ER-2 Flight Summary

Mission: CRYSTAL-FACE
Flight Scientists: M. King, P. Newman

Sortie: 02-952
Date: Friday, 19 July 2002
Pilot: J. Barrilleaux

Takeoff: 1300 EDT (1700 UTC)
Landing: 1935 EDT (2335 UTC)
Duration: 6:35

Objectives:

At 1700 UT strong NE flow @ 100-200 hPa was moving blow-off from Atlantic convection into Florida along a 100 nm stretch centered on Palm Beach. Convection in the Miami region decreased over the period from 1700-1830 as the ER-2 flew the Aqua satellite track from the SW to the NE. At 1930, a 50 nm long line of convection developed that was oriented roughly SW to NE cutting across the Tamiami Trail. This convection built over the period 1830 to 2030. The cirrus blow off from this system was then carried approximately westward.

ER-2 proceeded to waypoint A (25°05'N, 82°13'W) and flew over the western ground site en route to the NE towards waypoint B (26°41'N, 80°26'W) and beyond to the Atlantic coast. NPOL re-directed the ER-2 into a number of shortened flight lines oriented roughly SW-NE parallel to the A-B track but to the south over the Everglades. These tracks coincided with a convective cloud complex overflown by TRMM at 2013 UTC. One dropsonde was pickled into cirrus over the western Atlantic at 27°20'N, 79°46'W at 1811 UTC to support Proteus overflights of a flight track at the time of the Aqua overpass (1834 UTC). Four additional dropsondes were released over the Gulf of Mexico.

Satellite or fixed coordination:

Satellites (relative to eastern site):

Aqua – 1834 UTC, VZA = 14.72°
(Terra – 1704 UTC, VZA = 67.86°: before launch of aircraft)
TRMM – 2013 UTC, VZA = 5.62°, Heading = 63.6°

Western ground site:
PARSL, Everglades National Park, Gulf Coast Visitor's Center
25 50.7 N, 81 23.15 W
Overpasses of Western Site
17:52:32 UT, Min dist.= 1.54 km
18:33:04 UT, Min dist.= 1.40 km

19:04:48 UT, Min dist.= 0.51 km
19:28:50 UT, Min dist.= 0.59 km
19:51:25 UT, Min dist.= 0.55 km
20:06:23 UT, Min dist.= 0.30 km

Eastern ground site:
Kendall-Tamiami Airport
25 39.3 N, 80 25.9 W
Overpasses of Eastern Site
None

Aircraft coordination:

Nominal take off times (local): WB-57 (1400), Proteus (1215), Citation (1430), Twin Otter (1100), P-3B (1200).

WB-57: In situ sampling along the southwest-northeast flight line underneath the ER-2 between 1845 and 2000 UTC, and again between 2013 and 2200 during the TRMM overpass, region, as adjusted by NPOL.

Citation: In situ sampling in lower regions of anvil over the western ground site and underneath the ER-2 and WB-57F between 1900 and 2200 UTC, primarily at 10 km altitude.

Proteus: Remote sensing observations along east-west flight line just south of the western ground site at an altitude of 10 km after the Aqua overpass that they underflew along the east coast of Florida.

Twin Otter: Low altitude observations along east-west flight line and TRMM overpass regions just south of the western ground site at an altitude of ~4 km between 2000 and 2245 UTC.

Summary/highlights:

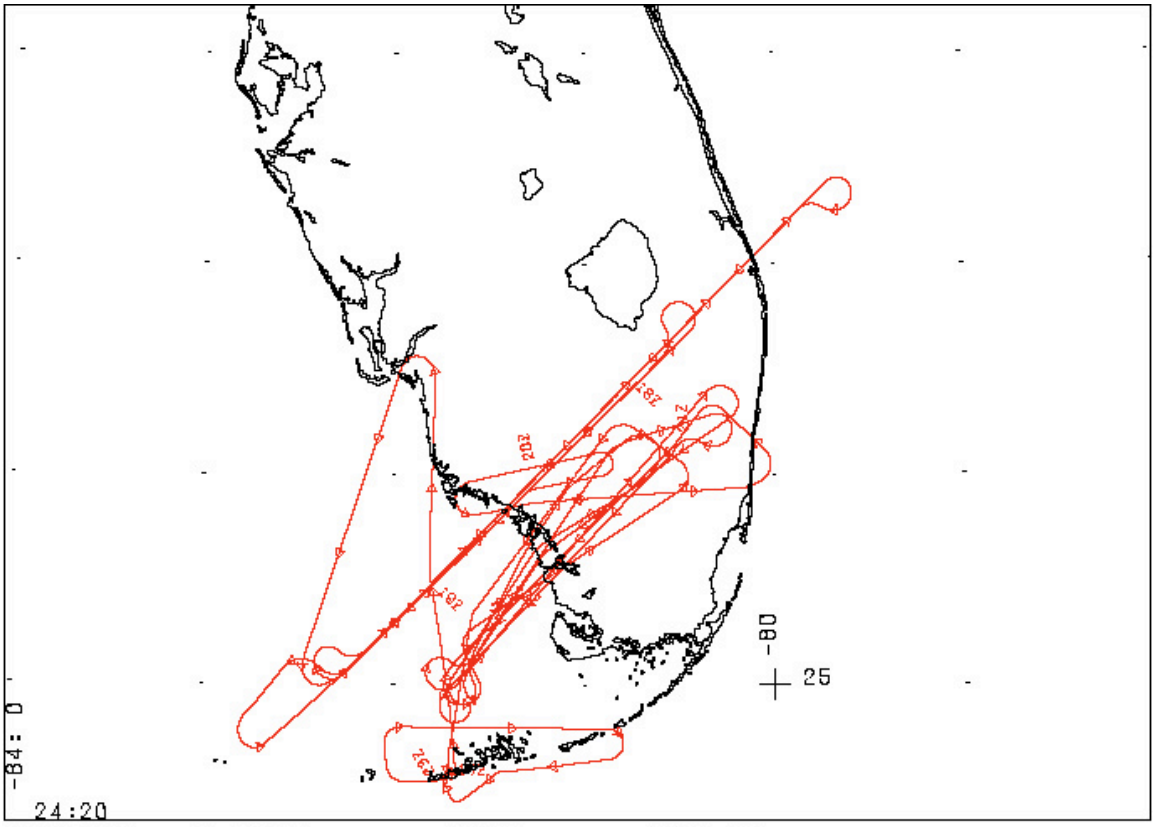
•Dropsondes: 5 sondes dropped

Sonde	*Rel. time*	*Rel. long.*	*Rel. lat.*	*Spl. Time*	*Spl long.*	*Spl lang.*
1	18:11:51	79° 43.9	27° 21.8′	21:23:19	79° 45.2′	27° 21.6′
2	18:55:18	82° 11.4′	25° 06.7′	21:23:19	82° 13.8′	25° 06.9′
3	21:13:23	81° 39.7′	25° 01.3′	21:23:19	81° 42.6′	25° 00.9′
4	22:22:33	81° 39.8′	25° 03.9′	22:13:11	81° 42.6′	25° 03.5′
5	22:55:49	81° 38.3′	25° 01.2′	23:30:00	81° 41.2′	25° 00.5′

ER-2 science instrument payload and status:

Instrument	Status	Notes
CoSSIR Conical Scanning Sub-mm wave Imaging Radiometer	**F**	**Failure after 5-6 min of data on ascent**
CPL Cloud Physics Lidar	**P**	**Failure of 1.064 μm perpendicular polarization**
CRS Cloud Radar System	**G**	
EDOP ER-2 Doppler Radar	**G**	
JLH JPL Laser Hygrometer	**G**	
MAS MODIS Airborne Simulator	**G**	
MMS Meteor. Meas. System	**G**	
MTP Microwave Temperature Profiler	**G**	
RAMS Radiation Meas. System	**G**	
SSFR Solar Spectral Flux Radiometer	**G**	
Dropsonde	**G**	

G = good; P = partial data collected; F = failure, no data; NA = status not available at time of writing



FLIGHT 02-962 19 JULY 2002 A/C 809 CRYSTAL-FACE
LAMBERT CONFORMAL PROJECTION: SP1 = 24.0 SP2 = 26.9 CM = -81.2 ROTATED BY 0.0
17:00:00 TO 23:35:00 UT SCALE 1:2.50E+08 TIME TICK EVERY 5.00 MINUTES