

## ORACLES P3 Flight Scientist Post-Flight Status

Date: \_\_\_19 August 2017\_\_\_\_\_

Flight number: \_\_\_PRF06\_\_\_\_\_

Routine flight or target of opportunity? \_\_\_target of opportunity\_\_\_\_\_

If target of opportunity, what is the goal? \_\_\_\_\_Ascension to Sao Tome 9 hour  
flight\_\_\_\_\_

Flight scientist: \_\_\_Jens Redemann\_\_\_\_\_

Assistant flight scientist: \_\_\_\_\_

Ground scientist: \_\_\_Rob Wood\_\_\_\_\_

Take-off: \_\_\_10:06UT\_\_\_\_\_

Landing: \_\_\_11:54UT\_\_\_\_\_

### Quick summary:

Representative ACAOD or ACAOD range for flight: \_0.1 in holding pattern (AODmax=0.3 at  
ASI)\_\_\_\_\_

Do the models predict crossing a gradient in aerosol age?

Yes/No/Unclear

Did the flight cross a gradient in macroscopic cloud properties, like cloud fraction?

Yes/No/Unclear

Did the flight cross a gradient in aerosol loading?

Yes/No/Unclear (significantly more loading to the East)

At any point during the flight, was there a clear separation between the smoke plume(s) and  
cloud tops?

Yes/No/Unclear

### How many of the following maneuvers took place?

Ramps \_\_\_0\_\_\_\_\_

Above plume legs \_\_\_\_\_

Square spirals \_\_\_0 (upward)\_\_\_\_\_

MBL legs \_\_\_0\_\_\_\_\_

Cloud legs \_\_\_0\_\_\_\_\_

Above cloud legs \_\_\_0\_\_\_\_\_

Sawtooth legs \_\_\_0\_\_\_\_\_

Plume legs \_\_\_1 (some sampling in plume, but  
also P3 exhaust)\_\_\_\_\_

**Instrument status:**

<b>Instrument</b>	<b>Comments</b>
<b>P3</b>	Fire warning in engine 2 during climb out; fire suppressant not discharged; down-ward radiating instruments are OFF, dumping fuel in holding pattern
<b>4STAR</b>	Got some data, mostly constant AOD=0.1
<b>HiGEAR</b>	Data on ascent and descent profiles
<b>HiGEAR-AMS</b>	Operating entire flight
<b>HSRL-2</b>	15min of data on initial ascent, 45min during descent
<b>RSP</b>	Some data after fuel dump
<b>APR3</b>	No data
<b>Cloud probes</b>	No data
<b>CCN</b>	
<b>PDI</b>	
<b>Vertical winds</b>	
<b>WISPR/CVI</b>	Data during ascent/descent
<b>COMA</b>	Data all flight
<b>SSFR</b>	Data all flight
<b>data</b>	Data all flight

**PRF06Y17 date 08/19/2017 day-of-week Mission Report**

*flight scientist: Jens Redemann*

*ground scientist: Rob Wood*

**flight plan and objective: 1-2 line synopsis, image of proposed flight plan**

- **Sampling E-W gradient along 8S + Routine track (5E) 8S to STM**

**Flight Summary: 7-8 line synopsis, include actual flight path (aircraft altitude-time from IWG and/or visible satellite image from NASA worldview with flight path superimposed)**

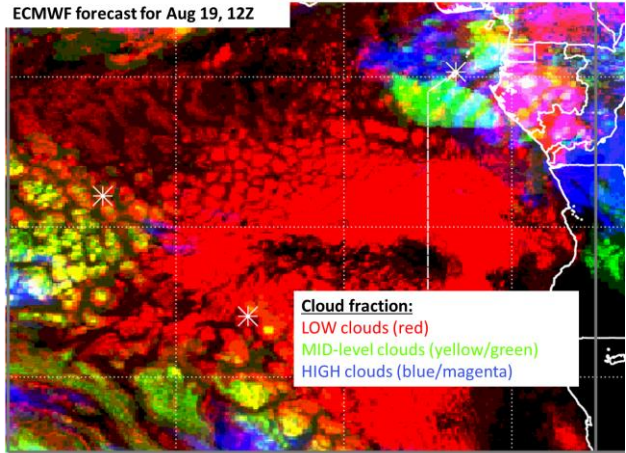
This was intended to be the return flight from Ascension Island to Sao Tome. During initial climb out from Sao Tome, the P3 had another engine fire warning in engine 2. We dumped/burned fuel for a while and landed back after ~2hrs of flying. A small number of instruments collected data. During race-track holding pattern, in situ instruments indicated several instances of sampling our own exhaust. We did a figure 8 pattern on the tarmac for comparison of radiation measurements. No clouds in direct beam during figure 8, but significant clouds in the hemisphere.



**A-Priori Forecast: 4-5 line synopsis with selection of images taken from the forecast briefings, Available at [http://bocachica.arc.nasa.gov/ORACLES/oracles\\_2017.html](http://bocachica.arc.nasa.gov/ORACLES/oracles_2017.html), bottom of page e.g.,**

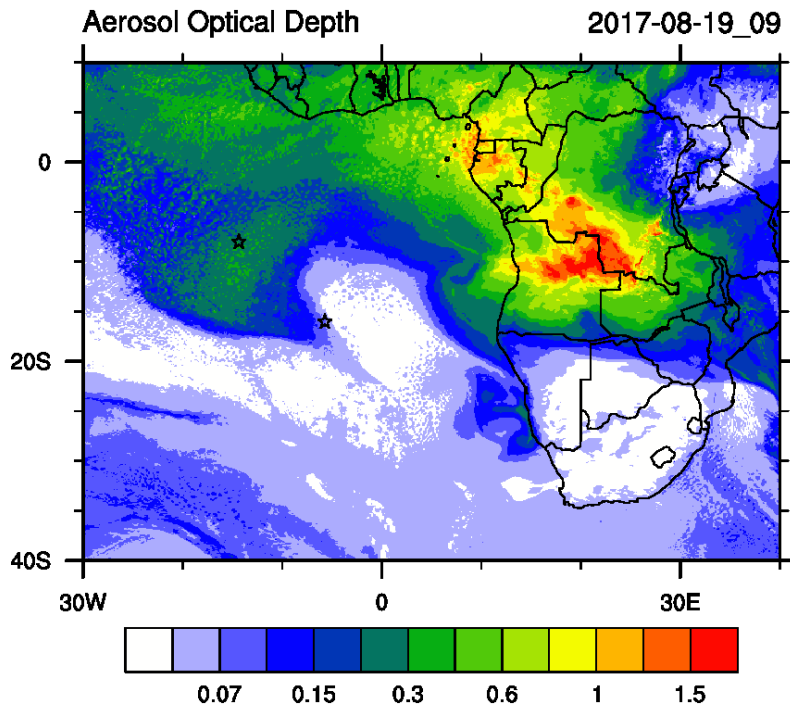
17081912, 096 hour forecast for Cloud Fraction (low, mid, and high cloud) -- ECMWF

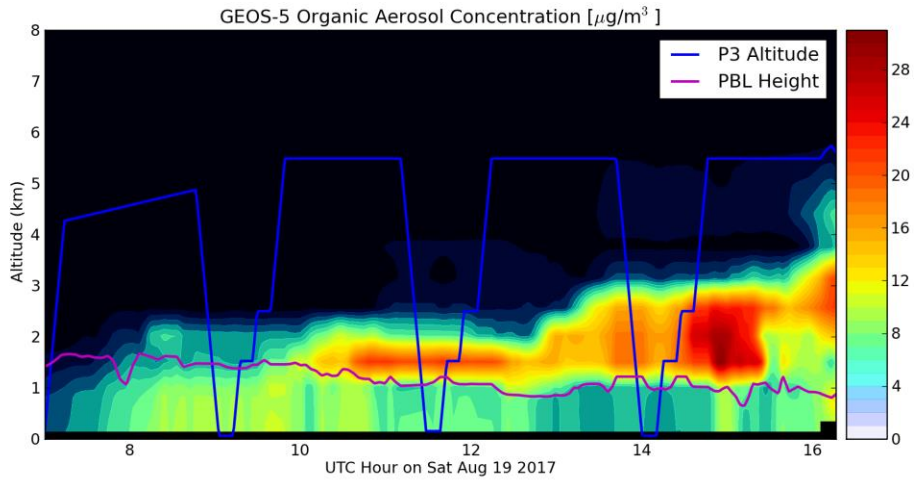
ECMWF forecast for Aug 19, 12Z



Low (red) + High (blue) cloud = magenta  
 Mid (green) + High (blue) cloud = cyan  
 Low (red) + Mid (green) cloud = yellow

Cloud Fraction: low (red), mid (green), high (blue) cloud





**Flight Instrument status: 2-5 line synopsis**

**Flight Instrument/logistics notes: 4-5 lines on anything of note**

**Run Table [UTC]**

09:58 Slow figure eight on the tarmac – pix after fig 8



10:06 Take-off 10:06:02

10:1x Fire warning in engine 2 during climb out; fire suppressant not discharged; down-ward radiating instruments are OFF, dumping fuel in holding pattern, very limited science, 4STAR, some in situ (although we are sampling our own plume and many instruments are off)

11:54 landing at 11:54:38; crew planning to work on engine issue, no science access requested