

## SARP-East Science Flight Report

2017-07-20

OWLETS Flight #2

Pilots: Rich Rogers, Alan Barringer

Mission Scientist: Glenn Wolfe

Science Crew: Thomas Hanisco, Sally Pusede, Jessica Munyan, Don Blake, Brenda Biggs

NASA Interns: Joe Robinson, Weston Millar, Fayzan Saleem

### Objectives:

- 1) Characterize horizontal land-water gradients in ozone and related species
- 2) Characterize vertical chemical gradients in vicinity of O3 lidars and Pandora spectrometers
- 3) Sample outflow from Hopewell industrial complex
- 4) Sample emissions over Elizabeth River (S of Portsmouth/Norfolk)

### Meteorology (from ground stations, averaged over flight):

Location	T (F)	RH (%)	WDIR	WSPD (mph)	Clouds
WFF	90	65	W,SW,S	9	OVC
Norfolk	92	50	VAR	4	CLR
Richmond	93	50	W,SW	6	OVC

### Summary:

Takeoff 45 minutes later than scheduled due to delay in getting plane out the door (reasons unknown). ATC prevented en route descent to CBB, so did a spiral down and back up instead. Spirals at CAP still not ideal due to ATC limitations. VCU spirals look much better compared to yesterday (tighter, better location). Significant enhancements in O3 (up to 90 ppb) and other gases observed NE of Hopewell. Second set of spirals at CAP and CBB capped at 4000' due to clouds. Ozone up to 100 ppb observed in MBL near CBB on second pass, with stark land/water gradient of 20-30 ppb between bay and Poquoson area. Low-level loops also suggest significant horizontal heterogeneity in this area and possible influence of ship traffic. Pollution sampled NE of Hopewell again. Sufficient time to acquire a spiral near Wallops Island Pandora before landing.

### Instruments:

All instruments performed well.

### Events:

Time (UTC)	Event	Time (UTC)	Event
14:44	Takeoff	16:44 – 16:47	Great Dismal Swamp
15:10 – 15:20	CBB spiral down	16:49 – 16:52	Elizabeth River
15:20 – 15:30	CBB spiral up	16:56 – 17:01	CAP spiral
15:34 – 15:43	CAP spiral(ish)	17:05 – 17:11	CBB spiral
15:45 – 16:00	James River land/water	17:38 – 17:47	VCU spiral
16:00 – 16:10	VCU spiral up	18:10	TAN missed approach
16:10 – 16:19	VCU spiral down	18:21 – 18:30	Wallops Island spiral
16:20 – 16:25	Hopewell loop	18:34	Land

