| **MISSION PLAN** | | | |
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| **FLIGHT ID** | 20240713I1 | **STORM** | AEW1 / MAGPIE |
| **MISSION ID** | WAWXA MAGPIE01 | **TAIL NUMBER** | NOAA-43 |
| **TASKING** | HRD | **PLANNED PATTERN** | Survey36 |
| **MISSION SUMMARY** | | | |
| **TAKEOFF [UTC]** | 1426 | **LANDING [UTC]** | 2050 |
| **TAKEOFF LOCATION** | BGI/TBPB | **LANDING LOCATION** | BGI/TBPB |
| **FLIGHT TIME** | 6.4 hours | **BLOCK TIME** | Get from onboard LPS or Flight Director |
| **TOTAL REAL-TIME RADAR ANALYSES**  **(Transmitted)** | N/A | **TOTAL DROPSONDES Deployed (Transmitted)** | 36 (34) |
| **OCEAN EXPENDABLES (Type)** | 3 NRL AXBTs (3 good) | **sUAS (Type)** | N/A |
| **APHEX EXPERIMENTS / MODULES** | GENESIS STAGE EXPERIMENT; Favorable Air Mass (FAM) Experiment | | |
| **HRD CREW MANIFEST** | | | |
| **LPS ONBOARD** | Hazelton | **LPS GROUND** | Alaka/Looney |
| **TDR ONBOARD** | N/A | **TDR GROUND** | N/A |
| **ASPEN ONBOARD** | N/A | **ASPEN GROUND** | Sippel |
| **NESDIS SCIENTISTS** | N/A | | |
| **GUESTS (Affiliation)** | Melvin (MAGPIE student), Venne (French Documentary), Chafton (French Documentary) | | |
| **AOC CREW MANIFEST** | | | |
| **PILOTS** | Rannenberg (Pilot); Wood/Ellis (co-pilots) | | |
| **NAVIGATOR** | Utama/Dunford | | |
| **FLIGHT ENGINEERS** | Stokes/Ripp/Santoni | | |
| **FLIGHT DIRECTOR** | Englert/Zawislak | | |
| **DATA TECHNICIAN** | Richards | | |
| **AVAPS** | Dykeman/Santoni | | |

| **PRE-FLIGHT** | |
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| **Flight Plan** | *[Insert image of ONR/TCRI detailed pattern image, if available]* |
| **Expendable Distribution** | *[Describe planned dropsonde, ocean buoy, sUAS deployment locations; e.g., “Dropsondes/AXBT combo drops at endpoints, midpoints, and center”* |
| **Preflight Weather Briefing** | Band 9 from G16  *[Notes from the Flight Crew Preflight Briefing and other relevant notes about the current and forecasted storm state from the most recent NHC advisory (location, intensity, MSLP, movement, possible intensity change during the flight)]*  *[Briefly describe the relevant environmental drivers.]*  *[Copy in GIF of recent (~6 hr) satellite loops (https://www.star.nesdis.noaa.gov/GOES/index.php)]* |
| **Instrument Notes** | *[What instruments are working, not working, not functioning nominally, not installed?]*  First 16 old sondes, rest at new minisondes |

| **IN-FLIGHT** | |
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| **Time [UTC]** | **Event** |
| 1426 | Take-off from TBPB |
| 1427 | Ascending to 7500 ft to begin first leg |
| 1458 | Dropsonde 1 CH1 |
| 1508 | Dropsonde 2 CH2 |
| 1510 | 29C SST on AXBT (BT1) at point 2 |
| 1517 | Shallow clouds at Point 19 - 20, more convection around 17.2 N, 65.62 W, isolated light convection near point 15  G16, Band 13 (‘Clean IR’) |
| 1519 | Dropsonde 3, CH3 |
| 1530 | Drosponde 4, CH4 |
| 1532 | 29C SST on AXBT (BT2) at point 4 |
| 1540 | Dropsonde 5 CH5 |
| 1542 | Descending to 600 ft |
| 1542 | 29.1C SST on AXBT (BT3) at point 5 |
| 1549 | Starting spiral up to 21k ft, loiter at 14k ft for ~5 min |
| 1550 | Reporting being able to see Sargassum from P3 while flying that low |
| 1552 | Convection ~75 km WNW of point 20. 11 min ferry there. Still 2.5 hours until there and convection is only ~30 min old, so uncertain on where/how it will be then |
| 1556 | Next drop at top of spiral |
| 1600 | Convection at 16.11N, 64.33W sparked interest of LPS (Andy), FD and LPS considering it as initial guess for racetrack |
| 1606 | Loitering at 14k ft for 5 min, then complete spiral to 21k ft…FD noted “That’s some nice haze” |
| 1610 | Based on visual estimate, at top of the haze |
| 1621 | ‘New’ convection firing 16.5N, 65.2W  (Glider marked not under current consideration for flyover) - Lev |
| 1621 | Dropsonde 6 CH6 |
| 1622 | Finished spiral, did drop 6 and starting S-N leg |
| 1627 | Dropsonde 7 CH7 |
| 1634 | Dropsonde 8 CH8 |
| 1640 | Dropsonde 9, CH1 |
| 1647 | Dropsonde 10, CH2 |
| 1653 | Dropsonde 11, CH3 |
| 1654 |  |
| 1654 | Turned westbound for E-W leg |
| 1703 | Dropsonde 12, CH4 |
| 1714 | Dropsonde 13, CH5 |
| 1715 | Drop 14 will be last drop of the old sondes |
| 1719 | Radar from Puerto Rico showing lots of smaller convection to the SW |
| 1724 | Dropsonde 14, CH6 (should be last of older sondes) |
| 1727 | Plan to dip after sonde release (point 15) at 21k ft down to 14k ft, then back up to 21k ft for next release (just past point 16) |
| 1734 | Dropsonde 15, CH7 (should be start of the minisondes) |
| 1742 | Climbing back up WP16 |
| 1745 | Dropsonde 16, CH8 |
| 1754 | Dropsonde 17, CH1 |
| 1756 | Racetrack after point 20 is nixed, instead going for the west of the island gap between St. Lucia and St. Vincent (between point 22 and 23)  IP: 13.8N, 62W  EP: 13.7N, 61.5W  Turn to south at EP, then back to IP  IP2: 13.5N, 61.5W  EP2: 13.6N, 62W |
| 1757 | Plan to do a second dip after sonde release (point 18) at 21k ft down to 14k ft, then back up to 21k ft for next release (just past point 19) |
| 1805 | Dropsonde 18, CH2 |
| 1809 | Change Racetrack to IP2 → EP2 → IP1 → EP1, making it a box |
| 1817 | Dropsonde 19, CH3 |
| 1827 | Dropsonde 20, CH4 |
| 1845 | Add 4 intermediate drops between WP21 & WP22 maintaining altitude |
| 1846 | Add drop at 14.3N along planned track, Add drop at 13.9N along planned track, then start modified racetrack for 2 laps:  13.7N, 61.5W → head south → 13.2N, 61.5W → head west → 13.3N, 62.6W → turn north → 13.7N. 62.6W → head east to original point  Expendables on every corner + 1 mid on longer zonal legs  Loop twice |
| 1900 | Adjust drop 22 to 14.6N to be in the wake of Martinique |
| 1909 | Dropsonde 21, CH5 |
| 1912 | Dropsonde 22, CH6 |
| 1916 | Dropsonde 23, CH7 |
| 1920 | Dropsonde 24, CH8 |
| 1923 | Dropsonde 25, CH1 |
| 1923 | No convection popping up in the island wake region, if that continues, may only do single racetrack lap |
| 1925 | guidance to do best to fly racetrack at 1k ft above cloud tops (based on visual and radar) |
| 1926 | Dropsonde 26, CH2 |
| 1927 | Cloud top estimate is 15-16k ft |
| 1930 | Dropsonde 27, CH3 |
| 1931 | Tiled GOES imagery of racetrack points (likely older visible image from GOES) |
| 1934 | Dropsonde 28, CH3 (should be CH4) |
| 1937 | Dropsonde 29 CH5 |
| 1939 | Descending to 16k ft for the box, no decision yet from ground about 1 or 2 laps around the box |
| 1940 | Not much convection visually |
| 1944 | Dropsonde 30, CH6 |
| 1947 | After lap around box, heading to WP23 |
| 1952 | For the racetrack, instead of looping at each drop, can cut the corners and bag WP23, also bag the inbound/outbound legs from Ragged Point |
| 1954 | Dropsonde 31, CH7 (no temp backup on CH8) |
| 1955 | Dropsonde 32 CH8 |
| 1956 | Last sonde was bad one, so dropped a backup |
| 1958 | Backing up racetrack sondes |
| 1959 | Dropsonde 33, CH1 |
| 2004 | No go for the second lap around the racetrack. Return to base following finishing the first loop of the racetrack |
| 2004 | Dropsonde 34, CH2 |
| 2011 | Dropsonde 35, CH3 |
| 2018 | Dropsonde 36, CH4 |
| 2021 | TDR and w-band shut down |
| 2026 | Totals: 36 sondes, 35 good, 1 no temperature, all charged to ONR |
| 2110 | Dropsonde 36 had issues in terms of pressure list |
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| **POST-FLIGHT** | |
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| **Mission Summary** | The main goal of this mission was to work with MAGPIE to sample an African easterly wave and the Saharan air layer. For most of the mission, the P-3 was above 20 kft (~475 mb) to maximize sampling of the troposphere. The P-3 flew across moisture boundaries between the SAL and its adjacent maritime tropical environment. In addition, MAGPIE and APHEX objectives were met by descending the P-3 between drop points to fly through the SAL. Also, a racetrack module was set up to sample the evolution of a shallow convective line. Very dry air (< 25%) observed in some of the soundings on the northern side of the flight pattern.  Expendables:   * 36 total dropsondes: 34 good, 1 no temperature, 1 pressure out of order, all charged to ONR * 3 AXBTs: 3 good (all w/ SST) |
| **Actual Standard Pattern Flown** | Survey Pattern |
| **APHEX Experiments / Modules Flown** | Genesis > FAM > MAGPIE  [2024HFP\_GenesisStage\_Flight\_Patterns\_FAM.pdf](https://drive.google.com/file/d/1xHNMsLK3LRk9NqMbiaRvNWQ8JCJxnbyz/view?usp=drive_link) |
| **Plain Language Summary** | This HRD-tasked research mission was carried out in collaboration with the MAGPIE program. For most of the mission, the P-3 was above 20 kft (~475 mb) to maximize sampling of the African easterly wave and the Saharan air layer throughout much of the troposphere. The P-3 flew across moisture boundaries between the SAL and its adjacent maritime tropical environment. In addition, MAGPIE and APHEX objectives were met by descending the P-3 between drop points to fly through the SAL. Also, a racetrack module was set up to sample the evolution of a shallow convective line. |
| **Instrument Notes** | All instruments worked as expected |
| **Final Mission Track** | Final flight track with altitude colored |