

## NAAMES - C-130H Hercules #439 11/14/15 Science Report

**Date:** Saturday, November 14, 2015

**Mission:** NAAMES

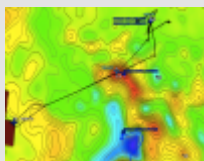
**Mission Location:** St. John's, Canada

**Mission Summary:**

This was the second science flight for NAAMES. Ship operations commenced in the early morning with a station at Point S2 (54.1077°N, 40.018°W) under scattered stratocumulus and cumulus clouds at around 1 km altitude. The aircraft transited to the previous ship station (Point S1: 51.01167°N, 43.635°W) and then proceeded at high altitude over Point S3 (52.1147°N, 39.913°W) before turning northward to the ship position at Point S2. These high-level legs were mostly over complete low-cloud coverage; although, as the aircraft moved northward from S3 to S2, the low cloud began to open up, which allowed ocean remote sensing measurements. Arriving at the ship, the aircraft executed the downwind and upwind bowtie module of coincident sampling lines at 23 kft. and in the boundary layer (300 ft., 2000 ft., and porpoising through the clouds). Due to the LARGE aerosol inlet icing issues encountered during Science Flight #1 (11/12/15), the order of the flight plan was adjusted so that an upward spiral was executed in-between the upwind and downwind legs, and the cloud module was executed after completing the bowtie module. Cloud conditions around the ship were very different than the previous flight, with much more scattered sampling for the cloud module stacked legs. To mitigate LARGE aerosol inlet icing, the cloud top leg was completed after all of the in situ sampling legs (min. altitude, just below cloud, cloud base, and just above cloud). No inlet issues were detected; although, it is unclear if this is due to the change in flight maneuvers or because of differences in the clouds encountered. After completing these stacked cloud legs, the aircraft performed an inline ascent over the ship and overflowed the cloud module at 23 kft. before returning to St. John's airport. In situ instruments reported some of the cleanest conditions observed so far during NAAMES (particle concentrations  $\sim 10\text{-}30\text{ cm}^{-3}$ ) in the boundary layer. While in situ aerosol number was greater above the boundary layer than at low altitude, HSRL atmospheric profiling showed highest aerosol extinction in the boundary layer, which decreased with increasing altitude. Ocean remote sensing showed the surface waters to be relatively uniform. All instruments operated well and are ready for the next flight.

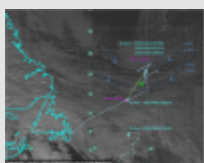
**Images:**

### Flight Track Overlaid on Eddy Map



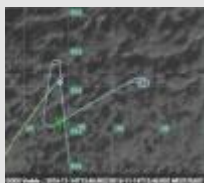
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### Flight Track Overlaid on GOES Visible Imagery



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### 1400Z GOES Visible Imagery and Flight Track



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## 1510Z GOES Visible Imagery and Flight Track



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## 1535Z GOES Visible Imagery and Flight Track



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## 1550Z GOES Visible Imagery and Flight Track



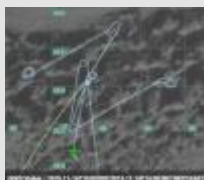
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## 1600Z GOES Visible Imagery and Flight Track



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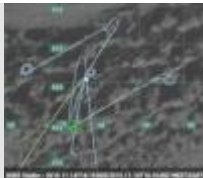
## 1615Z GOES Visible Imagery and Flight Track



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## 1630Z GOES Visible Imagery and Flight Track

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## 1655Z GOES Visible Imagery and Flight Track



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Submitted by: Richard Moore on 11/23/15

Related Flight Report:

## C-130H Hercules #439 11/14/15

**NOTE:** All flight reports will be archived as NASA public data in the DAAC.

**Flight Number:** NAAMES Nov-2015 Data Flight #2

**Payload Configuration:** NAAMES

**Nav Data Collected:** No

**Total Flight Time:** 9.7 hours

**Submitted by:** Cate Easmunt on 11/14/15

**Flight Segments:**

<b>From:</b>	CYYT	<b>To:</b>	CYYT
<b>Start:</b>	11/14/15 10:20 Z	<b>Finish:</b>	11/14/15 20:00 Z
<b>Flight Time:</b>	9.7 hours		
<b>Log Number:</b>	<a href="#">161006</a>	<b>PI:</b>	Michael Behrenfeld
<b>Funding Source:</b>	Paula Bontempi - NASA - SMD - ESD Ocean Biology and Biogeochemistry		
<b>Purpose of Flight:</b>	Science		

**Flight Hour Summary:**

	<b>161006</b>
<b>Flight Hours Approved in SOFRS</b>	100
<b>Total Used</b>	64.5
<b>Total Remaining</b>	35.5

### 161006 Flight Reports

Date	Flt #	Purpose of Flight	Duration	Running Total	Hours Remaining	Miles Flown
<a href="#">10/31/15</a>	Airworthiness Test Flight	Check	1	1	99	
<a href="#">11/04/15</a>	Project Test Flight	Check	5.5	6.5	93.5	
<a href="#">11/09/15 - 11/10/15</a>	NAAMES Nov-2015 Transit to St. John's	Transit	4.6	11.1	88.9	
<a href="#">11/12/15</a>	NAAMES Nov-2015 Data Flight #1	Science	9.9	21	79	

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<a href="#">11/14/15</a>	NAAMES Nov-2015 Data Flight #2	Science	9.7	30.7	69.3
<a href="#">11/17/15</a>	NAAMES Nov-2015 Data Flight #3	Science	8.8	39.5	60.5
<a href="#">11/18/15</a>	NAAMES Nov-2015 Data Flight #4	Science	9.8	49.3	50.7
<a href="#">11/23/15</a>	NAAMES Nov-2015 Data Flight #5	Science	9.4	58.7	41.3
<a href="#">11/28/15</a>	NAAMES Nov-2015 Return Transit	Transit	5.3	64	36
<a href="#">11/28/15</a>	NAAMES Nov-2015 Return Transit	Transit	0.5	64.5	35.5

*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.*

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NASA Official: Bruce A. Tagg

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