**07/11/02**

**FC:**

Report: Winds aloft – NE, 20m/s

Summary: The surface winds are forecast to be out of the S/SE, and the winds aloft are expected to be northeasterly at about 20 knots. Models differ about where and when convection will occur. Some forecasts suggest that convection along the west coast will be delayed due to maritime clouds over the coast in the morning, but that widespread convection is expected by mid-afternoon. Tropopause at about 48 kft.

Aircraft: All

| Take-off/Land: | | |
|---|---|---|
| | ER-2 | 1120 1715 |
| | Proteus | 1050 1730 |
| | WB-57F | 1150 1700 |
| | Citation | 1030, 1400 1315, 1800 |
| | Twin Otter | 1130 1600 |

**Log:**

| | |
|---|---|
| 1515: | Take-off |
| 1545: | Flying between 25 30.09N 80 59.90W (N) and 26 09.02N 81 46.70W |
| | Looking at cirrus for coordination with TERRA |
| | Some return signal from cirrus |
| 1615: | No detectable signal from above |
| 1616: | Very weak signal detected on northern extend of line |
| 1655: | Move to south of peninsula |
| | Start working line only on southern end oriented heading – $020^{o}$ |
| 1702: | Start working line over central Florida |
| | Getting orientation |
| 1718: | Setup for runs along convection |
| 1727: | Legs done – too far to west |
| 1730: | Setup right and fly leg |
| 1745: | Leg ends between convection |
| 1746: | Back track |
| 1757: | Next leg |
| | Cells considerably weaker |
| | Fly between 25 02N 81 15W (Q) and 26 05N 80 52W (P) - given by Ed |
| | Line changes ~ 40min |
| | Need to get early line orientation from NPOL – we will work with them if possible, we will just work what they give us |
| 1910: | Milling around |
| 1930: | Flying from Q to P |
| | Flying under around just detectable |
| 1939: | Switch to clear-air mode to get maximum sensitivity above – if I am going to work cirrus I would like to know in advance to switch to clear-air mode |
| 1955: | Flying back and forth P to Q |
| | Looking for cirrus in clear-air mode |
| | Coordinate flight with all other aircraft |
| 1900: | See what looks like a second trip scan |
| | Getting far away from convection in turn |
| | See skinpaint of other aircraft |

1920: Next leg
1928: Break pattern – go to EYW where convection is going

**Mission Reports:**

Report: We had lightning over the airfield in the morning, so fueling the Twin Otter and Citation was delayed. The Twin Otter decided to cancel their early flight and make just one flight, and the Citation cut its first flight to 2 hours 45 minutes so that they could refuel and sample the cirrus anvils in the mid-afternoon. The WB-57F takeoff was delayed about 30 minutes due to a stuck hangar door. The other aircraft took off on schedule. The ER-2 and Proteus did their 30-minute runs along the Terra ground track, passing over the western ground site at 1215 as planned. The Citation tried to fly over the ground site, but they were vectored off to the west by ATC. They sampled an altostratus cloud at about 19-21 kft, and then managed to get over the ground site at higher altitudes with cirrus above them. The WB-57F got to the ground site just in time for the 1215 satellite overpass, and flew through thin cirrus at about 46 kft. The Twin Otter was sampling the boundary layer during the overpass. In the early afternoon, a line of convection developed that was aligned NE-SW over the Everglades, with anvils spreading to the west of the line. After the Terra run, the ER-2 and Proteus flew two legs over this convection line, and the WB-57F was directed to fly in the developing anvil blow-off to the west of this line. Then the remote-sensing aircraft were put on the same line as the WB-57F. The WB-57F sampled cirrus at several levels from 41 to 51 kft, with cirrus on legs below about 48 kft. After the anvils grew longer than about 80 km, the legs were reoriented to be closely aligned to the E-W wind. The WB-57F spiraled through the cirrus layer down to 41 kft, then stepped up through the cirrus. On its second flight, the Citation flew along the same line as the higher aircraft, and sampled cirrus at several levels ranging from cloud base near 29 kft up to 42 kft. Late in its flight, the Twin Otter flew along the southwestern part of this line, making radiometric measurements at about 11 kft. The P-3 flew near the southern end of the convection line for deep convection measurements with ELDORA. Later in the flight, they made measurements of the cirrus layer that the higher aircraft were sampling.

Summary: The flights today provided Terra validation data and a convection/cirrus anvil case study. The ER-2, Proteus, and WB-57F flew along the Terra ground track at 1215, with the WB-57F sampling a thin, subvisible cirrus layer at about 46 kft over the western ground site. The Citation sampled a mid-level altostratus cloud west of the ground site, and the Twin Otter sampled the lower troposphere over the ground site. By around noon, a line of convection developed that was aligned NE-SW over the Everglades. After the Terra run, the ER-2 and Proteus flew two legs over this convection line, and the WB-57F was directed to fly in the developing anvil blow-off to the west of this line. Then the remote-sensing aircraft were put on the same line as the WB-57F. Later in the afternoon, the Citation flew along the same line, sampling the lower levels of the anvil line, and the Twin Otter flew along the southwestern end of the ER-2 line for radiation measurements. The P-3 measured the southern end of the convection line, as well as the cirrus sampled by the higher aircraft. Today's flights should provide an excellent case study for modeling and analysis of the physical processes controlling cirrus-anvil evolution.

**Flight Path & Focus:** 144717 204451, rf03

Line 1: 164700 202900 Q-P (25 02N 81 15W – 26 05N 80 52W), over Everglades southern tip of Florida,
southern end of line
convection-anvil system
coordination w/ other aircraft
Quality: Ok/Bad – not much structure, not much detectable

Part 1: 164700 182900 NW-SE orientation
convection some anvil
nothing on edges

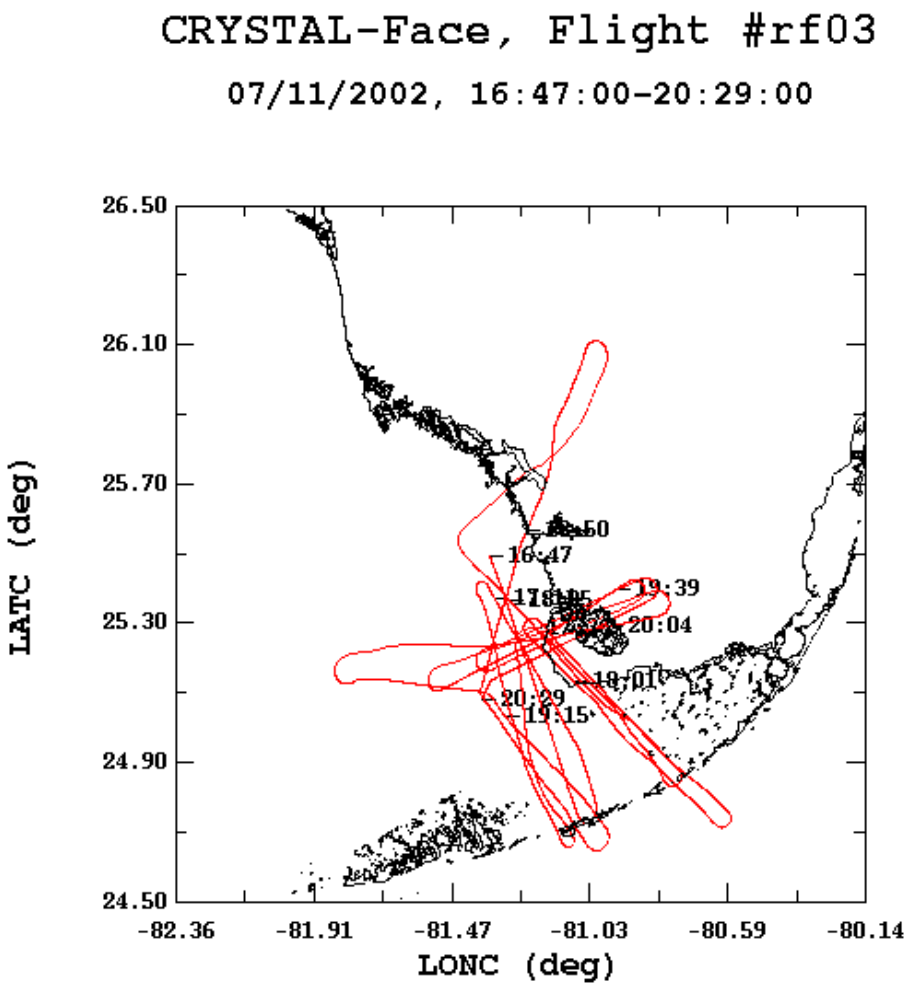
leg_1.1.1: 164700 165900 not much detectable

leg_1.1.2: 170200 171220 little convection, specs
leg_1.1.3: 171500 172550
leg_1.1.4: 172700 173550 too far to west so move east between 4-5, building convection
leg_1.1.5: 173630 174500
leg_1.1.6: 174650 175620 looks like a mess
leg_1.1.7: 175700 181040 lot of little spotty stuff everywhere
leg_1.1.8: 181150 182940

Part 2: 185900 191610 NW-SE orientation
later convection some anvil
detached anvil
leg_1.2.1: 185900 190610 small anvil
leg_1.2.2: 190720 191610

Part 3: 192400 202900 NE-SW orientation
anvil
clear-air mode
not much detectable
leg_1.3.1: 192400 193800 convective mode still
leg_1.3.2: 194350 194940
leg_1.3.3: 195030 200020 not much
leg_1.3.4: 200130 201040
leg_1.3.5: 201150 201840
leg_1.3.6: 201940 202900

0711 Line 1




| | mean | sigma | min | max |
|---|---|---|---|---|
| LATC (deg), 1 s/sec | 25.19 | 0.29 | 24.65 | 26.11 |
| LONC (deg), 1 s/sec | -81.15 | 0.22 | -81.84 | -80.57 |