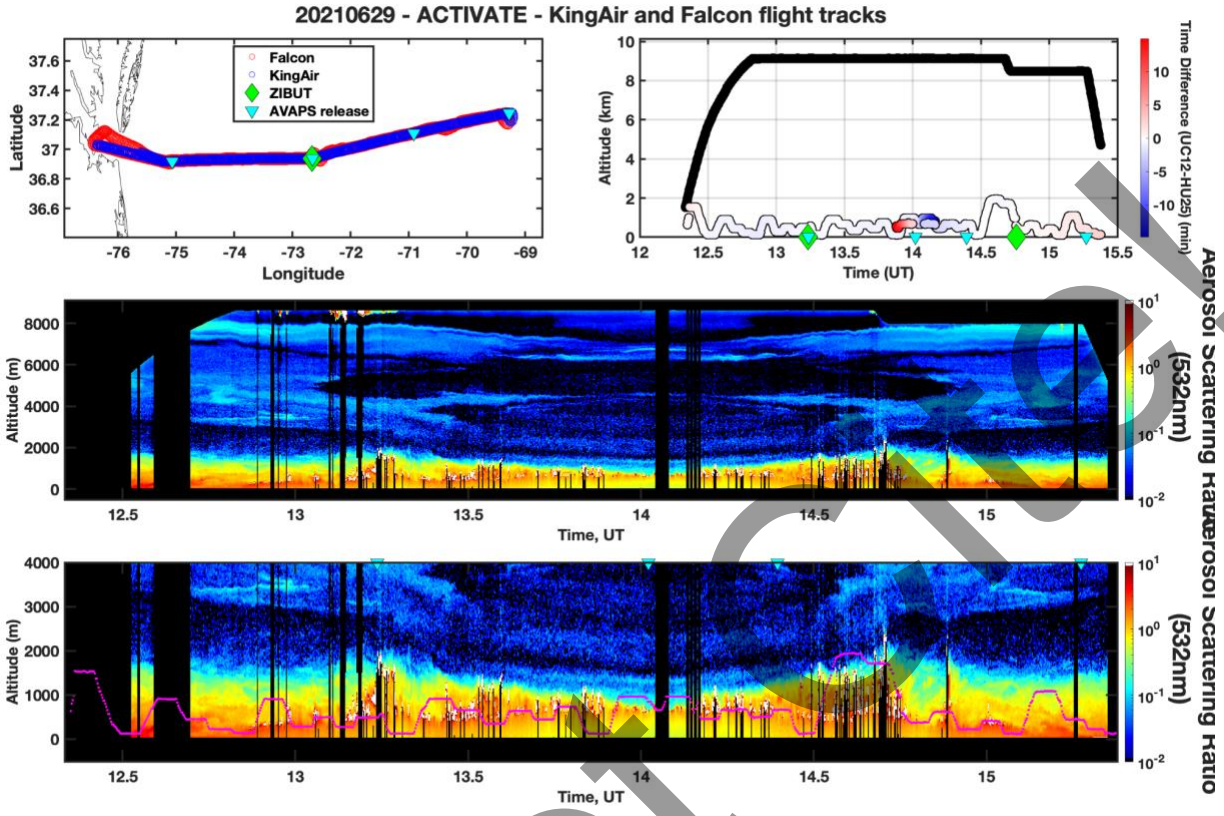
13:46 Humidifier turned back on as RH is decreasing

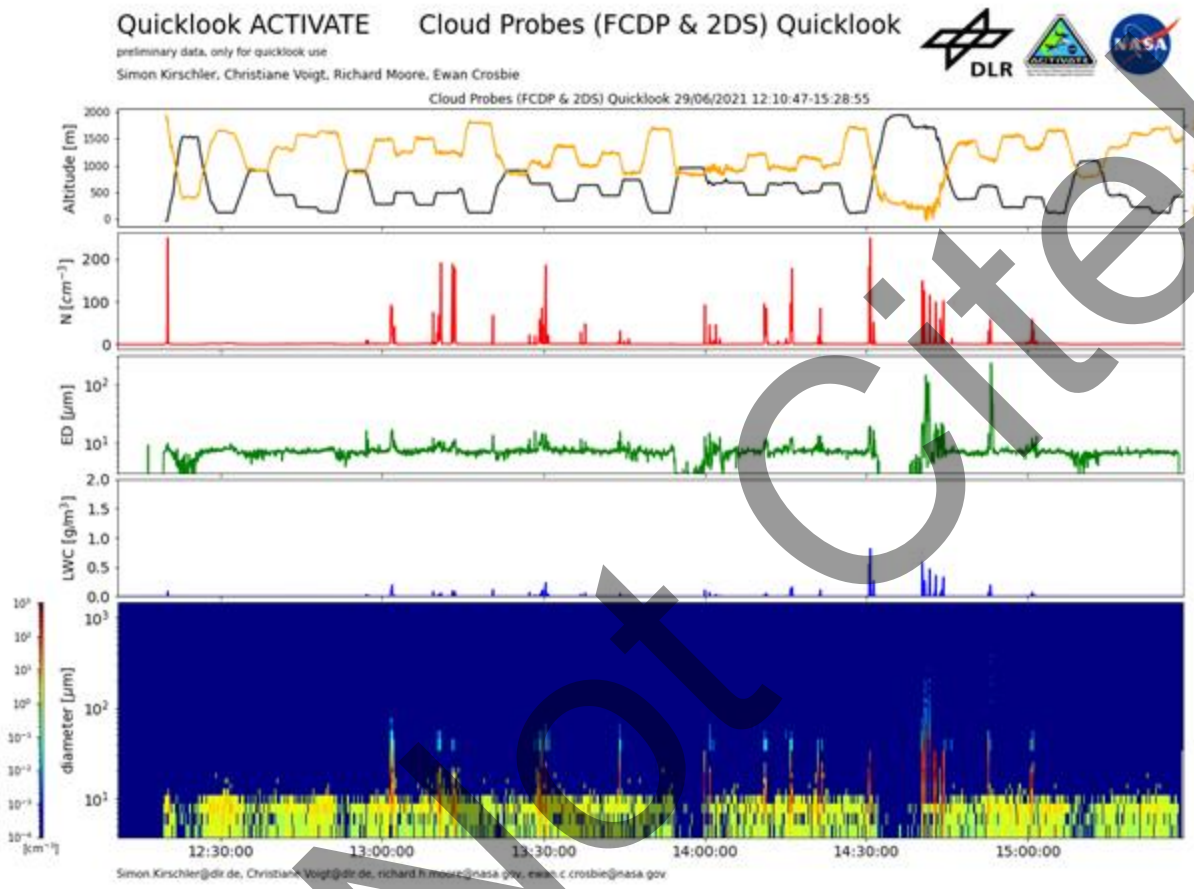
15:30 Humidifier & WCM turned off in preparation for landing

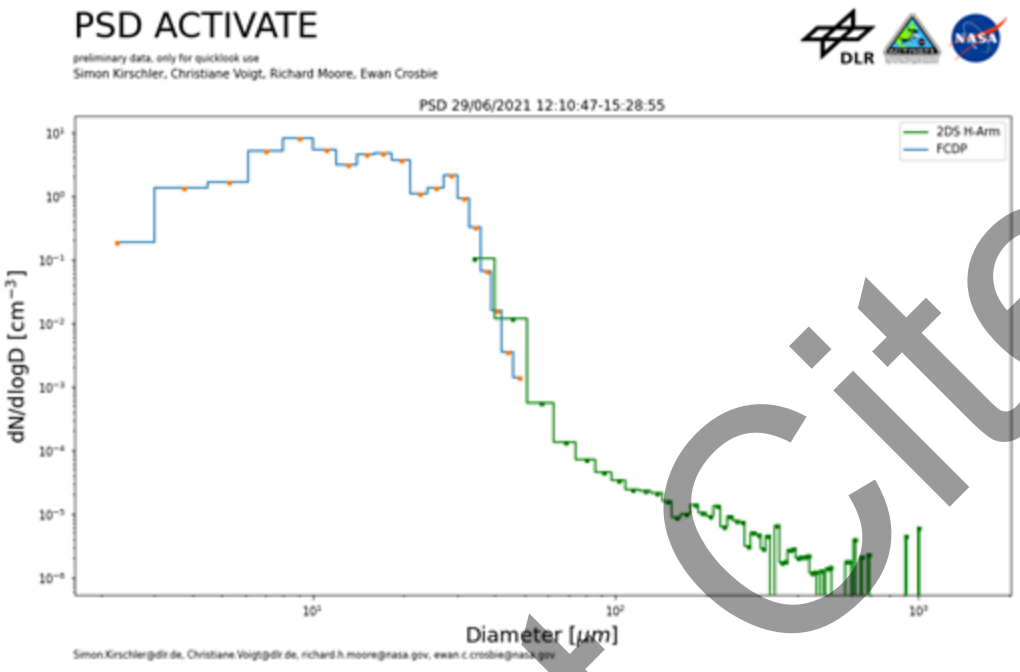
15:36:59 Landing

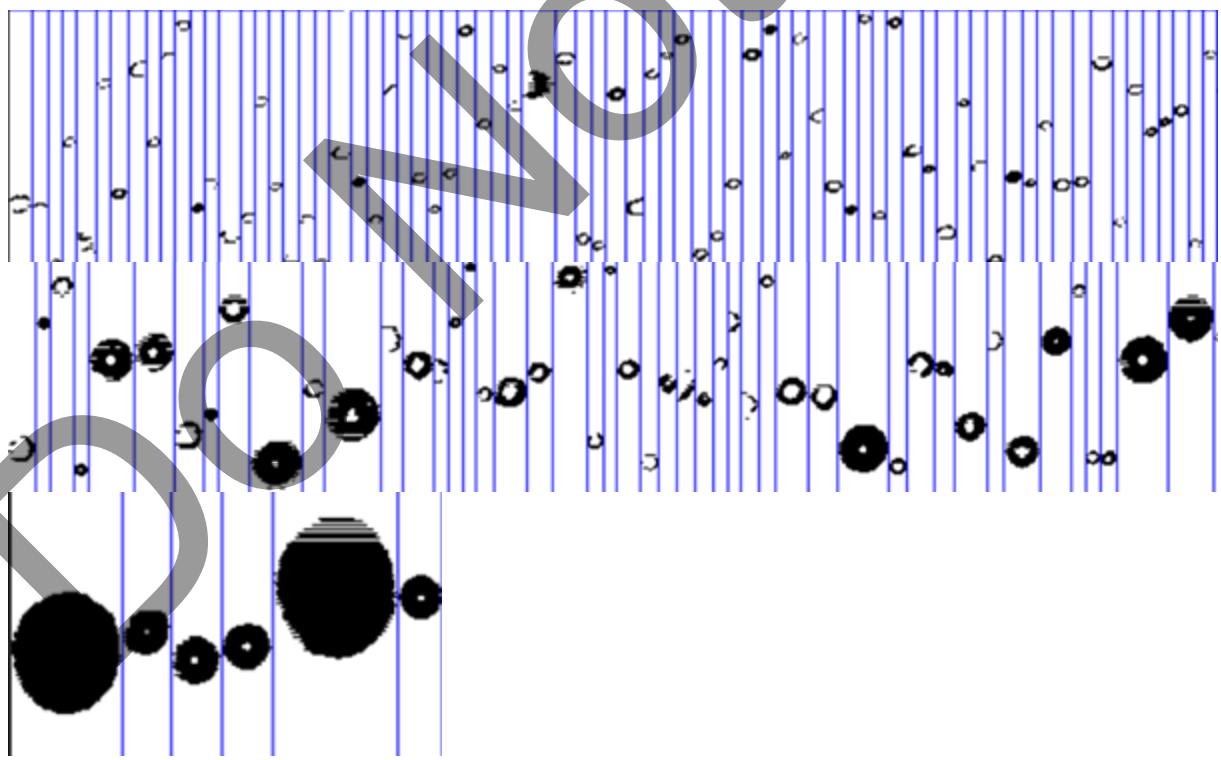

KLFI
ATLIC
ZIBUT
NORTN
VIRST
29 June 2021
ACTIVATE Flight
39
38
37
36
35
-78
-76
-74
-72
-70
-68


GPS Altitude (m above MSL)
GPS Altitude (1000 ft MSL)
Latitude (°)
Dry, 90%RH Green Scattering Coefficient (Mm-1)
In-cloud CVI sampling periods
Particle Number Concentration (cm-3)
Fine + Nucleation Modes (diameter > 3nm)
Fine Mode (diameter > 10nm)
Non-Volatile Fine Mode (diameter > 10nm)
CO (ppb)
CO2 (ppm)
Water Vapor (ppm)
12:30
6/29/2021
12:55
13:20
13:45
14:10
14:35
15:00
15:25
UTC Date and Time


20210629 - 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
DLR
Cloud Probes (FCDP & 2DS) Quicklook 29/06/2021 12:10:47-15:28:55
Altitude [m]
N [cm⁻³]
ED [µm]
LWC [g/m³]
diameter [µm]
[cm⁻³]
12:30:00
13:00:00
13:30:00
14:00:00
14:30:00
15:00:00
Simon.Kirschler@dlr.de, Christiane.Voigt@dlr.de, richard.h.moore@nasa.gov, ewan.c.crosbie@nasa.gov

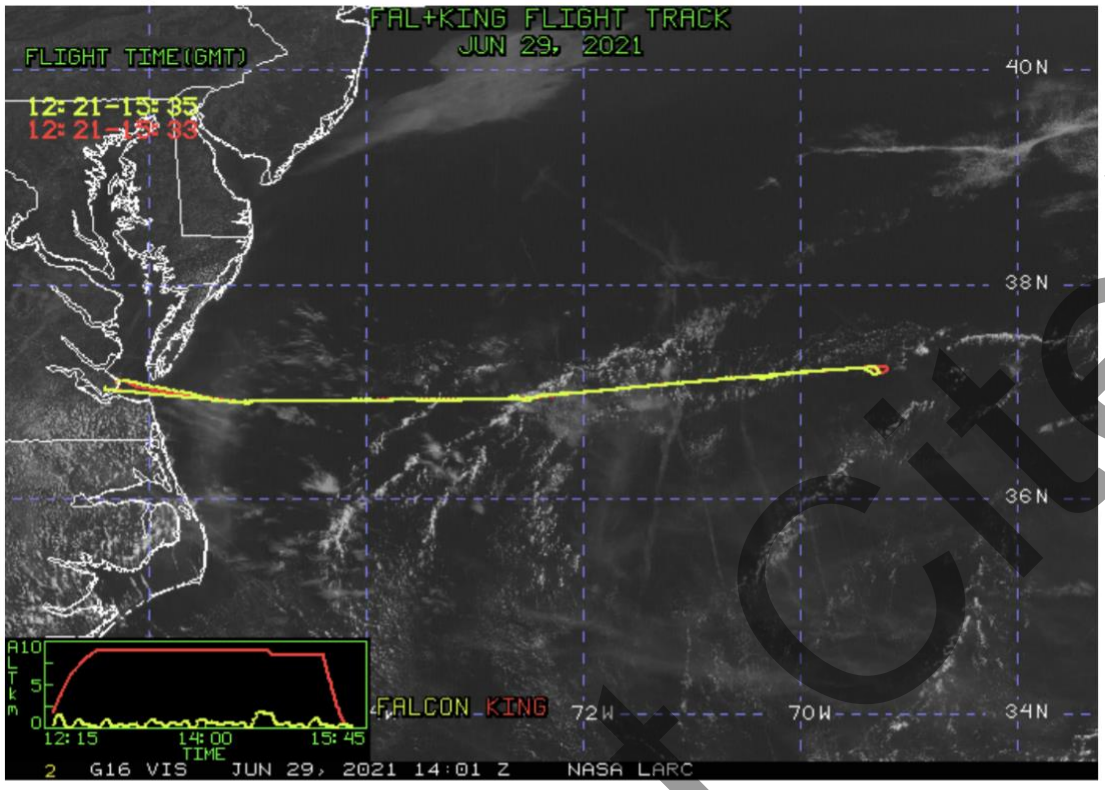




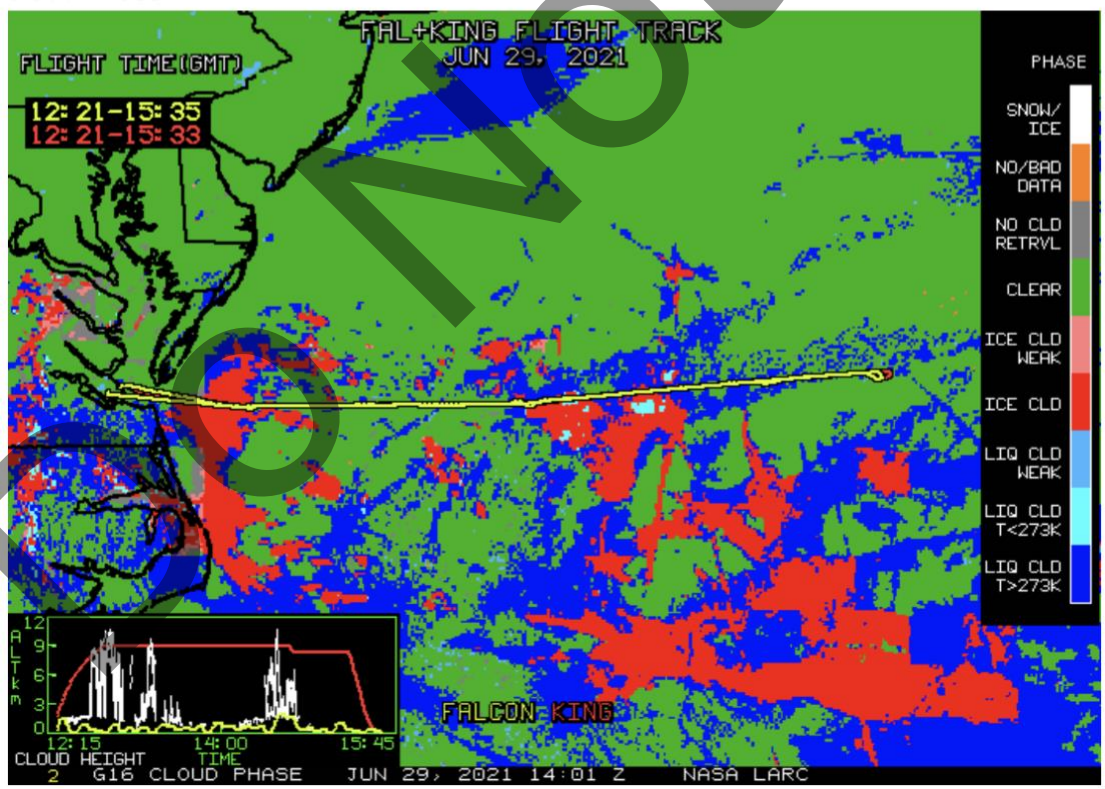
Only pure liquid clouds with drizzle and light precipitation ~ 14:53 UTC.

NASA-LaRC Clouds Group GOES-16 Quicklook Images for Flight 91, 14:01 UTC Jun 29, 2021

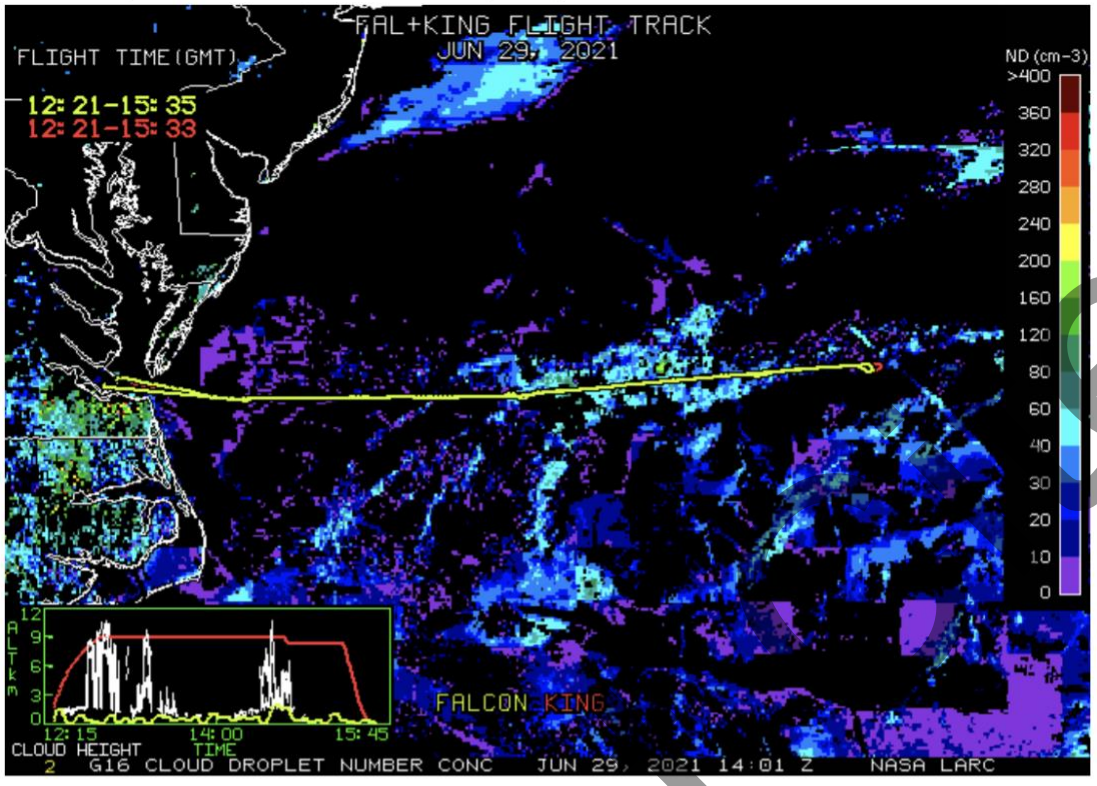
Visible Image



Cloud Phase



Cloud Droplet Number Concentration (cm-3)



Cloud-Top Height (Kft-ASL)