



CARCAH 2025 Tropical Season Recon Summary

Warren Madden
Chief, Aerial Reconnaissance Coordination, All Hurricanes
(CARCAH, 53WRS/OL-A)



CARCAH

2025 Season Summary



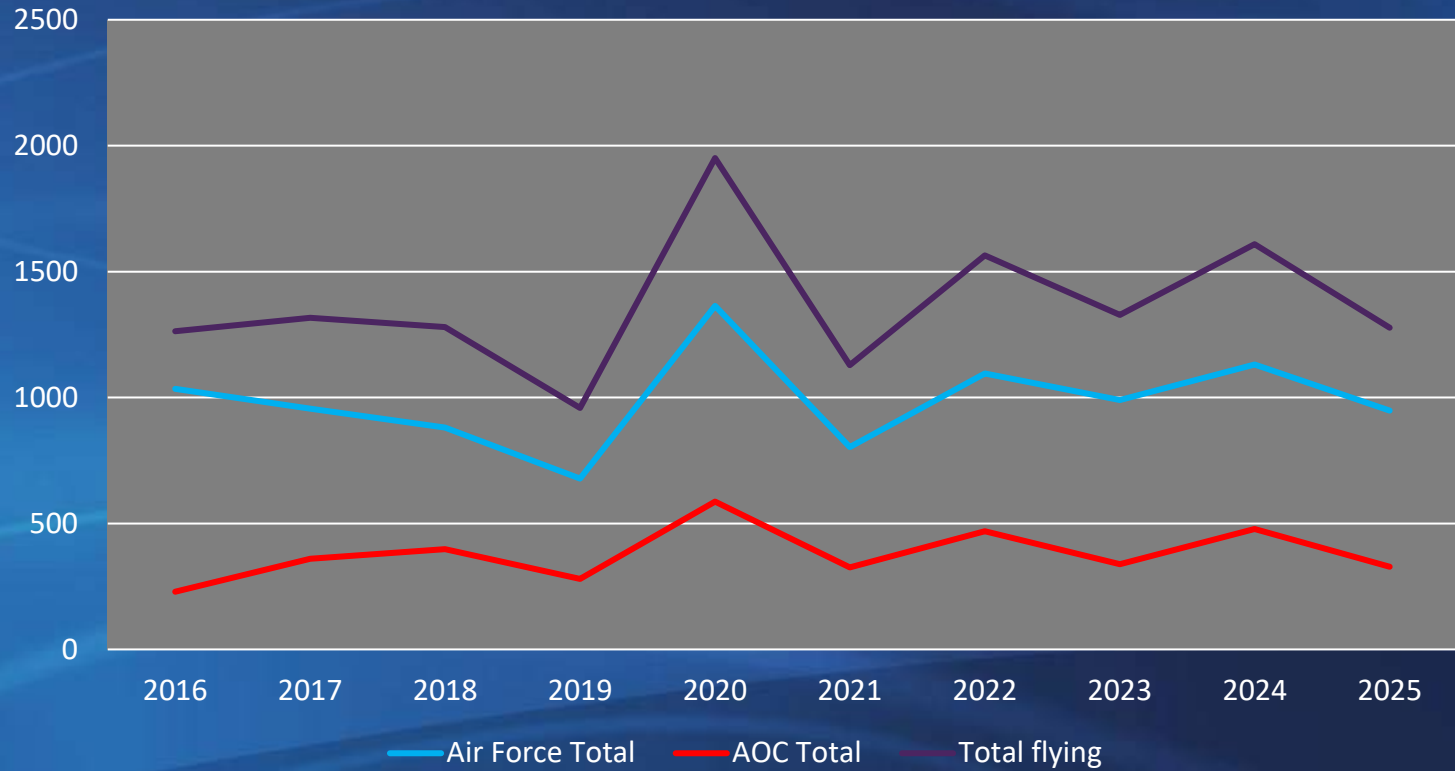
- Tasked requirements: 148 Atlantic, 12 Pacific
- Unmet demand: 1 Atlantic
- Accomplished(Degraded): 138(5) Atlantic, 11(1) Pacific
- Missed: 5 Atlantic, 0 Pacific
- Missions flown: 108 Atlantic, 9 Pacific
- Hours flown: 1124.2 Atlantic, 152.9 Pacific
- 1277.1 total hours (7th highest in last 10 years, 21th overall)



10 Year Trend

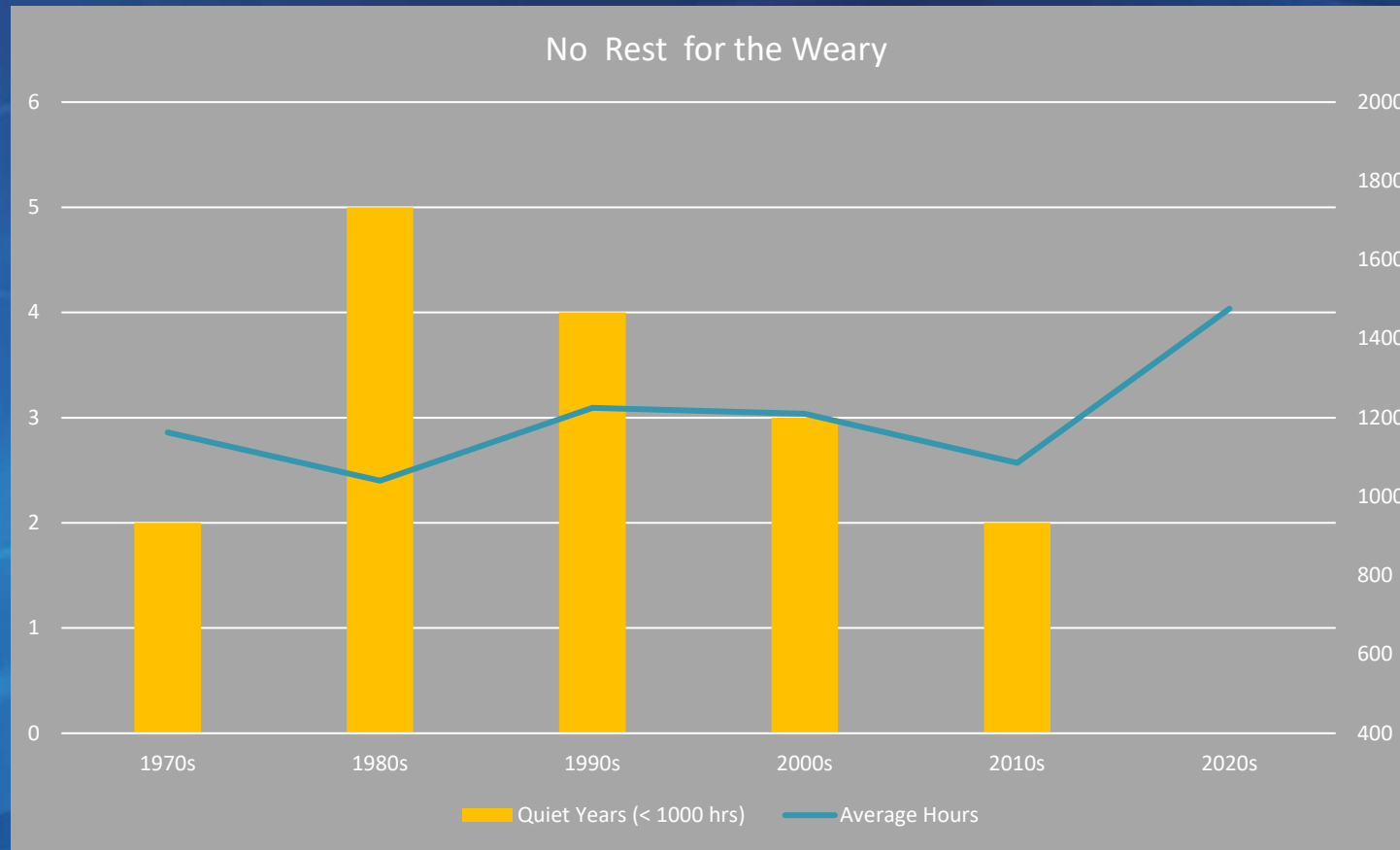


Tropical Season Flying Hours 2016-2025



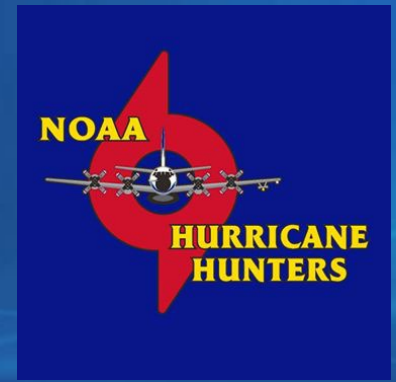


No Rest for the Weary





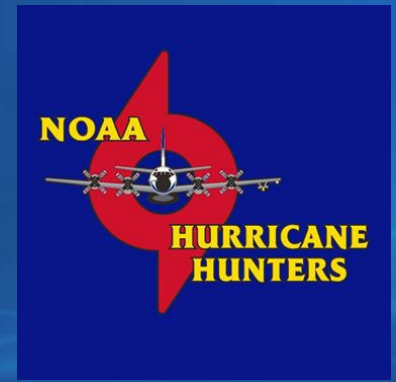
Noteworthy Events & Trivia



- No CONUS Hurricane Landfalls
- Limited Pacific flying
- 3 Atlantic Cat 5s (Erin, Humberto, Melissa)
- Melissa goes from mess to monster (892mb, tied for 3rd lowest in the Atlantic)
- Imelda and Humberto do Fujiwhara dance



Seasonal Successes



- Excellent coordination between squadrons
- Augmentees/ARWOs provided CARCAH support
- Additional sUAS deployments
- Flexibility in forward basing



Seasonal Challenges



- Maintaining mission capability through extended government shutdown
- Loss of CARCAH 4th slot
- Loss of use of TISX
- Aircraft Maintenance challenges



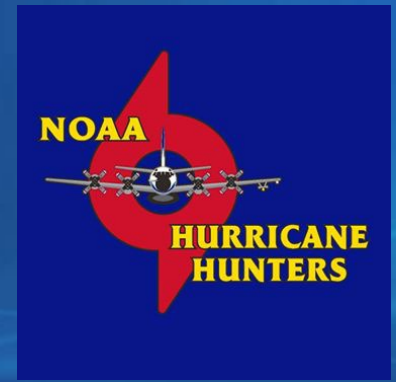
CARCAH issues



- Continued need for augmentation
- SATCOM glitches still need to be addressed
- Software update needed
- Changing of the guard at end of 2026



One Last Thing...

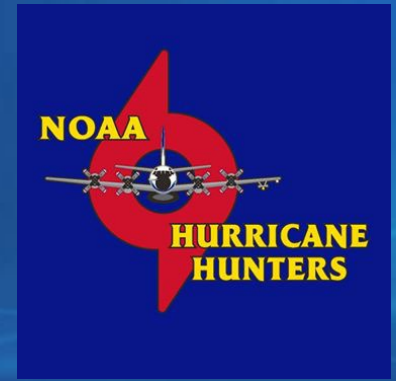


Melissa became the 7th member of the Atlantic sub-900mb club, but it fell 10mb short of reaching the record.

Hurricane Wilma set that record of 882mb just over 20 years prior to Melissa's run at it. The Teal mission that night made 3 penetrations into Wilma, and each proved interesting in it's own way.



Pass 3: The Record Setter



VORTEX DATA MESSAGE

- A. 19/08:00:30Z
- B. 17 deg 03 min N
082 deg 20 min W
- C. 700 mb 2082 m
- D. NA kt
- E. NA deg nm
- F. 320 deg 166 kt
- G. 221 deg 003 nm
- H. 884 mb
- I. 10 C/ 3073 m
- J. 24 C/ 3043 m
- K. 10 C/ NA
- L. CLOSED
- M. C4
- N. 12345/ 7
- O. 0.02 / 1 nm
- P. AF308 0724A WILMA OB 16
MAX FL WIND 168 KT SE QUAD 06:10:20 Z



Pass 2: Smaller than a Pinhole



VORTEX DATA MESSAGE

A. 19/06:11:10Z

B. 16 deg 58 min N

082 deg 11 min W

C. 700 mb 2132 m

D. NA kt

E. NA deg nm

F. 202 deg 168 kt

G. 109 deg 003 nm

H. EXTRAP 892 mb

I. 10 C/ 3058 m

J. 24 C/ 3034 m

K. 11 C/ NA

L. CLOSED

M. C2

N. 12345/ 7

O. 0.02 / 1 nm

P. AF308 0724A WILMA OB 12

MAX FL WIND 168 KT SE QUAD 06:10:20 Z

SLP EXTRAP FROM 700 MB



Pass 1: Not What They Expected

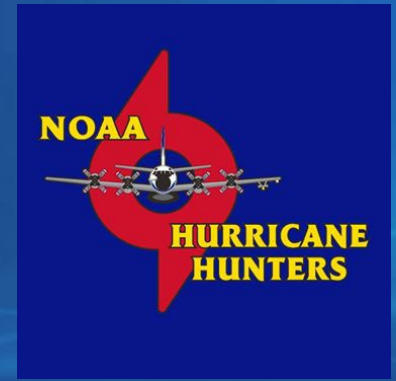


19 October 03Z discussion:

WILMA HAS DEVELOPED THE DREADED PINHOLE EYE. REPORTS FROM THE AIR FORCE RESERVE HURRICANE HUNTER INVESTIGATING WILMA BETWEEN 19Z AND 23Z INDICATED A 7-8 N MI WIDE EYE...WITH THE CENTRAL PRESSURE DROPPING FROM 970 MB TO 954 MB IN 3 HR 14 MIN. THE MAXIMUM FLIGHT-LEVEL WINDS MEASURED BY THE AIRCRAFT AT 850 MB WERE 101 KT. SINCE THAT TIME...SATELLITE IMAGERY SHOWS INCREASED ORGANIZATION... WITH A RING OF COLD TOPS OF -80C TO -87C SURROUNDING THE EYE. SATELLITE INTENSITY ESTIMATES ARE 102 KT FROM TAFB AND SAB...AND 90 KT FROM AFWA. BASED ON THIS AND EXTRAPOLATION OF THE LAST AIRCRAFT DATA...THE INITIAL INTENSITY IS INCREASED TO 95 KT. THIS MAY BE CONSERVATIVE.



Pass 1: Not What They Expected

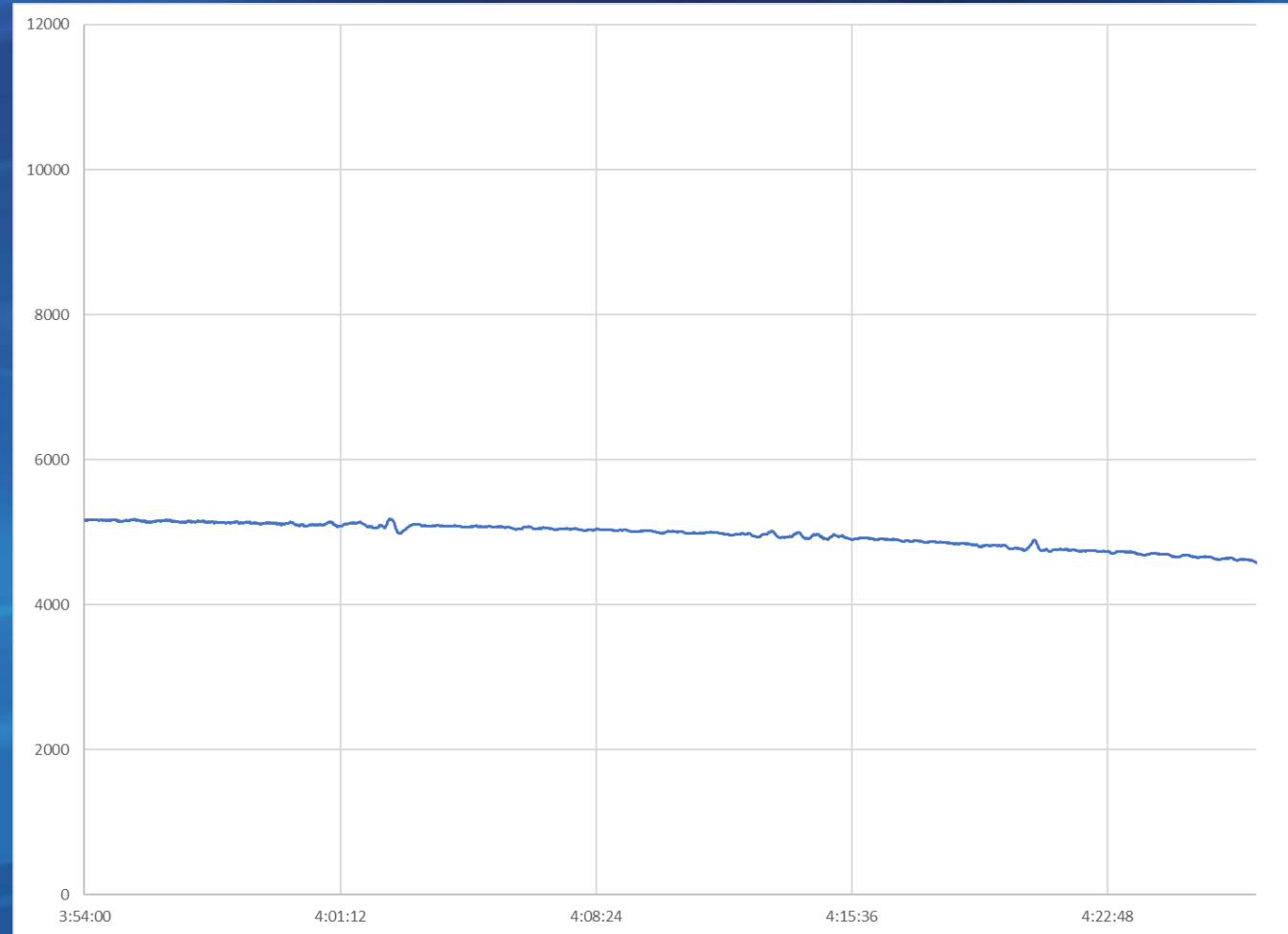
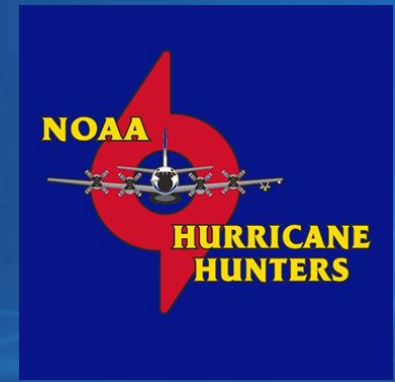


The last pass of mission 0524A penetrated at 850mb and fixed at 18/2309Z, with the eye sonde measuring 954mb with 13kts.

Mission 0724A began its first run into Wilma at 19/0354Z...still at 850mb.

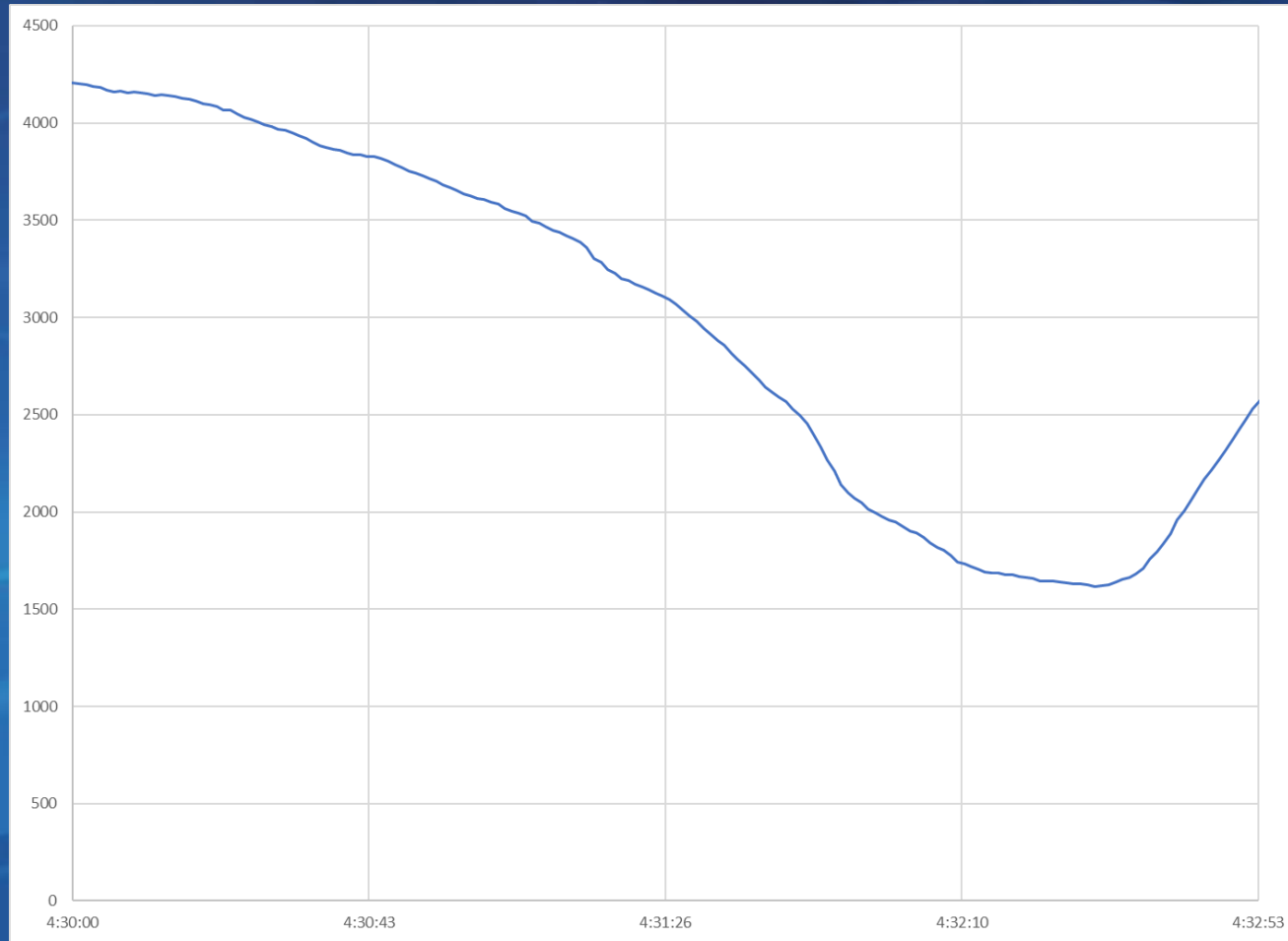


Pass 1: Seemed Pretty Standard...



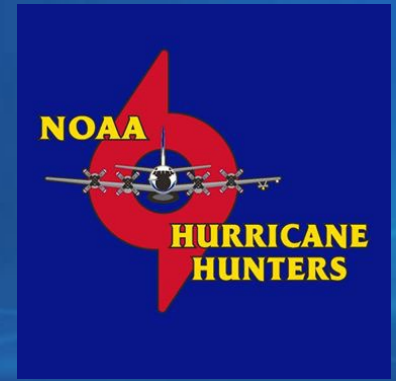


Pass 1: ...Until It Wasn't



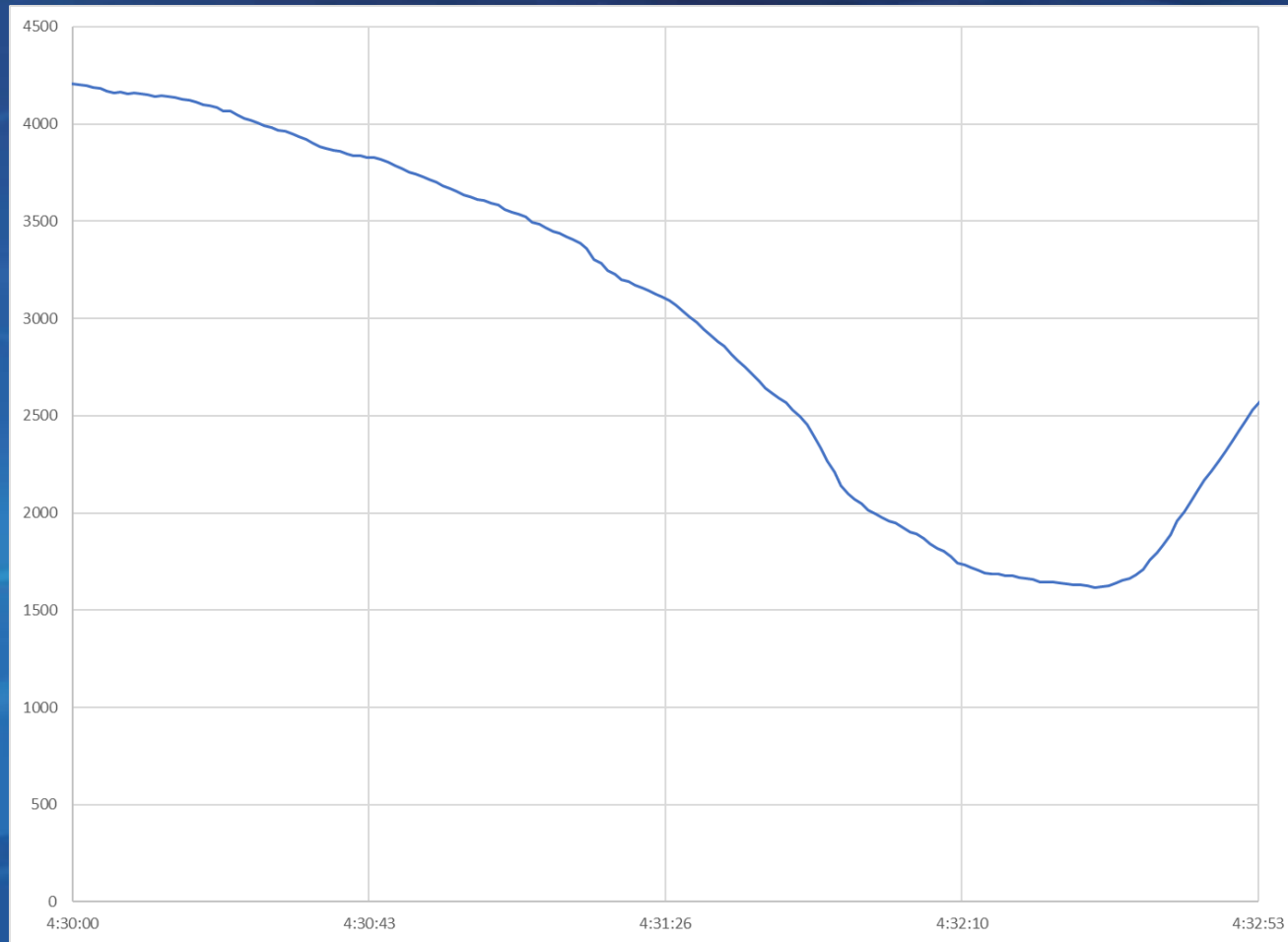


Pass 1: ...Until It Wasn't



Lowest Radar Altitude:

1618 ft



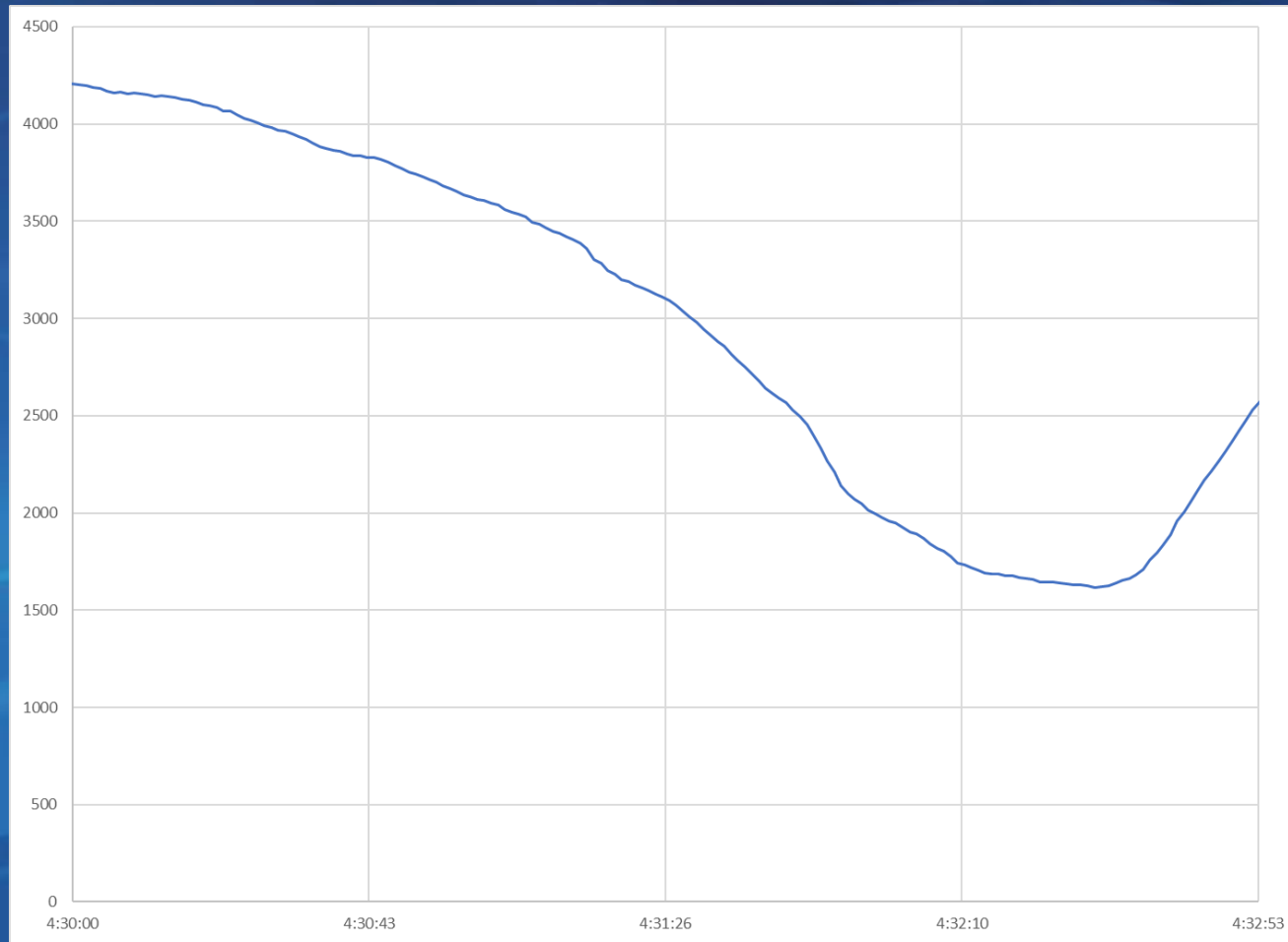


Pass 1: ...Until It Wasn't



Lowest Radar Altitude:

1618 ft



Peak Vertical Velocity:

-3600 ft/min



Pass 1: ...Until It Wasn't

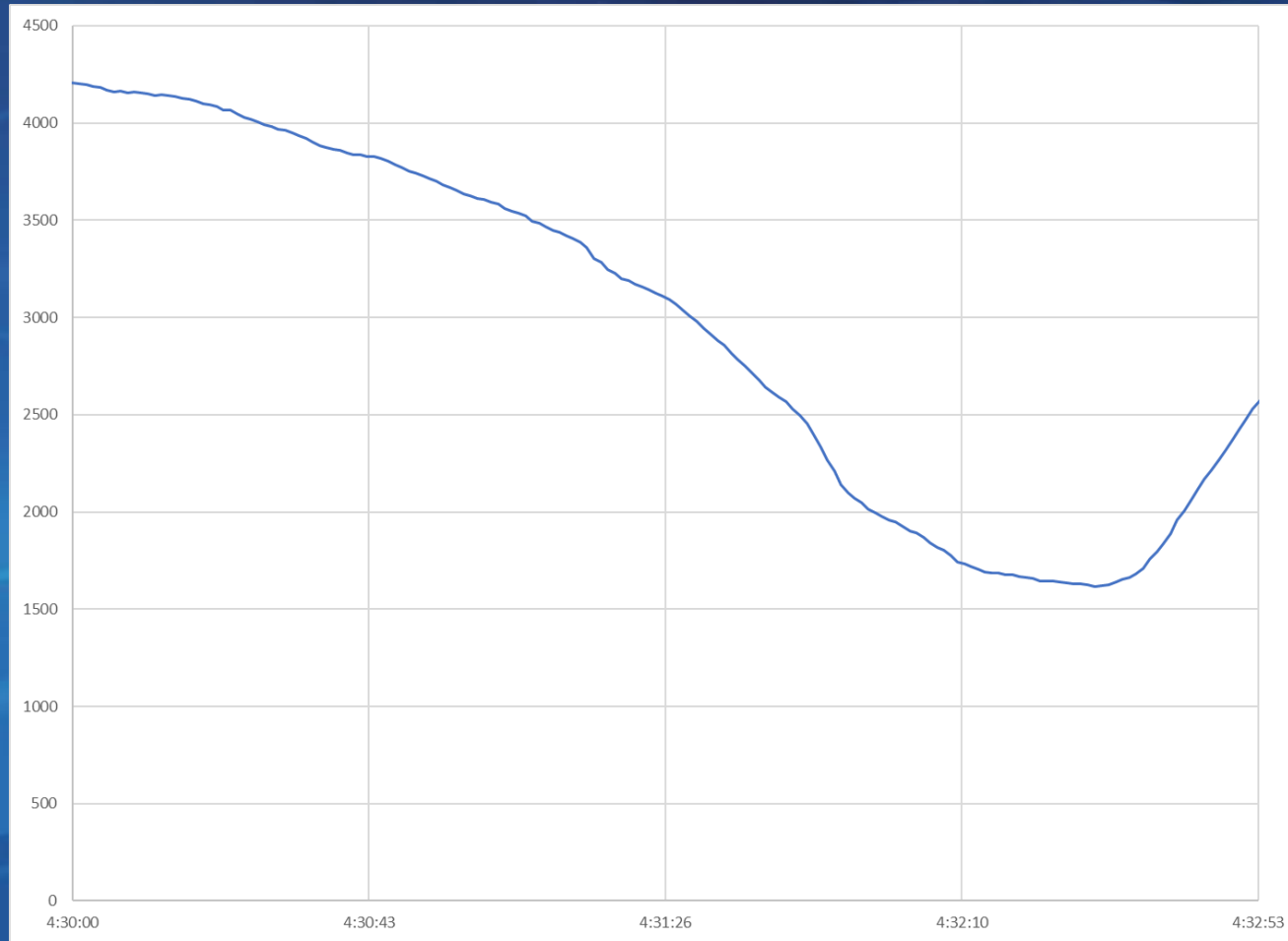


Lowest Radar Altitude:

1618 ft

Peak FL Wind Transit Time:

2.5 minutes

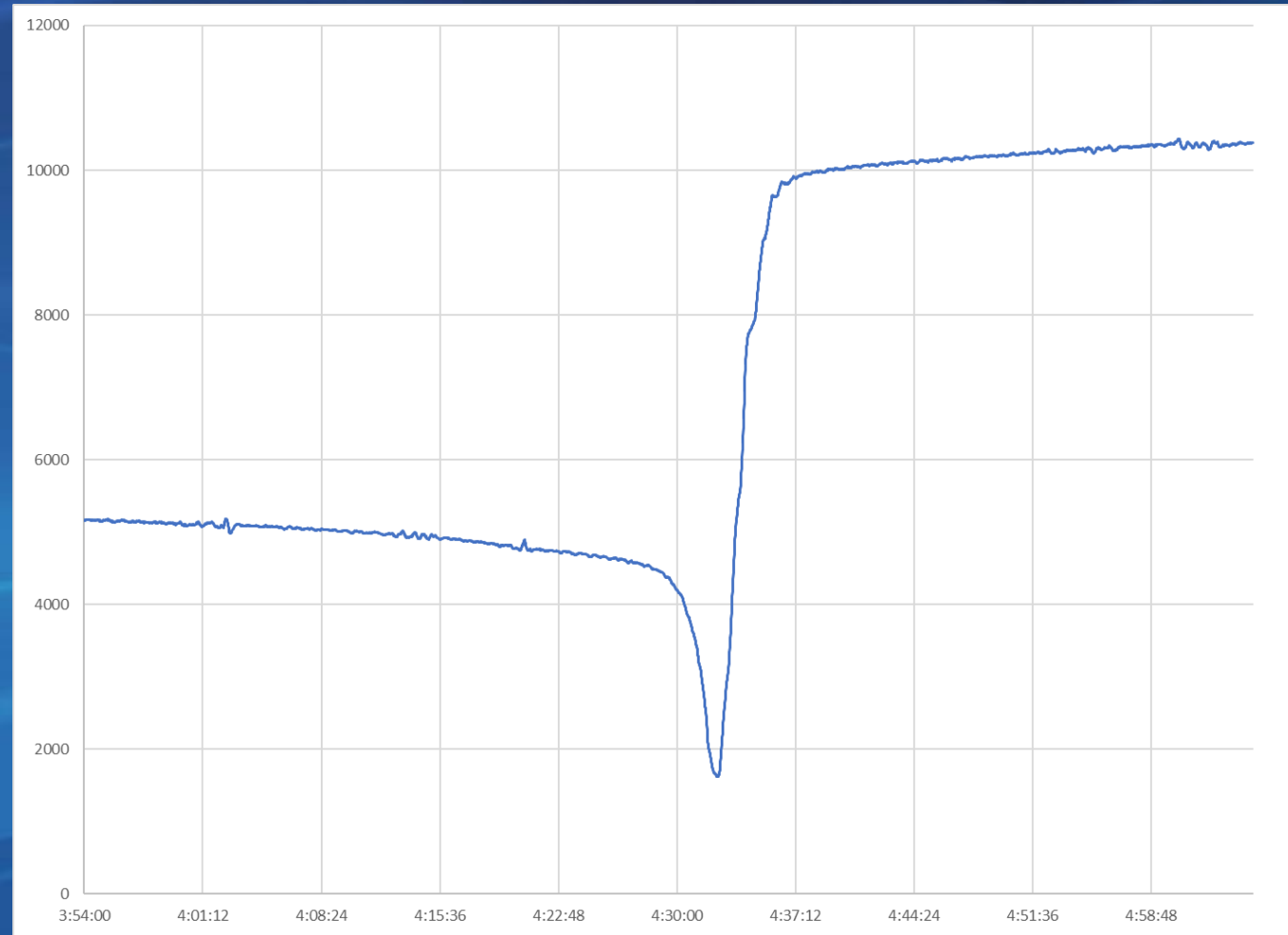


Peak Vertical Velocity:

-3600 ft/min



Pass 1: Altitude Is Your Friend



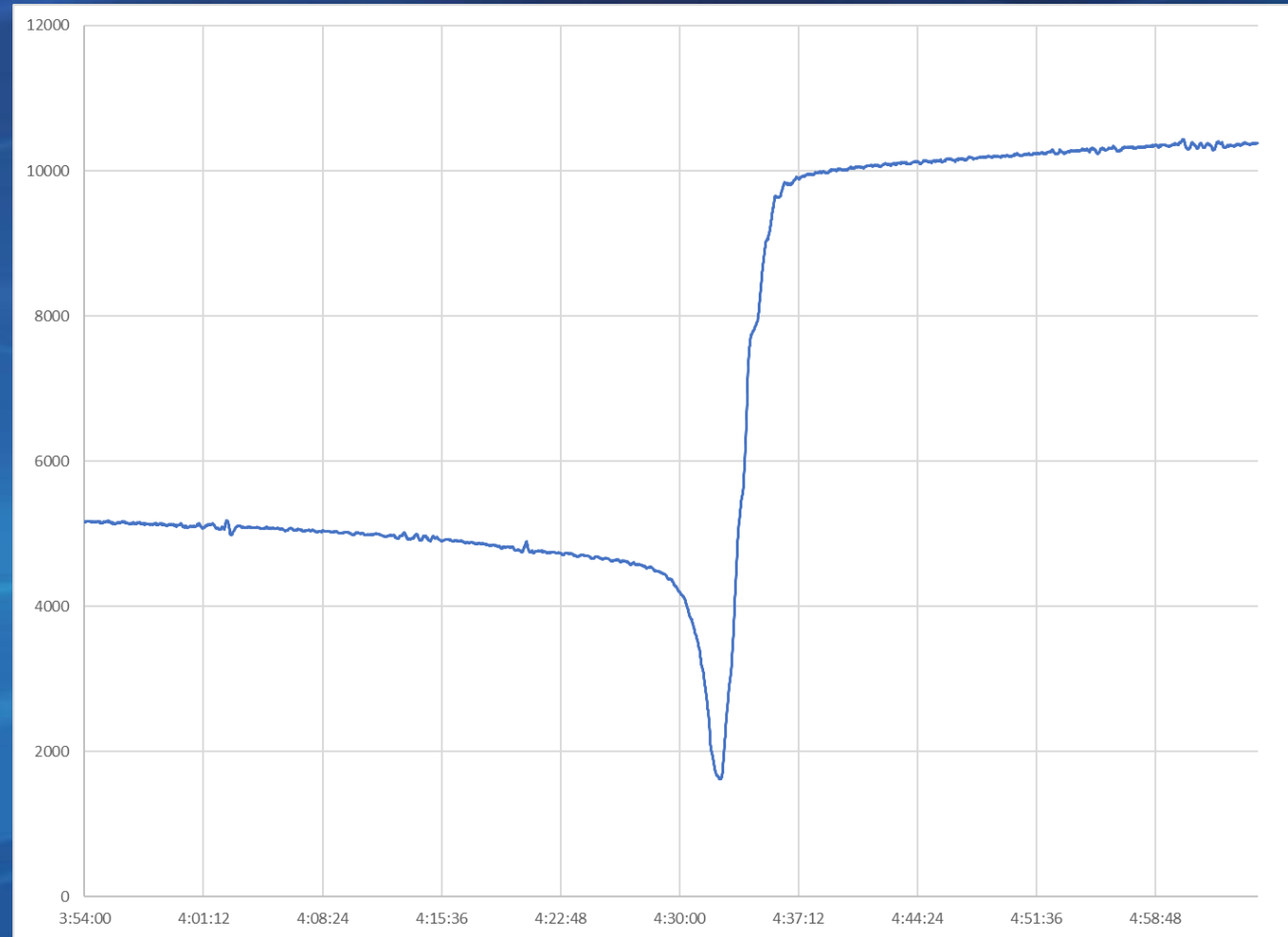


Pass 1: Altitude Is Your Friend



Total Altitude Change
Eyewall to Eyewall:

**6400 ft
(-2600 and
+3800)**



Peak Vertical Velocity:

+5063 ft/min



Pass 1: Left Speechless



VORTEX DATA MESSAGE

A. 19/04:32:40Z

B. 16 deg 52 min N

081 deg 56 min W

C. 850 mb 516 m

D. NA kt

E. NA deg nm

F. 116 deg 162 kt

G. 15 deg 003 nm

H. EXTRAP 901 mb

I. 17 C/ 1537 m

J. 26 C/ 1557 m

K. 25 C/ NA

L. CLOSED WALL

M. C4

N. 12345/ 8

O. 0.02 / 1 nm

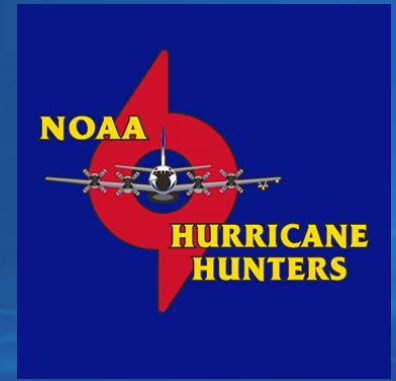
P. AF308 0724A WILMA OB 07

MAX FL WIND 162 KT NE QUAD 04:31:30 Z

SLP EXTRAP FROM 850 MB



What a Difference a Few Hours Makes



From 18/2309Z to 19/0432Z:

Pressure fell 53 millibars

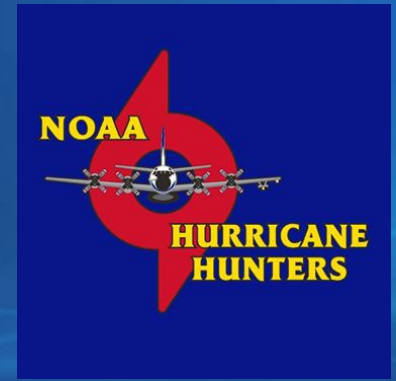
Peak FL Winds increased 61 knots

From 18/2309Z to 19/0800Z:

Pressure fell 71 millibars



The Value of Recon



19/03Z Advisory:

...WILMA CONTINUES TO RAPIDLY STRENGTHEN...SHOULD BECOME A MAJOR HURRICANE IN A FEW HOURS...

19/09Z Advisory:

...AIR FORCE RECONNAISSANCE PLANE REPORTED 884 MB...THE LOWEST MINIMUM PRESSURE EVER MEASURED IN A HURRICANE IN THE ATLANTIC BASIN...THIS VALUE SHOULD BE USED WITH CAUTION UNTIL CALIBRATED...