Flight Scientist Report
Friday 03/04/2022 ACTIVATE RF133

Flight Type: Statistical Survey Flight
Flight Route:
Special Notes: First of two flights. Went south this flight (via Oxana) to capitalize on good low-cloud deck and pollution that was sampled yesterday too with links to possible dust and smoke sources. The P3 tried to coordinate this flight with the ACTIVATE aircraft.

King Air
Pilot report (Coldsnow):
Flight was briefed as LFI ECG OXANA 3230N 072W OXANA ECG LFI. Flight was flown as briefed except we changed the end point to 3211N 07143W to capture the frontal line. Three dropsondes were planned but 4 were dropped. The additional dropsonde was added on the other side of the frontal line. All dropsondes were nominal. Winds were out of the West/Nothwest between 50-80 knots. All research systems were nominal. Timing was within 10 minutes for the entire flight path over water.

Flight scientist report (Shingler):

Mid cloud deck base at 11.5kft and tops at 13.5kft on the climb out. Mid deck cleared out approx half way to OXANA and the lower deck is stratified with cloud tops at 6kft. There is also a layer between 8-10kft with elevated depol. No cirrus noted above today.

Past OXANA, there is a capping layer about 1kft thick centered at 5kft and it appears to be messy below it when we can see through with HSRL2. Approaching a convergence line at the end of the track, the capping layer dissipated and the messy layer beneath persisted. The convergence line had convection up to about 7kft. There was a thin layer of appreciable scattering on the southern end of the line. Sondes were dropped on both sides of the line.

Coming back to the coast the stratified deck descended down to 3-4kft and two decoupled aerosol layers were seen aloft both with elevated depolarization.

4 SONDES

OXANA

TURN (south of convergence line)

NEAR TURN (north of convergence line)

COAST

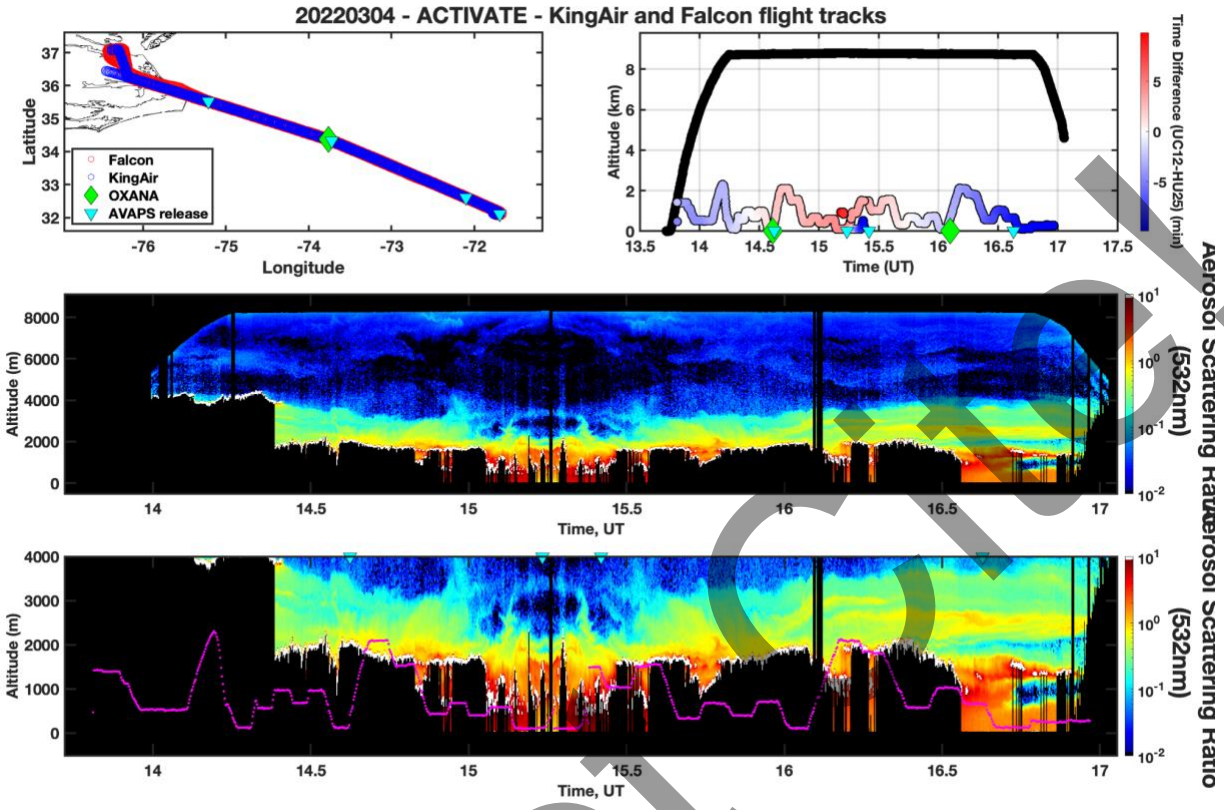
Falcon

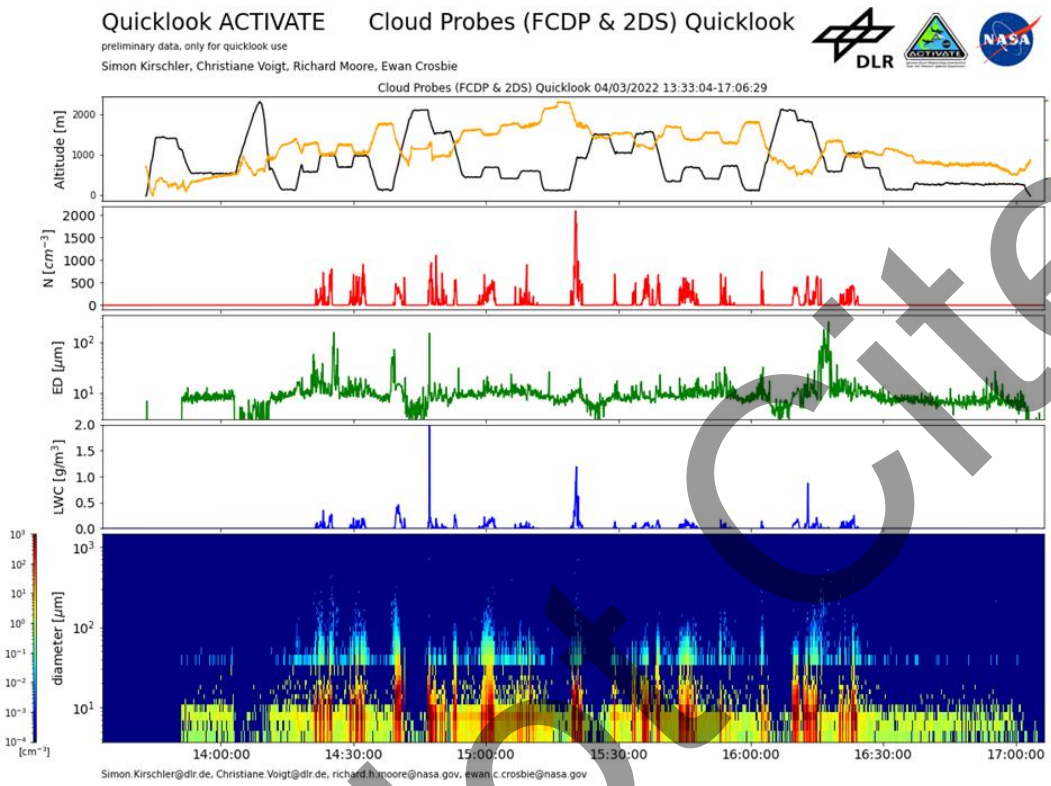
Pilot report (Baxley):

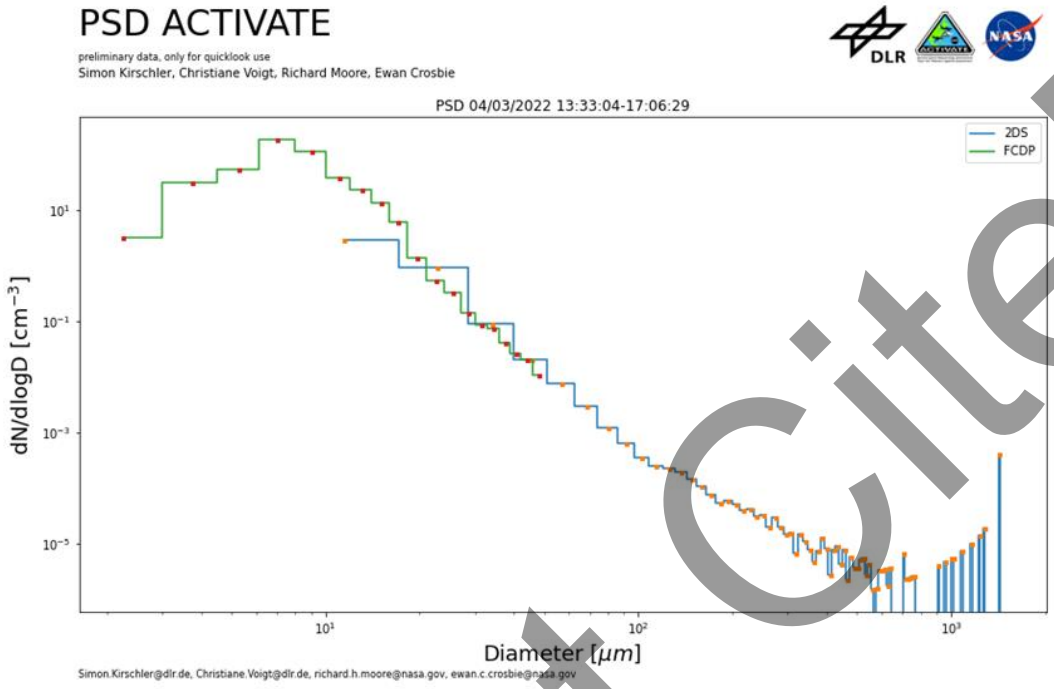
HU-25 coordinated flight with UC-12, WFF P-3 also along route of flight. Baxley/Elder, Crosbie/Winstead KLFI ECG OXANA 3230N07200W OXANA ECG KLFI (modified in flight to extend southeast to 3211N07143W). Weather as expected, flight flown as brief, to include the P-3 at FL250 and about 10 minutes in front of the HU-25. No issues noted.

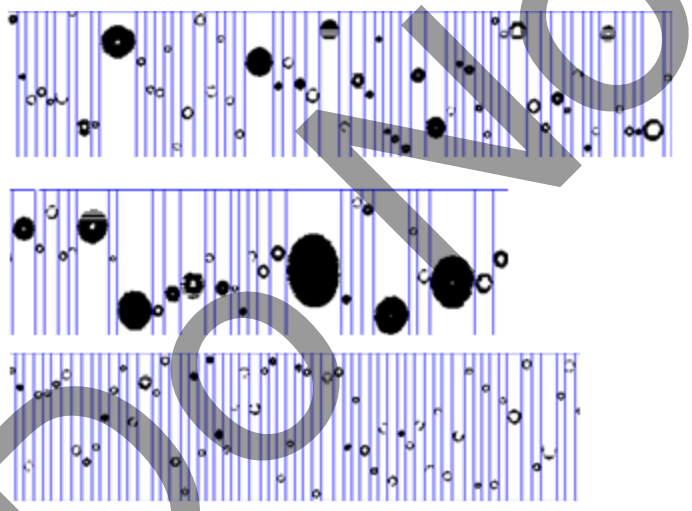
Flight scientist report (Crosbie):

Stat survey OXANA-SE. Extensive low cloud over water. The clouds although extensive in coverage were thin in places and had very low LWC. The conditions were somewhat surprising in that the cloud appearance was suggestive of a higher condensate amount but upon flying through there were many clear spots embedded within the cloud layer. At the far turnpoint we crossed the convergence line that was flown the previous day. The temperature change was observed but was not nearly as significant as the case near the OBX the previous day. On the return we passed through the line at ~3000ft in cloud and this was the only cloud penetration with high enough LWC for CW collection on this flight.


20220304 - ACTIVATE - KingAir and Falcon flight tracks
Latitude
Longitude
Falcon
KingAir
OXANA
AVAPS release
Altitude (km)
Time (UT)
Time Difference (UC12-HU25) (min)
Altitude (m)
Time, UT
Aerosol Scattering Ratio (532nm)

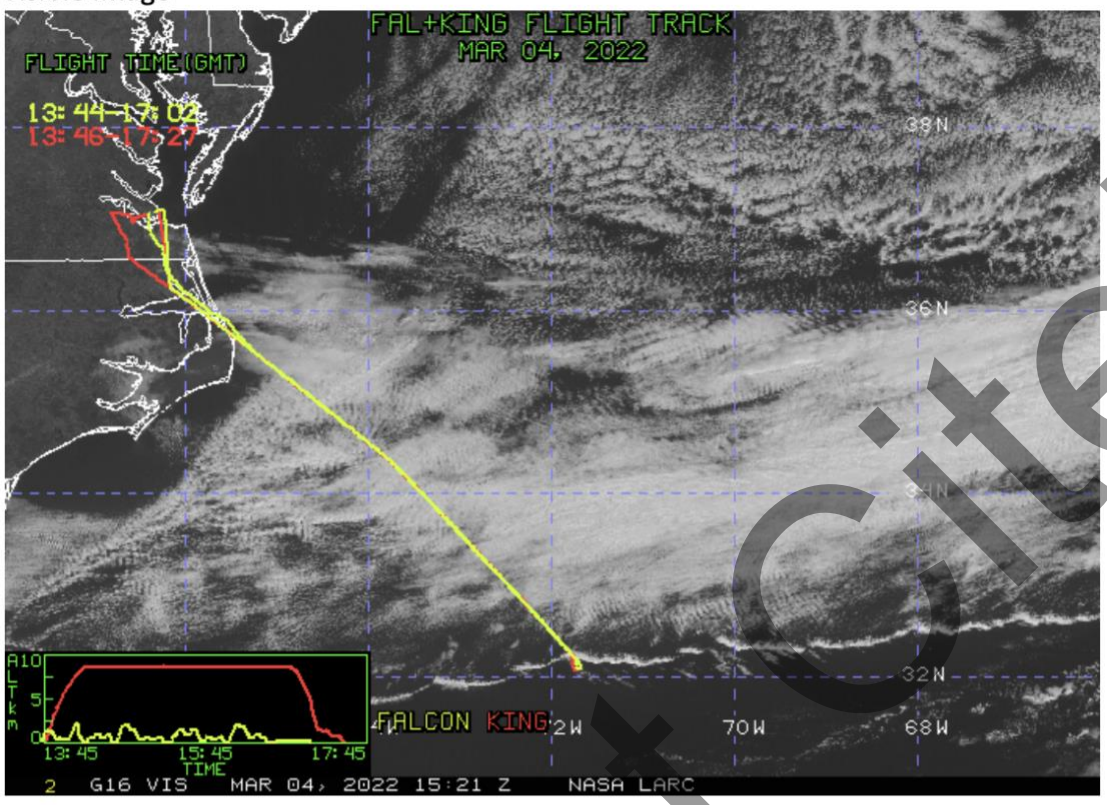

Quicklook ACTIVATE
Cloud Probes (FCDP & 2DS) Quicklook
preliminary data, only for quicklook use
Simon Kirschler, Christiane Voigt, Richard Moore, Ewan Crosbie
Cloud Probes (FCDP & 2DS) Quicklook 04/03/2022 13:33:04-17:06:29
Altitude [m]
Static Temperatur [°C]
N [cm⁻³]
ED [µm]
LWC [g/m³]
diameter [µm]
[cm⁻³]
14:00:00
14:30:00
15:00:00
15:30:00
16:00:00
16:30:00
17:00:00
Simon.Kirschler@dlr.de, Christiane.Voigt@dlr.de, richard.h.moore@nasa.gov, ewan.c.crosbie@nasa.gov



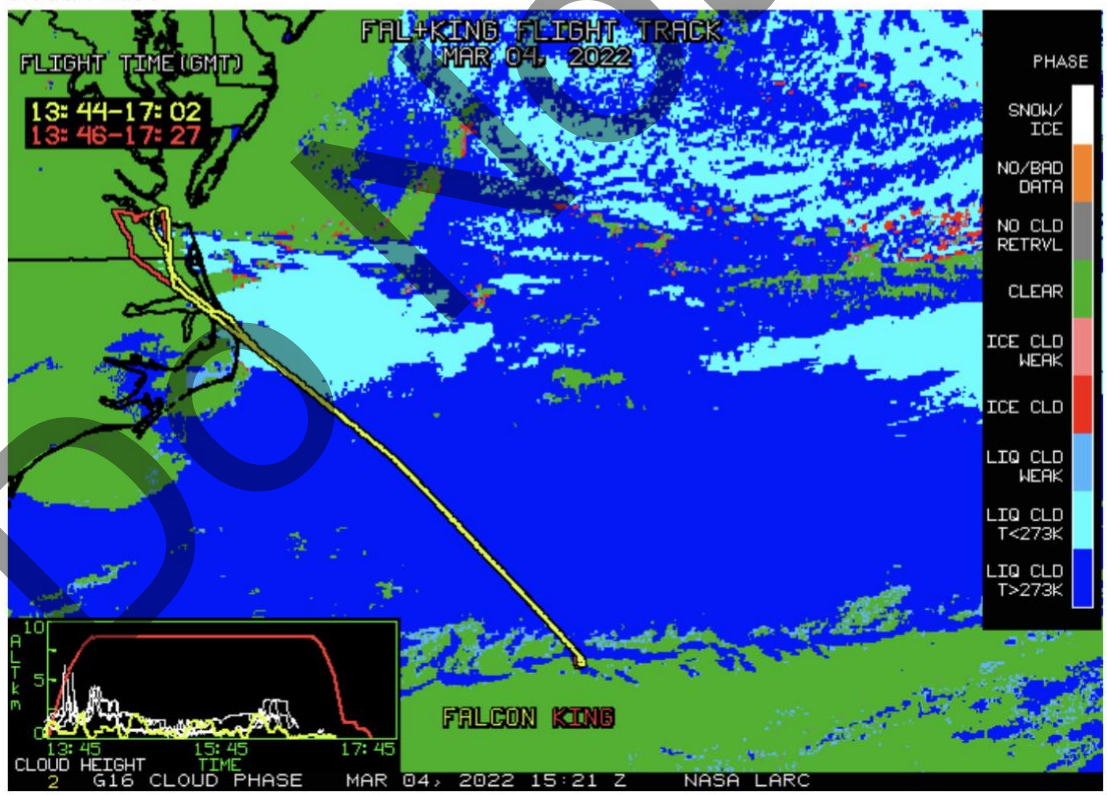


Only pure liquid clouds with Precip.

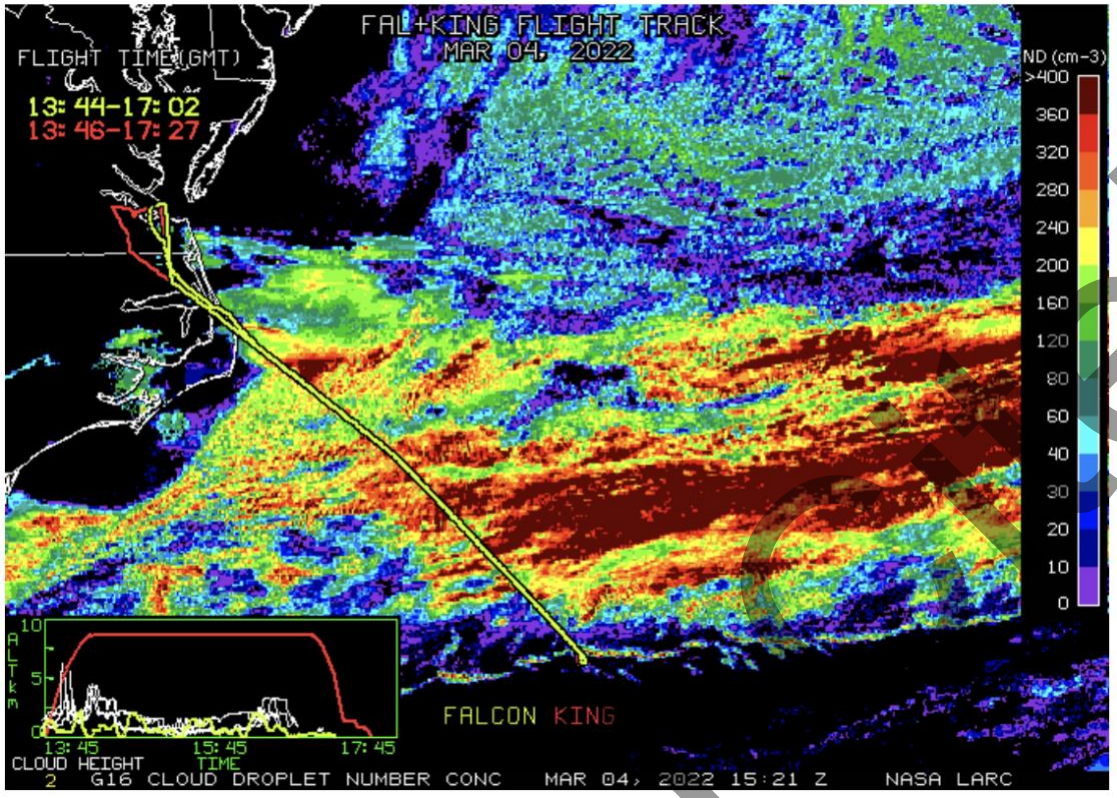
Visible Image



Cloud Phase



Cloud Droplet Number Concentration (cm-3)



Cloud-Top Height (Kft-ASL)