

September 13-14, 2011

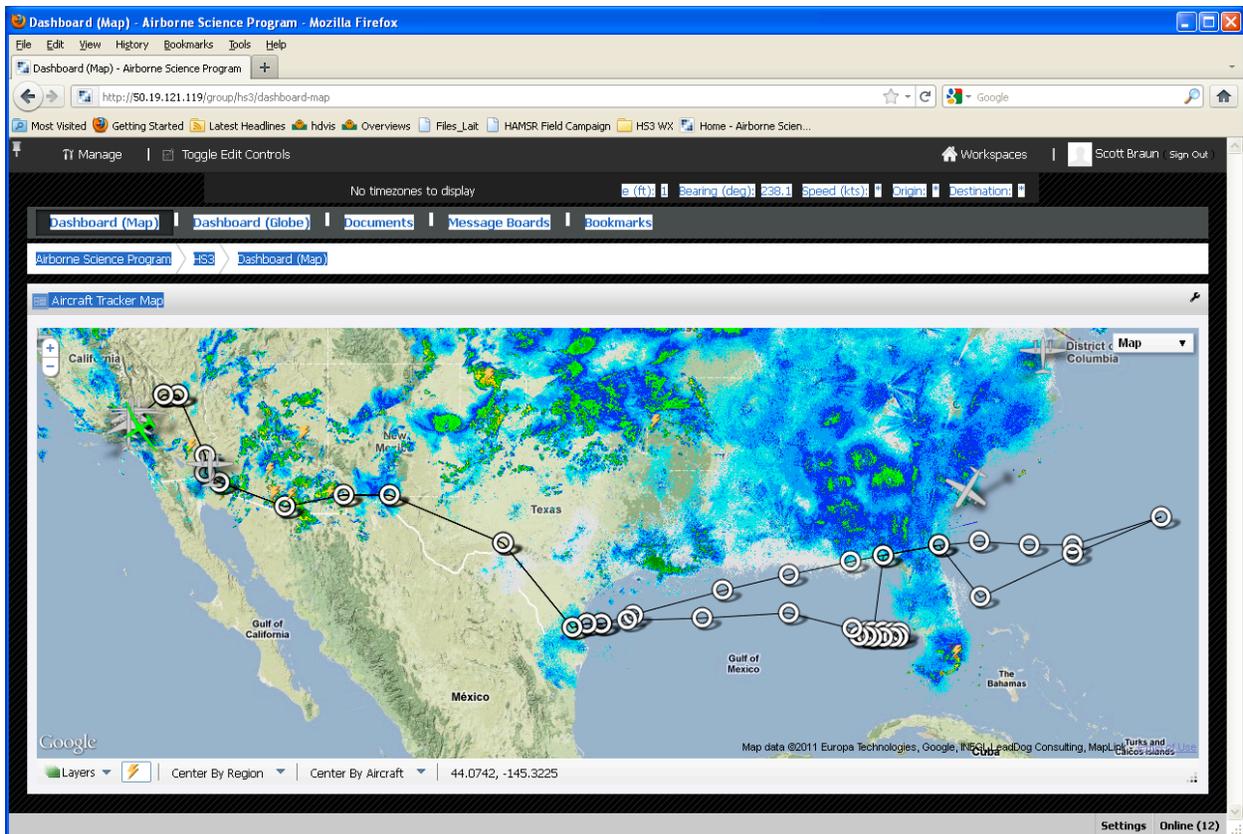
Mission scientists: Scott Braun, Paul Newman

H53 Gulf of Mexico Flight

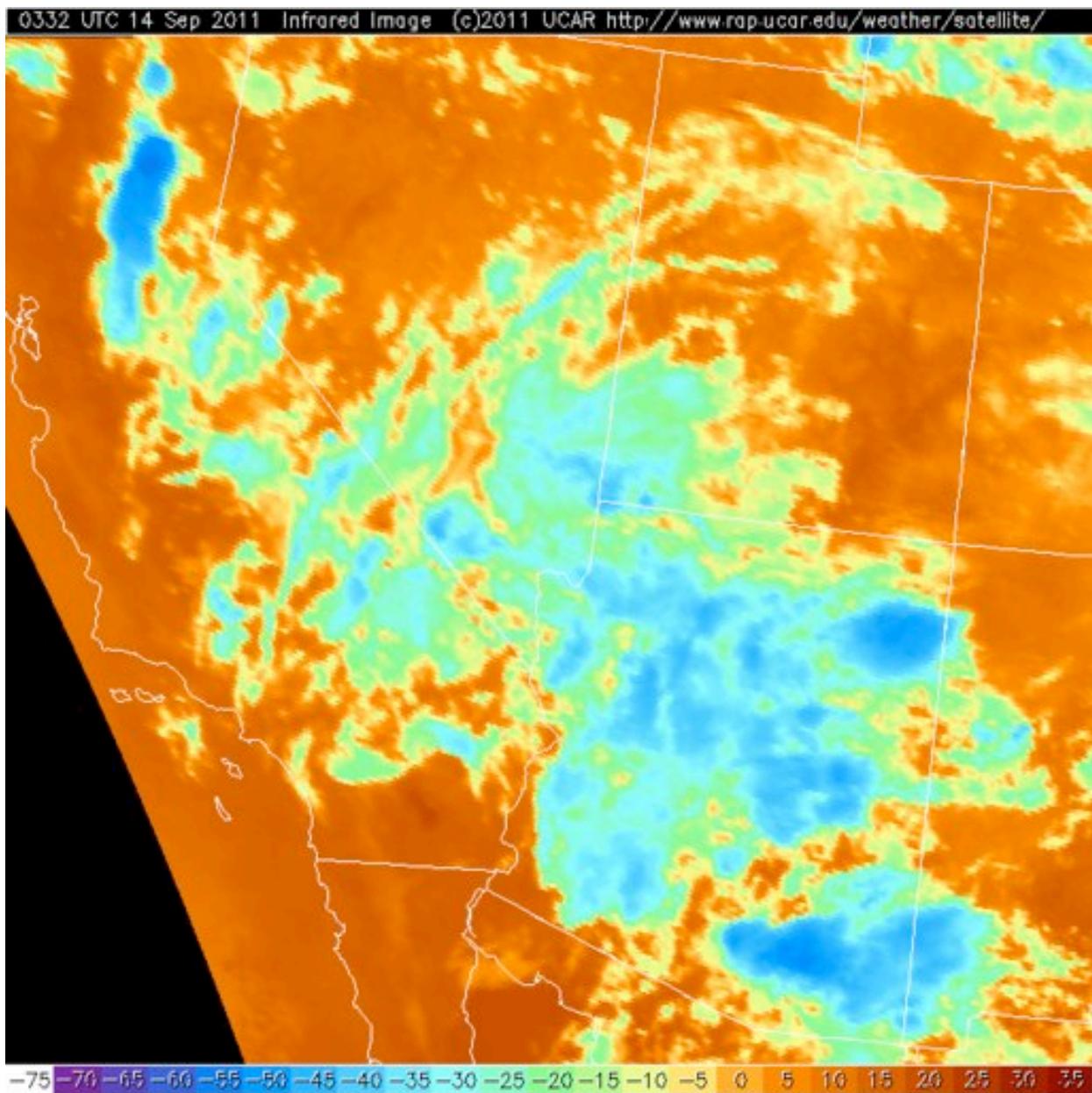
Goals: To conduct dropsonde intercomparison with the NOAA G-IV aircraft in Warning Area W168 off the west coast of Florida. The pattern includes multiple race tracks with up to 6 sondes per race track. Three race tracks to be done with the GH at max altitude, 2 more with the GH at ~45 kft. A secondary goal is to do additional drops in the Gulf and in the western Atlantic to test communication and coordination with ATC (Houston, Miami, New York). Total flight time is expected to be 24.2 h.

GH taxi at 02:40 UTC.

GH takeoff at 02:56 UTC.



The GOES satellite image shortly after leaving the Edwards range looks as follows:



04:11 Just north of Yuma, have reached flight altitude of 53.7 kft. Most convection in eastern AZ typically below 44 kft at most, so we have ~10 kft clearance over clouds.

~05:00 Had to deviate right of track by ~10 mi because of convection with some lightning, but tops below 40 k ft. Flight altitude about ~54 kft.

05:35 Severe clear for several hours to come.

~07:00 GH reaches the GoM.

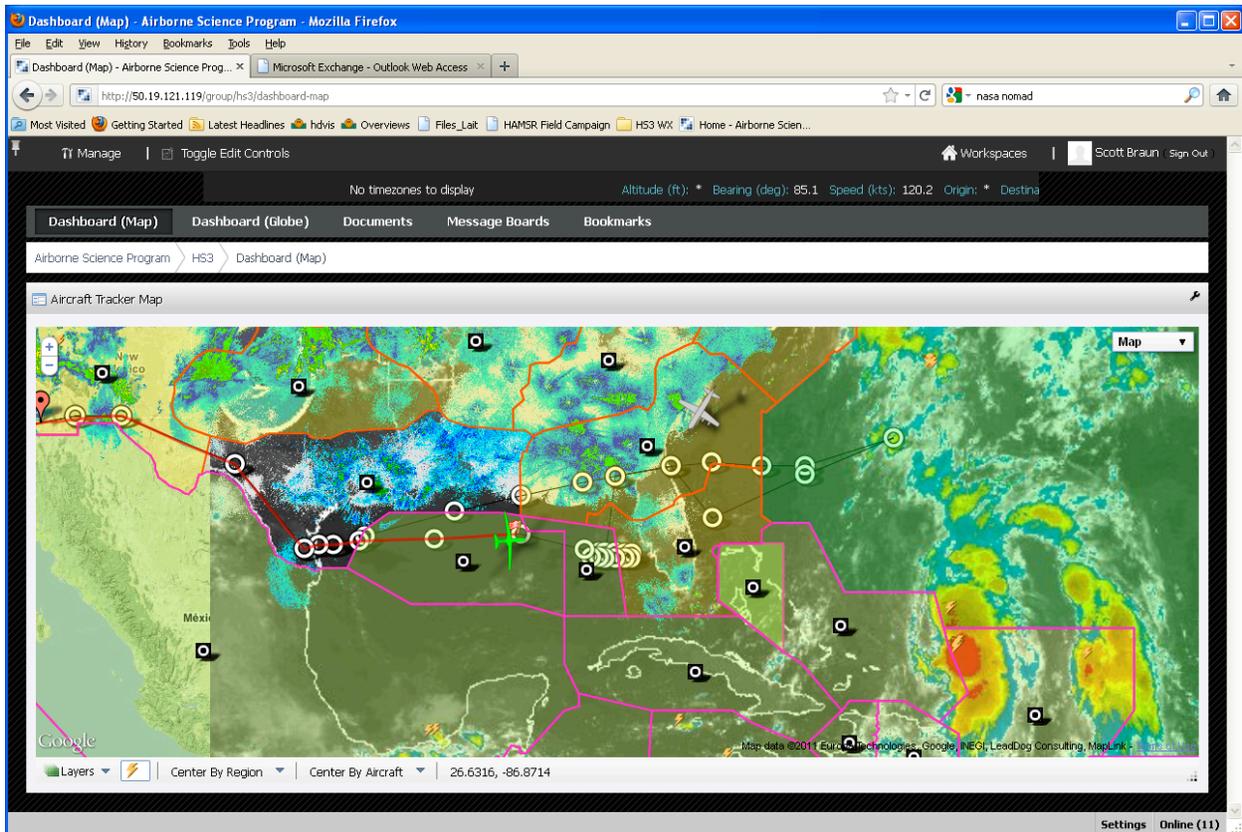
07:42 First drop in the GoM, 27.14 deg N, -93.8 deg W. Terry Hoch estimates a drift of 0.7 nmi.

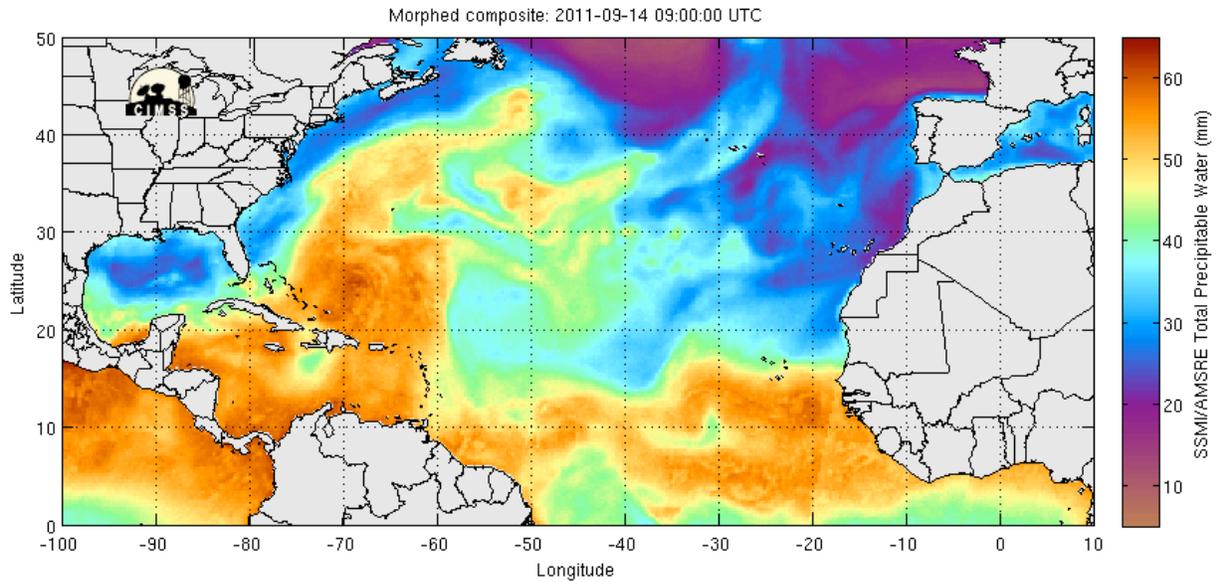
08:02 Second drop, 27.2 deg N, 91.4 deg W. Drift was 0.82 nmi.

08:24 Third drop, 27.3 deg N, 89.4 deg W.

08:40 Fourth drop, 27.4 deg N, 87.8 deg W.

Below is a screen grab showing weather in the Gulf and the Atlantic, with FIRs overlaid. Also shown is the TPW field for 09 UTC.





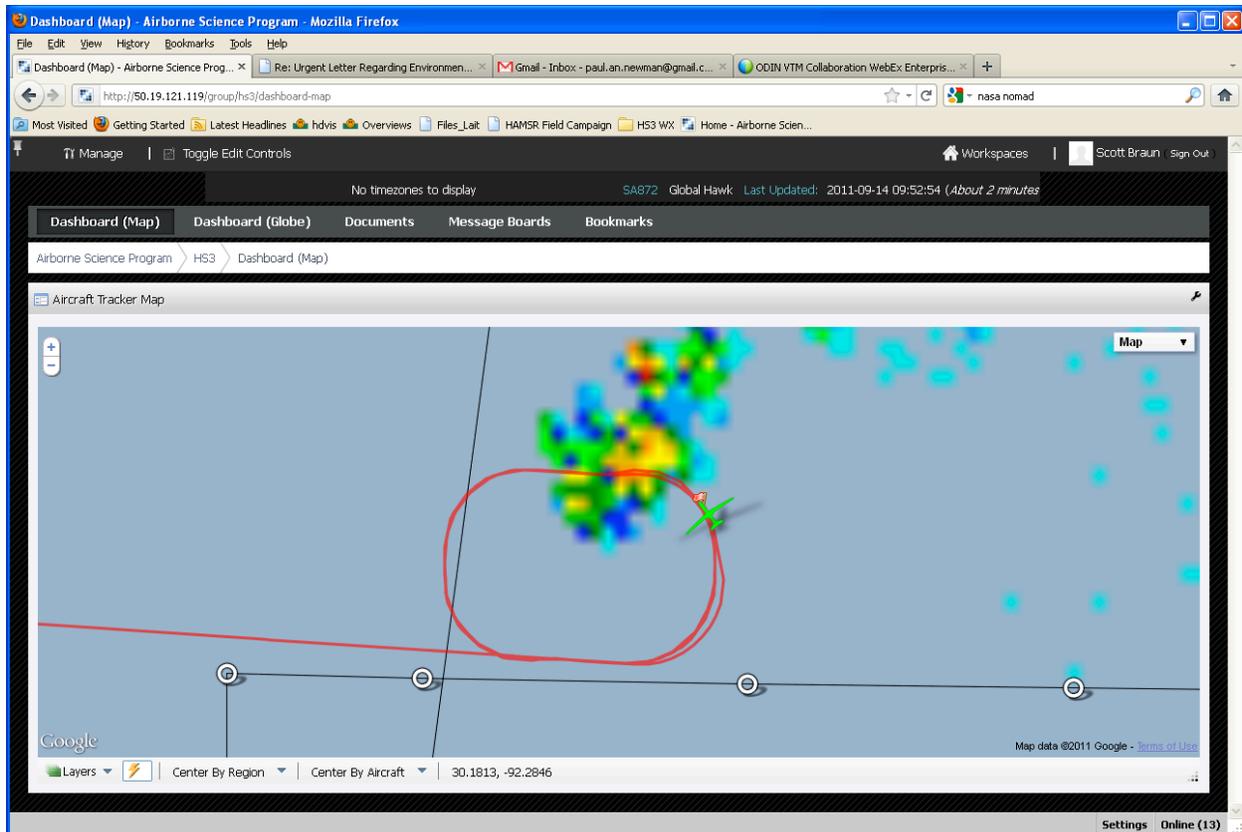
0856 5<sup>th</sup> dropsonde, 27N, 86.1W

0900 Shift change, Newman relieves Braun

0910 Arrived in W168 range. The dropsonde intercomparison is planned for this area.

0940 Orbiting the W168 area. GIV is planning a takeoff at 1015, should take about 45 minutes to arrive in W168.

0948 There is a small convective cell on the northern side of our current orbital track in W168. Asked if we could pitch out a sonde into this cell. Mission approves, and the 6<sup>th</sup> sonde was commanded at 0953. The image below shows the location of the cell and the AC just prior to launch.



- 1000 Turning toward the dropsonde intercomparison track for a practice run.
- 1012 On track for “simulation” of intercomparison.
- 1027 GIV is airborne, should be with us in 30 minutes.
- 1036 N26 25 W84 26 for P0.
- 1041 COMPASS should have the ability to track multiple aircraft that are not NASA assets.
- 1044 Orbiting at point P0, waiting for GIV to arrive.
- 1104 Coming up on 1<sup>st</sup> drop of the intercomparison.
- 1112 GIV was a bit late to P1, so 1<sup>st</sup> drop will occur at P2.
- 1115 1<sup>st</sup> drop at P2 (7<sup>th</sup> sonde). Looks good. GIV got their sonde away too at P2. 2<sup>nd</sup> drop at P3 at 1120. 3<sup>rd</sup> drop at 1127 @P5. 4<sup>th</sup> drop at 1131 at P6. 5<sup>th</sup> drop at 1135, completing the first loop at FL580. 5 good drops on this loop.
- 1142 Starting 2<sup>nd</sup> loop at FL580. 1<sup>st</sup> drop at P1 at 1145. 2<sup>nd</sup> drop at P2 at 1150. 3<sup>rd</sup> drop at P3 at 1154. As we headed up to the E-W track, we got ahead of the GIV, so the pilots did a 360 turn to get back behind the GIV. Unfortunately, AVAPS operator misunderstood the calls and launched a sonde at P4 at about 1203 (not counted). 4<sup>th</sup> sonde launch at P5 at 1211. Iridium dropout at 1215, preventing drop at

P6. 5<sup>th</sup> launch near P7 at 1221. On this loop, we launch 5 sondes at coincident locations, with a 6<sup>th</sup> sonde at an errant location. We experienced some iridium problems on this loop.

1228 Started 3<sup>rd</sup> loop. GIV arrived late, so we skipped a drop at P1. The GH did S-turns to allow the GIV to catch up. Iridium kept us from dropping at P2. 1<sup>st</sup> drop at P3 at 1241. No iridium for P5 launch, but came back for a 2<sup>nd</sup> launch at 1250. 3<sup>rd</sup> sonde at 1254 at P6. 4<sup>th</sup> sonde at 1257 at P7. 4 good sondes on this loop.

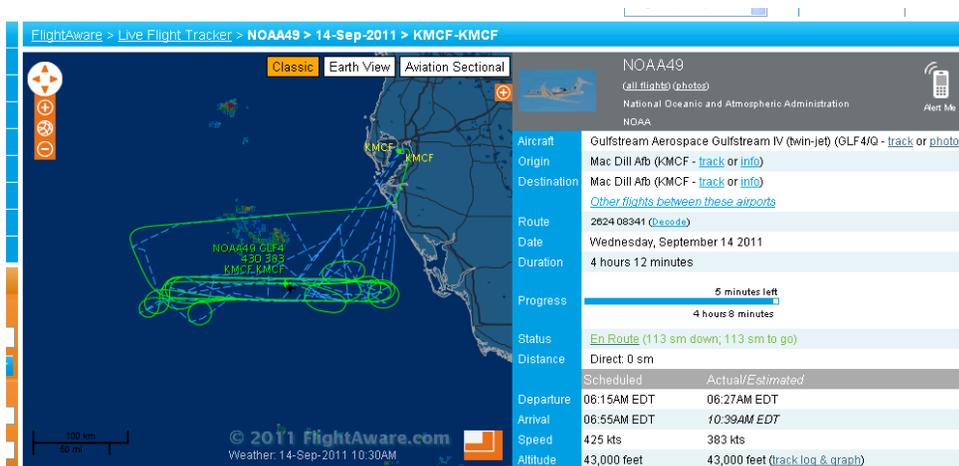
1259 At this point, we only have 14 sondes of the 18 we thought we would get. We have decided to do a ½ pass at FL580 to get another 3 sondes out to catch up.

1305 Started onto the 4<sup>th</sup> loop (currently at about 58.5 kft). Again the G1V was behind, so we had to delay the drop at P1. Launched 1<sup>st</sup> sonde about 10 nm east of P1 at 1309. 2<sup>nd</sup> sonde at P2 at 1312 (a small delay because of iridium). 3<sup>rd</sup> sonde at P3 at 1316 – initially uncertain if command went through, but it did. 3 good launches for a total of 17 launches.

1320 Started descent to FL450.

1341 At FL450. Starting first run on the E-W track. Way points are named differently at this altitude. The 1<sup>st</sup> drop at 1345 at Q5. 2<sup>nd</sup> at 1350 at Q6. 3<sup>rd</sup> at 1355 at Q7. Circling to let GIV get ahead of us. 4<sup>th</sup> drop at Q1 at 1409. 5<sup>th</sup> at Q2 at 1413 (failed). 6<sup>th</sup> at Q3 at 1417. 5 good sondes on this loop for a total of 22 launches so far.

1421 Starting FL450 2<sup>nd</sup> loop. 1<sup>st</sup> at Q5 1428. 2<sup>nd</sup> at Q6 1433. Launch at Q7 failed with the iridium was lost during send command. GIV pattern on this leg is shown in the plot below using Flight Aware. 3<sup>rd</sup> at Q2 1451. 4<sup>th</sup> at Q3 at 1456, a bit late because of iridium. 4 good sondes on this loop for a total of 26 launches.



1509 AVAPS has a fault.

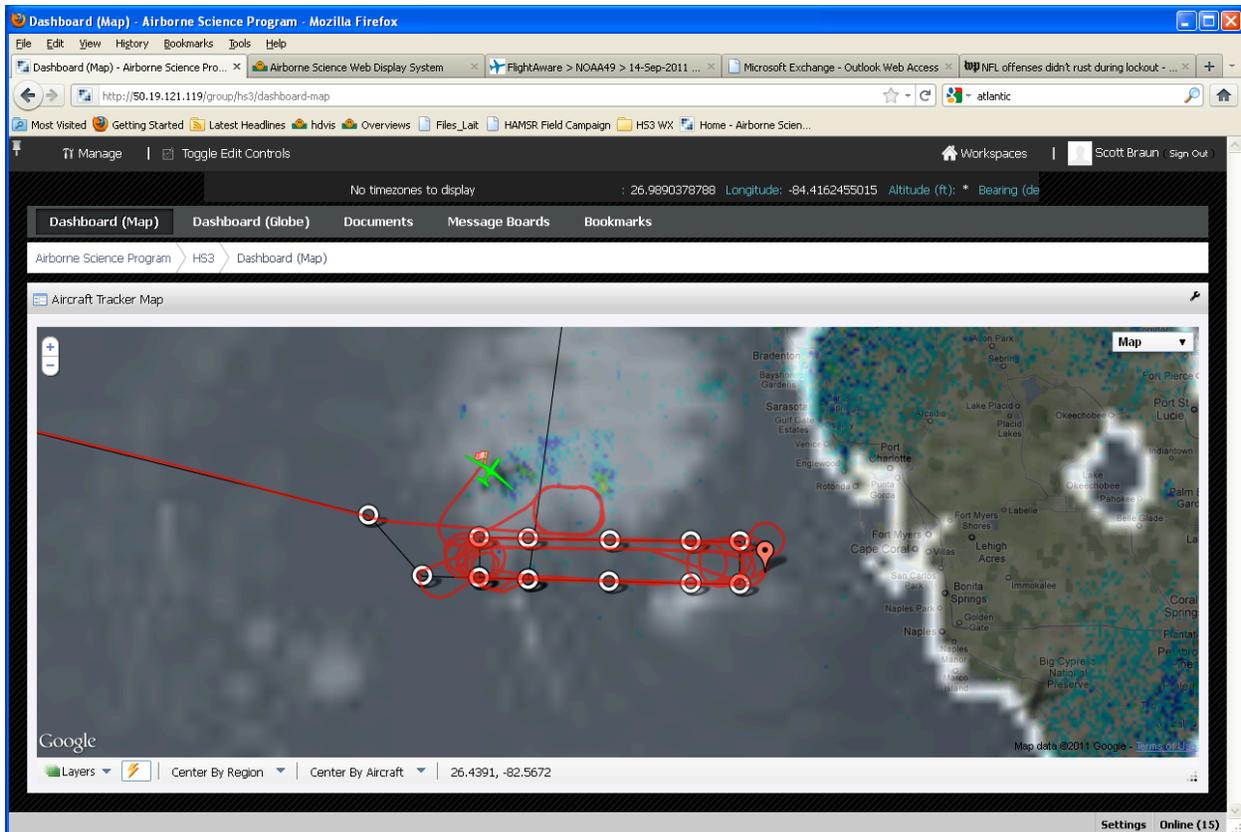
1535 AVAPS believes they have a jam. We've decided to return home. Weather may also be an issue in the New Mexico – Arizona area. ETA will be about 1515 PDT.

The plots below show the final tracks of the GIV and GH aircraft.

The screenshot shows the FlightAware website interface. The main content area displays a map of the flight path for NOAA49, with a green track showing the aircraft's route. The map includes a scale bar (100 km / 60 mi) and a copyright notice for 2011 FlightAware.com. The right-hand panel provides detailed flight information:

- Aircraft:** Gulfstream Aerospace Gulfstream IV (twin-jet) (GLF4/Q - [track](#) or [photos](#))
- Origin:** Mac Dill Afb (KMCF - [track](#) or [info](#))
- Destination:** Mac Dill Afb (KMCF - [track](#) or [info](#))
- Route:** 2624 08341 ([codes](#))
- Date:** Wednesday, September 14 2011
- Duration:** 5 hours 23 minutes
- Progress:** 18 minutes left (5 hours total)
- Status:** En Route (120 sm down, 120 sm to go)
- Distance:** Direct: 0 sm
- Departure:** Scheduled: 06:15AM EDT, Actual/Estimated: 06:27AM EDT
- Arrival:** Scheduled: 06:55AM EDT, Actual/Estimated: 11:50AM EDT
- Speed:** 425 kts (Actual/Estimated: 398 kts)
- Altitude:** 43,000 feet (Actual/Estimated: 43,000 feet ([track log & graph](#)))

The left sidebar contains navigation options such as Live Flight Tracking, Flight Planning, Pilot Resources, and various tracking tools. The top of the page features the FlightAware logo, a search bar, and a language selector set to English (USA).



1600 Homeward bound.

~22:28 GH landed safely.

Overall, the flight was a success, meeting the key goal of the dropsonde intercomparison. We were able to do drops (6) in the Gulf on the way to the warning area without any problems working with Houston Oceanic. We managed to get 26 successful drops in the warning area for comparisons with the G-IV. Unfortunately, we were unable to test out Miami and New York Oceanic and we will just have to tackle that next year.