Flight Scientist Report
Monday 03/09/2020 ACTIVATE RF19

Flight Type: Statistical Survey Flight – Clouds
Flight Route: OXANA – southwest point
Special Notes: There were two lines of clouds that setup parallel along the flight path. However due to the way these setup, we ended up being offset from the line of clouds during most of the flight path heading south to southwest. Therefore it conditions were mostly clear with at times scattered cumulus. The depth of the clouds was less than 1kft thick for most of the time when sampling clouds. The aerosol conditions appeared to be constant when out over the ocean. However, in near the coast there was more variability and smoke was visually seen in from the aircraft and in the lidar data. (see plot below).

The flight was delayed due to another power switch on the HU25. This was due to getting the steps of the procedure out of order. All instruments and systems were able to get back online shortly before takeoff. Lesson learned, the UC12 should not launch unless HU25 is up and running on engines when possible.

King Air

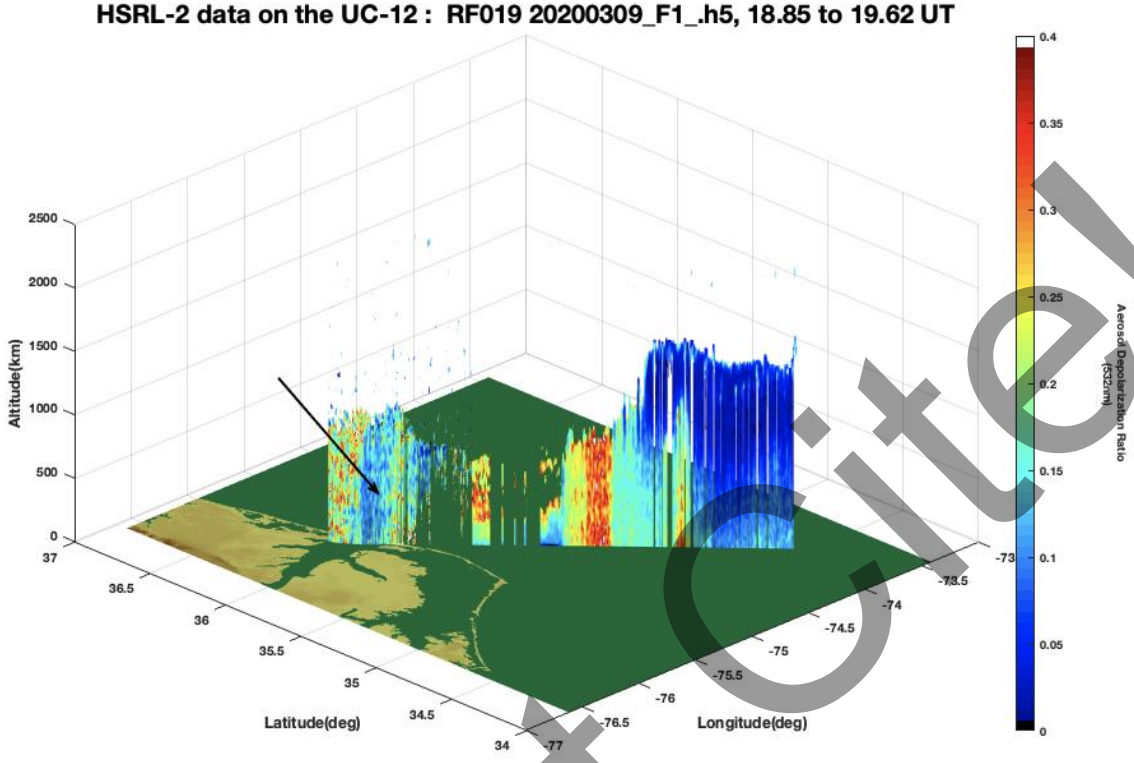
- No issues. However, the UC12 was to launch first so the aircraft delayed holding short of runway. Ended up taking off a bit early.

Instruments:
RSP software was fixed and worked well .

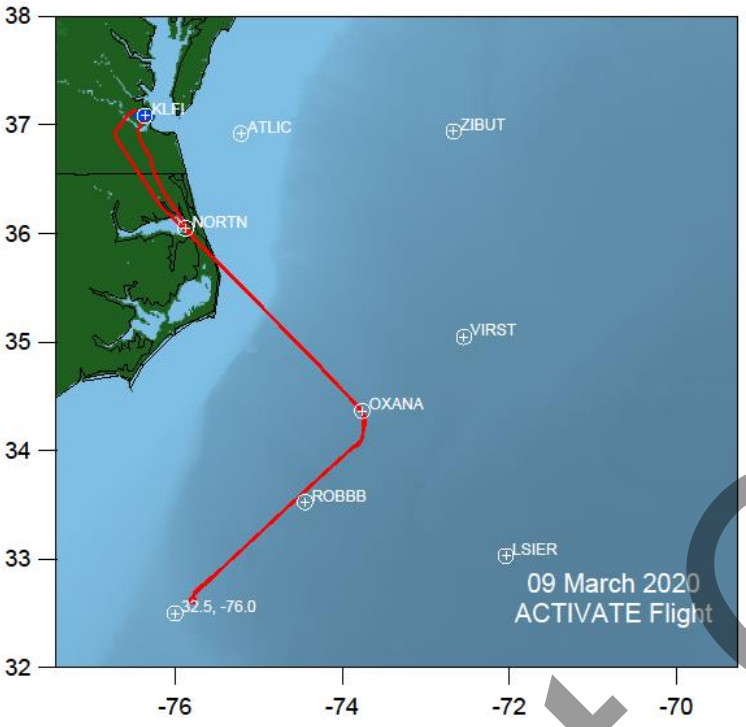
Falcon

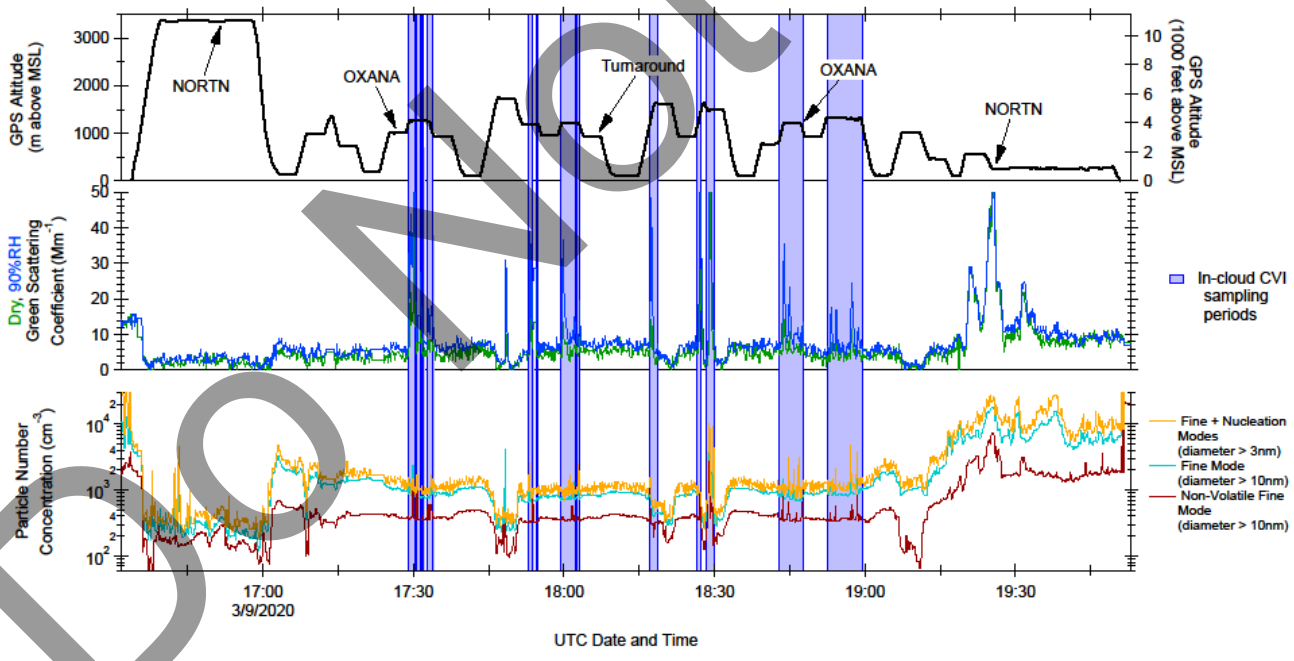
- Delayed take off due to another self-induced power swap issue
- Smoke near land on way back (see image below)

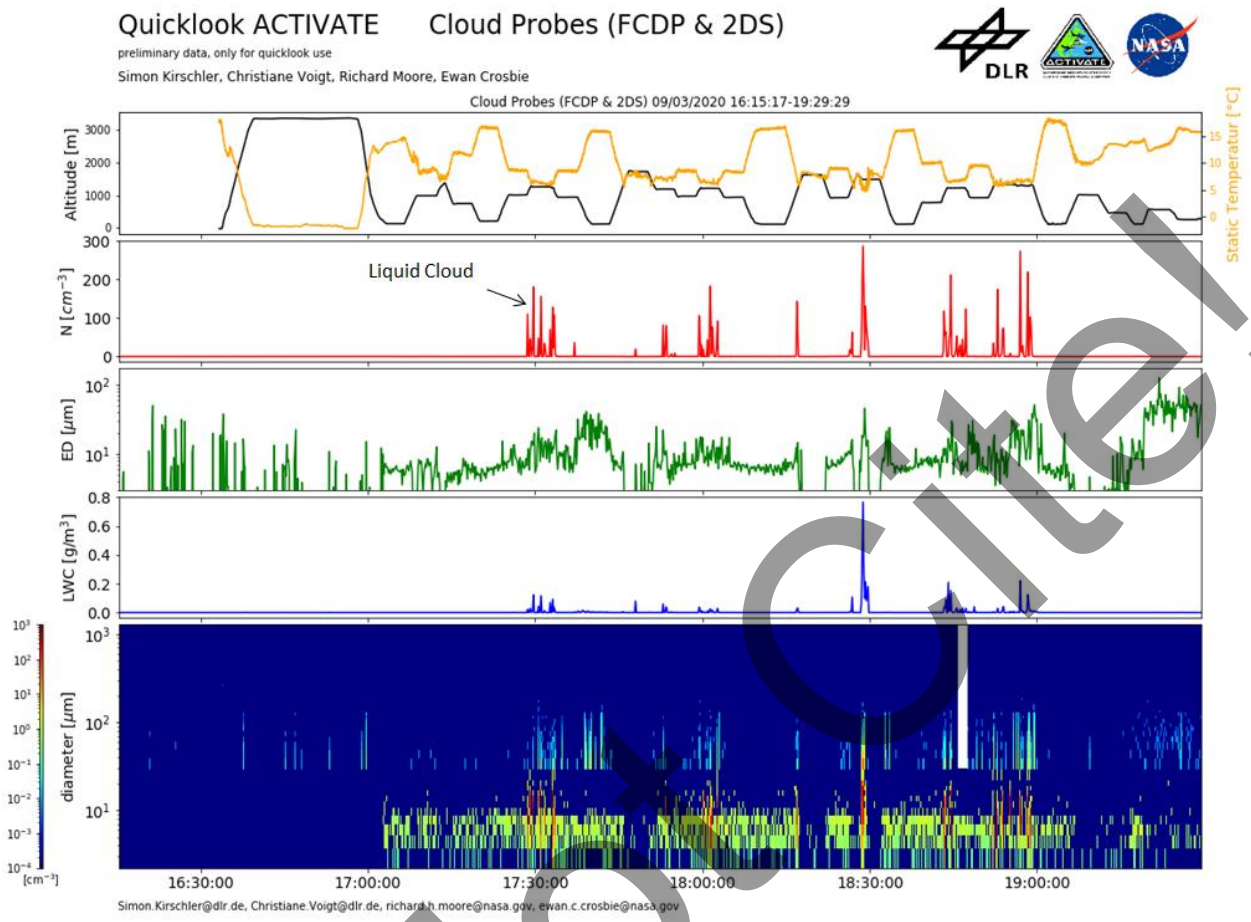
Instruments:
Was some issues during startup on the power switch however all were recovered before or shortly after takeoff. DLH noted some slightly lower laser output power (addressed on the following day).


HSRL-2 data on the UC-12 : RF019 20200309_F1_.h5, 18.85 to 19.62 UT
Altitude(km)
2500
2000
1500
1000
500
0
37
36.5
36
35.5
35
34.5
34
Latitude(deg)
-77
-76.5
-76
-75.5
-75
-74.5
-74
-73.5
-73
Longitude(deg)
Aerosol Depolarization Ratio (532nm)
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0

Rich Moore Quicklook Images:



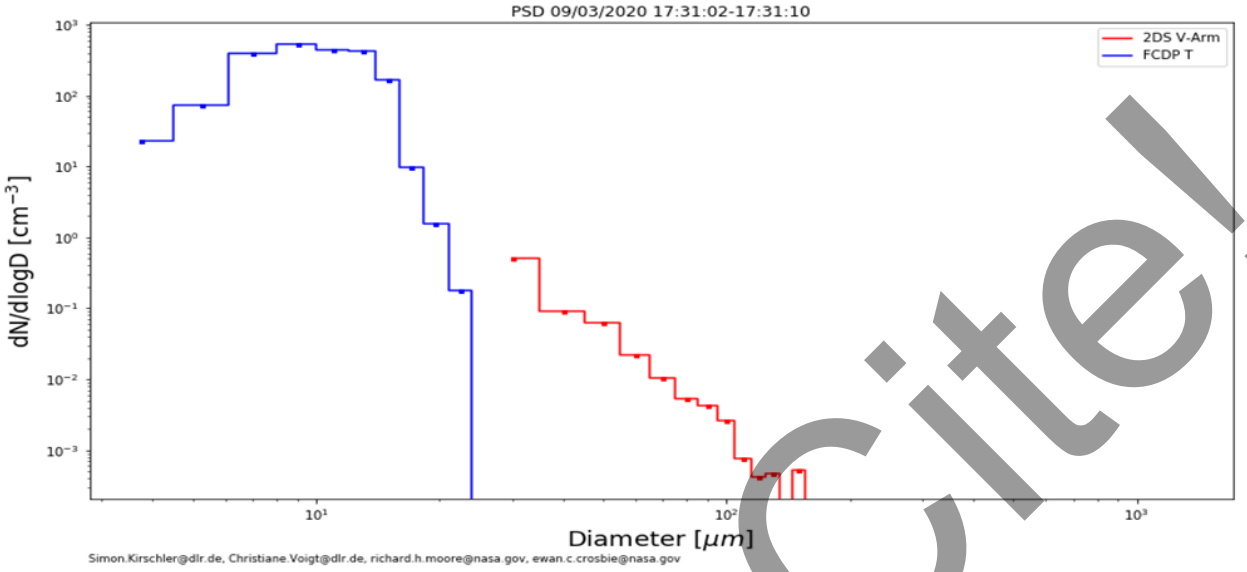



Quicklook ACTIVATE Cloud Probes (FCDP & 2DS)
preliminary data, only for quicklook use
Simon Kirschler, Christiane Voigt, Richard Moore, Ewan Crosbie
Cloud Probes (FCDP & 2DS) 09/03/2020 16:15:17-19:29:29
Altitude [m]
Static Temperatur [°C]
Liquid Cloud
N [cm⁻³]
ED [µm]
LWC [g/m³]
diameter [µm]
[cm⁻³]
16:30:00
17:00:00
17:30:00
18:00:00
18:30:00
19:00:00
Simon.Kirschler@dlr.de, Christiane.Voigt@dlr.de, richard.h.moore@nasa.gov, ewan.c.crosbie@nasa.gov

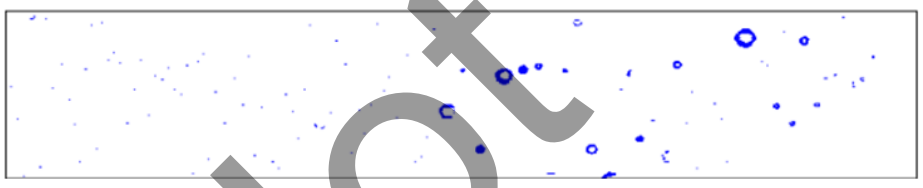
PSD ACTIVATE

preliminary data, only for quicklook use

Simon Kirschler, Christiane Voigt, Richard Moore, Ewan Crosbie

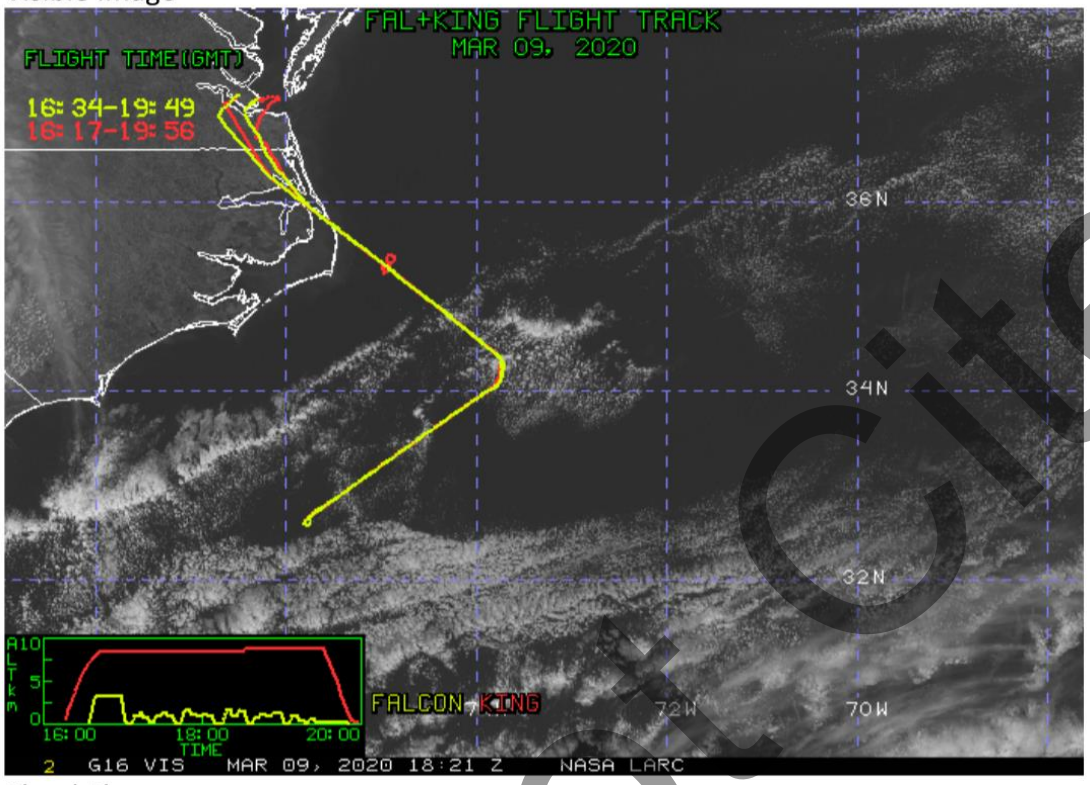


Liquid Cloud: 17:30:41

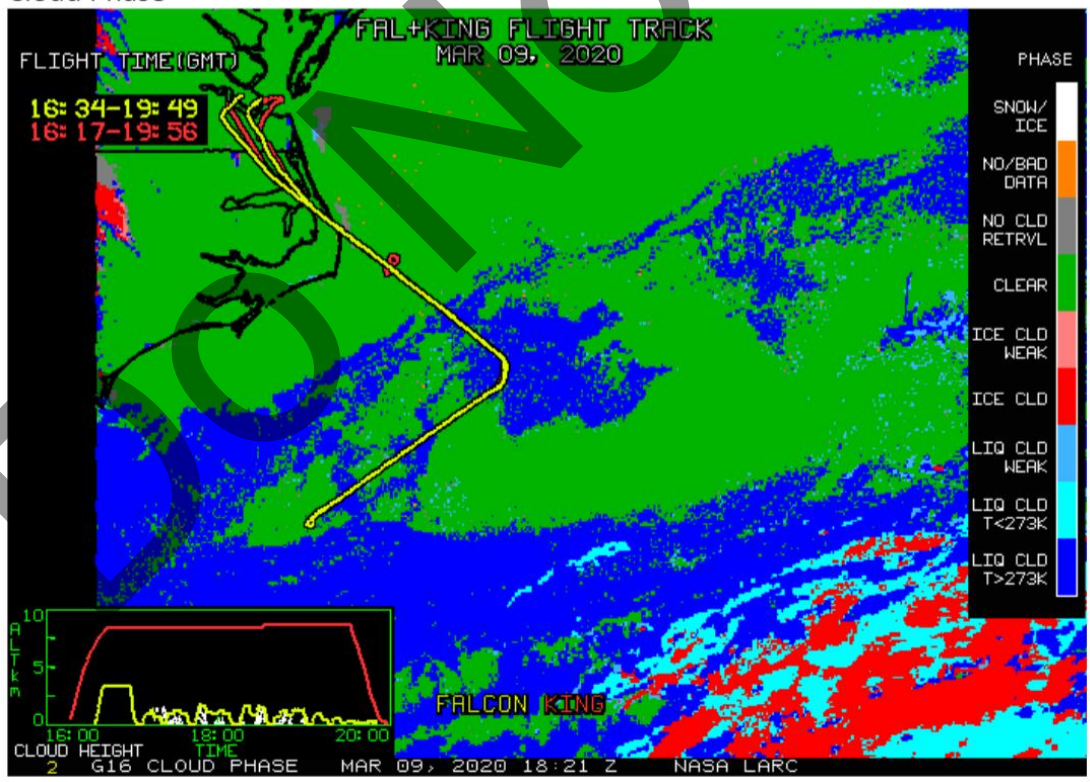


NASA-LaRC Clouds Group GOES-16 Quicklook Images for Flight 19, 18:21 UTC Mar 09, 2020 (near middle of flight)

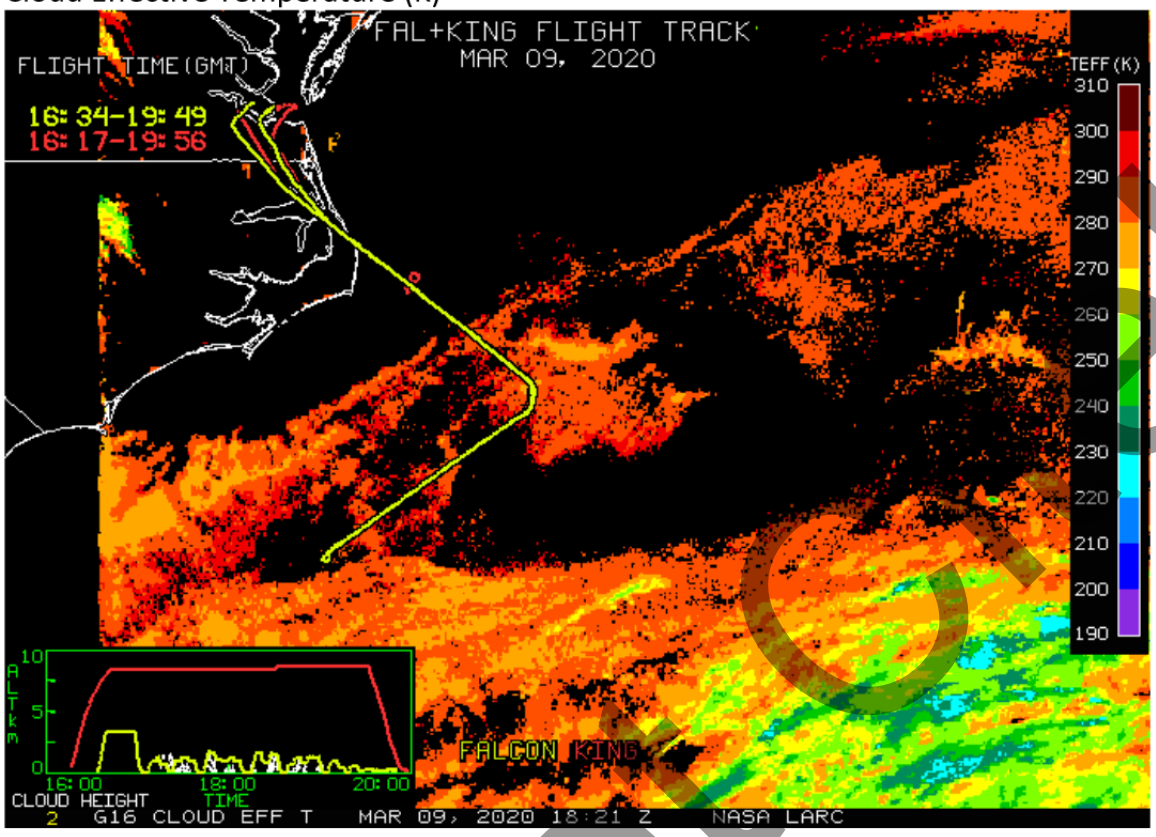
Visible Image



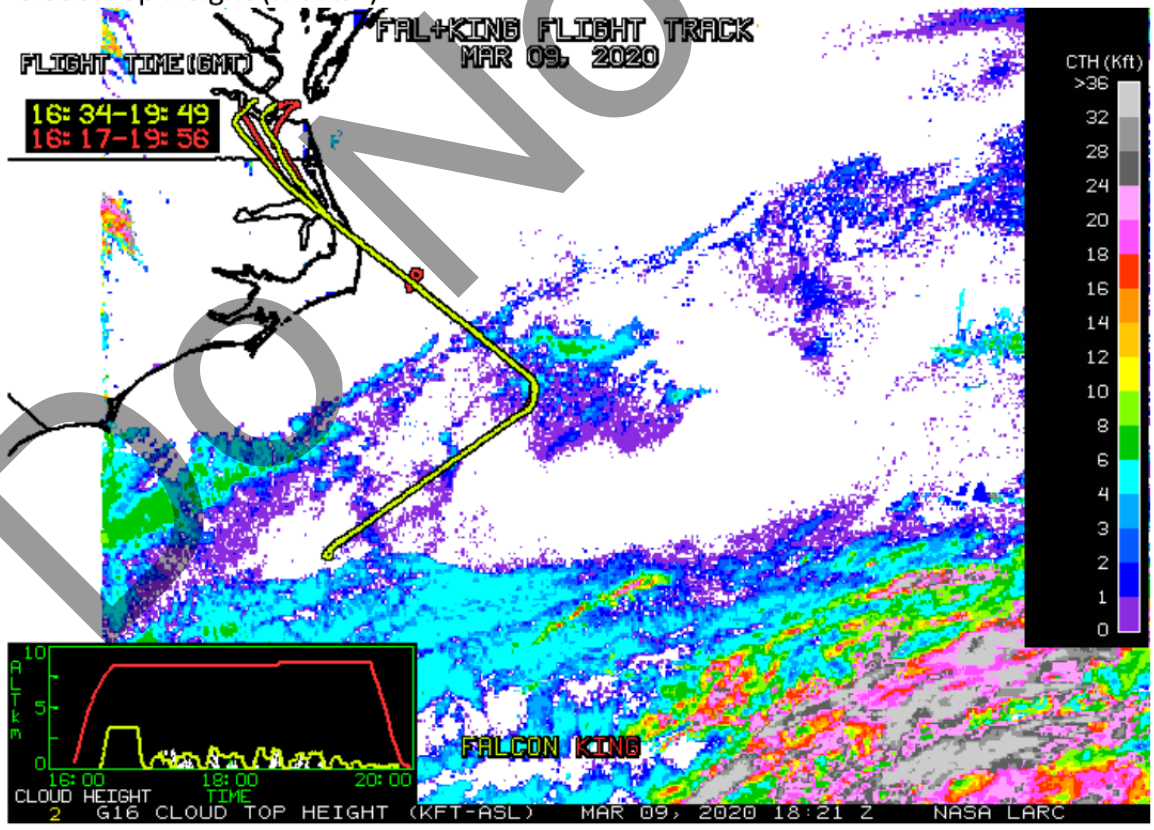
Cloud Phase



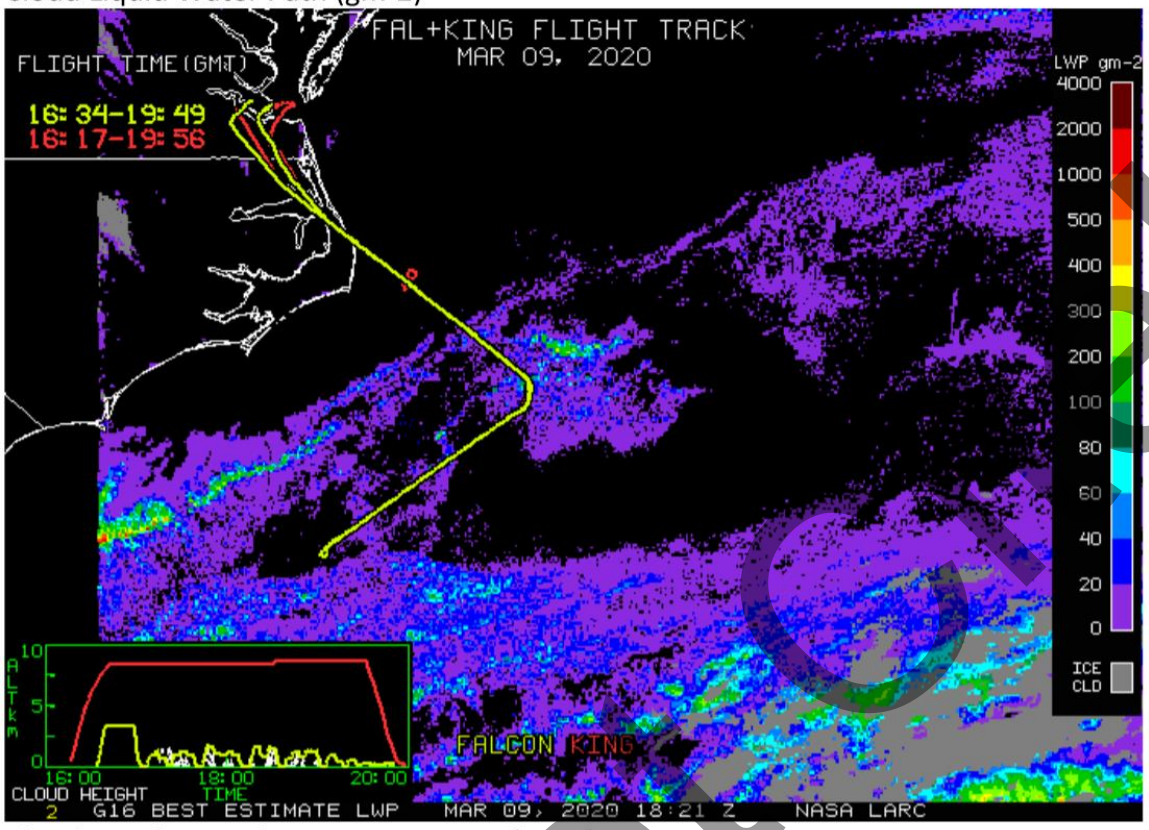
Cloud Effective Temperature (K)



Cloud-Top Height (Kft-ASL)



Cloud Liquid Water Path (gm-2)



Cloud Droplet Number Concentration (cm-3)