

2019 NOAA/AOML/HRD Hurricane Field Program - IFEX

GENESIS STAGE EXPERIMENT *Flight Pattern Descriptions*

Experiment/Module: Favorable Air Mass (FAM) Experiment

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Requirements: Pre-genesis disturbances (pre-TDs), including NHC-designated “Invests”

Genesis Stage Science Objective(s) Addressed:

The overarching objective is to investigate if a pre-genesis disturbance has matured into a TC, including the organization of convection and the development of a closed low-level circulation.

- 1) To investigate the favorability in both dynamics (e.g., vertical wind shear) and thermodynamics (e.g., moisture) for tropical cyclogenesis in the environment near a pre-TD, especially the downstream environment [*IFEX Goal 3*]

P-3 Pattern 1:

What to Target: The environment near a pre-TD or “invest”, especially ahead of the pre-TD’s trajectory. In most cases, this will be the environment to the west and north of a pre-TD.

When to Target: Every 12 h. Could be every 6 h if it is determined that the environment is evolving rapidly and aircraft/crew availability allows it. Sample when pre-TD is at or west of 45°W.

Pattern: Lawnmower

Flight altitude: 15-20 kft

Leg length or radii: 600-1000 n mi (1100-1850 km) x 150 n mi (275 km) with the longer leg oriented approximately perpendicular to the trajectory of the pre-TD. The length of the longer leg should be set based on an analysis of the environment to be measured.

Estimated in-pattern flight duration: 3-6 h depending on the number of lawnmower legs

Expendable distribution: Dropsonde every ~150 n mi (280 km)

Instrumentation Notes: Use straight flight legs as safety permits. DWL should be downward looking, 20° off nadir. See attached figure for more information.

G-IV Pattern 1:

What to Target: The environment near a pre-TD or “invest”, especially ahead of the pre-TD’s trajectory. In most cases, this will be the environment to the west and north of a pre-TD.

When to Target: Every 12 h. Sample when pre-TD is at or west of 35°W.

Pattern: Lawnmower

GENESIS STAGE EXPERIMENT
Flight Pattern Descriptions

Flight altitude: 40-45 kft

Leg length or radii: 600-1000 n mi (1100-1850 km) x 150 n mi (275 km) with the longer leg oriented approximately perpendicular to the trajectory of the pre-TD. The length of the longer leg should be set based on an analysis of the environment to be measured.

Estimated in-pattern flight duration: 3-6 h depending on the number of lawnmower legs

Expendable distribution: Dropsonde every ~150 n mi (280 km)

Instrumentation Notes: Use straight flight legs as safety permits. See attached figure for more information.

