iCyclone Chase Report

storm	**Hurricane OLAF**		
location	**San Jose del Cabo, Baja California Sur, Mexico**		
date	**09 September 2021**		
chaser	**Josh Morgerman**	**author**	**Josh Morgerman**

Overview

Hurricane OLAF struck the S tip of Mexico's Baja California Peninsula on 09 September 2021.

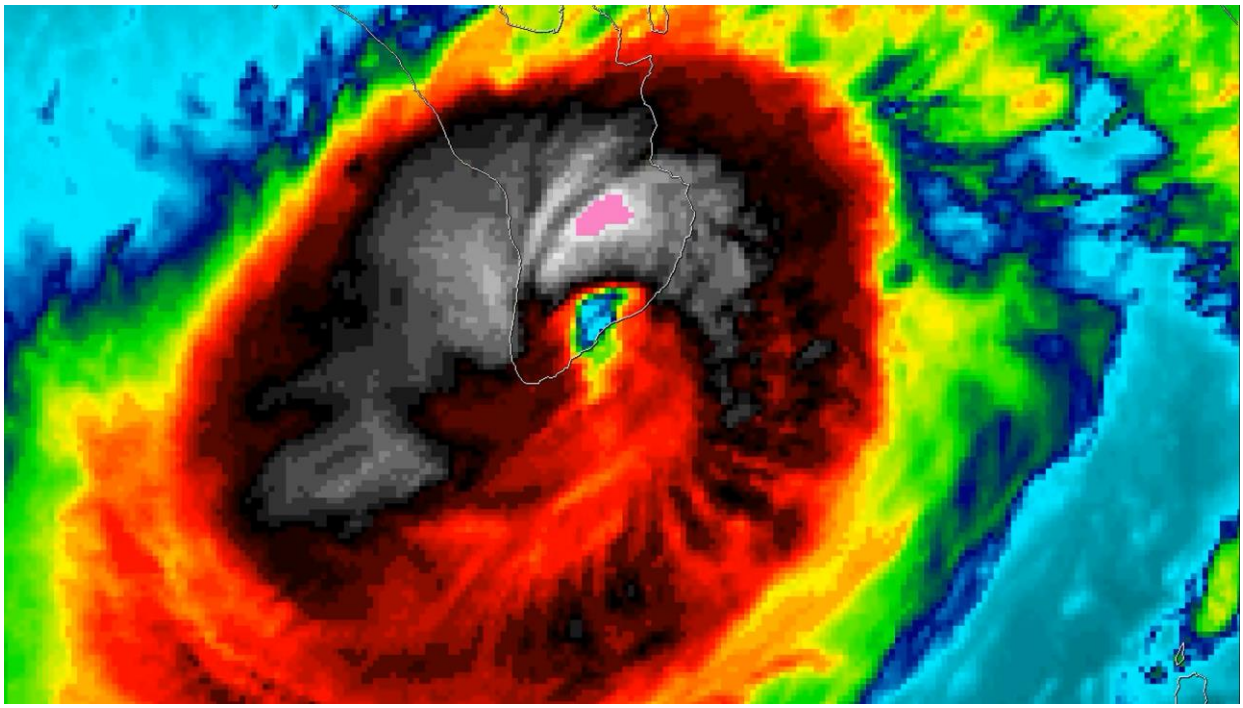
The author was in **San Jose del Cabo** (23.0439N 109.6956W)—very close to the landfall point—to collect data and document this event. Prior to landfall, the author also deployed a data sensor in Cabo San Lucas (22.8809N 109.9118W), which also experienced the cyclone's core.

Key observations from the primary chase location, **San Jose del Cabo:**

- **Eye Passage.** The eye passed over this location, bringing a **distinct lull that lasted about 40 minutes**—from ~8:25 to ~9:05 pm MDT.
- **Minimum Pressure.** The lowest pressure, measured in the eye, was **976.7 mb at 8:51 pm MDT 09 Sep (0251Z 10 Sep).**
    - The sensor in Cabo San Lucas, in the SW eyewall, measured 989.2 mb at 8:37 pm.

Key conclusions from the author's data and observations:

- **Landfall.** Air-pressure data indicate landfall occurred **at ~8:50 pm MDT 09 Sep (0250Z 10 Sep)**—slightly earlier than the NHC's operational estimate.
- **Structure.** The hurricane's core was asymmetric. The leading (NW) eyewall was vigorous and sharply defined, whereas the back (SE) eyewall was weaker and more diffuse, bringing only moderately windy conditions and light rain.
- **Size.** The storm did not last long, with apparent hurricane conditions preceding the arrival of the eye by no more than ~65-80 minutes—suggesting OLAF was a small hurricane.



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Locations

The author documented the passage of Hurricane OLAF's core from two locations.

Location A: Chase Location

The author observed the passage of the hurricane from multiple points in **San Jose del Cabo, Baja California Sur, Mexico.**

As per NHC advisory positions, this city was very close to the cyclone's track—almost exactly at the landfall point. **This location experienced the eye.**

The author drove into OLAF's core to reach the city, arriving at ~7:20 pm MDT in hurricane conditions.

During the calm eye, air-pressure data were collected at **23.0439N 109.6956W.** This location is on the beach in San Jose del Cabo's "Zona Hotelera" (near the hotel Barcelo Gran Faro Los Cabos). The author walked down a flooded bike path during the eye of the hurricane to get to this location, arriving at ~8:40 pm MDT in relatively calm conditions.

Locations B: Sensor Location

Prior to landfall, the author deployed a data sensor in **Cabo San Lucas (22.8809N 109.9118W).** This location is a hotel in the city's marina, about 15 n mi SW of Location A. Radar images suggest this location was brushed by the outer edge of the hurricane's **SW eyewall.**

The **Chase Map** shows **Location A** (**star**) and **Location B** (**hotel symbol**) in relation to **OLAF's track** (**pink**), as per NHC advisory positions. (**Chase Map (Close)** is a zoomed-in view.)

Figure 1: Chase Map

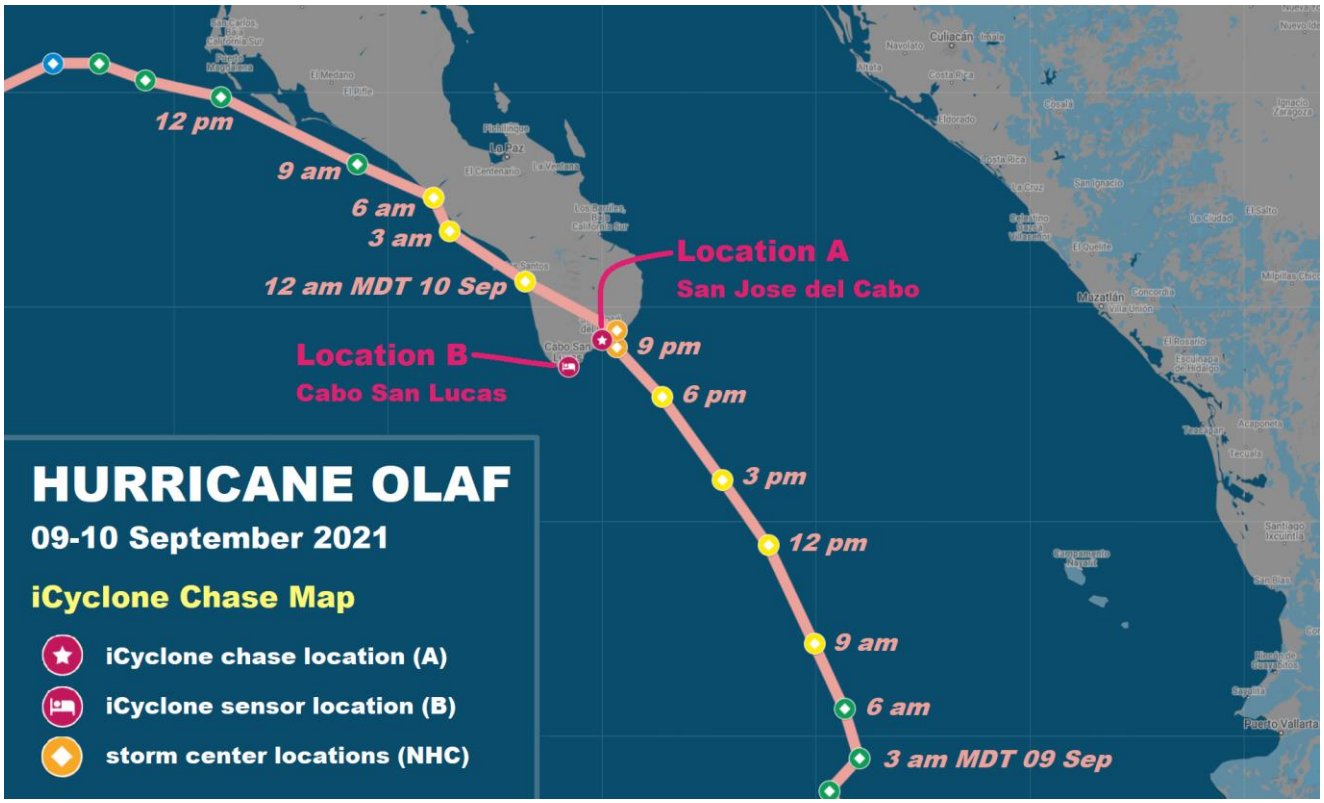

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Figure 2: Chase Map (Close)

Observations & Chronology

The author observed the hurricane in **San Jose del Cabo**, riding out the severest conditions on a hill a few blocks from the shore. When the calm eye arrived, he drove down the hill to Paseo Malecon San Jose (the neighborhood's main street), parked the car, and walked down a flooded bike path to the beach **(Location A)**, where he continued to make observations while also collecting data in the eye.

Several hours before the hurricane, the author deployed a sensor to collect data at **Location B (Cabo San Lucas),** 15 n mi to the SW.

Location A: San Jose del Cabo

Key observations and data (**color code: eyewall**, **transition to eye**, **eye**):

- The author left **Cabo San Lucas (Location B)** at ~6:25 pm MDT and drove NE on Highway 1, up the coast, as the hurricane approached. The weather deteriorated steadily during this drive, becoming severe by the time he reached Palmilla at ~7:05 pm and building to a full-on **hurricane** by the time he arrived in **San Jose del Cabo (Location A)** at ~7:20 pm.

- **Conditions were especially severe—and seemed to peak—from ~7:25 pm to around 8 pm.** During this time there was extremely heavy rainfall and a powerful, turbulent bursts of wind that seemed to change direction erratically.

- **The author noticed some slight lessening of the intensity of the winds at ~8:05 pm, with more pronounced calming by ~8:20 pm.** By this time, the rain was much lighter, and despite some occasional explosive gusts, winds were generally dying down.

- The **eye passed over this location,** bringing pronounced calm, from **~8:25 pm to ~9:05 pm.**

- The minimum air pressure, **976.7 mb,** occurred at **8:51 pm MDT** (in the eye).

- **Wind and rain gradually returned starting ~9:05 pm,** but conditions were relatively mild, never regaining their former bite—just occasionally gusty winds and light-to-moderate rain.

Key **takeaways** from the observations and data.

- **The cyclone's core was vigorous and intense**—much more so than the author expected.

- **The cyclone's core was asymmetric.** Destructive winds and extremely heavy rain **preceded** the eye—however, conditions were much milder after the eye.

- **The cyclone was apparently quite small.** The duration of hurricane conditions on the front side (65-80 mins) plus the calm eye (40 mins) was less than 2 hours combined. The duration of the cyclone's backside is harder to estimate since that part of the storm was much weaker and not well defined. (As far as the author could tell, hurricane conditions did **not** follow the eye.)

See more below, under **Air Pressure Data,** Re: instrument calibration and data collection.

Location B: Cabo San Lucas

Well before the arrival of the hurricane, the author deployed a data sensor at this location, a hotel in the marina in Cabo San Lucas. The device recorded a **minimum pressure of 989.2 mb at 8:37 pm MDT.**

Radar images suggest the outer edge of the hurricane's SW eyewall just barely brushed the city, so it never entered the eye.

OLAF's impacts in Cabo San Lucas were not especially severe, apparently limited to a few downed trees and branches, and some flooded streets. Power remained on in most of the city.

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Air Pressure Data

The author collected quality-controlled air-pressure data at two locations using Kestrel 4500s.

- **Location A: San Jose del Cabo.** This device was deployed on a low wall right on the beach. Unfortunately, the author didn't arrive at this location, calibrate, and begin data collection until 8:45 pm MDT—about 20 minutes into the eye. Therefore, the entire eye was not sampled.

- **Location B: Cabo San Lucas.** This device was deployed on the counter of a fifth-floor hotel room well before the hurricane arrived.

The sampling rate for both instruments was one reading every 30 seconds (2/min).

Calibration

To ensure sea-level pressure readings, each device was calibrated as follows:

- **Location A: San Jose del Cabo.** The author deployed the device right on the beach, so determining elevation was simple. The author used a reference altitude of **5 ft,** to account for the slight slope of the beach and the device's resting position on a low wall.

- **Location B: Cabo San Lucas.** This location is in the city's marina, right on the waterfront. The author visually estimated the ground elevation to be **8 ft**—therefore, the reference altitude (70 ft) was the 8 ft elevation plus additional height to account for the device being in a fifth-floor hotel room.

Minimums

As follows:

- **Location A (San Jose del Cabo): 976.7 mb at 8:51 pm MDT**

    - **Note:** Although the author didn't begin data collection until about halfway through the eye, it's likely the 976.7 mb represents a true minimum, since the pressure fell fairly steadily from the time of deployment (8:45 pm) to the time of the minimum value (8:51 pm).

- **Location B (Cabo San Lucas): 989.2 mb at 8:37 pm MDT**

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

Landfall Timing

These data (and observations) give a solid idea **of OLAF's landfall timing.**

The minimum pressure at Location A occurred at 8:51 pm MDT, in the eye, after which time the pressure rose as the center moved on.

Since this location is right at the coast, a logical estimate for the time of landfall is **8:50 pm MDT 09 Sep (0250Z 10 Sep).**

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Figure 3: Barogram—Location A

The minimum pressure of 976.7 mb occurred at 8:51 pm MDT, as the eye passed over San Jose del Cabo.

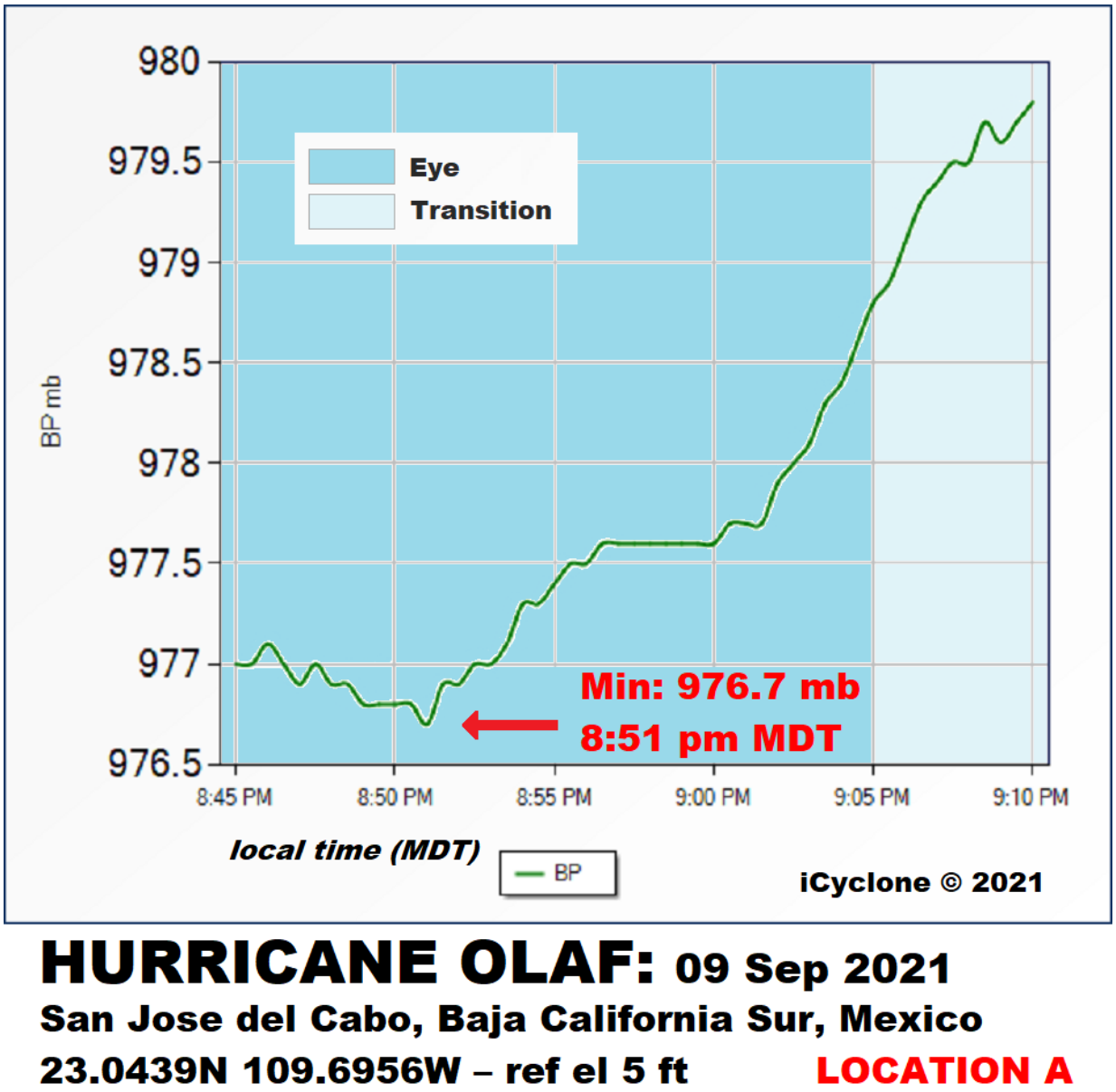
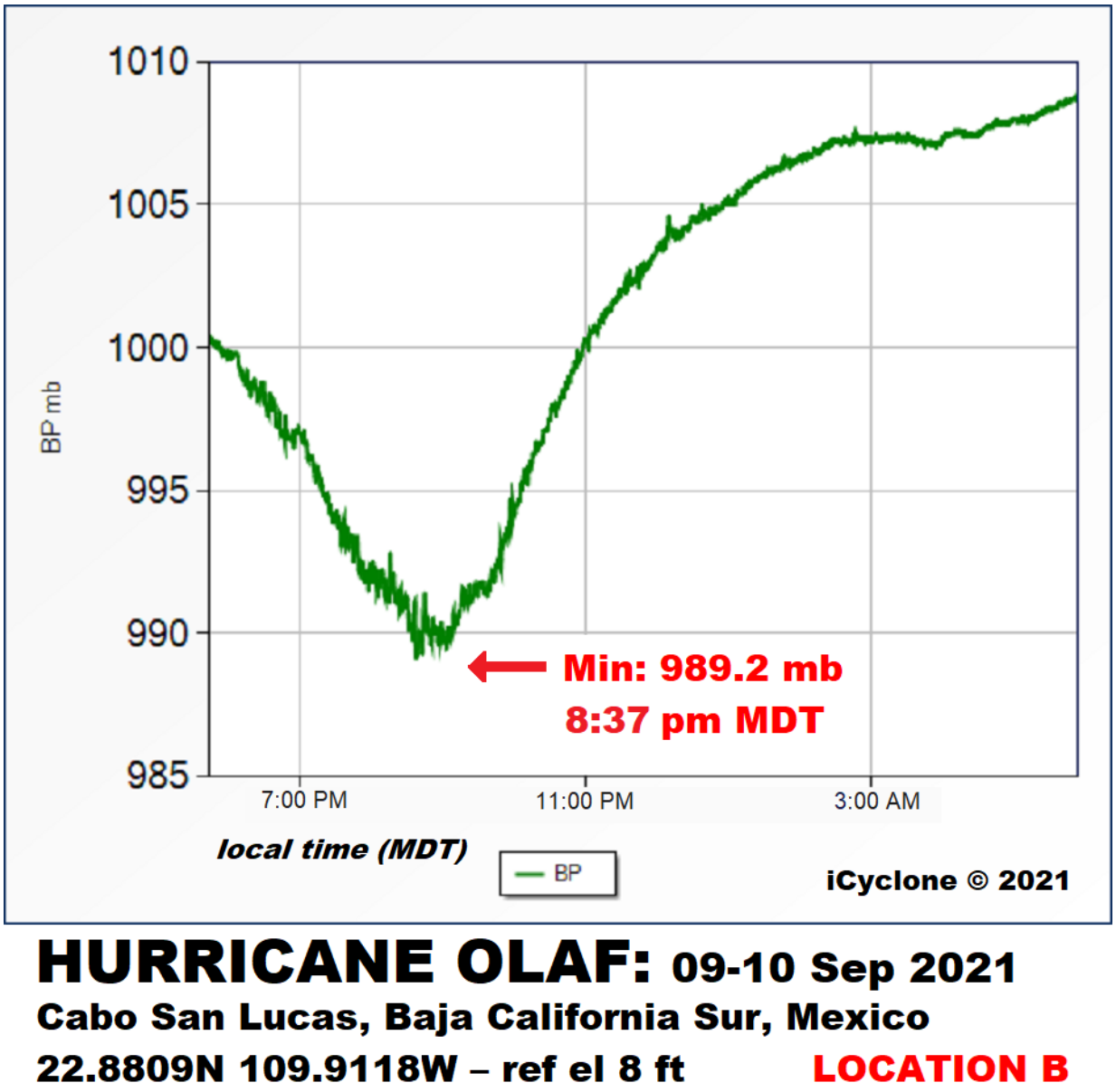


Figure 4: Barogram—Location B

The minimum pressure in Cabo San Lucas was 989.2 mb at 8:37 pm MDT. This minimum likely occurred as the SW eyewall brushed the city.



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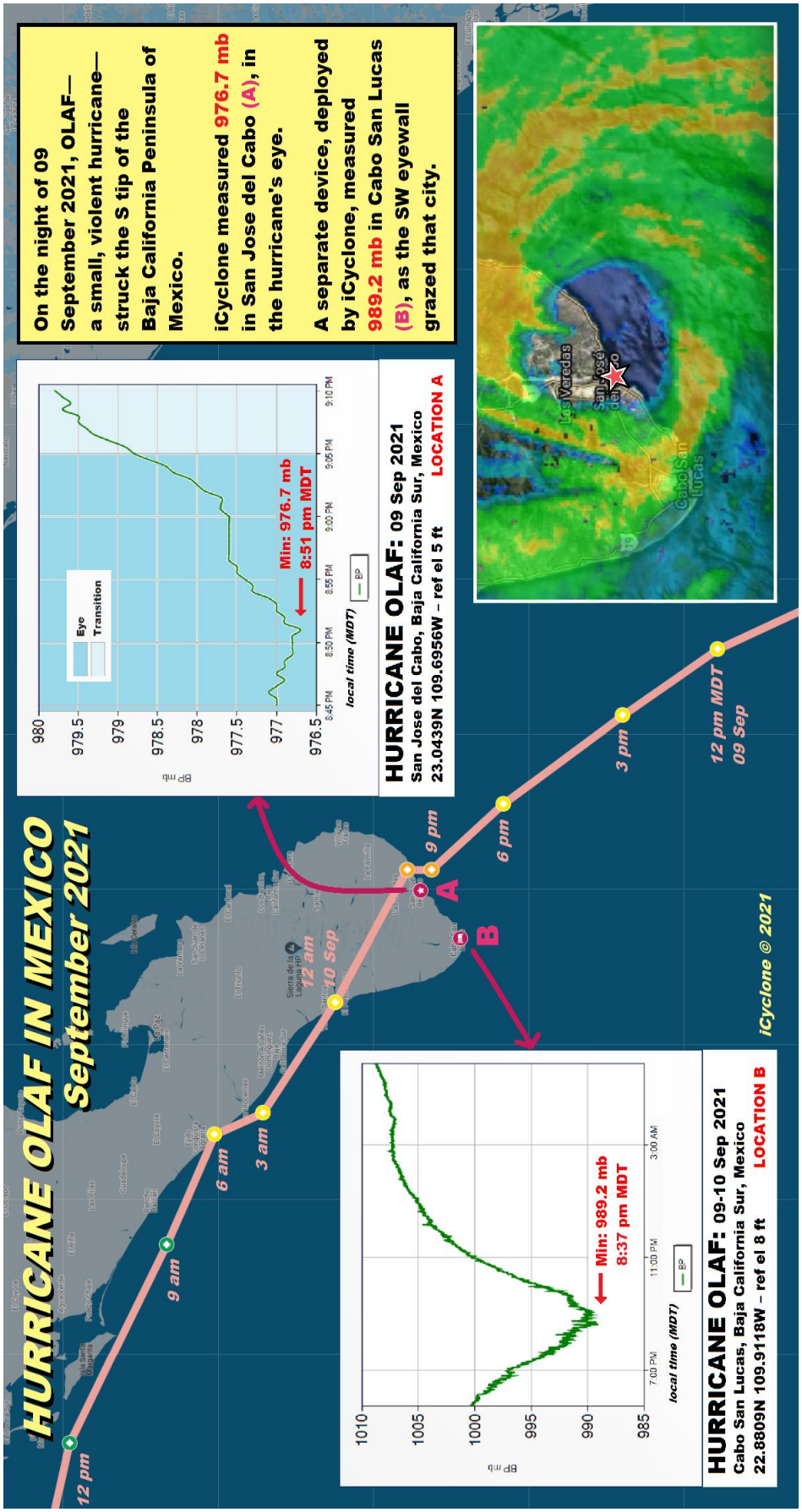
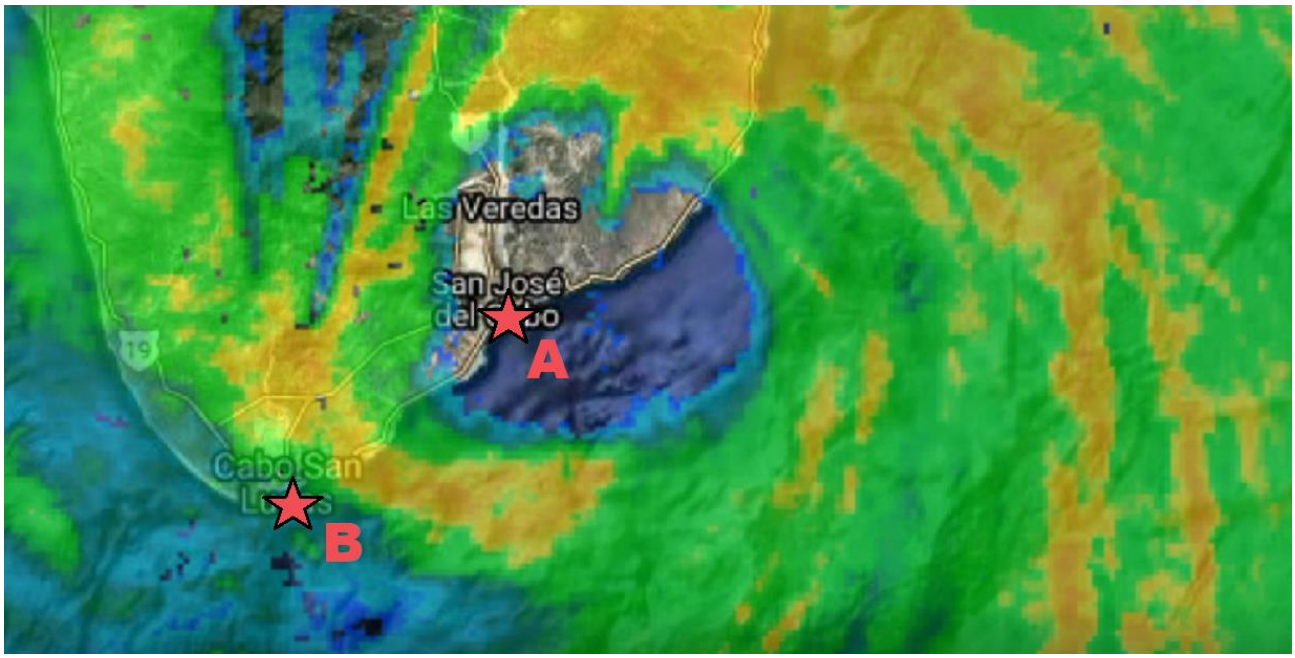
Summary (Infographic)



Radar

Radar from the time of landfall shows OLAF's eye passing over **Location A (San Jose del Cabo**) while the SW eyewall only brushed **Location B (Cabo San Lucas).**



Video

Conditions described in this report can be seen in the author's 15-minute video of the event: https://youtu.be/1TInvYQK6tY

For easy analysis, all the footage is timestamped in local time (MDT).

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Questions or Feedback?

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