Flight Report: DISCOVER-AQ Science Flight #8

From: KEFD To: KEFD

Start: 09/25/13 13:48 Z Finish: 09/25/13 22:19 Z

Flight Times: 8.5 hours

Log Number: 13P201 PI: James Crawford

Funding Source: Hal Maring - NASA - SMD Radiation Science Program

Official report logged at:
https://airbornescience.nasa.gov/flight_reports/P-3_Orion_09_25_13

Flight	Date	Duration	Cumulative Hours	DISCOVER-AQ Hours remaining
Total Allocated				100
ECF	8/27/13	2.3	2.3	97.7
PCF	8/28/13	2.1	4.4	95.6
Transit	9/2/13	3.9	8.3	91.7
Science Flight - 1	9/4/13	8.0	16.3	83.7
Science Flight - 2	9/6/13	7.9	24.2	75.8
Science Flight - 3	9/11/13	8.2	32.4	67.6
Science Flight - 4	9/12/13	8.0	40.4	59.6
Science Flight - 5	9/13/13	7.9	48.3	51.7
Science Flight - 6	9/14/13	8.0	56.3	43.7
Aborted Flight	9/18/13	1.1	57.4	42.6
ECF	9/18/13	1.1	58.5	41.5
Science Flight - 7	9/24/13	7.9	66.4	33.6
Science Flight - 8	9/25/13	8.5	74.9	25.1

Comments: This was the eighth science flight for DISCOVER-AQ. During this flight, 24 spirals were successfully completed. On this day, the persistent low finally moved to the east and the first clear skies of the campaign emerged over the Houston area. Weak flow to the southeast combined with a seabreeze front held emissions between the ship channel and the coast leading to extremely high ozone levels well over 100 ppbv. The LaPorte-Sylvan Beach site sustained 150 ppbv for 3 hours and had an 8 hour average of 124 ppbv. This showed how quickly Houston emissions can develop poor air quality given the proper meteorological conditions. Smith Point also sustained values of ozone in excess of 100 ppbv, demonstrating the need for monitoring in that area. At the end of the flight, the P-3B flew south to Galveston and out over the Gulf to investigate model predictions of higher ozone over the water. The P-3B then proceeded to conduct a low altitude run through Galveston Bay where the highest ozone levels had actually developed. On landing, the number 3 relay was lost and it was determined that a

spare was not available. Given the expectations for another poor air quality day, options were explored for putting the P-3B back in service as soon as possible. This included flying the part in from Wallops on NASA-8 early the next morning and getting a new part Fedexed from Dallas.