Flight Scientist Report
Thursday 03/03/2022 ACTIVATE RF132

Flight Type: Statistical Survey Flight
Flight Route: KLFI ATLIC ZIBUT SKPPR OXANA ECG KLFI
Special Notes: Second of two flights today. Working more clear air again.

King Air
Pilot report (Wusk):
Second flight of a two flight day. Planned route was KLFI ATLIC ZIBUT SKPPR OXANA ECG KLFI. Take off just after the HU. Climb to FL260 due to Tanker ops. East of ZIBUT climbed to FL280.Sonde at ZIBUT SKPPR and OXANA. Descent just SE of ECG. Normal descent to ILS 08 KLFI. Crew was Jamison, Wusk, Harper.

Flight scientist report (Harper):

UC12 takeoff: 18:32utc

Cloud conditions: no cirrus above they entire flight.

Mid level clouds starting near end of flight at 20:50utc

Aircraft coordination: within 10min thru flight.

SONDES

Sonde 1: 19:12utc at waypoint ZIBUT

Sonde 2: at waypoint SKPPR

Sonde 3: just after waypoint OXANA

Instrument status:

AVAPS: no issues

HSRL: data acq program freeze at ~19:20utc. Issue resolved quickly with only 2 min loss of data.

RSP: no issues

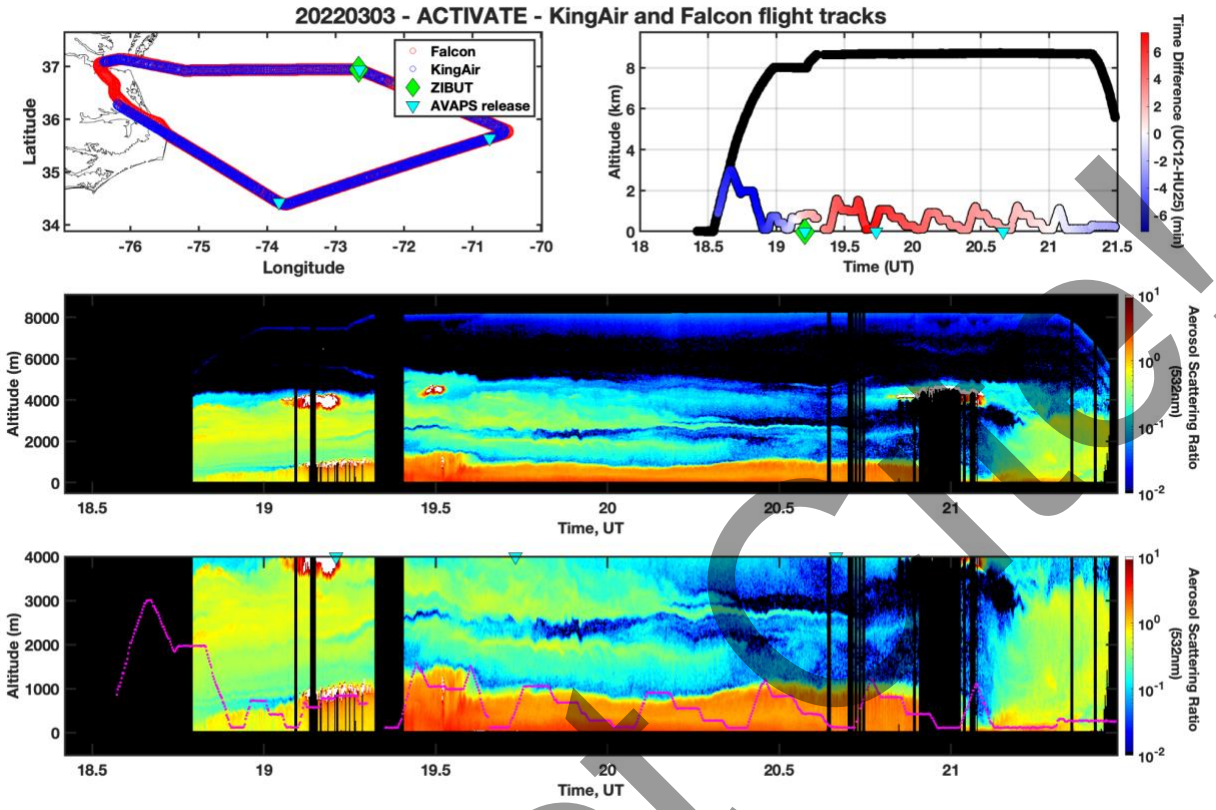
Falcon

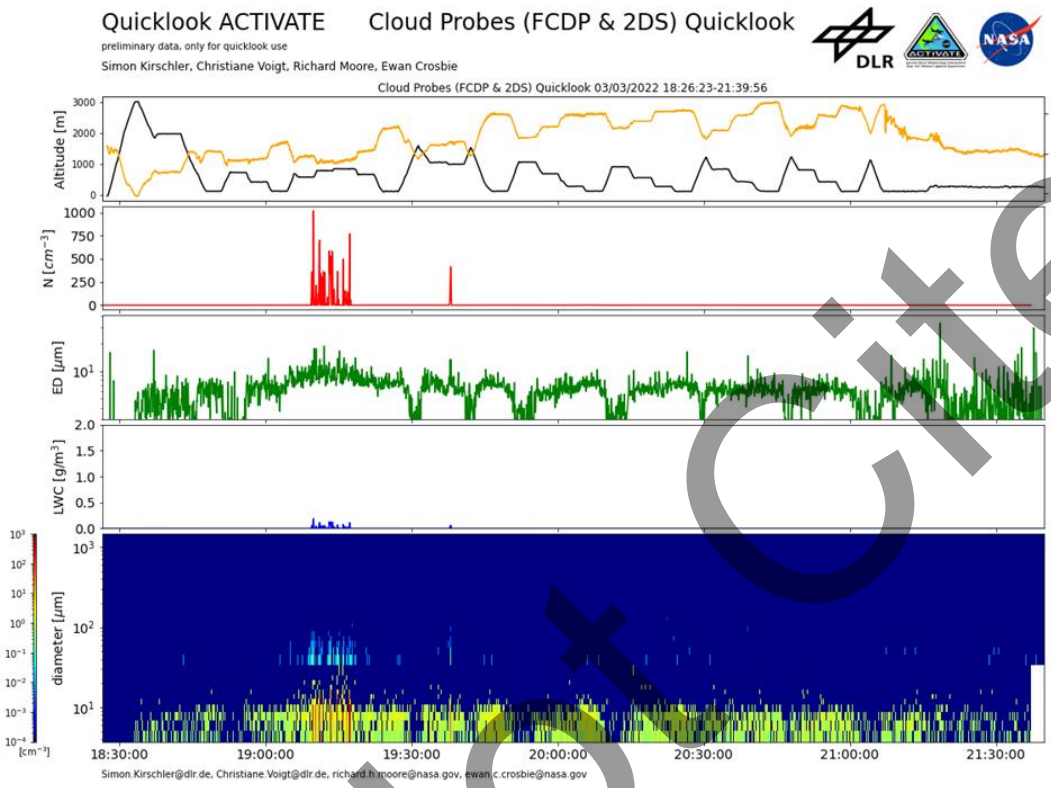
Pilot report (Slover):

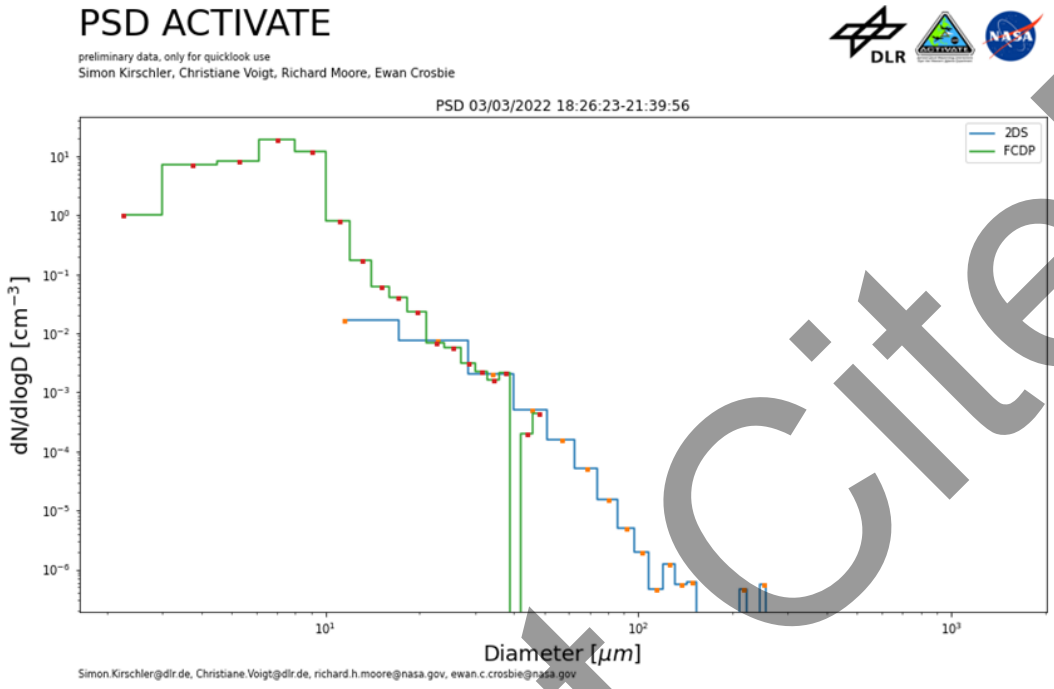
ACTIVATE research flight. Clear air module flown from KLFI ATLIC ZIBUT SKPPR OXANA ECG KLFI as planned. For about +/- 10 min either side of ZIBUT, there were some low clouds from 2000' to 3500' and were able to get a quick below cloud base and above cloud base portion of a cloudy module. A small brush fire was visible enroute home north of Manteo airport, overflew with a small chance of some aerosol samples.

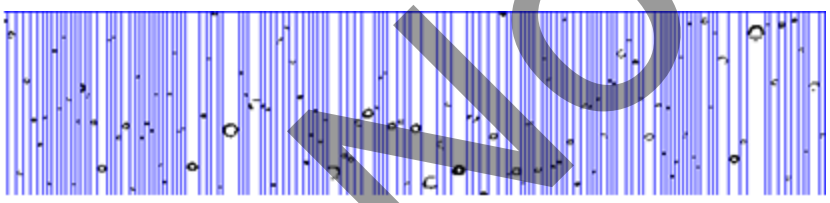
Flight scientist report (Crosbie):

Stat survey ZIBUT-SKPPR-OXANA. The region to the north was in a distinctly different airmass with lower aerosol abundance. The marine boundary layer was more developed and in places was capped with cumulus. A pair of in cloud legs was flown in the one region of extensive cloudy conditions. There was a marked airmass boundary associated with a large scale lower tropospheric convergence feature that was crossed near SKPPR. The convergence was marked by clouds extending to ~6000ft. South of the boundary the aerosol more closely resembled the features of the morning flight. On the inbound leg from OXANA, an extension of the same airmass boundary was intercepted near the OBX. The boundary was free from clouds at the lowest levels here but there was some mid-cloud in the area. The boundary was marked by a rapid decrease in temperature at 500ft, and accompanied by turbulence. On the descent to MINALT just prior to the boundary, the aerosol was markedly reduced from the previous climb. The temperature continued to decrease on the inbound leg over land.


20220303 - 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)

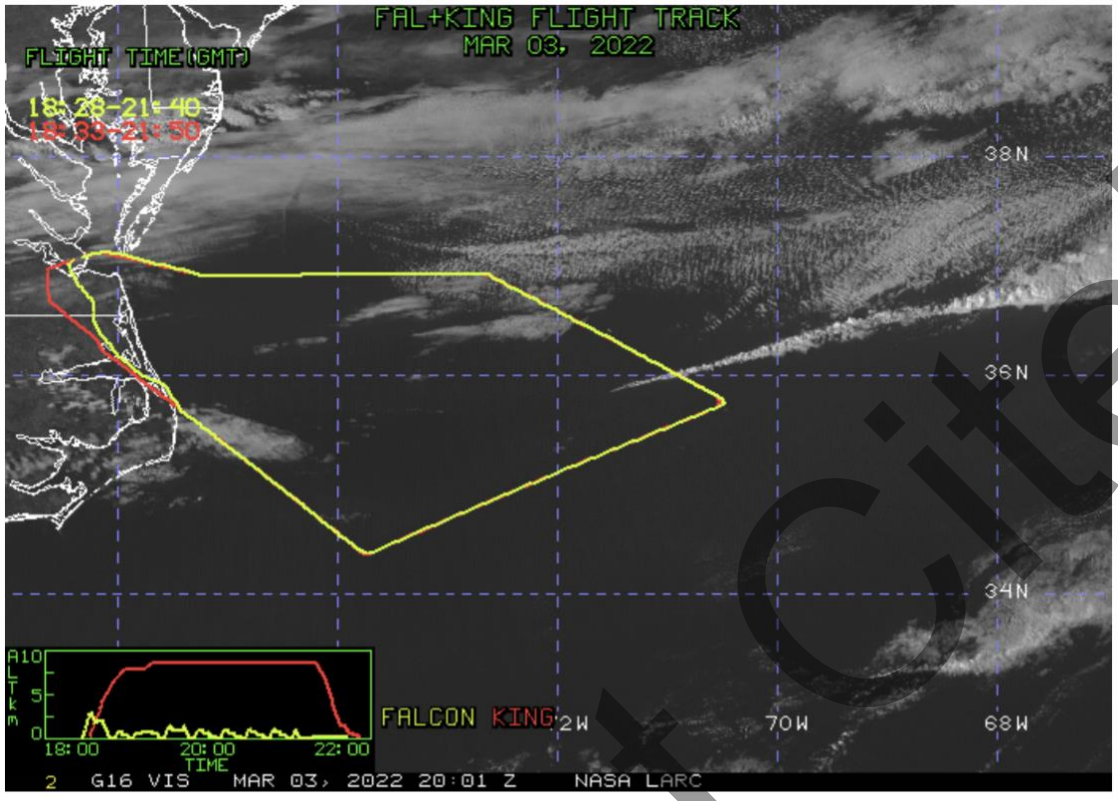

Quicklook ACTIVATE
Cloud Probes (FCDP & 2DS) Quicklook
preliminary data, only for quicklook use
Simon Kirschler, Christiane Voigt, Richard Moore, Ewan Crosbie
Cloud Probes (FCDP & 2DS) Quicklook 03/03/2022 18:26:23-21:39:56
Altitude [m]
Static Temperatur [°C]
N [cm⁻³]
ED [µm]
LWC [g/m³]
diameter [µm]
[cm⁻³]
18:30:00
19:00:00
19:30:00
20:00:00
20:30:00
21:00:00
21:30:00
Simon.Kirschler@dlr.de, Christiane.Voigt@dlr.de, richard.h.moore@nasa.gov, ewan.c.crosbie@nasa.gov



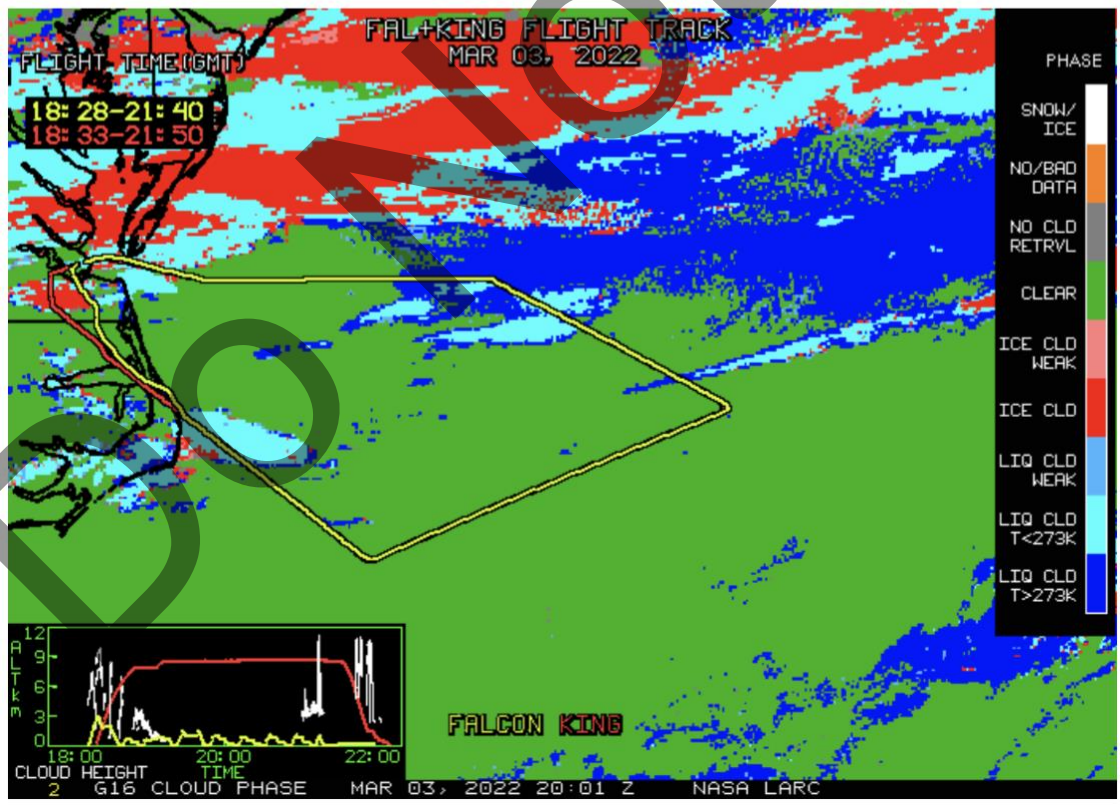


Only pure liquid clouds.

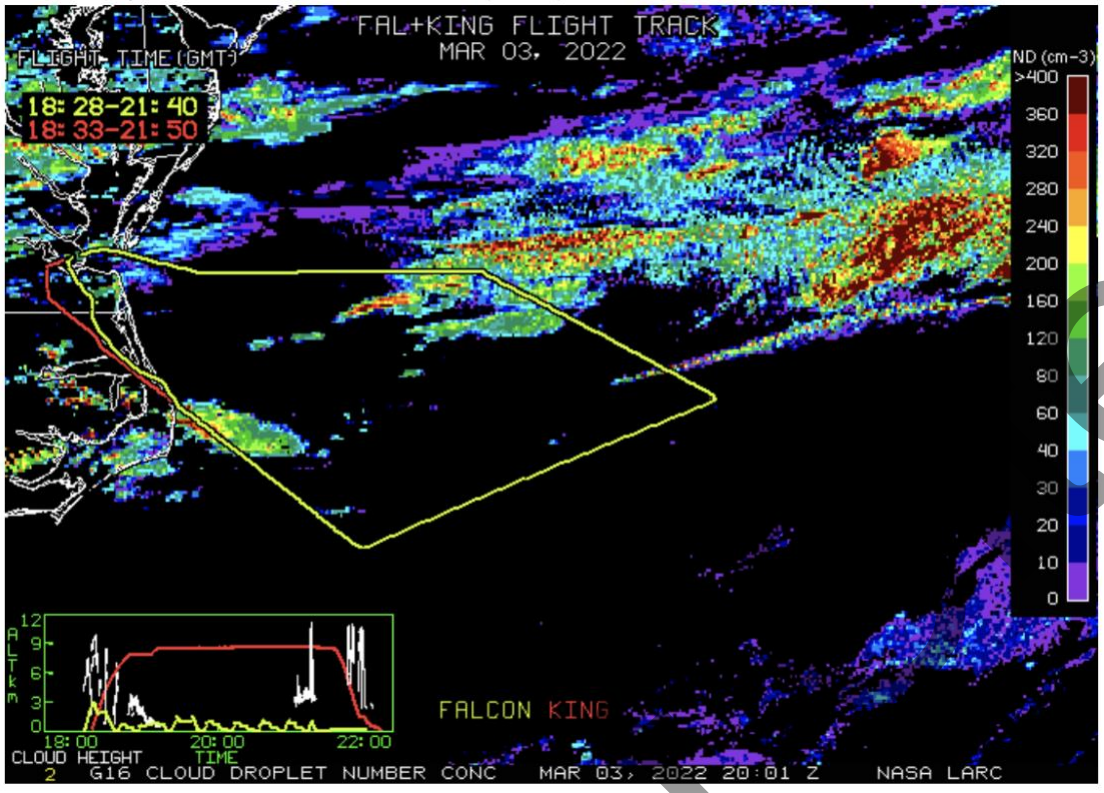
Visible Image



Cloud Phase



Cloud Droplet Number Concentration (cm-3)



Cloud-Top Height (Kft-ASL)