| **MISSION PLAN** | | | |
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| **FLIGHT ID** | 20230915I1 | **STORM** | AL13 / LEE |
| **MISSION ID** | 3513A | **TAIL NUMBER** | NOAA 43 |
| **TASKING** | NHC-EMC TDR | **PLANNED PATTERN** | Butterfly |
| **MISSION SUMMARY** | | | |
| **TAKEOFF [UTC]** | 0844 | **LANDING [UTC]** | 1610 |
| **TAKEOFF LOCATION** | KILM | **LANDING LOCATION** | KILM |
| **FLIGHT TIME** | 7.4 | **BLOCK TIME** | 7.6 |
| **TOTAL REAL-TIME RADAR ANALYSES**  **(Transmitted)** | 3 (3) | **TOTAL DROPSONDES Deployed (Transmitted)** | 21 (20) |
| **OCEAN EXPENDABLES (Type)** | n/a | **sUAS (Type)** | 1 Altius-600 |
| **APHEX EXPERIMENTS / MODULES** | RICO SUAVE (Altius) | | |
| **HRD CREW MANIFEST** | | | |
| **LPS ONBOARD** | J. Zhang | **LPS GROUND** | None |
| **TDR ONBOARD** | J. Zhang | **TDR GROUND** | Reasor |
| **ASPEN ONBOARD** | Dahl | **ASPEN GROUND** | n/a |
| **NESDIS SCIENTISTS** | n/a | | |
| **GUESTS (Affiliation)** | Cione, Josh Wadler (Embry-Riddle), Sosa (Altius), Owens (Altius) | | |
| **AOC CREW MANIFEST** | | | |
| **PILOTS** | Copare/Keith/Wood | | |
| **NAVIGATOR** | Utama | | |
| **FLIGHT ENGINEERS** | Tyson/Tufnell | | |
| **FLIGHT DIRECTOR** | Kalen/Lundry | | |
| **DATA TECHNICIAN** | Richards | | |
| **AVAPS** | Warneke/Kotz | | |

| **PRE-FLIGHT** | |
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| **Flight Plan** | *Pattern: Butterfly pattern with 105 NM legs*  *Altitude:*   * *8 or 10 kft (pressure altitude) depending on AF deconfliction requirements*   *Potential add-on APHEX Modules: (time permitting)*   * *Altius sUAS (RICO SUAVE)*   + *Drop at WP 1-2 center, establish comms between Altius & the P-3, continue reminder of TDR butterfly pattern* * *No additional research due to AOC crewing limitations* |
| **Expendable Distribution** | *Expendables:*   * *Load 30 dropsondes*   + *Release at endpoints, midpoints, centers, RMWs (charged to NWS)*   + *1 dropsonde near wave drifter #1 if possible (GOMO)*   + *Additional drops may be requested at the discretion of the onboard HRD LPS*   + *All dropsondes transmitted to the GTS* * *No AXBTs* |
| **Preflight Weather Briefing** | *Observations from an Air Force Reserve Unit Hurricane Hunter*  *aircraft indicate that Lee's eyewall is not well defined, and this*  *is also suggested by geostationary satellite and microwave imagery.*  *Although the peak 700 mb flight-level winds reported by the plane*  *were near 93 kt, the highest SFMR-observed surface winds were 72 kt.*  *Thus the winds aloft in the hurricane are not being transported*  *very effectively to the surface. This is not surprising, since the*  *central deep convection is no longer very strong. The current*  *intensity is kept at 75 kt based on the aircraft data, which is*  *well above the Dvorak satellite estimates.*  *Lee wobbled a bit to the northeast early this evening, but the*  *longer-term motion appears to be just east of north, or around*  *010/12 kt.*  *[South-southwesterly shear is predicted to increase significantly*  *over Lee during the next couple of days. This, along with cooler*  *SSTs, particularly after the system moves north of 40N latitude,*  *should result in weakening. However, baroclinic processes could*  *help the cyclone maintain its intensity, or at least slow the*  *weakening rate.*      *Lee appears to be in the very initial stages of extratropical*  transition. The cloud pattern is becoming increasingly asymmetric,  and scatterometer data from last evening showed a band of strong  winds developing along a boundary to the northwest of the center.  Lee's initial intensity remains 75 kt based on continuity from last  evening's reconnaissance and scatterometer data.  Lee has been wobbling a bit since yesterday afternoon, but the smoothed motion is northward (010 degrees) at a faster speed of 14 kt.  Although southerly shear is forecast to increase markedly through  the day, baroclinic influences during Lee's extratropical transition  are likely to keep the intensity relatively steady for the next 24  hours or so. Extratropical transition is forecast to be  complete by 36 hours (although it could be sooner), and Lee is  likely to be weakening--but still near or just below hurricane  force--as it is approaching Nova Scotia due to the continued shear  and much colder ocean temperatures. |
| **Instrument Notes** | TDR: working  SFMR: working  MMR: working  WSRA: not working |

| **IN-FLIGHT** | |
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| **Time [UTC]** | **Event** |
| 0745 | GOES-16 IR image (0745 UTC) |
| 0844 | Take-off from KILM |
| 1016 | N43 (red) at IP while N49 (blue) is just finishing its inner circumnavigation (NHC Synoptic Surveillance). Flight patterns are quite complimentary for TDR and dropsonde coverage. |
| 0859 | Radar status update - Run radar start\_script  Checked TDR display, confirmed radar running well |
| 0859 | Run radar start\_script |
| 0907 | Changed route, time to IP will be 30 minutes shorter than planned |
| 0910 | Altius folks started working on the preparation |
| 0931 | Altius launch dry run- went through the pre-launch check list |
| 0935 | Went through flight plan again, Jun call the RMW sonde, then pre-launch list checking, then release Altius and dropsonde |
| 1001 | Started descent to IP |
| 1015 | IP #1 SW-NE Pass Drop#1 |
| 1020 | Storm moving faster than expected, so we adjusted the inbound leg azimuth to head to the real time center |
| 1026 | Mid-pt SW Drop#2 |
| 1030 | Altius pre-launch check verification complete at 1031 |
| 1033 | RMW SW Drop#3 (not real RMW) |
| 1044 | Altius real time launch check list |
| 104431 | Altius launched and Drop #4 |
| 104453 | Launch Altius complete |
| 1045 | Center fix hunting started – flight level wind |
| 104519 | We lost the Altius no comm and it went to the water straight down. The last data recording height is 260 ft |
| 1047 | Center Drop #5 Center sonde: sfc p 963 mb sfc wind 035 at 7 kt |
| 1048 | Altius and P3 communication status update; Patrick confirmed the Altius is in the water. We’ll continue the flight pattern as planned. |
| 1057 | RMW NE Drop#6 combined with midPT  flight-level wind is ~72 kt |
| 1112 | End-PT NE Drop#7 |
| 1152 | IP #2 N-S Pass Drop#8, no launch detection |
| 1154 | Backup of IP2 Drop#9 |
| 1207 | Mid-pt N Drop#10 |
| 1211 | RMW N Drop#11 |
| 1216 | 2nd CENTER Drop#12 – FL and surface wind relatively high |
| 1219 | RMW S Drop#13 |
| 1230 | Mid-PT S Drop#14 |
| 1243 | End-PT S Drop# 15 |
| 1312 | IP#3 SE-NW Pass Drop#16 |
| 1325 | Mid-pt and EYEwall combined SE Drop#17 |
| 1335 | 3rd Center Drop#18 |
| 1343 | RMW NW Drop#19 |
| 1347 | Mid-pt NW Drop#20 (wind is higher than RMW) extra tropical transition |
| 1400 | End-pt NW Drop#21 last sonde Science complete |
| 1407 | TDR composites from 101441-140700 UTC. |

| **POST-FLIGHT** | |
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| **Mission Summary** | *[Short description of interesting observations from the flight; what objectives were successful? What was unsuccessful? Was the planned pattern flown? What deviations occurred?*  *[Don’t forget to fill in Tables on page 1]*  *[Sonde and ocean expendable accounting: how many total of each? How many are charged to each account?]* |
| **Actual Standard Pattern Flown** | *[Butterfly, Rotated Figure-4, Lawnmower, etc]* |
| **APHEX Experiments / Modules Flown** | *[Linked to HFP Plan; fill in regardless of whether the mission was operationally or research tasked]* |
| **Plain Language Summary** | *[Boil down the above into a couple of bullet points in “plain language”. This will help us when we report to management & OAR Public Affairs and prepare storm mission summaries]* |
| **Instrument Notes** | *[Notes about instrument status from during and after the mission]* |
| **Final Mission Track** |  |