2023 NOAA/AOML/HRD Hurricane Field Program - APHEX

MATURE STAGE EXPERIMENT
Flight Pattern Description

Experiment/Module: TDR Dual-PRF in Hurricanes Module

Investigator(s): Paul Reasor and John Gamache

Requirements: Categories 2–5

Mature Stage Science Objective(s) Addressed:

1) Test new (or improved) technologies with the potential to fill gaps, both spatially and temporally, in the existing suite of airborne measurements in mature hurricanes. These measurements include improved three-dimensional representation of the hurricane wind field, more spatially dense thermodynamic sampling of the boundary layer, and more accurate measurements of ocean surface winds [*APHEX Goal 2*]

P-3 Pattern #1

What to Target: Eyewall and eye region

When to Target: The eyewall should fit within a standard TDR swath [*maximum* distance from the flight track to the swath edge is 27 n mi (50 km)].

Pattern: Any standard P-3 pattern with inbound-outbound radial legs. The P-3 flies a short pass through the eyewall and eye. Time permitting, repeat a short pass along a different azimuth for diversity of measurements.

Flight altitude: 8-12 kft

Leg length or radii: Inbound-outbound radial legs out to 40-50 n mi (75-90 km)

Estimated in-pattern flight duration: 0.5-1 h

Expendable distribution: No expendables are required.

Instrumentation Notes: TDR task settings should be set to utilize 3:2 ratio dual-PRF (2775 and 1850 Hz) during the module. This will extend the Nyquist velocity from 22 m/s to approximately 44 m/s. All other settings should be the standard HRD task settings. No TDR products will be transmitted during the module.