

iCYCLONE CHASE REPORT

storm	Hurricane NATE		
location	Ocean Springs, Mississippi, USA		
date	07-08 October 2017		
chasers	Josh Morgerman	author	Josh Morgerman

Location

The author observed the passage of **Hurricane NATE** near **Ocean Springs, Mississippi**.

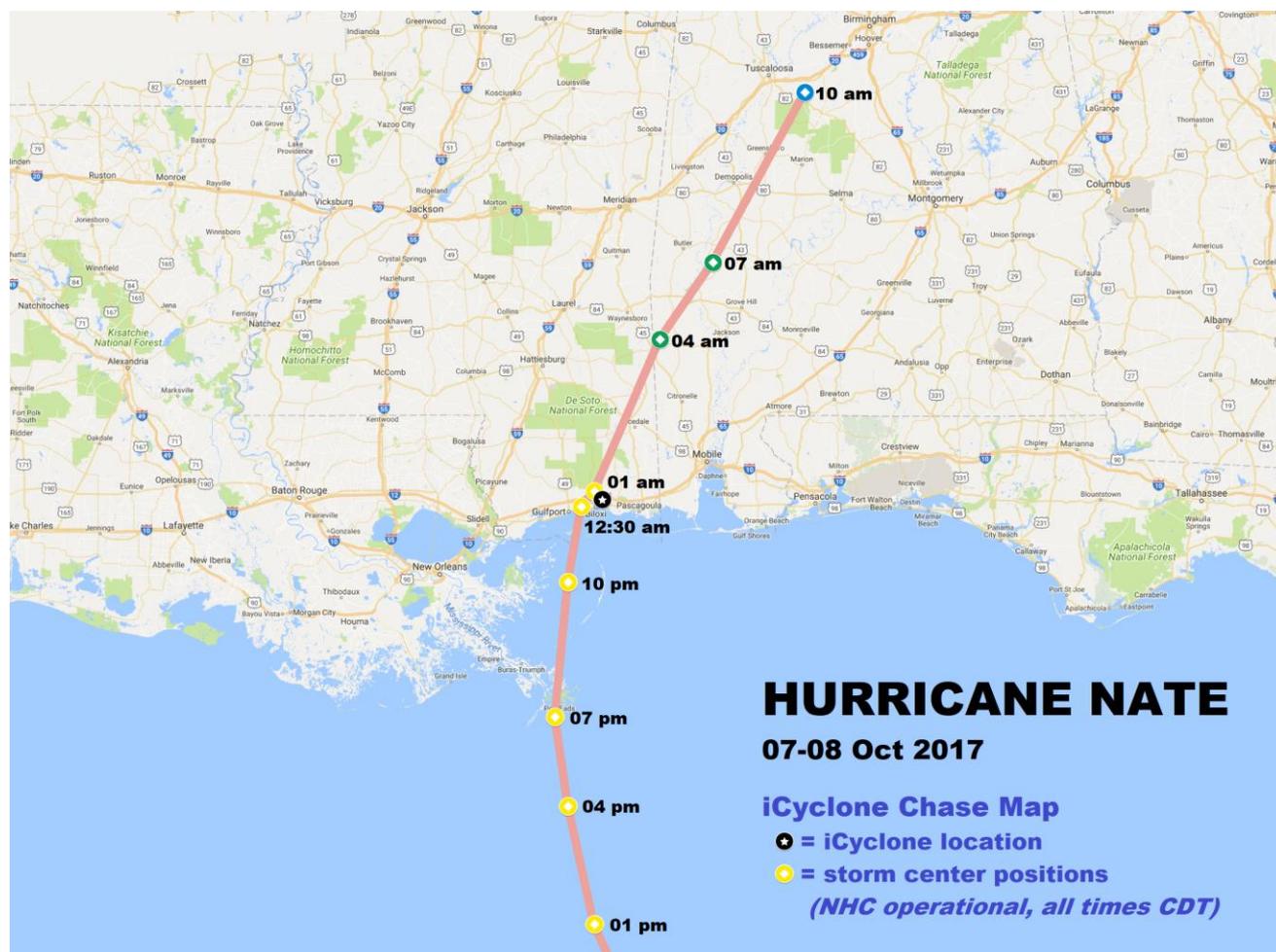
Data were collected at **30.44690N 88.84116W**, at the Holiday Inn Express & Suites – Biloxi-Ocean Springs on Washington Avenue (Hwy 609). **Observations** were made along a stretch of Washington Avenue spanning from the hotel to a Walmart gas station ~1 n mi to the SE (~30.4347N 88.8297W).

As per NHC advisory positions, this was very close to the cyclone's track—less than **5 n mi SE of NATE's center** (at its point of closest approach).

The author arrived at this location ~9 hours before the arrival of the cyclone's center, remaining there until the cyclone had passed.

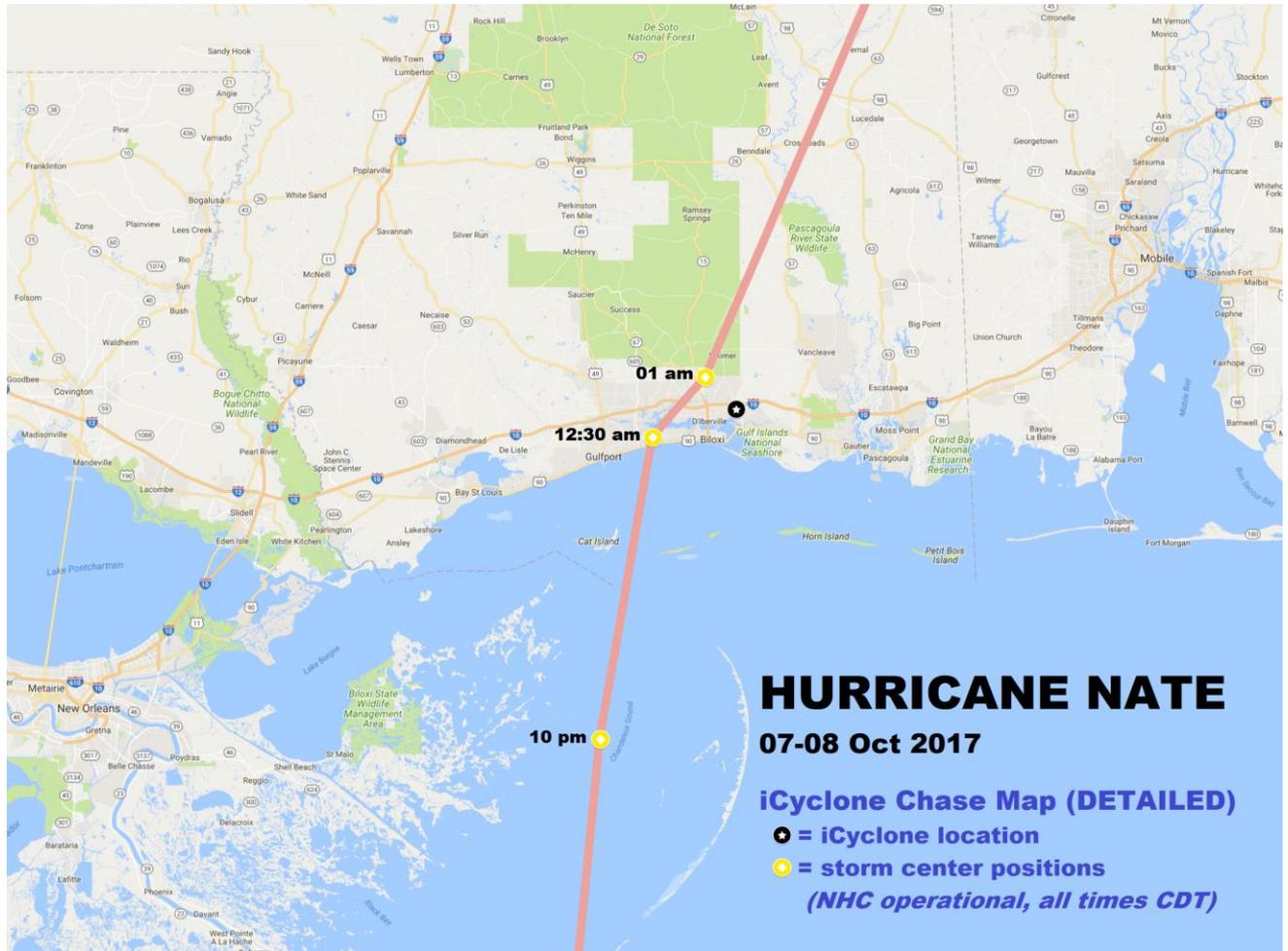
The **Chase Map** shows **the author's location (black star)** in relation to **NATE's center (yellow points)**, as per NHC advisory positions. (**Chase Map (Detailed)** is a closer view.)

Figure 1: Chase Map



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Figure 2: Chase Map (Detailed)



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Chronology

NATE made landfall in Biloxi, very close to Ocean Springs. It was a small, fast-moving, highly asymmetric hurricane—so the main impact was confined to a single, 45-minute burst of weather in the N eyewall. The hurricane's eye passed directly over Ocean Springs, resulting in a distinct calm period.

Following is a detailed chronology of observed conditions in Ocean Springs during the event—reconstructed from the author's **time-stamped video footage, social-media postings (Tweets) made in real time, notes, and air-pressure data**. Color-coding indicates passage of the **damaging winds** and **calm eye** over the area, as well as the **minimum air pressure**.

(Note: Some air-pressure values indicated in real-time Tweets have since been corrected to match data recorded by Device 1.)

All times are CDT:

- **5:20 pm.** Moderate rain, calm. 1005.4 mb & steady.
- **8:00 pm.** Steady rain, light breeze. 1003.1 mb.
- **9:00 pm.** Light rain, breezier. 1002.1 mb & falling.
- **9:30 pm.** Light rain, breezy. 1000.0 mb.
- **9:40 pm.** Squally; rain & wind increasing. 999.4 mb.
- **9:50 pm.** Heavy rain, windy. 999.1 mb.
- **10:10 pm.** Light rain, windy. 997.7 mb.
- **10:15 pm.** Very light rain, but much stronger winds. Flagpole clanking hard. 997.7 mb.
- **11:00 pm.** Rainy & windy. 994.5 mb.
- **11:10 pm.** Heavy rain, wind increasing. 994.1 mb.
- **11:15 pm.** Stormy: very heavy rain & strong winds. 993.6 mb.
- **11:23 pm.** Very heavy rain & strong winds. 992.3 mb.
- **11:30 pm.** Very heavy rain & strong winds. 991.6 mb.
- **11:40 pm.** Very heavy rain; powerful winds—strongest of the night; car shaking. 989.2 mb.
- **11:44 pm.** Wind still ripping. 988.8 mb.
- **11:55 pm.** Entering eye: calming, quieter. 988.1 mb.
- **12:10 am.** Skirting edge of eye: rain has stopped, but occasionally gusty winds. 986.5 mb.
- **12:25 am.** Still calm. Birds chirping. 986.0 mb.
- **12:30 am. 985.5 mb.**
- **12:55 am.** Near middle of eye: breezy. Damage around town light. 987.6 mb.
- **2:15 am.** Drizzle, mild breeze. 995.5 mb.

Key points:

- The **calm eye** hovered over the town for **almost 2 hours**—from ~11:55 pm to ~1:40 am.
 - **Note:** Because the cyclone's backside (S eyewall) had disintegrated by landfall, the author had to use high-res radar imagery to determine an end time for the eye, since it wasn't readily apparent from surface conditions. A close review of these radar images shows a band of very light convection—forming a sort of SW boundary to the eye—moving into the area around 1:40 am.
- The lowest air pressure, **985.5 mb**, occurred during the eye, at **12:30 am CDT**.
- **The cyclone's core was highly asymmetric:**
 - **The frontside** (N side, before eye) brought the expected heavy rain and strong winds.
 - **The backside** (S side, after eye) was barely detectable, bringing just drizzle and moderate breezes.
- **The cyclone was small.** Its impact was limited to a single, intense burst of rain and wind—lasting no more than ~45 minutes—in the vigorous N eyewall.
- **An apparent moat feature** (separating the innermost rainband and the N eyewall) crossed the area around 10:10 and 10:15 pm, during which time rainfall became very light. This structural feature was apparent in radar imagery.

See more below Re: instrument calibration and data collection.

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Air Pressure Data

The author collected quality-controlled air-pressure data with two Kestrel 4500s.

The devices were left undisturbed on the bathroom counter of the author's second-floor hotel room during the entire passage of the hurricane.

The sampling rate was one reading per minute (1/min).

Calibration

Geographer James Hyde checked local data and estimated the ground elevation at this location to be **23 ft**.

To calibrate the device, the author used a reference altitude of **38 ft**—which is the assumed ground elevation (23 ft) plus additional altitude to account for being on a countertop on the hotel's second floor.

Minimums

Devices 1 and 2 matched well, showing the same minimum readings simultaneously as the eye of the hurricane was passing over the observation point:

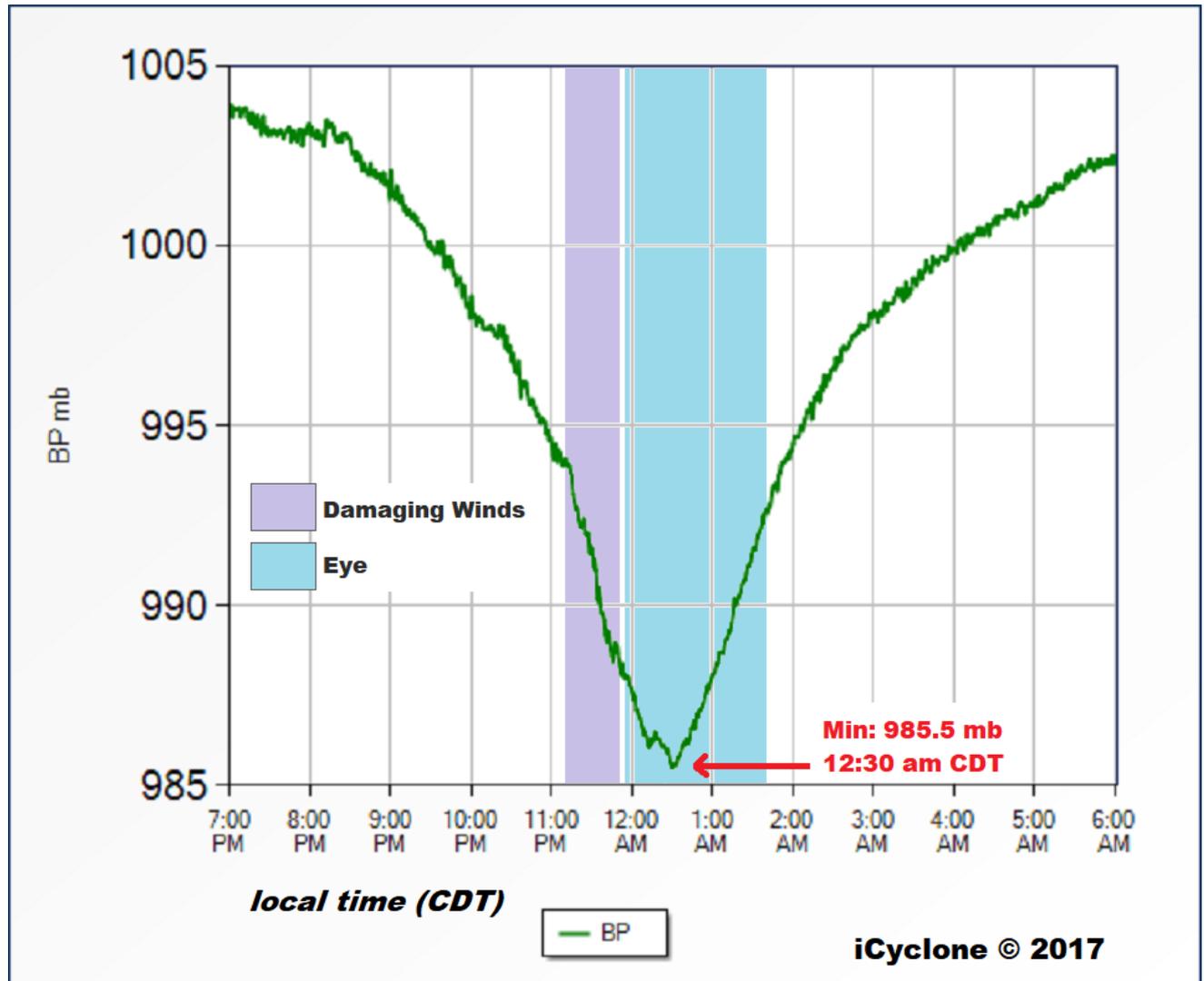
- **Device 1: 985.5 mb at 12:30 am CDT**
- **Device 2: 985.5 mb from 12:28 to 12:31 am CDT**

The complete data are graphed in **Figures 3** and **4**, below.

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Figure 3: Barogram—Device 1

Air-pressure data reveal the minimum value of 985.5 mb occurred at 12:30 am, as the eye passed over Ocean Springs.



HURRICANE NATE: 07-08 Oct 2017

Ocean Springs, Mississippi, USA

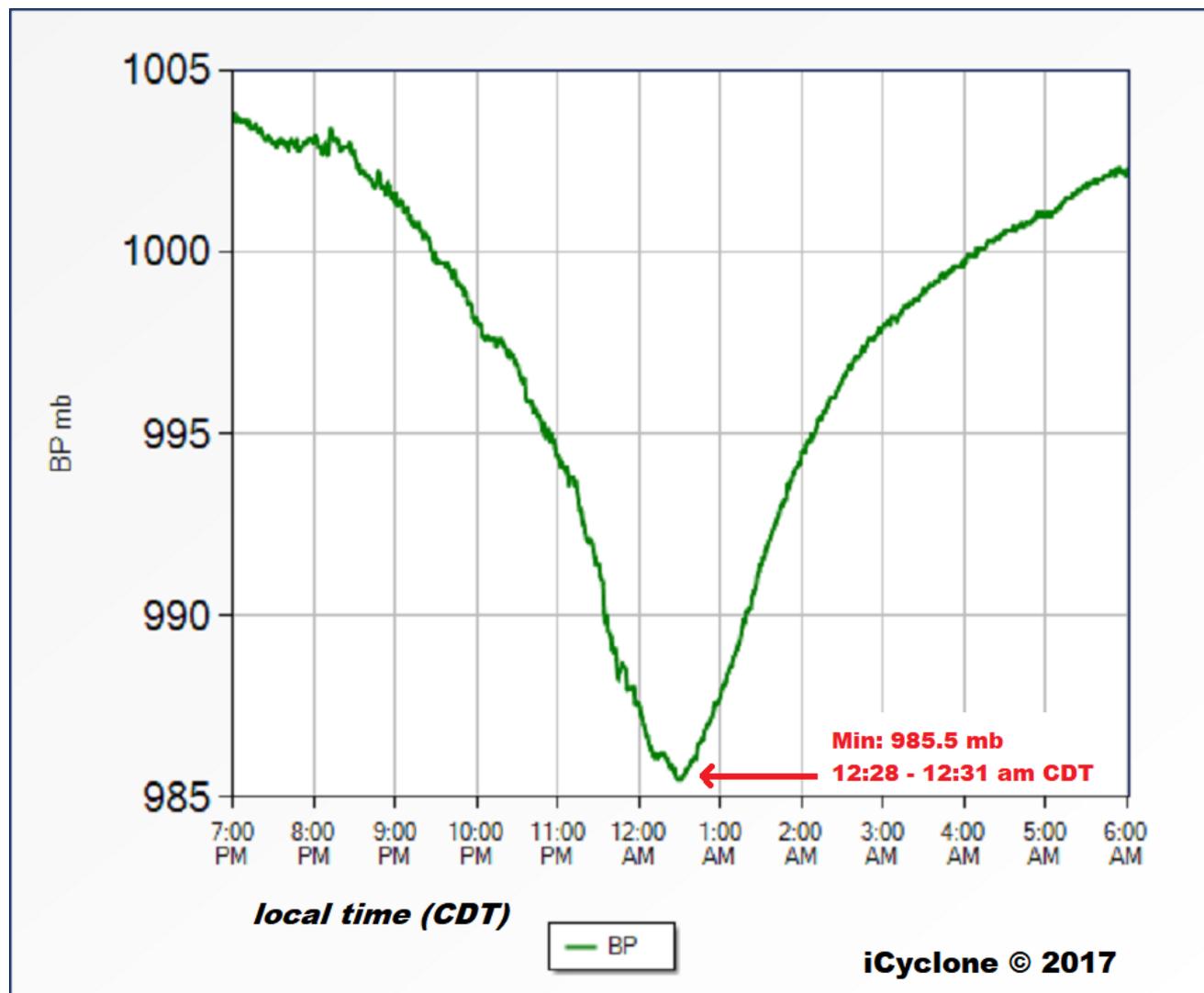
30.44690N 88.84116W – ref el 23 ft

DEVICE 1

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Figure 4: Barogram—Device 2

The pressure profile and minimum pressure for Device 2 is very similar to Device 1, with negligible differences.



HURRICANE NATE: 07-08 Oct 2017

Ocean Springs, Mississippi, USA

30.44690N 88.84116W – ref el 23 ft

DEVICE 2

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Damage

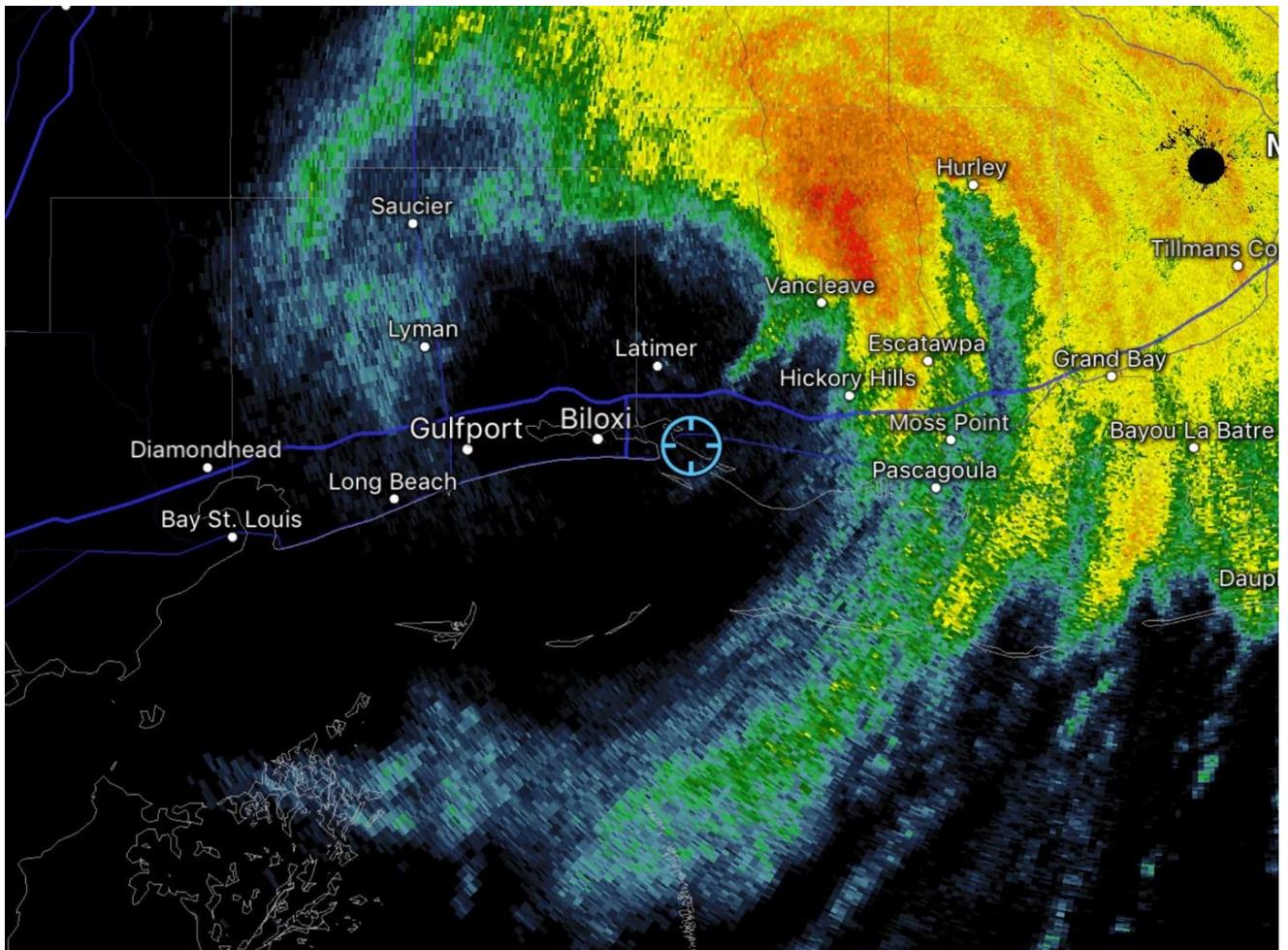
A quick drive around Ocean Springs during the eye revealed very little damage—a couple of downed trees, branches littering the roads, and some moderate storm-surge flooding in areas along the immediate coast. And as far as the author could tell, the power mostly stayed on around town.

As far as hurricane impacts go, NATE's was minimal in Ocean Springs, Mississippi.

Imagery

Figure 5: Hurricane's eye over Ocean Springs.

This radar shot shows Hurricane NATE's eye over Ocean Springs and Biloxi at 12:46 am CDT 08 Oct 2017. (Image: RadarScope)



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Figure 6: Hurricane's eyewall over Ocean Springs.

Radar shot showing NATE's N eyewall over Ocean Springs and Biloxi at 11:24 pm CDT 07 Oct 2017. (Image: RadarScope)

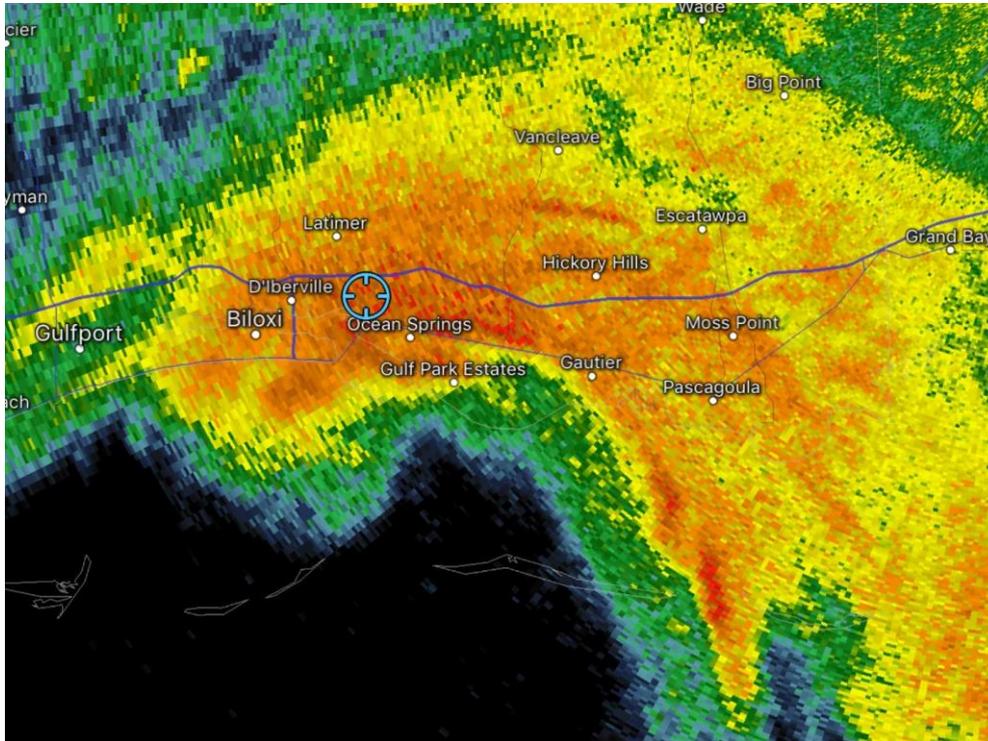
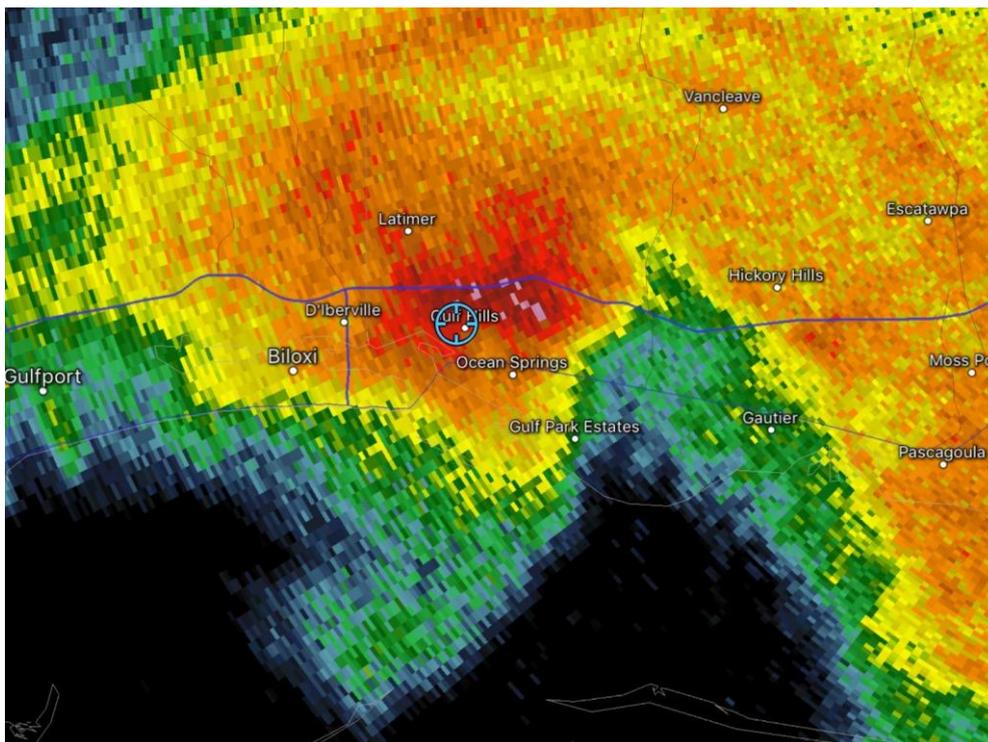


Figure 7: Intense part of hurricane's eyewall over Ocean Springs.

Radar shot showing an especially vigorous portion of NATE's N eyewall over Ocean Springs at 11:35 pm CDT 07 Oct 2017. (Image: RadarScope)



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Questions or Feedback?

Get in touch:

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