Flight Scientist Report
Thursday 01/27/2022 ACTIVATE RF113

Flight Type: Statistical Survey Flight
Flight Route: KLFI ATLIC CROAK N3925/W06725 YAHOO SKOWL KPVD
Special Notes: First 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 takeoff delayed due to remote tower operations. King Air was outside the 10 minute window of the Falcon until halfway between ATLIC and CROAK. Rest of the flight was synchronized until the King Air was 45 NM from ATLIC. Falcon did one 3min 360 to help with synchronization on the way back. Winds at altitude were out of the SW at 100-115 Knots. Four dropsonds were released. All data collection from sonds were nominal.

Flight scientist report (Shingler):

KLFI ATLIC CROAK 3925N06725W YAHOO SKOWL KPVD

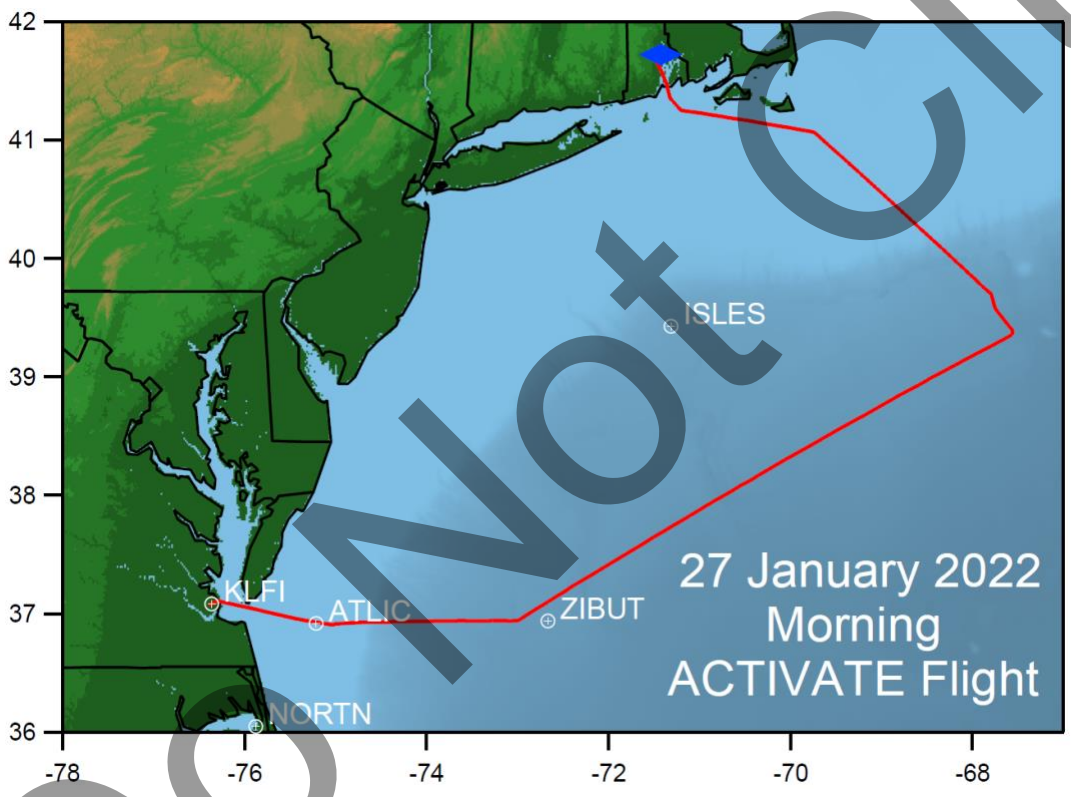
One way trip to Providence with a return later in the day. Near the end of AR9, just before CROAK, there was some interesting cloud top height structure with a slight sawtooth pattern noticed by MShook. CTHs varying between 4-6kft. After the turn to the NE, CTHs settled to a more rolling constant height varying between 5-6kft through MIDPOINT. Very clean in the free troposphere. These conditions persisted all the way to YAHOO.

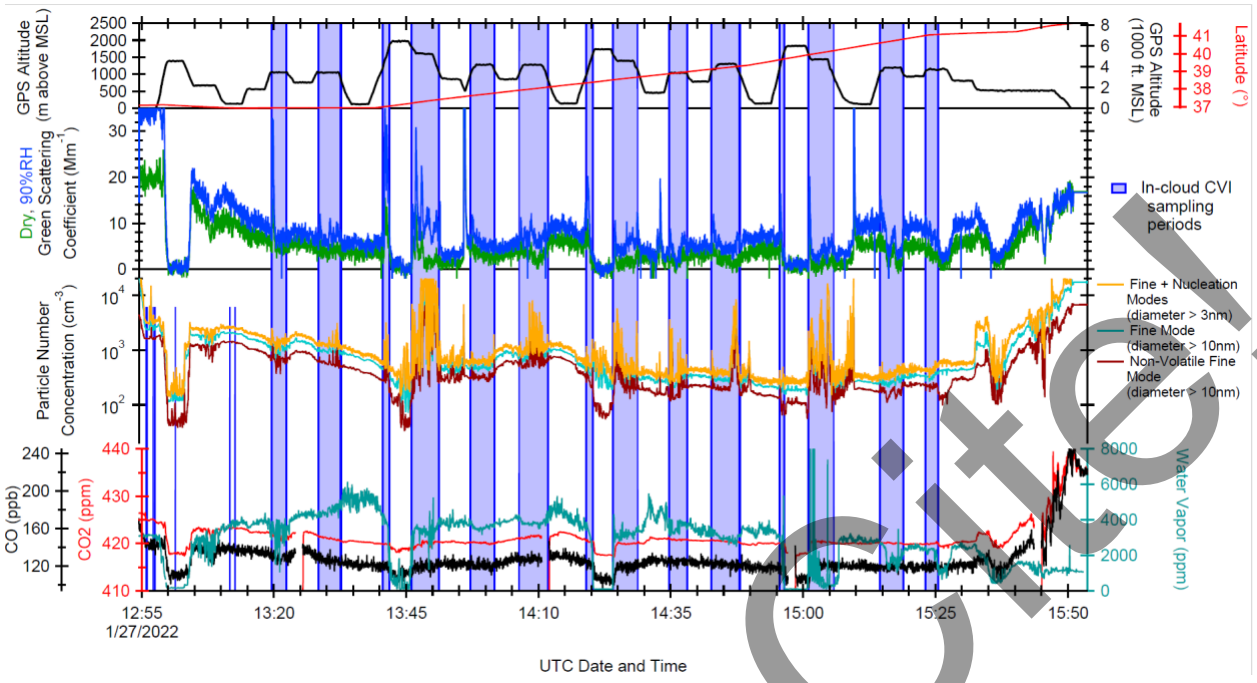
4 Sondes dropped
CROAK
MID CROAK/TURN
3925N06725W
YAHOO

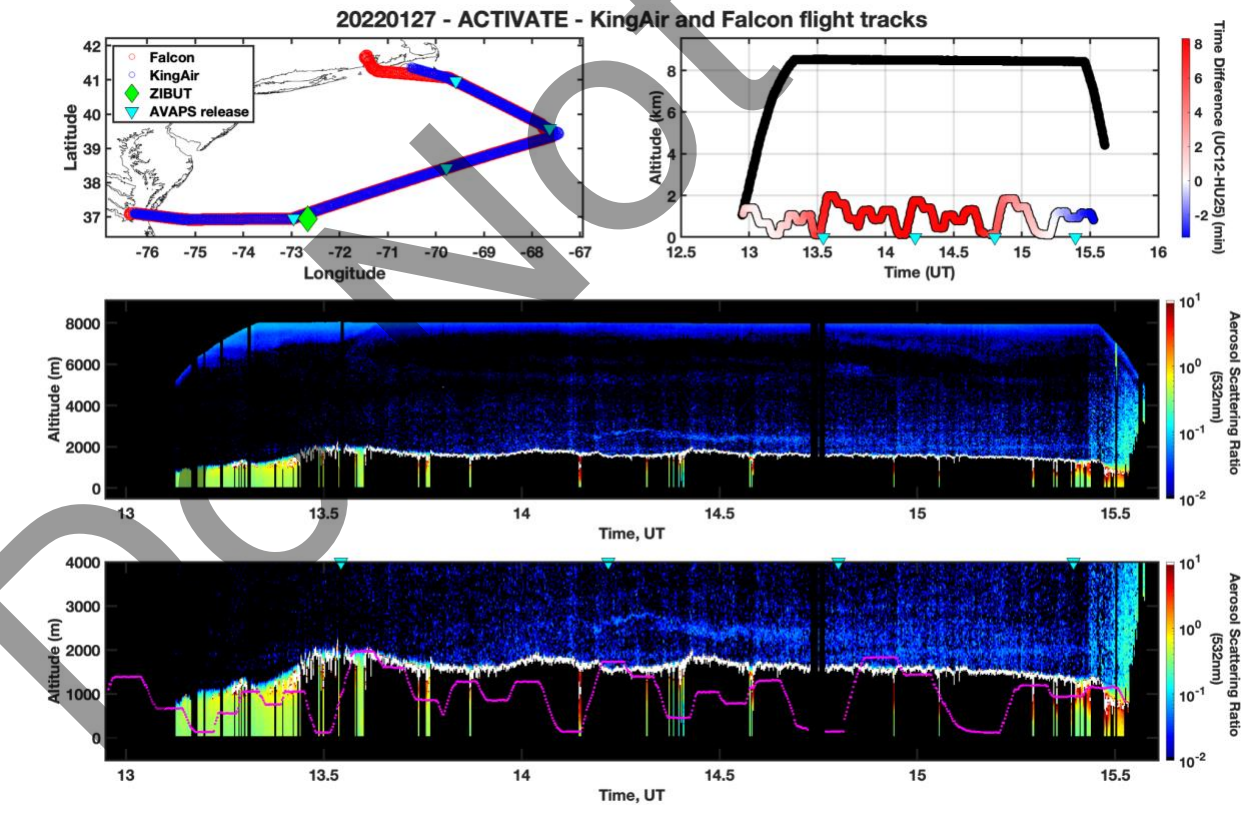
~1517 +/-3 underpass on nadir cam

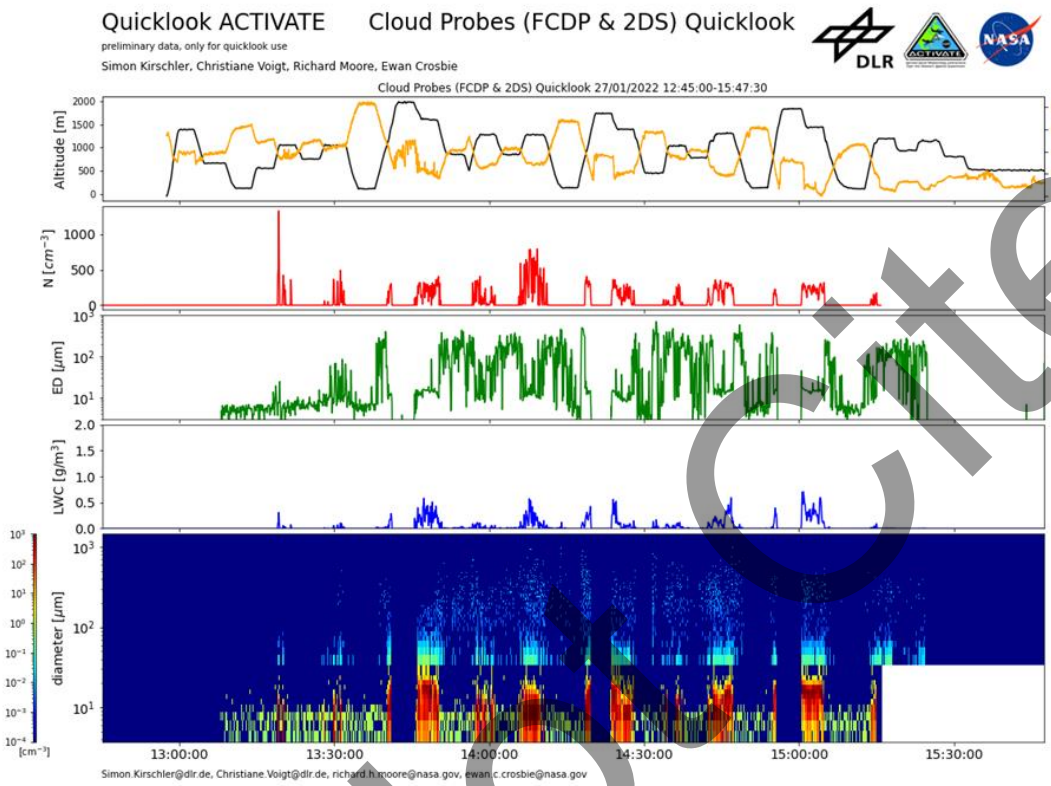
Falcon
Pilot report (Slover):
Statistical survey flight to New England flown as planned. Route was KLFI ATLIC CROAK N3925/W06725 YAHOO SKOWL KPVD. Clouds generally from 2000' MSL to 5500' MSL. Some icing during the below cloud top legs. Excellent statistical profiles. Refueling at Providence, RI successful and a very suitable location.

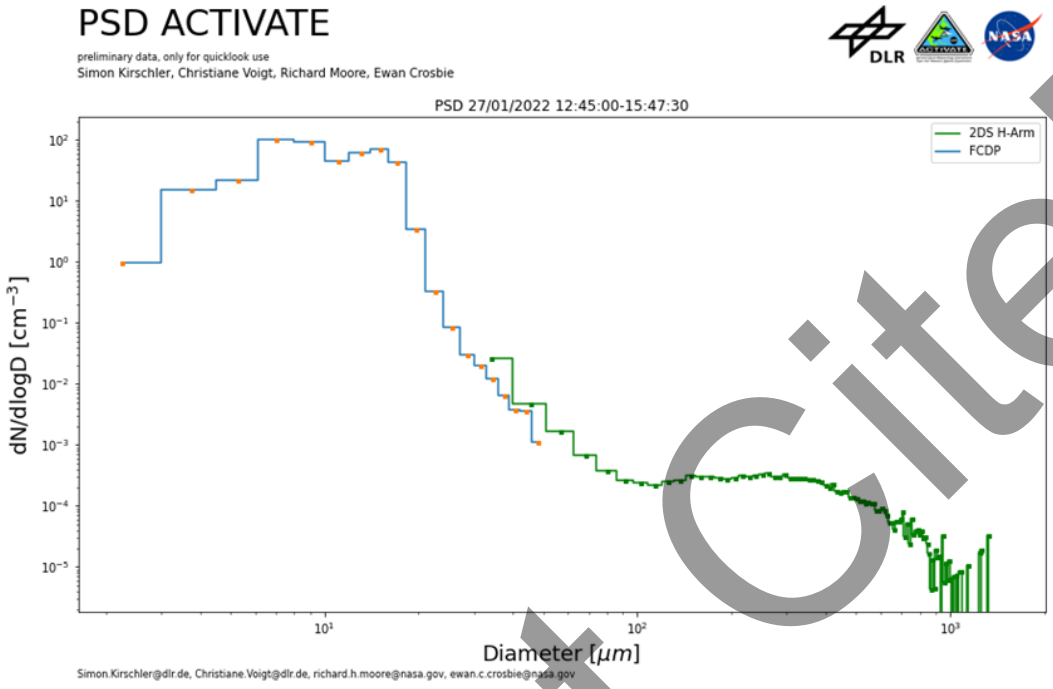
Flight scientist report (Crosbie):
Transit stat survey to KPVD (Providence). Initially a clear region quickly transitionined to shallow Cu and then filled in to form an overcast deck. Very dry conditions observed above the cloud. Some ice precip was observed even in the small clouds. Once the clouds thickened there was visible showers forming and affecting the sub-cloud environment. Largely overcast conditions were present until YAHOO on the inbound leg to PVD. Some regions appeared to become visiblely more decoupled with 2 layers forming. Further to the NE the cloud top inversion became sharper and stronger, while cloud base remained ragged and ill defined in places. Instrument icing was a significant factor on this flight.

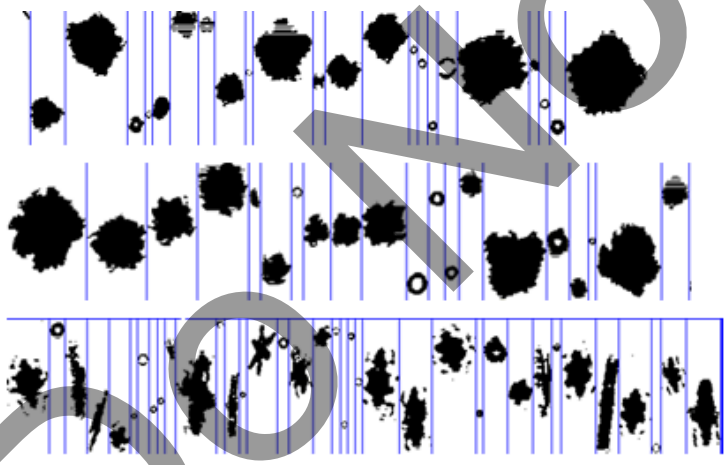



GPS Altitude (m above MSL)
GPS Altitude (1000 ft. MSL)
Latitude (°)
Dry, 90%RH Green Scattering Coefficient (Mm-1)
In-cloud CVI sampling periods
Particle Number Concentration (cm-3)
Fine + Nucleation Modes (diameter > 3nm)
Fine Mode (diameter > 10nm)
Non-Volatile Fine Mode (diameter > 10nm)
CO (ppb)
CO2 (ppm)
Water Vapor (ppm)
12:55
1/27/2022
13:20
13:45
14:10
14:35
15:00
15:25
15:50
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 12:45:00-15:47:30
Altitude [m]
Static Temperatur [°C]
N [cm⁻³]
ED [µm]
LWC [g/m³]
diameter [µm]
[cm⁻³]
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

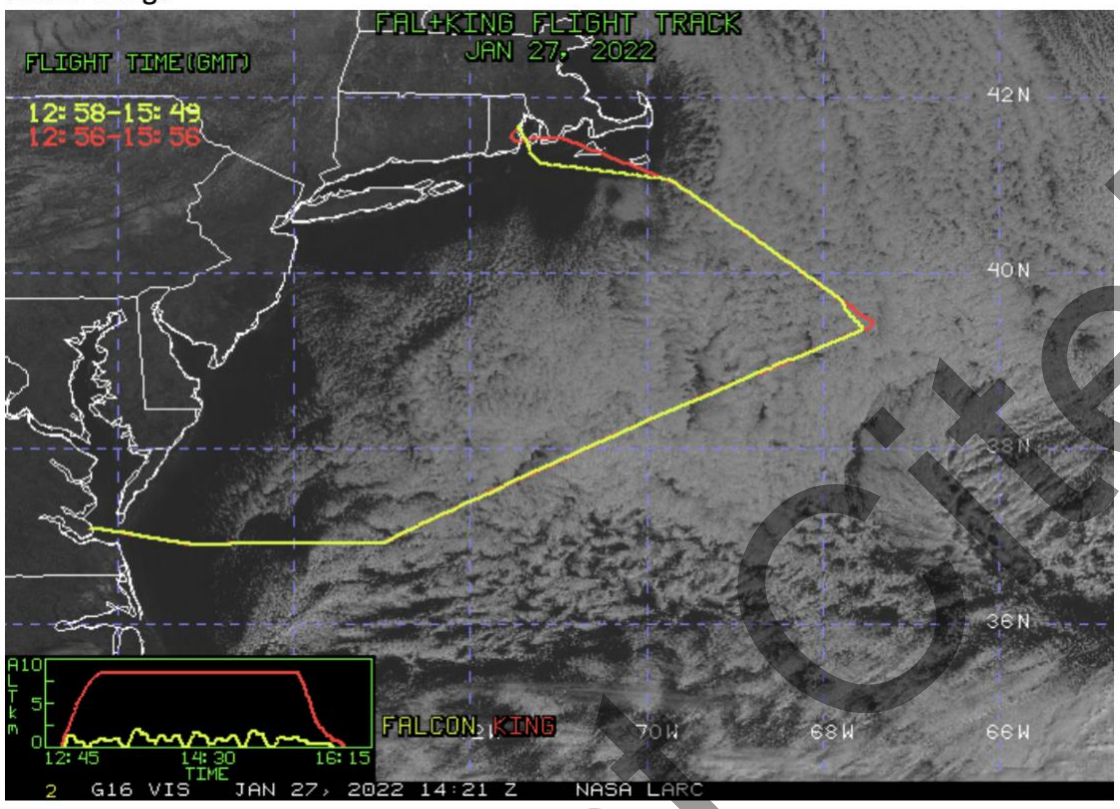




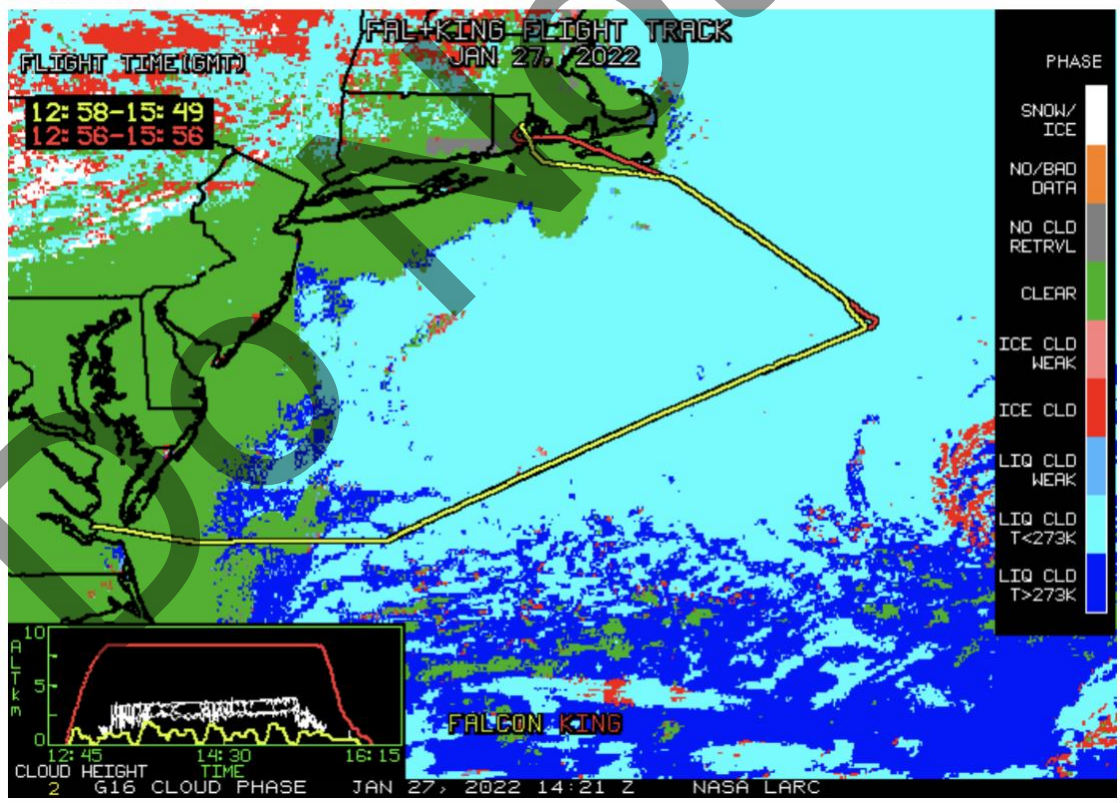
Mixed phase clouds with only ice precip.
Dominantly graupel.

NASA-LaRC Clouds Group GOES-16 Quicklook Images for Flight 113, 14:21 UTC Jan 27, 2022

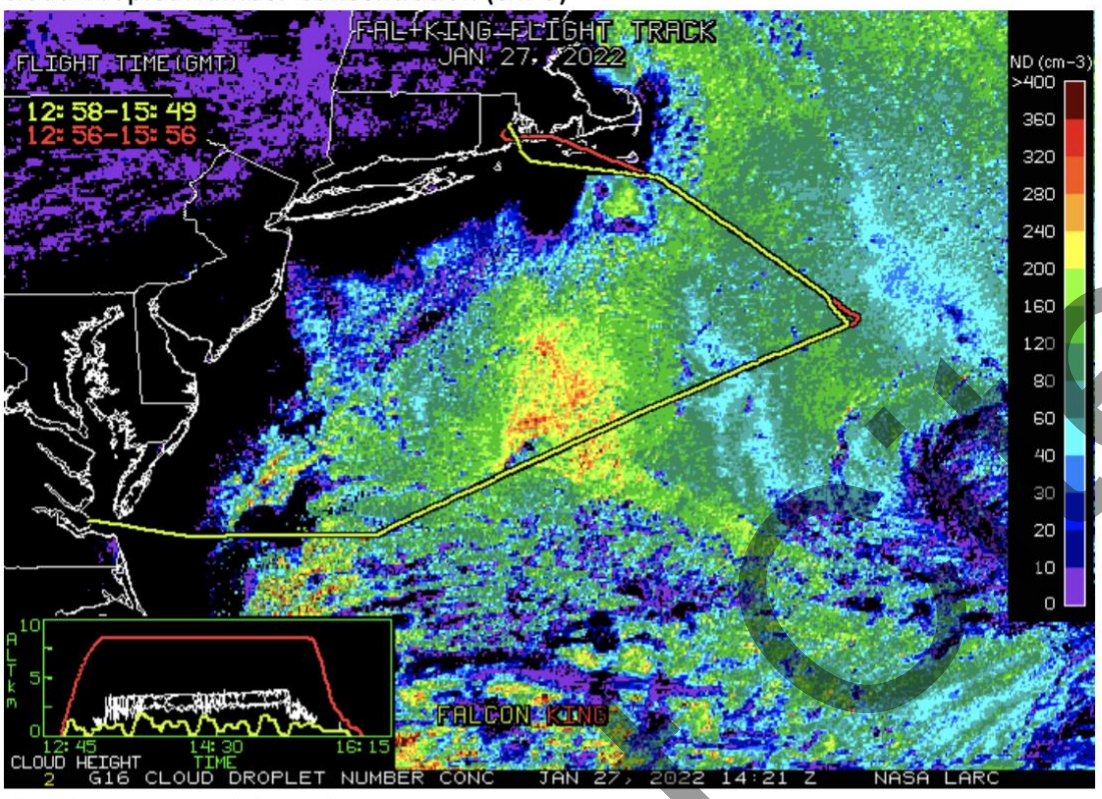
Visible Image



Cloud Phase



Cloud Droplet Number Concentration (cm-3)



Cloud-Top Height (Kft-ASL)