

# 3 July 2002 Mission Report

## Summary:

All aircraft except the P-3 (crew-rest restrictions) flew sorties over southern Florida for a convection/cirrus anvil flight. The remote-sensing aircraft flew above a variety of cirrus and convective systems, including strong, active convective systems, developing outflow anvils, and diffuse dissipating cirrus anvils. The WB-57F and Citation sampled the dissipating cirrus and low-level anvils. At the end of its flight, the WB-57F sampled a young anvil at 47 kft (above the regional tropopause). The Twin Otter sampled the environmental environment through the lower troposphere over much of southern Florida, and underflew an anvil near Miami.

## Forecast:

10-20 knt westerly flow aloft, W to SW low-level flow. Slightly drier than yesterday, but still plenty of CAPE and precipitable water. Sea-breeze convection is likely along the west coast, with anvils spreading over the east. Tropopause at ~45 kft.

## Plan:

Begin with ER-2, Proteus, WB-57F, and Citation doing legs over both ground sites and extending over water at both ends. Coordinate with 1430 Aqua overpass: ER-2 will fly a N-S leg while WB-57F and Citation spiral. After 1430, adjust flight paths to sample anvils expected along east coast. Send Twin Otter out early for sampling of lower troposphere over southern FL at different levels. P-3 will stand down due to crew-rest considerations.

## Flight times:

	Takeoff	Landing
ER-2	1030	1630
Proteus	1000	1640
WB-57F	1200	1720
Citation	1315	1715
Twin Otter	0800, 1345	1200, 1645

## Report:

All five aircraft took off roughly on schedule. Prior to about 1400, the flight plans were flown as planned. Convection popped up in central FL just north of the E-W flight line and along the SE coast between 1300 and 1400. At around 1400, N-POL redirected the WB-57F and Citation to spiral down at a location east of the ground site through a decaying anvil.

Next, they set up a SW-NE line across this dissipating anvil for the ER-2, Proteus, WB-57F, and Citation, with the WB-57F and Citation doing stairstep legs in the anvil. At about 1530, the anvil was dissipated to the point that the WB-57F was not detecting ice crystals, so they were directed to a point off the west coast where they ascended to maximum altitude (~60 kft), and then transited back to KWNAAF.

During the ascent to maximum altitude, the WB-57F penetrated a narrow cirrus outflow anvil with large ice crystals and high ice-water content at about 47 kft. This anvil appeared to be above the regional tropopause level.

During the Aqua-underpass N-S ER-2 leg, the aircraft flew over a line of strong thunderstorms along the southeastern coast of FL. Before returning to KWNAAF, the ER-2 flew over the very intense convection south of Miami.

After flying four times back and forth along the leg over the anvil, the ER-2 headed over the eastern ground site and off the east coast before heading back to KWNAAF. One sonde was dropped SE of Miami.

The Twin Otter flew the first flight as planned, including a spiral off the west coast and level legs at several altitudes along a N-S line. They landed at about 1215 and took off again at about 1400. Their options were limited by ATC during the second flight, but they did sample at various levels along N-S and E-W lines over southern FL, including sampling under an anvil near Miami.