Flight Scientist Report
Friday 02/28/2020 ACTIVATE RF10

Flight Type: Process Study Flight – Clouds
Flight Route: OXANA
Special Notes: Late take off due to power glitch with Falcon

King Air

- Dropped 11 sondes successfully in a circle. Aircraft was going quite fast and so ended up doing a delay loop at north part of circle to slow down.

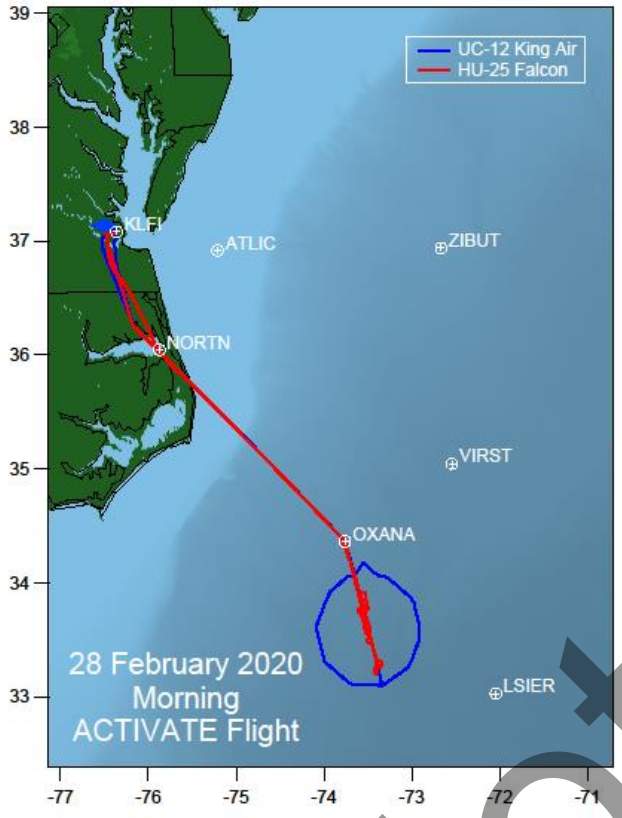
Instruments:
Fine

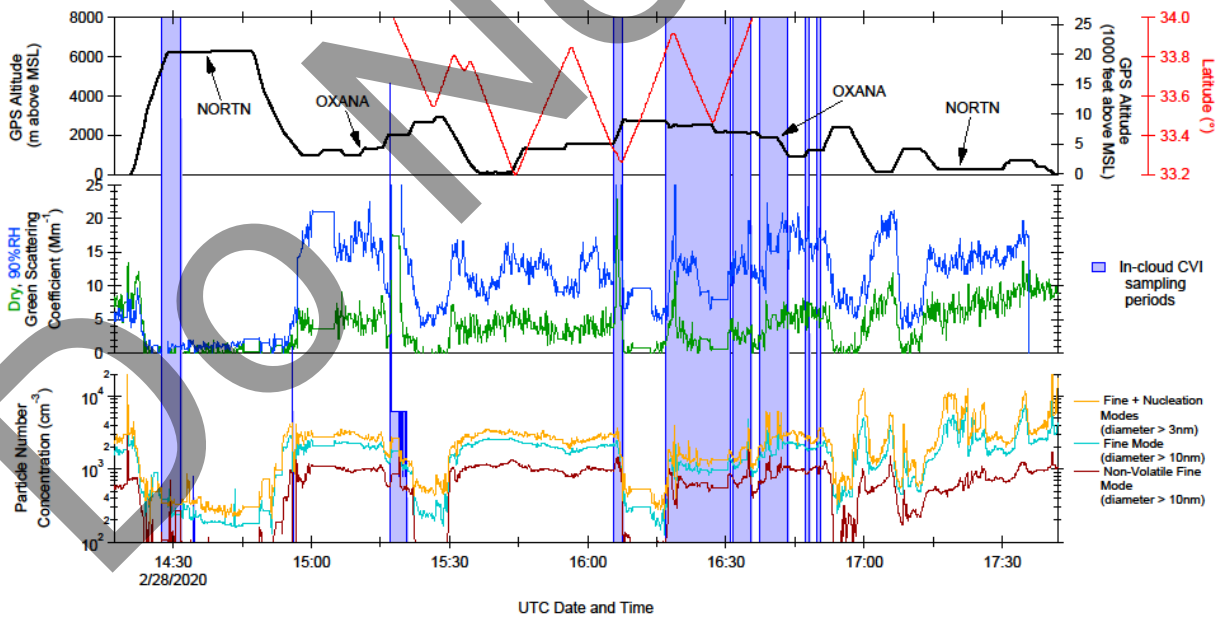
Falcon

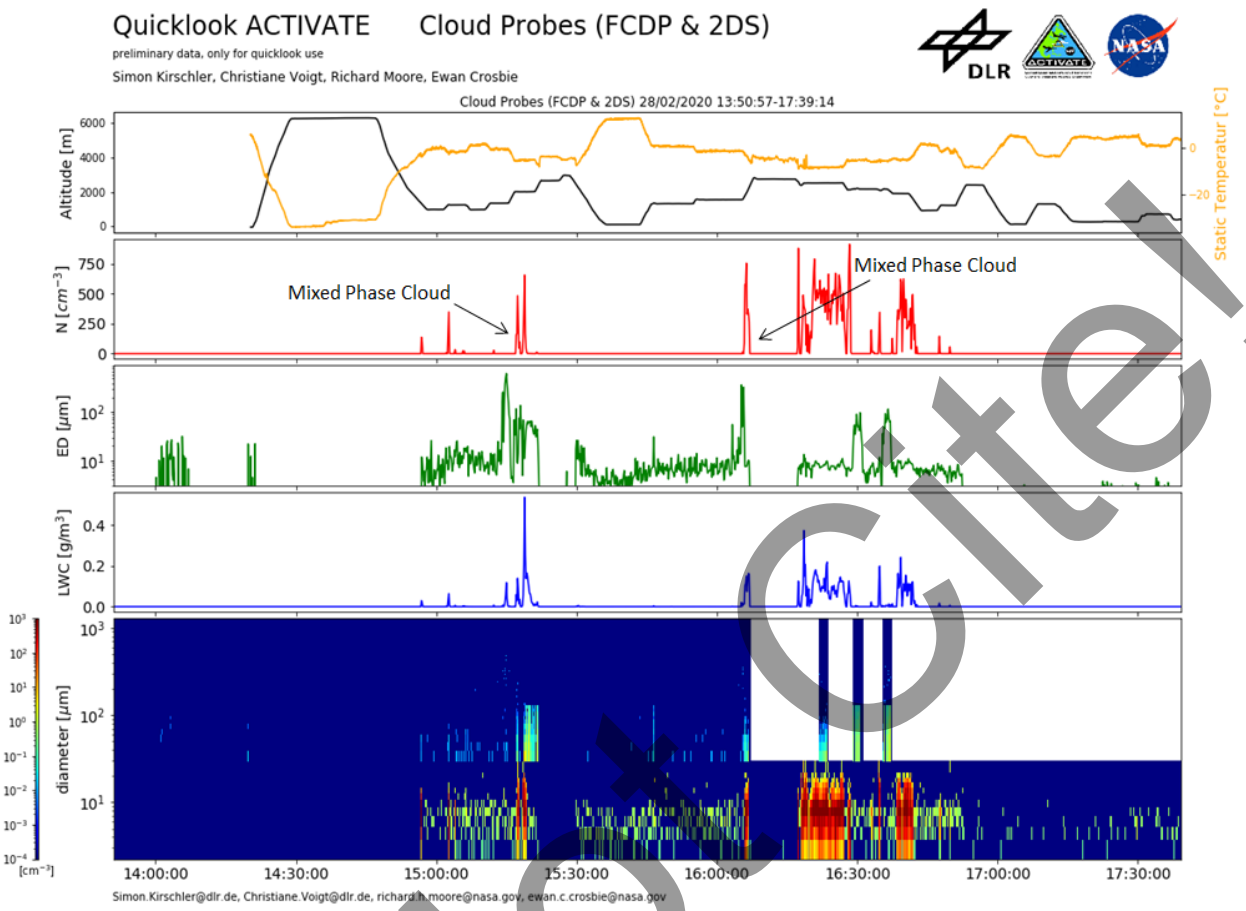
- Complex cloud scene during flight with multiple types of clouds in a column; stratiform, growing cumulus clouds, wave clouds, rolling tops
- Unstable atmosphere and the very top of the column we worked was capped by a decent inversion; the BCT leg we did in wall was in stratiform, and above those tops we had the inversion
- First cloudy ensemble on way out didn't have a MINALT
- Some ACB legs didn't hit clouds including in the Wall
- Wall: BCT was a good leg in the stratiform
- Yasky: If want to improve efficiency for getting 5 wall legs, should next time finish surveying at high altitude on the far end of the circle to then spiral down and then do (MINALT-BCB-ABC-ACT-BCT) so that you are on the part of the circle closest to the airport to then head back faster; in contrast, if you finishing surveying at high altitude on the closer end of the circle, we get a 'bonus' 6th leg as part of the wall since we have to return to base anyways and so we cut through circle again. Note that with both options we only get the spiral at the beginning of the wall rather than the end, which is fine as we have the help of the dropsondes and the initial spiral helps most with model initial conditions.
- Caught some interesting aerosol structure on the way back to base especially during a leg above the PBL around 1720 UTC (nucleation)

Instruments:
Had issues with forward camera and PILS this flight

Rich Moore Quicklook Images:



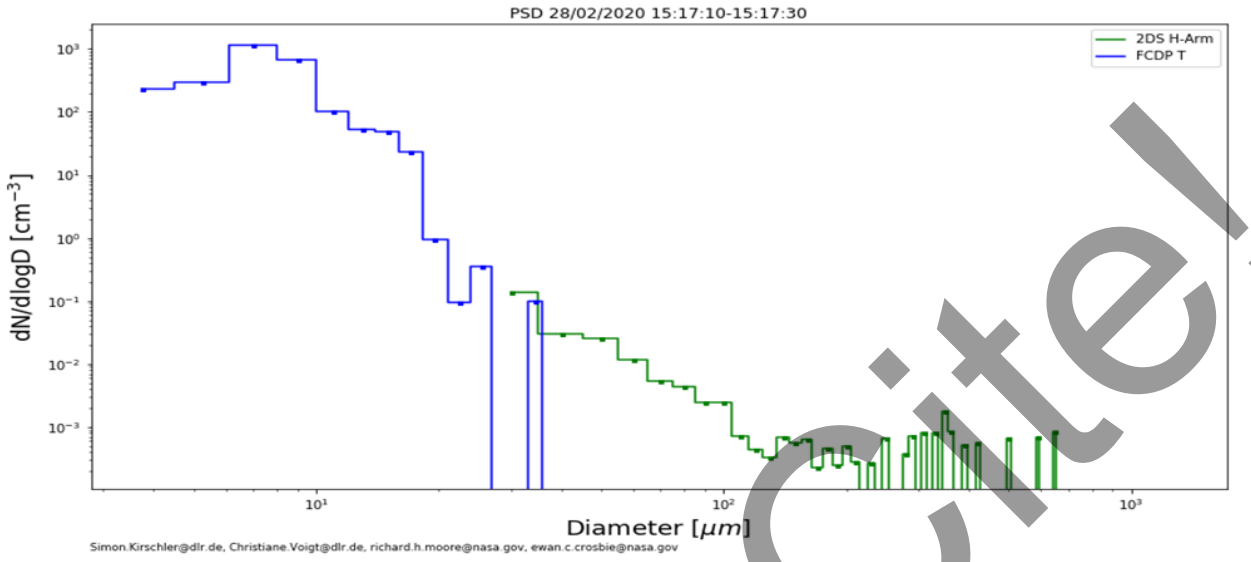



Quicklook ACTIVATE Cloud Probes (FCDP & 2DS)
preliminary data, only for quicklook use
Simon Kirschler, Christiane Voigt, Richard Moore, Ewan Crosbie
Cloud Probes (FCDP & 2DS) 28/02/2020 13:50:57-17:39:14
Altitude [m]
Static Temperatur [°C]
N [cm⁻³]
Mixed Phase Cloud
Mixed Phase Cloud
ED [µm]
LWC [g/m³]
diameter [µm]
[cm⁻³]
14:00:00
14:30:00
15:00:00
15:30:00
16:00:00
16:30:00
17:00:00
17:30:00
Simon.Kirschler@dlr.de, Christiane.Voigt@dlr.de, richard.h.moore@nasa.gov, ewan.c.crosbie@nasa.gov

PSD ACTIVATE

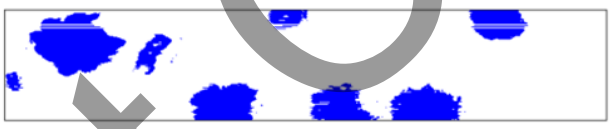
preliminary data, only for quicklook use

Simon Kirschler, Christiane Voigt, Richard Moore, Ewan Crosbie



Simon.Kirschler@dlr.de, Christiane.Voigt@dlr.de, richard.h.moore@nasa.gov, ewan.c.crosbie@nasa.gov

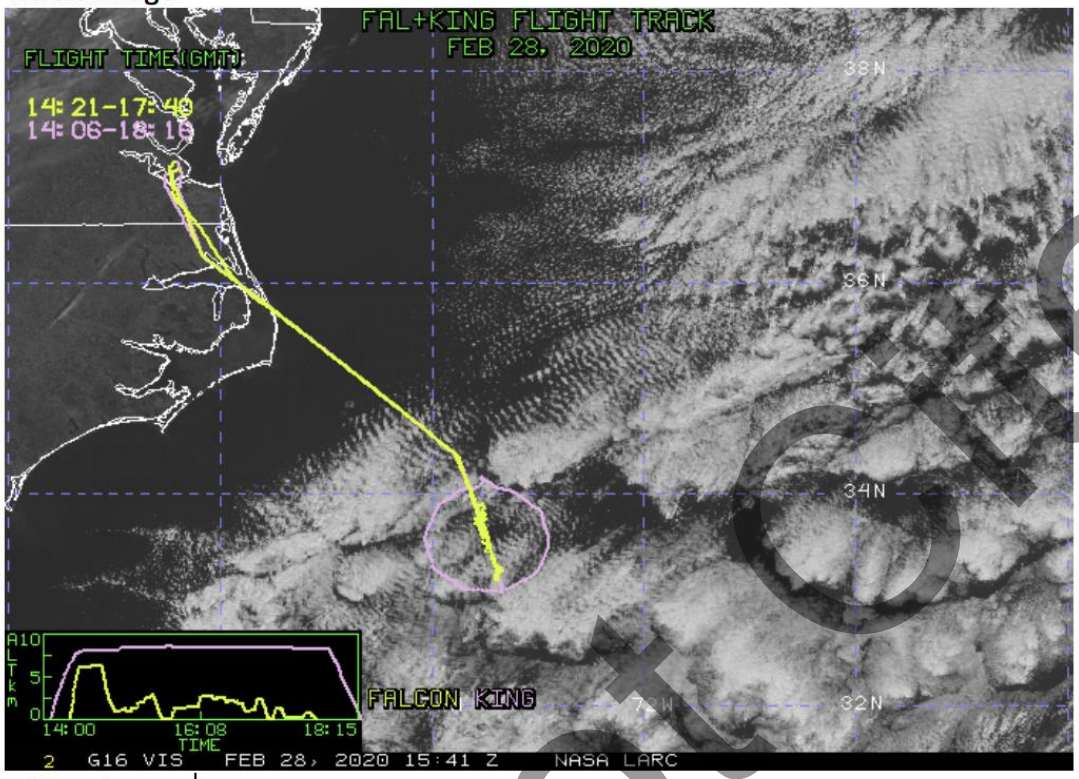
Mixed Phase / Ice Aggregates: 15:15:08



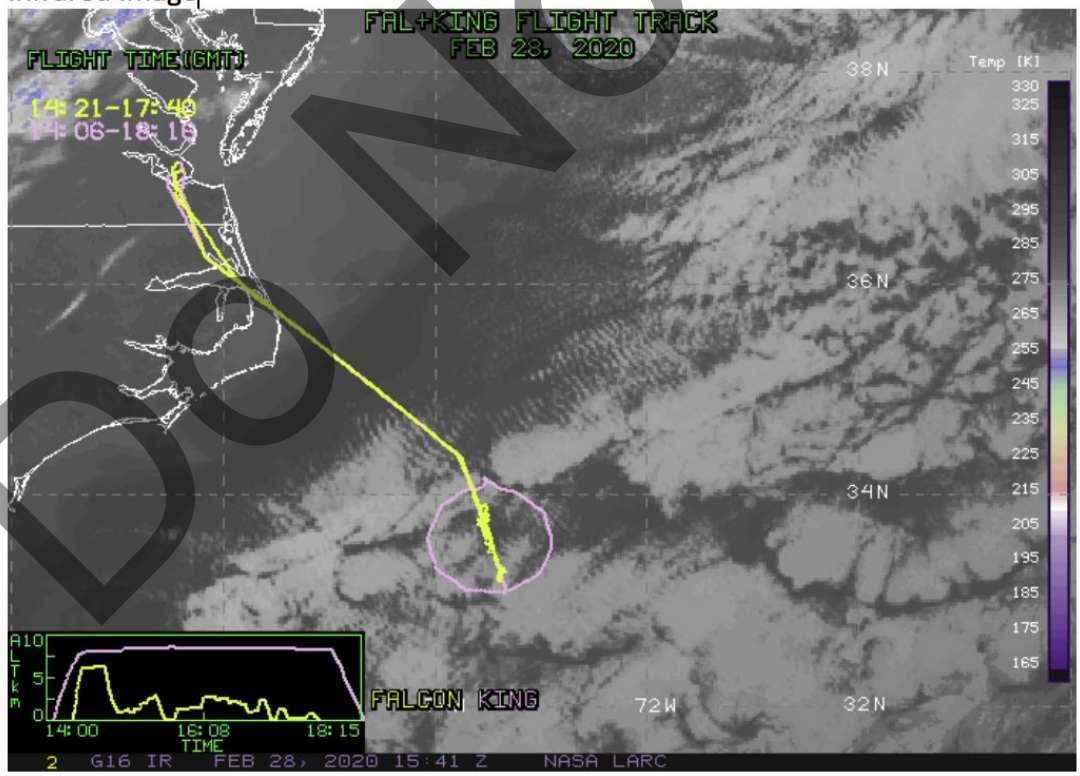
Mixed Phase / Columns: 16:05:42

NASA-LaRC Clouds Group GOES-16 Quicklook Images for Flight 10, 15:41 UTC Feb 28, 2020 (near middle of flight)

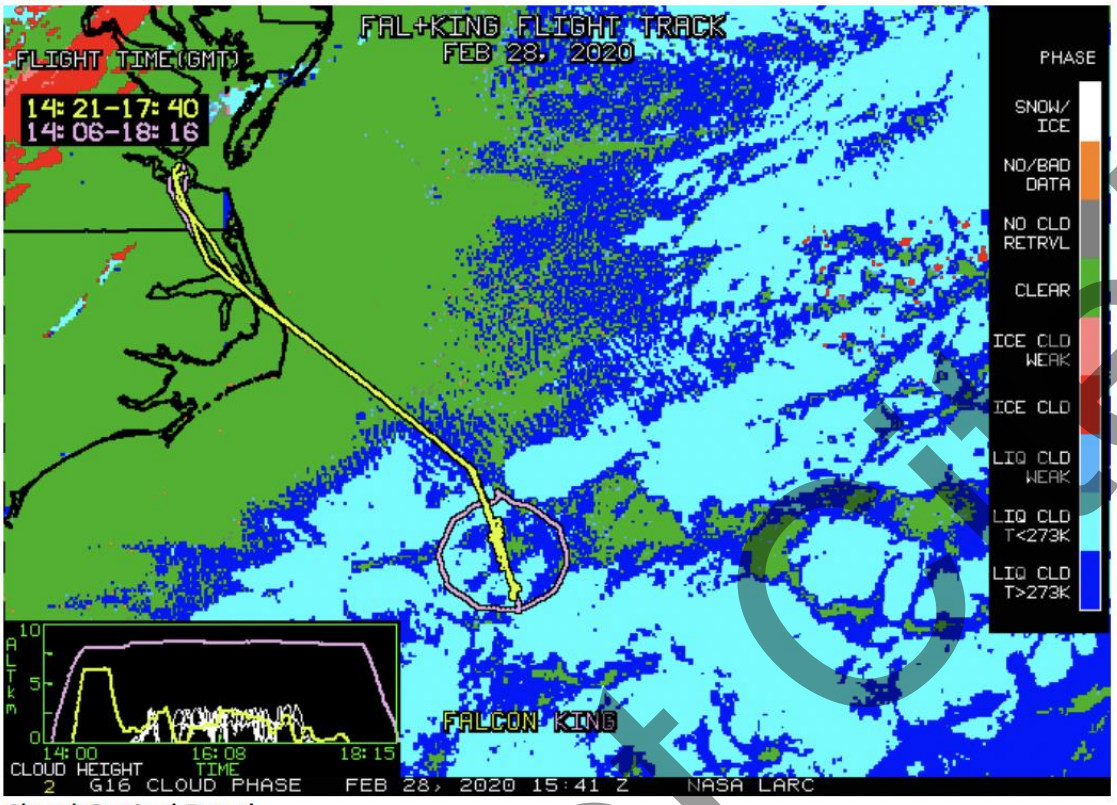
Visible Image



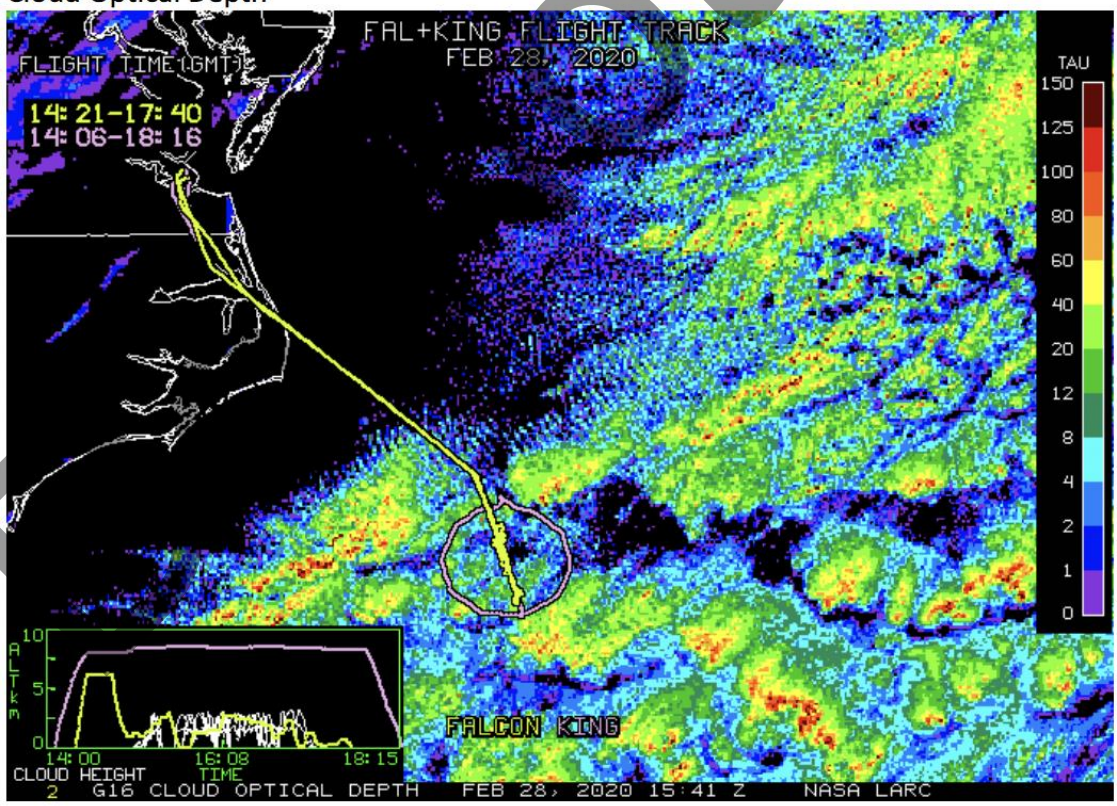
Infrared Image



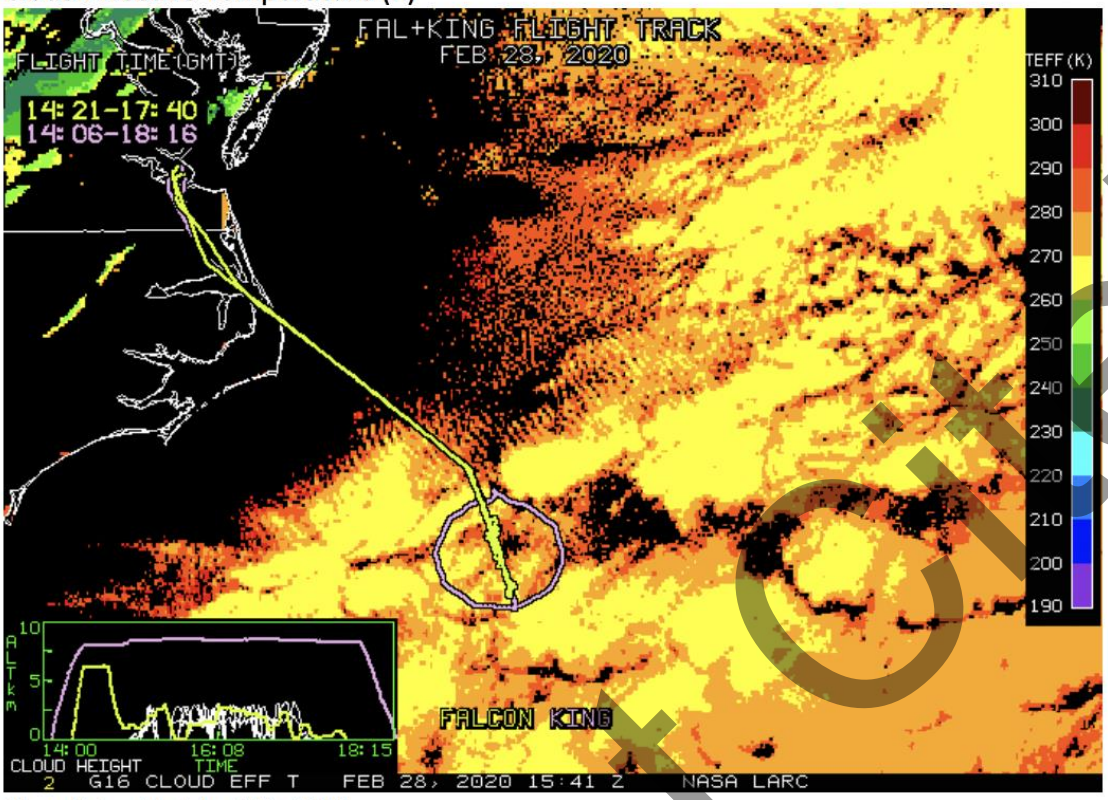
Cloud Phase



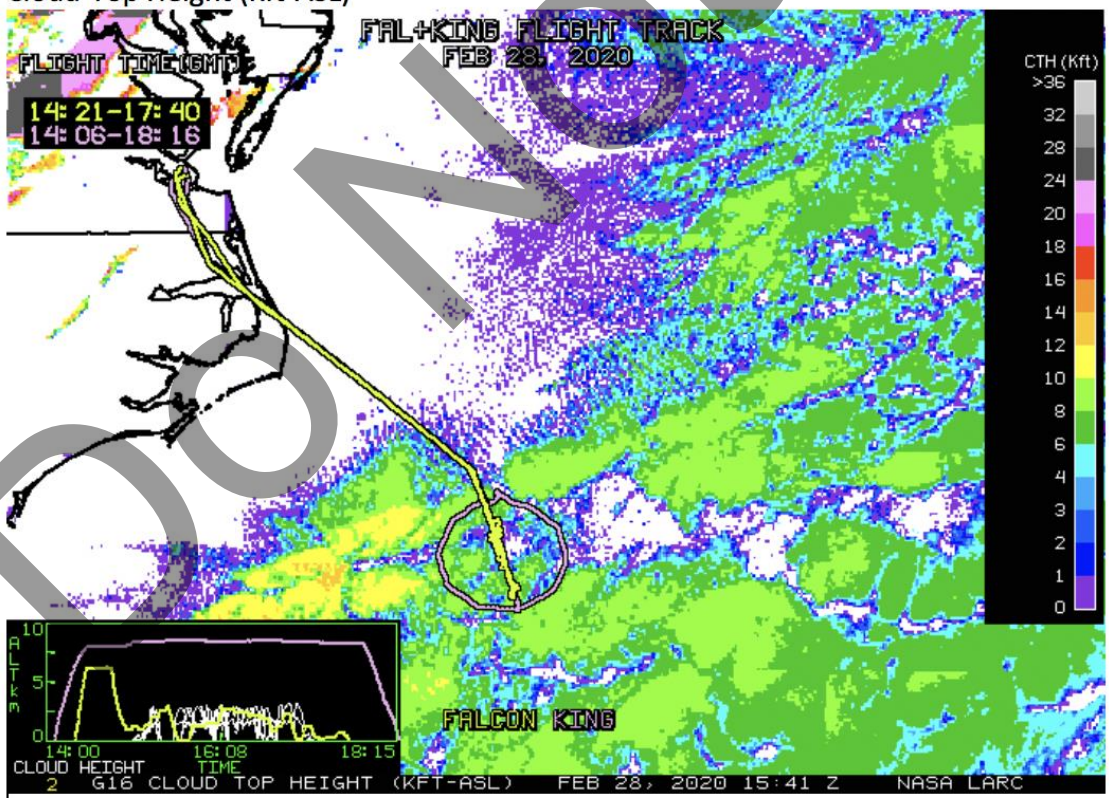
Cloud Optical Depth



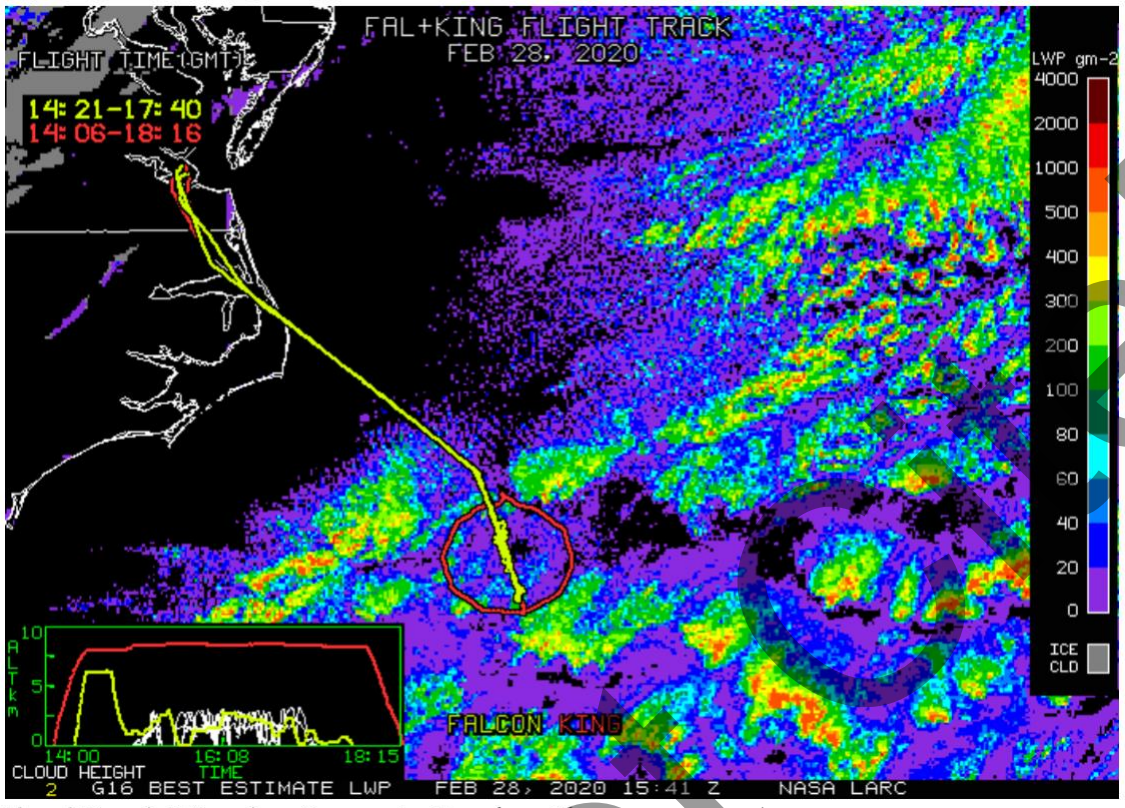
Cloud Effective Temperature (K)



Cloud-Top Height (Kft-ASL)



Liquid Water Path (gm-2)



Cloud Droplet Number Concentration (cm-3)