

Flight Scientist Report  
Wednesday 03/02/2022 ACTIVATE RF130

Flight Type: Statistical Survey Flight

Flight Route:

Special Notes: Due to aircraft maintenance, there was only a single flight today (rather than the original plan for 2) in the afternoon. The goal was to conduct our so-called "unicorn module", which is to do a spiral with the Falcon between Min. Alt. level and the top of the most evident aerosol layer based on real-time HSRL-2 data. Meanwhile the King Air flies over with ideal fly-over when the Falcon is at Min. Alt. during the spiral.

### King Air

Pilot report (Wusk):

Planned for a single flight day, pending completion of HU25 Mx activities. HU Mx somewhat delayed but eventually cleared for a 2PM Take-off. Route planned was KLF1-ATLIC ZIBUT WEBBB JETER WEBBB ZIBUT ATLIC KLF1. with the potential to change to just ATLIC ZIBUT TILED ZIBUT ATLIC. Strong winds at altitude forecast to be 270 at 80 knots. UC took off minutes after the HU. Passed the HU around OUTES and stayed in relative close proximity outbound to ZIBUT. Research team opted to change to the back up plan so route was coordinated to TILED. UC turned about 2 minutes prior to TILED for winds. HU soon passed the UC headed west. Set Spiral point was determined as 3706N07100W. UC12 was passed time to cross over as the HU reached bottom of spiral. Also told to have 5 nm straight run before and after spiral point which was 3nm south of route. UC offset and held for the requested time (actually held for 6 mins after the spiral as requested). Two sondes were dropped at TILED as the first appeared to have signal issues, so did the second. Sonde dropped at Spiral worked. Final sonde dropped at ATLIC. Normal descent and an RNAV 08 approach and landing. Aircraft ready for double day tomorrow. Crew was Wusk, Jamison, Harper.

Flight scientist report (Harper):

UC12 takeoff: 19:10:31utc

Cloud conditions: no cirrus above they entire flight.

Aircraft coordination: within 10min thru most of flight until the last 45min where HU25 continued to slowly increase its distance ahead of UC12.

SONDES

2 sondes launched at turnaround point TILED.

Sonde 3: 21:10utc over HU25 spiral point.

Sonde 4: 22:26 approaching coast at nav point ATLIC

Instrument status: Issues with Sondes software not receiving signal but signal cards indicate good signal. Most likely due to GPS and PC clock time 3 sec difference

HSRL: no issues

RSP: no issues

### **Falcon**

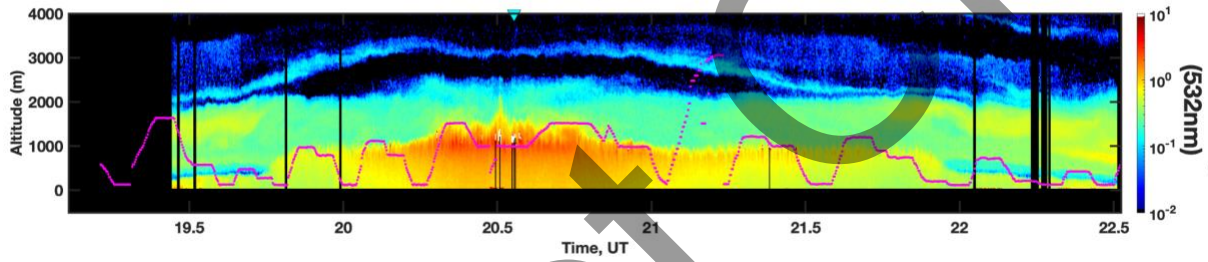
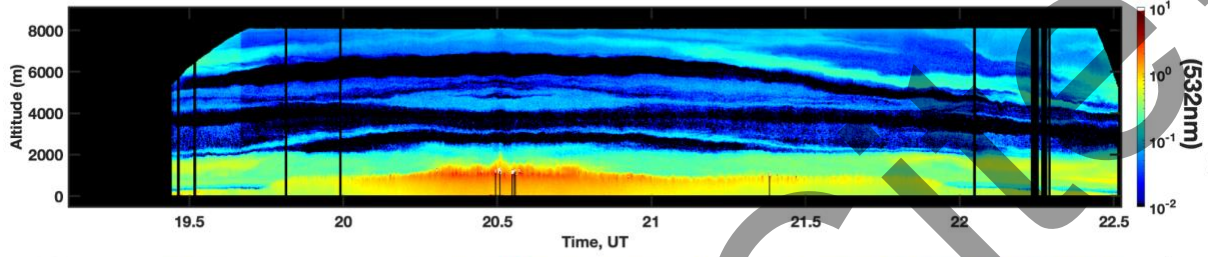
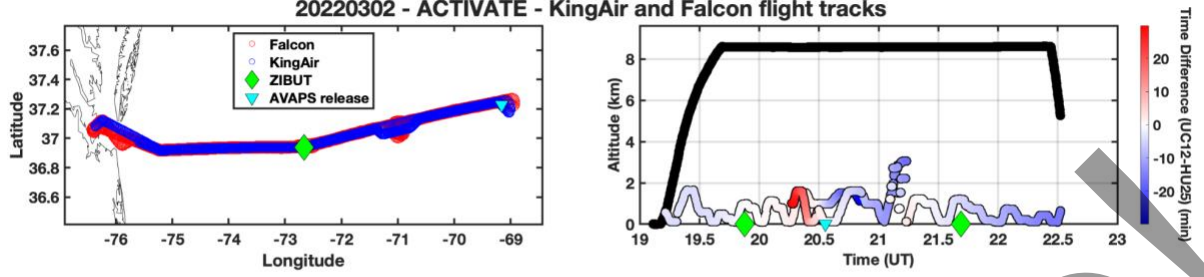
Pilot report (Baxley):

HU-25 coordinated flight with UC-12; Thorson/Baxley, Crosbie/Winstead KLF1-ATL1C-ZIBUT-TILED-ZIBUT-ALTIC-KLF1 (change given at the aircraft, not the briefed route of flight) Few clouds along the route of flight (as expected), waypoint selected on outbound leg to conduct spiral descent - 3706N07100W. Spiral descent started at 10,000' MSL and 2055Z, with the UC-12 passing overhead 2110Z with the HU-25 at 2500' MSL. On return to KLF1 the HU-25 climbed to 10,000' MSL for data collection. Flight flown as expected, no issues noted.

Flight scientist report (Crosbie):

Stat survey ZIBUT-TILED. Clear modules were performed to characterize aerosols. A spiral was conducted on the return leg to allow detailed analysis of the remote sensors and in situ aerosol measurements. There was significant aerosol enhancements above the marine boundary layer throughout the flight the marine layer deepened to the east interacting with the aerosol layer above. There were some clouds near the turnpoint at TILED especially to the south and there were patches on the return leg which had started to form some very small (~100m) clouds. The location of the spiral was slightly offset to the south to try and minimize impact of these very small clouds on the RSP retrievals for aerosols.

### 20220302 - ACTIVATE - KingAir and Falcon flight tracks

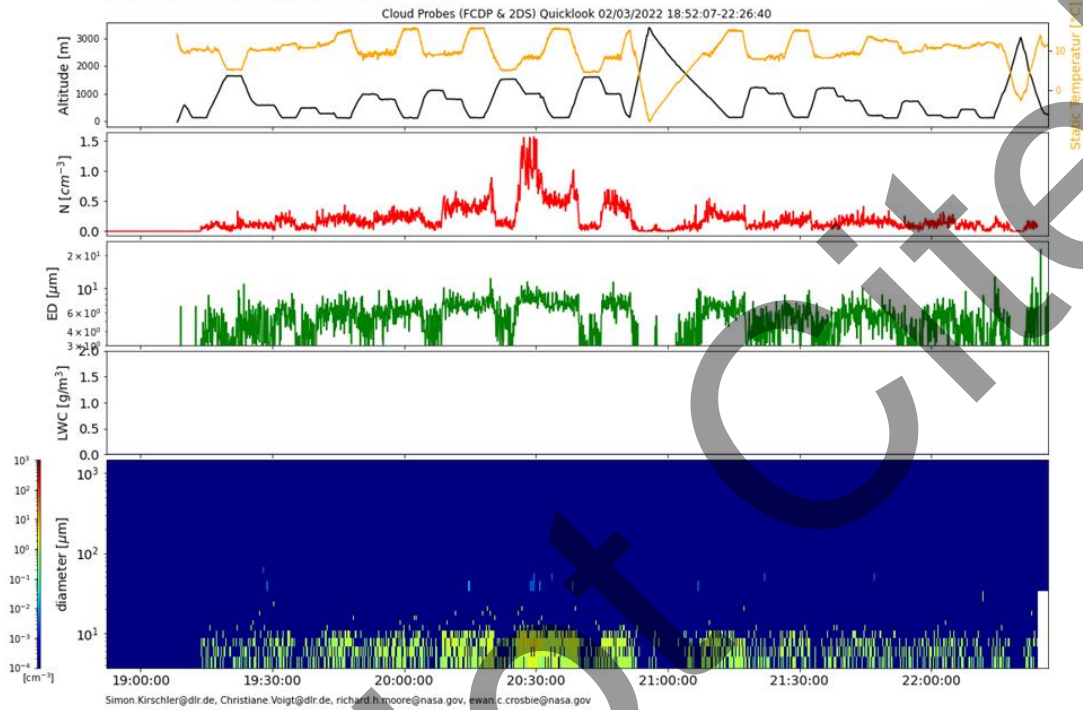


DO NOT

# Quicklook ACTIVATE Cloud Probes (FCDP & 2DS) Quicklook

preliminary data, only for quicklook use

Simon Kirschler, Christiane Voigt, Richard Moore, Ewan Crosbie

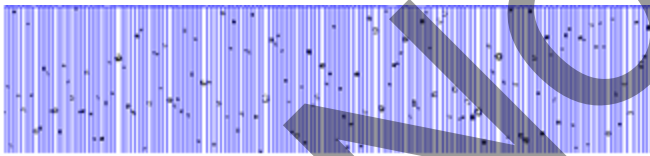
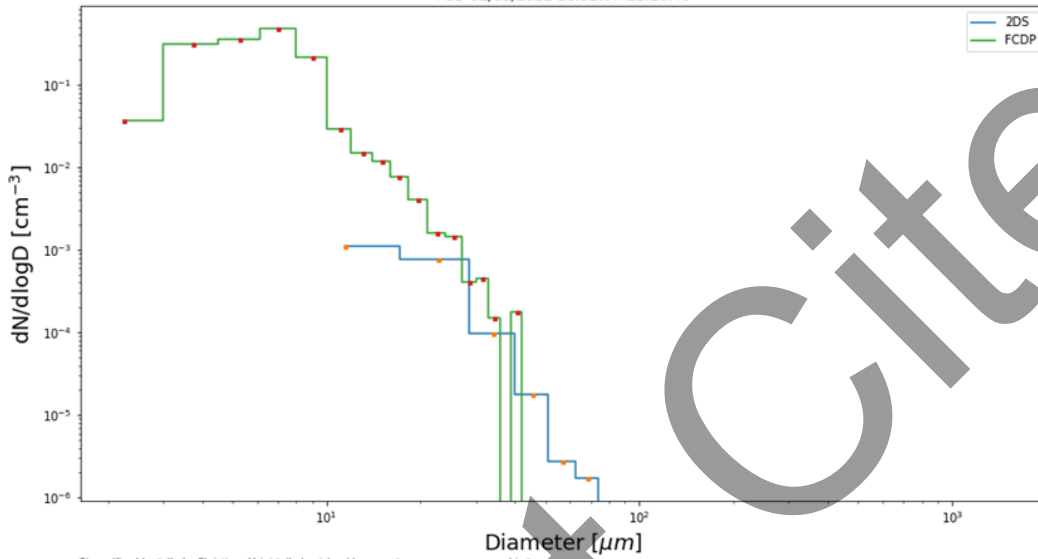


# PSD ACTIVATE

preliminary data, only for quicklook use  
Simon Kirschler, Christiane Voigt, Richard Moore, Ewan Crosbie



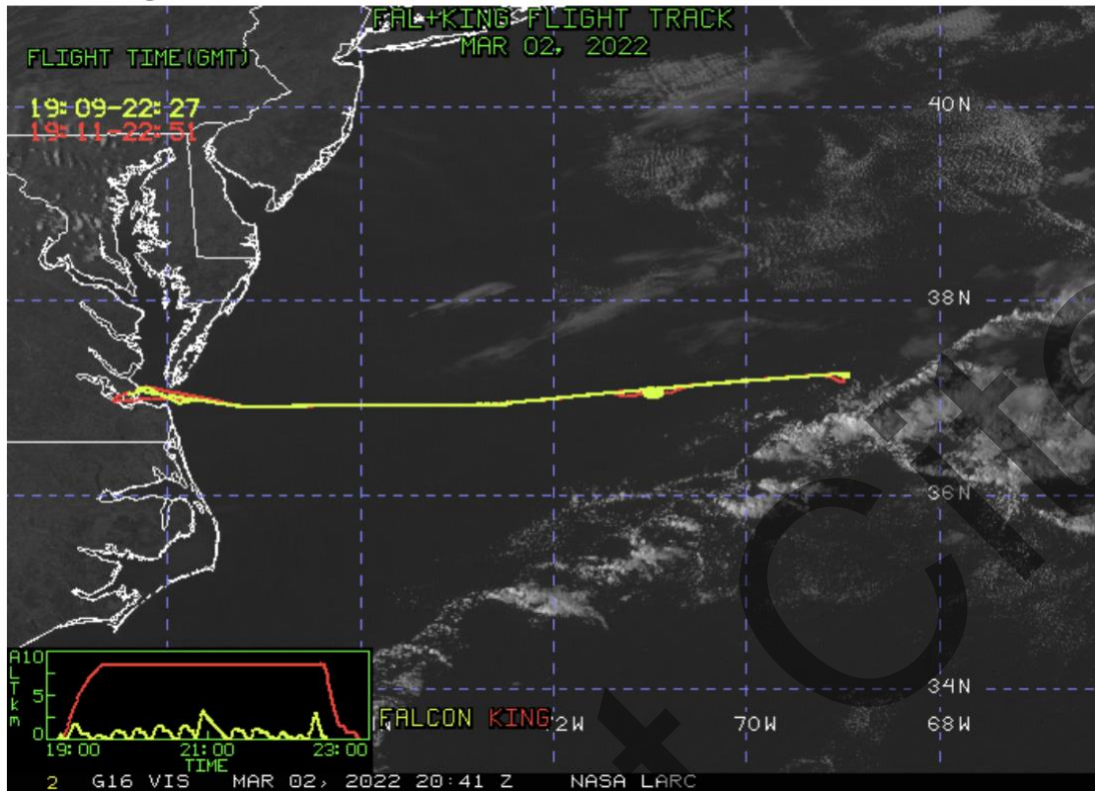
PSD 02/03/2022 18:52:07-22:26:40



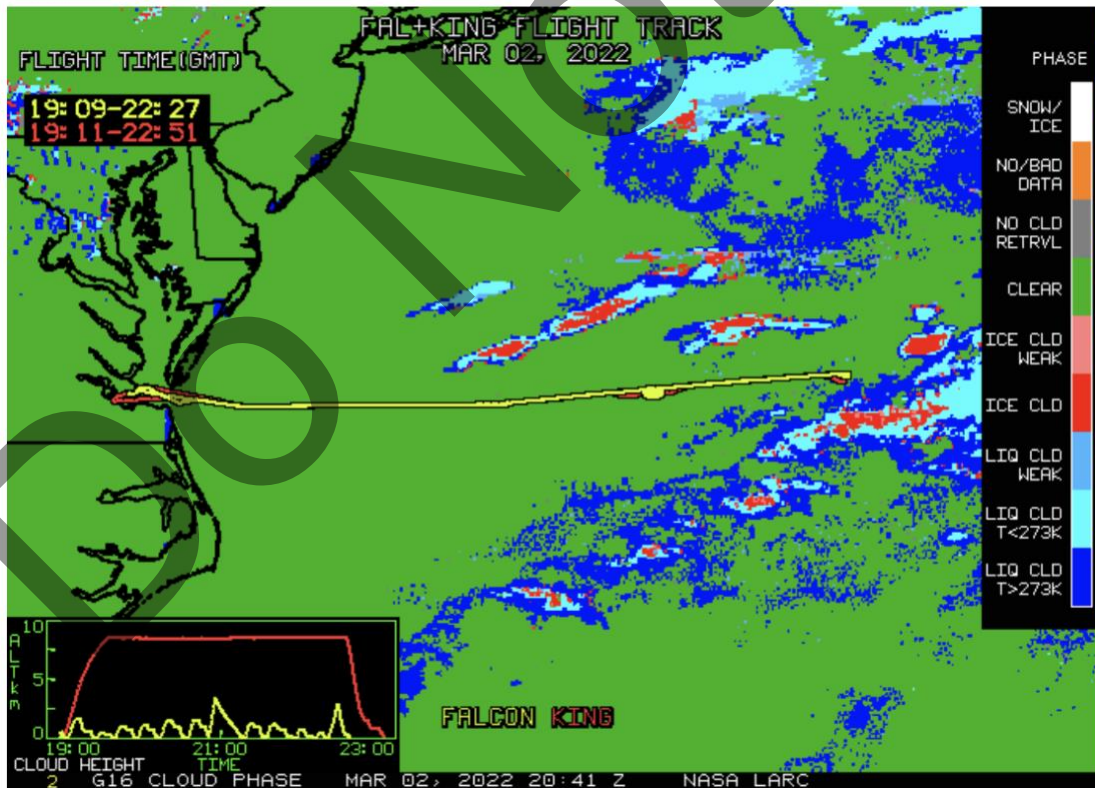
Only very small particles and probably pure liquid.

NASA-LaRC Clouds Group GOES-16 Quicklook Images for Flight 130, 20:41 UTC Mar 02, 2022

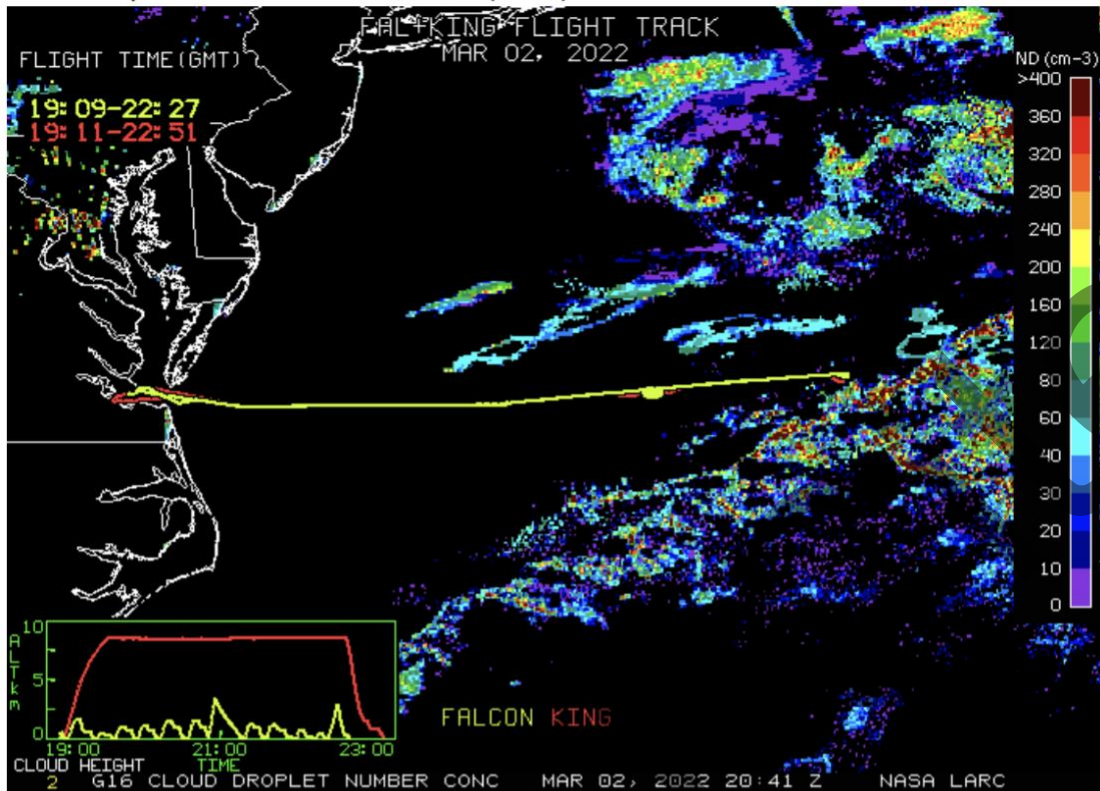
Visible Image



Cloud Phase



### Cloud Droplet Number Concentration (cm-3)



### Cloud-Top Height (Kft-ASL)

