

**NOAA / AOML / Hurricane Research Division
2021 Hurricane Field Program
Advancing the Prediction of Hurricanes Experiment (APHEX)**

FLIGHT LOG -- 2021081011

MISSION PLAN			
FLIGHT ID	2021081011	STORM	AL06 / PTC06
MISSION ID	0106A	TAIL NUMBER	NOAA43
TASKING	NHC (Invest)	PLANNED PATTERN	Alpha+box pattern
MISSION SUMMARY			
TAKEOFF [UTC]	0839	LANDING [UTC]	1645
TAKEOFF LOCATION	Lakeland	LANDING LOCATION	Aruba
FLIGHT TIME	8.1	BLOCK TIME	8.3
TOTAL REAL-TIME RADAR ANALYSES (Transmitted)	3 (3)	TOTAL DROPSONDES (Good/Transmitted)	3 (3/3)
OCEAN EXPENDABLES (Type)	None	sUAS (Type)	None
APHEX EXPERIMENTS / MODULES	None		
HRD CREW MANIFEST			
LPS ONBOARD	Marks	LPS GROUND	Dunion
TDR ONBOARD	Marks	TDR GROUND	Reasor
ASPEN ONBOARD	Wadler	ASPEN GROUND	None
NESDIS SCIENTISTS	Chang, Jelenak		
GUESTS (Affiliation)	None		
AOC CREW MANIFEST			
PILOTS	Abitbol		
NAVIGATOR	Shaw		
FLIGHT ENGINEERS	Sanchez		
FLIGHT DIRECTOR	Lundry/Hathaway		
DATA TECHNICIAN	Richards		
AVAPS	Warnecke		

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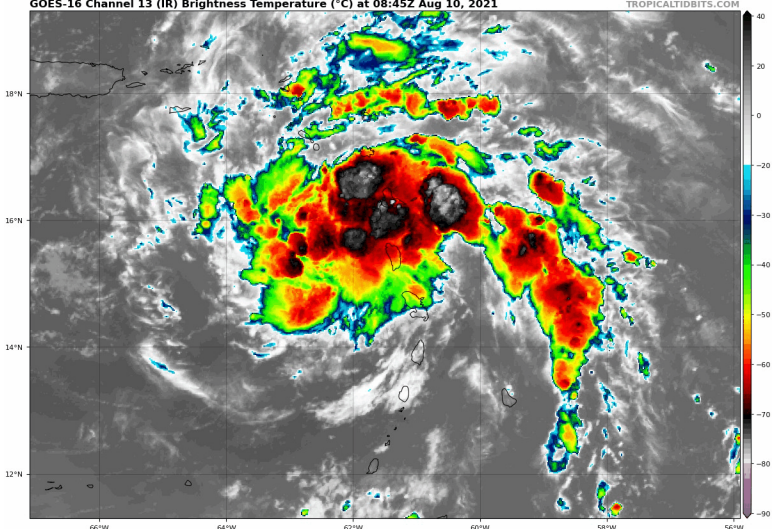
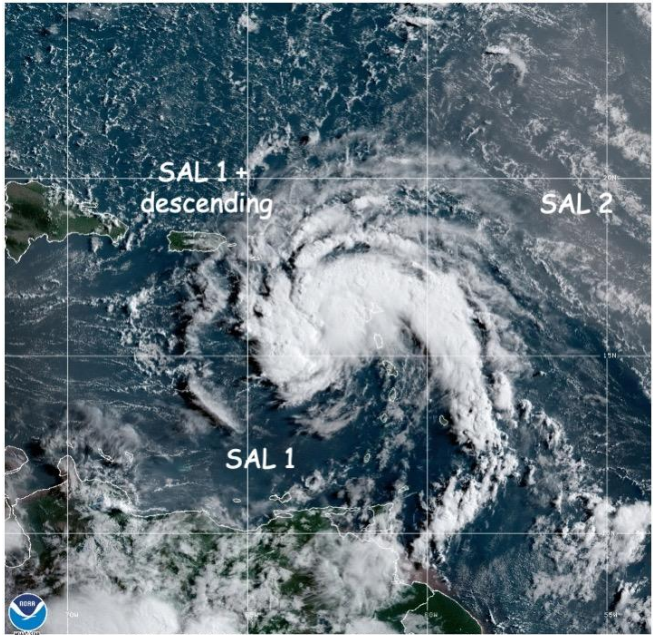
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PRE-FLIGHT	
Flight Plan	NHC alpha pattern followed by a box pattern or additional legs to attempt to close of a low-level circulation (if none was found during the initial alpha pattern)
Expendable Distribution	Dropsondes released at the center of each pass if a well-defined circulation is found and altitude at or above 5000 ft. 3 additional sondes for ONR TCRI during the ferry to the IP to sample gradients associated with the SAL.
Preflight Weather Briefing	
Instrument Notes	No microphysics probes onboard N43. All other instruments operating normally.

IN-FLIGHT	
Time [UTC]	Event
0900	NHC is keeping PTC06 at 30 kt with no well-defined surface circulation.

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1105	 <p>GOES-16 Channel 13 (IR) Brightness Temperature (°C) at 08:45Z Aug 10, 2021 TROPICALDDBITS.COM</p>
1130	Setting up 3 ONR drops to sample SAL NW of PTC Six. Drops requested along inbound ferry NW of the storm at 66.0W, 65.5W, & 64.5W.
1130	<p>GOES Geocolor (1130 UTC)</p>  <p>10 Aug 2021 11:30Z NOAA/NESDIS/STAR GOES-East GEOCOLOR</p>
1130	MIMIC TPW (1100 UTC)

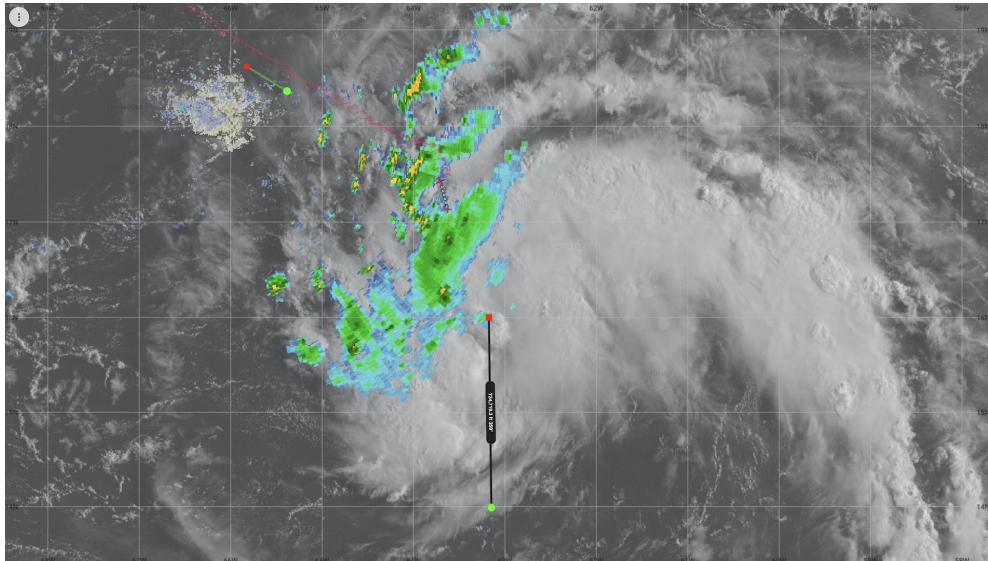
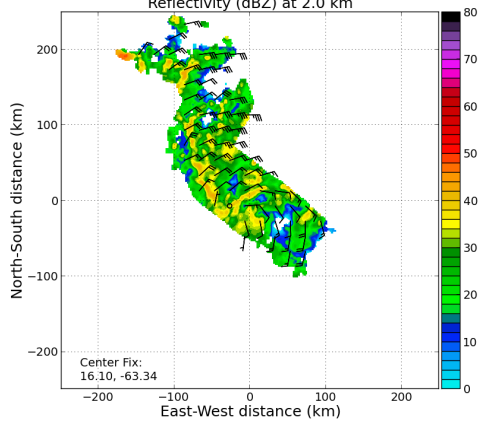
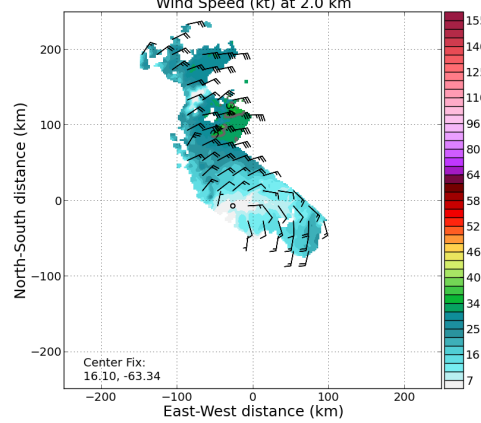
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1135	Centering initial pattern on 16.0N 63.2W
1156	Drop #1 18.92 N, 66.0 W (SAL 1 + dry, descending air/AEW moisture gradient) >> ONR sonde
1203	Drop #2 18.50 N, 65.5 W (SAL 1 + dry, descending air/AEW moisture gradient) >> ONR sonde
1215	Drop #3 18.01 N, 64.5 W (SAL 1 + dry, descending air/AEW moisture gradient) >> ONR sonde. Launched from ~14kft during descent to pattern FL (1500 ft)
1230	N43 picking through multiple outer bands N of center approaching IP N of "center"

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1243	Inbound N-ctr leg bowing out west to avoid band convection- will have to then bow back to the SE to overfly the “center”
1248	Climbing to 2500 ft before crossing large convective band N of estimated center
1313	<div style="display: flex; justify-content: space-around;"> <div> <p style="text-align: center;">210810I1 (INVEST) 121600 to 131300 UTC Reflectivity (dBZ) at 2.0 km</p>  <p style="text-align: center;">Center Fix: 16.10, -63.34</p> </div> <div> <p style="text-align: center;">210810I1 (INVEST) 121600 to 131300 UTC Wind Speed (kt) at 2.0 km</p>  <p style="text-align: center;">Center Fix: 16.10, -63.34</p> </div> </div> <p>Hints of an elongated NE-SW circulation at 2 km. Next NE-SW pass will hopefully provide a more complete picture.</p>
1400	NE-ctr leg: NHC not convinced of any solid westerly winds to close off the circulation.
1425	End of ctr-SW leg. NHC asking for a S-N leg west of the “center” and then

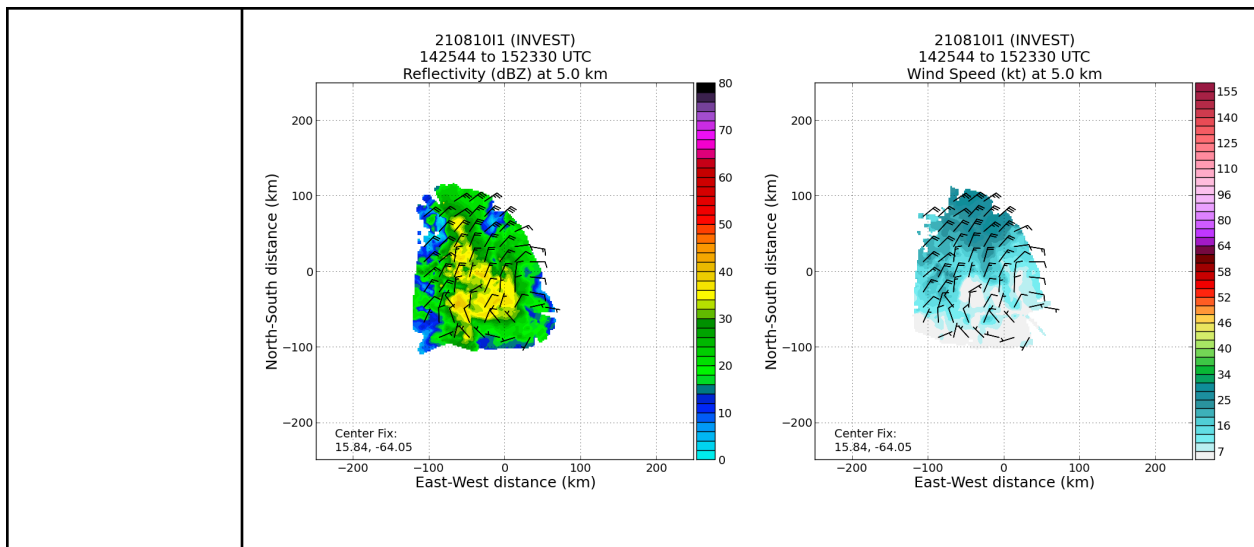
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	a final NW-SE pass to look for signs of a closed low-level circulation.
1424	<p>NE-SW and S-N passes indicate PTC Six is still an open wave at 2 km. Signs of a mid-level 5-km closed circulation.</p> <div style="display: flex; flex-wrap: wrap; justify-content: space-around;"> <div style="width: 48%;"> <p style="text-align: center;">21081011 (INVEST) 131330 to 142447 UTC Reflectivity (dBZ) at 2.0 km</p> <p style="text-align: center;">Center Fix: 16.16, -63.32</p> </div> <div style="width: 48%;"> <p style="text-align: center;">21081011 (INVEST) 131330 to 142447 UTC Wind Speed (kt) at 2.0 km</p> <p style="text-align: center;">Center Fix: 16.16, -63.32</p> </div> <div style="width: 48%;"> <p style="text-align: center;">21081011 (INVEST) 142544 to 152330 UTC Reflectivity (dBZ) at 2.0 km</p> <p style="text-align: center;">Center Fix: 15.84, -64.05</p> </div> <div style="width: 48%;"> <p style="text-align: center;">21081011 (INVEST) 142544 to 152330 UTC Wind Speed (kt) at 2.0 km</p> <p style="text-align: center;">Center Fix: 15.84, -64.05</p> </div> </div>

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POST-FLIGHT	
Mission Summary	<p>Successful NHC invest mission. 3 tail Doppler radar analyses were also transmitted off the aircraft and 3 GPS dropsondes were transmitted to the GTS. PTC Six maintained its 30 kt intensity during the mission and TDR data indicated that the vortex was elongated SW-NE at 2 km and perhaps closed at 5 km. NHC mentioned in their 1500 UTC advisory the use of NOAA-43's observations to determine that PTC Six did not yet have a well-defined closed circulation, that wind and pressure fields more resembling an open wave, and that the intensity remained at 30 kt.</p> <p>Due to weather hazard avoidance and proximity to land, the planned pattern had to be modified slightly. The 3 dropsondes that were deployed to support ONR TCRI research were transmitted to the GTS (all sondes were charged to ONR).</p>
Actual Standard Pattern Flown	Alpha pattern plus additional legs to investigate the environment of Potential Tropical Cyclone Six. The pattern was distorted due to the need to avoid convection and increase the flight level to maintain safety.
APHEX Experiments / Modules Flown	Data collected could be relevant to the <i>Genesis Stage Experiment: FAM</i> and <i>PREFORM</i> ; mission also flown collaboratively with ONR TCRI
Plain Language Summary	<ul style="list-style-type: none"> The NOAA P-3 flew this mission to investigate <i>Potential Tropical Cyclone Six</i> and determine if the disturbance had developed into a tropical cyclone.

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	<ul style="list-style-type: none"> The P-3 did not observe a well-developed low-level circulation in <i>Potential Tropical Cyclone Six</i> and therefore NHC did not upgrade the storm to a tropical cyclone.
Instrument Notes	The cloud microphysics package was not installed on the P-3 for this mission. All other aircraft instruments operated nominally.
Final Mission Track	

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