

Flight Number: RF01

Date: 17 Jan 2020

Flight scientist: Chris Fairall

Mission scientists: Patrick Chuang, Graham Feingold

take-off time: 1400Z

landing time: 2050Z

Flight plan and objective: The inaugural flight. The plan was to fly to NTAS and do a dropsonde circle, a slow descent and ascent for isotope profiles, and two cloud modules. AXBTs were not available, so we planned two cloud modules. Other objectives were testing equipment, testing flight modules, working on communications links to ground and Ronald Brown, and training on Wband radar.

Flight Summary: The aircraft climbed to 21,000 ft initially and slowly climbed on the way to the drop circle (24,000 ft). The drop circle was executed, a slant profile was done to 500 ft before climbing back to 10,000 ft to do the cloud model. A #1 cloud module was done with 6 levels: one above cloud, 3 in-cloud, one intended to be just below cloud base but which clipped some clouds, and one near-surface level at 500 ft. Climbed out and headed straight back at 10,000 ft. Total flight time was 7.5 hours, 22 drop sondes.

Notes from flight:

manifest

crew: 11

Science:

Fairall - flight scientist

Moran - Wband radar engineer

Pincus - training, observer

Baily - isotopes

Leandro - cloud physics

Ground mission scientists: Chuang, Feingold

instrument status

dropsondes: 22 launched

cloud probes: failed early in flight

radars: Wband and TDR operated normally. Wband was turned on/off in transect to circle for training.

AXBT: None

isotope&CVI: Operated normally

SSFMR: Operated normally (but we have not checked)

WSRA: Operated intermittently. The system was started when we descended below 20,000 ft as per advice of ProSensing. The display indicated good operation for a few minutes then it looked funky. J. Warneke worked on it for a few hours. It came back up once or twice but would fail after 10 or so minutes. Still unknown if it is just a display problem.

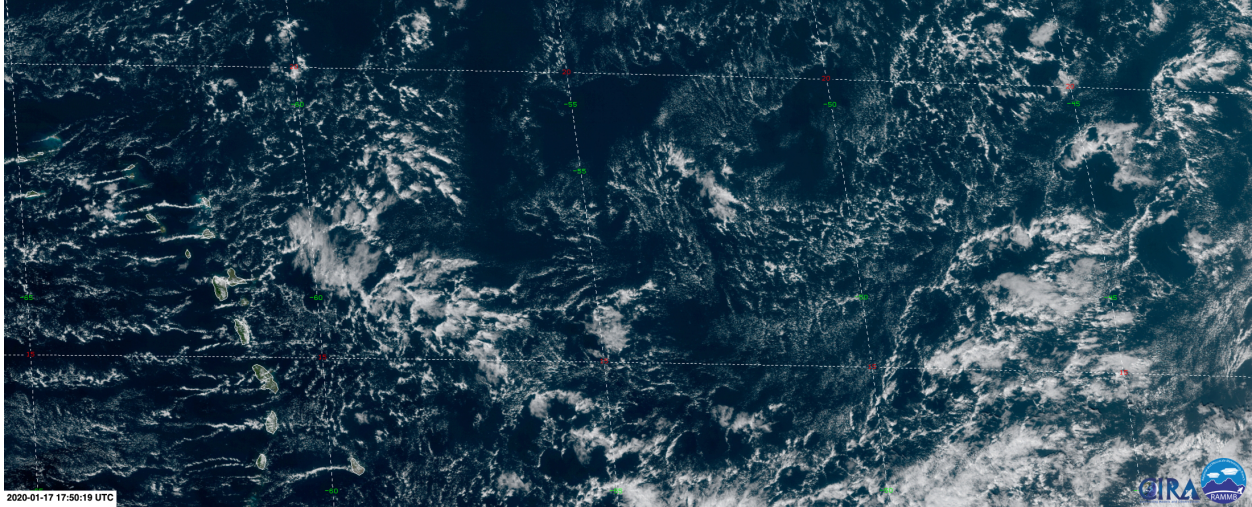
Instrument/logistics notes: Cloud physics and WSRA did not operate successfully. Coordination with the flight manager was not smooth. Need to make use of headsets. It was difficult to select the right place to do the cloud module. Satellite picture was not of sufficient visual quality.

Nearness/coordination with other EUREC4A/ATOMIC platforms: Circle done around RHB. Talked with RHB and mission scientists using XCHAT. Could not use PLANET or SLACK to chat. PLANET performed poorly for mapping. Successfully uploaded a satellite image via email.

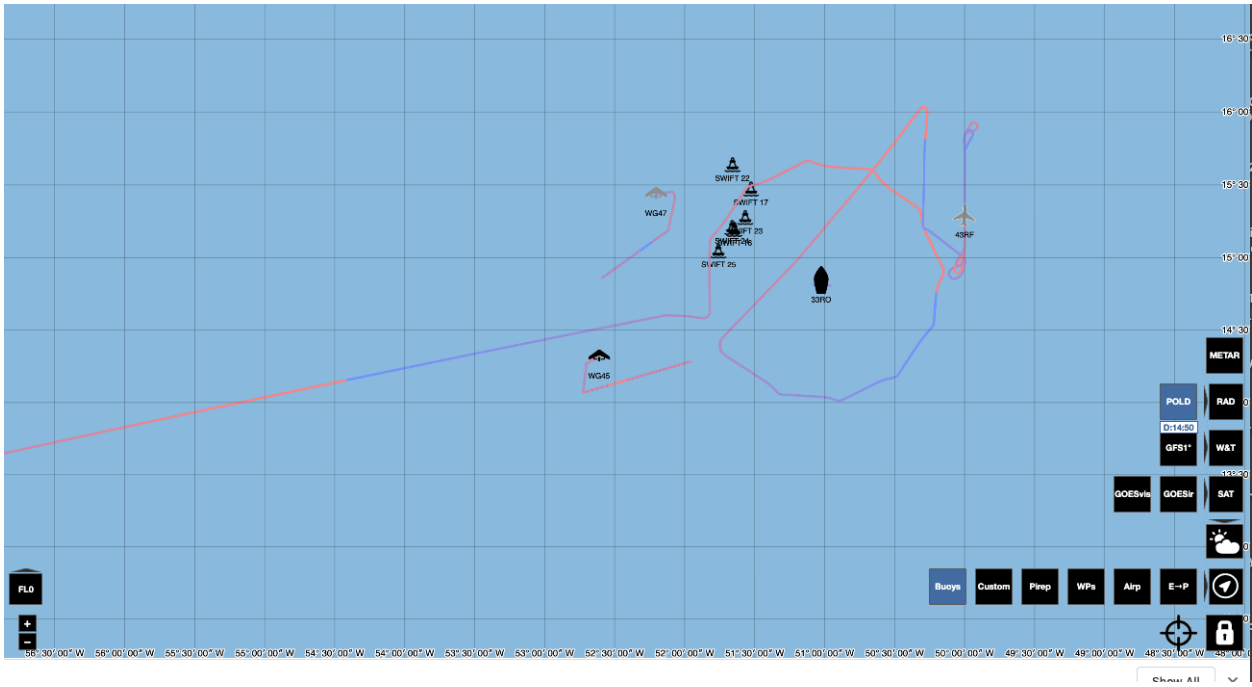
Run Table [UTC; times are approximate]

description	begin time	end time	altitude	notes
takeoff	1400		0	
transit to circle	1420	1530	7.3-7.7 km	dropped 6 sondes CLOUD tops about 2.5 km
Dropsonde circle	1530	1640	7.7 km	1.6 deg dia, center 15 N 51W. RHB was within the circle. Did not overfly RHB.
descent profile	1640	1705	7 to .15	Isotope slant profile; 1000 ft/min below 5.0 km. Winds at 0.15 km were 17 kts
ascent	1705	1710	.15 to 3.0	Ascend to 3 km to start cloud module
Cloud module	1715	1845	6 hts	No cloud physics. CB about 0.70. Module N-S at east edge of circle
Return transect	1845	2045	3 km	Transect at 10,000 ft for wband sampling

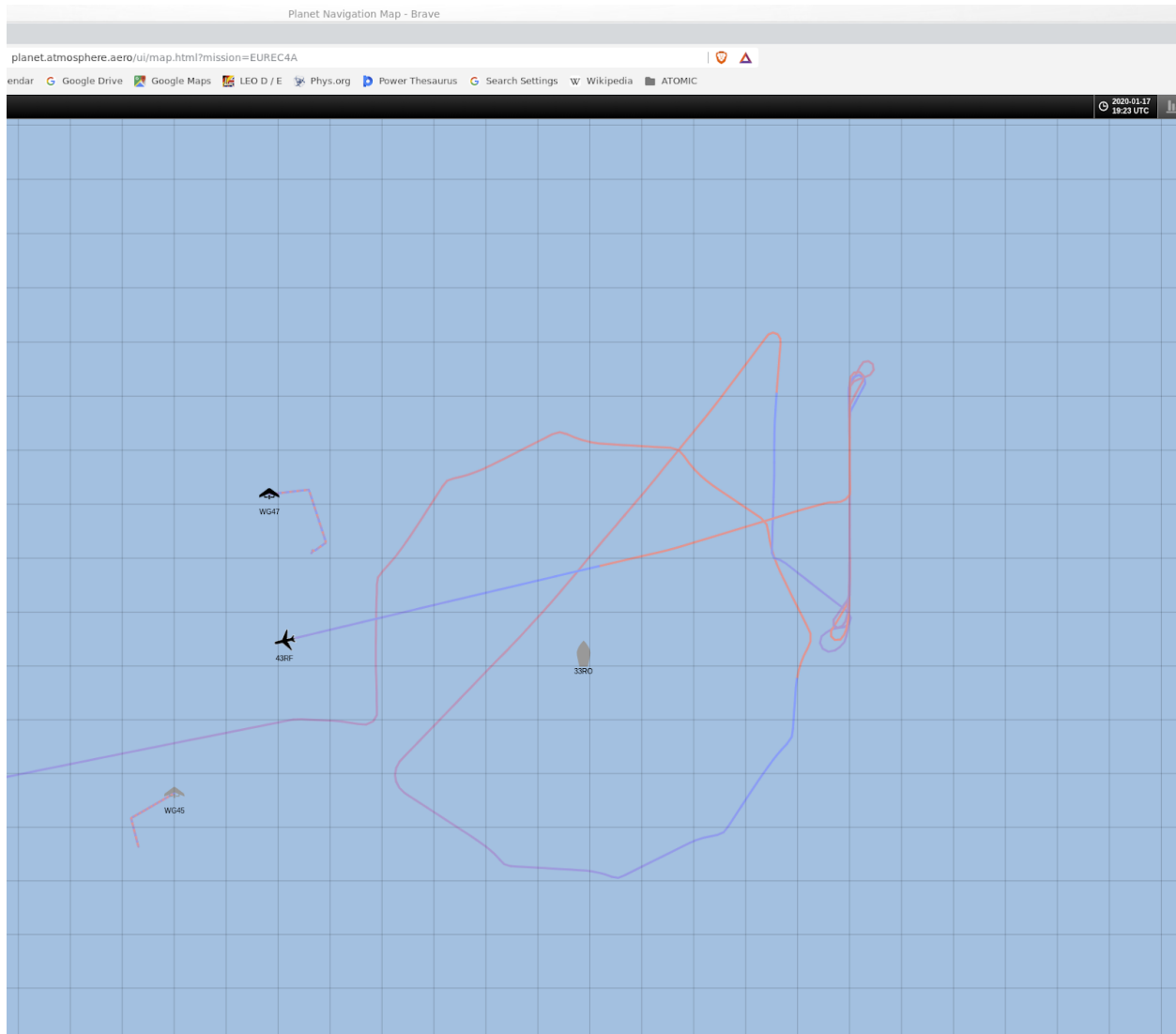
Visual notes: Cloud fraction and vertical development became less as we headed East. In the circle region the clouds were principally sugar with some large clumps a few km in diameter. Residual mushroom top stratus like things were seen on the way back.



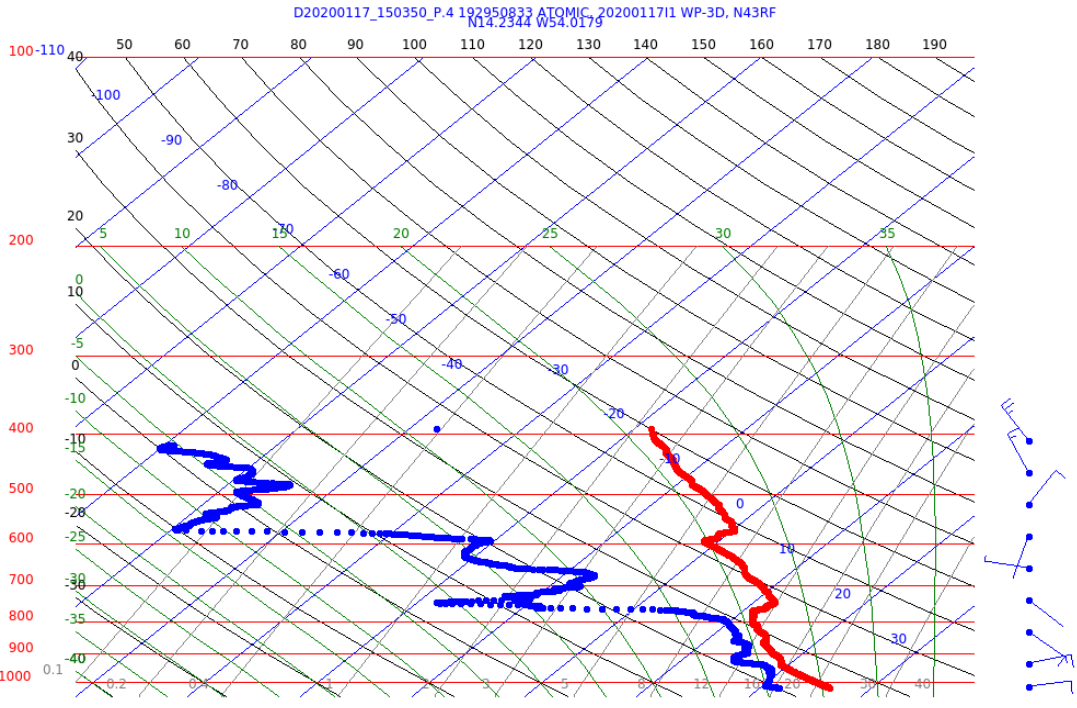
Satellite image during flight period.



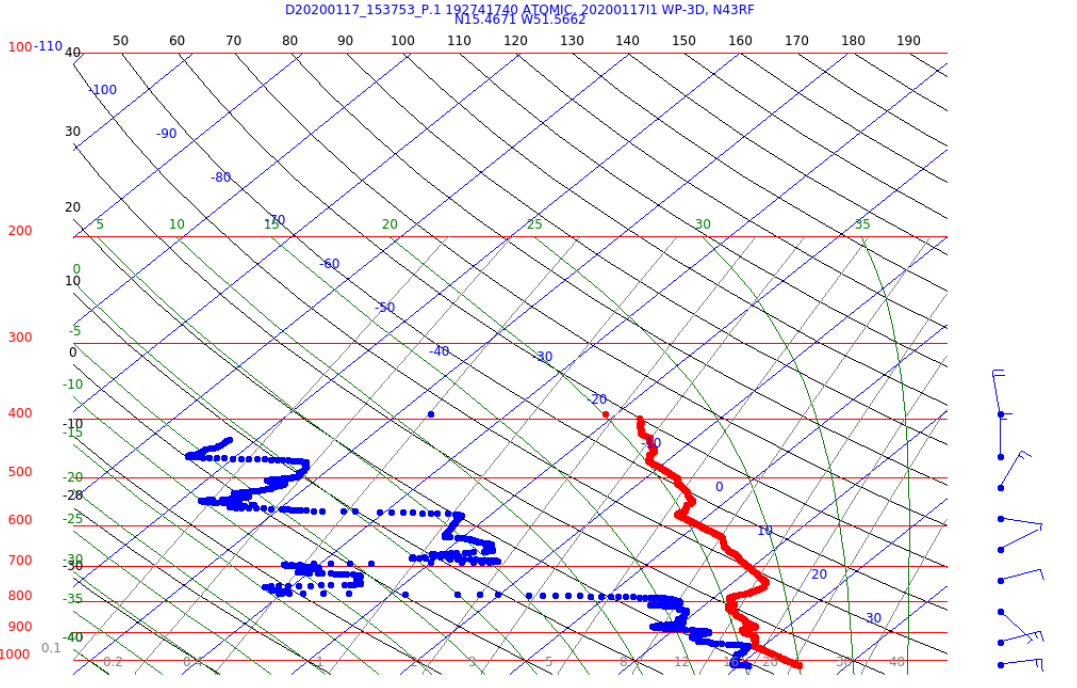
PLANET images showing RHB, SWIFT buoys, and P3 track.



PLANET image in dropcircle area.



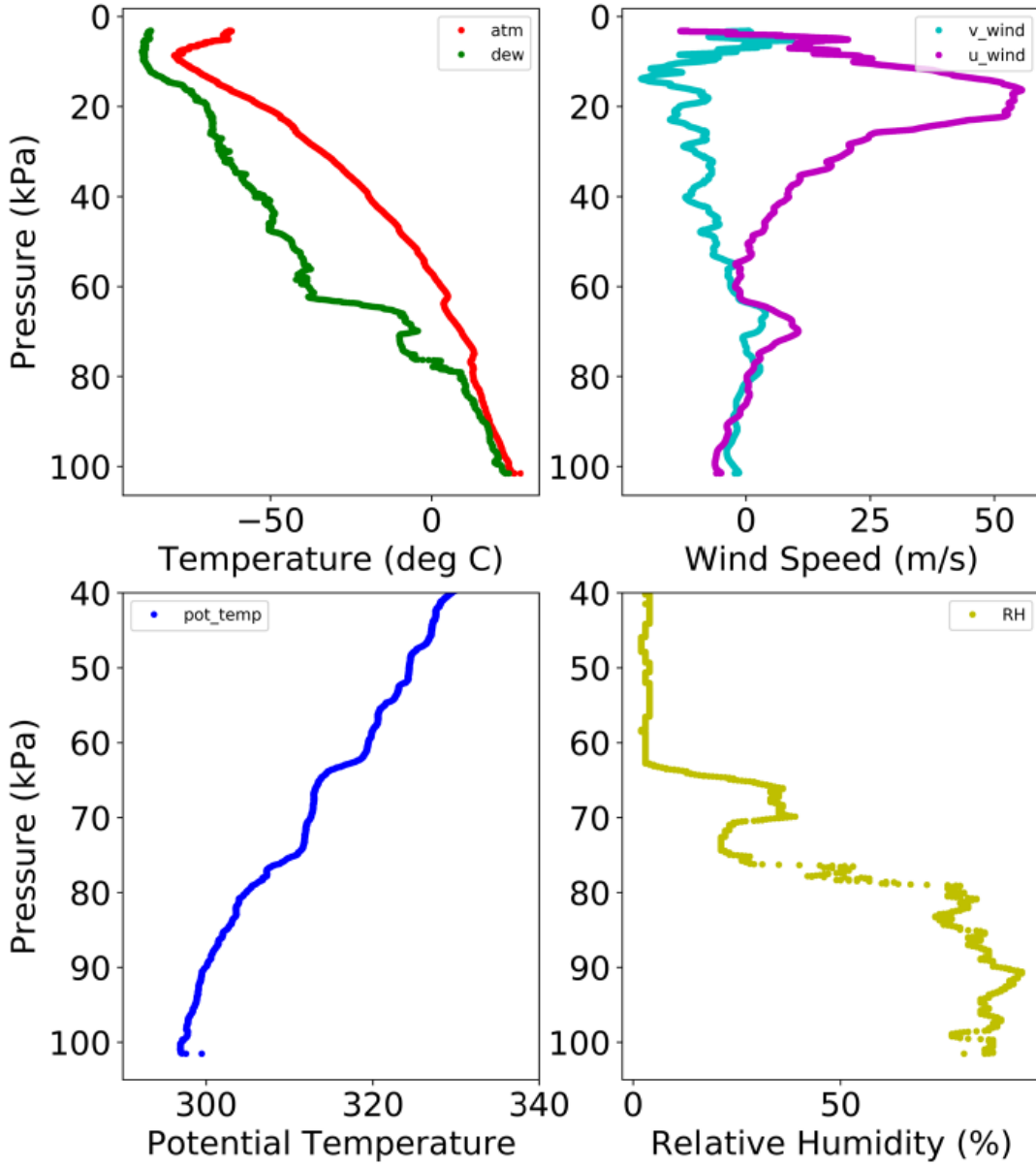
Aspen V3.4.2, 17 Jan 2020 15:15 UTC



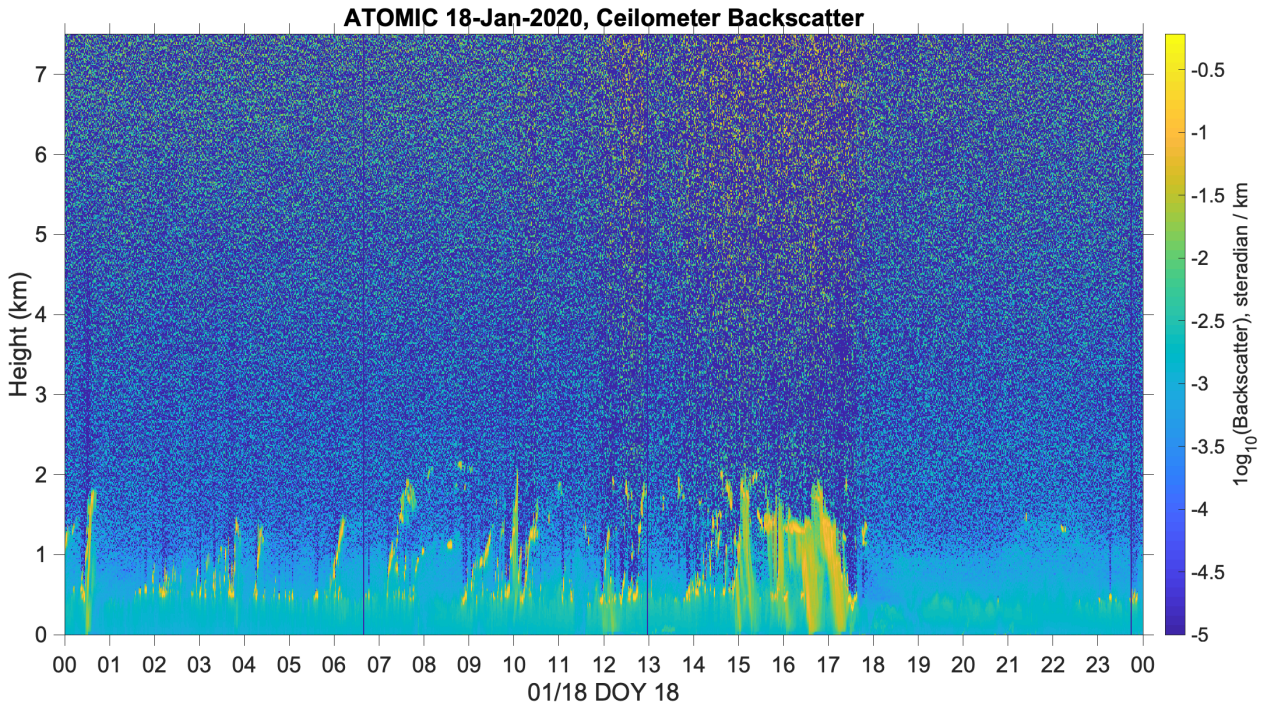
Aspen V3.4.2, 17 Jan 2020 15:57 UTC

Sample dropsonde skewT from W and E sides of circle. See https://seb.noaa.gov/pub/flight/ASPEN_Data/2020011711/

2020-01-18 1848UTC



Sounding from RHB at `1848 at 15 N 51 W.



Ceilometer backscatter image from RHB at 15 N 51 W. The P3 was in the area from 1530 to 1845.