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Flight Report

Aircraft :	N426NA P-3B Orion
Operating Site(s) From / To :	KWAL/KWAL
Flight Date :	7/22/2011
Flight Number :	1091
Take Off Time :	Local / GMT 0920/1320
Landing Time :	Local / GMT 1715/2115
Flight Time :	7.9 hrs.
Flt Request # / PI:	11P201 Dr. Jim Crawford (NASA LaRC) N/A []
Purpose of Flight(s) :	Data <input checked="" type="checkbox"/> Ferry <input type="checkbox"/> Functional Check <input type="checkbox"/> Other <input type="checkbox"/>
Aircraft Status:	Up <input checked="" type="checkbox"/> Down <input type="checkbox"/>
Sensor Payload :	DISCOVER-AQ mission configuration
Comments :	<ul style="list-style-type: none">Tenth science flight of the DISCOVER-AQ campaign. Flight was successful. Please see mission science report for further science updates.

SUBMITTED BY: Mike Cropper _____

DATE: 7/22/2011

Flight Hours Flown

Flight	Date	Aircraft Flight #	Data Flight#	Duration (hr)	Remaining Hours*
<i>Total Allocated</i>	6/26/2011				100
FCF	6/26/2011	1069		.8	100
DISCOVER-AQ ECF	6/26/2011	1069		1.6	98.4
PPF	6/26/2011	1069		1.1	98.4
PCF #1	6/28/2011	1074		2.6	95.8
Media Event Flight	6/28/2011	1074		.8	95.8
ECF #2	6/29/2011	1077		.9	94.9
PCF #2	6/30/2011	1079		2.8	92.1
Science Flight 1	7/01/2011	1080	#1	7.3	84.8
Science Flight 2	7/02/2011	1081	#2	7.7	77.1
Science Flight 3	7/05/2011	1073	#3	8.0	69.1
Science Flight 4	7/10/2011	1083	#4	7.6	61.5
Science Flight 5	7/11/2011	1071	#5	5.5	56.0
Science Flight 6	7/14/2011	1071	#6	8.1	47.9
Science Flight 7	7/16/2011	1087	#7	5.6	42.3
Science Flight 8	7/20/2011	1088	#8	7.7	34.6
Science Flight 9	7/21/2011	1089	#9	7.7	26.9
Science Flight 10	7/22/2011	1091	#10	7.9	19

Comments: This afternoon flight was the third consecutive flight day during a period of high heat index and expected code orange/red conditions for ozone. HSRL was inoperable during the first 1.5 hours of the first sortie, but was operational for the remainder of the day. A few small convective storms did pop up during the flight, but did not limit any aircraft profiling. A Temporary Flight Restriction over College Park (Presidential Town Hall Meeting) required the second Beltsville profile to be skipped, but a return to Beltsville after the end of the third circuit allowed for 3 visits to all sites. This was followed by a run at 1000 feet down the Chesapeake Bay on the return to Wallops, revealing ozone levels in excess of 100 ppbv and increased aerosol scattering relative to the flight period over MDE ground sites. Widespread code orange and red conditions occurred throughout the afternoon, but air quality indices fluctuated across the area in unexpected ways (see table below). After the last visit to Edgewood, NATIVE reported ozone reaching 130 ppbv for more than 30 minutes. Record levels for isoprene (7 ppbv) were observed over the northern end of the flight track and away from Beltsville where isoprene has tended to maximize. While heating of the cabin did not threaten any instruments, full profiling to 15.5 kft was executed over Fairhill and Aldino to provide some relief to investigators. This day also provided a MISR overpass of the flight domain at midday. The Pandora at Essex experienced problems and will require either repair or replacement. EPA instrumentation at Padonia also encountered problems when the temperature in the

trailer reached 55 deg F overnight, allowing condensation to form in the instruments. They will be working to try and restore those measurements, but they may not be operable for the last week of the campaign.

Site	Ozone AQI						Comment
	1PM	2PM	3PM	4PM	5PM	6PM	
Aldino	56	67	115	152	136	97	
Beltsville	74	74	74	74	83	48	Outlier relative to surrounding sites
Edgewood	130	94	109	120	161	143	Power plant plume observed
Essex	105	45	55	139	141	97	Small storm between 1-2 pm
Fairhill	64	78	92	144	148	107	