

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

FLIGHT LOG -- 20210812H1

| MISSION PLAN | | | |
|--|-------------------------------|--|------------------|
| FLIGHT ID | 20210812H1 | STORM | AL06 / FRED |
| MISSION ID | 0506A | TAIL NUMBER | NOAA42 |
| TASKING | EMC | PLANNED PATTERN | Butterfly |
| MISSION SUMMARY | | | |
| TAKEOFF [UTC] | 0805 | LANDING [UTC] | 1447 |
| TAKEOFF LOCATION | Lakeland | LANDING LOCATION | Lakeland |
| FLIGHT TIME | 6.7 | BLOCK TIME | 7.0 |
| TOTAL REAL-TIME RADAR ANALYSES (Transmitted) | 3 (3) | TOTAL DROPSONDES (Good/Transmitted) | 14 (14/14) |
| OCEAN EXPENDABLES (Type) | None | sUAS (Type) | None |
| APHEX EXPERIMENTS / MODULES | Early Stage Experiment: AIPEX | | |
| HRD CREW MANIFEST | | | |
| LPS ONBOARD | Marks | LPS GROUND | Bucci |
| TDR ONBOARD | Marks | TDR GROUND | Fischer / Reasor |
| ASPEN ONBOARD | Wadler | ASPEN GROUND | None |
| NESDIS SCIENTISTS | None | | |
| GUESTS (Affiliation) | None | | |
| AOC CREW MANIFEST | | | |
| PILOTS | Abitbol, Shaw, Stater | | |
| NAVIGATOR | Utama, B. Richards | | |
| FLIGHT ENGINEERS | Sanchez, Stokes | | |
| FLIGHT DIRECTOR | Hathaway, Lundry | | |
| DATA TECHNICIAN | T. Richards | | |
| AVAPS | Warnecke | | |

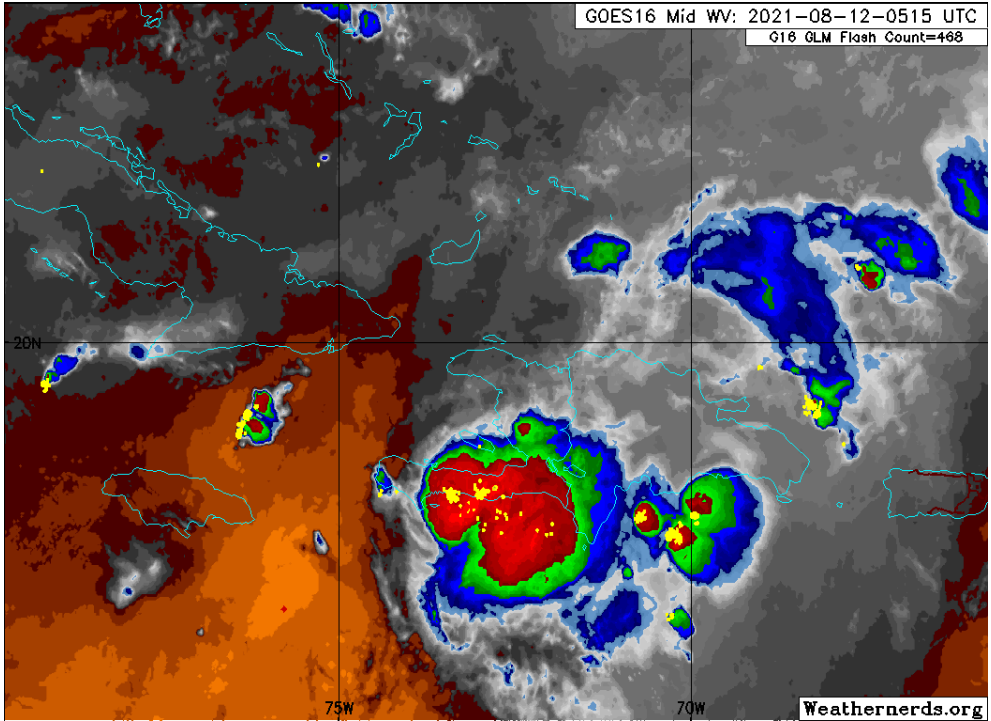
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| PRE-FLIGHT | |
|-----------------------------------|--|
| Flight Plan | <p style="font-size: small;"> ● 12 UTC Rawinsonde ● 00 UTC Rawinsonde ● 00 and 12 UTC Rawinsonde </p> |
| Expendable Distribution | Dropsondes planned to be released at endpoints (EP), midpoints (MP), and center (ctr) |
| Preflight Weather Briefing | Fred has crossed Hispaniola leaving behind the convection associated with the center to the south of Haiti. Based on Shortwave infrared satellite imagery it appears to be a low level swirl with no precipitation. |
| Instrument Notes | None |

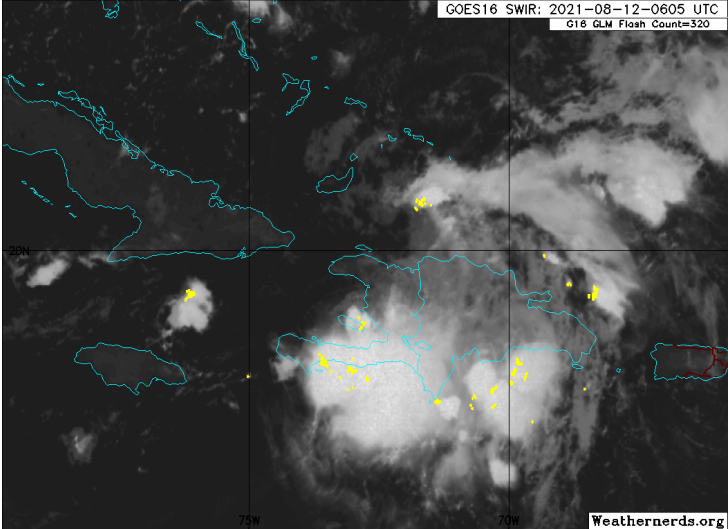
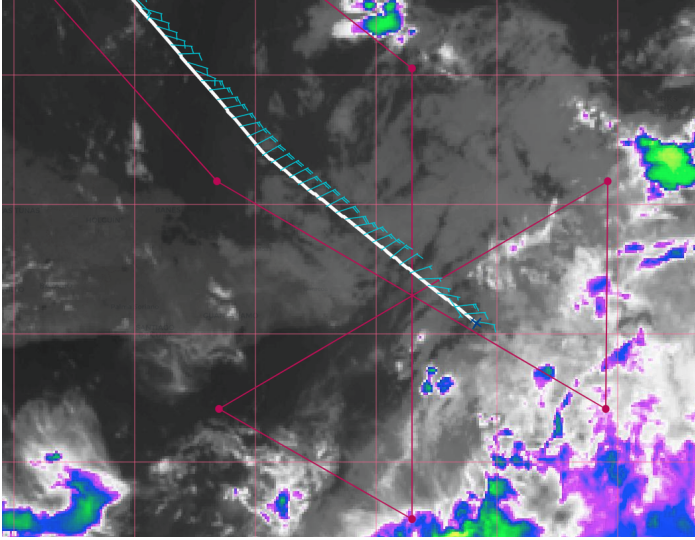
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| IN-FLIGHT | |
|------------|---|
| Time [UTC] | Event |
| 0805 | Take off from Lakeland, FL |
| 0812 | Marks extended second leg of pattern. "lisab about two hours to IP. I extended the second leg to the SE to get a drop as close to Jamaica as possible, figuring that would be a spot we would want to know what the circulation looks like. I figured leg 2 was the most important leg of the mission as it is the only one not truncated by land." |
| 0842 | <p>Circulation is decoupled from convection with the majority of cold (but warming) cloud tops remain south of Haiti. It appears the predicted and actual center will be close to one another and little/no pattern shifts will need to occur.</p>  |

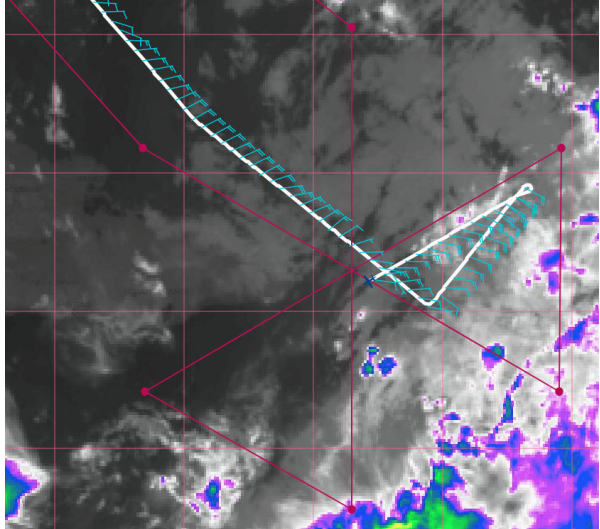
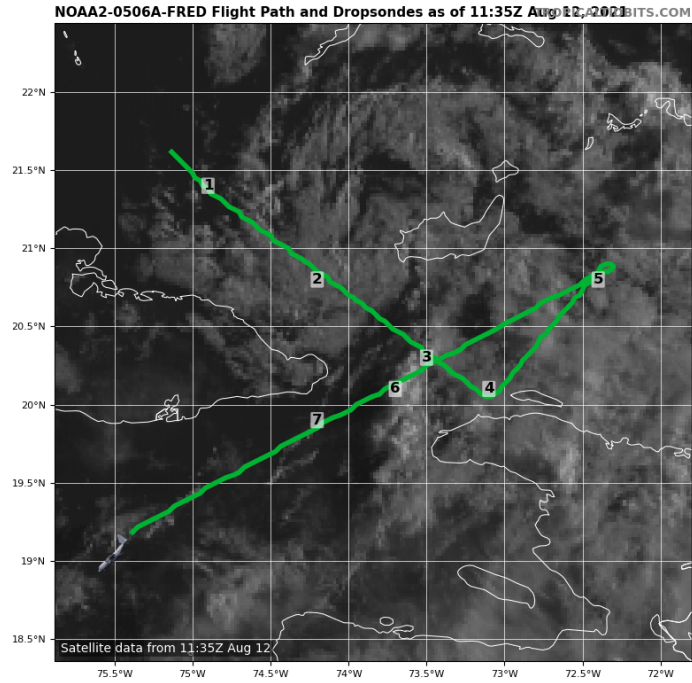
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| |  |
| 1003 | Begin pattern; arrived Initial Point (IP) at 10 kft |
| 1015 | Drop #2 0.8213,74.1535,inbound MP |
| 1022 |  <p>Climbing to 12 kft</p> |
| 1027 | Drop #3 Wadler: 20.3432,73.5122, center. waiting on confirmation from Flight Director if it should be a marked center... was not marked |
| 1033 | End of leg 1, turning to the north, drop #4 In a stratiform cloud deck, but not much precipitation |

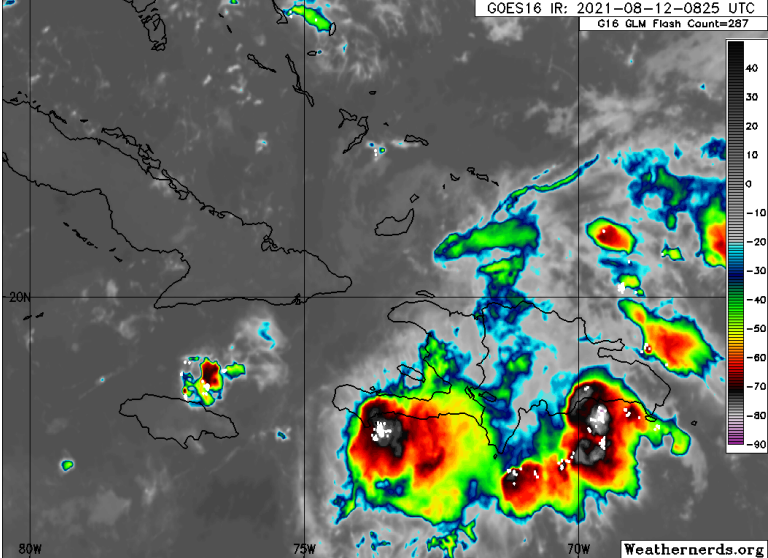
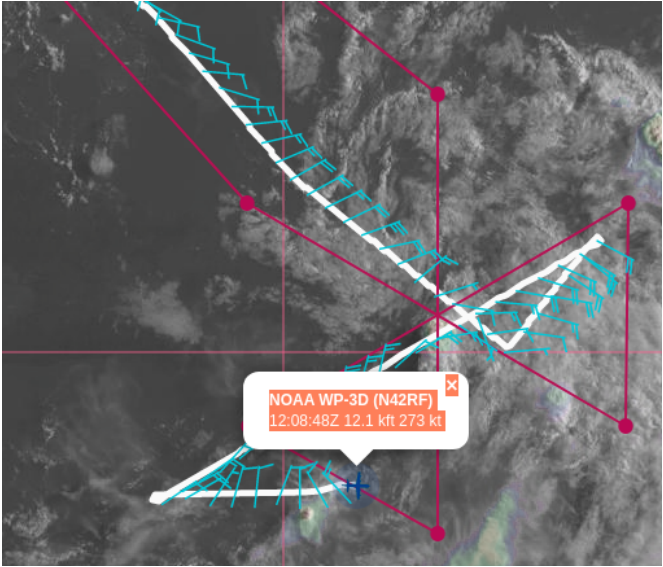
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| |  |
| 1052 | Drop #5 20.8290,72.4395, IP leg2 |
| 1110 | Drop #6 20.1439,73.7015, inbound MP leg 2 |
| 1117 | <p>Drop #7, 19.8545,74.2263, center leg 2 (more like midpoint)</p>  <p>NOAA2-0506A-FRED Flight Path and Dropsondes as of 11:35Z Aug 12, 2021 Satellite data from 11:35Z Aug 12</p> |
| 1133 | Drop #8 19.2655,75.2795, MP out leg2 |

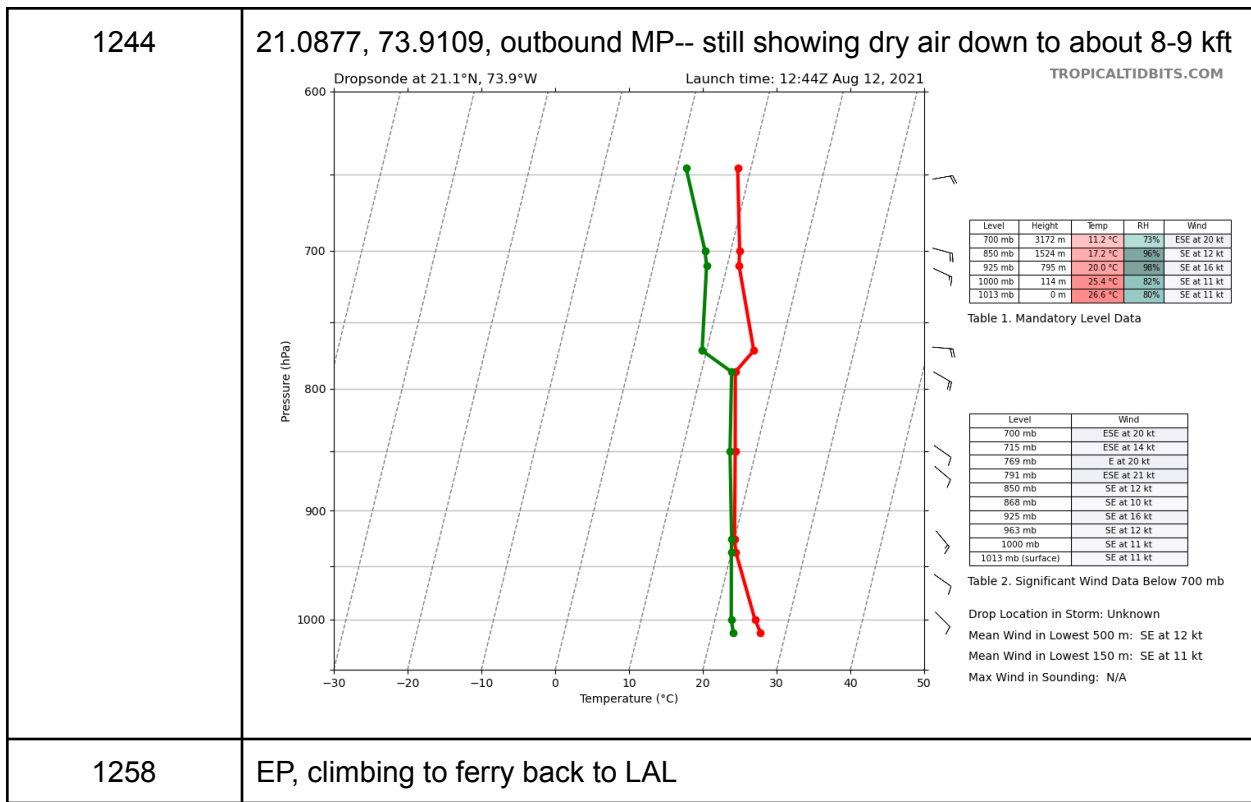
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| 1143 | Drop #9 18.8619,75.9903, EP leg2 |
| 1147 | <p>Convection over Jamaica has collapsed and ceased lightning activity</p>  |
| 1201 | TDR data is very slow to transfer. Yesterday's transfer times were ~15 minutes. Today's files are taking 35 minutes. (2nd sat comm was turned off) |
| 1206 | <p>Deviating around convection</p>  |
| 1233 | Outbound of final leg crossing over low level center 20.2701,73.9194, center pass 3 |

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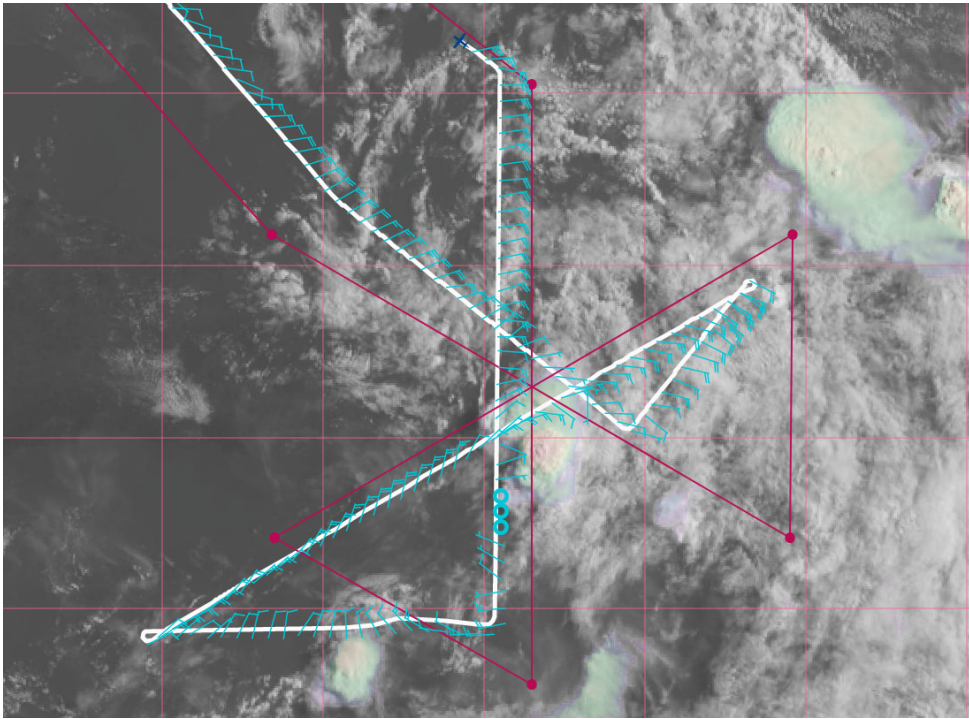
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| POST-FLIGHT | |
|------------------------|---|
| Mission Summary | <p>Low level center has decoupled from the majority of the convection (located to the southeast over Hispaniola). TDR was still able to collect some scatters at low levels despite a lack of cold cloud tops present in the IR satellite imagery. Dry air appears to be entrained into the upshear quadrant. While the thermodynamics in the downshear side do not appear to be unfavorable, there is a notable lack of convection. It is unknown if this is due to thermodynamics above the flight level or dynamic reason (interactions with the mountainous terrain of the island).</p> <p>Pattern was only slightly modified to target some convection north of Jamaica by extending the second leg. There was no center hunting and only one minor deviation occurred. Flight altitude was increased from 10 to 12 kft due to ATC issues. The Air Force flew concurrently at 5 kft.</p> <p>14 sondes deployed and transmitted (charged to NWS) 3 radar analyses created and transmitted</p> |

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|--|--|
| Actual Standard Pattern Flown | Butterfly |
| APHEX Experiments / Modules Flown | Data collection could be useful for the <i>Early Stage Experiment: AIPEX</i> |
| Plain Language Summary | This morning's mission into Tropical Depression Fred found a shallow weak system emerging from the coast of Hispaniola. NOAA P-3 aircraft collected and scientists quality controlled and transmitted data in and around the inner core of the system. |
| Instrument Notes | TDR was transmitting slowly because the second sat comm system was not turned on. There may be an issue with the land masking algorithm for the SFMR. Holbach noted that data was not transmitted regularly and T. Richards said Prosensing has a firmware update they are waiting to install. |
| Final Mission Track |  |