Hurricane Isaias: Facebook Data Situation Report

NSF AI-SDM and Meta AI for Good
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Disaster Manager Brief - Hurricane Isaias, Florida Gulf Coast

Overview

This report focuses on Hurricane Isaias and population changes along the Florida Gulf Coast and coastal Alabama from **October 10, 2026 12am CDT through October 12, 2026 4pm CDT**, using Meta's *Facebook Population During Crisis* data. Observations are recorded in eight-hour windows, and each window is compared with a 90-day pre-crisis baseline for the same day of the week. The data represent **Facebook app users** in a given area, not raw population. This analysis focuses on areas where there are more or fewer Facebook users during the crisis than the baseline: four coastal cities (Gulf Shores, Pensacola, Destin, and Panama City Beach) and one inland city, Tuscaloosa.

1. Hurricane Isaias made landfall near Destin, FL, crossing the coast between Pensacola and Panama City Beach, and weakened from a major hurricane to a tropical storm and then a tropical depression as it moved inland toward western Alabama (Figure 1).
2. All four coastal cities were already **below the 90 day pre-crisis baseline in the first eight-hour window (October 10, 2026 12am CDT)** and stayed below it through October 12, 2026 4pm CDT. **Destin had the largest deficit**. (Table 2, Figure 3). **Tuscaloosa showed the opposite pattern**, with an initial influx of Facebook users. (Figure 2, Figure 3).
3. Latest data show that all five cities exhibit signs of returning to their baseline population levels, regardless of whether they experienced an initial population decrease or increase during the crisis (Figure 2, Figure 3).
4. We note that population differences (relative to a 90-day baseline) do not imply large or small raw population counts in each city, and they are not counts of evacuees. The data represent Facebook users with Location Services enabled, not the full resident population. See the Appendix for data caveats.

Key Takeaways

Overall pattern: The pattern is the movement of Facebook users from coastal cities like Gulf Shores, Pensacola, Destin, and Panama City toward inland cities like Tuscaloosa, which initially experienced a growing influx of Facebook users.

Table 1: Summary of Facebook-user population changes relative to the 90-day baseline during Hurricane Isaias.

Location	Oct. 10, 12 AM CDT	Oct. 10, 8 AM CDT	Oct. 12, 4 PM CDT	Takeaway
Destin, FL	−11,966	−12,977	−3,208	Largest coastal deficit; substantial recovery by October 12.
Panama City Beach, FL	−8,827	−9,709	−1,371	Deficit initially deepened before narrowing considerably.
Gulf Shores, AL	−7,681	−8,625	−471	Deficit initially deepened, followed by a near-return to baseline.
Pensacola, FL	−7,352	−6,884	−540	Smallest initial coastal deficit; also a near-return to baseline.
Tuscaloosa, AL	+3,496	+8,715	+1,045	Initial influx increased before declining toward baseline.

Note. Values represent the net change in Facebook users (crisis − baseline), not the total population or number of evacuees. Negative values indicate fewer users than baseline; positive values indicate more users. All times are CDT. See Figure 2 and Figure 3 for the spatial and full temporal patterns.

1. Hurricane Path

This regional view is shown at **October 10, 2026 8am CDT**. The map provides broader context for the storm's observed approach and the official forecast available at that point in the event.

Table 2: Cities used in the Hurricane Isaias analysis and Facebook user change during the first available window after landfall.

Place	Role	Population (2025 est.)	Net change in Facebook users
Gulf Shores, AL	Coastal Alabama community	17,394	−8,625
Pensacola, FL	Western Florida Panhandle hub	53,817	−6,884
Destin, FL	Near-landfall coastal community	14,046	−12,977
Panama City Beach, FL	Eastern Panhandle coastal community	20,375	−9,709
Tuscaloosa, AL	Inland Alabama population hub	114,316	8,715

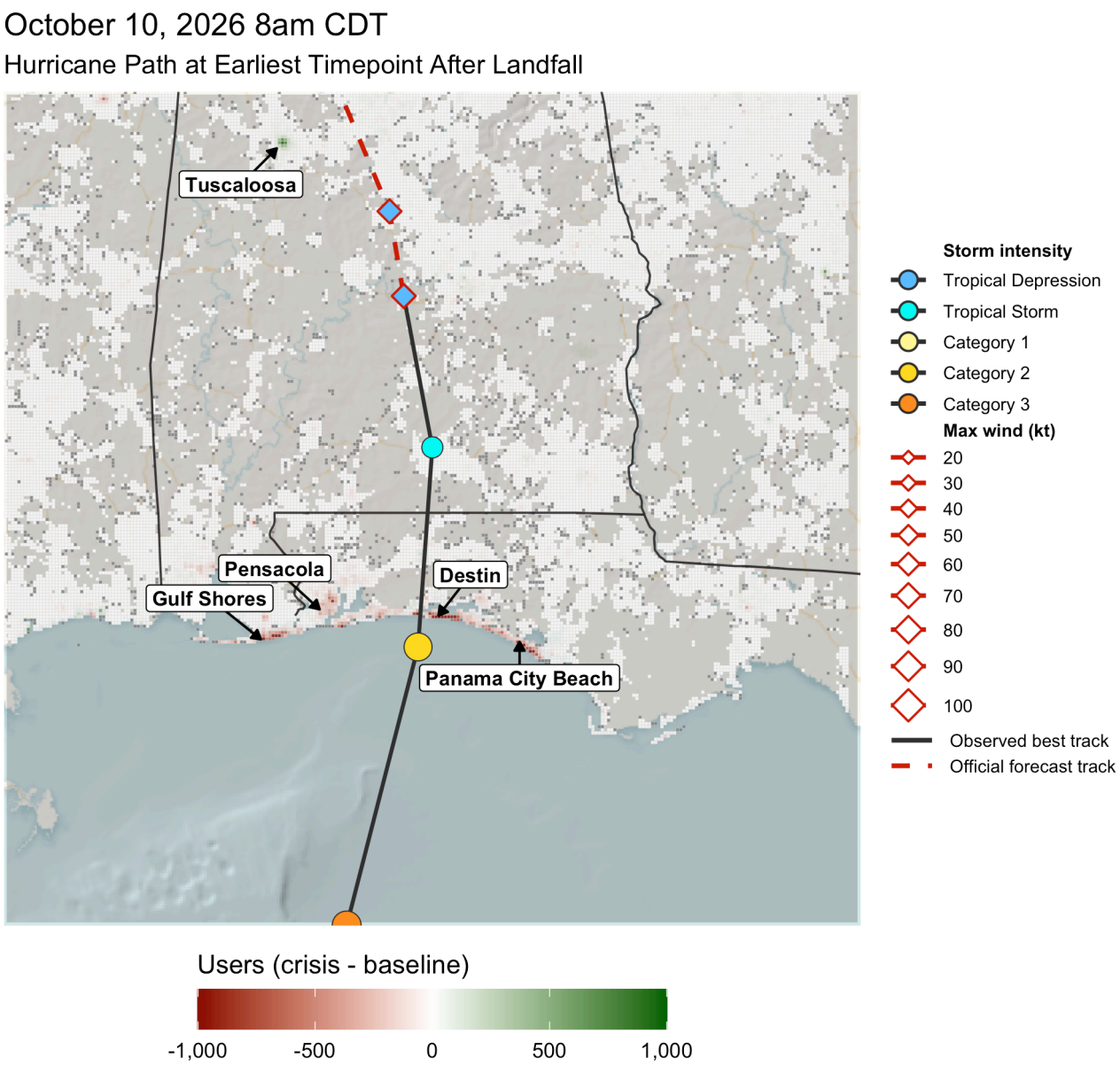

Figure 1: Regional Gulf Coast view of Hurricane Isaias. The observed track is shown with circular intensity markers, while the official forecast is represented by a red dashed path and diamond markers. Storm positions, maximum sustained wind speeds, and intensity classifications are derived from the NOAA National Hurricane Center (NHC) Automated Tropical Cyclone Forecasting (ATCF) best-track and official forecast datasets. User counts are differences from a 90-day pre-crisis baseline: red means fewer users, green means more users

2. Population change through the crisis

Dark red = fewer users than baseline; dark green = more users than baseline; white = little/no net change; grey = privacy-threshold / missing data. The three panels below show the beginning, time point of interest, and end of the Hurricane Isaias population-data period using the same population-change scale. This allows changes in the spatial pattern to be compared directly across time.

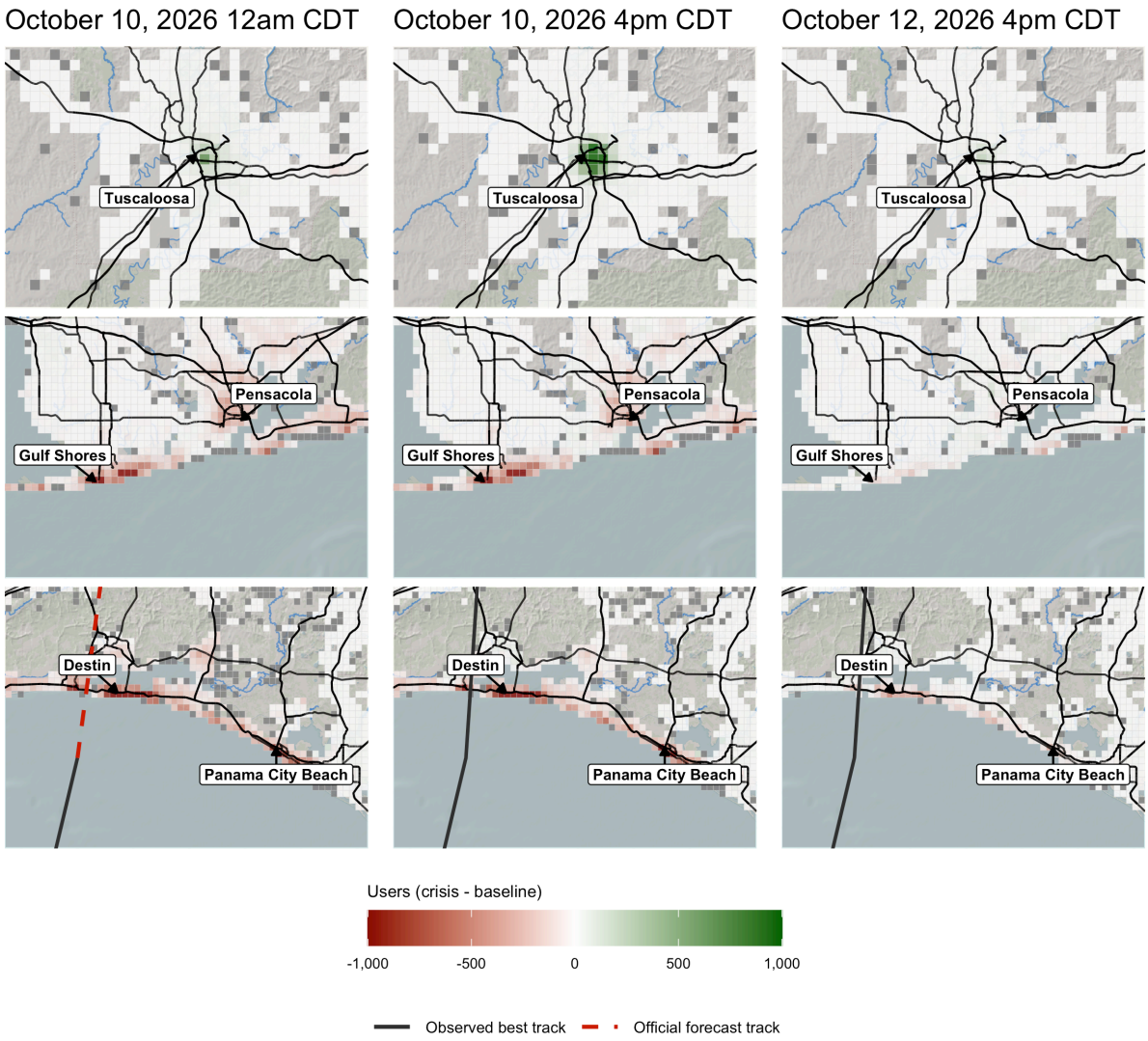

Figure 2: Population difference at the start, time point of interest, and end of the Hurricane Isaias data colection period. Rows show zoomed views of Tuscaloosa, Gulf Shores and Pensacola, and lastly Destin and Panama City Beach. All panels use the same population-change scale.

Interpretation

- **User movement.** Dark red tiles along the coast (Gulf Shores, Pensacola, Destin, Panama City Beach) show fewer Facebook users than baseline on October 10th, which suggest users leaving the coast or losing service.
- The area around **Destin**, closest city to Hurricane Isaias landfall, shows the largest decline in users relative to baseline (−11,966 users at 12 am on October 10) and was the last of the coastal cities to move back toward baseline. It was still about 3,208 users below baseline at 4pm on October 12 (Figure 2, Figure 3).
- Dark green tiles around **Tuscaloosa** indicate an influx of users relative to baseline. The influx grew from +3,496 users at 12am on October 10 to a peak of +13,176 users at 4pm, October 10 (Figure 2, Figure 3). It then fell to +1,045 users by 4pm October 12.
- **Return toward normal.** After the hurricane moves away, both the red and green signals fade toward baseline.
- By 4 PM on October 12, population deficits in the coastal cities had narrowed from their October 10 lows, while Tuscaloosa's initial influx had diminished. These trends are reflected in the lighter red coastal tiles and lighter green tiles surrounding Tuscaloosa, indicating a gradual return toward baseline population levels (Figure 2, Figure 3).
- None of the cities had fully returned to baseline by 4pm on October 12.

3. Population change in selected city regions

The city-level time series summarize the net change in Facebook users relative to baseline within exact **9 × 9 mile** areas centered on Gulf Shores, Pensacola, Destin, Panama City Beach, and Tuscaloosa. Each 9 × 9 mile area corresponds approximately to a 6 × 6 grid of 1.5-mile Bing tiles, representing roughly 36 tiles per city.

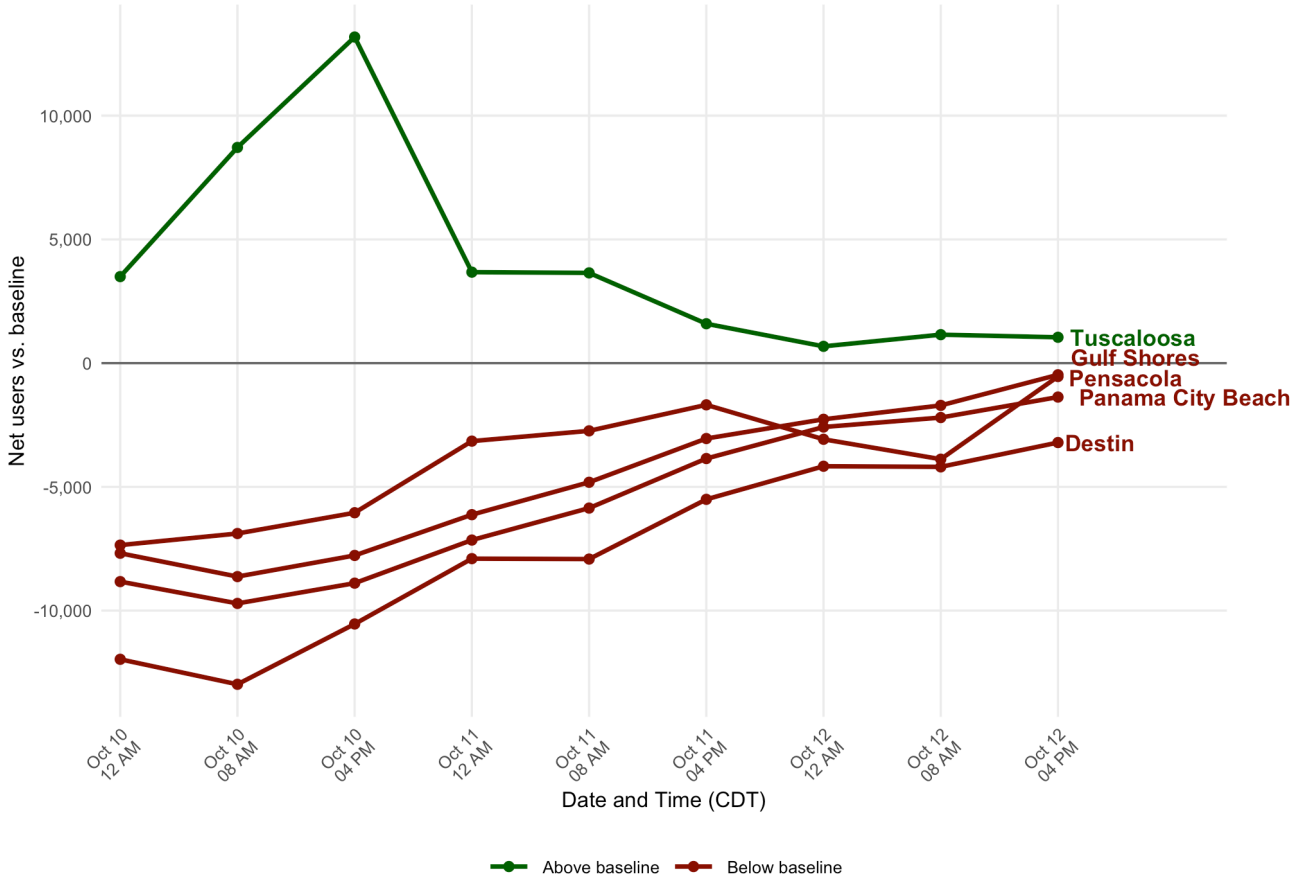

Figure 3: Net change in users (crisis − baseline) within exact city-centered square selections, shown in 8-hour intervals.

Interpretation

- **Decreases in user population relative to baseline (coastal cities).**
- Gulf Shores, Pensacola, Destin, and Panama City Beach stayed below the 90-day user baseline in every window (Figure 3). Possible explanations include:
  - Evacuation or exodus away from the coast
  - Loss of electrical or cellular service, which reduces observed Facebook activity
  - Other disruptions that reduce activity within the affected area
- **Increases in user population relative to baseline (inland).**
- Tuscaloosa was above user baseline in every window, and its net influx grew from +3,496 users at 12am to +13,176 users at 4pm on Oct. 10th (Table 1, Figure 3). Possible explanations include:
  - Influx into nearby inland cities
  - Temporary relocation or sheltering
  - College football fans commuting to watch Alabama verse Georgia that took place Oct. 10 at 6:30 CDT
- **Magnitude of change.** Destin had the deepest deficit (−12,977 users at 8am on Oct. 10th), while Pensacola's deficit steadily narrowed (−7,352 to −6,045 users). The coastal deficits eased with the four cities approaching the baseline by 4pm on Oct. 12th (Figure 3).
- **What the time series measure.** The city time series indicate changes in the *spatial distribution of Facebook users*, not direct counts of evacuees or residents.

Appendix

This report summarizes Facebook user population data by Meta for **October 10, 2026 12am CDT through October 12, 2026 4pm CDT** to help understand where user population change is concentrated during Hurricane Isaias and **whether** it is consistent with Hurricane impact. It is a decision-support supplement, not a headcount: every figure reflects Facebook users with Location Services on, not the whole population (see Data caveats).

Data description

We use Meta's **Facebook Population During Crisis** data, which uses location activity from Facebook users (with **Location Services on**) to estimate how user population shifts during a crisis. The data represent **Facebook app users**, not everyone in the area, hence "users." The dataset compares user counts near the disaster hit area with pre-crisis behavior. There are two granularities: fixed **8-hour windows** (starting 12am / 8am / 4pm Central Time) and **Bing tiles** (level 14, about 2.4 km or 1.5 mi squares). For privacy, a tile is shown as NA / grey when either the crisis or the baseline count is under 10 users. Grey means "one side was below threshold" (not "no change" or "fewer than 10 people total"). One signal was used: the **difference from a pre-crisis baseline** for the same time of day and day of week (a 90-day baseline).

For this event, population observations run from **October 10, 2026 12am CDT through October 12, 2026 4pm CDT** in 8-hour increments. For city-level user population change over time Figure 3, each city is centered within an exact **9 × 9 mile square**.

Map, terrain, storm data, and population data

Terrain is downloaded through `elevatr` (Hollister & others, 2026) from AWS Terrain Tiles (Mapzen, 2026), projected with `terra` (Hijmans, 2026), and cached locally. Major roads and rivers come from OpenStreetMap (OpenStreetMap contributors, 2026).

NHC ATCF data (National Hurricane Center, 2026) provide the observed best track and the official forecast track of the hurricane Isaias.

The U.S. Census Bureau's 2025 population estimates were used to provide resident populations for the five selected cities, offering demographic context for interpreting changes in Facebook-user populations during Hurricane Isaias (U.S. Census Bureau, 2025).

⚠️ Data caveats

- **Sample bias.** The data cover only Facebook users with Location Services turned on.
- **Data intervals.** Population data are aggregated into 8-hour windows, with up to about 8 hours of delay.
- **Tile size.** Tiles are about 2 km (1.3 mi), neighborhood-scale, not address-level.
- **Privacy controls.** A tile is NA / grey when the crisis or baseline count is under 10. Suppressed or missing tiles should not be interpreted as zero population change.
- **Baselines.** Population data use a 90-day baseline before the crisis. Differences are relative to that baseline, not direct evacuation counts.
- **Evacuation vs. connectivity.** A tile emptying could mean people left or that power or cell service dropped.
- **Who is under-counted.** The signal skews toward mobile, connected, vehicle-owning residents and may under-capture people with mobility limits, no vehicle, or no transit option.
- **Forecast vs. observed track.** The forecast path is what was predicted at that point in the event; the best track is the retrospective observed path.
- **Users ≠ people ≠ vehicles.** Facebook-user counts are not direct counts of residents, evacuees, vehicles, or shelter demand.

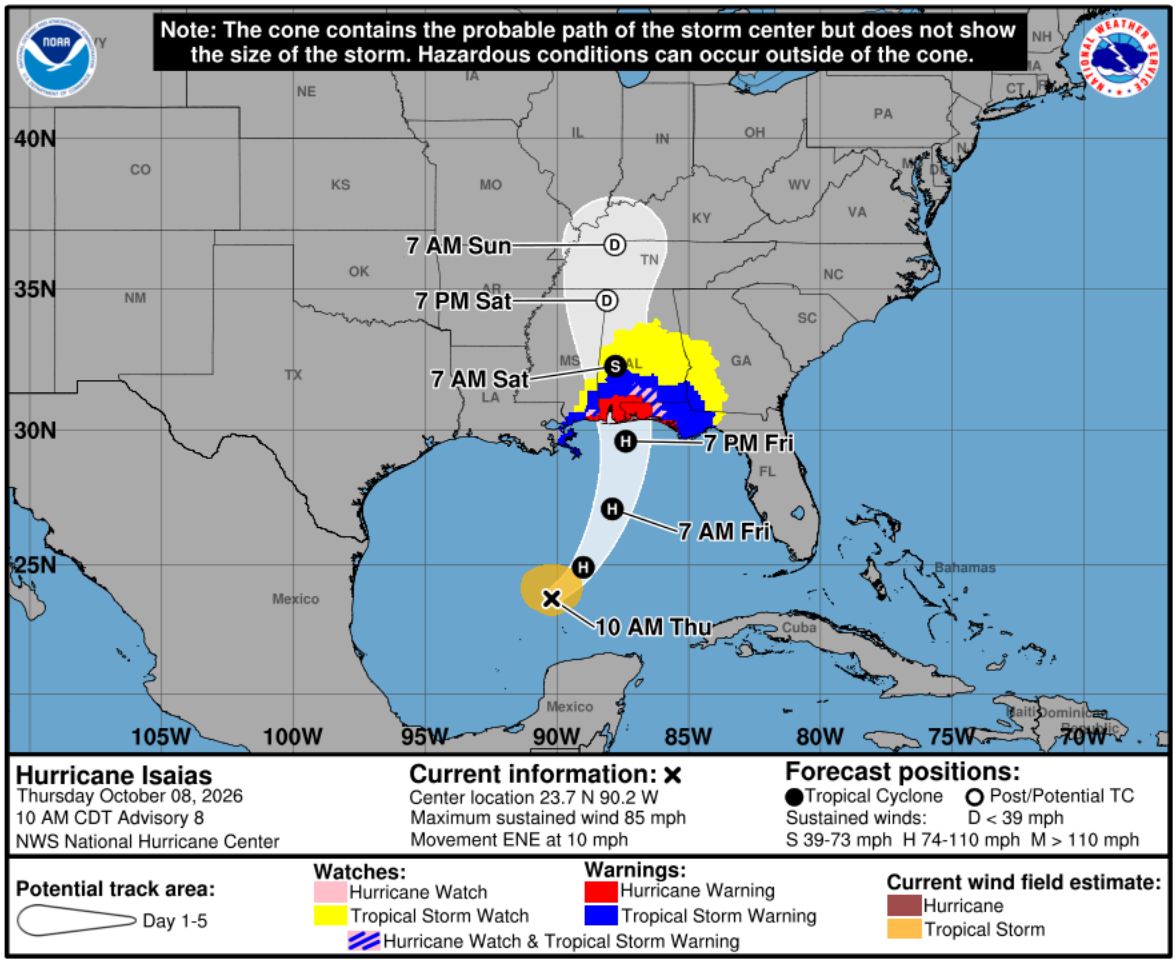

Figure 4: National Hurricane Center 5-day forecast cone for Hurricane Isaias (AL092026), Advisory 8, issued 10 AM CDT on Thursday, October 8, 2026. Source: National Hurricane Center (2026).

The graphic above shows the NHC forecast at the time of Advisory 8 (National Hurricane Center (2026)). The forecast cone brought the storm onto the northern Gulf Coast as a hurricane on Friday, October 9, then inland as a tropical storm and depression through October 10–12, with hurricane and tropical storm warnings posted along the coast.

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