Flight Scientist Report
Saturday 03/26/2022 ACTIVATE RF144

Flight Type: Statistical Survey Flight
Flight Route: KLFI ECG OXANA 3230N07124W OXANA ECG KLFI
Special Notes: This is the first of two flights today probing the area southeast of OXANA. The morning flight has low clouds but also a clear patch near the end point (before turning to return to Langley) that was prime for a Falcon vertical spiral sounding. The morning flight was marked by a variety of aerosol types ranging from extensive dust, to smoke, to sea salt, and even pollen near the coast. Some ground sampling took place on this day for the purpose of pollen characterization as it was a very windy morning.

King Air
Pilot report (Wusk):
First flight of a double flight day with HU25. Planned route KLFI ECG OXANA 3230N0712430W OXANA ECG KLFI. UC12 taxi and takeoff about 15 minutes early for timing. Plan to go to turn point but expect adjustments based on HU spiral point. Nominal take off and climb out. FL280. Proceed outbound ahead of HU. HU determine spiral point of 3311.2N07215.3W. Extend slightly beyond TP for timing then back over spiral point when HU climbing through about 5k'.Winds at altitude were ~95 kts direct cross to path. 3 sondes dropped Spiral point, OXANA, Coast. Once over land request direct KLFI from OPHEA for RNAV 26. Winds at KLFI were 290@19G27. Crew was Coldsnow, Wusk, Shingler.

Flight scientist report (Shingler):

Intent is for the falcon to do a cloudfree spiral near the end point up to as high as 15kft. UC12 to lead along track and provide guidance on aerosol layers to HU25.

MBL starting to form off the OBX coast up to 4kft after 10 min. Low scattering aerosol layers aloft (5, 11, 13, 19kft). Layer at 12-16 looks to be dust with depol around 30%. Shallow cu along track between 3-5kft. Dust layer aloft still prominent. Scattering below cloud picked up substantially past OXANA. Near surface depol also increases past OXANA. Scattering continuing to increase about 20 nmi from LSIER. Near surface depol has gone back down. Mid level cloud (9-11kft) formed between LSIER and endpoint. Spiral location set at 3311N07215W on return leg. On the return around FULTN there is a smoke layer aloft near our altitude (>22kft). Multiple dust layers at various altitudes. Saw some possible pollen near OBX on return in the BL.

Adjusted the nadir camera focus around 1221-1222. Note camera time offset: camera is approx 4 seconds fast.

3 SONDES
SPIRAL
OXANA

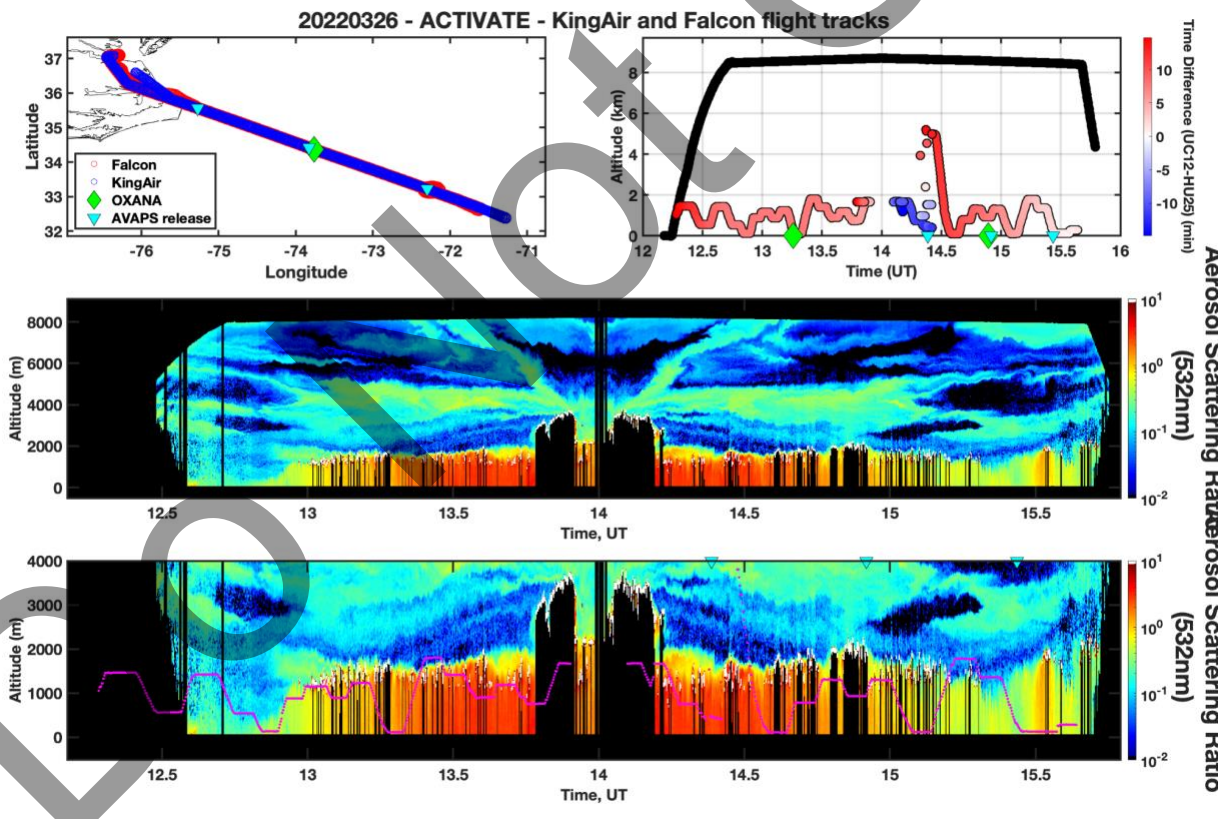
COAST

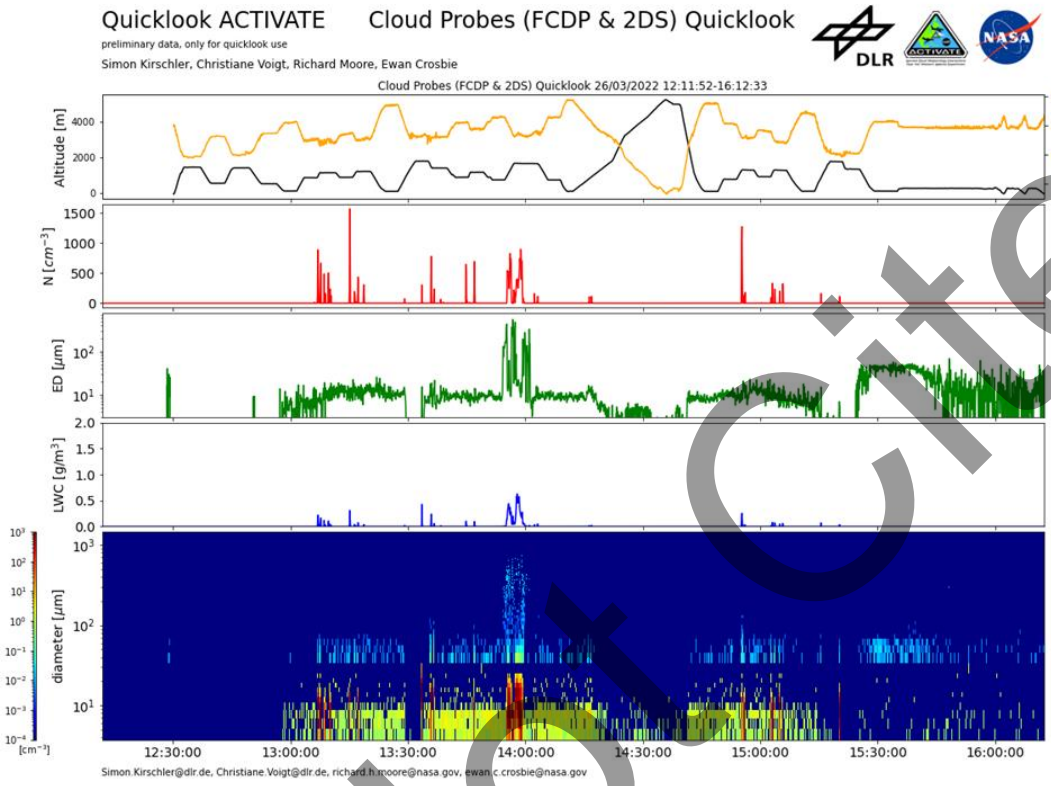
Falcon

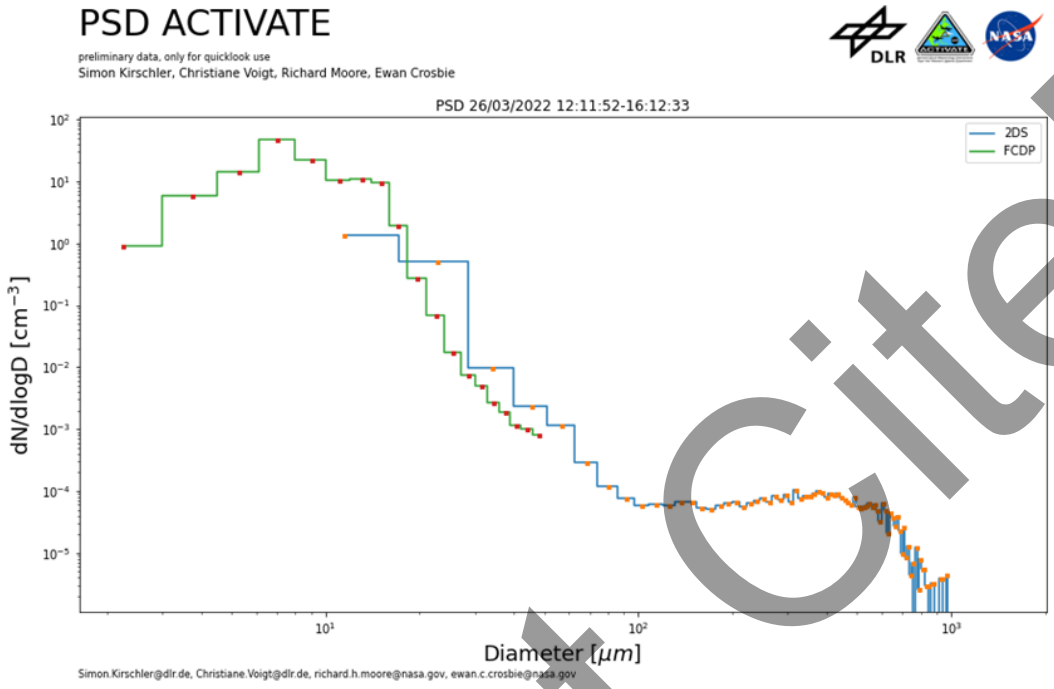
Pilot report (Slover):

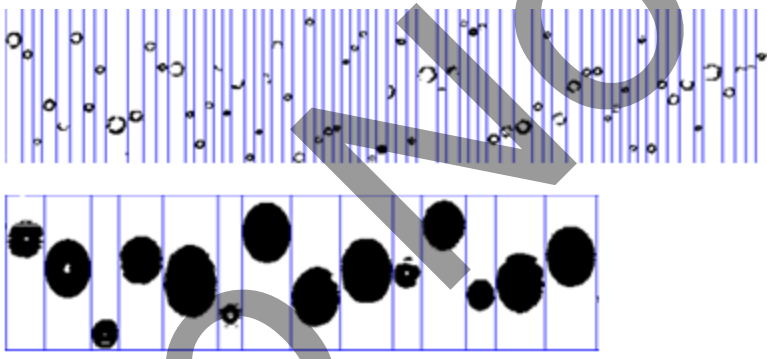
ACTIVATE research flight, statistical survey with a twist. Route was KLFI ECG OXANA 3230N/07124.5W OXANA ECG KLFI. A spiral up was flown from 500' AGL to 16,500 MSL around the point N3311.2/W07215.3 with the UC-12 flying over NW bound when Falcon was about 6,500' MSL. Plenty of clouds enroute from 3000 - 6000' MSL. Two low approaches over KLFI runway were flown in order to collect data on high pollen day.

Flight scientist report ():



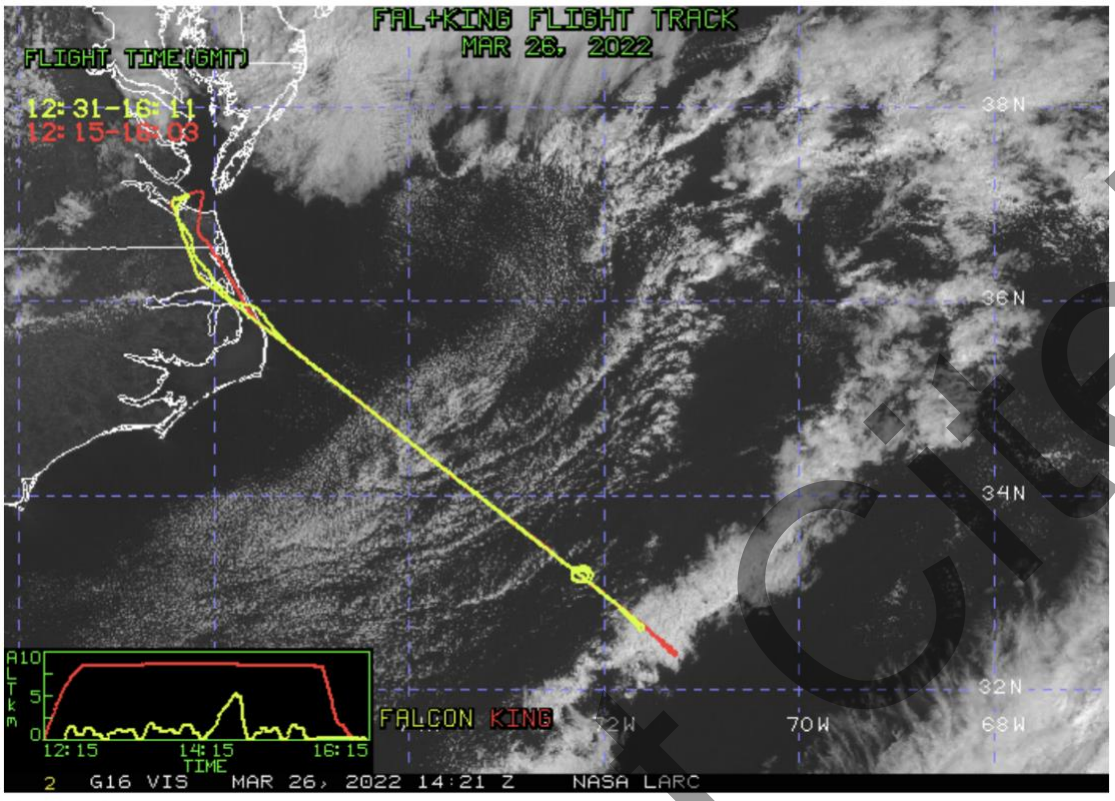

Quicklook ACTIVATE
Cloud Probes (FCDP & 2DS) Quicklook
preliminary data, only for quicklook use
Simon Kirschler, Christiane Voigt, Richard Moore, Ewan Crosbie
Cloud Probes (FCDP & 2DS) Quicklook 26/03/2022 12:11:52-16:12:33
Altitude [m]
Static Temperatur [°C]
N [cm⁻³]
ED [µm]
LWC [g/m³]
diameter [µm]
[cm⁻³]
12:30:00
13:00:00
13:30:00
14:00:00
14:30:00
15:00:00
15:30:00
16:00:00
Simon.Kirschler@dlr.de, Christiane.Voigt@dlr.de, richard.h.moore@nasa.gov, ewan.c.crosbie@nasa.gov



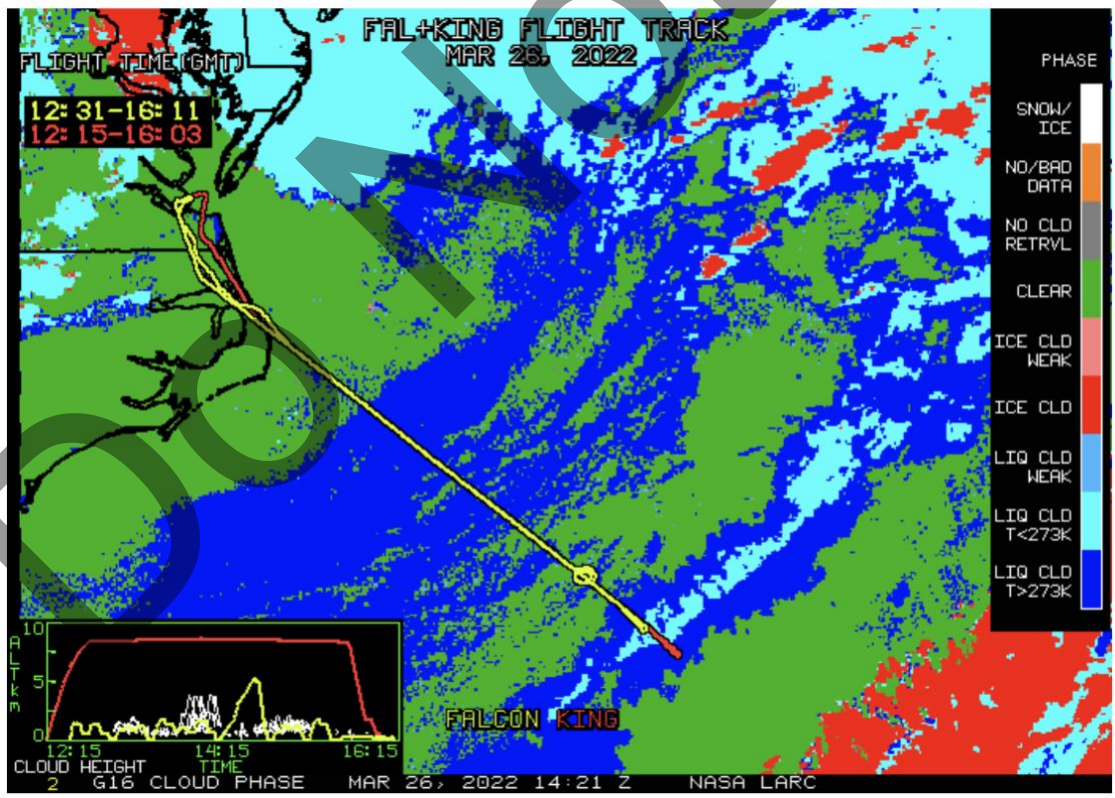


Only pure liquid clouds with Precip.

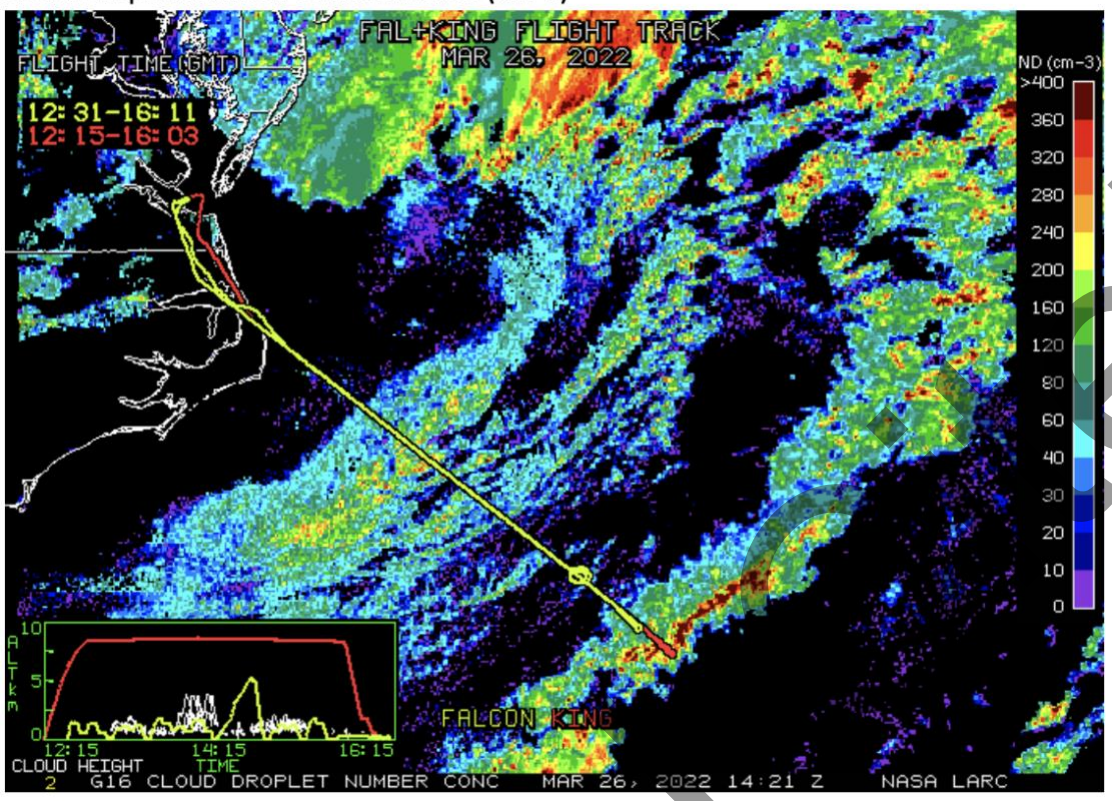
Visible Image



Cloud Phase



Cloud Droplet Number Concentration (cm-3)



Cloud-Top Height (Kft-ASL)