

Flight Scientist Report
Monday 6/07/2021 ACTIVATE RF79

Flight Type: Statistical Survey Flight
Flight Route:

Special Notes: This is the morning flight of a double flight day. We surveyed puffy cumulus clouds East of Zibut and identified good targets for the afternoon's process study flight.

King Air

Pilot report (Wusk):

UC-12 ACTIVATE cooperative flight with HU-25. Planned route: ATLIC-ZIBUT-lat/long-ZIBUT-ATLIC. Standard takeoff; initial climb held to FL260 due to Air Force Tanker activity. Outside ZIBUT then cleared to final altitude of FL280. End Point changed to TILED per researcher request in-flight. HU had to deviate to the south just past ZIBUT to avoid weather. UC had to deviate slightly to the north to get around the some cells anvil (which blew off to the south). With light winds at altitude the UC remained about 23nm behind the HU unable to close on the eastbound leg. Flew to end point even though HU25 was ahead. Was able to close some on westward track to establish better coincidence with HU-25. Uneventful RTB per remainder of flight. 4x dropsondes deployed. Crew Jamison, Wusk, Harper.

Flight scientist report (Harper):

UC12 takeoff: 12:32:17 a approx 3 min after HU25.

Aircraft coordination: UC12 lagged HU25 ~8min on outbound leg, lagged 6min on inbound leg.

Sonde 1: 13:29utc at ZIBUT

Sonde 2: 14:17utc. at TILED (outbound turnaround)

Sonde 3: 14:41utc. 1/2way between TILED and ZIBUT return leg.

Sonde 4: ~15:38 just after ATLIC.

No problems with RSP or AVAPS. The HSRL2 INTF had some issues with locking but alternate locking scheme worked well to keep it locked with good contrast ratio for most of the flight. Decreased performance and debugging of locking occurred between ZIBUT and ATLIC.

Falcon

Pilot report (Baxley):

Takeoff (Z): 1230 / Land: 1600

Science flight for the HU-25 in support of ACTIVATE Campaign #4, conducted cooperatively with the UC-12. Route of flight KFLI-ATLIC-ZIBUT-3545N/06915W-ZIBUT-ATLIC-KLFI. Departed Rwy26 with vectors to the north then east before direct to ATLIC, climbing to 5k ft MSL for initial transit, then descending to 500' MSL approximately 15 nautical miles east of KLFI. Winds were light (<15 kts) out of the west and north throughout the flight. All objectives were achieved and with no discrepancies noted.

Pilots: Baxley/Thorson

QNCs: Crosbie/Winstead

Flight scientist report (Crosbie):

There was a small diversion made near the start of the first cloudy module to get us clear of deep convection that was along the planned track. East of that deep convection the cloud scene settled into predominantly ShCu with most of the clouds confined to a 500ft layer. There was a prominent band of deeper Cu around the location where we did the ACT leg in cloudy module 1 and 2. During the clear modules, the MBL was very shallow and so most of the module occurred above levels that were coupled to the surface, making it difficult to select levels. In places there was evidence of stratified aerosol enhancements and so we attempted to pick levels to sample these layers. (2 cloudy, 1 part cloudy, 4 clear)

Eddie:

12:28:55 Takeoff

12:31:51 Filter on CPC's & SMPS; CPC 3776 reading ~ 100 counts/cc

12:34:46 CPC's & SMPOS back on ambient sampling

12:54 CPC 3776 lower than CPC 3772

12:57 Some very thin fog <500 ft

13:04 Differential between CPC 3776 & CPC 3772 larger than last flight.

13:19 Deviating from track to avoid convection

13:25 Increased humidifier water temperature from 46 to 47

14:48:10 Rain while in cloud

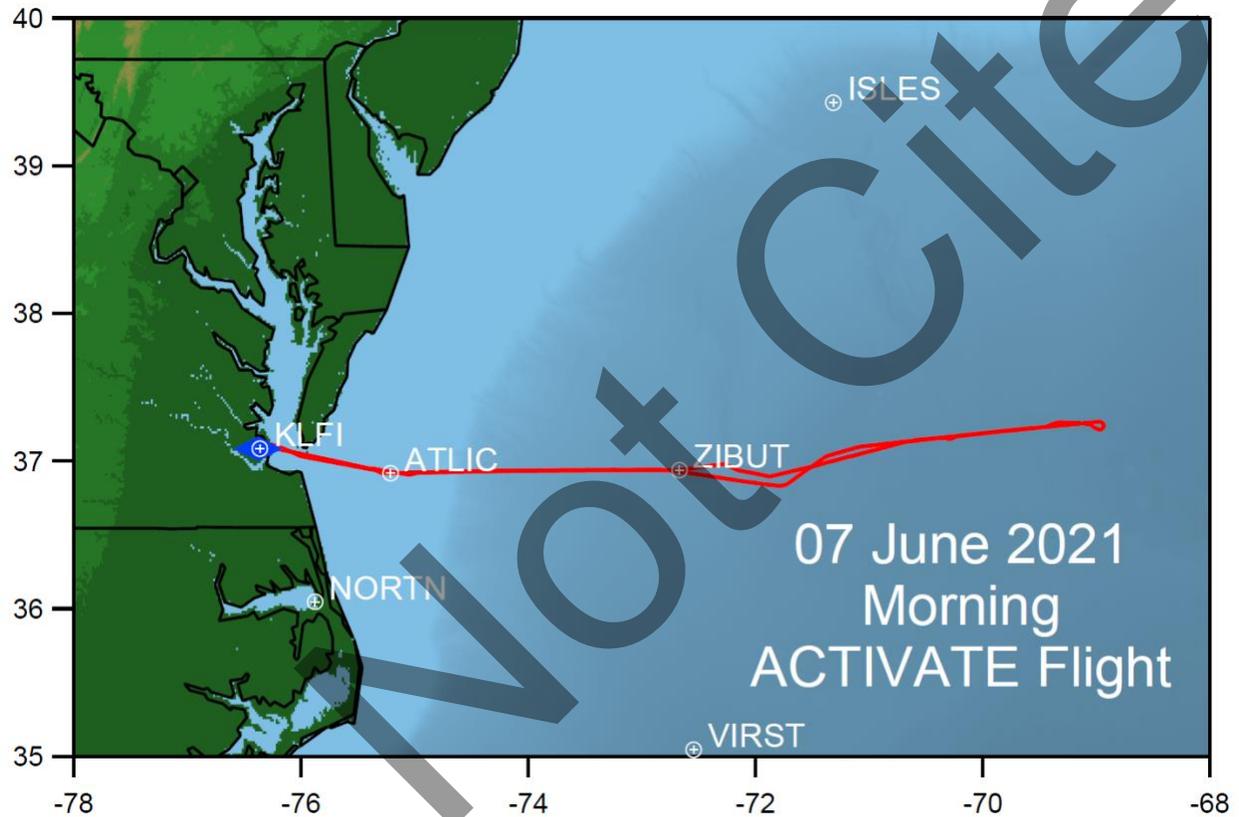
15:20 CPC 3776 counting efficiency decreasing

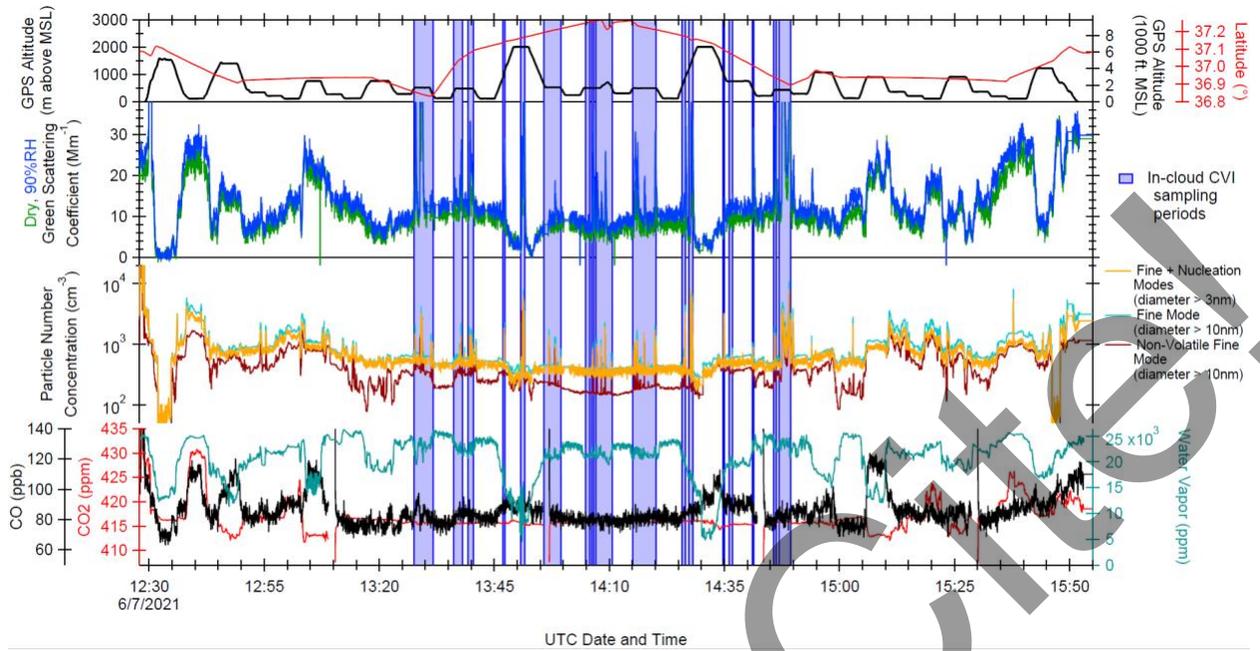
15:46:10 CPC's & SMPS on filter

15:47:50 CPC's & SMPS back on ambient

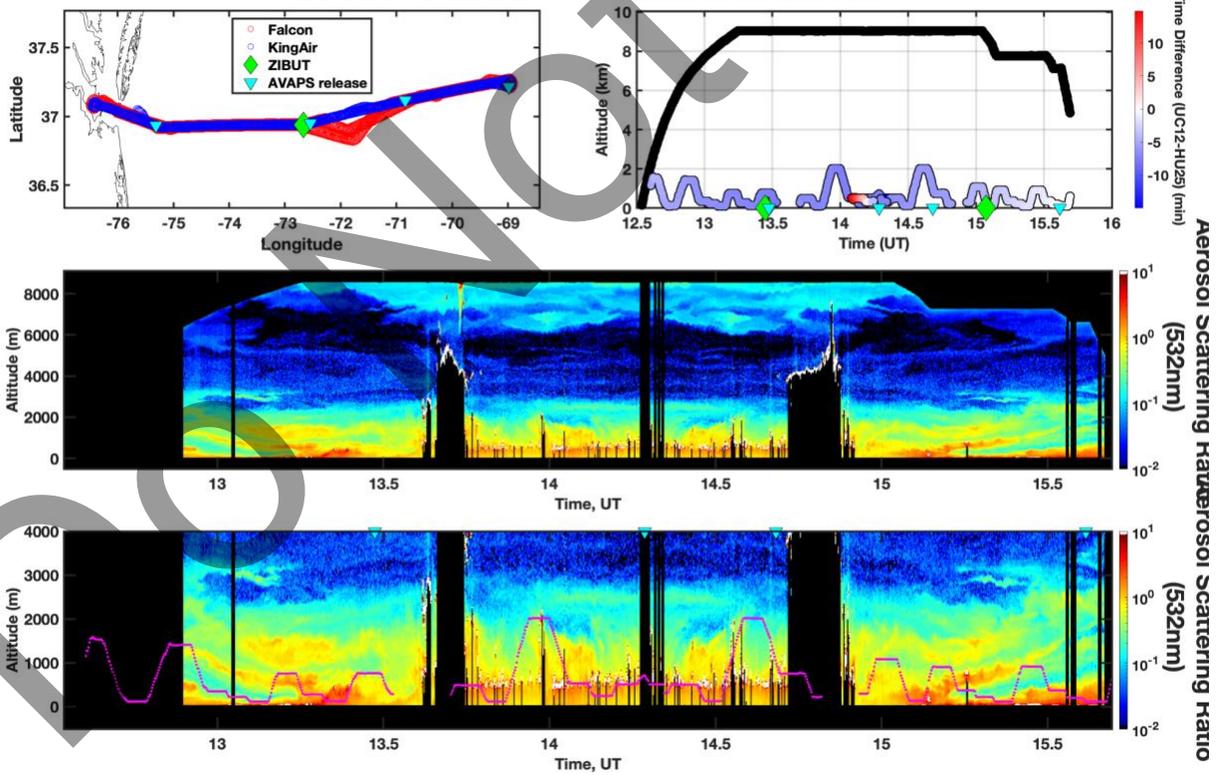
15:48:25 Humidifier & WCM turned off in preparation for landing

15:52:01 Landing





20210607 - ACTIVATE - KingAir and Falcon flight tracks



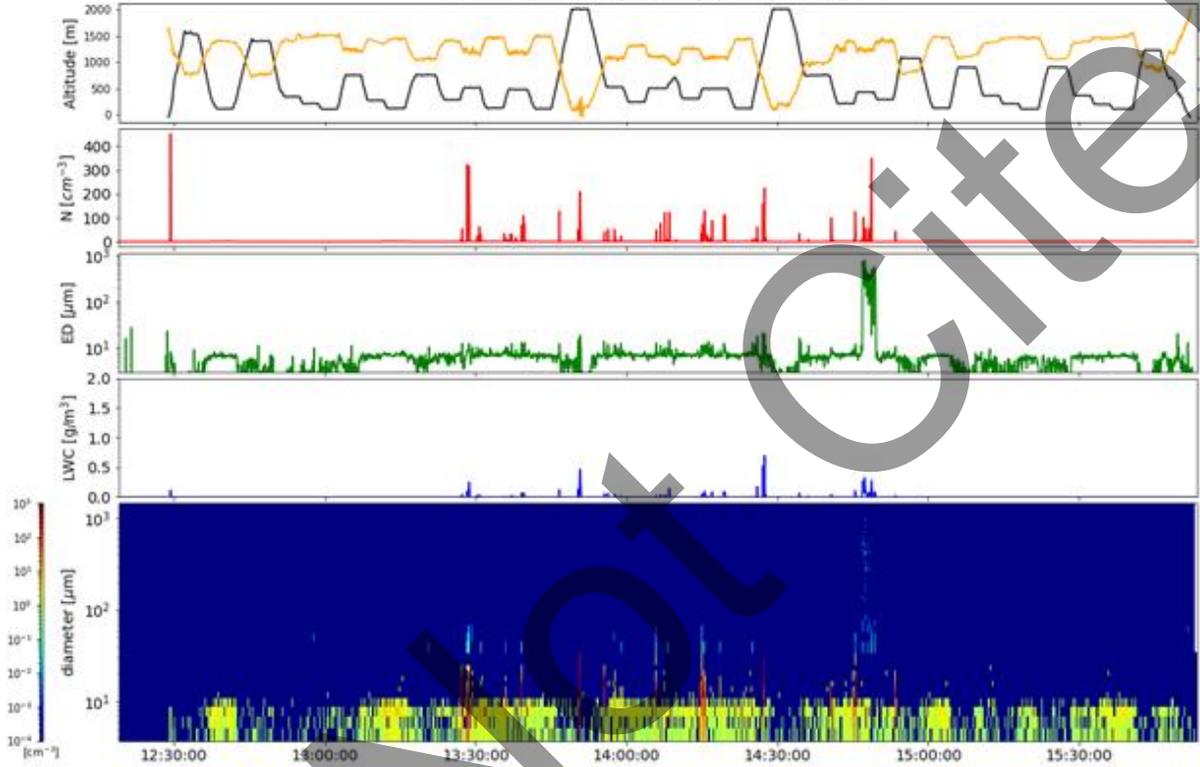
Quicklook ACTIVATE Cloud Probes (FCDP & 2DS) Quicklook

preliminary data, only for quicklook use

Simon Kirschler, Christiane Voigt, Richard Moore, Ewan Crosbie



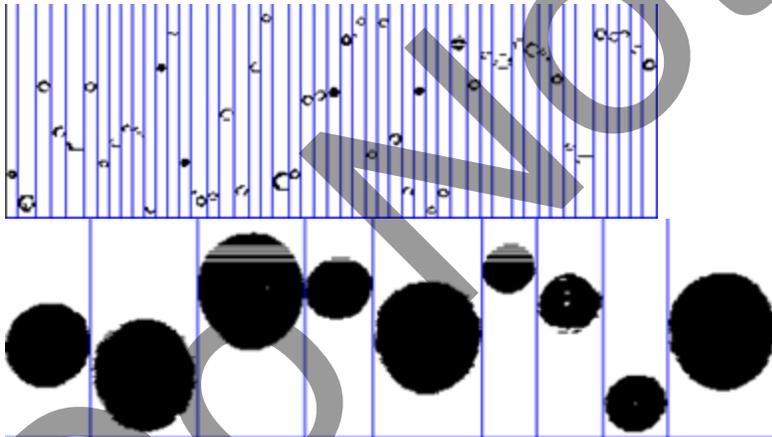
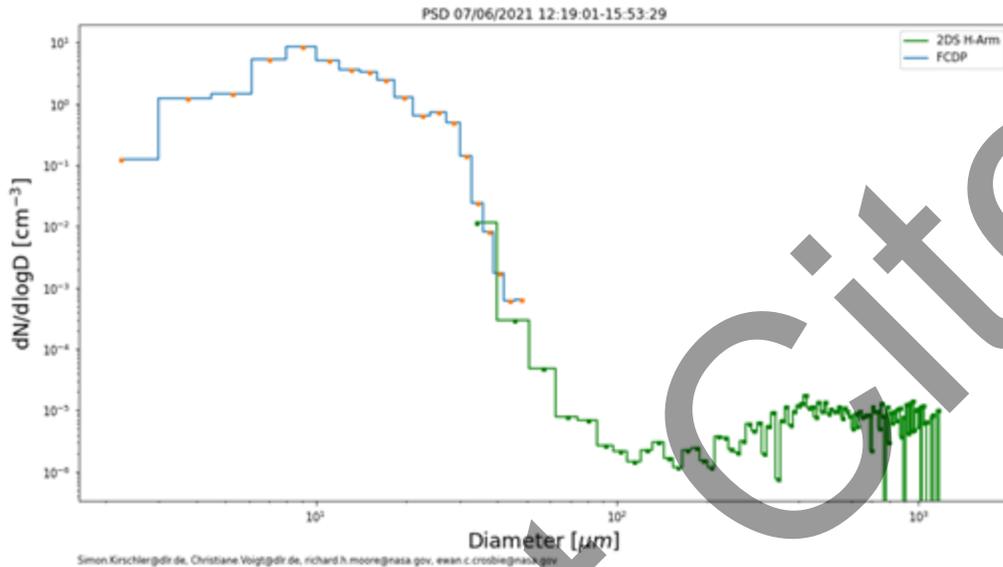
Cloud Probes (FCDP & 2DS) Quicklook 07/06/2021 12:19:01-15:53:29



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PSD ACTIVATE

preliminary data, only for quicklook use
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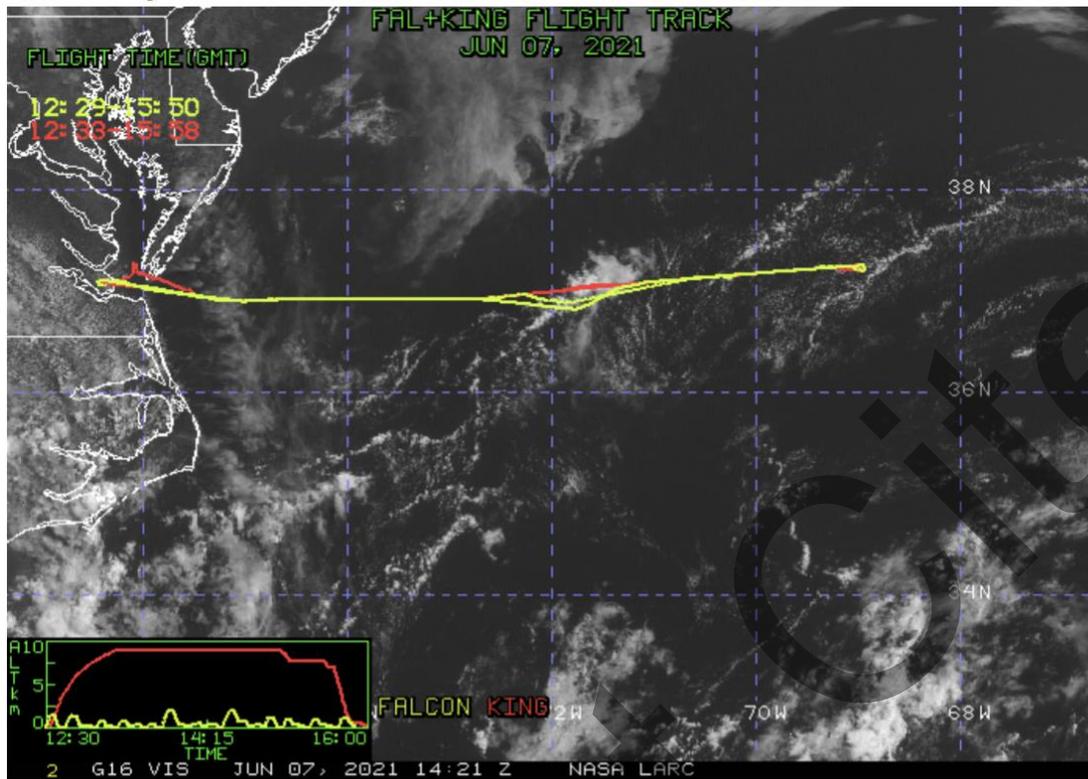


Only pure liquid clouds and precipitation around 14:47 UTC

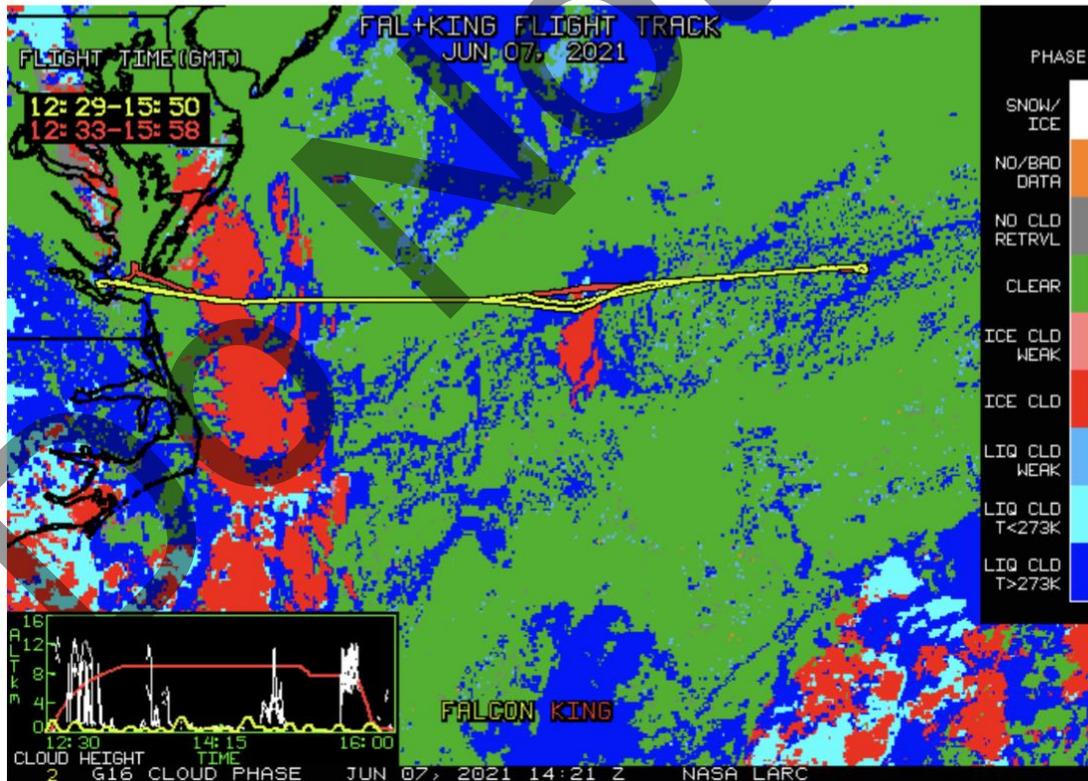
NASA-LaRC Clouds Group GOES-16 Quicklook Images for Flight 79, 14:21 UTC Jun 07, 2021

Do Not Cite!

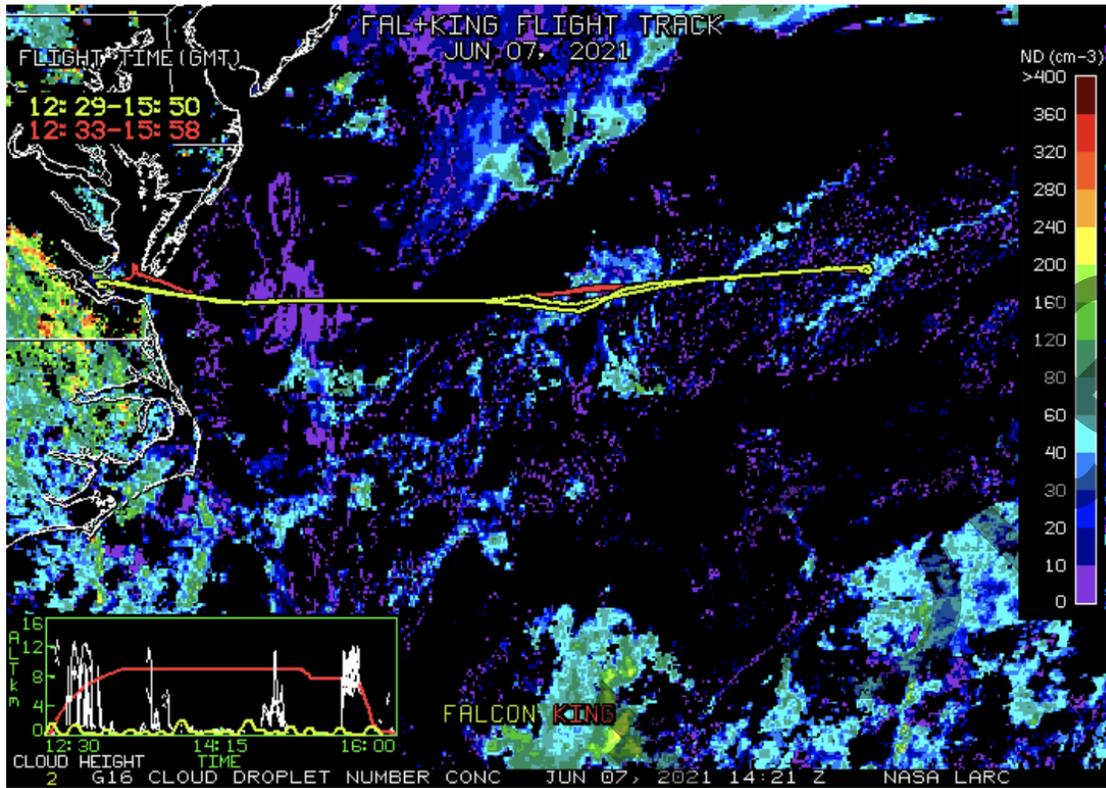
Visible Image



Cloud Phase



Cloud Droplet Number Concentration (cm-3)



Cloud-Top Height (Kft-ASL)

