

07/28/02

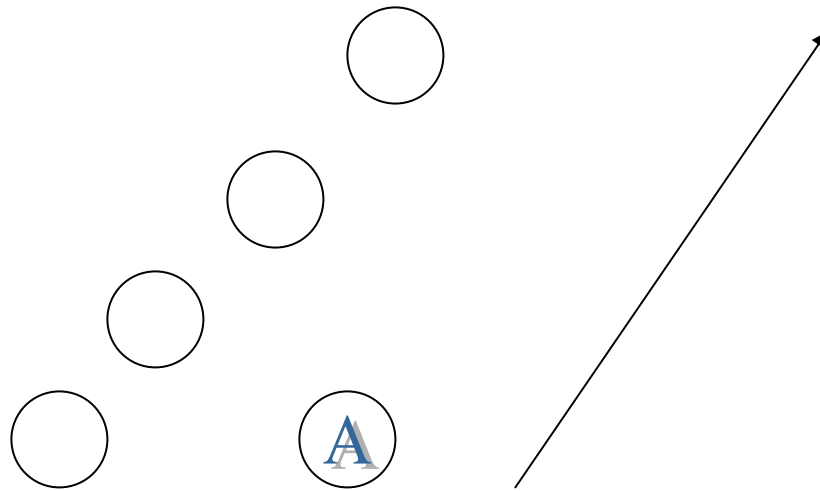
FC:

Summary: The forecast was unfavorable for maritime convection, so the planes stood up for flights over the peninsula, expecting suppressed conditions due to low moisture ahead of an approaching easterly wave. We expected late-afternoon convection on the west coast. Additionally, forecasts with the NAAPS model called for Saharan dust near Florida.

Aircraft: P3, Citation, Twin Otter, ER-2, WB-57F

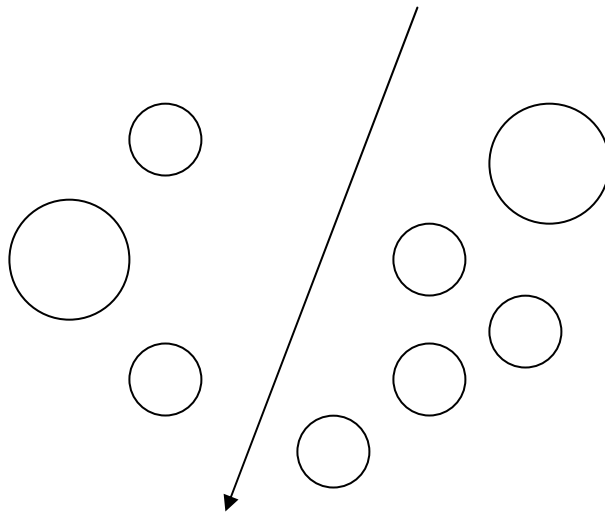
Log:

1800: Take-off
1801: Decided to take off at 1800 in spite of the lack of cell development as the plan is to get all the planes into the air and to be ready to get to the convection as it develops
1807: NPOL: small cell, fly west side of it, 25 50N 80 47W
This is too near Miami
1811: Leaving radar off until we need it
1840: NPOL: Cell near 2525N 8102W
Cloud top heights between 20-25000 ft
Flying near Cape Sable
Heading there now although near Miami inbound radial
1842: Cannot get to position above as right in zone of Miami arrivals
1848: Going to continue up and down the coast and hope for something to develop.
1849: Seeing some towering cumulus along the coast.
1909: Radar up
1912: Seeing some cell development
1913: NPOL: 25 23N 81 08W
1919: Going to work line of cells in this region
Currently heading -221°
1921: Turning around, now heading NNE
1923: Decent convection developing
Reflectivity ~50 dBz
1928: Turn around
1934: Turn
1937: Convection reaching between 6-7 km
1938: NPOL: 25 28N 81 15W
NE point 34000 ft
1942: Turn around
Heading - 246°
Trying to clear ATC permission to fly more NNE SSW
1949: Twin Otter and Citation are also in the area
1949: Turning and heading - 120°
1952: Picking up 2 cells
1958: Want to shorten the legs but are having ATC issues
1958: Turning now heading 218°
2001: Line of cells evident on the nose radar
2004: Decent convective development
2006: Turning
2007: Picking up layered clouds at 8 km
2008: Cell A is preventing us getting closer to the line:



- 2008: 3 cells of convective development evident on fore radar
- 2009: Line moving west – we are going to move slightly westward, changing radials.
Continually seeking ATC permission.
- 2015: Turning, now heading 208°
- 2022: Turning, now heading NE
- 2025: Some convection but not strong
- 2026: NPOL: (SE point) 26 08N 80 59W (NW point) 26 20N 81 20W
42000 ft
- 2035: Cells weakening
Twin Otter moving to point above
We are heading there now too
- 2038: Turning, heading to new points
- 2041: Convection in the current region looks suppressed at this stage
- 2041: NPOL: 26 27N 81 12W
This is on the northern section of the line
Tops ~ 50000 ft
- 2101: Decent cell development with anvil
Cloud tops ~ 12km
Reflectivity in lower levels ~ 50dBZ
Seeing lightening
- 2102: NPOL: (N Point) 26 39N 81 13W (S Point) 26 13N 81 26W
- 2119: Heading - 217°
Working line NE to SW
Storm tops ~ 15km
Bright band visible
In mature stage of storm
Twin Otter is also supposed to be here
- 2123: Convection and anvil evident
- 2125: Turning heading NE (3°)
Need to extend the leg
There are a bunch of cells on the southern section of the line which is forcing us to turn around – if it opens up on the next leg, the pilots will break through
- 2133: Turning and heading closer to the line
Heading - 217°

- 2137: Bright band evident
- 2139: Line more active to the south
- 2144: Convective cells on either side of us
- 2144: Convection reflectivity - +50 dBz
- Vertical ~ 8-9km
- 2146: ELDORA down
- This is such a pity as we just broke through the south side of the line - will wait for it to come back up and then head back on course



- 2151: Saw lightning
- Very dark visually
- 2153: Tomorrow: High flyers: 11am P-3: Noon
- 2155: NPOL: Southern cell 50000 ft 26 10N 81 43W
- Dropsonde release at 26 13N 82 22W 2217Z
- 2213: ELDORA up
- 2217: Heading - 340°
- 2218: Mature system
- Cloud tops ~15km
- Anvil evident
- 2220: Deep convective development
- Tilted updraft
- 2223: Turning
- 2224: NPOL: 52-55000 ft
- Marco Island
- 2228: Mature stage system
- Cloud tops ~15km
- 2233: Convection ~14km
- Well-developed anvil
- 2237: Convection ~16km
- 2238: Turning due to ATC issues
- Now heading -335°
- 2250: Convective development on N side of line
- Cloud tops ~ 12km
- 2251: NPOL: Dropsonde at 26 13N 82 40W 22:45Z
- 2251: Convection ~ 12km

2303: Turning
Northern cell strongest at this stage
Have had the Twin Otter, WB57 and ER2 with us this afternoon – all have now returned to base.
Bill is recommending that we do the same thing, however have decided to work the cell to the north a little longer. Bill is pleased with RAMS prediction of the day's events

2309: Going to try to head along a NE-SW track along the line

2312: Convection ~ 17km

2313: Reflectivity ~ +50 dBz, core ~12 km

2315: Turning SW

2319: Tops ~18km

2323: Turning NW

2323: ELDORA down

2324: RTB

Mission Reports:

Citation: The Citation took off around 1938Z and headed for the western ground site. They targeted a few convective clouds early in the flight while flying at an altitude of 29 kft. The first cloud was sampled at levels of 29, 31, and 33 kft. A second cloud was sampled at 29 and 31 kft, where the top of the cloud was about 31 kft. N-POL directed the Citation to fly some legs near the western ground site, looking at anvils with tops at about 31 kft. They were diverted over the Gulf by ATC at this point, and hit a very thin cirrus layer that seemed to be dying away. They had a lot of difficulty getting clearances from ATC, so the Citation headed back to base at 2142Z. During the return flight, they penetrated a dust layer that topped out at about 16 kft. At the top of the dust layer, the CFDC instrument was getting very high ice nuclei counts (~1000/liter). The Citation landed at 2207Z.

ER-2: The ER-2 took off around 1730Z, flew east of Florida, and aligned north-south across the Bahamas for the Aqua overpass. The track along the satellite overpass was mostly clear of clouds during this time. Six dropsondes were launched along this track. The ER-2 then lined up for some legs between the ground sites, and then was directed to fly north of the western ground site, over roughly the same horizontal legs the WB-57F was flying. The ER-2 returned to base around 0000Z.

P-3: The P-3 took off about 1830Z and flew some NE-SW legs north of the western ground site (in the Ft. Myers area). They later flew some legs oriented NW-SE just off the west coast in the Ft. Myers area. Some aircraft issues brought them back to base around 2200Z.

Twin Otter: The Twin Otter took off at 1831Z. They headed north from Boca Chica at an altitude of about 5 kft. They sampled two convective systems at the altitude of cloud base (between about 3 and 3.5 kft). The first cloud system was offshore of the west coast, and was sampled for about 80 minutes. The second cloud system was onshore, and was sampled for about 50 minutes. There were very high CCN and CN concentrations measured in association with each of these cloud systems, with sharp gradients noted in the concentrations as the plane circled the cloud and maximum concentrations noted on the upwind sides of the clouds. One of the cloud systems was actually underflown at one point, with no noticeable CN or CCN enhancements relative to background conditions. The AMS probe also saw some of the highest concentrations of sulfates and organics found on the mission. The Twin Otter returned to base at 2234Z.

WB-57F: The WB-57F took off about 1830Z. They climbed out to the east of Florida, getting to an altitude of 57 kft for an Aqua overpass. They then aligned for a couple of legs between the eastern and western ground sites, flying at 57.2, 51, and 45 kft. On the last leg, they were redirected to sample some cirrus blow-off north of the western ground site. They maintained these new legs for five or six runs at 45 kft, sampling the anvil from the tips right up to the center of convective cells. Near the end of these legs, they ascended to 51 kft at the western tip of the anvil (near an ER-2

dropsonde location) and then descended to 40 kft near the center of convection. The WB-57F returned to base around 2355Z.

Summary: The Proteus stood down because of engine problems. The WB-57F and ER-2 flew off the east coast of Florida for an Aqua satellite overpass. The Citation and Twin Otter sampled aerosols over the peninsula. Late-afternoon convection was generated near Lake Okeechobee around 1900Z, and was over the west coast around 2030Z.

Flight Path & Focus: 172948 240016, rf12

Line 1: 191800 205300 NE-SW orientation, north of w ground site Ft Myers area
coordination w/ Citation, Twin Otter, ER2, WB57
convection anvil system – small cell in way of larger cell
Quality – ok

Part 1: 191800 205300

leg_1.1.1: 191850 192150 not much
leg_1.1.2: 192220 192820
leg_1.1.3: 192910 193500
leg_1.1.4: 193530 194200
leg_1.1.5: 194230 195000
leg_1.1.6: 195030 195840
leg_1.1.7: 195910 200630
leg_1.1.8: 200710 201110 move west, layered clouds
leg_1.1.9: 201110 201510
leg_1.1.10: 201540 202230
leg_1.1.11: 202310 203000 some anvil
leg_1.1.12: 203050 203740 some anvil
leg_1.1.13: 203820 205300 suppressed, some anvile

Line 2: 210800 214500 NE-SW orientation, north of Line 1
coordination w/ Citation, Twin Otter, ER2, WB57
convection anvil system
Quality - good

Part 1: 210800 214500

leg_2.1.1: 210800 211630 convection anvil
leg_2.1.2: 211710 212510 bright band, convection anvil, mature stage
leg_2.1.3: 212540 213400 cells on south end (line 3), convection anvil
leg_2.1.4: 213420 214500 bright band

Line 3: 215950 232300 south of Line 2, off w coast Ft Myers area
coordination w/ Citation, Twin Otter, ER2, WB57
convection anvil system
Quality – good

Part 1: 215750 230950 NNW-SSE orientation

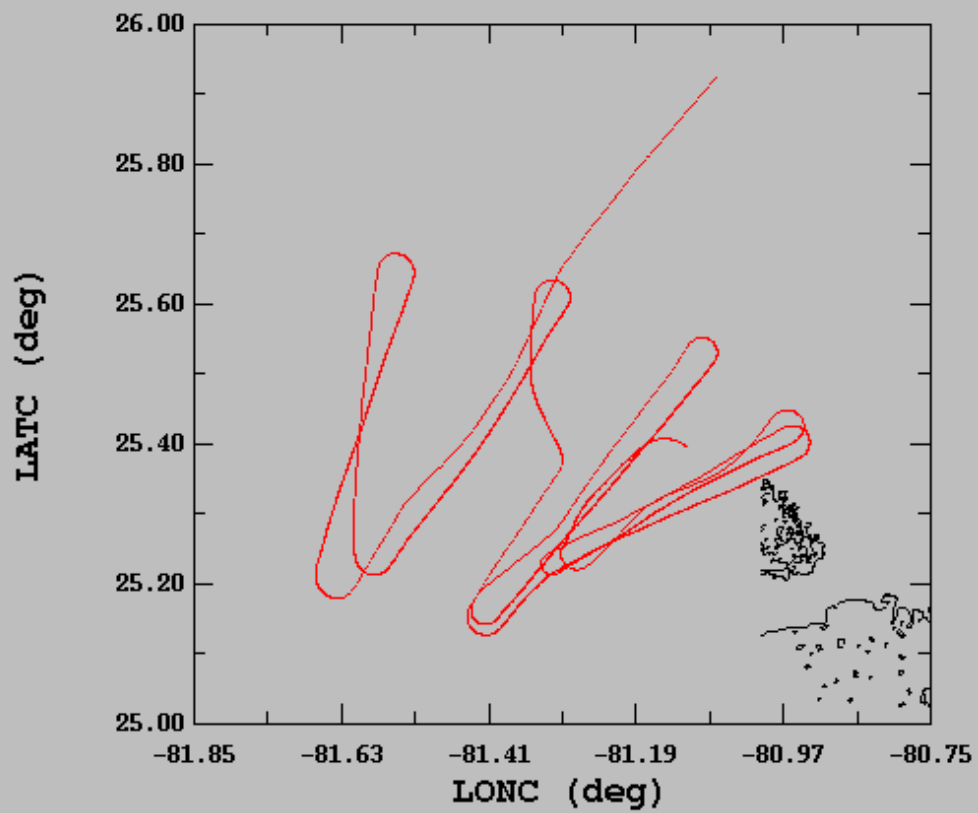
leg_3.1.1: 215750 230950 no sweeps
leg_3.1.2: 220340 221220 no sweeps
leg_3.1.3: 221320 222420 tilted updraft, convection anvil
leg_3.1.4: 222440 223900 mature stage
leg_3.1.5: 223950 225540
leg_3.1.6: 225610 230400
leg_3.1.7: 230420 230950

Part 2: 230950 232300 NE-SW orientation

leg_3.2.1: 230950 231550
leg_3.2.2: 231640 232300

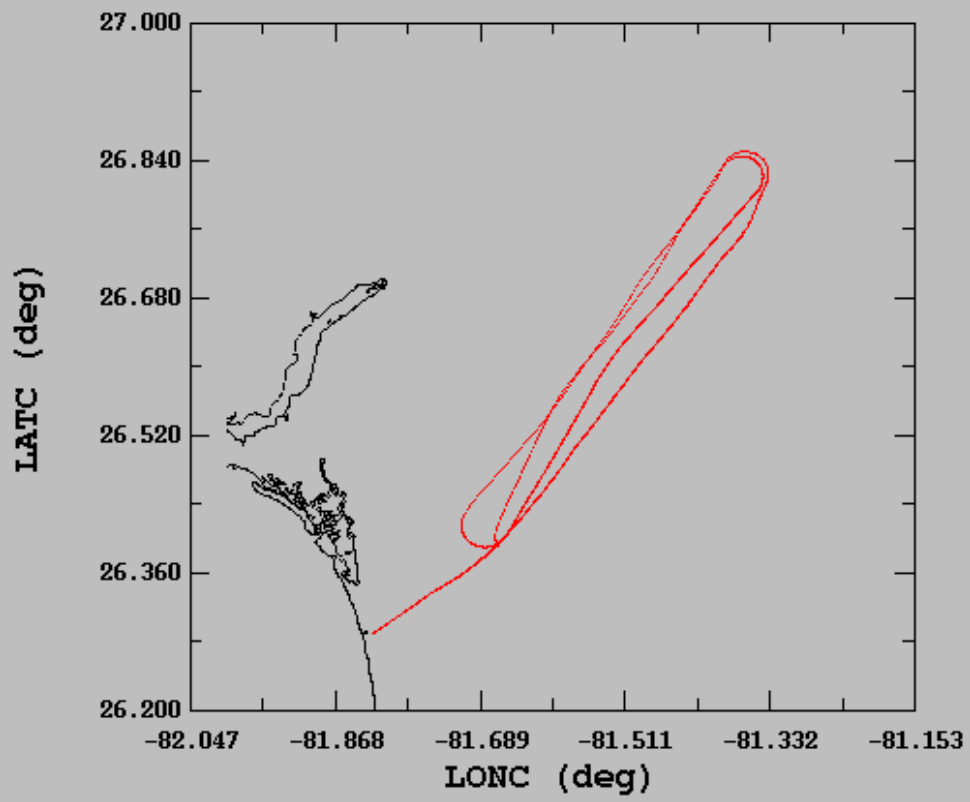
CRYSTAL - FACE, Flight #rf12

07/28/2002, 19:18:00-20:53:00



CRYSTAL - FACE, Flight #rf12

07/28/2002, 21:08:00-21:45:00



CRYSTAL - FACE, Flight #rf12

07/28/2002, 21:59:50-23:23:00

