

DC-8 09/06/13

Aircraft: [DC-8 - AFRC](#) (See full schedule)

Flight Number: 130617

Payload Configuration: SEAC4RS2013

Nav Data Collected: Yes

Total Flight Time: 8.5 hours

Submitted by: Walter E Klein on 09/11/13

Flight Segments:

From:	KEFD	To:	KEFD
Start:	09/06/13	Finish:	09/06/13
Flight Time:	8.5 hours		
Log Number:	138301	PI:	Kent Shiffer
Funding Source:	Hal Maring - NASA - SMD - ESD Radiation Science Program		
Purpose of Flight:	Science		
Comments:	Out and back from Ellington field TX. Late takeoff troubleshooting DLH for startup. Troubleshoot DC8 housekeeping system. Chemistry and NAM sortie over Louisiana, Mississippi and Alabama. Successfully flew curtain over isoprene location in Ozarks of Missouri. Proceeded to CART site in Oklahoma and executed low level profiling in region. Then proceeded NW to Colorado and profiled at high altitude towards NAM (North American Monsoon) point. Continued SE towards Ellington and profiled at high altitudes until return. Performed DIAL curtain over Houston region.		

Flight Hour Summary:

	138301
Flight Hours Approved in SOFRS	187
Total Used	180.6
Total Remaining	6.4

138301 Flight Reports

Date	Flt #	Purpose of Flight	Duration	Running Total	Hours Remaining	Miles Flown
08/01/13	130601	Check	1.8	1.8	185.2	
08/02/13 - 08/03/13	130602	Check	4.1	5.9	181.1	
08/05/13	130603	Check	5	10.9	176.1	
08/06/13 - 08/07/13	130604	Science	8.7	19.6	167.4	
08/08/13 - 08/09/13	130605	Science	7.8	27.4	159.6	
08/12/13	130606	Science	8.2	35.6	151.4	
08/14/13	130607	Science	7.3	42.9	144.1	
08/16/13	130608	Science	8.4	51.3	135.7	
08/19/13	130609	Science	8.5	59.8	127.2	
08/21/13	130610	Science	7.7	67.5	119.5	
08/23/13	130611	Science	7.4	74.9	112.1	
08/26/13 - 08/27/13	130612	Science	7.7	82.6	104.4	
08/27/13 - 08/28/13	130613	Science	8.7	91.3	95.7	
08/30/13 - 08/31/13	130614	Science	7.9	99.2	87.8	
09/02/13	130615	Science	8.7	107.9	79.1	
09/04/13	130616	Science	8.3	116.2	70.8	
09/06/13	130617	Science	8.5	124.7	62.3	

09/09/13	130618	Science	6.7	131.4	55.6
09/11/13	130619	Science	8.8	140.2	46.8
09/13/13	130620	Science	8.1	148.3	38.7
09/16/13	130621	Science	8.1	156.4	30.6
09/18/13	130622	Science	7.6	164	23
09/21/13 - 09/22/13	130623	Science	9.1	173.1	13.9
09/23/13 - 09/24/13	130624	Transit	7.5	180.6	6.4

Flight Reports began being entered into this system as of 2012 flights. If there were flights flown under an earlier log number the flight reports are not available online.

Related Science Report:

SEAC4RS - DC-8 09/06/13 Science Report

Mission: SEAC4RS

Mission Summary:

DC8Sep06FltRept

This flight had a number of objectives: (1) survey Southeast US boundary layer chemistry through Mississippi, Alabama, and Tennessee, including sampling of the "oak forest" over western Tennessee; (2) conduct a wall/flux isoprene chemistry experiment in the "isoprene volcano" over Southeast Missouri; (3) conduct a full vertical profile over the CART site for TCCON validation; (4) sample the decaying NAM centered over southern Colorado. The overall flight track is shown in Figure 1.

We departed Houston at 1548 UT and set up our boundary layer profiling pattern from the LA-MS border all the way around Birmingham and on to Tennessee. We were able to repeat the boundary layer pattern successfully along that whole flight track. The boundary layer was initially topped by fair-weather cumulus extending to about 6 kft, but eventually it became dry and clear (Figure 2). Our initial profiles over Mississippi showed an elevated pollution layer in the lower free troposphere that we speculated might be the Birmingham plume. This was followed by a smoke plume at 15 kft that extended over our flight track from Alabama to Missouri and presumably originated from the California fires; we climbed to sample it on two occasions. We were at 1 kft over the Centreville site, over the Huntsville lidar, and over the Oak forest. We also sampled the plume of an agricultural fire in the Mississippi valley.

We were able to set up a successful wall/flux experiment over a largely unbroken forest tract in SE Missouri. The boundary layer was clear and shallow with top at 4 kft. We conducted wall legs of 60 miles at 1 kft, 1.5 kft, 3.5 kft, and 4.5 kft. There were some interesting NO_x concentration gradients along the legs. The leg at 4.5 kft grazed the top of the boundary layer. All indications are that we had a successful flux experiment. Isoprene levels were around 5 ppb, lower than in our previous visit to the region.

After completion of the wall we climbed to 37 kft and then carried out the full vertical profile over the CART site. We arrived at the CART site at 1 kft and conducted the MMS calibration maneuver. We then climbed back up to 37 kft and conducted in-progress vertical profiles between 25K and the aircraft ceiling for the rest of the flight, hitting the southern Colorado waypoint at the aircraft ceiling. We did not seem to encounter NAM air as would be revealed by tropical ozone levels from DIAL. As we approached Houston we set up and successfully conducted a DIAL transect over the city in support of DISCOVER-AQ.

Total flight duration was 8.5 hours. All instruments functioned well. LARGE and GIT-CIMS had some trouble in the first hour of the flight.

File:

 [6SEPTFIGURES.pdf](#)

Submitted by: Jack Dibb on 09/08/13

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