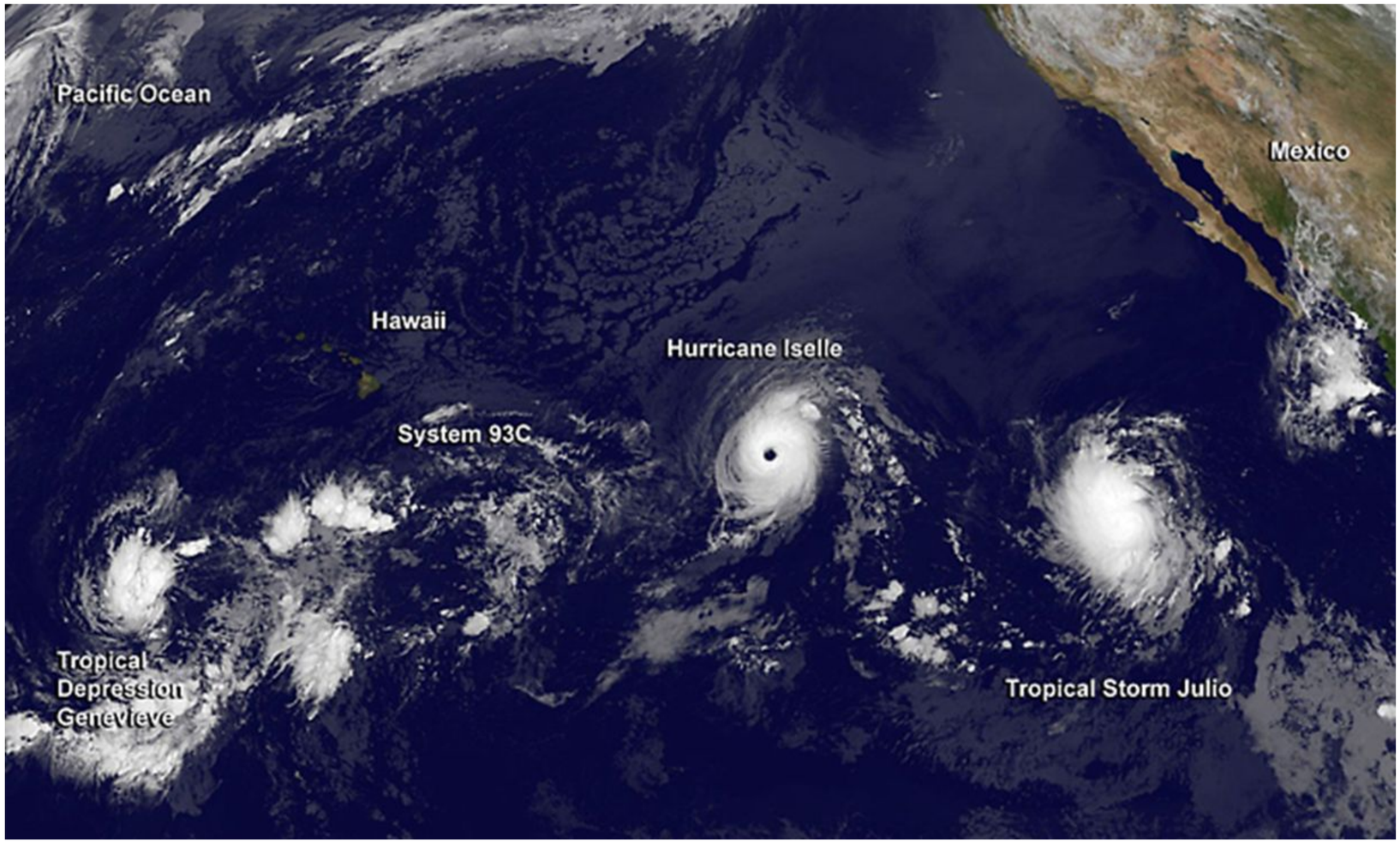
2026 Hurricane Season
Product Review and Preparedness Information

Be Ready Manoa – May 30, 2026

John Bravender, Warning Coordination Meteorologist
NOAA/NWS Weather Forecast Office Honolulu
john.bravender@noaa.gov

What is a Tropical Cyclone?

Hurricane, Tropical Storm, Tropical Depression

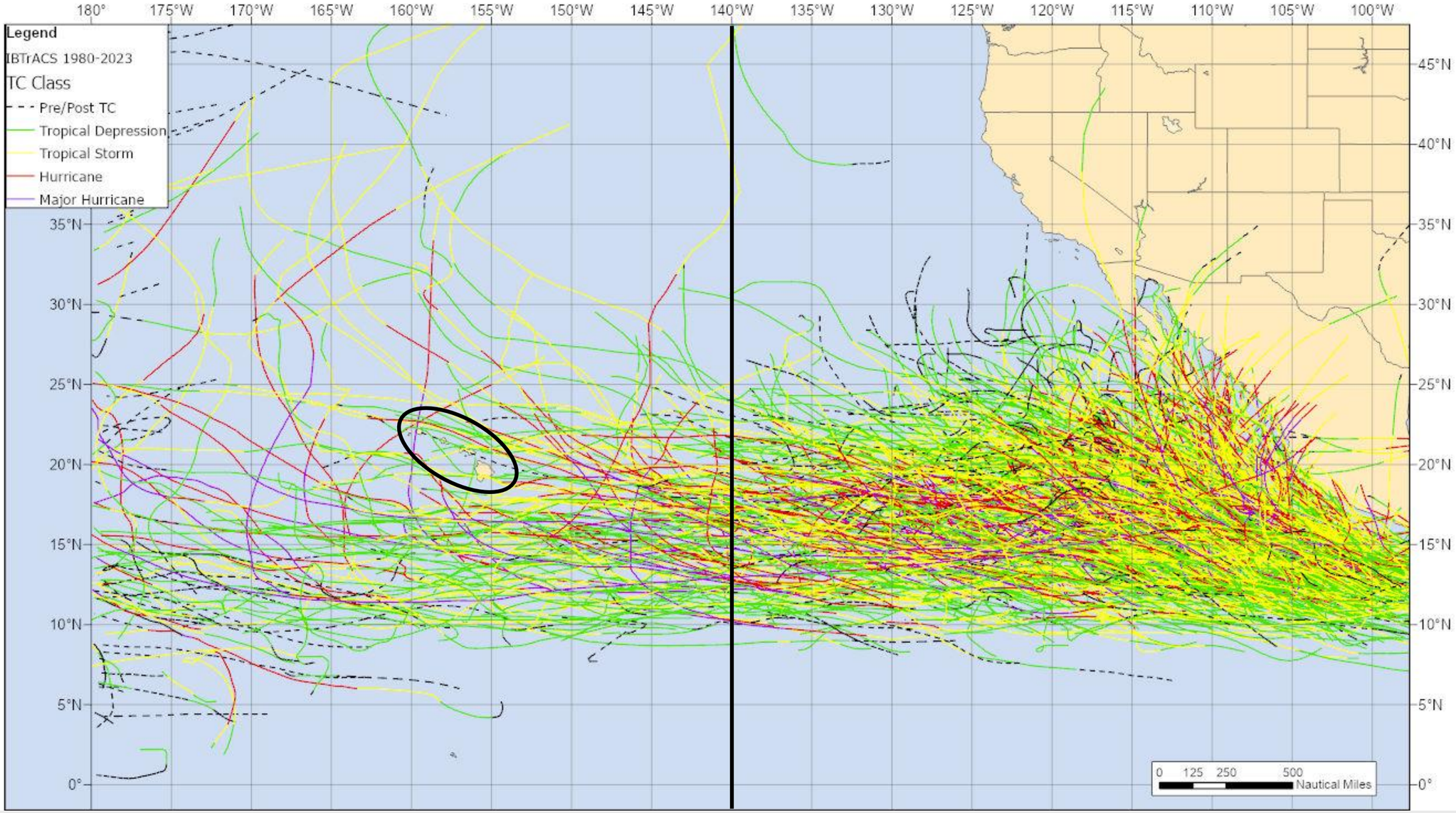


GOES-West satellite image from August 4, 2014
https://www.nasa.gov/content/goddard/iselle-eastern-pacific-ocean/

- Classified by maximum sustained surface wind speed (1-min average at 30 feet over open ocean)
  - Tropical depression:
    <39 mph (<34 kt)
  - Tropical storm:
    39-73 mph (34-63 kt)
  - Hurricane:
    >74 mph (>64 kt)
  - Major hurricane:
    >111 mph (>96 kt)

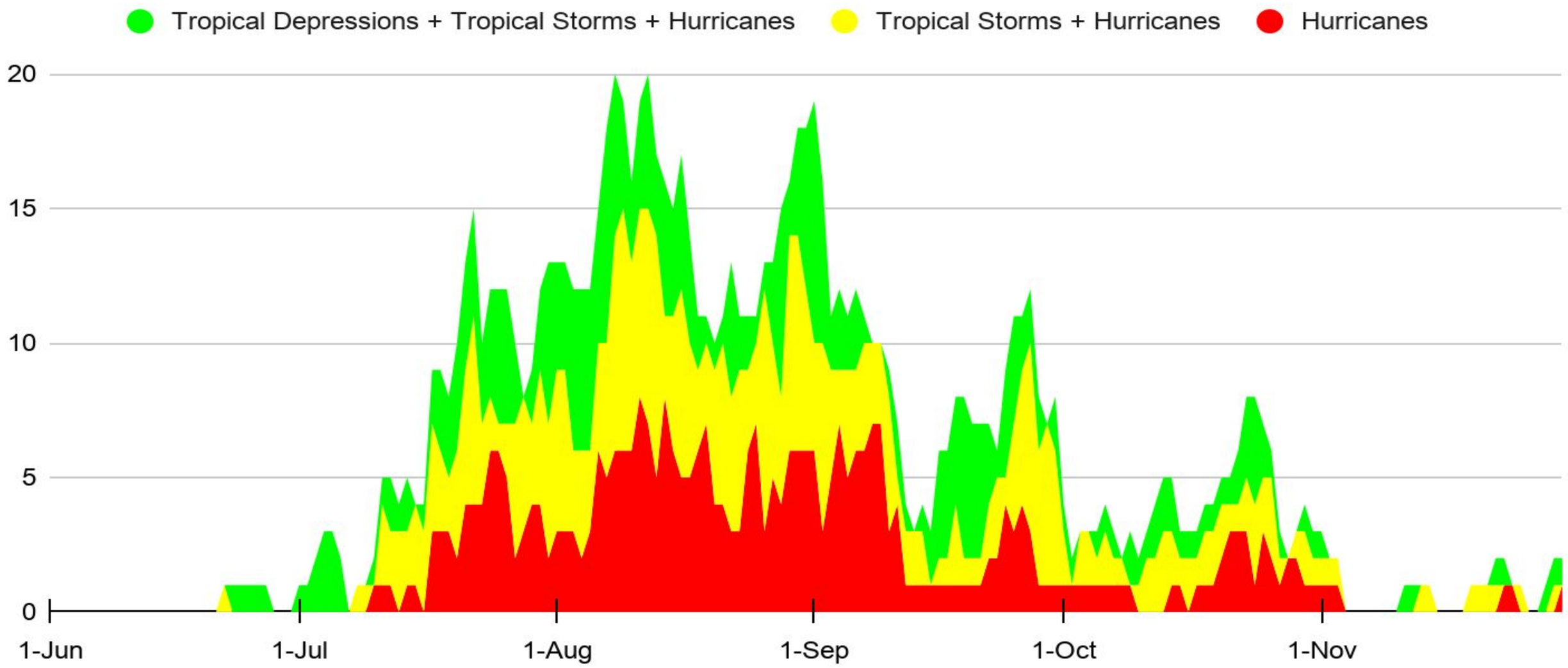
Tropical Cyclone Climatology

All tropical cyclone tracks from 1980-2023



Tropical Cyclone Activity By Day – Central Pacific

Hurricanes/Tropical Storms/Tropical Depressions, 1950-2025



National Oceanic and Atmospheric Administration
U.S. Department of Commerce

National Weather Service
Honolulu, HI

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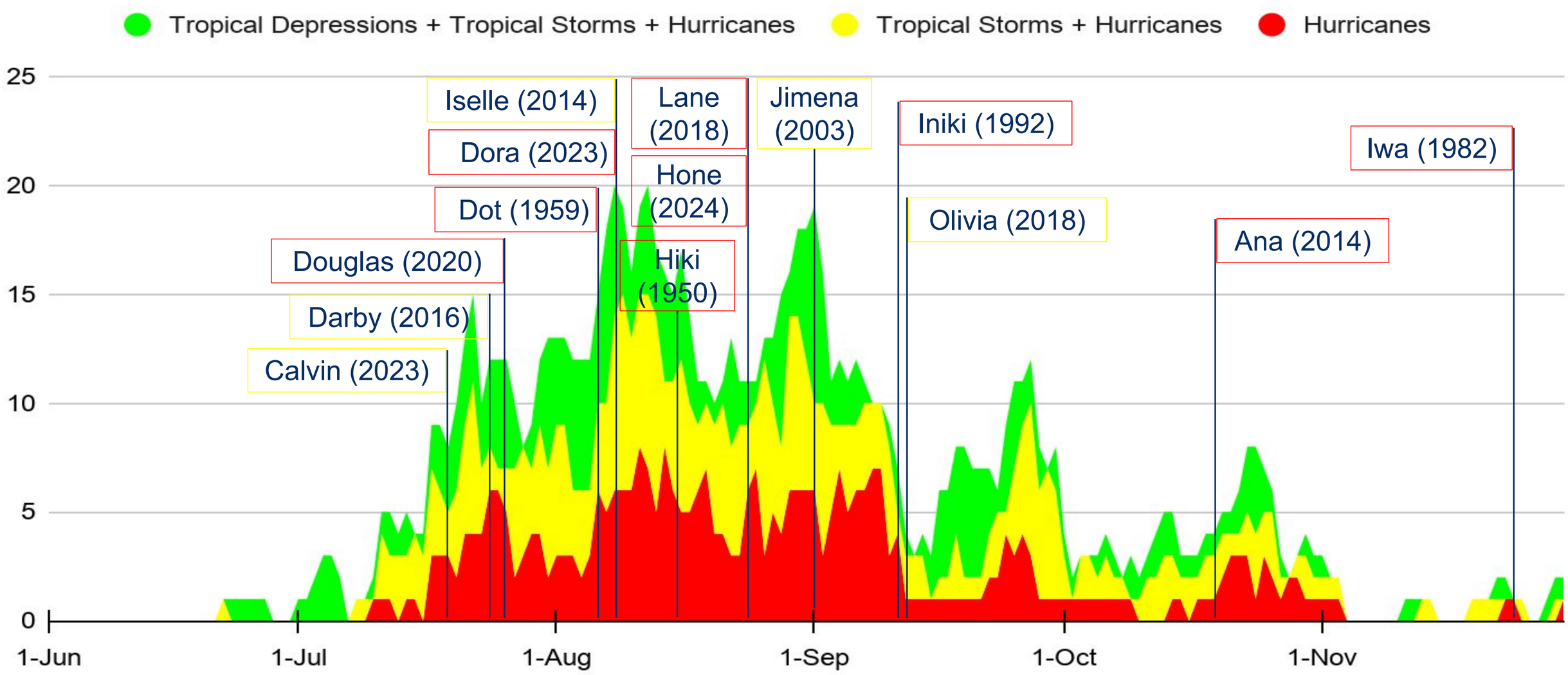

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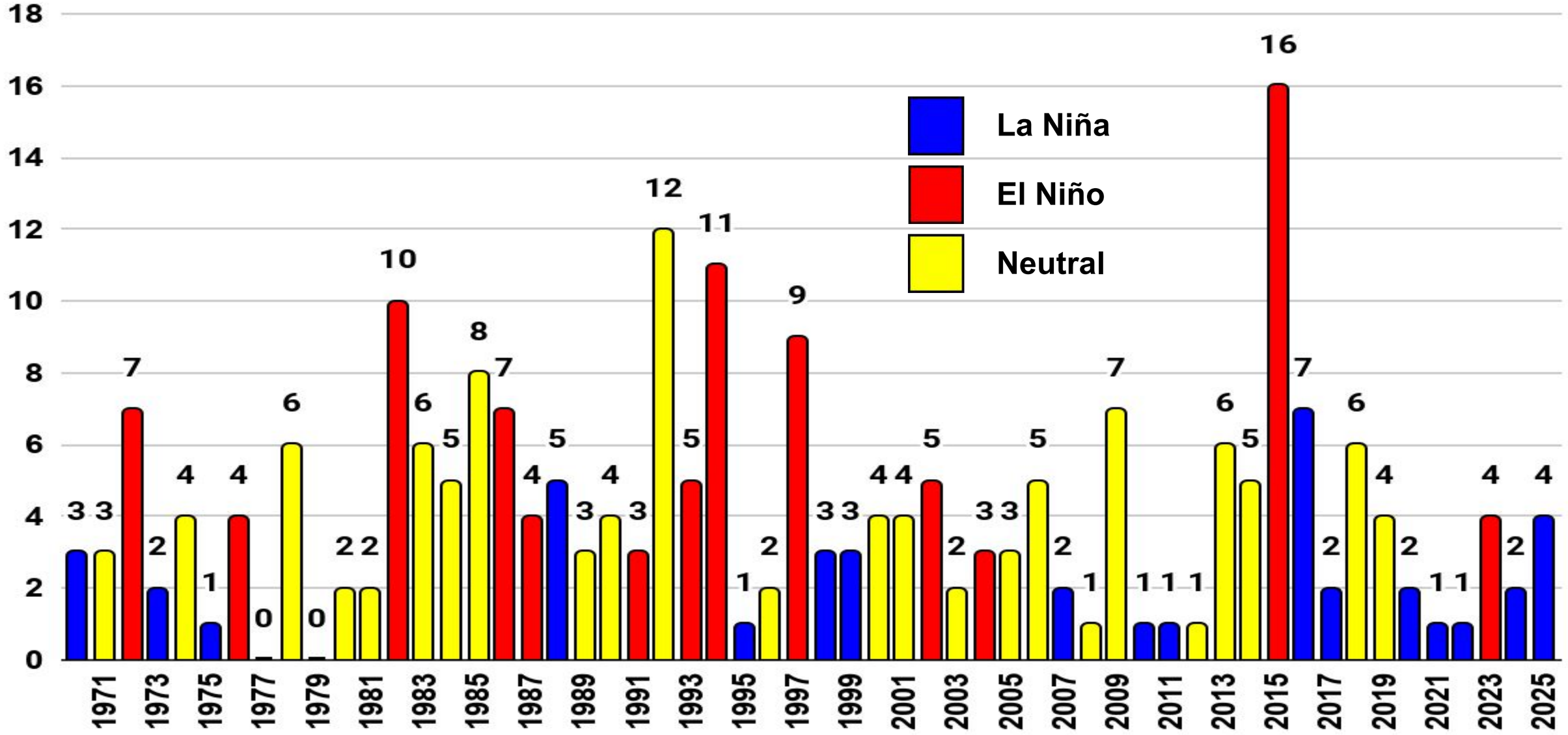
Annual Tropical Cyclones since 1970

Central Pacific Tropical Cyclones (1970-2025)



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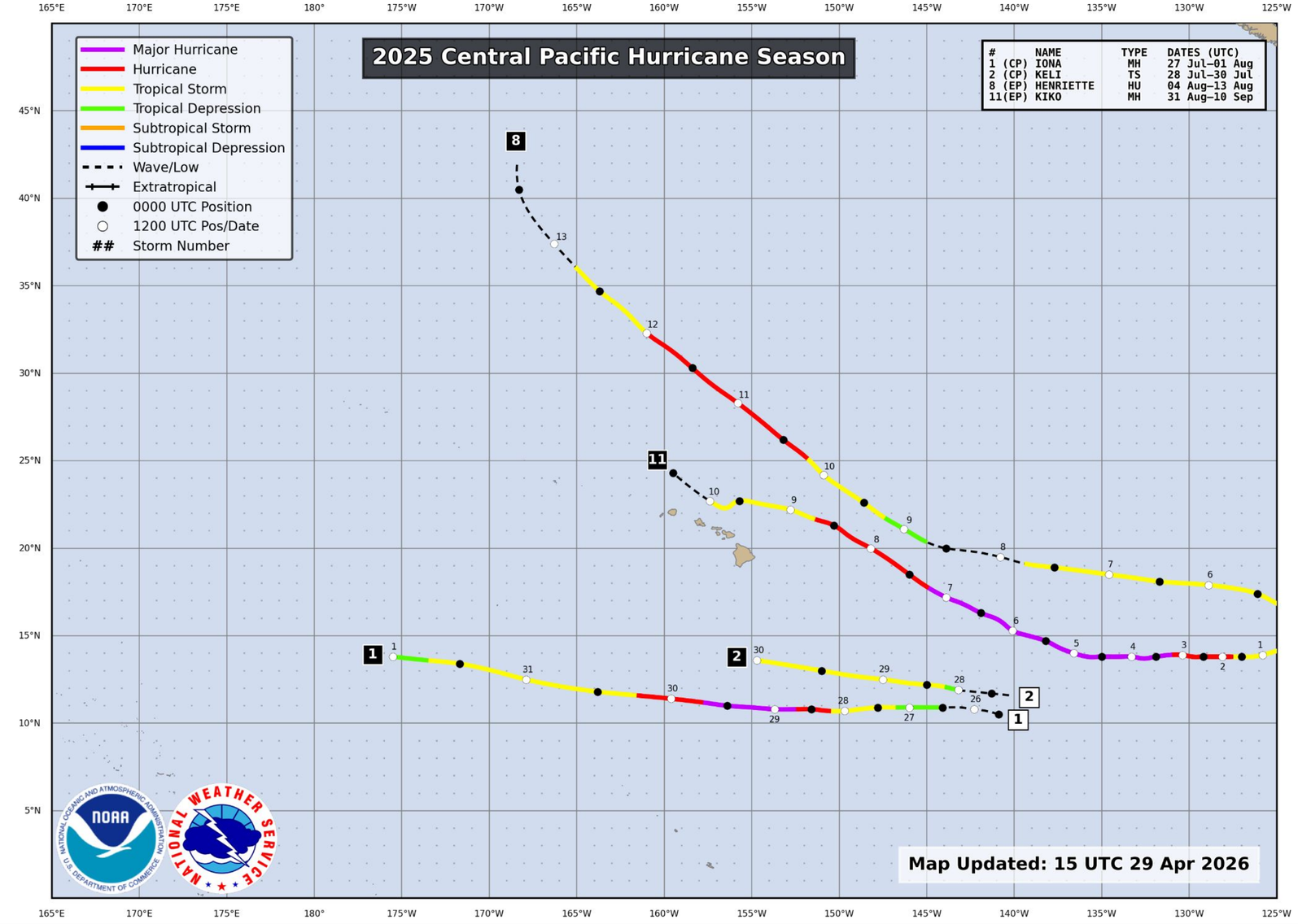
2025 Central Pacific Hurricane Season

4 Tropical Cyclones



1. **Iona**
   Peak: Major Hurricane (130 mph/category 4)
   Sat Jul 26 to Fri Aug 1

2. **Keli**
   Peak: Tropical Storm (50 mph)
   Mon Jul 28 to Wed Jul 30

3. **Henriette**
   Peak: Hurricane (85 mph/category 1)
   Fri Aug 8 to Wed Aug 13

4. **Kiko**
   Peak: Major Hurricane (140 mph/category 4)
   Sat Sep 6 to Wed Sep 10

National Oceanic and Atmospheric Administration
U.S. Department of Commerce

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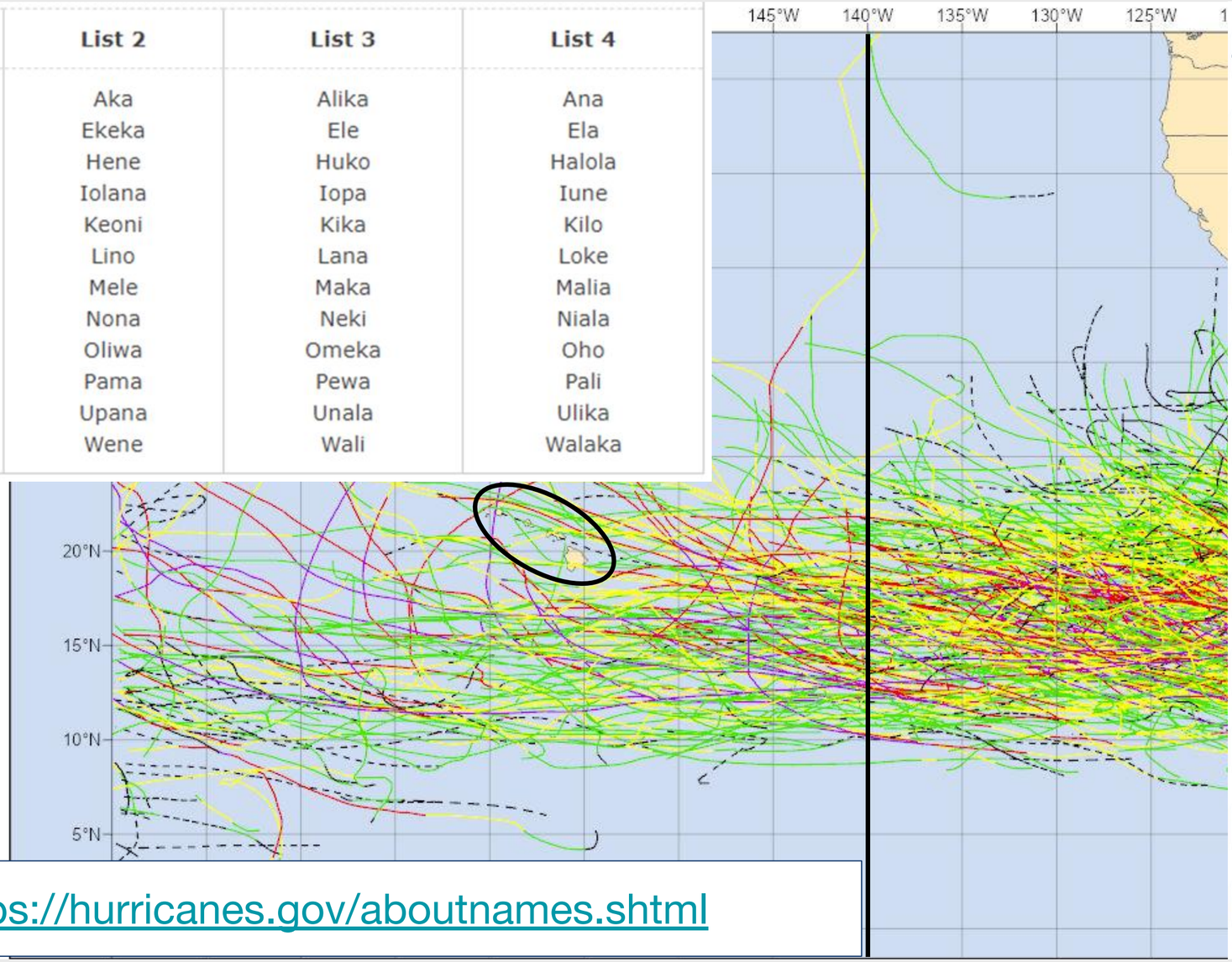
Honolulu, HI

Tropical Cyclone Names

Named in the basin where it becomes a tropical storm

List 1	List 2	List 3	List 4
~~Akoni~~	Aka	Alika	Ana
~~Ema~~	Ekeka	Ele	Ela
~~Hone~~	Hene	Huko	Halola
~~Iona~~	Iolana	Iopa	Iune
~~Keli~~	Keoni	Kika	Kilo
Lala	Lino	Lana	Loke
Moke	Mele	Maka	Malia
Nolo	Nona	Neki	Niala
Olana	Oliwa	Omeka	Oho
Pena	Pama	Pewa	Pali
Ulana	Upana	Unala	Ulika
Wale	Wene	Wali	Walaka



2026	2027	2028	2029	2030	2031	Supplemental List
Amanda	Andres	Agatha	Adrian	Aletta	Alvin	Aidan
Boris	Blanca	Blas	Beatriz	Bud	Barbara	Bruna
Cristina	Carlos	Celia	Calvin	Carlotta	Cosme	Carmelo
Douglas	Dolores	Darby	Debora	Daniel	Dalila	Daniella
Elida	Enrique	Estelle	Eugene	Emilia	Erick	Esteban
Fausto	Felicia	Frank	Fernanda	Fabio	Flossie	Flor
Genevieve	Guillermo	Georgette	Greg	Gilma	Gil	Gerardo
Hernan	Hilda	Howard	Hilary	Hector	Henriette	Hedda
Iselle	Ignacio	Ivette	Irwin	Ileana	Ivo	Izzy
Julio	Jimena	Javier	Jova	Jake	Juliette	Jacinta
Karina	Kevin	Kay	Kenneth	Kristy	Kiko	Kenito
Lowell	Linda	Lester	Lidia	Lane	Lorena	Luna
Marie	Marty	Madeline	Max	Miriam	Mario	Marina
Norbert	Nora	Newton	Norma	Norman	Narda	Nancy
Odalys	Olaf	Orlene	Otilio	Olivia	Octave	Ovidio
Polo	Pamela	Paine	Pilar	Paul	Priscilla	Pia
Rachel	Rick	Roslyn	Ramon	Rosa	Raymond	Rey
Simon	Sandra	Seymour	Selma	Sergio	Sonia	Skylar
Trudy	Terry	Tina	Todd	Tara	Tico	Teo
Vance	Vivian	Virgil	Veronica	Vicente	Velma	Violeta
Winnie	Waldo	Winifred	Wiley	Willa	Wallis	Wilfredo
Xavier	Xina	Xavier	Xina	Xavier	Xina	Xinia
Yolanda	York	Yolanda	York	Yolanda	York	Yariel
Zeke	Zelda	Zeke	Zelda	Zeke	Zelda	Zoe

https://hurricanes.gov/aboutnames.shtml

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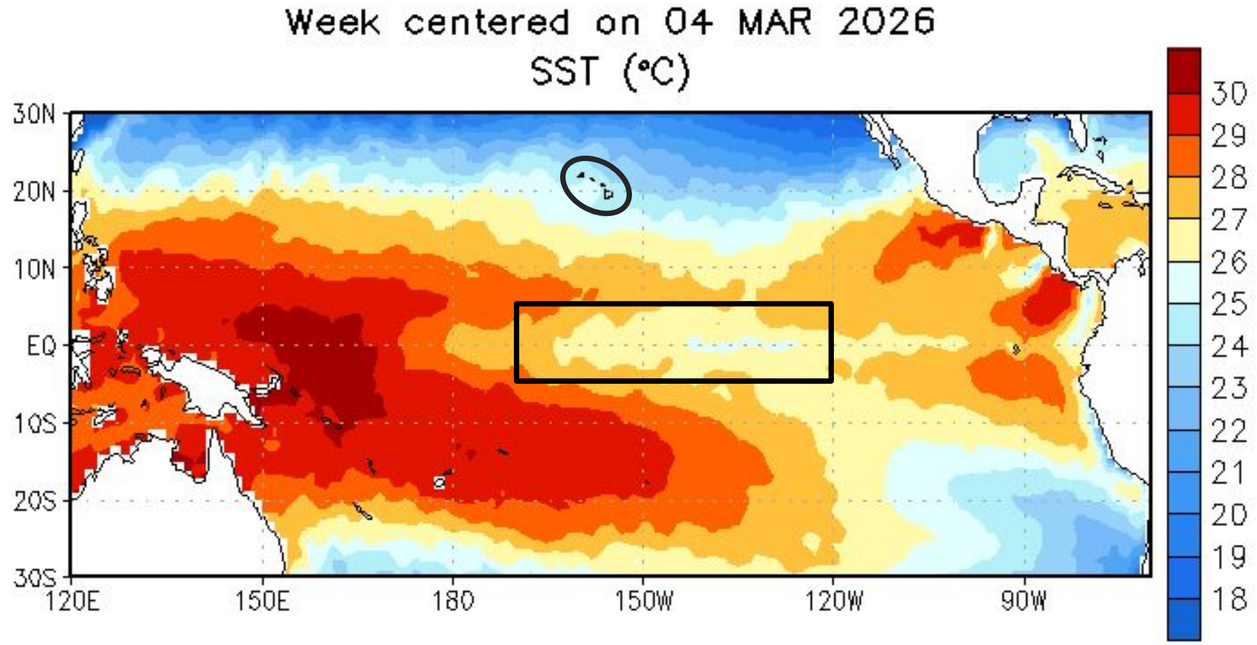
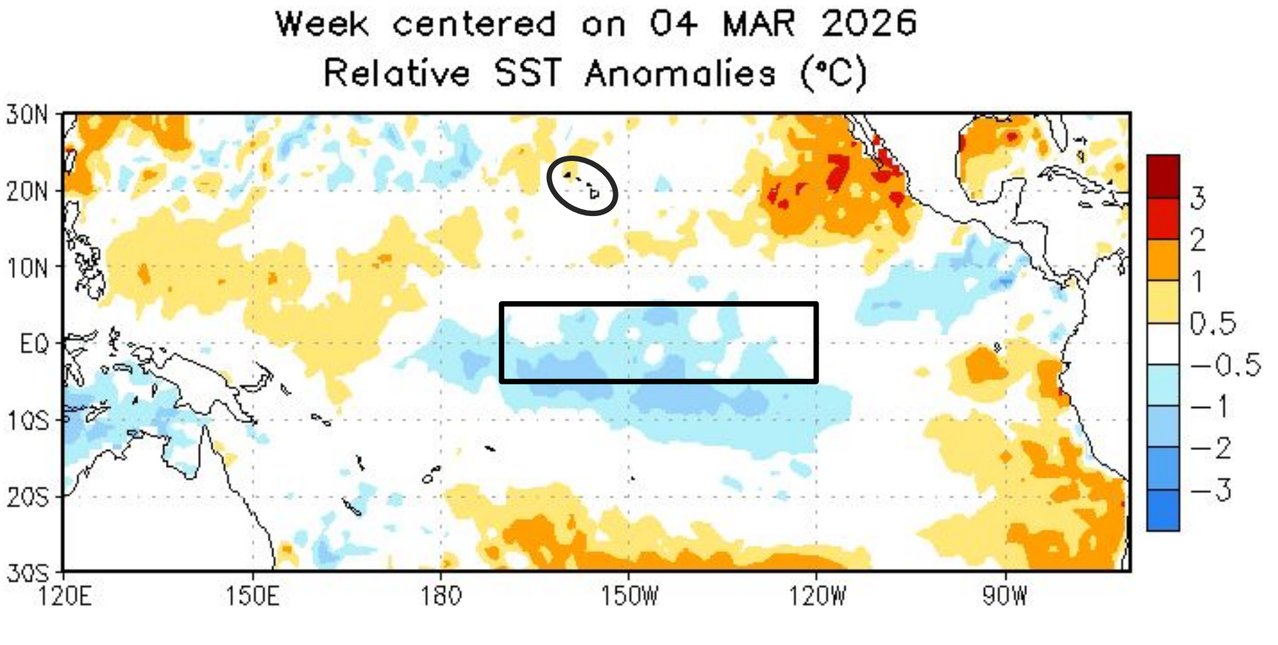
National Weather Service
Honolulu, HI

Recent Ocean Temperatures

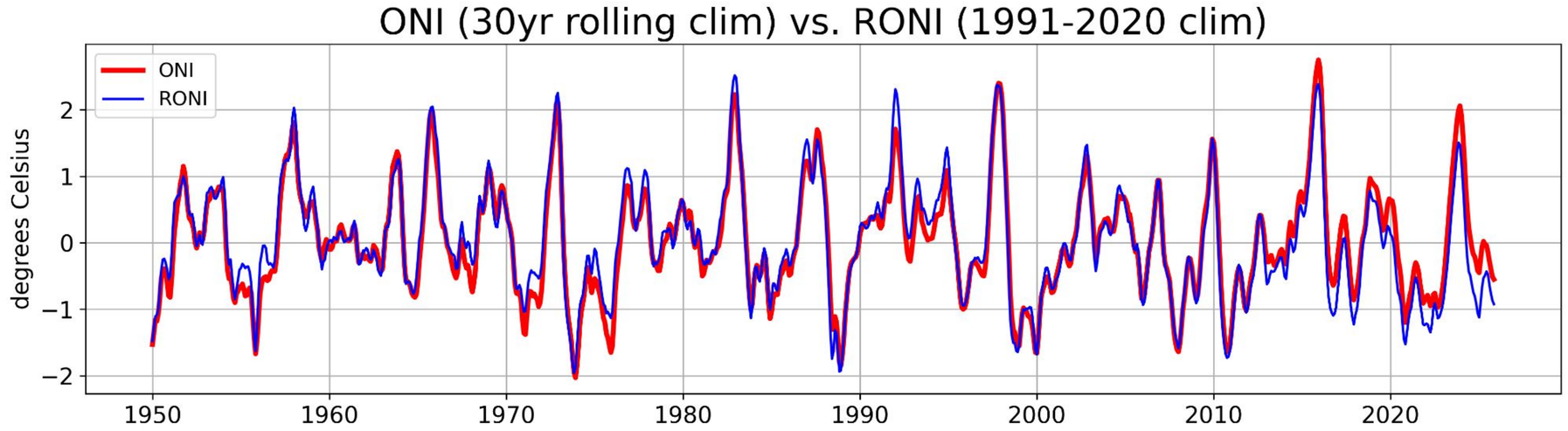
Weekly Sea Surface Temperatures and SST Anomalies

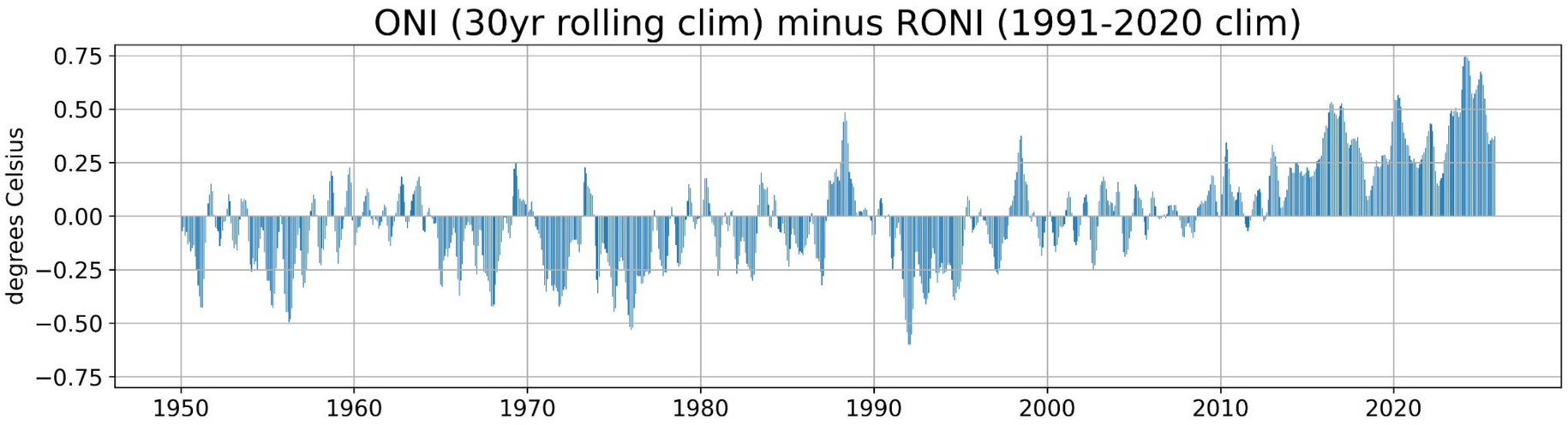




Relative Oceanic Niño Index (RONI)

A clearer, more reliable way to track El Niño and La Niña



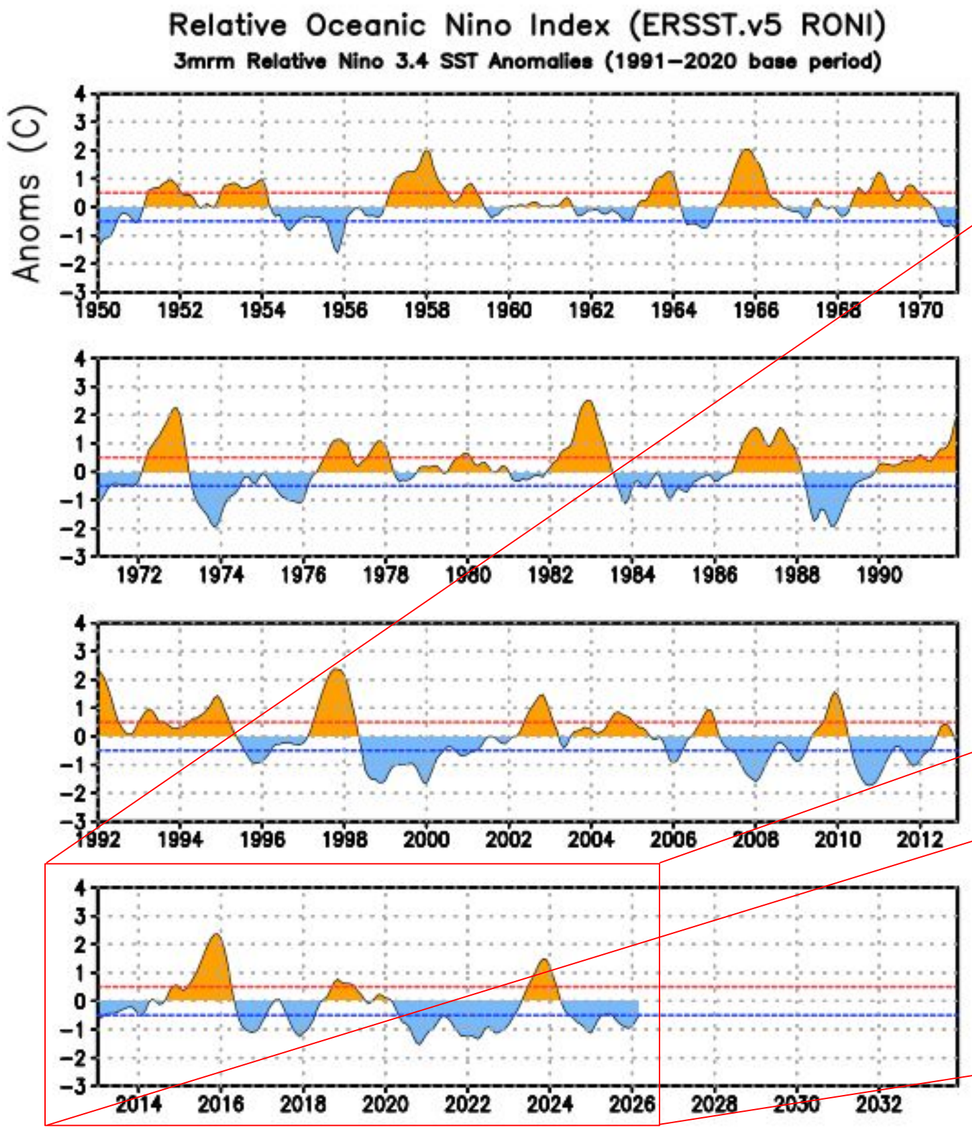


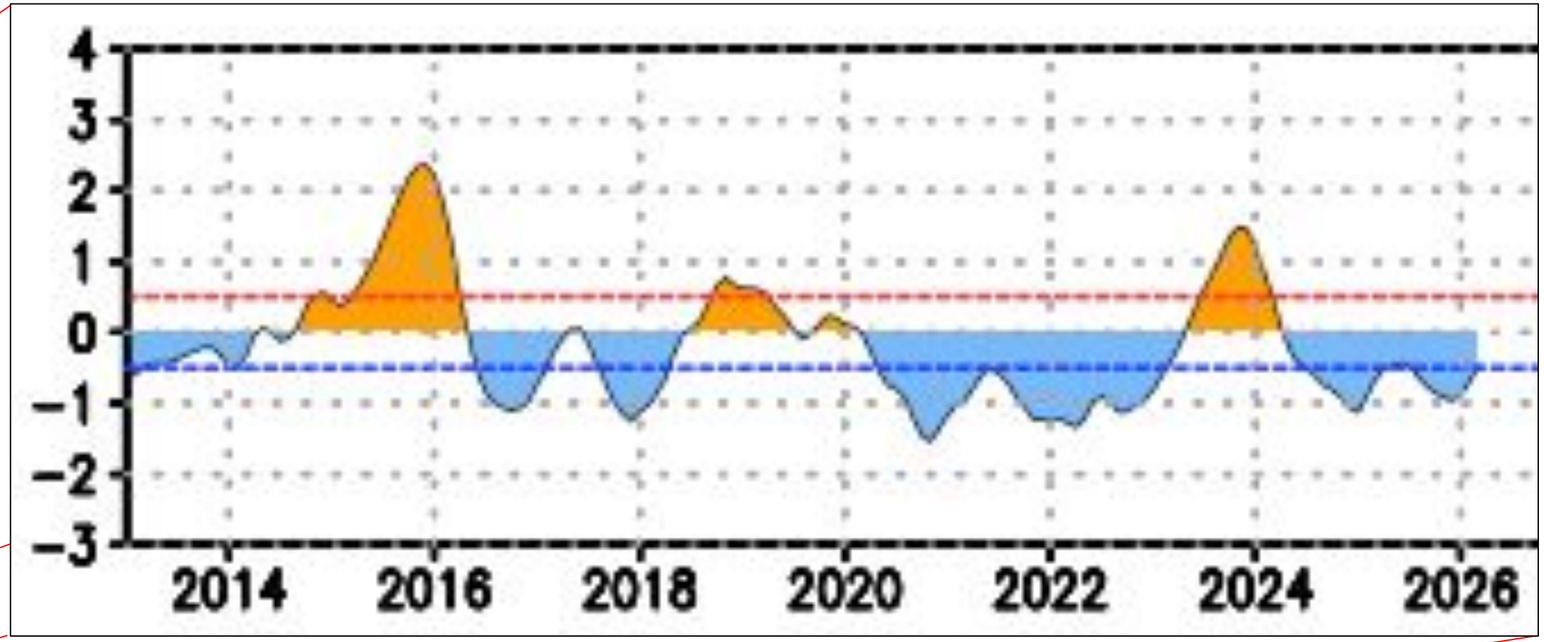
- The "Relative" ONI uses the same calculation as the traditional ONI but subtracts the sea surface temperature anomaly of the entire tropical mean (20° N-20°S)
- ONI: only includes the 30-year climatology
- RONI: includes the 30-year climatology and the tropical mean average

More information: https://www.weather.gov/media/climateservices/RONI.pdf

Historical El Niño/La Niña

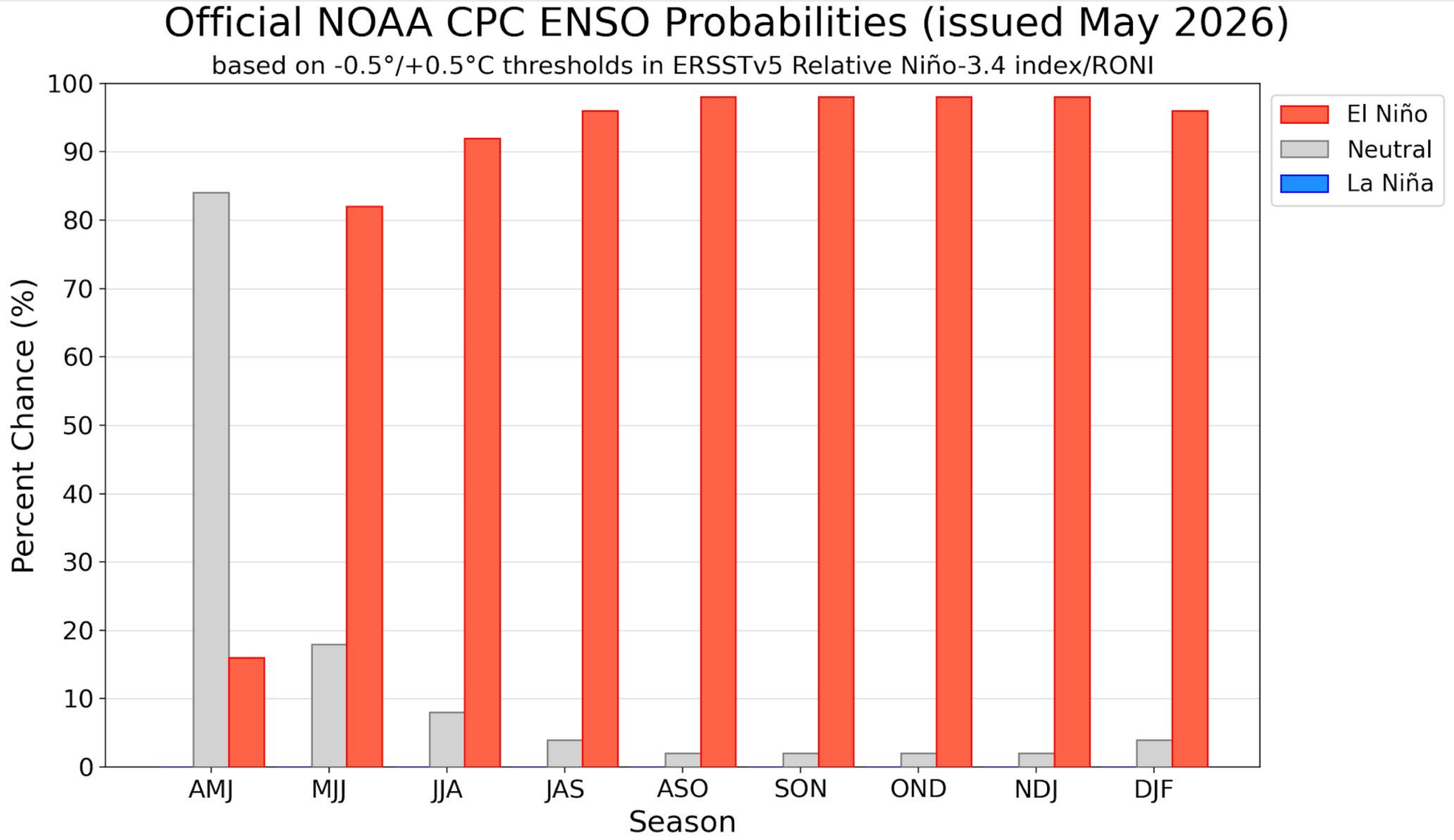
Relative Oceanic Niño Index – three month running mean





ENSO Outlook – from May 2026

El Niño to begin soon and continue through winter 2026-2027



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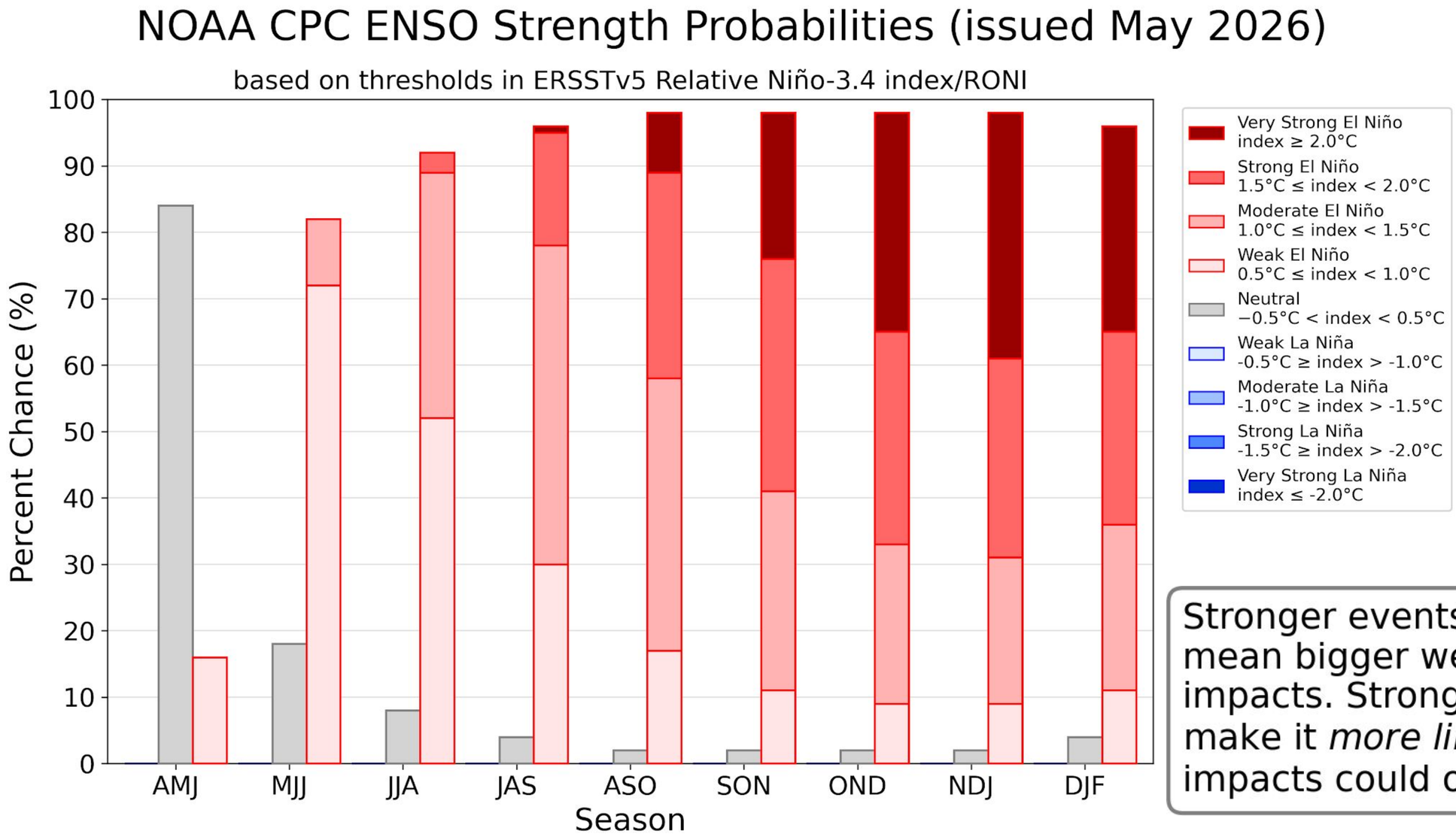
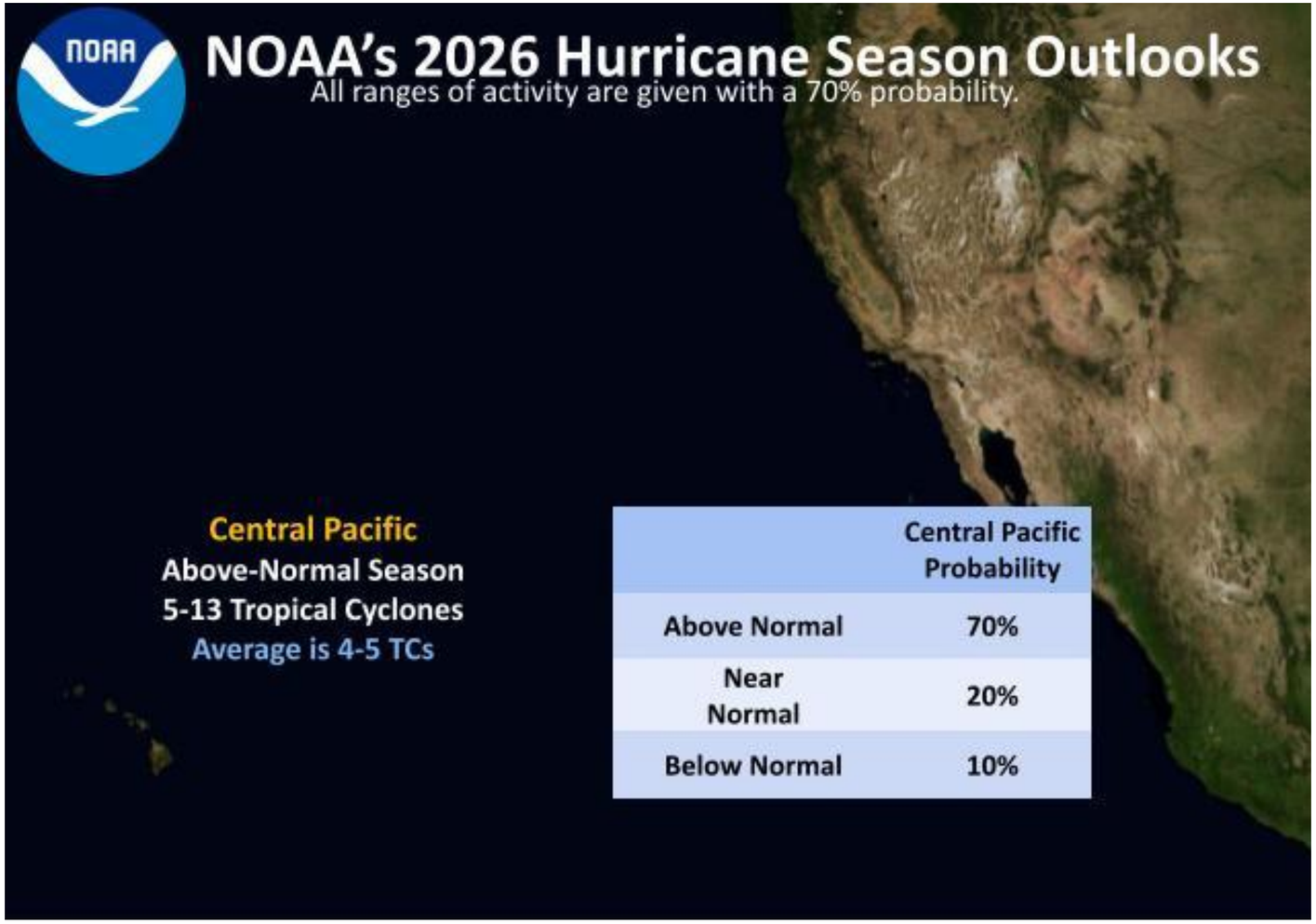


Stronger events do not always mean bigger weather and climate impacts. Stronger events can make it *more likely* that certain impacts could occur.

2026 Hurricane Season – Outlook

Central Pacific: above-normal (5 to 13 tropical cyclones)



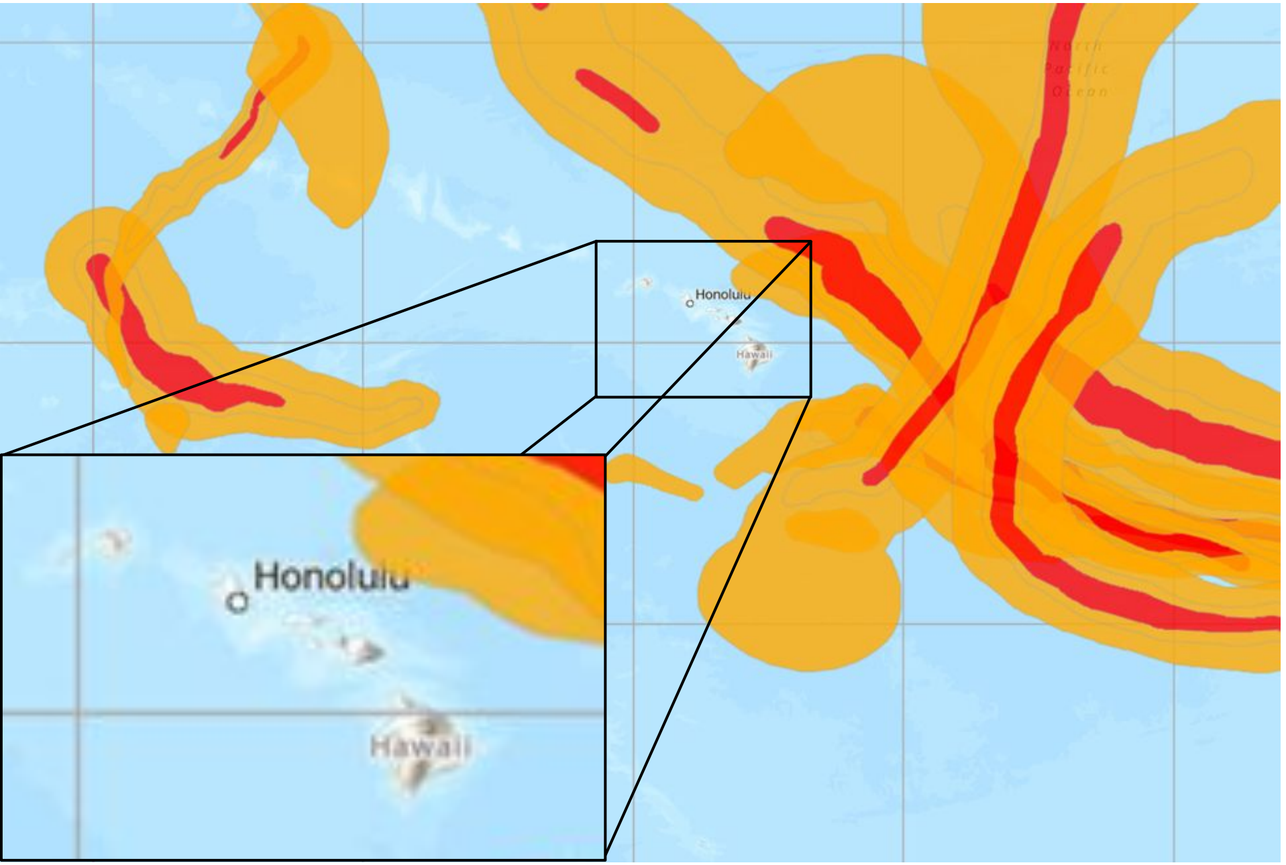
- 2026 Central Pacific outlook:
  - 5-13 Tropical Cyclones (TC)
  - 70% chances of above normal, 20% near normal, 10% below
  - Average year: 4-5 TCs
- Developing El Niño very supportive of more activity in the Central Pacific
- Uncertainty as to how fast it will develop (very large range)

- Does not address potential impacts to Hawaii

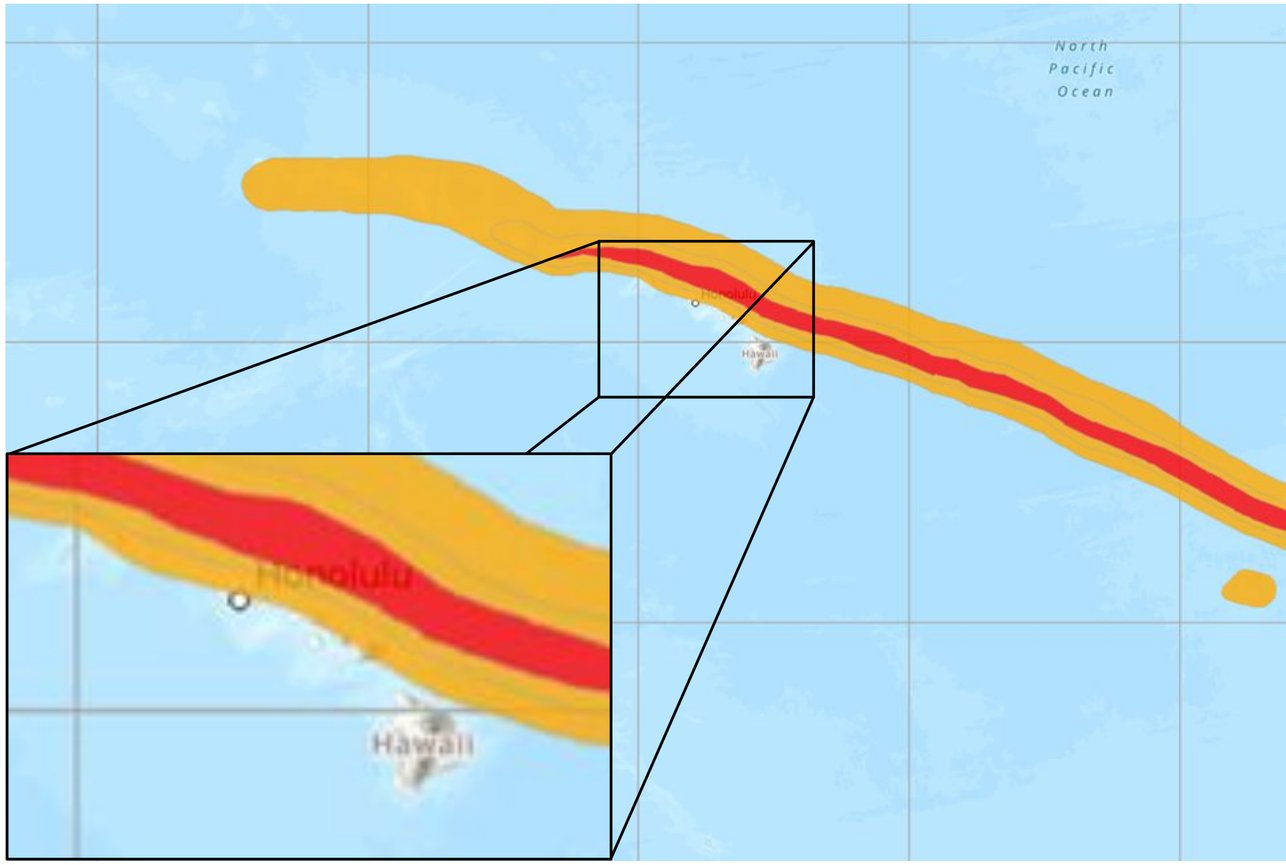
More information: https://www.weather.gov/hfo/hurricaneOutlook2026

Composite Wind Field – 2015 vs 2020

Cliché but still true: “It only takes one”



2015: 16 tropical cyclones

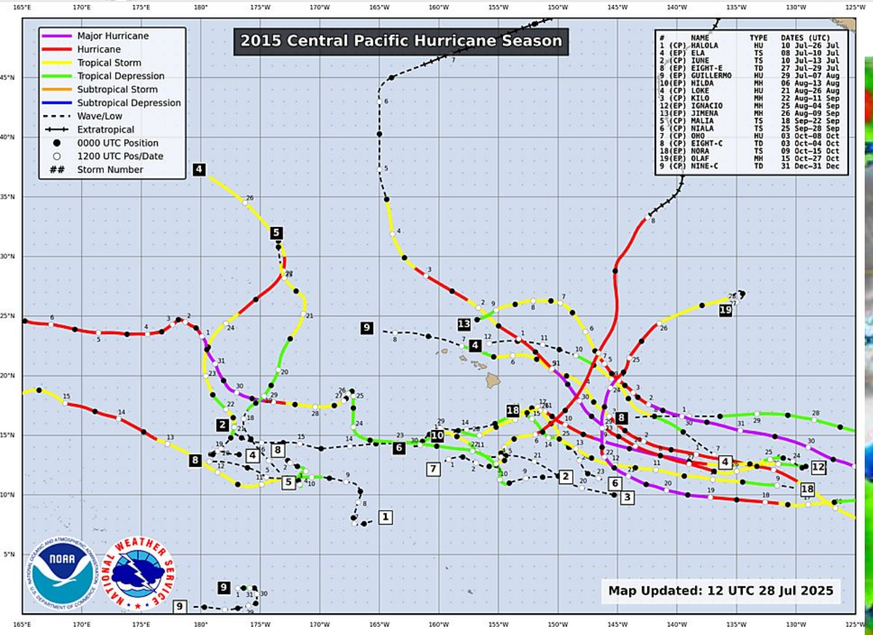


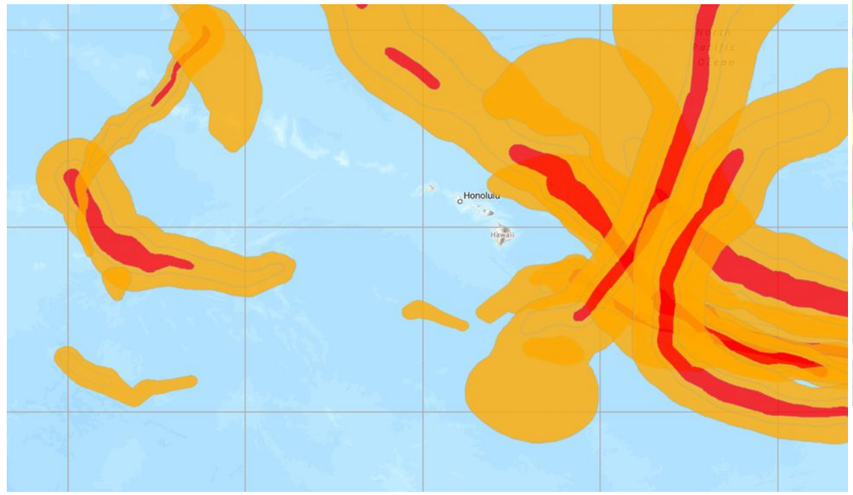
2020: 2 tropical cyclones

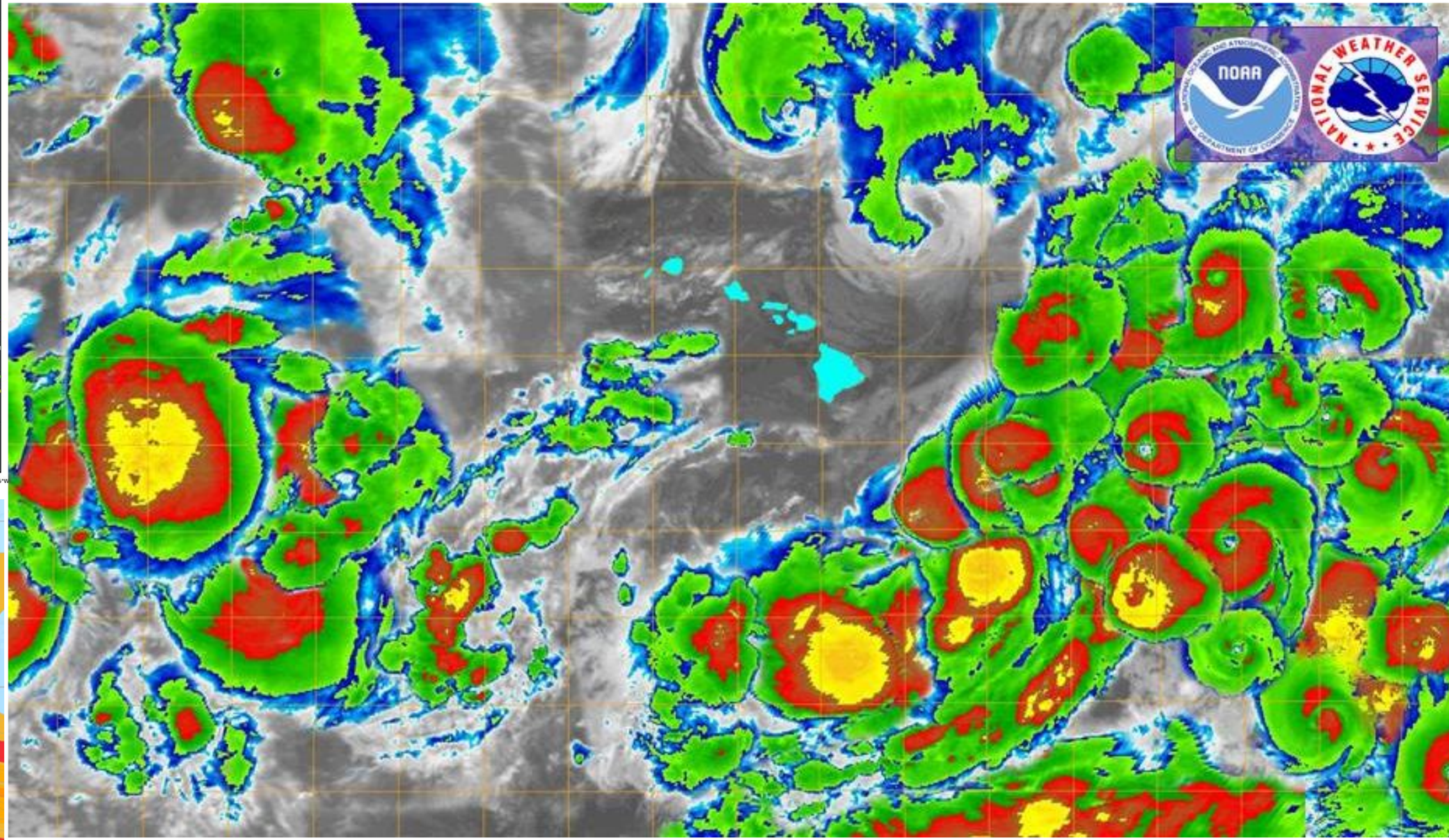
- **Orange: tropical storm (>=39 mph); Red: hurricane (>=74 mph)**

Central Pacific activity in a strong El Niño year

Example from 2015

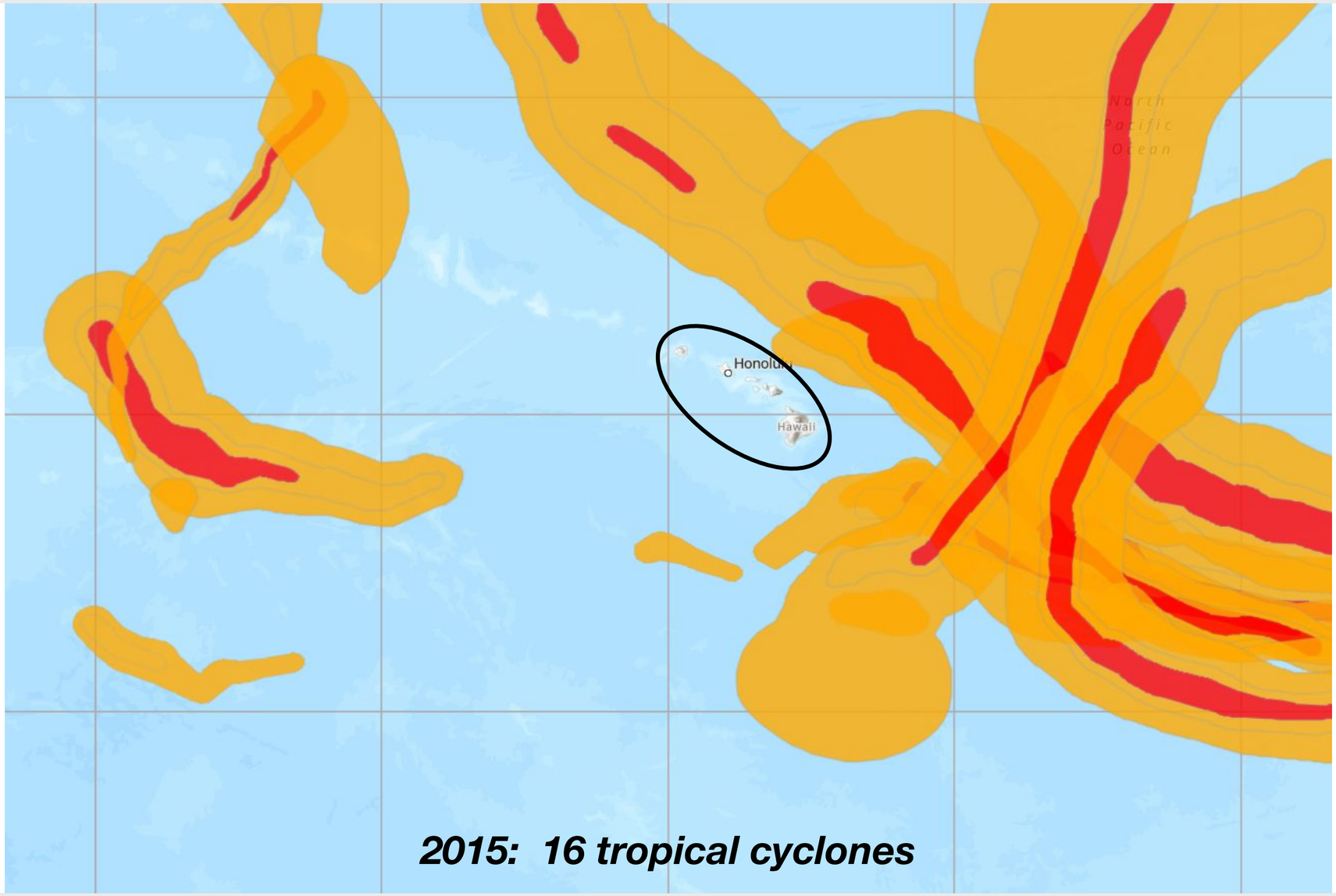






Composite Wind Field – 2015 “What If”?

What if the weather pattern was slightly different?



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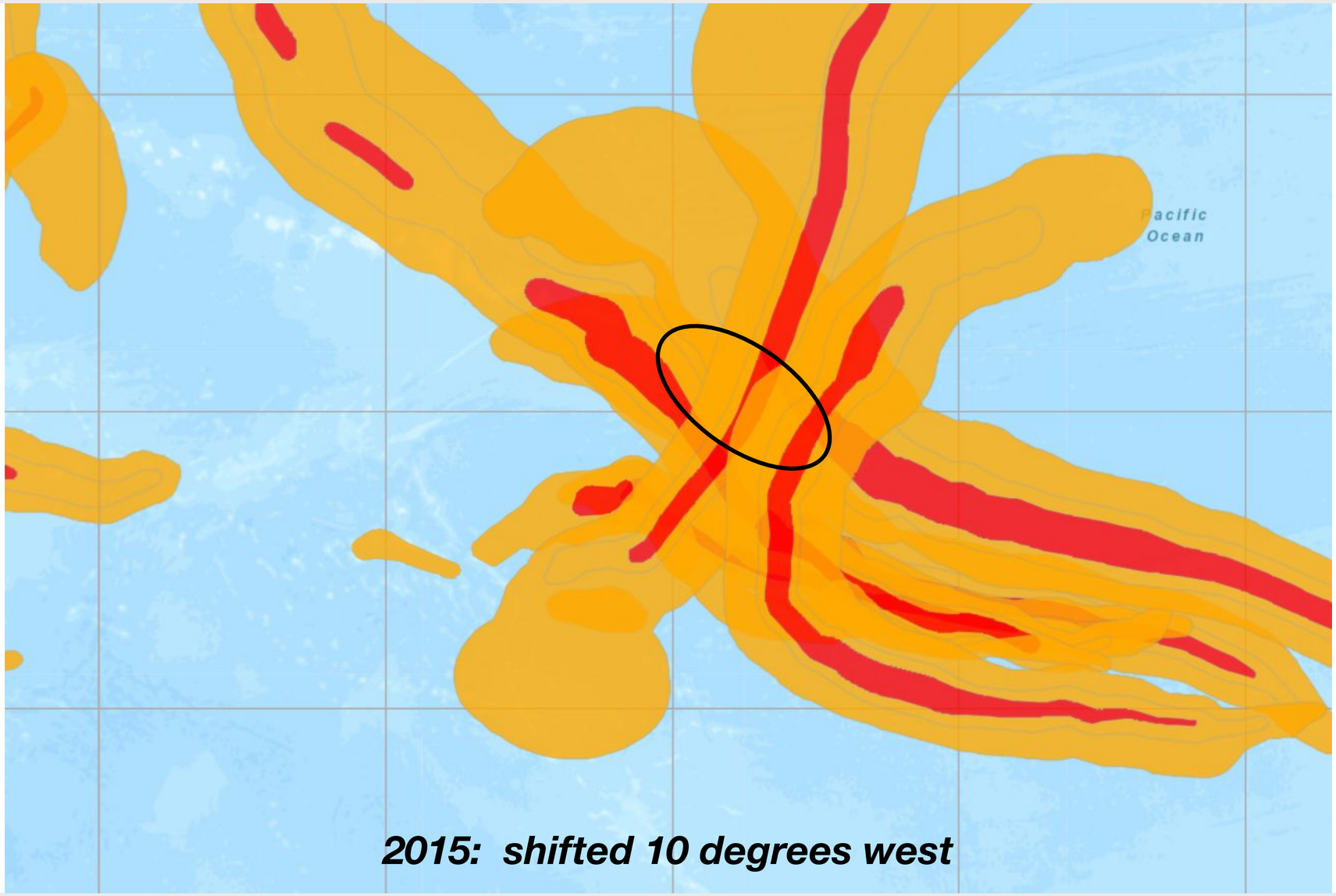

2015: shifted 10 degrees west

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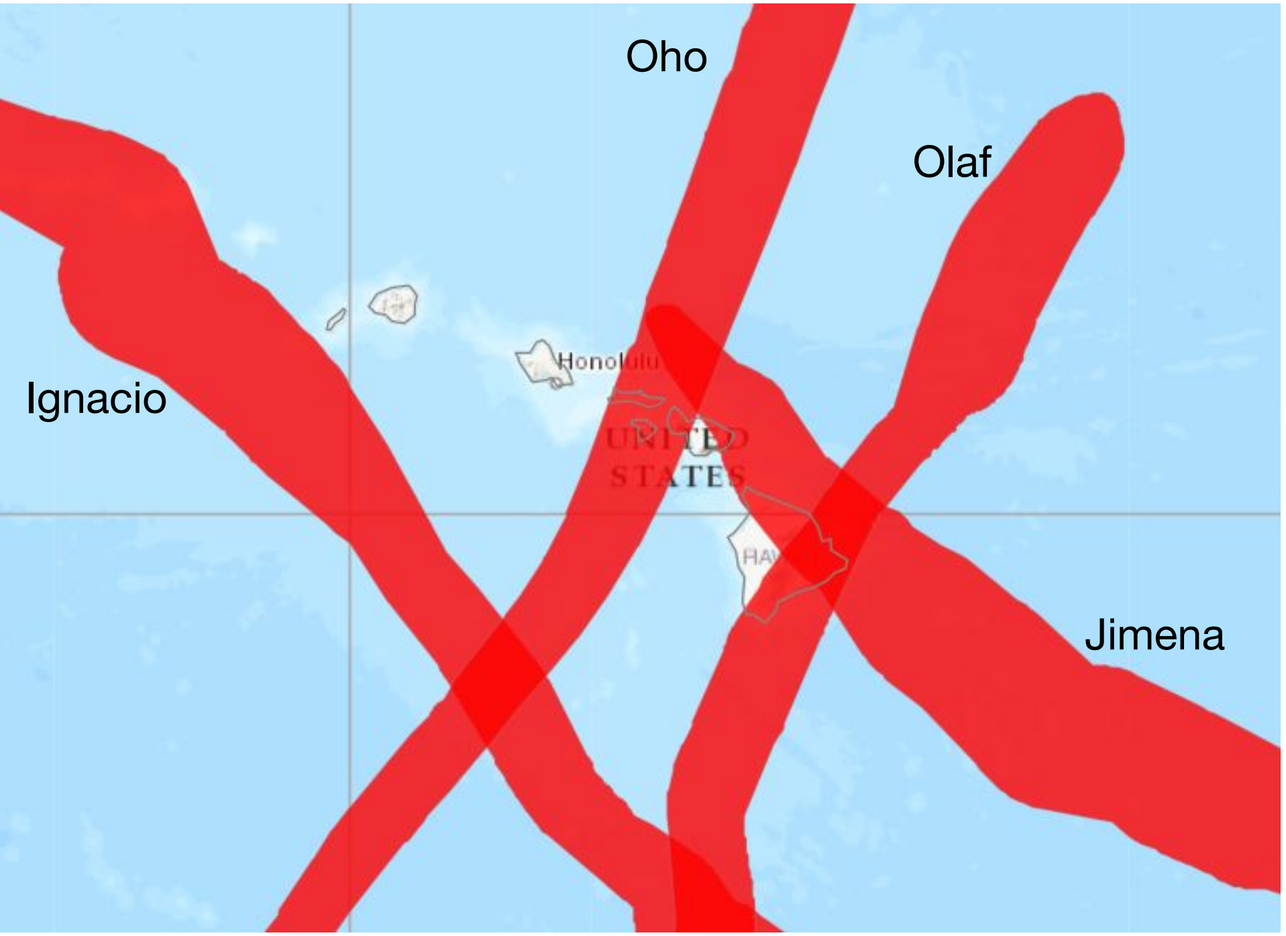
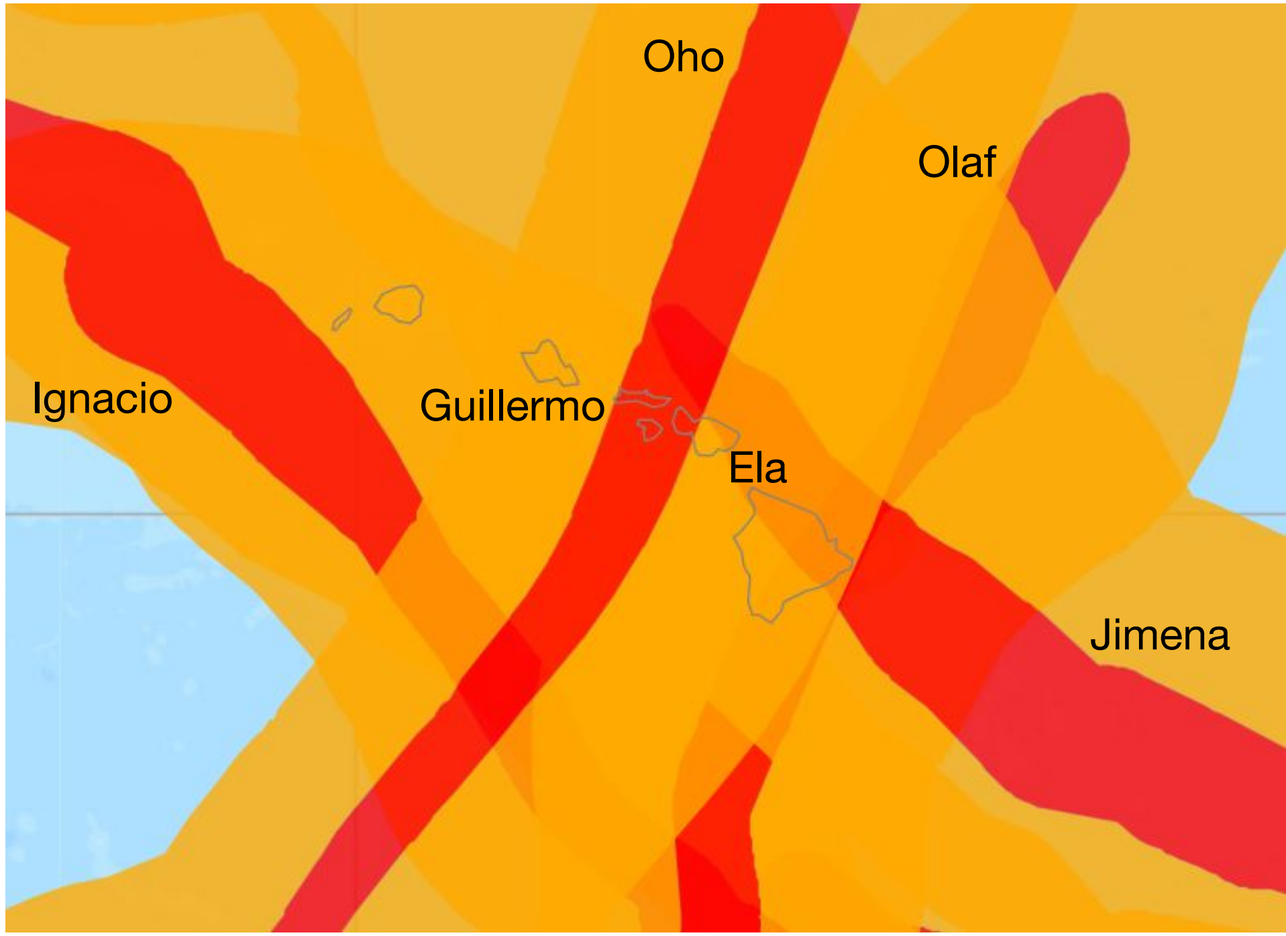


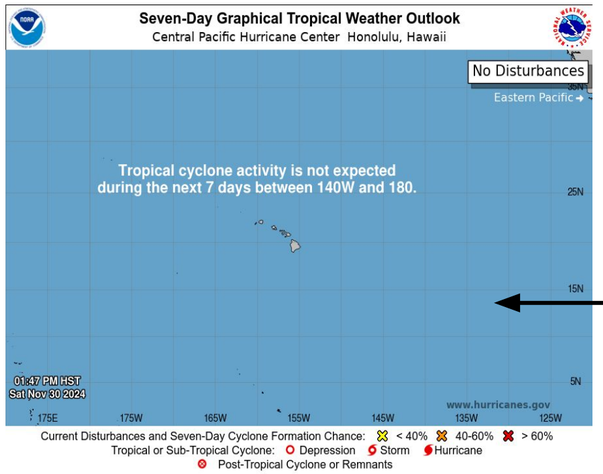
2015: shifted 10 degrees west (hurricane only)



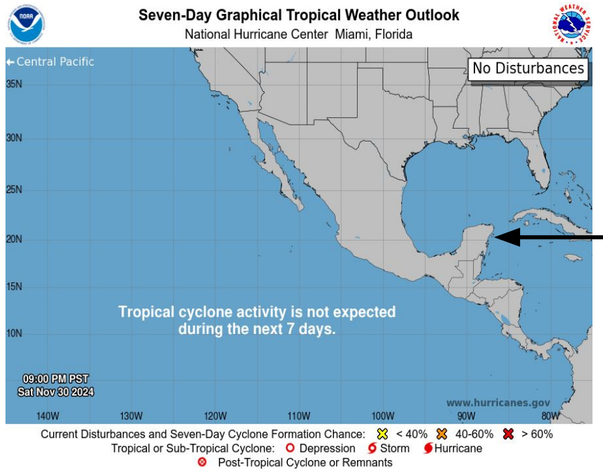
2015: shifted 10 degrees west (hurricane and T.S.)

Tropical Weather Outlook – East Pacific Expansion

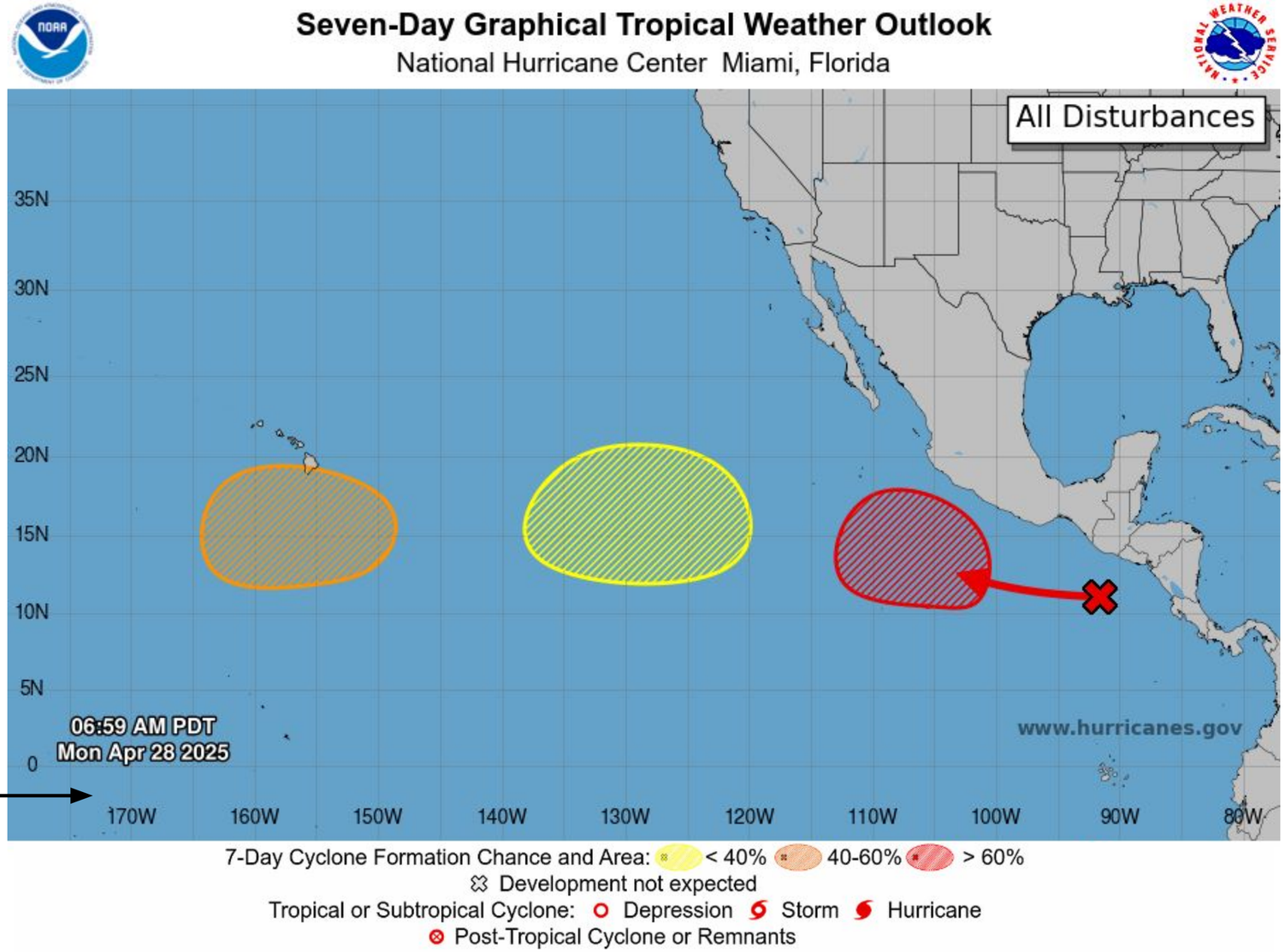
Central Pacific information included in East Pacific TWO since 2025



No changes to the Central Pacific map: 120°W to 170°E

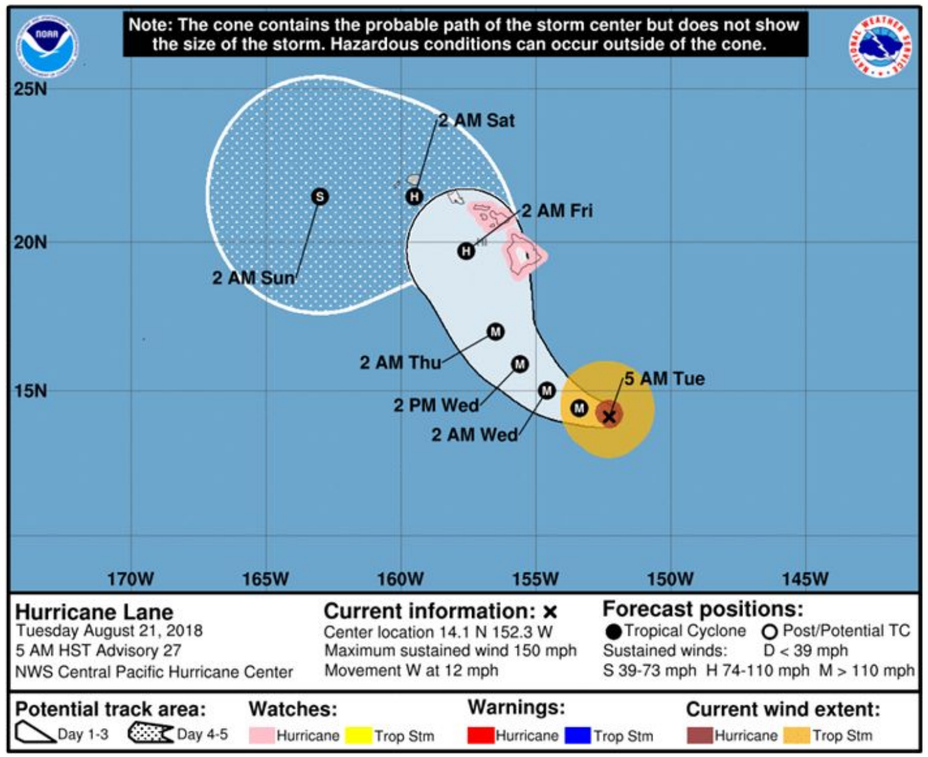


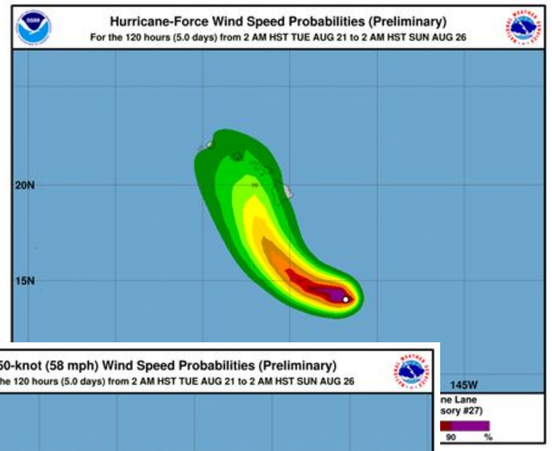
East Pacific map changed from 75°W to 145°W to 75°W to 180°W

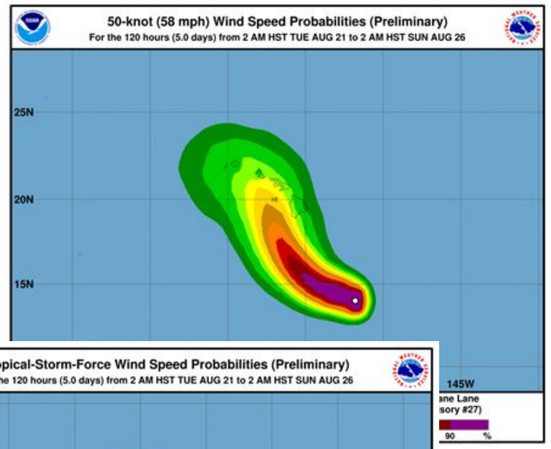


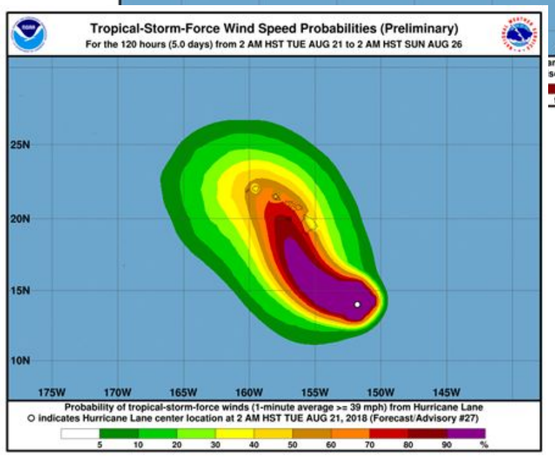
Tropical Cyclone Graphics

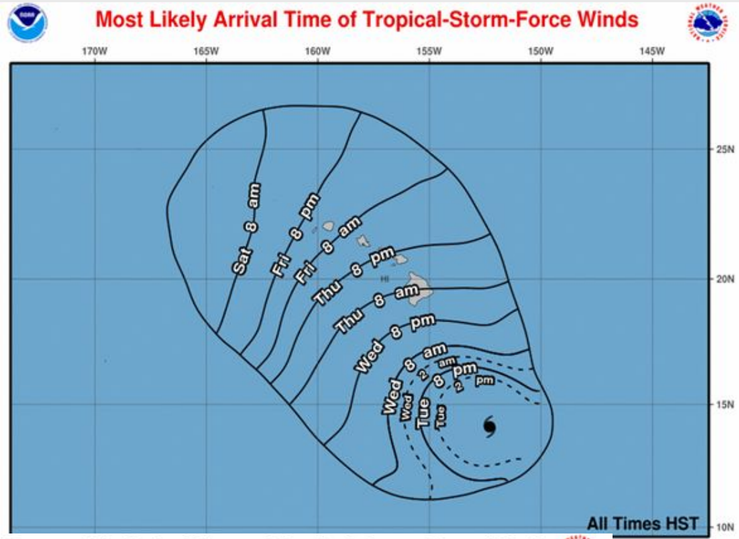
Hurricane Lane Example – Tuesday Aug 21, 2018, 5 am HST

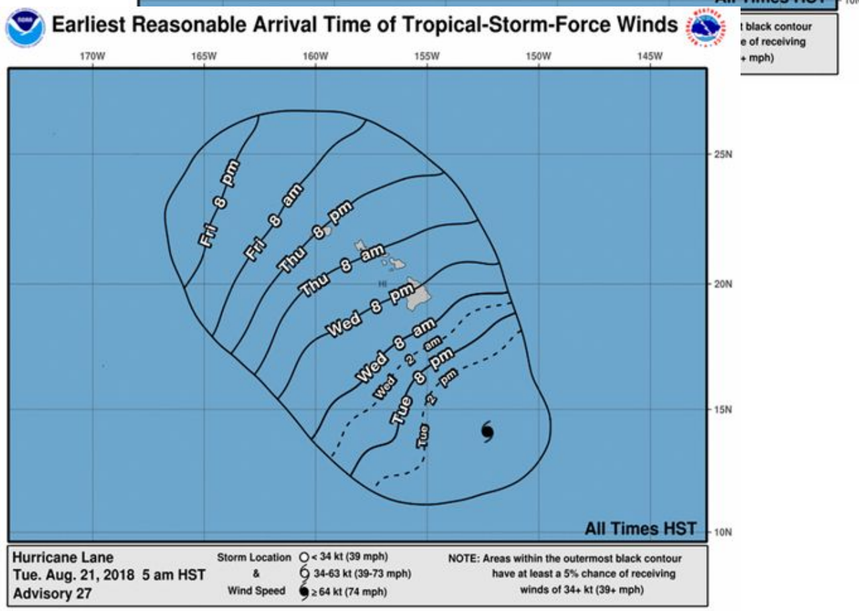










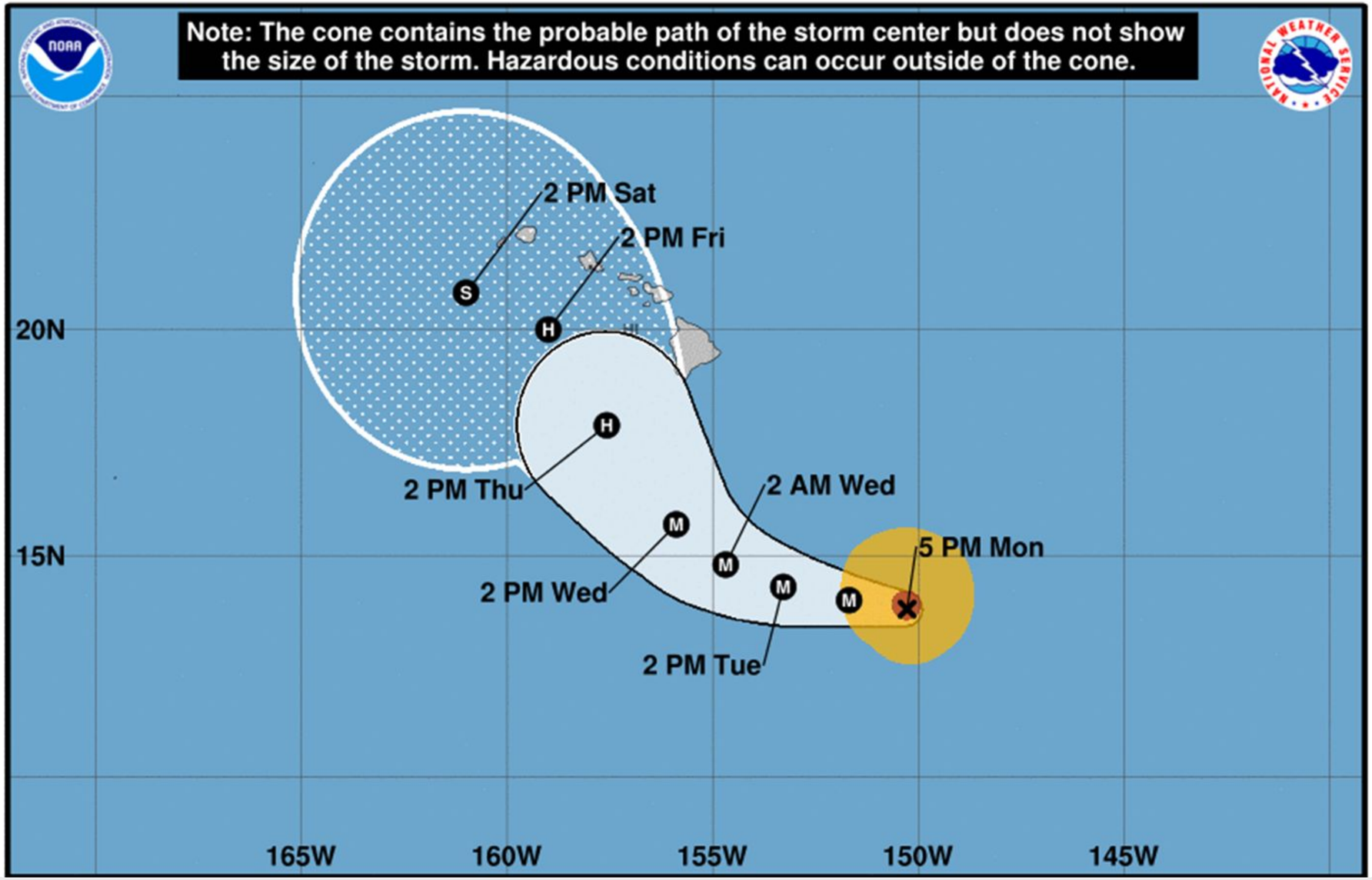


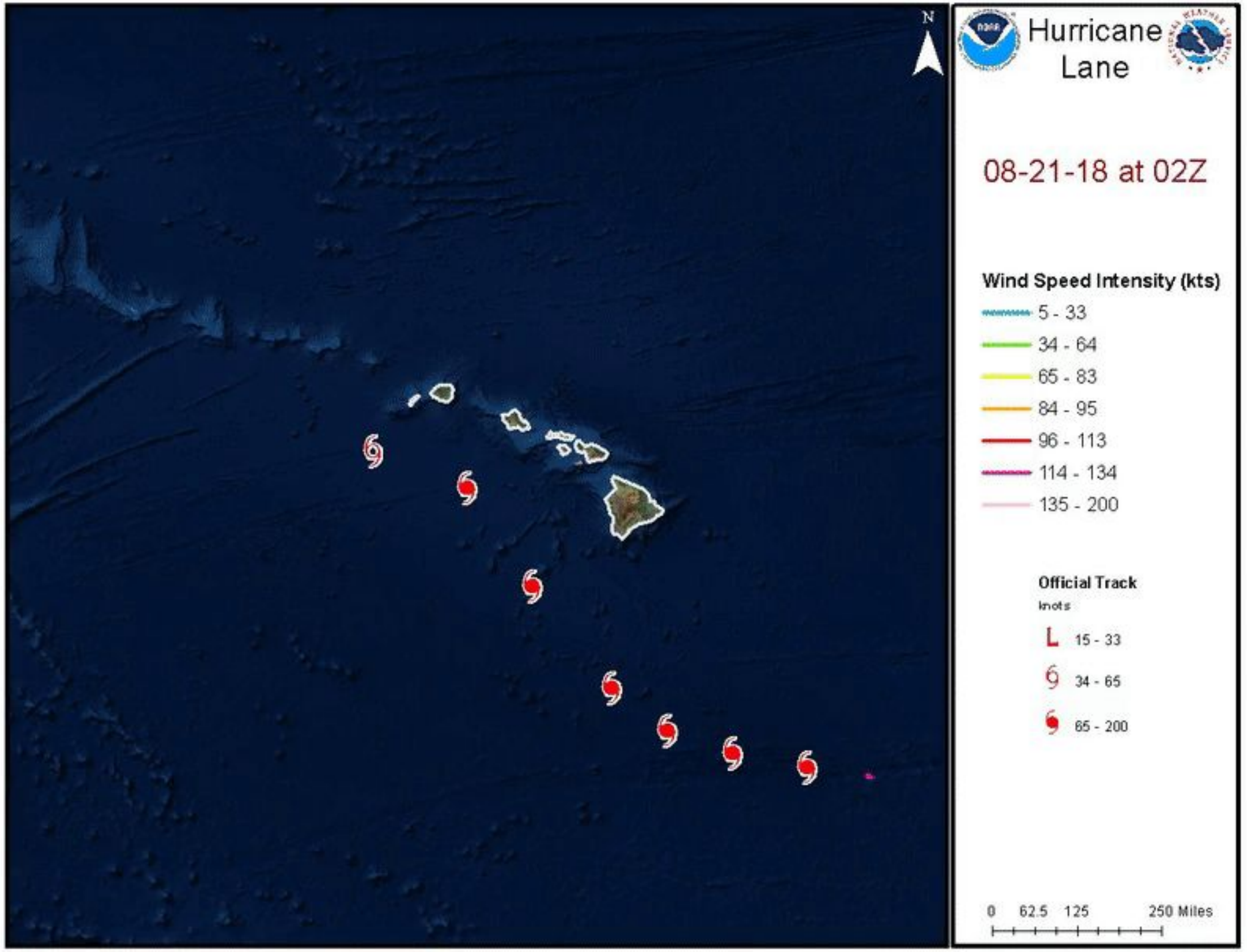
- **A more in-depth recorded webinar for media and the public is available here:**

  https://youtu.be/FhTonbgYSXE

Error Cone – What about impacts?

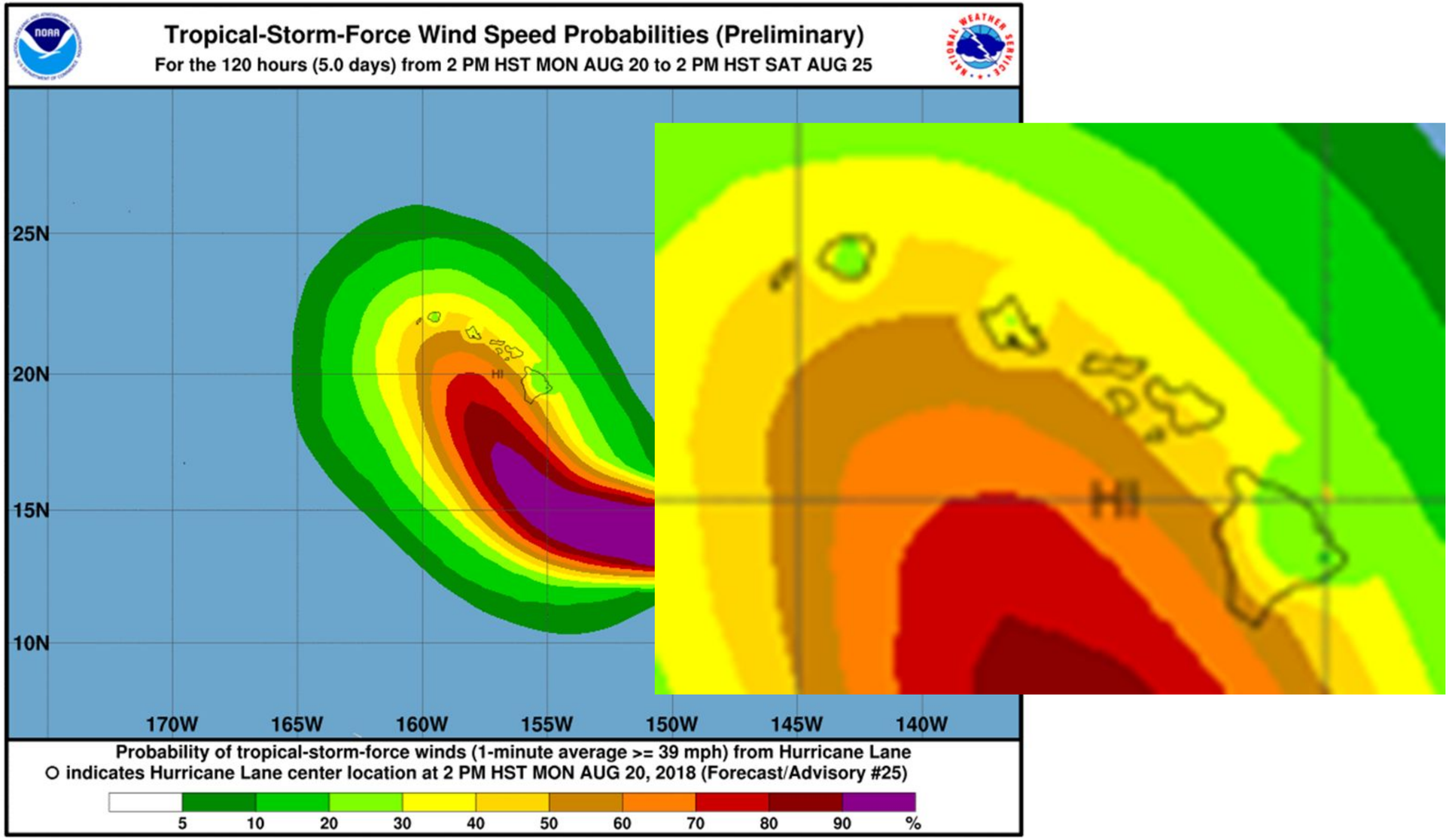
Hurricane Lane – Monday Aug 20, 2018, 5 pm HST




N
Hurricane
Lane
08-21-18 at 02Z
Wind Speed Intensity (kts)
5 - 33
34 - 64
65 - 83
84 - 95
96 - 113
114 - 134
135 - 200
Official Track
knots
L 15 - 33
34 - 65
65 - 200
0 62.5 125 250 Miles

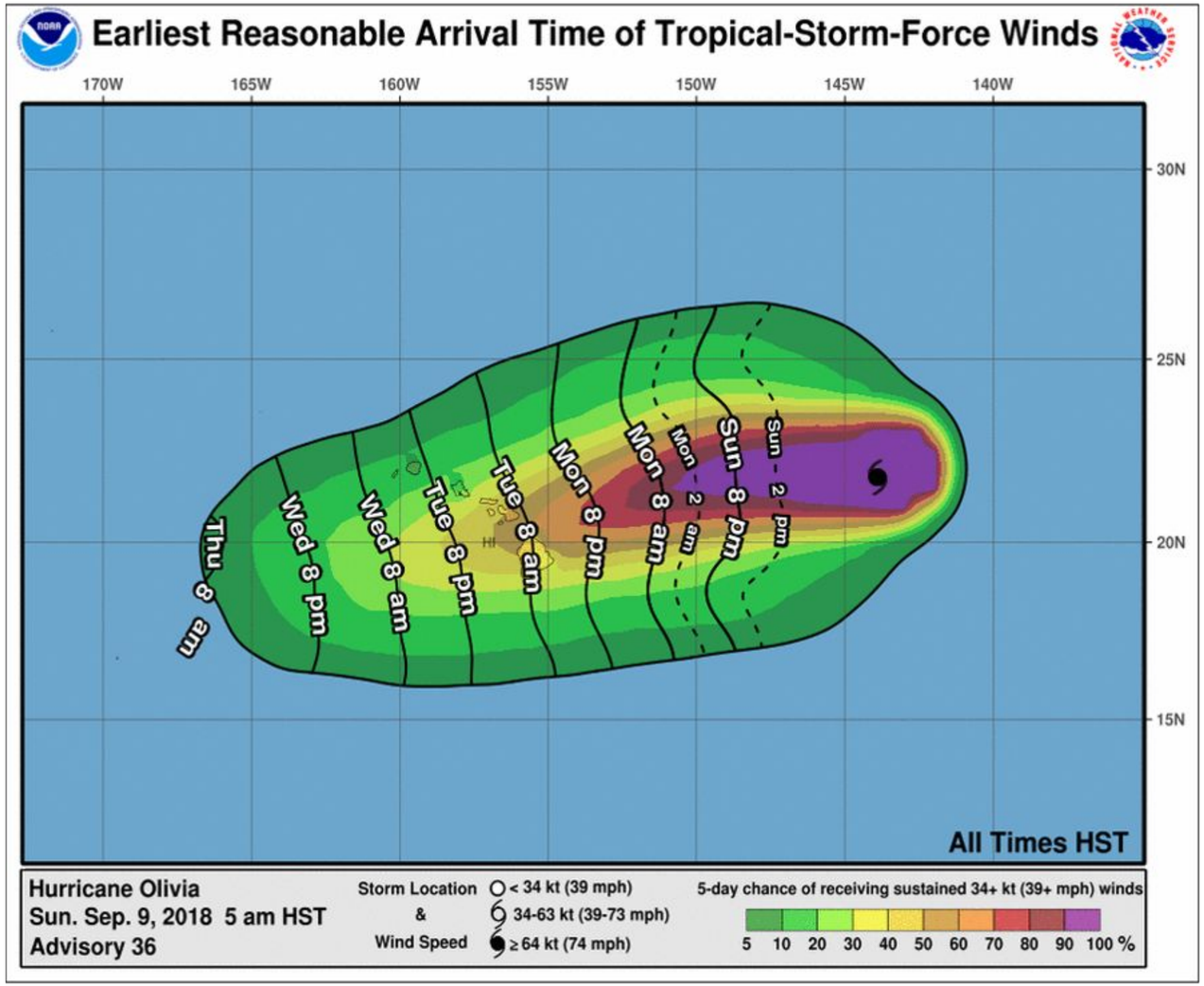
Graphics – Wind Speed Probabilities

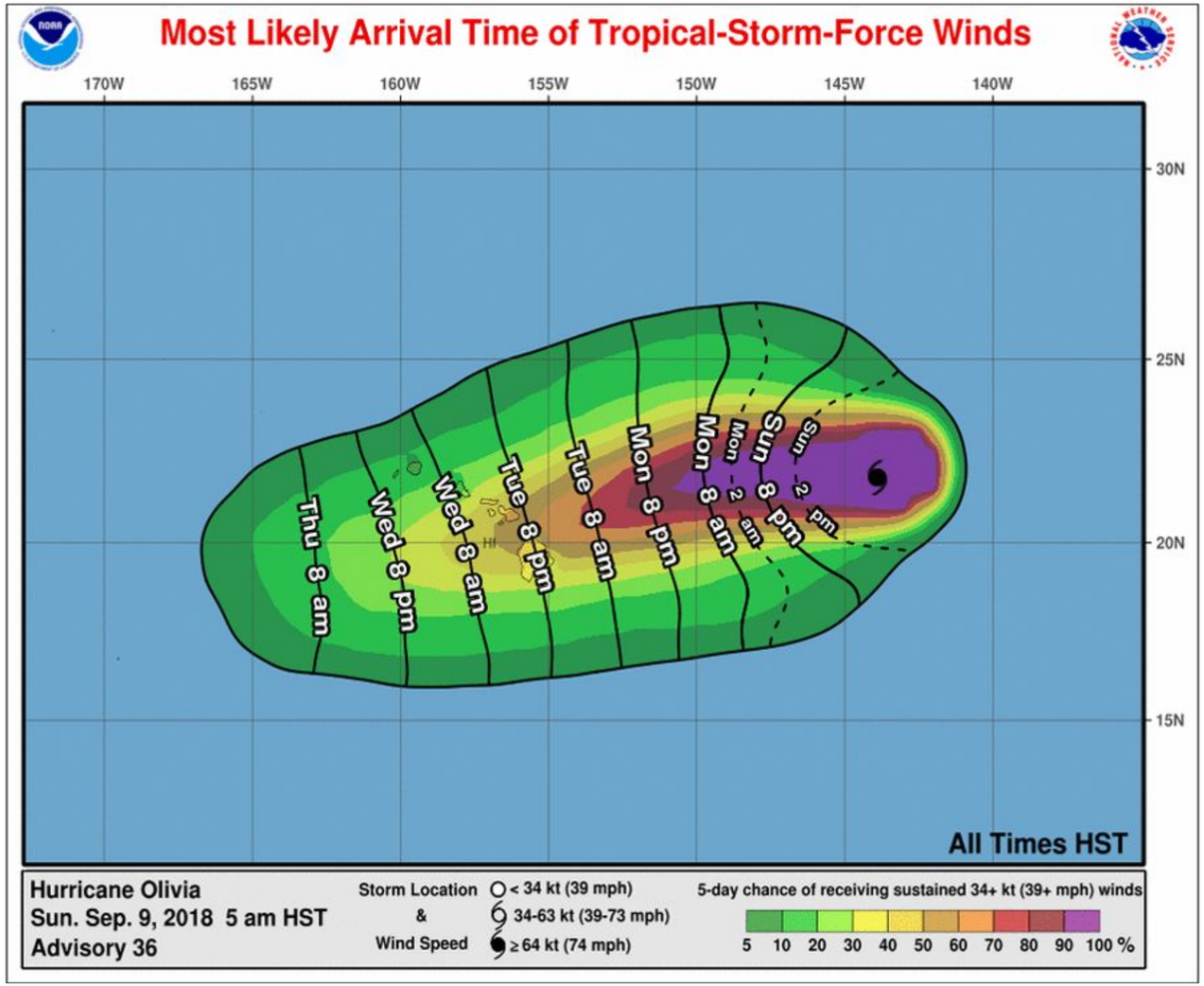
Hurricane Lane – Monday Aug 20, 2018, 5 pm HST



Time of Arrival

Earliest Reasonable vs Most Likely





Time of Arrival – Why Different Times?

Based on risk sensitivity

Honolulu Emergency Management, 650 S

Kalaeloa Barbers Point Harbor, Barbers Po

Arrive by | Options

5:00 PM | Fri, Jun 21

Send directions to your phone | Copy link

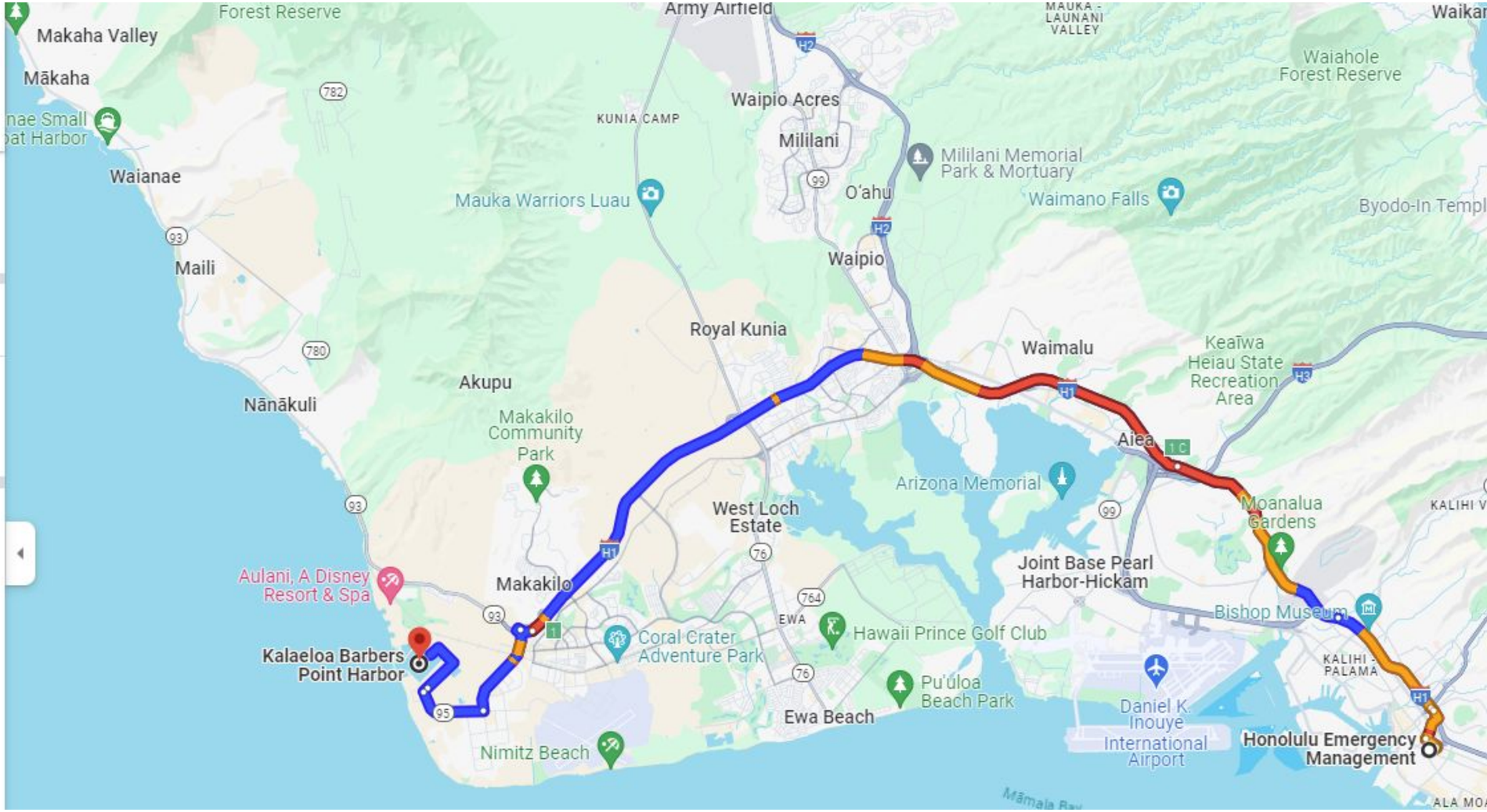
via I-H-1 W typically 40 min to 1 hr 15 min

Details

Leave around 3:45 PM

25.1 miles

“typically 40 min to 1 hr 15 min”



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Arrive by | Options

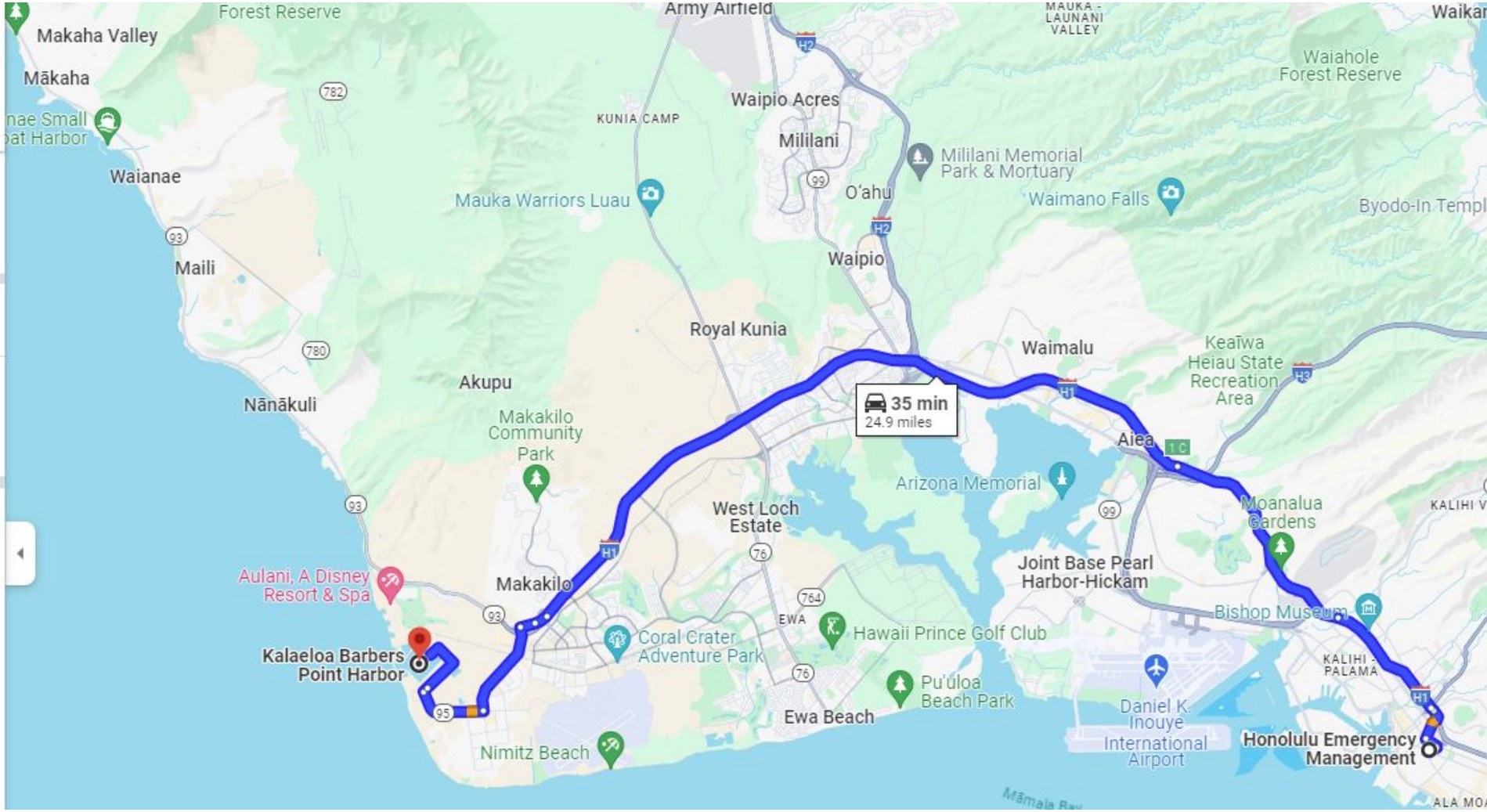
3:00 AM | Fri, Jun 21

Send directions to your phone | Copy link

via I-H-1 W — typically 35 min

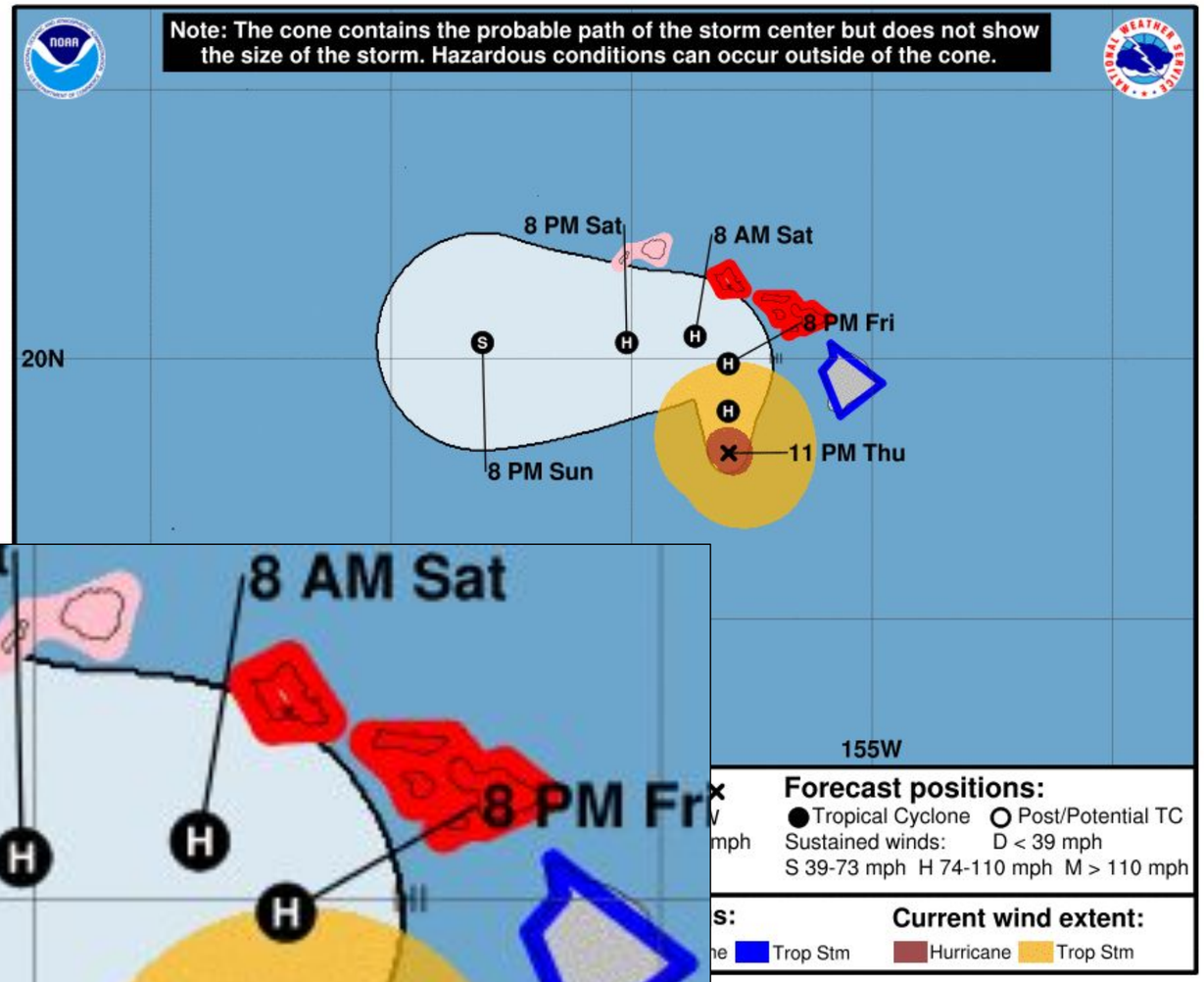
Details — Leave around 2:25 AM — 24.9 miles

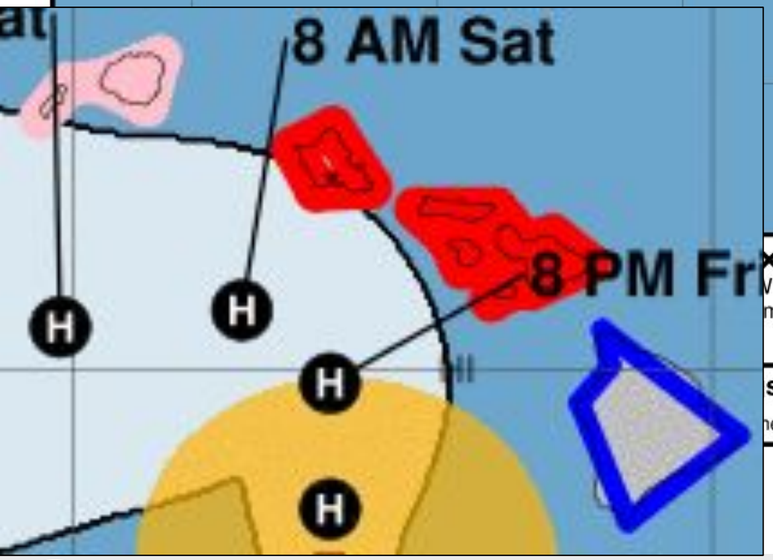
“typically 35 min”



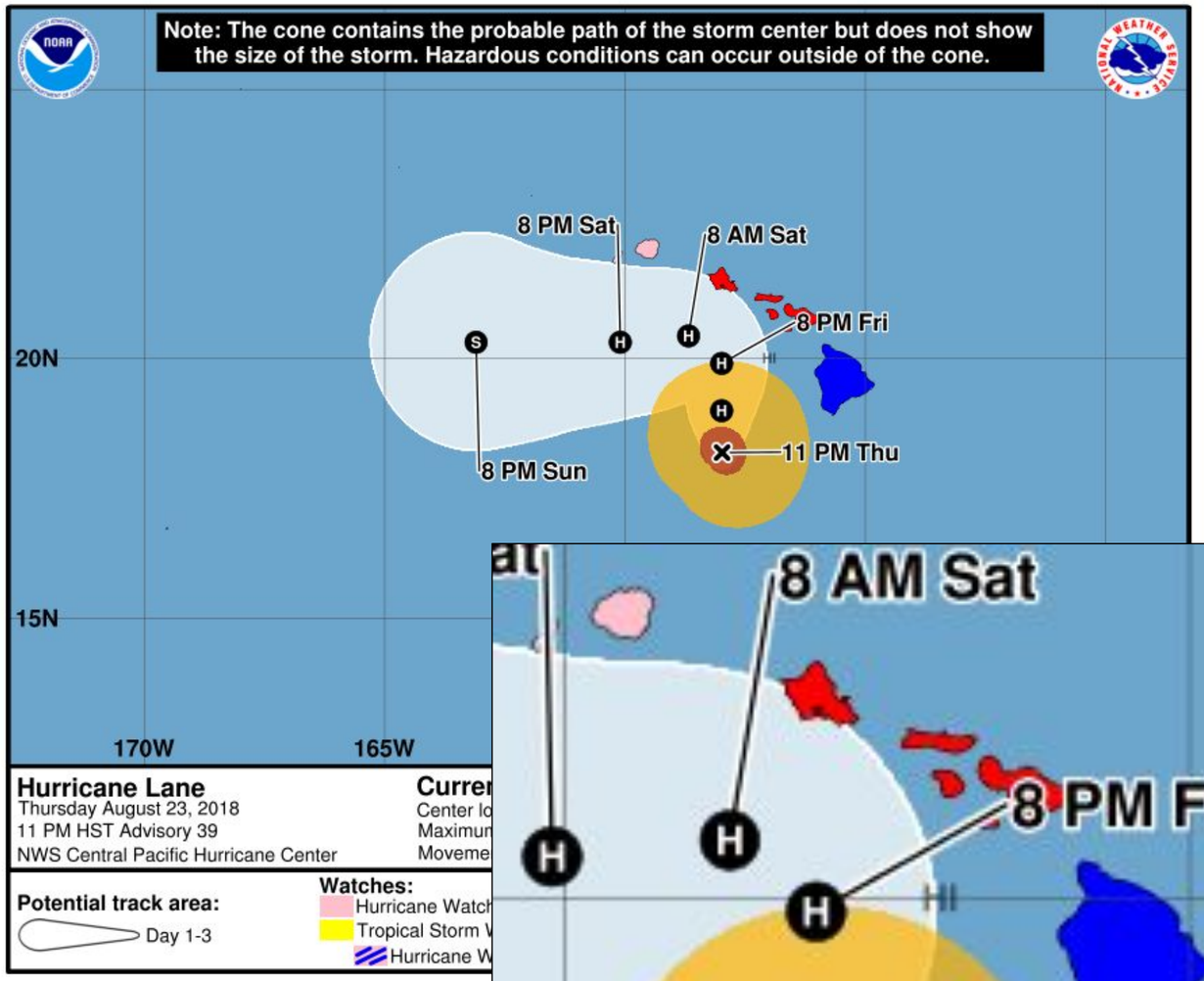
New Cone Graphic

“Inland” Watch/Warning display - cleaner look for Hawaii

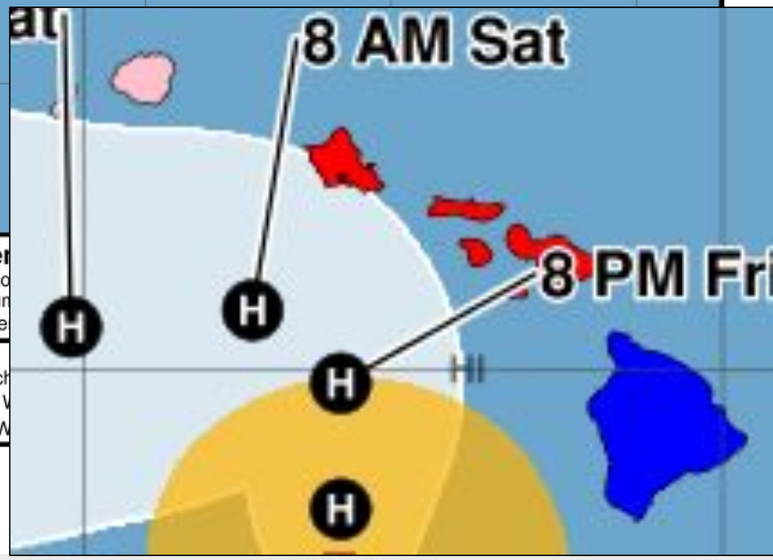




Previous cone graphic

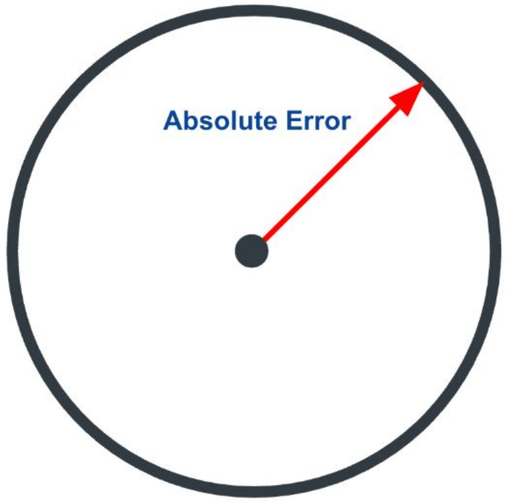


New cone graphic

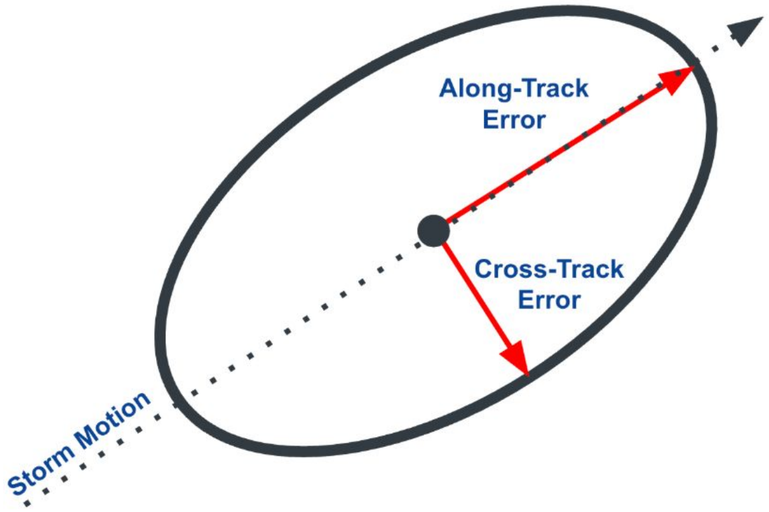


New Experimental Cone in 2026

Experimental cone based on speed and direction errors



Operational Cone



Experimental Cone

Traditionally, NHC's cone graphic is calculated based on 67% of absolute track error from the past five years, resulting in a cone formed based on circles at each forecast point.

In 2026, the experimental cone graphic will:

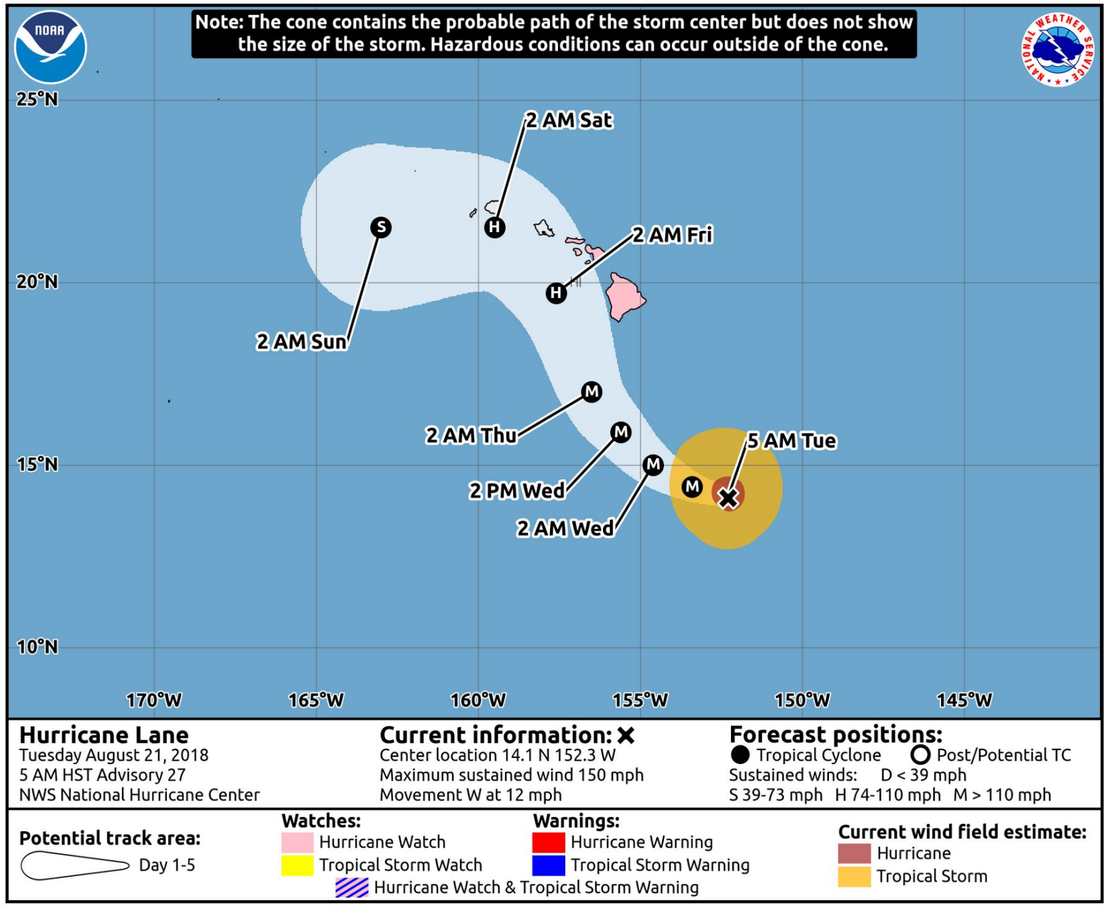
- Utilize both **along-track (forward speed)** and **cross-track (direction)** errors, resulting in an ellipse-based cone.
- Use 90% along-track and cross-track errors over the past 5 years to define the size of the ellipse instead of 67%

Experimental Cone of Uncertainty

Example from Hurricane Lane (2018)

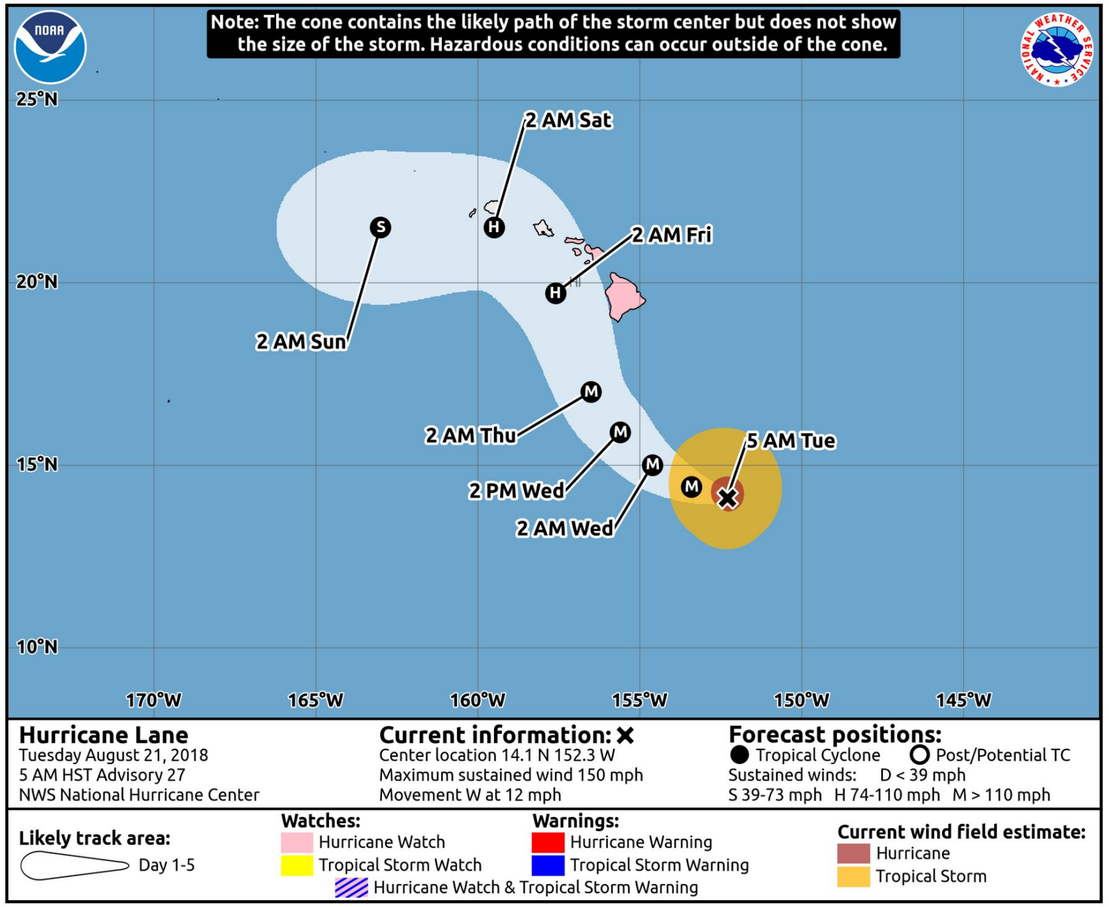
Operational Circle Cone

(67th percentile of absolute errors)



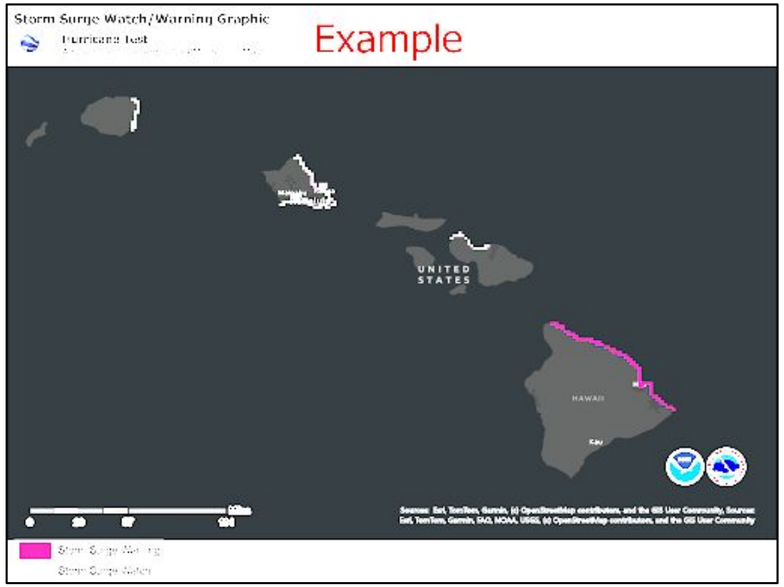
Experimental Ellipse Cone

(90th percentile of along- and cross-track errors)

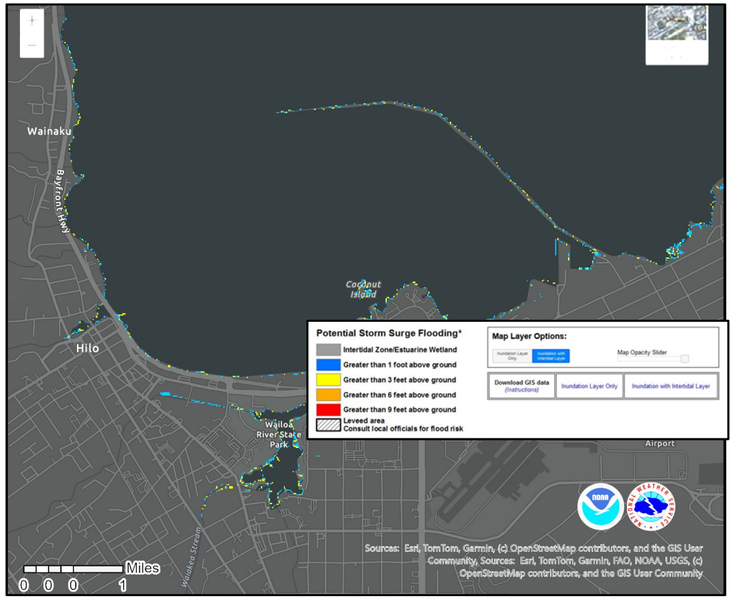


Expansion of Storm Surge Products to Hawaii

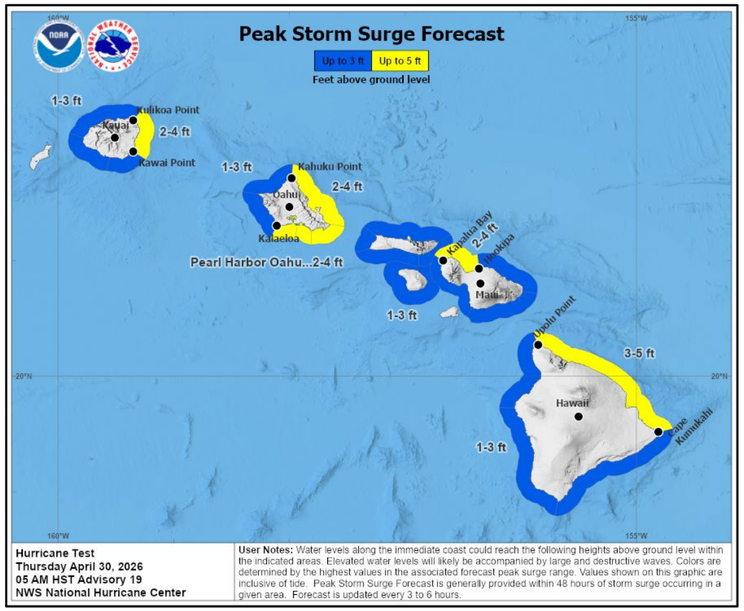
Storm Surge Watch/Warning, Potential Storm Surge Flooding Map, Peak Storm Surge Graphic



Storm Surge Watch/Warning



Potential Storm Surge Flooding Map



Peak Storm Surge Graphic

Beginning June 1, 2026. More information:

https://www.weather.gov/media/notification/pdf_2026/scn26-31_Expansion_Storm_Surge_Products_Hawaii.pdf

Which storm surge products should I use?

Top to bottom: generalized/uncertain to storm-specific/more certain

Pre-computed Products

Interactive map available here:
https://www.nhc.noaa.gov/nationalsurge/

- **MOMs**
  Maximum Of the MEOWs

  → **Main Audience: Emergency Management, General Public**

- **MEOWs**
  Maximum Envelopes Of Water

  → **Main Audience: Emergency Management**

Real Time Products

New for Hawaii in 2026

- Probabilistic Storm Surge (Psurge)
- Potential Storm Surge Flooding Graphic

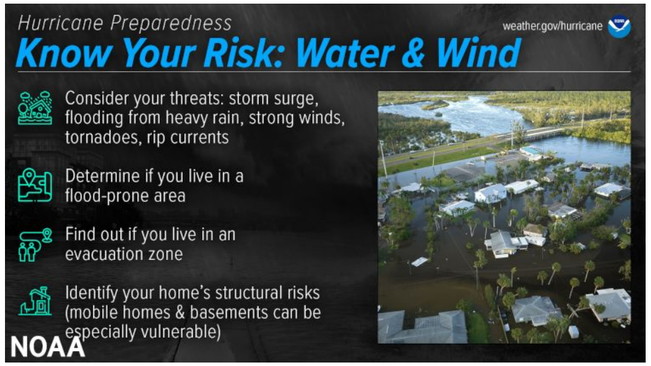
  → **Main Audience: Emergency Management**

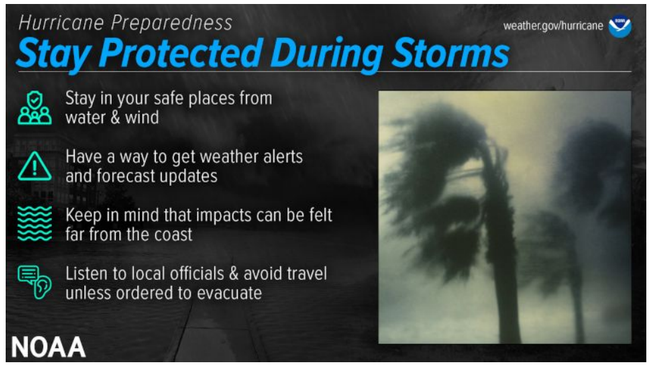
- Storm Surge Watch/Warning
- Peak Inundation Graphic
- HTI Storm Surge Threat Graphic

  → **Main Audience: General Public, Emergency Management**

Preparedness Information

Messages from Hurricane Preparedness Week





More information available at:

weather.gov/hfo/HPW2026

Key Actions to Take Now

Family Preparedness Plan

Hurricane Preparedness

weather.gov/hurricane

Prepare Before Hurricane Season

- Develop an evacuation plan
- Assemble disaster supplies: food, water, batteries, charger, radio, cash
- Get an insurance checkup and document your possessions
- Create a communication plan with a hand-written list of contacts
- Strengthen your home

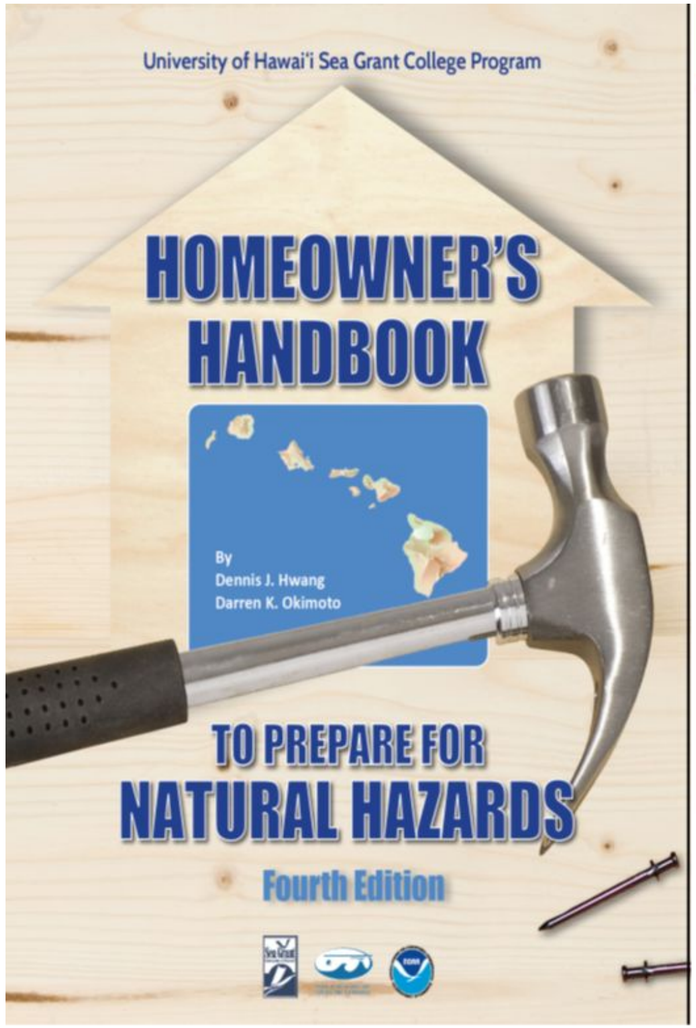
NOAA

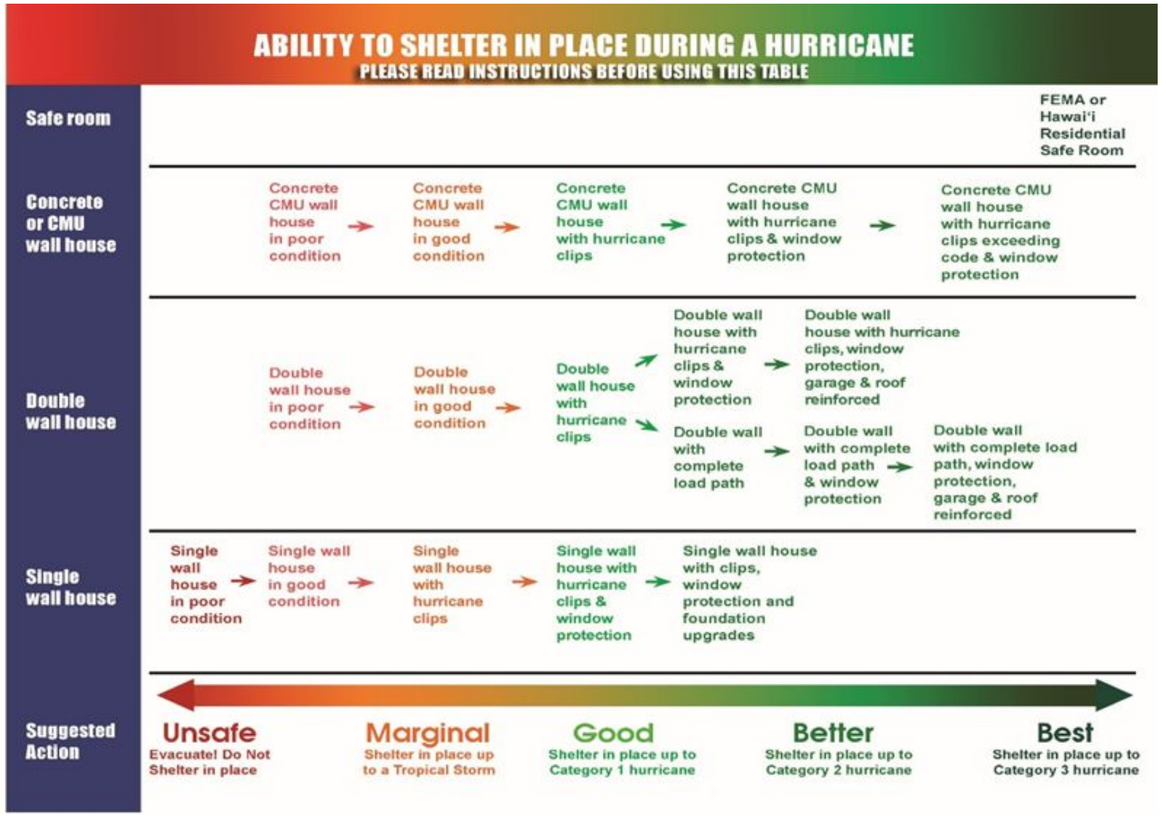
- Will your home be safe? If not, where will you go? *Decide ahead of time so you won't have to think about it in an emergency.*

- Have a point of contact off-island (*better: out of state*) to serve as a check-in hub
- Set a locally rally point for sudden emergencies

Preparedness Information

Determine your risk





Shelter in place or evacuate?

Hazards to consider:

- Wind
- Heavy rain
- Storm surge

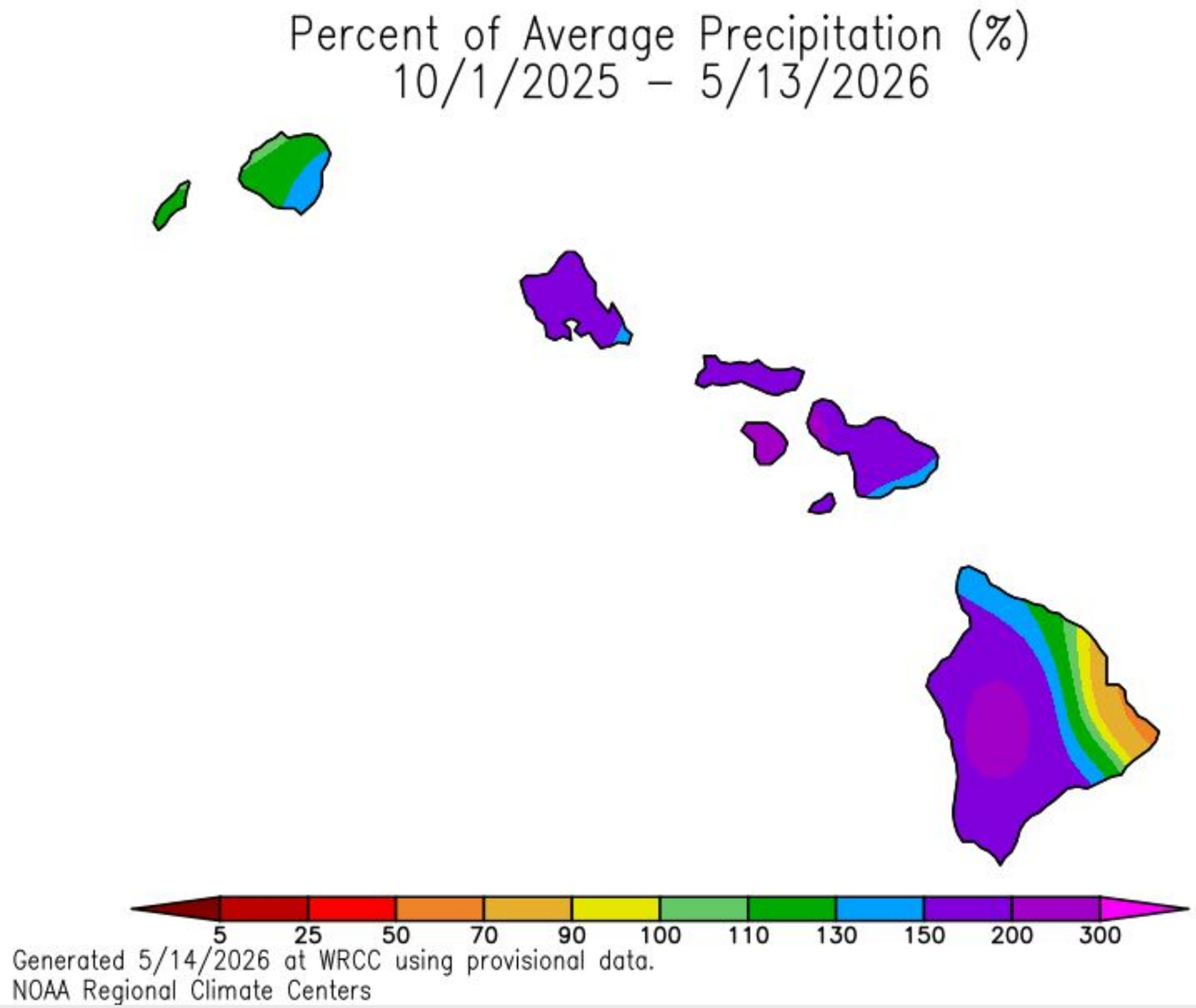
FEMA Flood Map search: https://msc.fema.gov/portal/home

NOAA storm surge: https://www.nhc.noaa.gov/nationalsurge

https://seagrant.soest.hawaii.edu/homeowners-handbook-to-prepare-for-natural-hazards/

Hawaii Ho‘oilo Wet Season 2025-2026

Rainfall near to above normal most areas, mainly due to a very wet late February through mid April



- October: Very slow start to the wet season with mostly below-average totals statewide.
- November: Mostly below-average rainfall statewide, especially for leeward areas.
- December: Above-average rainfall for Kauai County and Oahu. Maui County and the Big Island continued below average.
- January and February: Near- to above-average rainfall for eastern/southern Big Island, otherwise well below average. Mainly near to below average rainfall elsewhere, but significant amounts in February for most windward areas.
- March and April: Well-above-average rainfall statewide with significant flooding in many areas.

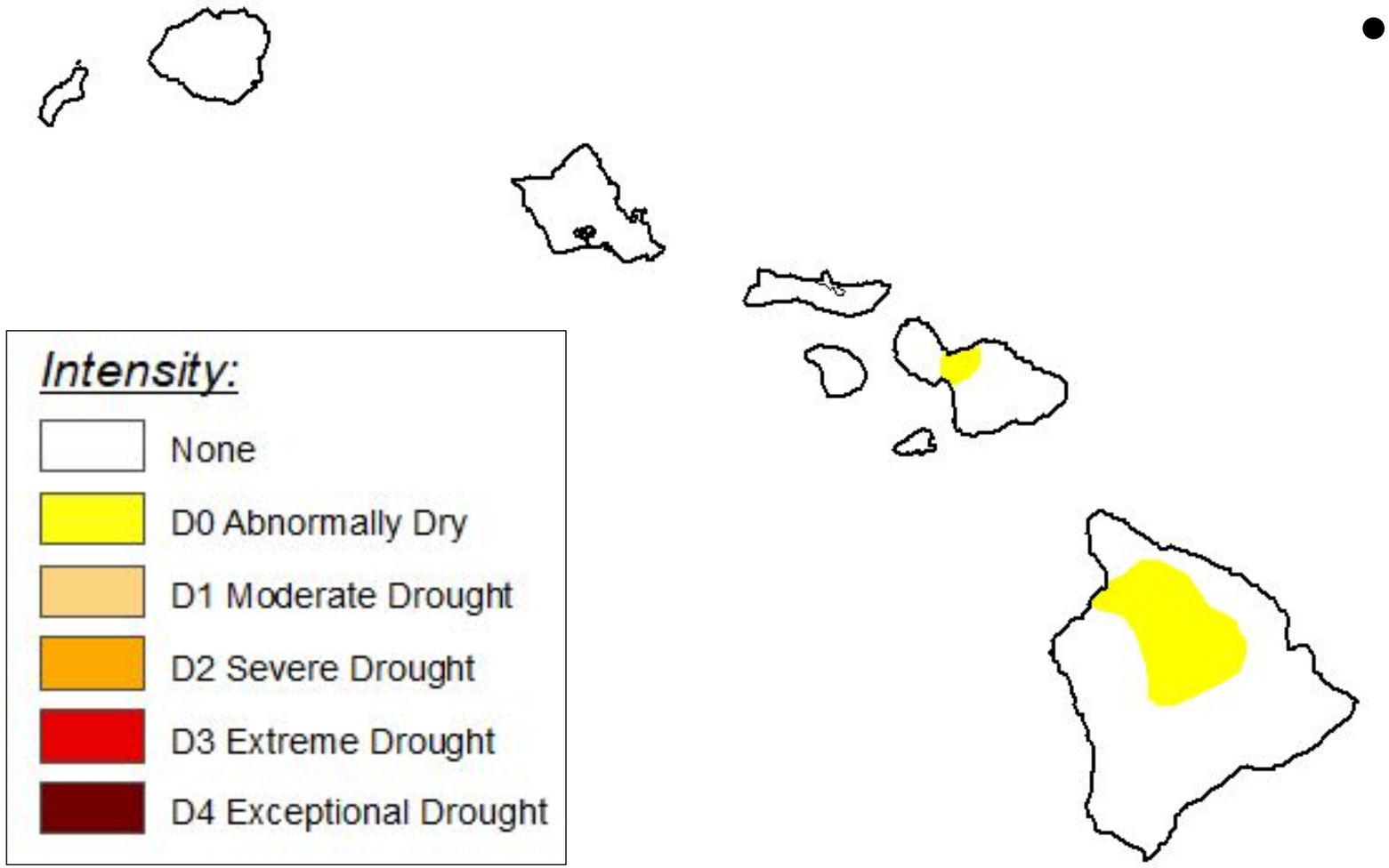
Image source: https://wrcc.dri.edu/anom/haw_anom.html

National Oceanic and Atmospheric Administration
U.S. Department of Commerce

National Weather Service
Honolulu, HI

2026 Hawaii Dry Season Outlook

Hawaii Drought Map – May 26, 2026

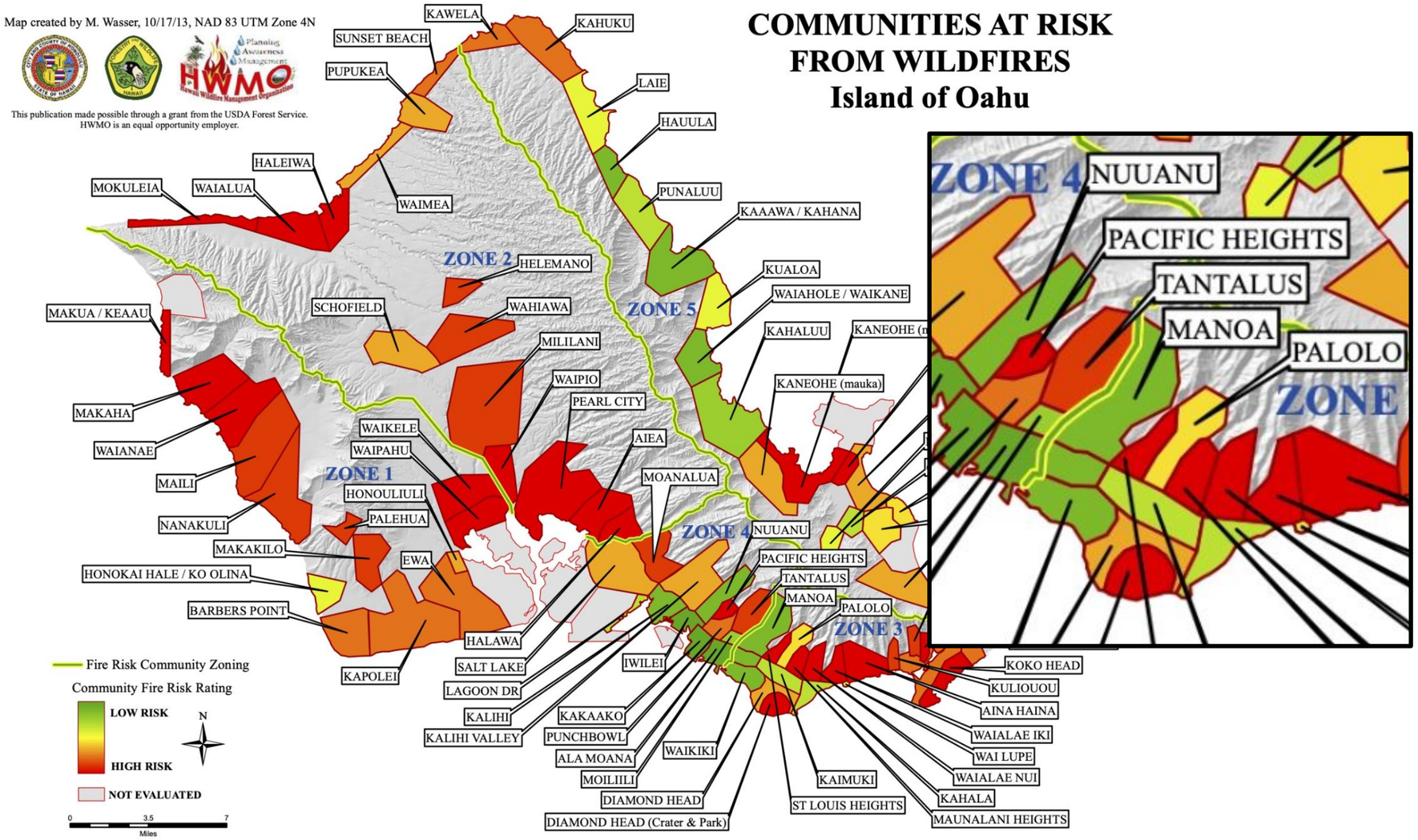


- Dry season outlook: above-normal rainfall for the entire state
  - Significant wet season rainfall and the potential for above-normal summer rainfall may help delay (but not prevent) drought development and significant wildfire risk.
  - However, the resulting vegetation growth provides abundant fuel and will likely increase the potential for significant wildfire risk once it dries out.

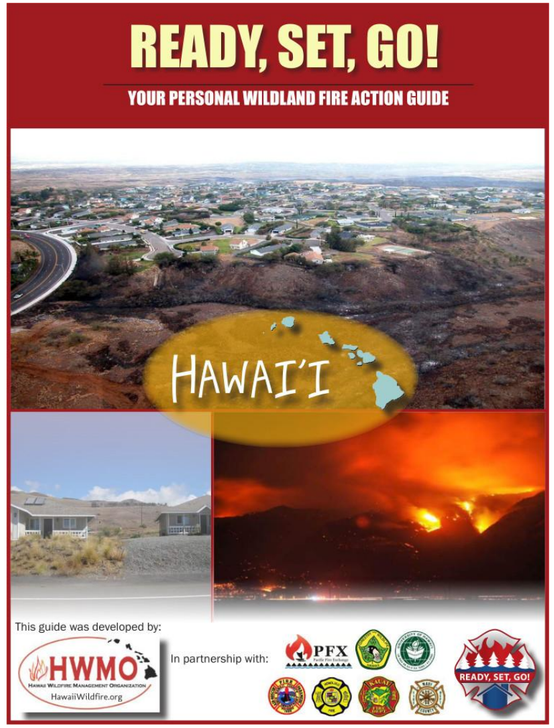
Image source: https://droughtmonitor.unl.edu/CurrentMap/StateDroughtMonitor.aspx?HI

Wildfire Preparedness Resources

Hawaii Resource: Hawaii Wildfire Management Organization



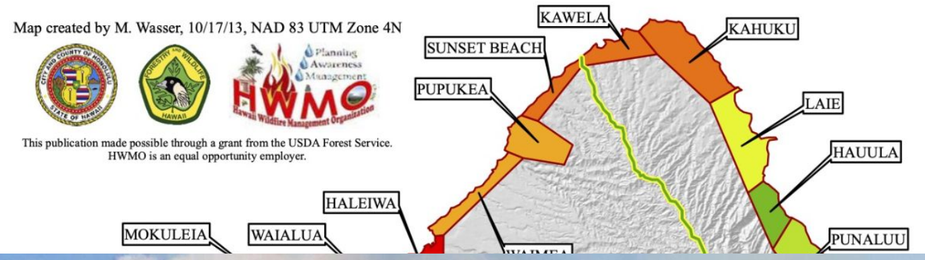
[Ready, Set, Go! Hawaii: Your Personal Wildland Fire Action Guide]

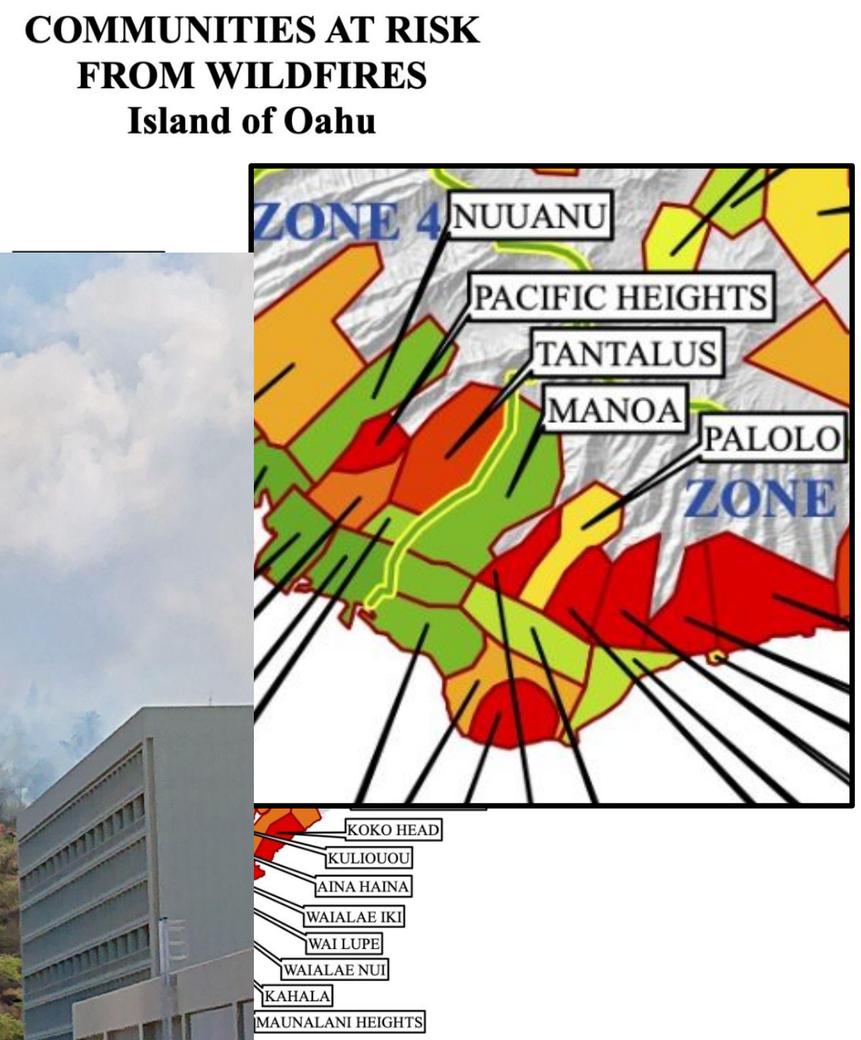


Hawaii Wildfire Management Organization: https://www.hawaiiwildfire.org/home

Wildfire Preparedness Resources

Hawaii Resource: Hawaii Wildfire Management Organization





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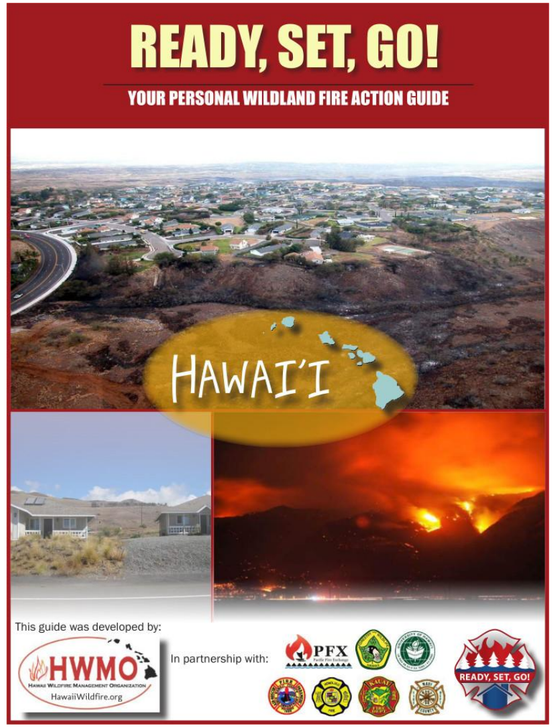


Hawaii Wildfire Management Organization: https://www.hawaiiwildfire.org/home

Fire Weather

What's the difference between a watch and warning?

"Red Flag" conditions indicate potential for extreme fire behavior

- Rapid spread
- Difficult containment

Original/old NWS thresholds for Hawaii:

- Strong winds (sustained >=20 mph)
- Low humidity (<=45 percent)
- Dry fuels (Keetch-Byram Drought Index >=600)

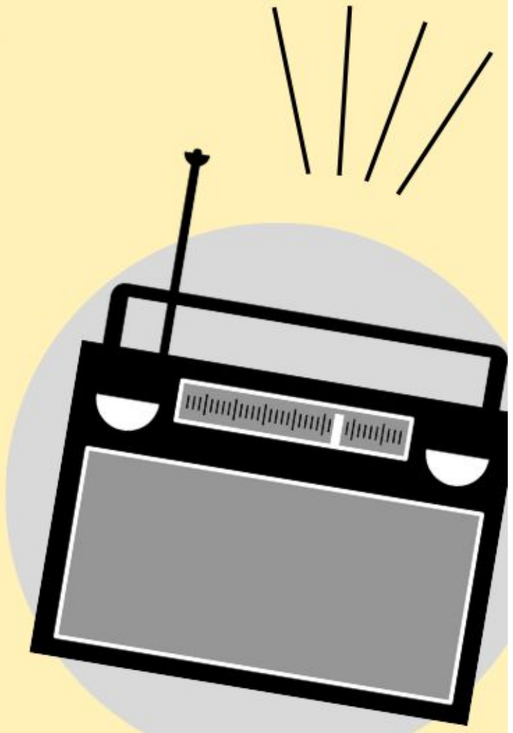
NOAA Weather Radio

Have multiple sources to receive information

How Can You Receive Emergency Notifications When Your Power is Out?

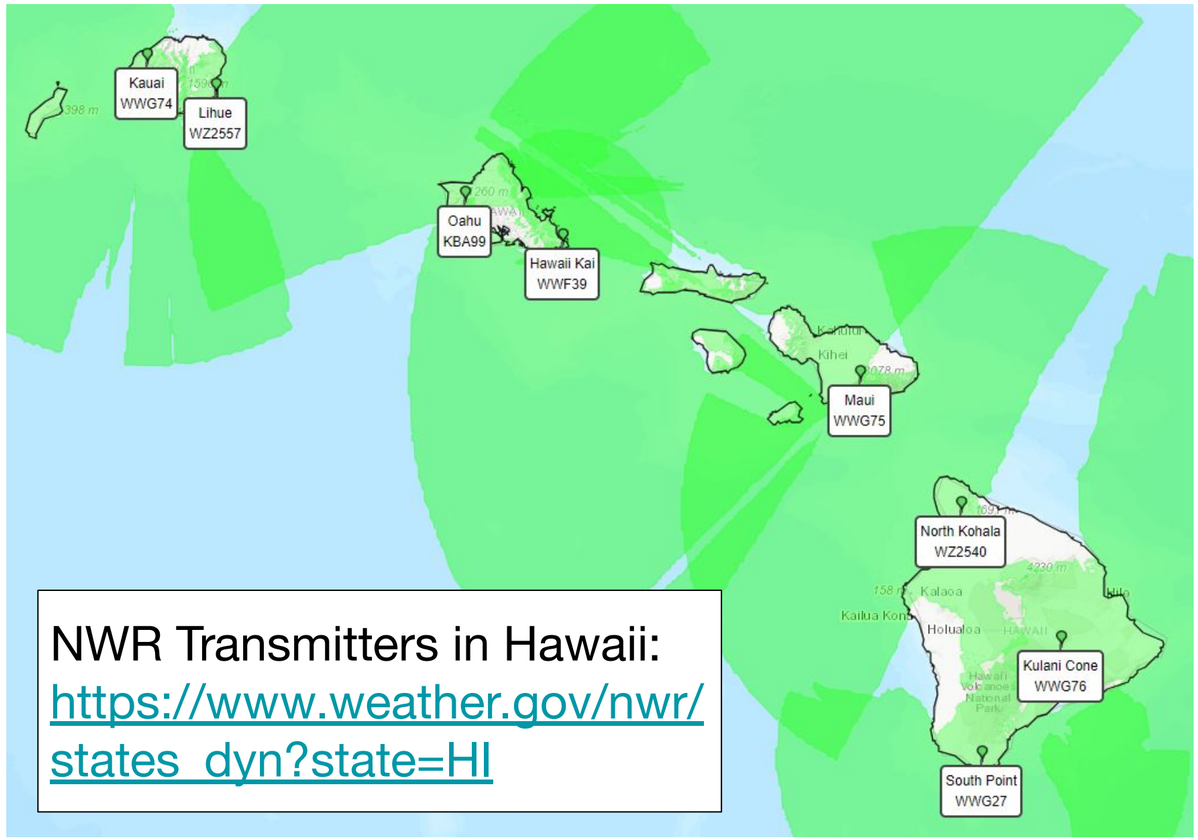
NOAA Weather Radio or another battery powered radio!

- ✓ Look for radios with solar power or hand cranks
- ✓ Make sure you have extra batteries!
- ✓ Some radios have USB ports to charge electronics



What if you lose internet and cell service?

- Broadcast radio (AM/FM)
- NOAA Weather Radio



NWR Transmitters in Hawaii: https://www.weather.gov/nwr/states_dyn?state=HI

Contact Information

Thank you for your time!

Any Questions?

John Bravender, Warning Coordination Meteorologist
NOAA/NWS Weather Forecast Office Honolulu
john.bravender@noaa.gov
808-973-5275 (office)
808-772-0641 (cell)