

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

FLIGHT LOG -- 2021081811

MISSION PLAN			
FLIGHT ID	2021081811	STORM	AL07 / GRACE
MISSION ID	1207A	TAIL NUMBER	NOAA43
TASKING	EMC	PLANNED PATTERN	Butterfly
MISSION SUMMARY			
TAKEOFF [UTC]	0813	LANDING [UTC]	1526
TAKEOFF LOCATION	Lakeland	LANDING LOCATION	Lakeland
FLIGHT TIME	7.2	BLOCK TIME	7.5
TOTAL REAL-TIME RADAR ANALYSES (Transmitted)	3 (2.5)	TOTAL DROPSONDES (Good/Transmitted)	17 (16/13)
OCEAN EXPENDABLES (Type)	2 ALAMO	sUAS (Type)	None
APHEX EXPERIMENTS / MODULES	Early Stage Experiment: AIPEX; Ocean Observing Experiment: Sustained and Targeted Observations		
HRD CREW MANIFEST			
LPS ONBOARD	Aberson	LPS GROUND	Bucci
TDR ONBOARD	Aberson	TDR GROUND	Fischer/Reasor
ASPEN ONBOARD	None	ASPEN GROUND	Dunion/J. Zhang
NESDIS SCIENTISTS	Chang		
GUESTS (Affiliation)	None		
AOC CREW MANIFEST			
PILOTS	Abitbol, Stateler, Shaw		
NAVIGATOR	Utama		
FLIGHT ENGINEERS	Sanchez, Stokes, Greene		
FLIGHT DIRECTOR	Lundry		
DATA TECHNICIAN	T. Richards		
AVAPS	Warnecke		

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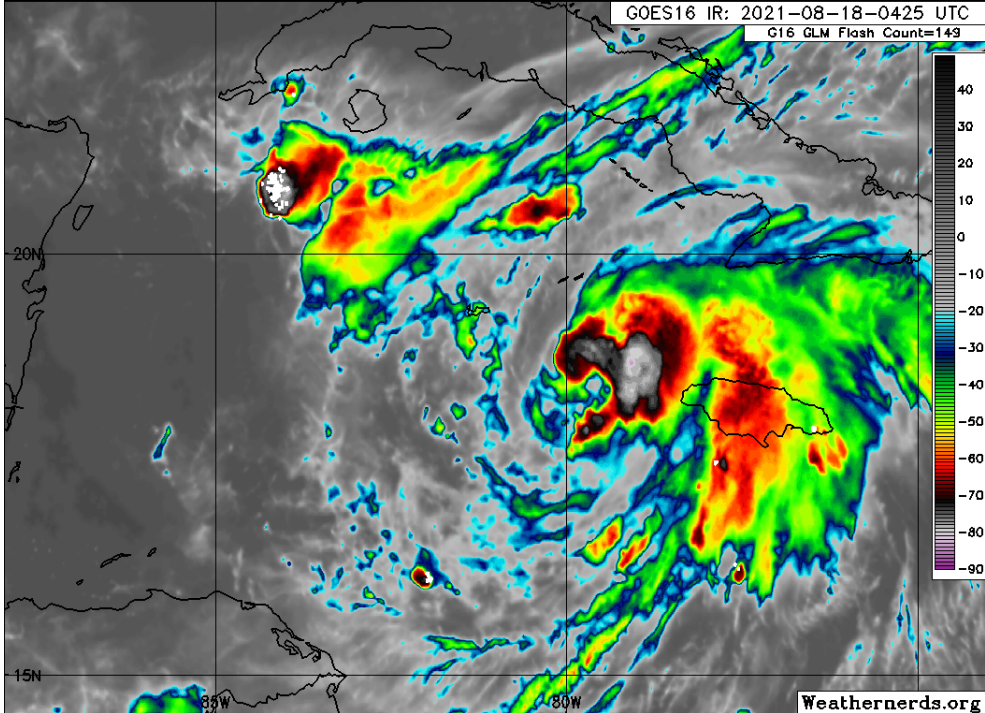
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PRE-FLIGHT	
Flight Plan	<p>Butterfly to collect data for EMC HWRF 1200 UTC cycle. Deploy two ALAMO floats ahead of the storm.</p> <div style="text-align: center;"> </div>
Expendable Distribution	<p>Dropsondes at endpoints (EP), midpoint (MP), and centers (CTR).</p> <ul style="list-style-type: none"> ● ALAMO Float 1: 20.5N 86.2W ● ALAMO Float 2: 19.5N 86.2W
Preflight Weather Briefing	<p>Grace is a tropical storm that just cleared Jamaica and has an expanding cold cloud top burst near the center. Microwave imagery suggests it is attempting to form an inner core ring of convection. This could mean shear is lessening or the burst is working to shield its near environment to allow for further strengthening.</p> <p>Objective of this mission is to collect observations for EMC. Collaborations on this mission include additional drops for the ONR TCRI field campaign and a few Alamo floats for AOML PhOD ahead of the predicted path of the storm.</p>

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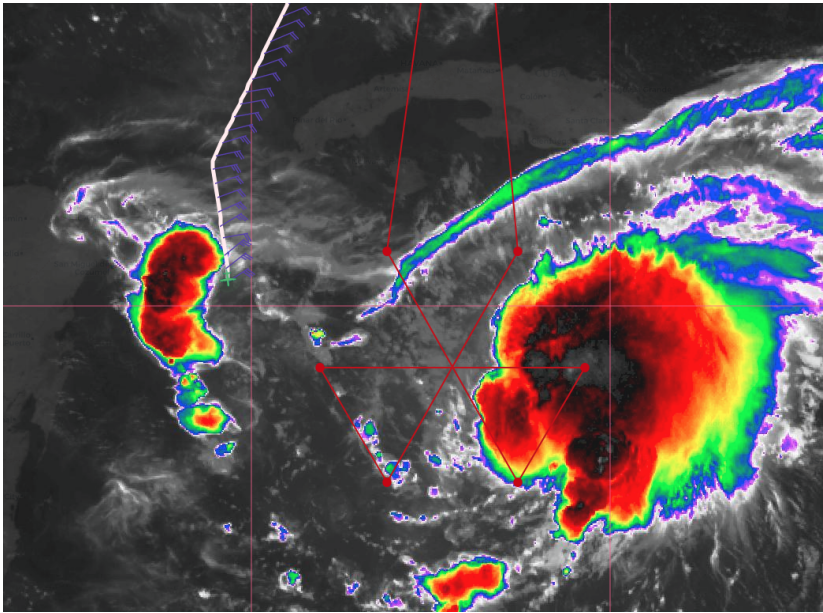
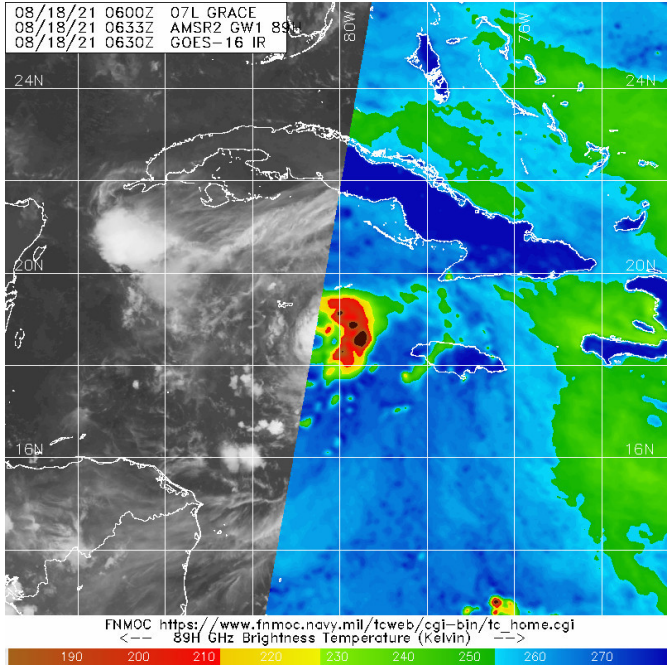
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Instrument Notes	All instruments are functional.
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IN-FLIGHT	
Time [UTC]	Event
0936	<p>Alamo float drop locations are being shifted eastward due to convective burst that formed off the Yucatan. New longitude is 85.3 (same latitudes). This location should be about 20 hours ahead of the track forecast.</p>  <p style="text-align: right; font-size: small;">GOES16 IR: 2021-08-18-0425 UTC G16 GLM Flash Count=149</p> <p style="text-align: right; font-size: x-small;">Weathernerds.org</p>

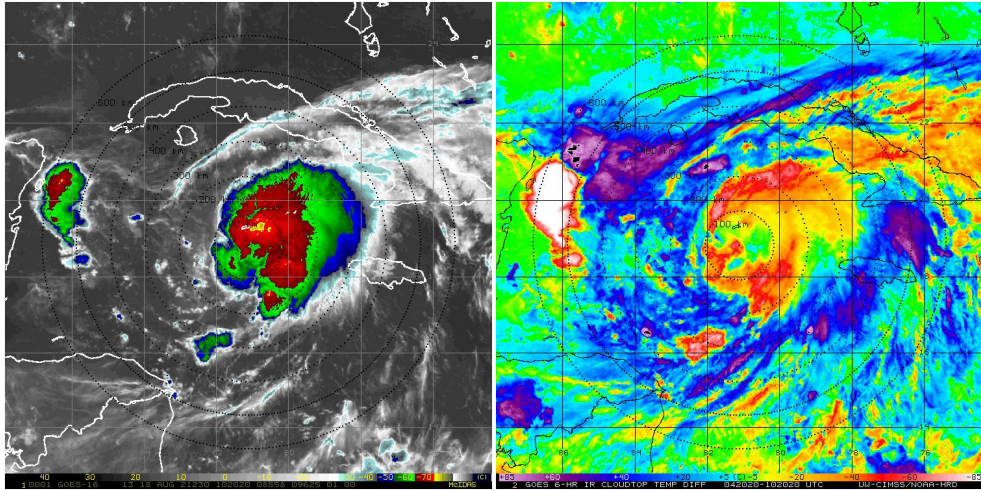
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0948	First Alamo deployed
0952	<p>89GHz partial pass of Grace shows potential signs of an inner core developing</p> 

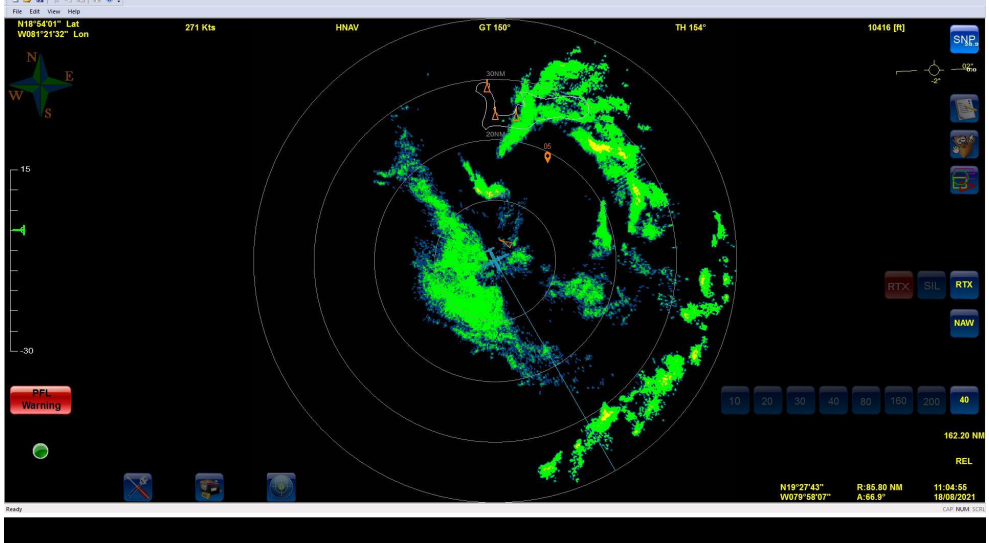
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1012	#n43rf / ash_N43FD 10:11:36Z ALAMO1 20 30 -85 20 #n43rf / ash_N43FD 10:11:38Z ALAMO2 19 30 -85 20
1033	<p>Growth of cold cloud tops on the IR satellite is substantial. Appears Grace is “pushing” back the shear and attempting symmetrization. Burst falls on the diurnal cycle 4 AM clock</p> 
1039	Drop 1, IP1, 1039Z, CH1, NW
1053	Drop 2, MP, 1053Z, CH2, NW
1106	19 04N 81 10.5W center in degrees minutes from radar on first pass Missed center because aircraft did not hunt or adjust on inbound. Future passes should be hunted.

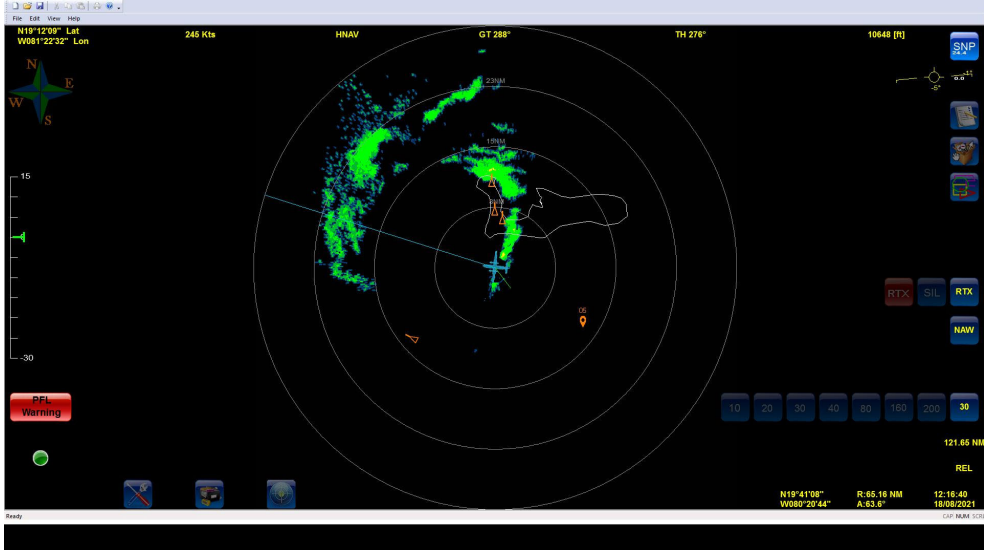
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1104	Drop 3, NOT CTR , 1104Z, CH3
1118	Drop 4, MP, 1118Z, CH4, SE
1120	Hazard avoidance-- lots of lightning
1132	DROP 5, EP1, 1132Z, CH5, SE
1200	Comms went down and interrupted TDR processing
1156	Drop 6, IP2, 1156Z, CH6, E
1210	Comms interruption may have stopped the transmission of AWIPS to NHC
1205	Drop 7, MP, 1205Z, CH7, E
1218	Drop 8, CTR, 1218Z, CH7

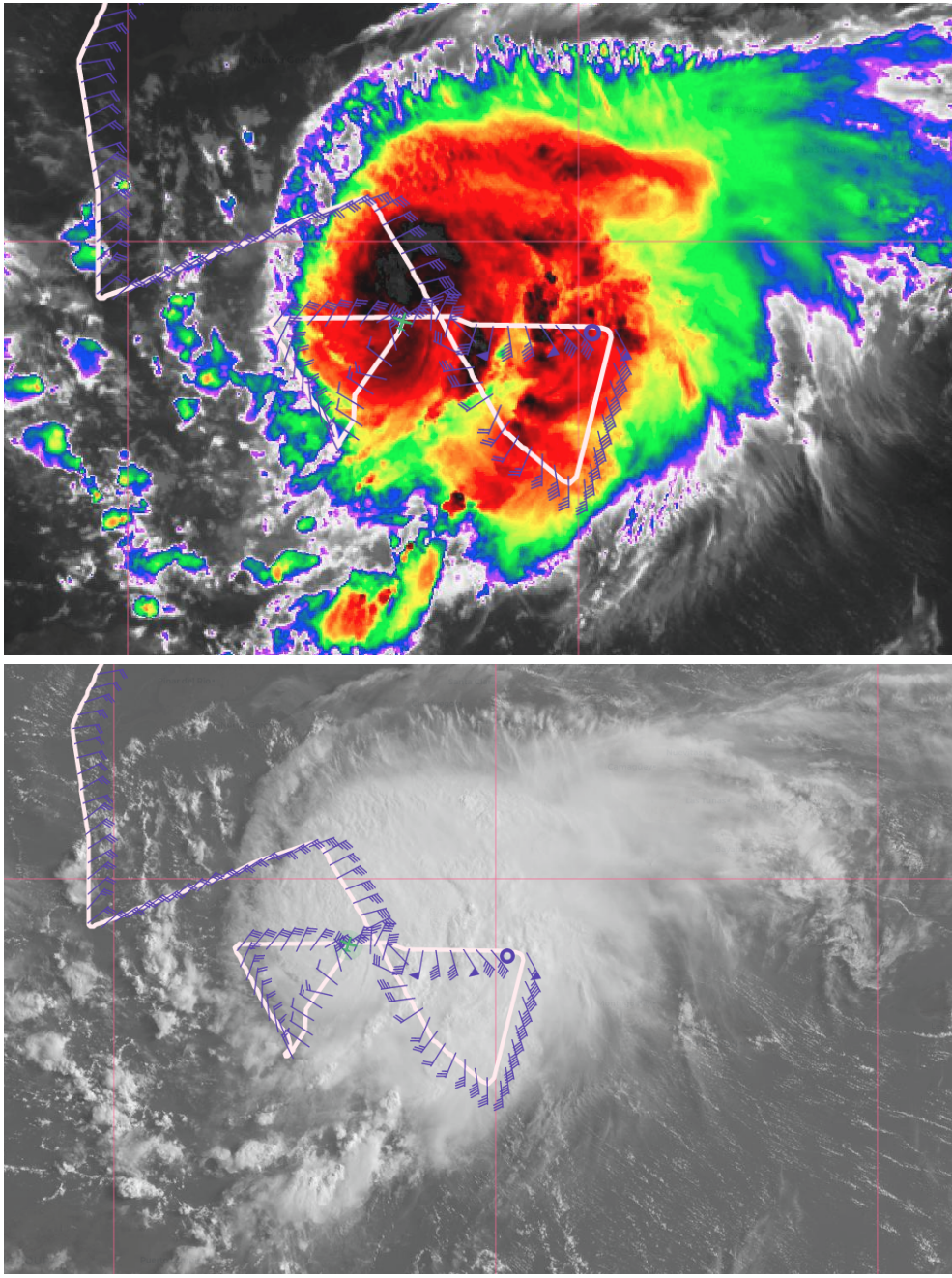
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1244	Adding extra dropsondes for TCRI at for last SW-NE pass 20 n mi before (SW) the estimated center and 20 n mi after (NE) of the center....charge both to the "ONR" sonde account
1301	First TDR analysis shows a fairly aligned mid level, signs of slight tilt below 3 km
1319	Delayed sonde release due to TEAL
1325	passed through something like a mesovortex at flight level

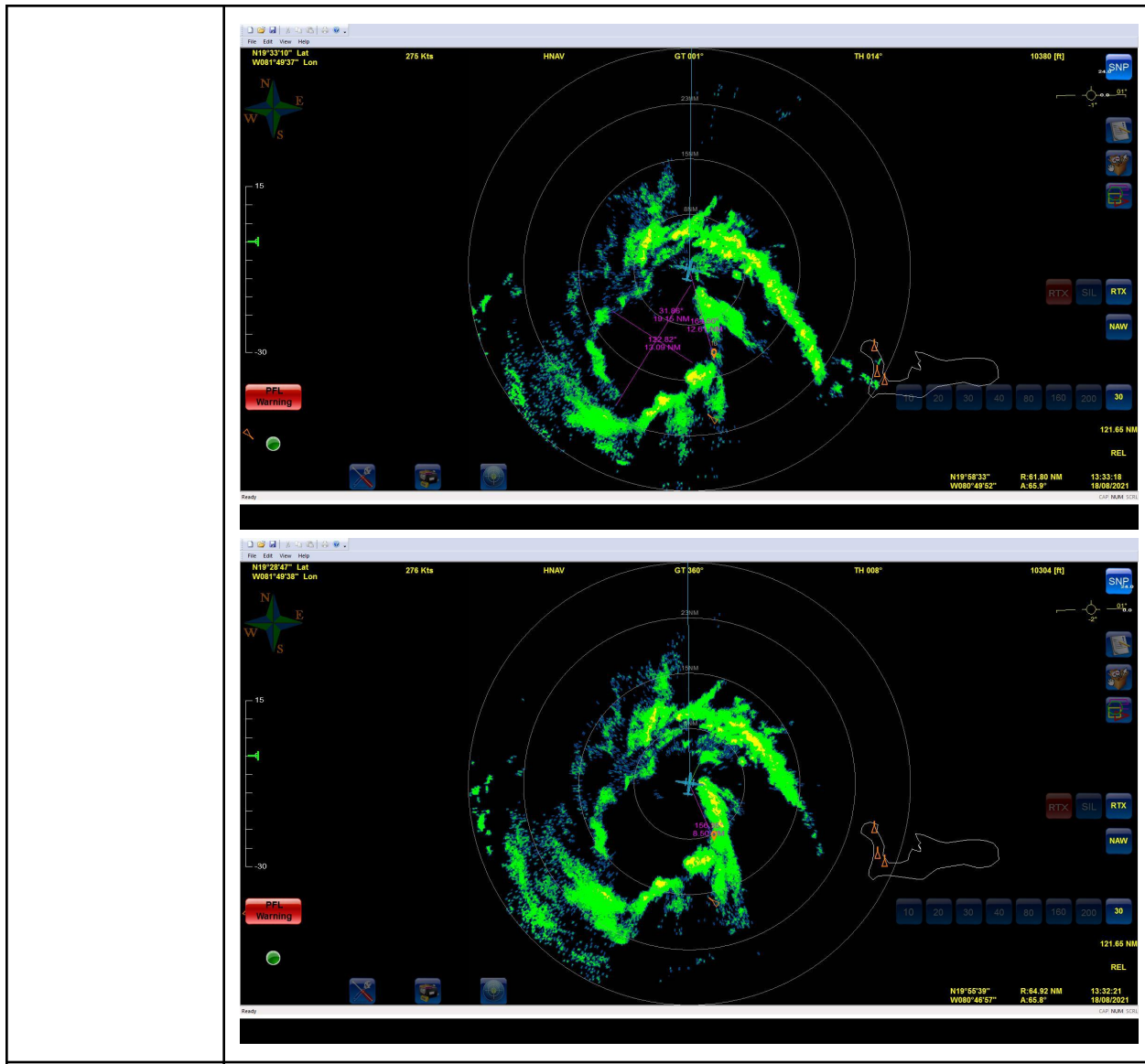
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1325	Drop 13. ONR, 1325Z, NE
1330	Drop 14, CTR, 1330Z, CH6

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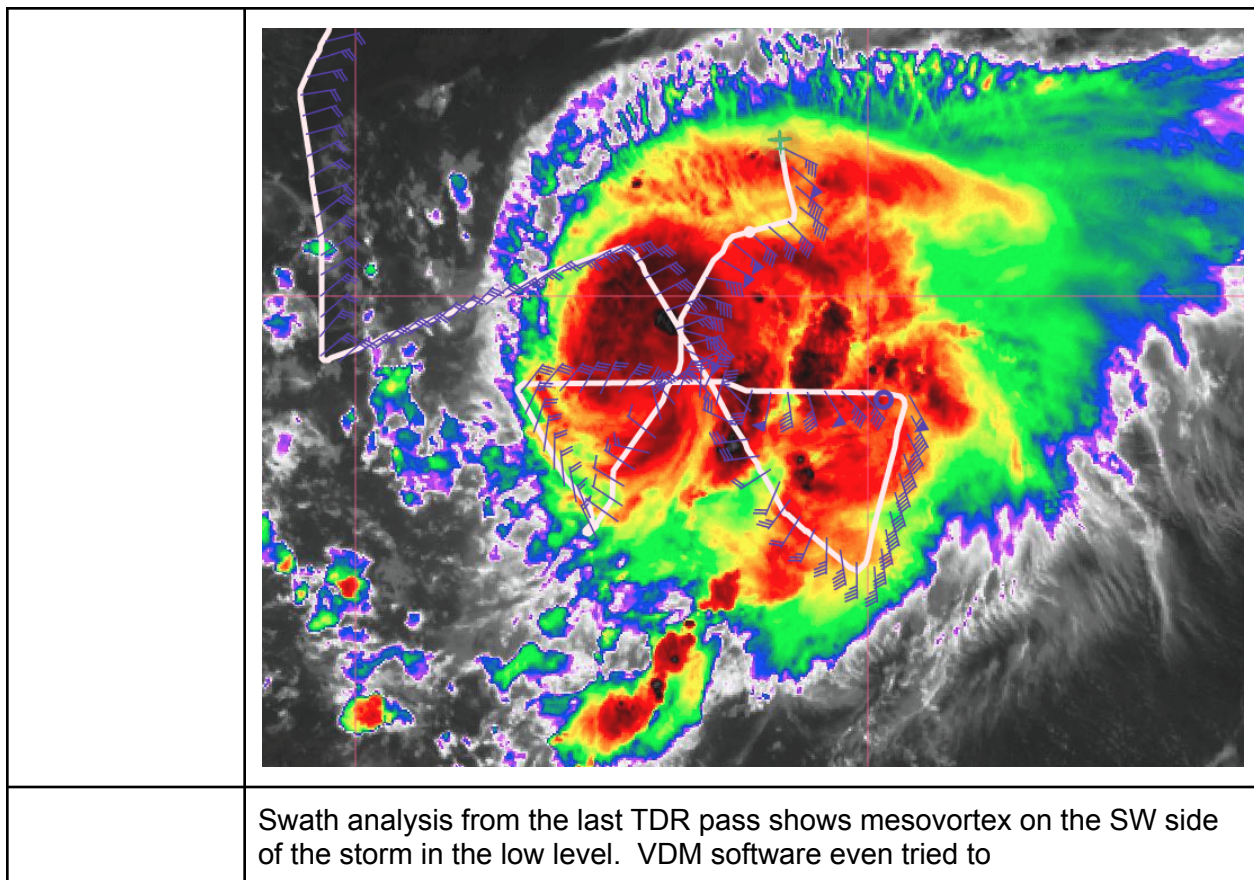
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1335	Drop 15, ONR, 1335Z, NE
1343	Drop 16, MP, 1343Z, CH8, NE
1357	Drop 17, EP3, 1357Z, CH1, NE
1406	TDR analysis ended

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<p>Flight Issues</p>	<p>#hrd / Sim_N43 14:51:59Z comms went down a few times delaying transfer of data #hrd / Sim_N43 14:52:06Z Last set of radar obs may not get off in time. #hrd / Sim_N43 14:52:54Z For me, mostly good. Radar stuff worked well. Miscommunication about hunting on first pass. #hrd / Sim_N43 14:53:19Z Big screen with MMR didn't work (flashed on and off like a disco). #hrd / Sim_N43 14:53:28Z Not that it mattered - MMR didn't #hrd / Sim_N43 14:53:42Z didn't correspond to nose, barely showed anything most of the flight. #hrd / Sim_N43 14:53:51Z Surface roughness was good, though. #hrd / Sim_N43</p>

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	<p>14:54:24Z And screen 802 freezes constantly. #hrd / Todd_N43Data 15:11:14Z lisab, the MMR, on either P-3, will attenuate in high precip. Just fact of life with this x-band system until we can get the updates done by the vendor</p>
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POST-FLIGHT	
Mission Summary	The mission flew the pattern as planned. There were 17 dropsondes released; 2 for ONR and 15 for NWS (13 transmitted).
Actual Standard Pattern Flown	Butterfly
APHEX Experiments / Modules Flown	Data collected will support the <i>Early Stage Experiment: AIPEX</i> , the Alamo floats were released in support of the <i>Ocean Observing Experiment: Sustained and Targeted Observations</i> ; and the mission was flown collaboratively with the ONR TCRI program.
Plain Language Summary	
Instrument Notes	

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Final Mission
Track

