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

FLIGHT LOG - 20210906N1

MISSION PLAN			
FLIGHT ID	20210906N1	**STORM**	AL12 / LARRY
MISSION ID	WC12A	**TAIL NUMBER**	NOAA49
TASKING	HRD	**PLANNED PATTERN**	Survey + Circumnav
MISSION SUMMARY			
TAKEOFF [UTC]	1545	**LANDING [UTC]**	2253
TAKEOFF LOCATION	St. Croix	**LANDING LOCATION**	St. Croix
FLIGHT TIME	7.1	**BLOCK TIME**	6.8
TOTAL REAL-TIME RADAR ANALYSES (Transmitted)	3 (3)	**TOTAL DROPSONDES (Good/Transmitted)**	35 (35/35)
OCEAN EXPENDABLES (Type)	None	**sUAS (Type)**	None
APHEX EXPERIMENTS / MODULES	Mature Stage Experiment: TC Diurnal Cycle		
HRD CREW MANIFEST			
LPS ONBOARD	None	**LPS GROUND**	Dunion, O'Neill, Wing
TDR ONBOARD	None	**TDR GROUND**	Reasor, Gamache
ASPEN ONBOARD	Parrish	**ASPEN GROUND**	None
NESDIS SCIENTISTS	None		
GUESTS (Affiliation)	None		
AOC CREW MANIFEST			
PILOTS	Mansour, Varwig		
NAVIGATOR	None		
FLIGHT ENGINEERS	None		
FLIGHT DIRECTOR	Kalen, Parrish		
DATA TECHNICIAN	Defeo		
AVAPS	Greene		

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PRE-FLIGHT	
Flight Plan	
Expendable Distribution	Dropsondes released at all of the green points in the above plan

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	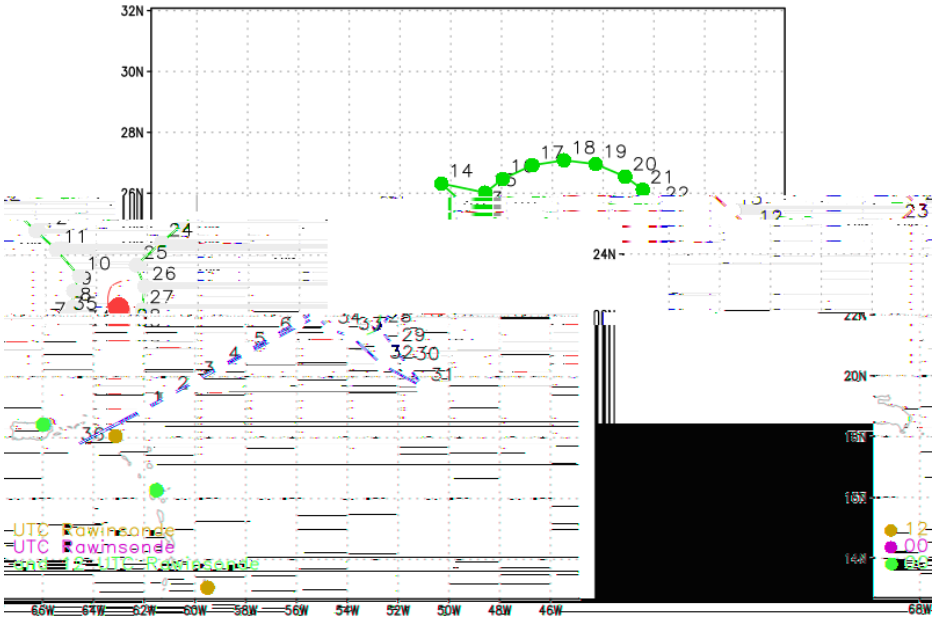
Preflight Weather Briefing	As of the 11 AM EDT NHC Advisory, Hurricane Larry has maximum sustained winds of 105 kt, an MSLP of 956 mb, is located near 22.1°N / 52.9°W, and is moving northwest at 9 kt.
Instrument Notes	None

IN-FLIGHT	
Time [UTC]	**Event**
1530	CIMSS indicates lower vertical wind shear than yesterday

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	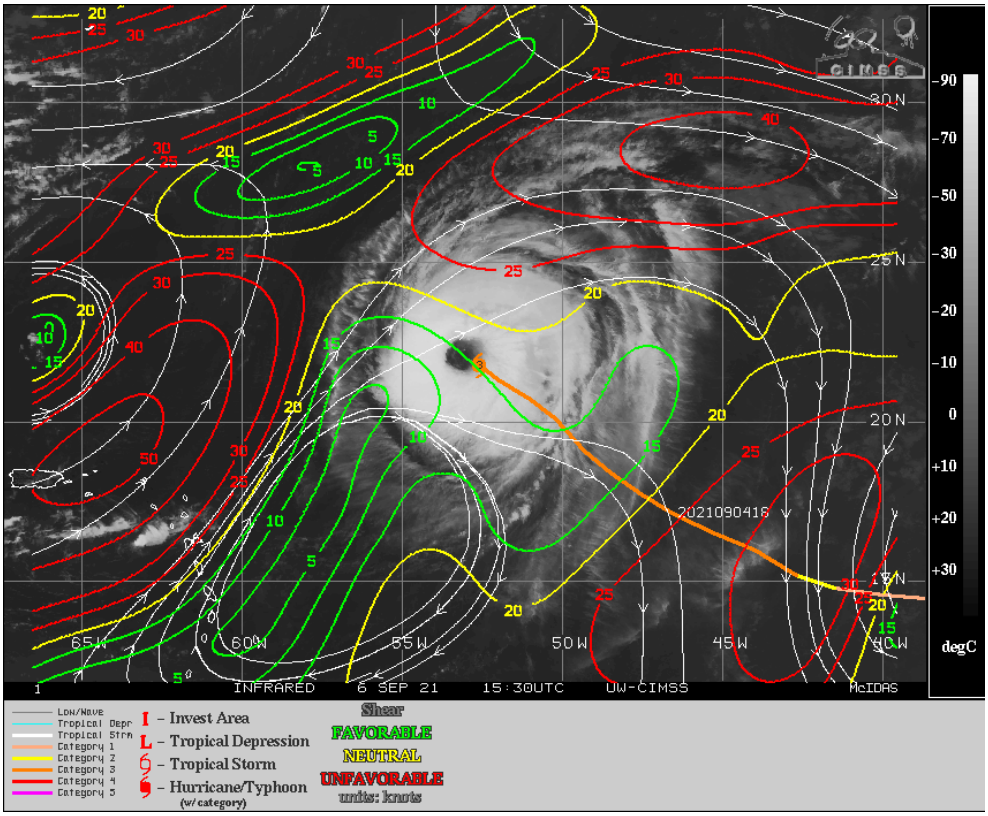
1545	Takeoff from St Croix
1600	NHC: 105 kts, moving NW at 9 kts

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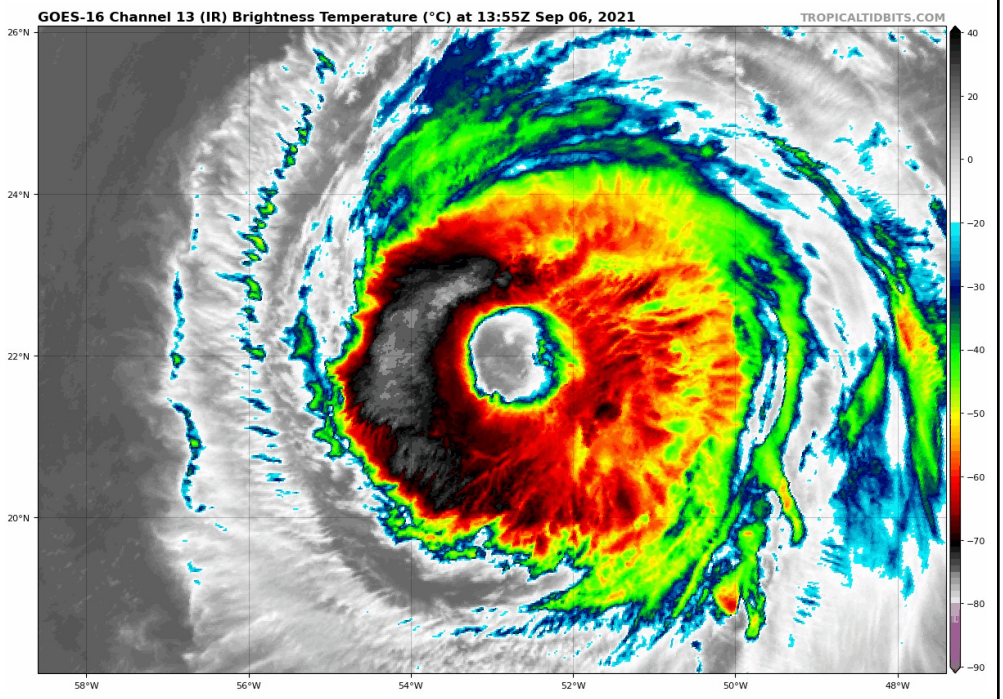
1630	
1640	First dropsonde (1612 UTC) at boundary of mid-latitude dry air and Saharan Air Layer (SAL)

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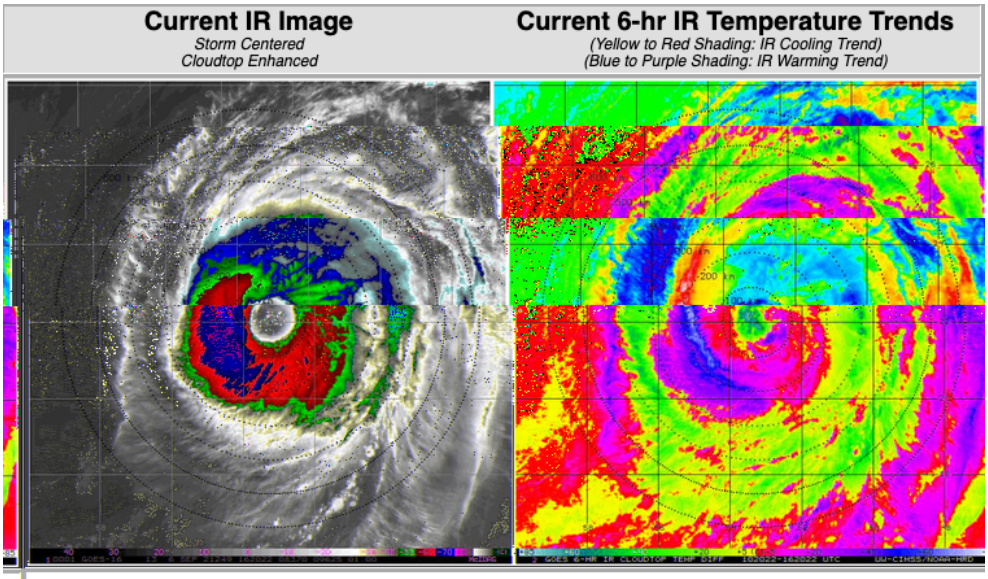
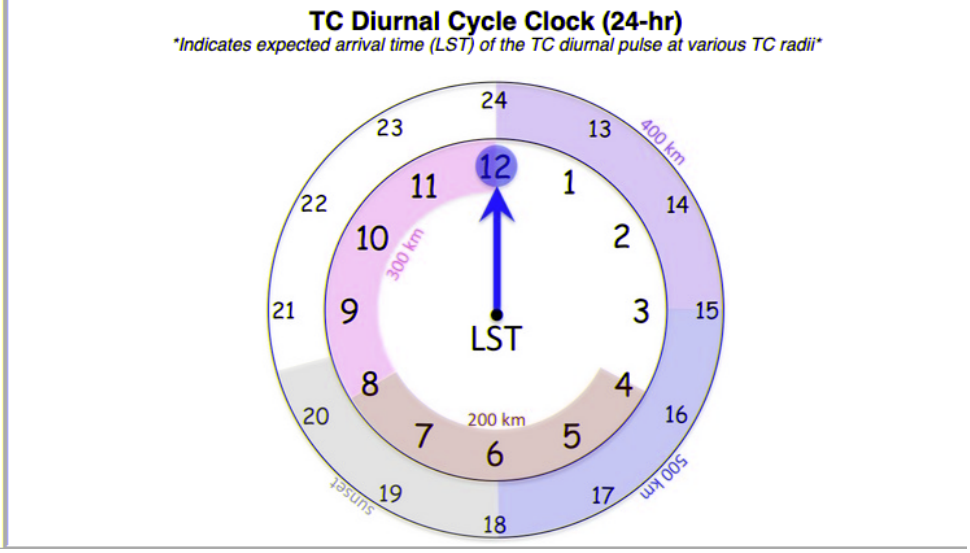
1651	Diurnal cycle ahead of schedule:





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1653	First few dropsondes all very similar trade wind BL structure, inversion a bit higher as moving northeast
1712	Flight level winds seem to be very wrong again: 

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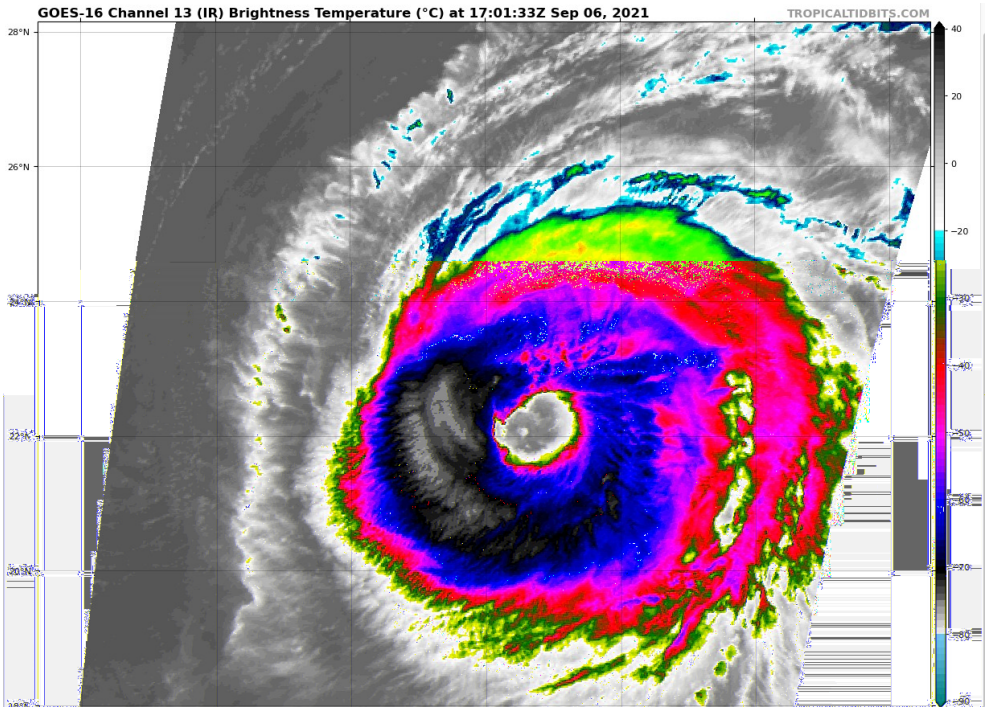
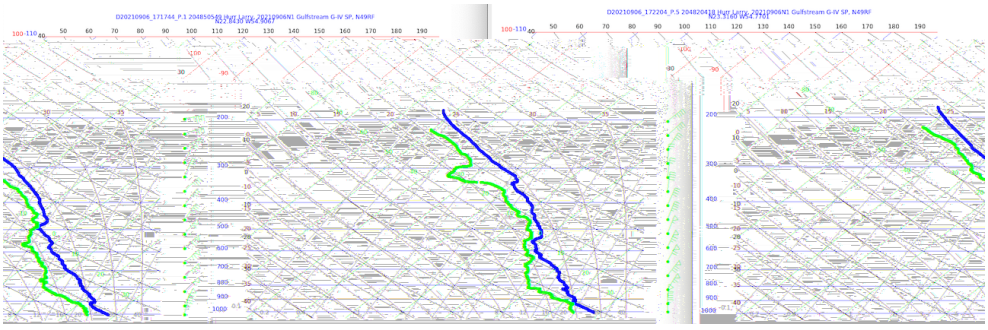
1729	Larry has potentially been exhibiting a “cloud cliff” feature for over an hour, featuring a straight-line feature from the 1pm position in the eye outward approximately ESE  Actually, I can see two of these, another is emanating from the noon position in the eye to ENE
1808	Some mid-level dry air in the inner circumnavigation west of center (sondes 9-10 at 1717 UTC & 1722 UTC, respectively) but not to the same extent as yesterday 

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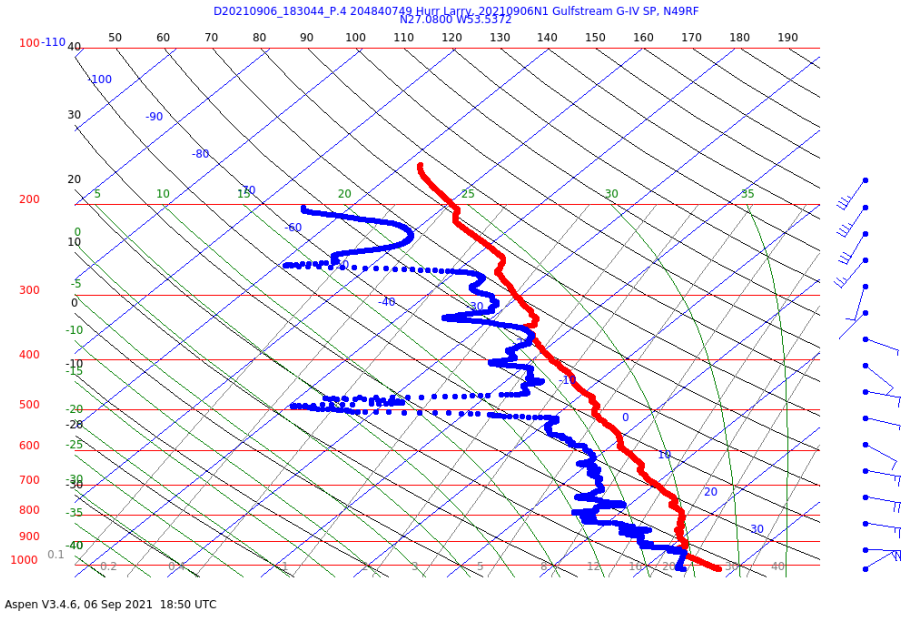
1843	Sondes 12-16 (1738Z, 1746Z, 1755Z, 1807Z, 1813Z) in the NW corner seem to have caught the outflow layer, fairly shallow southerly flow in upper most ~50 mb in sonde 12, then somewhat deeper SW flow in 13-16. 14 was dropped in the turn, pretty much in clear air, scattered Cu below per Flight Director
1900	Sonde 18 (1830 UTC) is notably moister than sonde 17 (1822 UTC) and 19 (1839 UTC) (all in Northern arc) 
1927	At WP25, turning into inner circumnav on East side of storm, at location of where that cloud cliff was, but not much visible anymore on satellite there (and no visual from the plane, in cloud)
1937	The G-IV and P-3 are near each other

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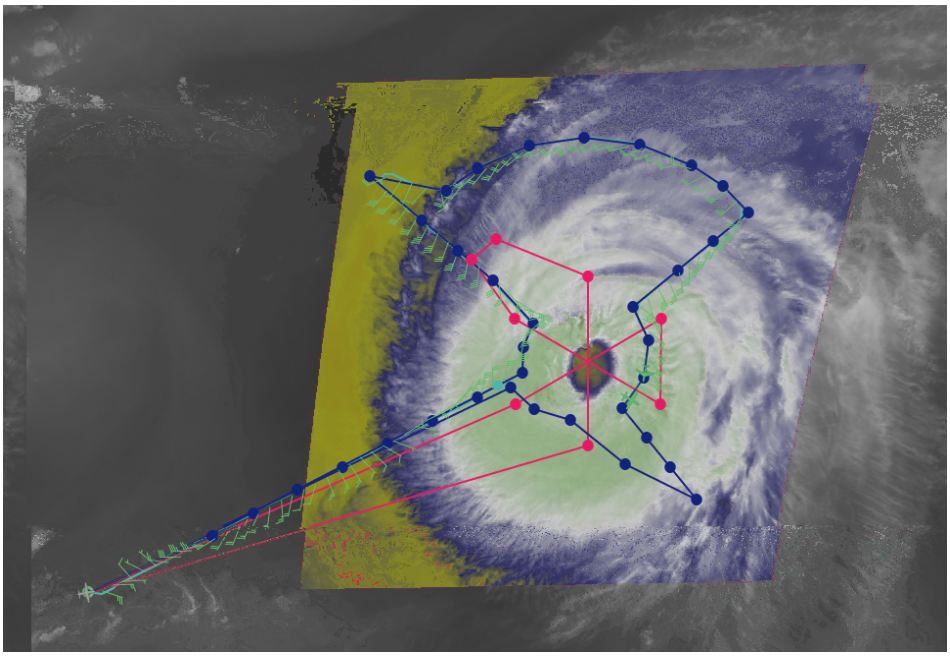
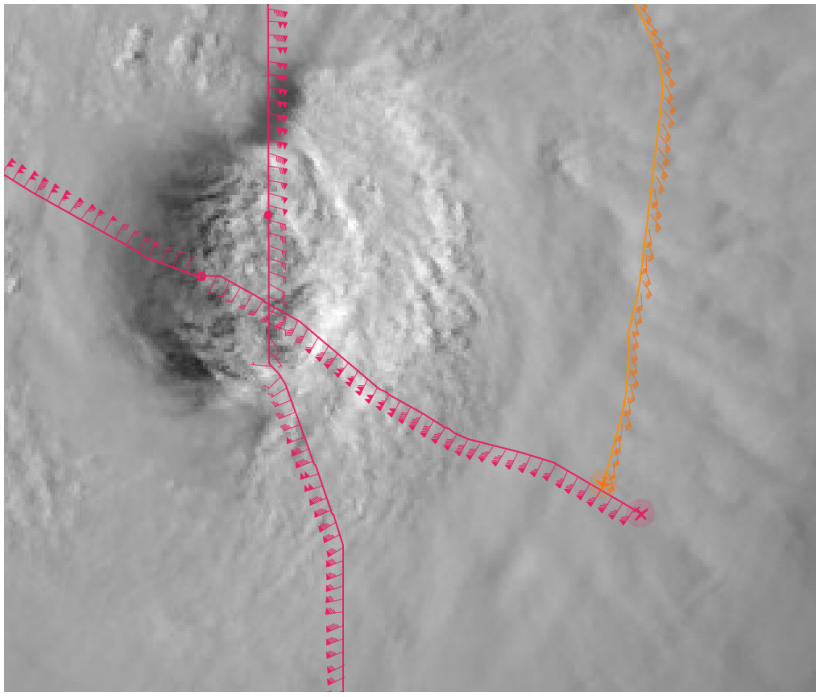
	
1939	Crew sees convective cells right on point 28, will do their best to drop at the CPA (closest point approach) on the way to point 29
1941	

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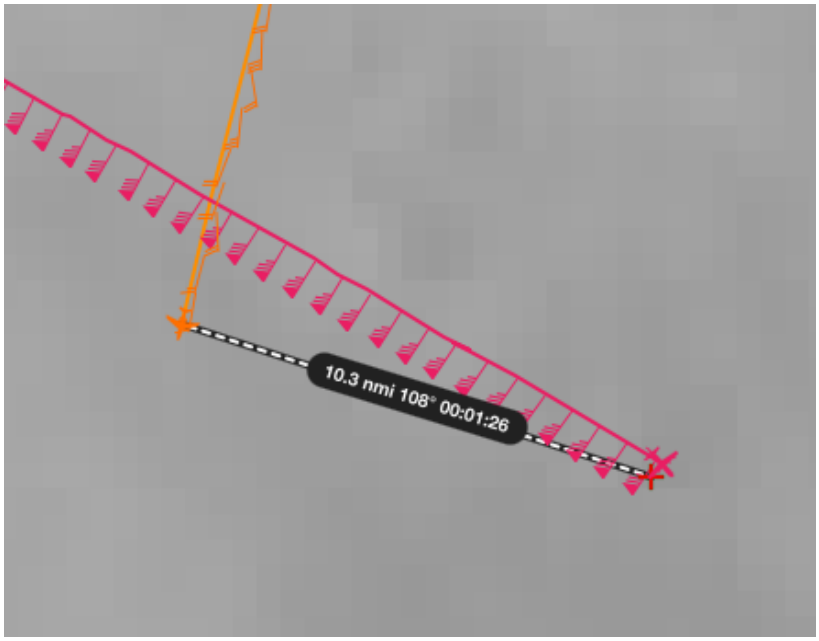
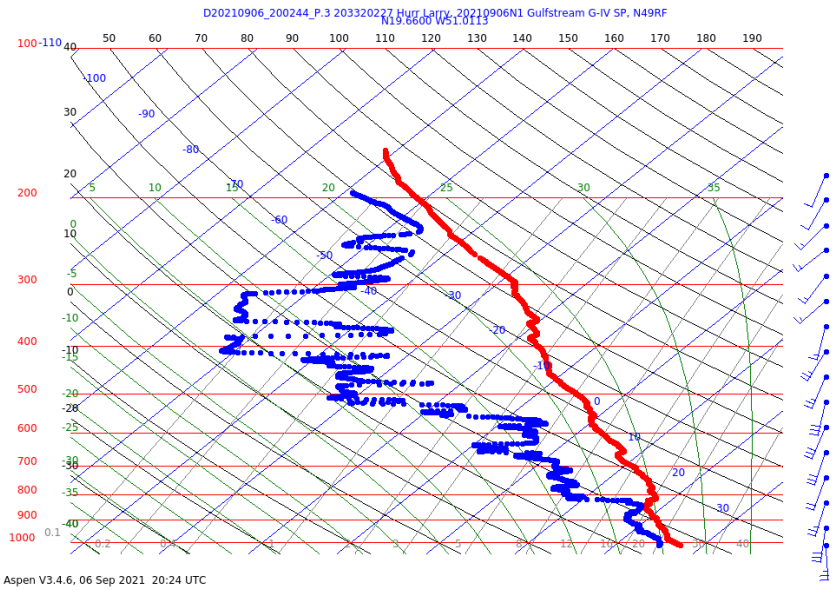
	G-IV & P-3 about to intersect  Closest was about 8 nmi.
2004	FD: in the CDO for point 31 (Southeast corner). near the top of it though, very bright, just can't see below. The sonde was pretty dry though (what we wanted with that SE corner). 

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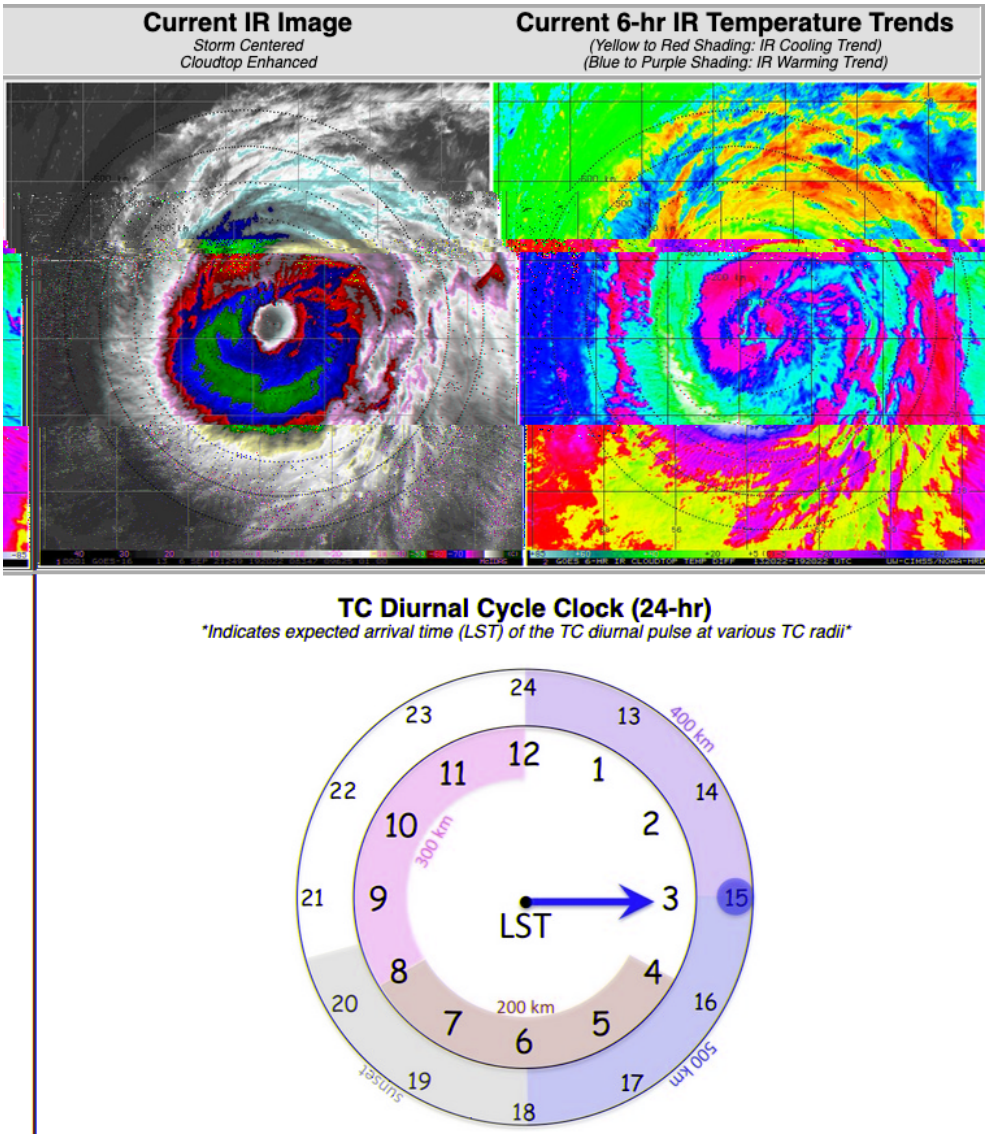
2020	Crew reports “gnarly convection within FL ORM (flight level operational risk management) at point 33”, they will do a CPA. there was a banding feature that went up pretty high which they had to avoid
2025	
2035	Flight crew says “drop 32 looks like it lost its winds below 7500 ft. RH and temp are still there though.”
2049	Last sonde away. Great sequence of TCDC flights!

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POST-FLIGHT	
Mission Summary	35 total dropsondes were released; 10 for HRD and 25 for Stanford Univ. collaboration.
Actual Standard Pattern Flown	Survey pattern with 3 Radius 90 n mi partial circumnavigations
APHEX Experiments / Modules Flown	*TC Diurnal Cycle Experiment*
Plain Language Summary	
Instrument Notes	
Final Mission Track	*Planned track with drop points (blue), actual flight track (red)*