| **MISSION PLAN** | | | |
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| **FLIGHT ID** | 20220925I1 | **STORM** | AL09 / IAN |
| **MISSION ID** | 1109A | **TAIL NUMBER** | NOAA43 |
| **TASKING** | EMC | **PLANNED PATTERN** | Butterfly |
| **MISSION SUMMARY** | | | |
| **TAKEOFF [UTC]** | 1954 | **LANDING [UTC]** | 0301 |
| **TAKEOFF LOCATION** | Lakeland | **LANDING LOCATION** | Lakeland |
| **FLIGHT TIME** | 7.1 | **BLOCK TIME** | 7.5 |
| **TOTAL REAL-TIME RADAR ANALYSES**  **(Transmitted)** | 3 (3) | **TOTAL DROPSONDES (Good/Transmitted)** | 21 (20 / 20) |
| **OCEAN EXPENDABLES (Type)** | None | **sUAS (Type)** | None |
| **APHEX EXPERIMENTS / MODULES** | Early Stage Experiment: AIPEX | | |
| **HRD CREW MANIFEST** | | | |
| **LPS ONBOARD** | Holbach | **LPS GROUND** | None |
| **TDR ONBOARD** | Holbach | **TDR GROUND** | Gamache |
| **ASPEN ONBOARD** | Hazelton | **ASPEN GROUND** | None |
| **NESDIS SCIENTISTS** | Chang, Jelenak, Sapp | | |
| **GUESTS (Affiliation)** | None | | |
| **AOC CREW MANIFEST** | | | |
| **PILOTS** | Mitchell, Doremous, Keith | | |
| **NAVIGATOR** | Urato | | |
| **FLIGHT ENGINEERS** | Pittman, Tyson, Tuffnell | | |
| **FLIGHT DIRECTOR** | Carpenter | | |
| **DATA TECHNICIAN** | T. Richards | | |
| **AVAPS** | Warnecke | | |

| **PRE-FLIGHT** | |
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| **Flight Plan** | Pattern: Fly butterfly pattern with 105 nmi legs  Altitude: 10 kft (pressure altitude)  Potential add-on Modules: None  Expendables: 33 sondes (all dropsondes transmitted to the GTS); No ONR/NRL AXBTs  Also have the NHC 2330Z fix requirement |
| **Expendable Distribution** | Release sondes at endpoints, midpoints, centers; possible supplemental rapid RMW drops conditional upon intensification |
| **Preflight Weather Briefing** | As of 5pm ET, Ian is a 40 kt tropical storm with minimum sea-level pressure of 1003 mb moving WNW (300) at 10 kt. From 5pm NHC discussion: “Although the storm has yet to develop an inner core, the conditions over the northwestern Caribbean Sea appear very likely to support strengthening once it becomes better organized. Some dry environmental air may have limited convection today, but the GFS- and ECMWF-simulated satellite imagery indicate that deep convection will increase during the diurnal maximum period overnight. Then, significant strengthening is expected with low deep-layer shear and  high oceanic heat content along the forecast track.” |
| **Instrument Notes** | None |

| **IN-FLIGHT** | |
| --- | --- |
| **Time [UTC]** | **Event** |
| 1953 | Takeoff from Lakeland |
| 2157 | Picking through outer rain band to IP |
| 2205 | Initial Point (IP) leg 1 drop #1 |
| 2219 | Midpoint (MP) drop #2 |
|  | Seeing some sort of possible eyewall-like feature on the MMR surface mode. We are targeting that for our center but winds may end up taking us a different way. Wondering if the center might try to reform near that feature if it is in fact currently south of it |
| 2231 | RMW NW drop #3 10 m = 35 kt |
| 2232 | Center drop # 4 992 mb 155/15kt |
|  | Definitely had a nice max wind band in that "eyewall" |
| 2245 | Midpoint drop #5 |
|  | Just some scattered cells out this way in what look like rainbands |
| 2258 | Endpoint (EP) leg 1 drop #6 |
| 2324 | IP leg 2 drop #7 |
|  | Going to deviate a little S in about 20 n mi around a cellular rain band then get back on original track once we are beyond it |
| 2335 | Midpoint drop #8 |
| 2342 | RMW E drop # 9 No launch detect (Bad sonde) |
| 2343 | RMW E drop #10 10 m = 40 kt |
|  | Probably won't get a good center fix since the center is tucked up near some convection in the center. Looks hook like on MMR or comma shape |
| 2349 | Center CPA drop #11; Center was to our N tucked up in a cell within the eye |
| 0000 | Midpoint drop #12 |
| 0008 | EP leg 2 drop #13 |
| 0029 | IP leg 3 drop #14 |
| 0041 | Midpoint drop #15 |
| 0052 | Center CPA drop #16 992 mb 285/27kt |
| 005507 | RMW NE drop #17 no sfc winds |
| 005534 | RMW NE drop #18 10 m = 61 kt |
| 005604 | RMW NE drop #19 10 m = 50 kt |
| 0108 | Midpoint drop #20 |
| 0118 | EP leg 3 drop #21. Science complete |

| **POST-FLIGHT** | |
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| **Mission Summary** | Ian surprised us with a partial eyewall upon our arrival to the system this evening. On our first pass we found that the pressure had fallen substantially to 991 mb. By the last pass, the MSLP was down to about 989 mb. Peak SFMR 1-sec winds were 27.6 m/s and peak flight-level 1-sec winds were 28.3 m/s.  TDR analyses show that Ian has become more vertically aligned and the RMW has contracted inward. IR satellite imagery also depicts a more organized system. It is possible that this flight sampled Ian’s rapid intensification onset. Still seems as though some dry air may have been wrapping into the system.      Sondes: NWS: 15 ONR: 6 |
| **Actual Standard Pattern Flown** | Butterfly |
| **APHEX Experiments / Modules Flown** | With rapid intensification likely ongoing now, this data collection effort supports the *Early Stage Experiment: Analysis of Intensity Change Processes (AIPEX)*. |
| **Plain Language Summary** | * Ian was beginning to become better organized and may have been starting to rapidly intensify. * TDR analyses showed that the storm was becoming better aligned with height. |
| **Instrument Notes** | None |
| **Final Mission Track** |  |