Flight Scientist Report
Tuesday 01/11/2022 ACTIVATE RF100

Flight Type: Statistical Survey Flight
Flight Route: SIE AGUNE 3600N07040W ZIBUT ATLIC
Special Notes: This is an excellent CAO day and first flight was meant to get upwind of the clouds in clear air to characterize the "initialization" conditions, followed by following system along the MBL winds. Then we turned west to return to base. Some icing concerns.
P3 as part of IMPACTS project is flying this day too in the same general region.

King Air

Pilot report (Coldsnow):
Flight planned route included KLFI, SIE, AGUNE, 36N/07040W, ZIBUT, ATLIC, KLFI. Weather at takeoff SKC, winds 350 12G17. Departure uneventful. In route to SIE, ATC issued reroute to ZIZZI. Coordinated flight path change with NASA 524 but they were unable to follow due to restricted area. Seven dropsondes released throughout the flight. Winds were generally out of the W-NW 90-110 knots. No issues observed with instrumentation and timing was within 10 min of NASA 524 at all times.

Flight scientist report (Shingler):

KLFI ZIZZI AGUNE 36N7040W ZIBUT ATLIC KLFI

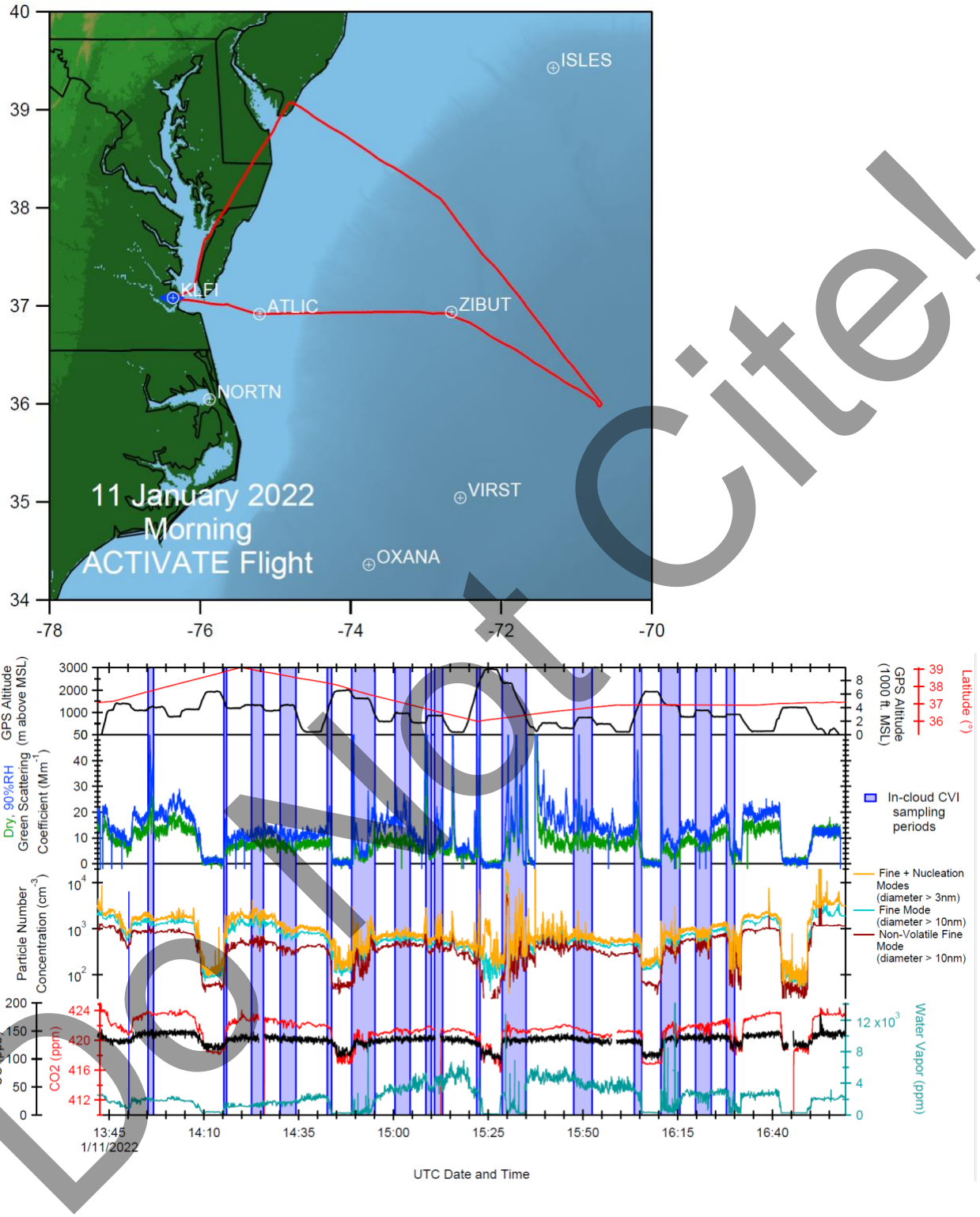
Increasing cloud fraction between SIE and AGUNE. CTs steady along downwind leg very slowly increasing from approx 5kft near coast to 8kft near Eastern most point. Very thin aerosol layer with weak scattering above cloud top between 6.5-7.5kft near the midpoint of the downwind leg. Nadir camera inop for this flight.

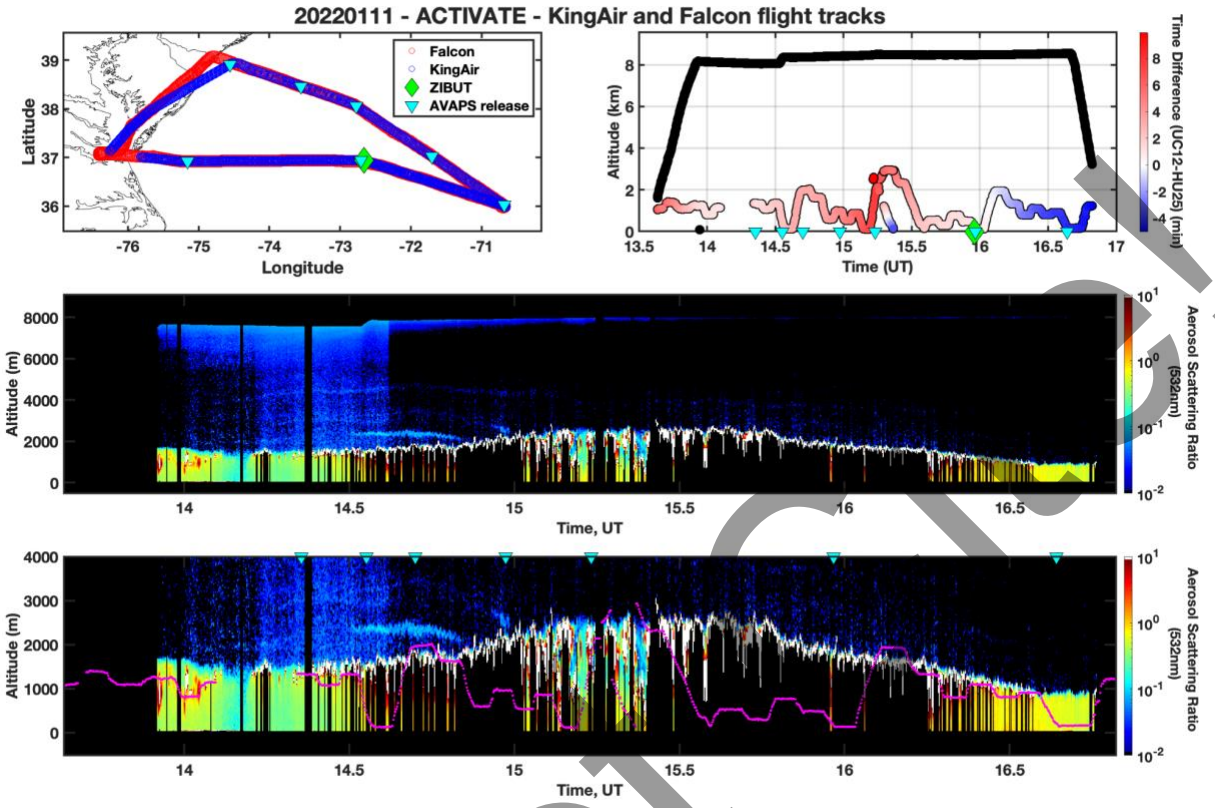
7 Sondes dropped.
ZIZZI
1/2 TO AGUNE
AGUNE
1/2 TO ENDPOINT
ENDPOINT
ZIBUT
COAST

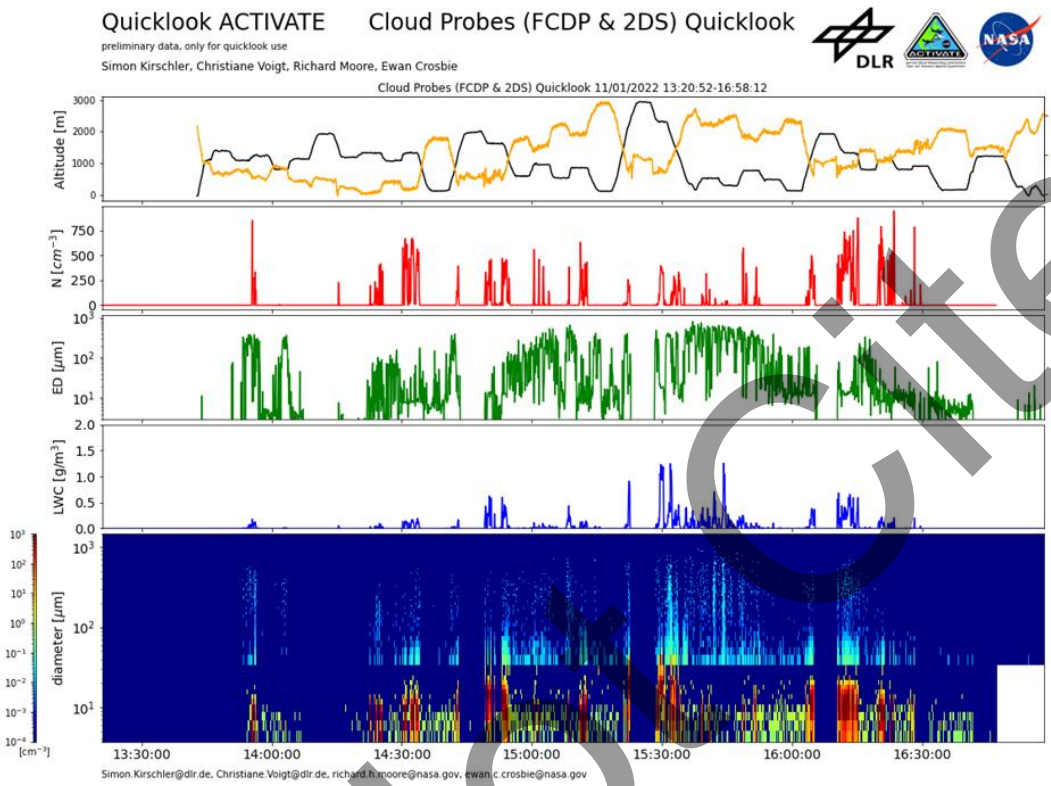
Falcon

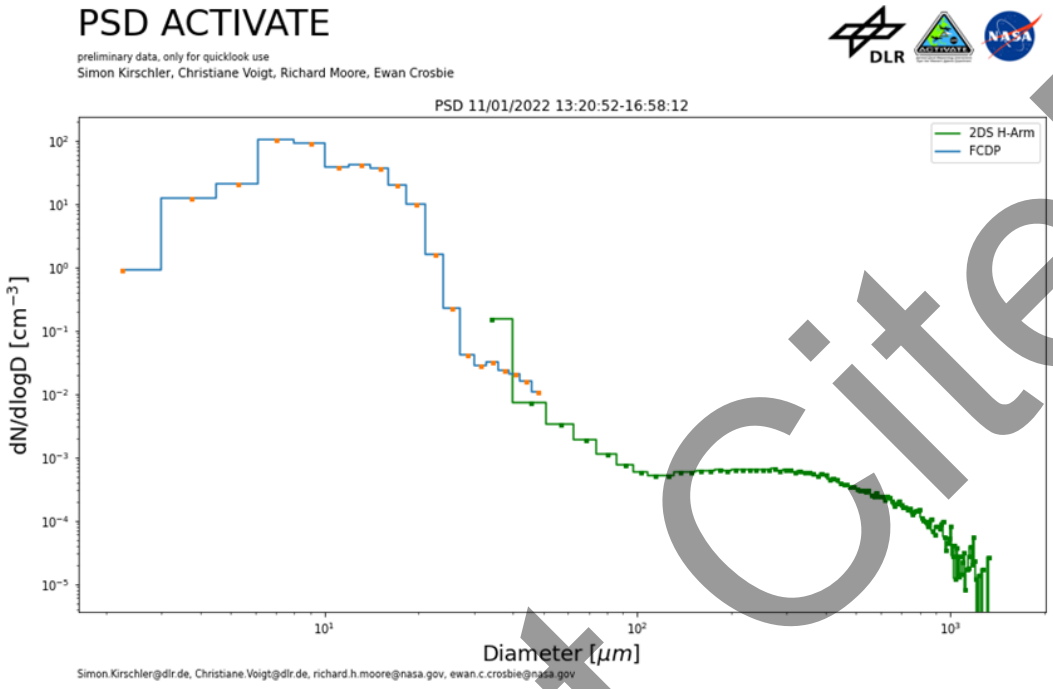
Pilot report (Baxley):
KLFI-SIE-AGUNE-N3600W07040-ZIBUT-ATLIC Baxley, Slover, Crosbie, Winstead 15 minute delayed takeoff due to air traffic control. Mission flown as planned, weather as expected. HU-25 autopilot did not function most of the flight.

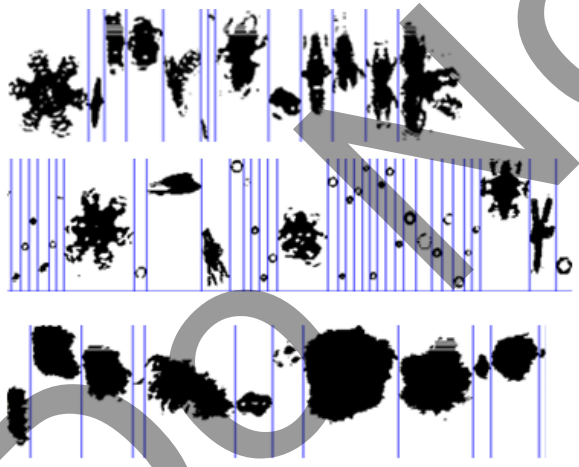
Flight scientist report (Crosbie):
5 Cloudy Modules. Cold air outbreak conditions. Flew over land/near coast to the Delaware Bay before turning SE close to downwind. Return leg was through the ZIBUT turnpoint. Boundary layer was quite deep over land despite being morning and shallow Cu were present in some regions. Over land the small Cu had ice precipitation despite their small size. Once over water, the cloud coverage rapidly increased but remained as "fair weather" Cu for some distance downwind. Once over the warmer GS waters, visible steam fog was present on/near the ocean surface and the sea state was rough with many whitecaps. The cloud base became more ragged as well as lowering and the cells became thicker. Features that appeared to be waterspouts were observed. Precipitation quickly developed with further distance downwind. Mixed phase conditions were observed in the clouds. During cloud top sampling, ice accumulation on instruments was observed and required shortening of the leg and/or descending to MINALT to clear it. Below cloud base, plenty showers were visible in the vicinity of the flight track. A (recent) NPF event was observed during an ACT leg.


ISLES
KLFI
ATLIC
ZIBUT
NORTN
VIRST
OXANA
11 January 2022
Morning
ACTIVATE Flight
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 (°)
In-cloud CVI sampling periods
Fine + Nucleation Modes (diameter > 3nm)
Fine Mode (diameter > 10nm)
Non-Volatile Fine Mode (diameter > 10nm)
Water Vapor (ppm)
1/11/2022
UTC Date and Time


20220111 - 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 11/01/2022 13:20:52-16:58:12
Altitude [m]
Static Temperatur [°C]
N [cm⁻³]
ED [µm]
LWC [g/m³]
diameter [µm]
[cm⁻³]
13:30:00
14:00:00
14:30:00
15:00:00
15:30:00
16:00:00
16:30:00
Simon.Kirschler@dlr.de, Christiane.Voigt@dlr.de, richard.h.moore@nasa.gov, ewan.c.crosbie@nasa.gov

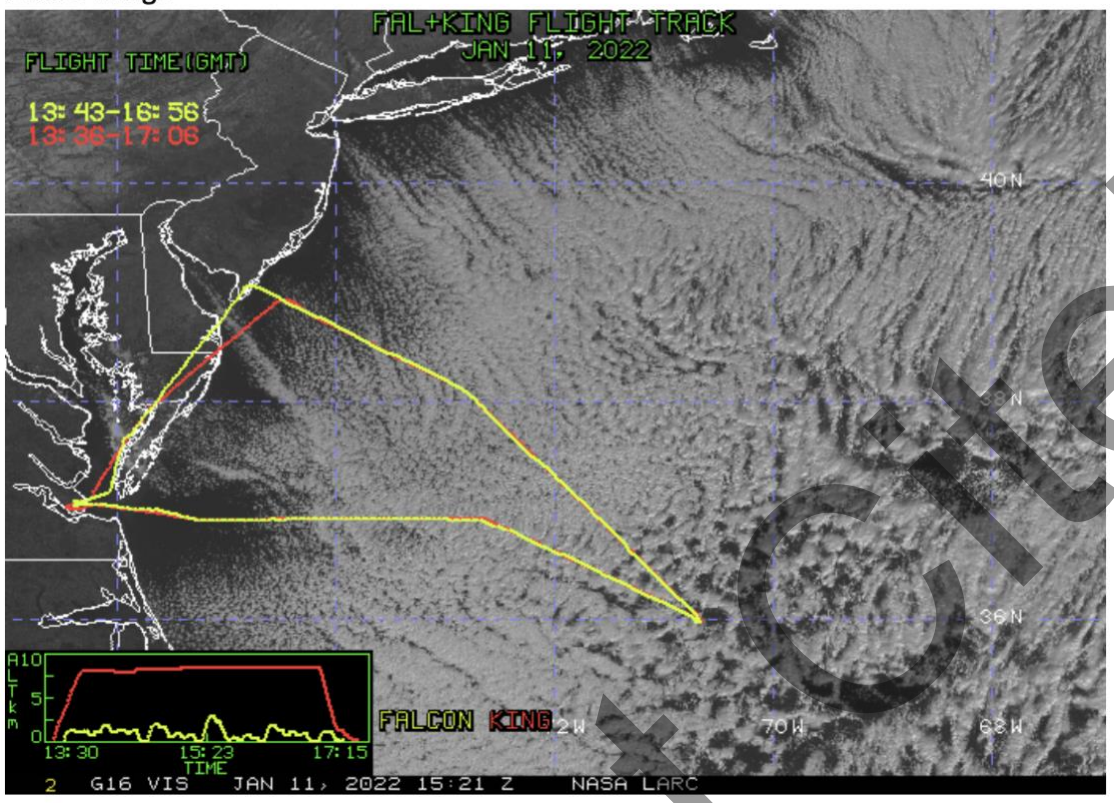




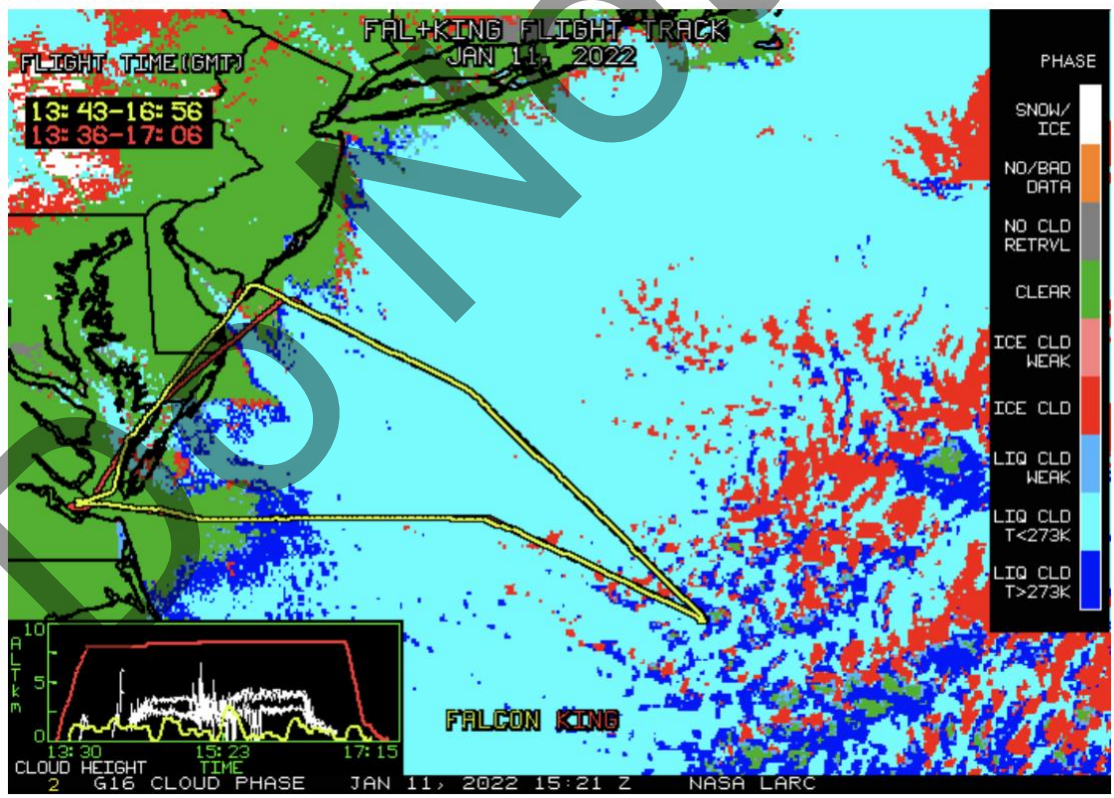
Mixed phase clouds with pure ice precip.
Dendrites near coast and graupel further
Offshore.

NASA-LaRC Clouds Group GOES-16 Quicklook Images for Flight 100, 15:21 UTC Jan 11, 2022

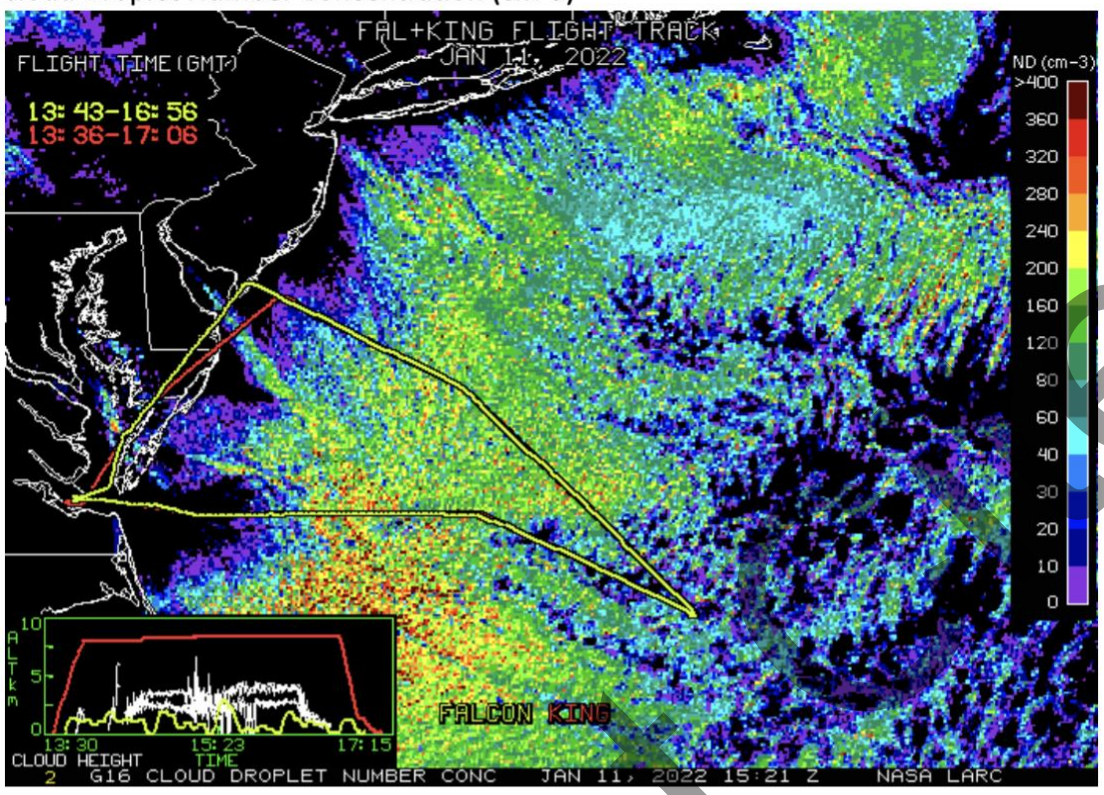
Visible Image



Cloud Phase



Cloud Droplet Number Concentration (cm-3)



Cloud-Top Height (Kft-ASL)