Flight Scientist Report
Thursday 01/27/2022 ACTIVATE RF114

Flight Type: Statistical Survey Flight
Flight Route: KPVD SKOWL YAHOO N3925/W06725 CROAK ATLIC KLFI
Special Notes: Second of two flights on this day going up to New England area for a refueling stop.

King Air

Pilot report (Coldsnow):
Flight flown as briefed. King Air remained synched with Falcon throughout the flight (within 10 min) until 40 NM from ZIZZI on the return leg. There were no observed clouds at low altitude from ZIZZI to 40 NM out. King Air experienced intermittent cirrus clouds from 30 NM before LYNUS to 30 NM after LYNUS. There were period of time when the RSP shutter was closed during encounters with cirrus clouds. Researcher requested to stay at FL280. Winds at flight level 280 were out of the SW at 100-135 Knots. Three dropsonds were released on this flight. All data collection from the sonds were nominal.

Flight scientist report (Shingler):

KPVD SKOWL YAHOO 3925N6725W CROAK ATLIC KLFI

Cloud free coming out of SKOWL, aerosol layer developed ahead of the cloud edge with ASR values up to about 2. Cloud formed off the coast with tops capped at 4-5kft. A hole developed at approximately 18:12z. After making the turn at 3925N06725W starting to see small but more frequent holes in the stratified deck with tops still steady at about 5kft. Approaching MARIG, looks like more holes are developing in the stratiform deck with other pockets of puffer cu nearby. Thinned out and cloud free for about 10 minutes along southern end of the leg coming in to CROAK. Cloud deck reformed with tops up to 5-6kft. Aerosols aloft in the FT extending down to 12kft.

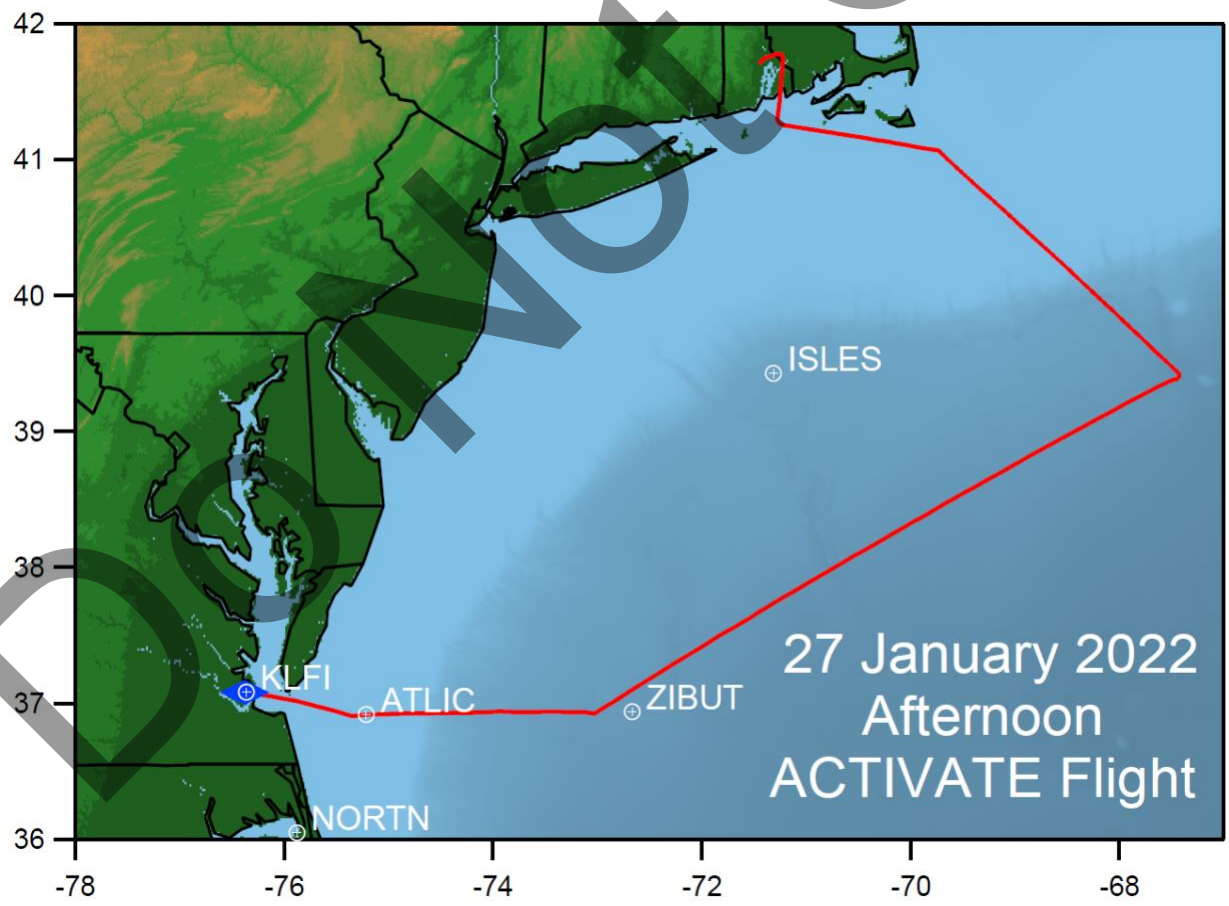
4 Sondes dropped
3925N6725W
MARIG
CROAK
ATLIC

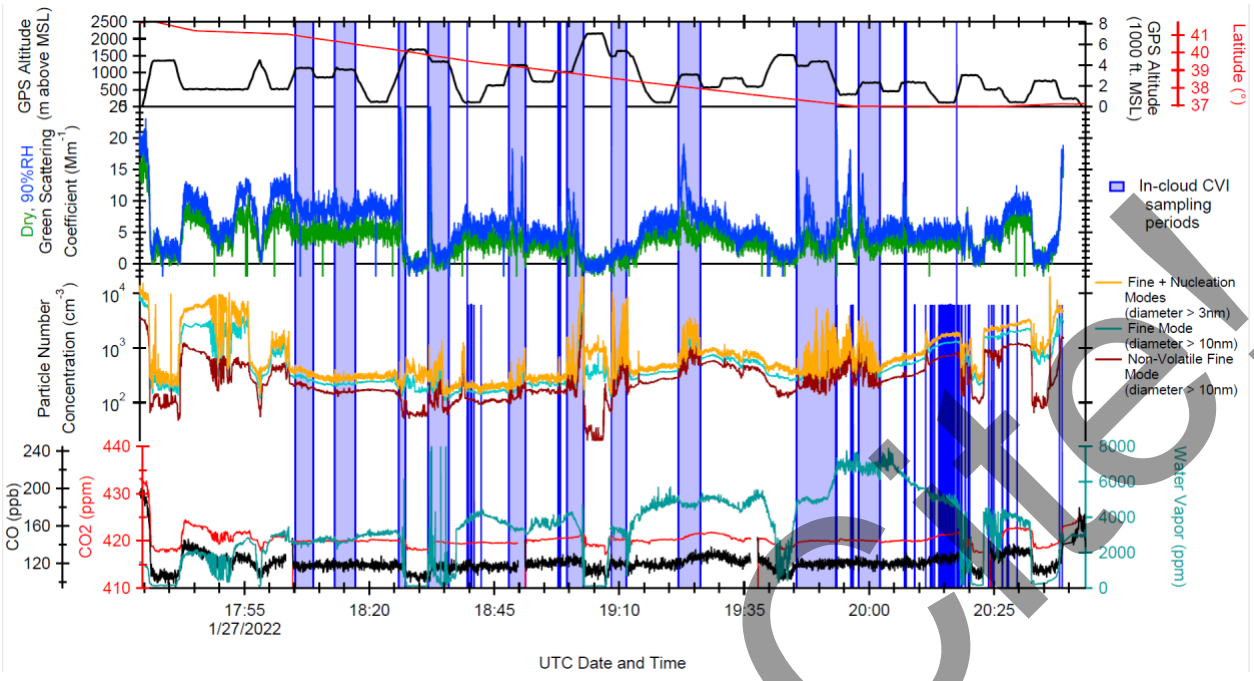
195030- 195230 nadir camera falcon in cloud underneath, speeds matched

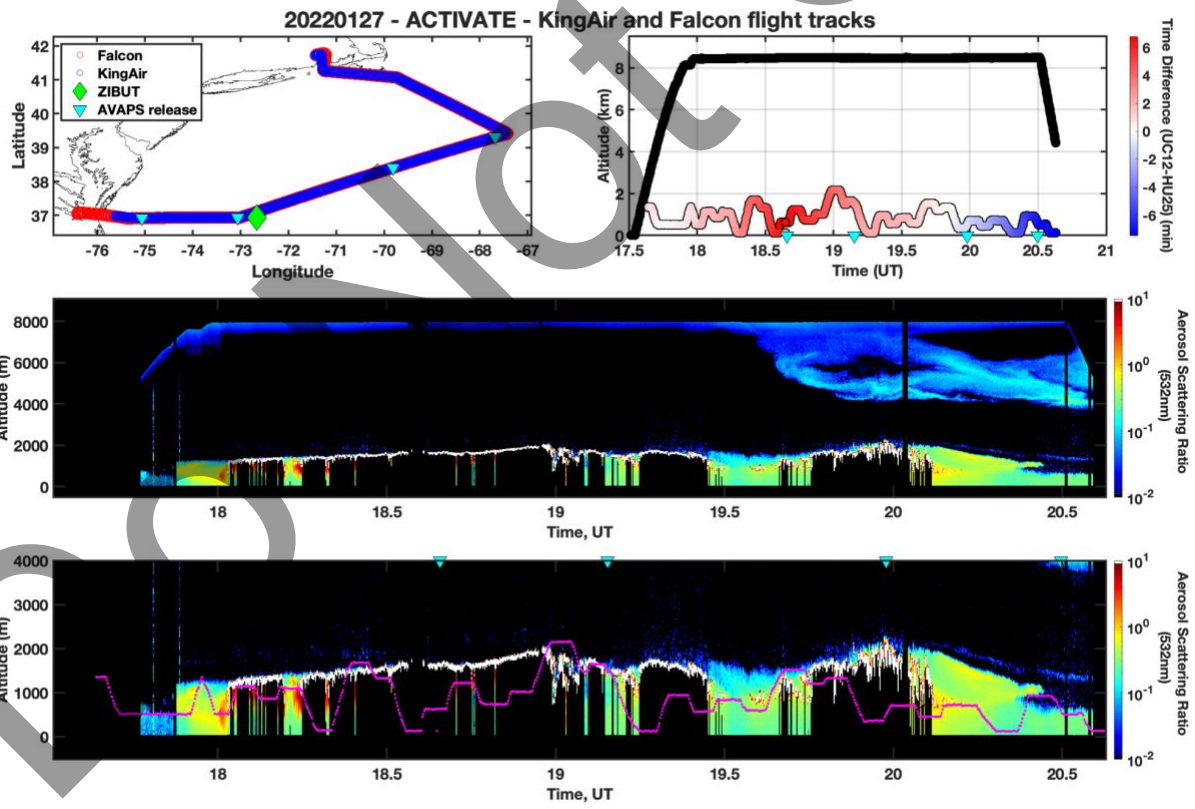
Falcon

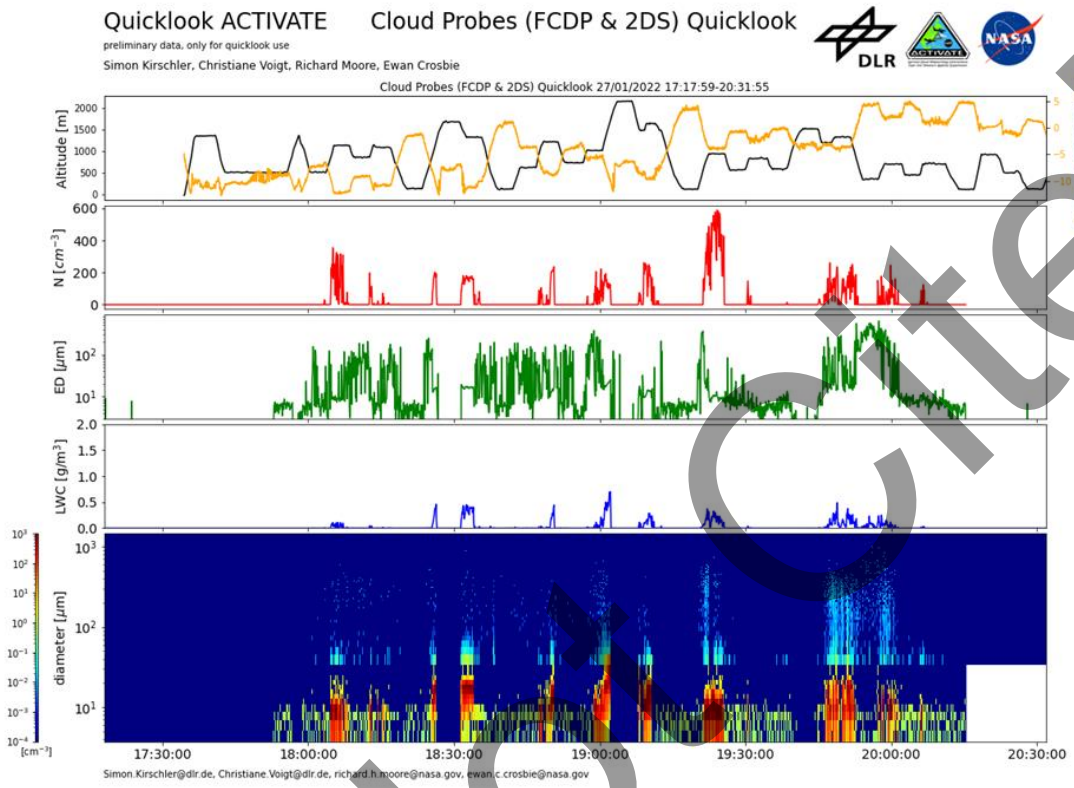
Pilot report (Statistical survey flight from New England returning to Virginia. Plan amended from cutting through W105A warning area and just flew the reverse track from the morning flight. Route was KPVD SKOWL YAHOO N3925/W06725 CROAK ATLIC KLFI. Clouds generally from 2000' MSL to 5500' MSL. Less icing during the below cloud top legs compared to morning sortie. Excellent statistical profiles. Inadvertent research power interruption just before landing was self-induced.):

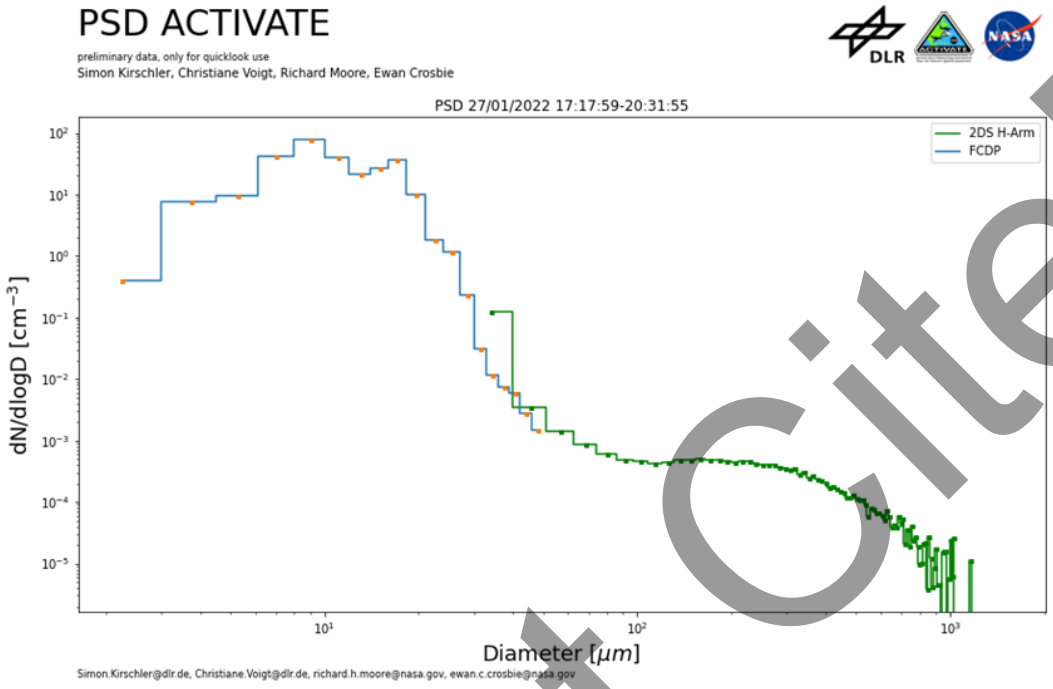
Flight scientist report (Crosbie):
Transit stat survey KPVD-KLFI. Similar conditions to the morning flight overall but the cloud layer became more complex in structure. More evidence of decoupling of the upper part of the cloud layer with sometime 3 distinct strata. Some of the clouds had wave characteristics with variable base and tops. Often these layers were very thin (100-200ft). The ice particles during this flight appeared to consist of a higher proportion of plates/columns while the morning was more irregular, rimed aggregates. There were some significant breaks in the cloud, that were not observed during the outbound flight. Instrument icing was a significant factor on this flight and the module order had to be rearranged to accommodate MINALT for ice clearance.

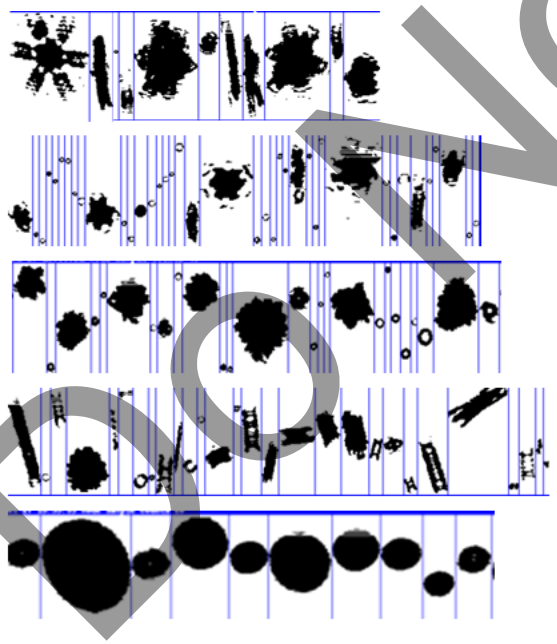



GPS Altitude (m above MSL)
GPS Altitude (1000 ft. MSL)
Latitude (°)
Dry, 90%RH Green Scattering Coefficient (Mm-1)
In-cloud CVI sampling periods
Particle Number Concentration (cm-3)
Fine + Nucleation Modes (diameter > 3nm)
Fine Mode (diameter > 10nm)
Non-Volatile Fine Mode (diameter > 10nm)
CO (ppb)
CO2 (ppm)
Water Vapor (ppm)
17:55
1/27/2022
18:20
18:45
19:10
19:35
20:00
20:25
UTC Date and Time


20220127 - 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 27/01/2022 17:17:59-20:31:55
Altitude [m]
N [cm⁻³]
ED [µm]
LWC [g/m³]
diameter [µm]
Static Temperatur [°C]
17:30:00
18:00:00
18:30:00
19:00:00
19:30:00
20:00:00
20:30:00
Simon.Kirschler@dlr.de, Christiane.Voigt@dlr.de, richard.h.moore@nasa.gov, ewan.c.crosbie@nasa.gov

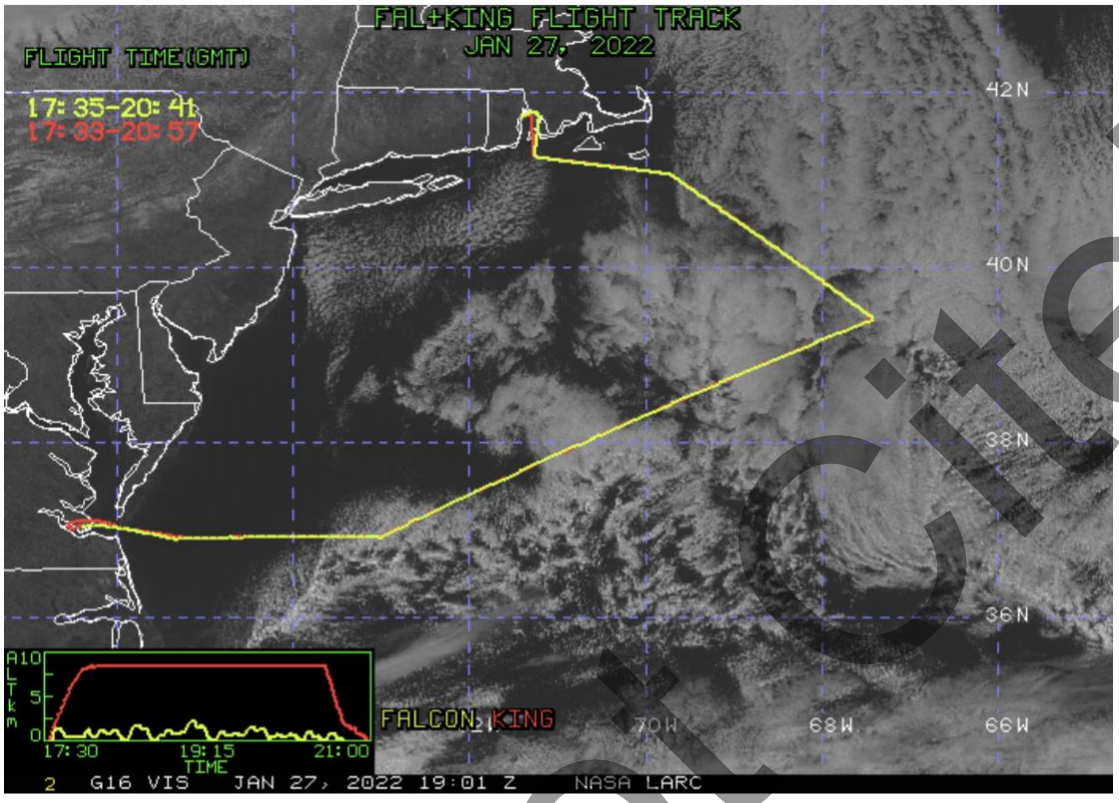




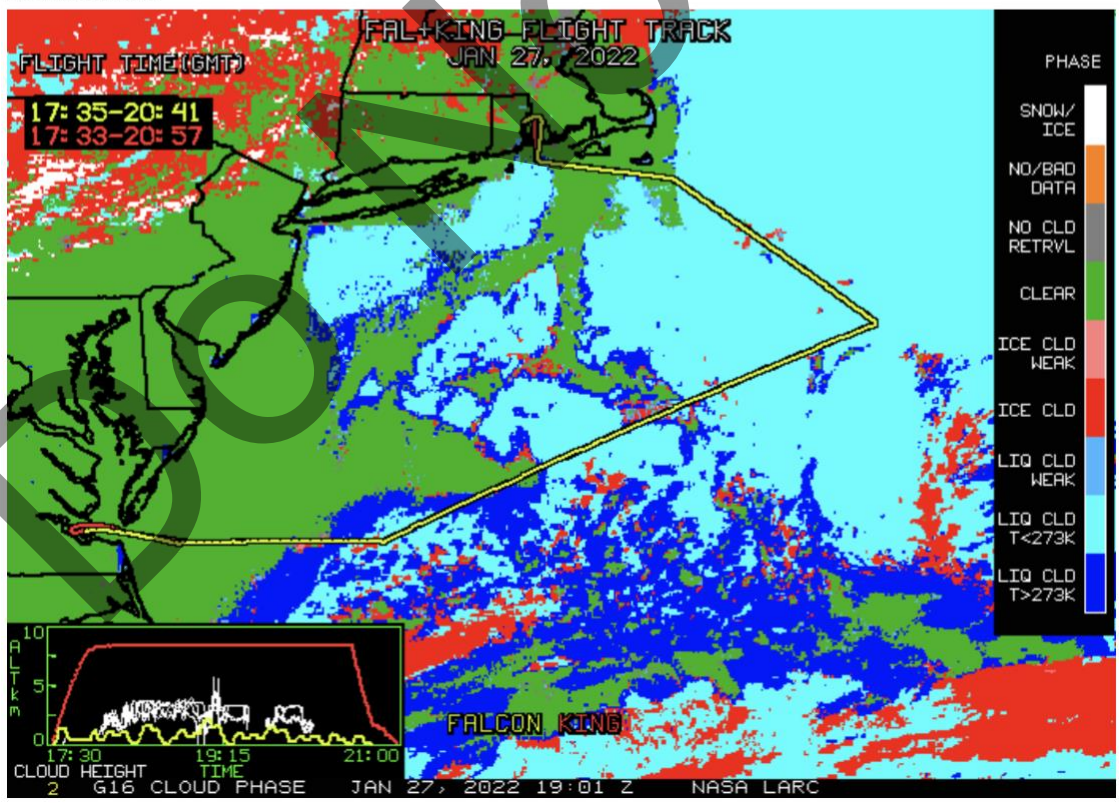
Mixed phase clouds with ice/liquid Precip.
Dominantly ice Precip with columnar ice
Particles.

NASA-LaRC Clouds Group GOES-16 Quicklook Images for Flight 114, 19:01 UTC Jan 27, 2022

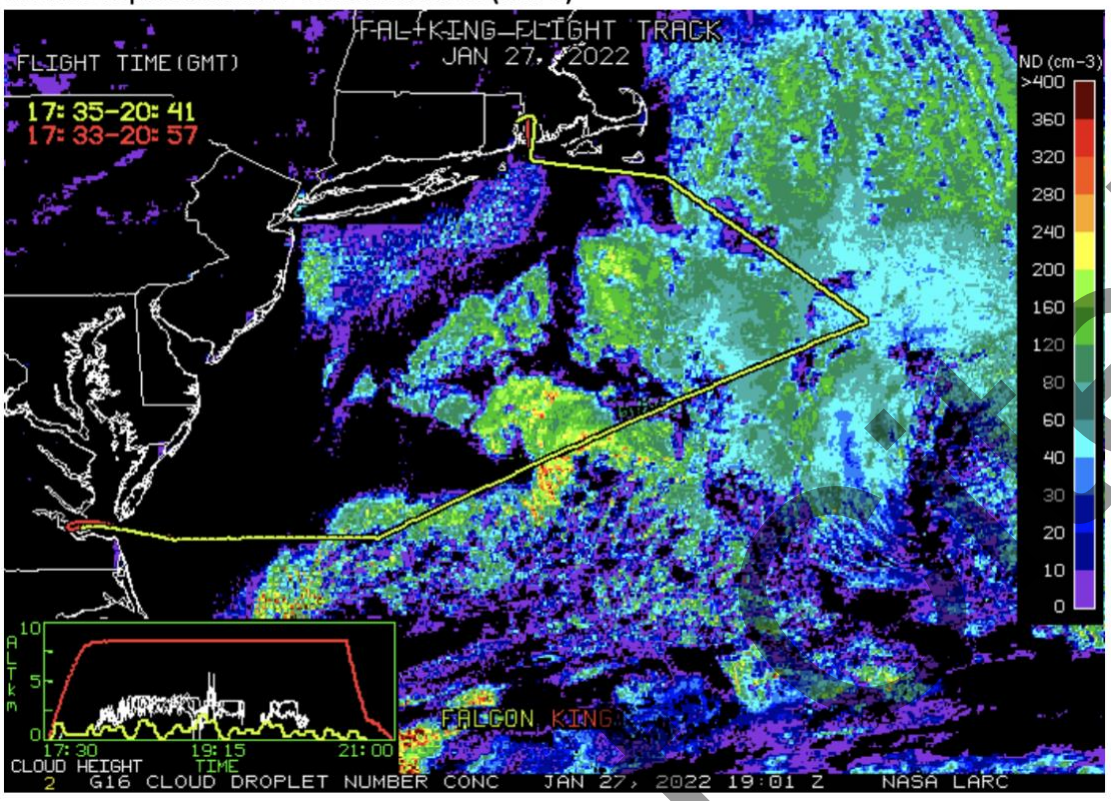
Visible Image



Cloud Phase



Cloud Droplet Number Concentration (cm-3)



Cloud-Top Height (Kft-ASL)