



STARTING SHORTLY

2023 Hurricane Season Outlook Interagency Congressional Briefing

May 25, 2023

NOAA -- Dr. Richard Spinrad, Under Secretary of Commerce for Oceans and Atmosphere, and NOAA Administrator

NOAA -- Dr. Mike Brennan, Director, NOAA/NWS National Hurricane Center

FEMA -- Deanne Criswell, Administrator

ARC -- Brad Kieserman, Vice President of Disaster Operations and Logistics

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**Briefing slides available at:
www.legislative.noaa.gov**



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NOAA Serves Before, During and After the Storm



THE WHITE HOUSE



Administration Priorities TH

APRIL 26, 2023

A Proclamation on National Hurricane Preparedness Week, 2023

BRIEFING ROOM PRESIDENTIAL ACTIONS



National Hurricane Preparedness

National Hurricane Preparedness Week is April 30-May 6, 2023.

Be ready for hurricane season. Take action TODAY to be better prepared for when the worst happens. Understand your risk from hurricanes, and begin pre-season preparations now. Make sure you understand how to interpret forecasts and alerts, and know what to do before, during, and after a storm. If you live in hurricane-prone areas, you are encouraged to prepare before hurricane season begins on June 1.



Office of Oceanic and Atmospheric Research (OAR)

Team NOAA: All in on Hurricanes

- The Hurricane Analysis and Forecast System (HAFS - NOAA's next-generation hurricane model) is on-track to become operational during the 2023 hurricane season.
- NOAA's Global Systems Laboratory collaborated with the NOAA National Hurricane Center to develop the future of storm surge watches and warnings in the first-ever use of the Hurricane and Ocean Testbed during a live event, the landfall of Hurricane Ian.

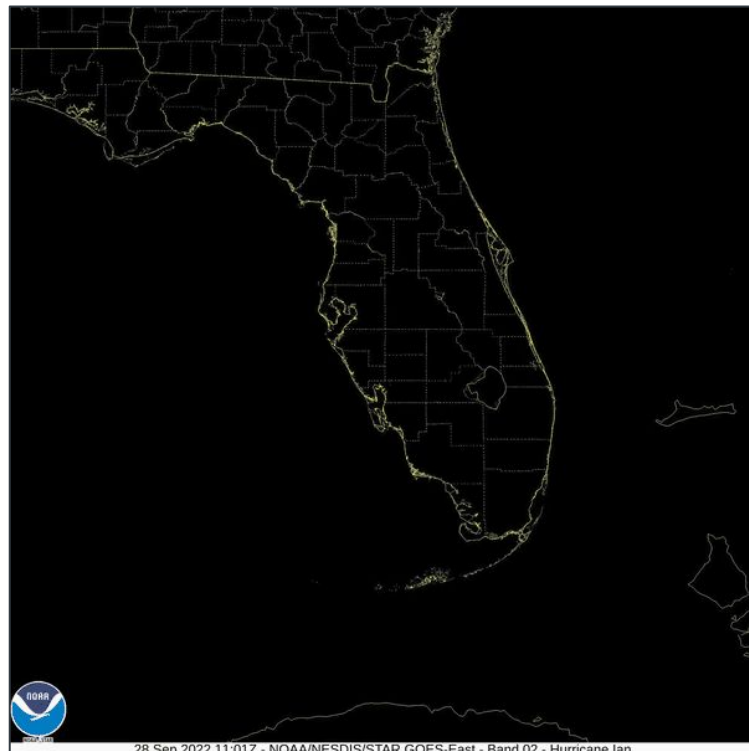


This GOES-East GeCcolor satellite image taken at 9:56 a.m. EDT on Tuesday, Sept. 27, 2022, and provided by the National Oceanic and Atmospheric Administration (NOAA), shows Hurricane Ian passing over western Cuba.

National Environmental Satellite, Data, and Information Service (NESDIS)

Team NOAA: All in on Hurricanes

- NOAA's weather satellites are our hurricane sentinels in space.
- NOAA launched two new satellites in 2022:
 - GOES-T, now operational as GOES-West
 - JPSS-2, now known as NOAA-21
 - Both provide critical data to forecasters for monitoring hurricane development and forecasting intensity and track.
- The FY 2024 budget provides support for NOAA's operational satellites and its Next Generation satellite systems, including GeoXO, NEON, and Space Weather Next.

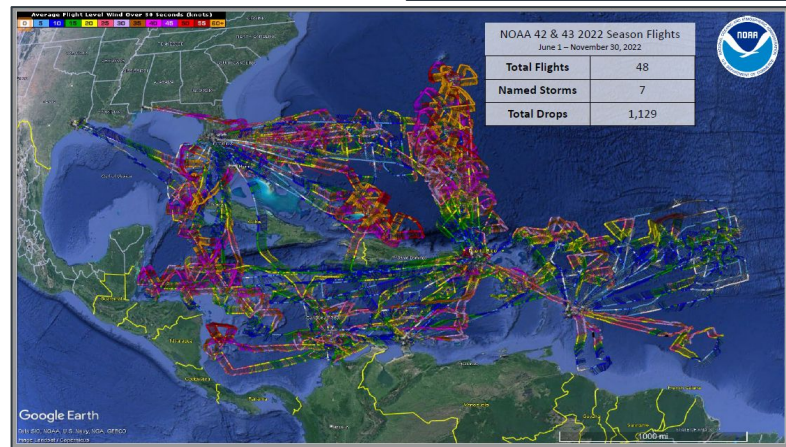


Office of Marine and Aviation Operations (OMAO)

Team NOAA: All in on Hurricanes

NOAA Hurricane Hunter aircraft flew more than 583 mission hours in 2022.

- Passed through an eye 65 times.
- Deployed more than 1,700 scientific instruments.
- Hurricane Ian:
 - Flew 20 missions and dropped 427 dropsondes
 - Emergency responders collected 13,172 images of damaged areas
 - Deployed Altius uncrewed system in the eye of the hurricane



Office of Marine and Aviation Operations (OMAO)

Team NOAA: All in on Hurricanes

Hurricane Hunter Replacements:

- The Weather Act of 2017 requires redundancy of aircraft.
- NOAA Hurricane Hunter will have specialized radar.
- When aircraft data are available, hurricane track forecasts are improved by 15-20%, and hurricane intensity forecasts are improved by 10-15%.
- National Defense Authorization Act 2022 authorized 6 new C-130Js for the NOAA aircraft fleet.
- FY23 Disaster supplemental provided \$327.7M for 1 C-130J
 - Due to the sophisticated instrumentation, each plane takes 6 years to build.



National Ocean Service (NOS)

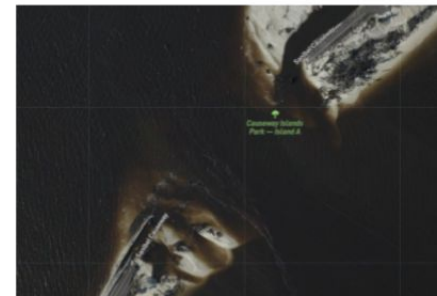
Team NOAA: All in on Hurricanes

- Six new or repaired CO-OPS Tide Gauges along the Atlantic and Gulf Coasts.
 - Providing real-time information on water levels and storm surge.
- National Geodetic Survey and Office of Coast Survey Imagery Provides response and recovery Agencies with critical data following Storms.

National Geodetic Survey (NGS) Aerial Imagery Hurricane Ian Emergency Response



Sanibel Island Causeway, Summer 2022

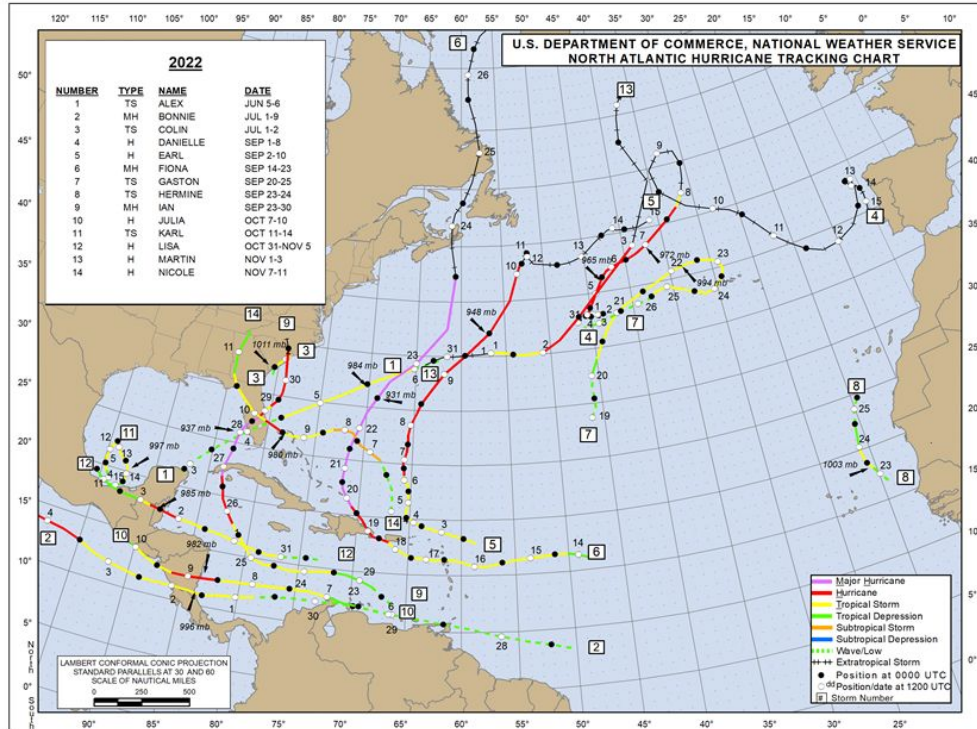


Sanibel Island Causeway, post-Hurricane Ian, September 2023

Outline



2022 Atlantic Hurricane Season

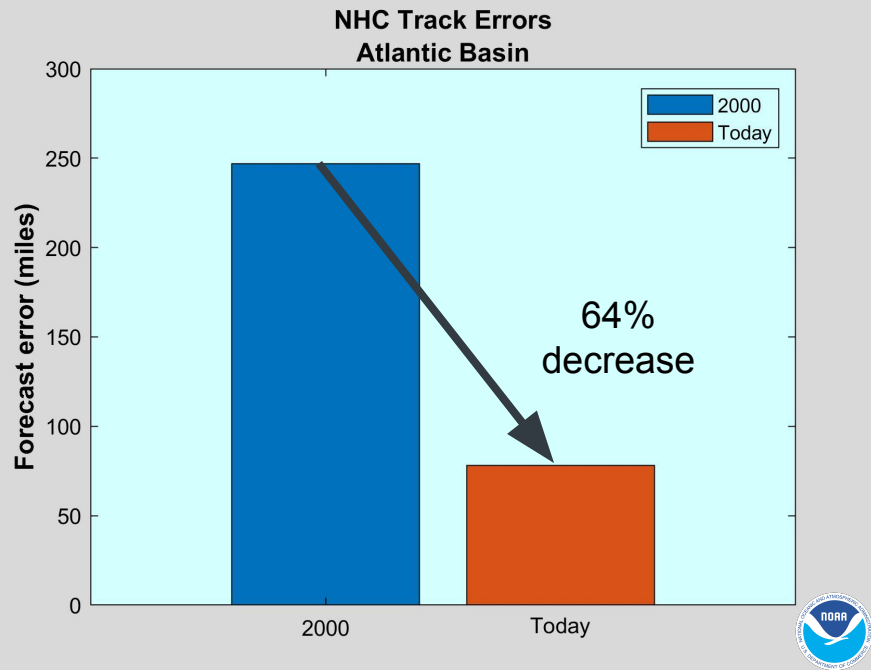


- 14 named storms
- 8 hurricanes
- 2 major hurricanes
- 3 landfalling U.S. hurricanes
 - Fiona: Puerto Rico
 - Ian: Florida, North Carolina
 - Nicole: Florida
- 72 direct fatalities in the U.S.
- Over \$116B in U.S. damage

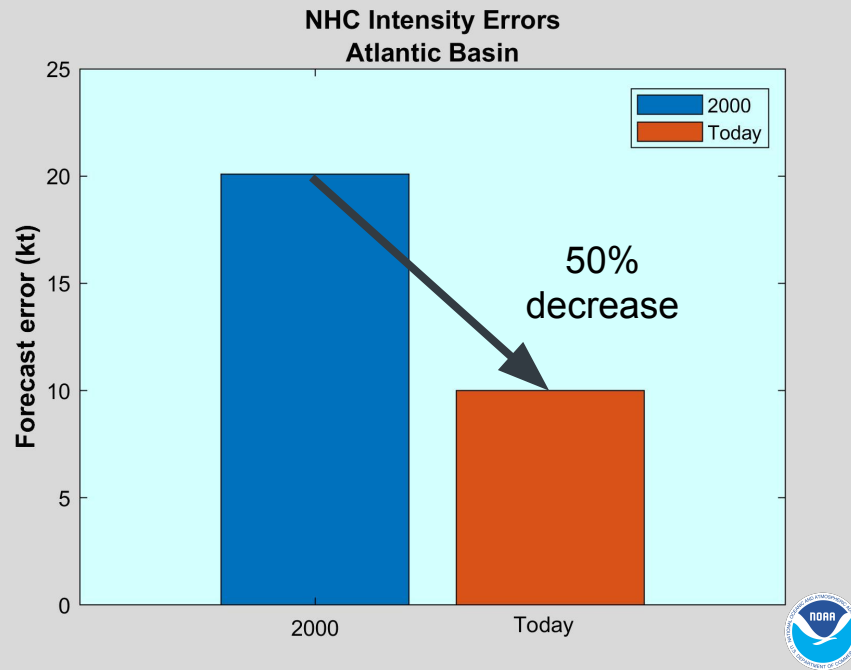
Economic damage and risk to life and property grow each year
Improving readiness, communication, and forecasts are vitally important

NHC's Forecast Accuracy Continues to Improve

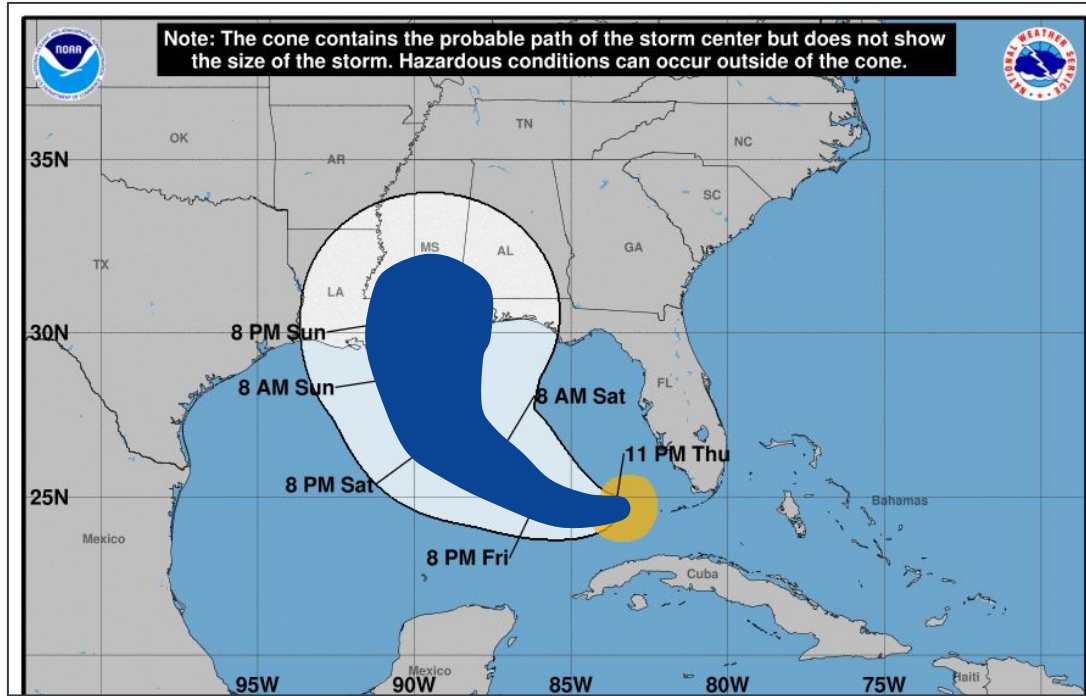
72-hr Track Forecast



72-hr Intensity Forecast



Improving Track Accuracy



2005 Cone

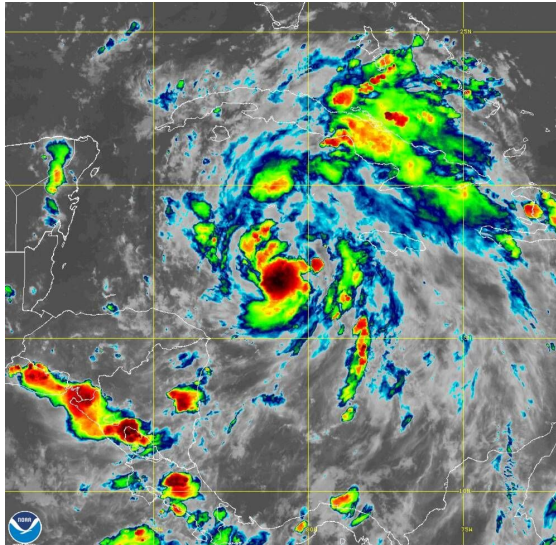


2023 Cone



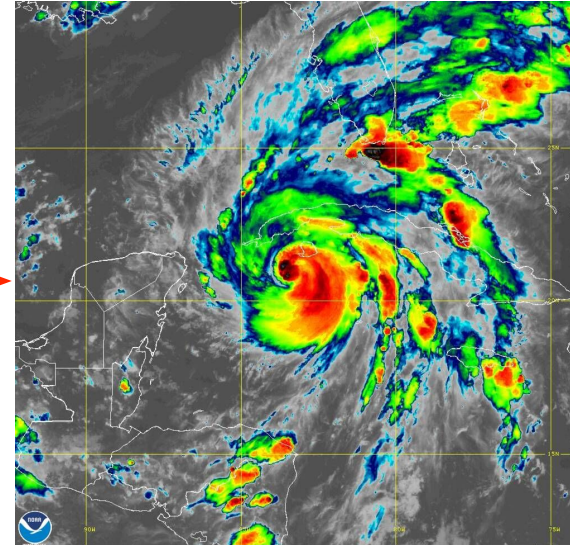
Intensity Forecast Improvements

NHC successfully forecast Hurricane Ian's rapid intensification
40-mph increase in 24 hours



60-mph Tropical Storm

24 hours
→

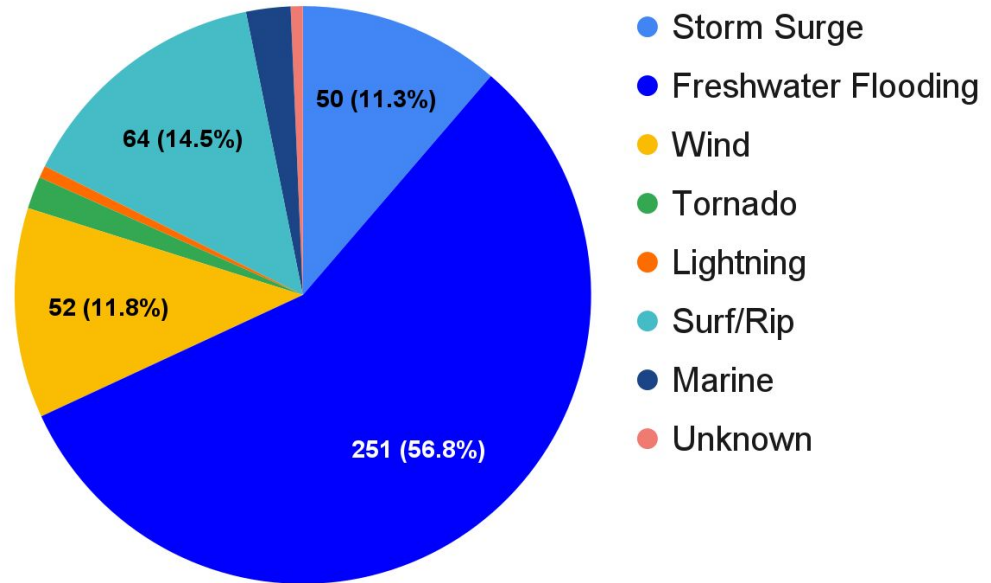


100-mph Hurricane

Lessons:

#1: Recent Fatality Trends

- Since 2013, most fatalities have been due to drowning from freshwater flooding from rainfall (57%)
- 41 storm surge fatalities in Ian a reminder of the potential loss of life from that hazard
- More deaths from surf and rip currents than wind or storm surge

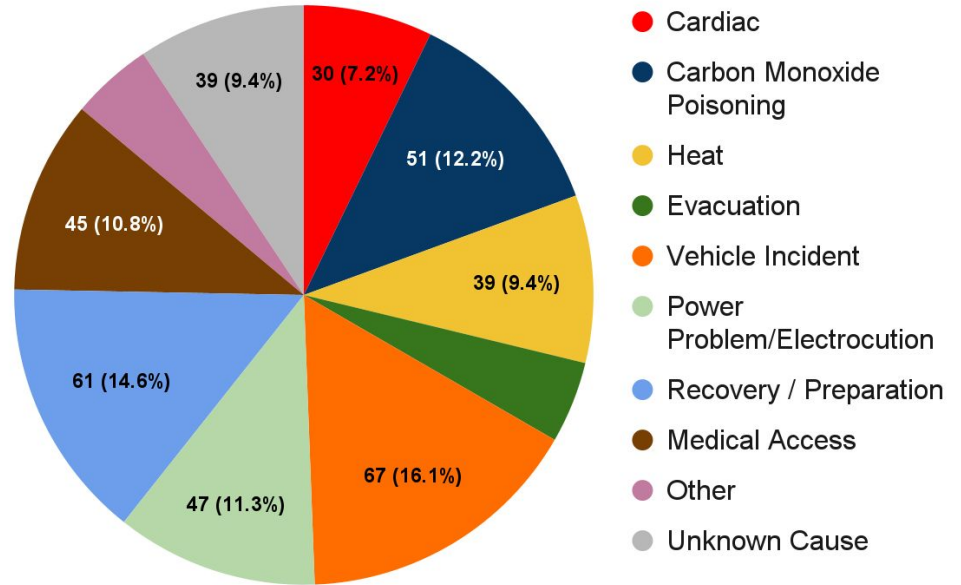


U.S. Direct Hurricane Deaths - 2013-2022
Total: 442

Lessons:

#1: Recent Fatality Trends

- Nearly as many “indirect” fatalities after the storm as direct storm deaths in the last 10 years
- Most occur after major hurricane landfalls with widespread power outages
- Disproportionally affect older adults (60+), especially men

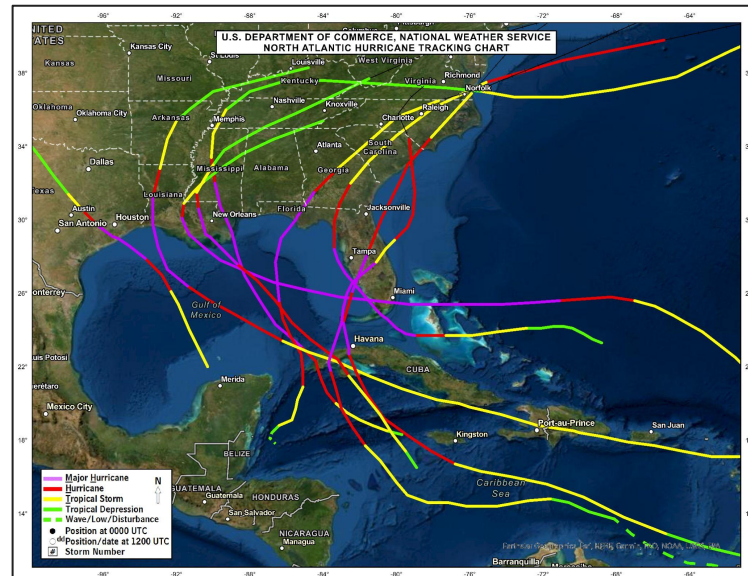


U.S. Indirect Hurricane Deaths - 2013-2022
Total: 415

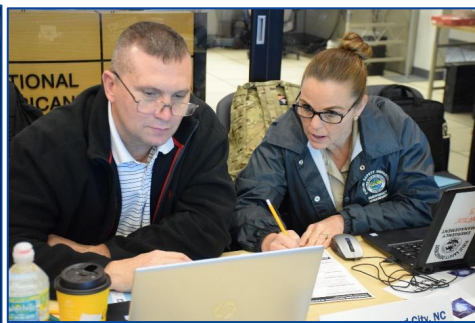
Lessons:

#2: Hurricanes Don't Care About Your Timelines

- We teach and train Emergency Managers (~70 per year) and NWS and international meteorologists at NHC
- Returned to in-person training in 2023
- EMs don't always have 5 to 7 days to prepare for a storm - some of the strongest hurricanes form and bring impacts within 3-4 days



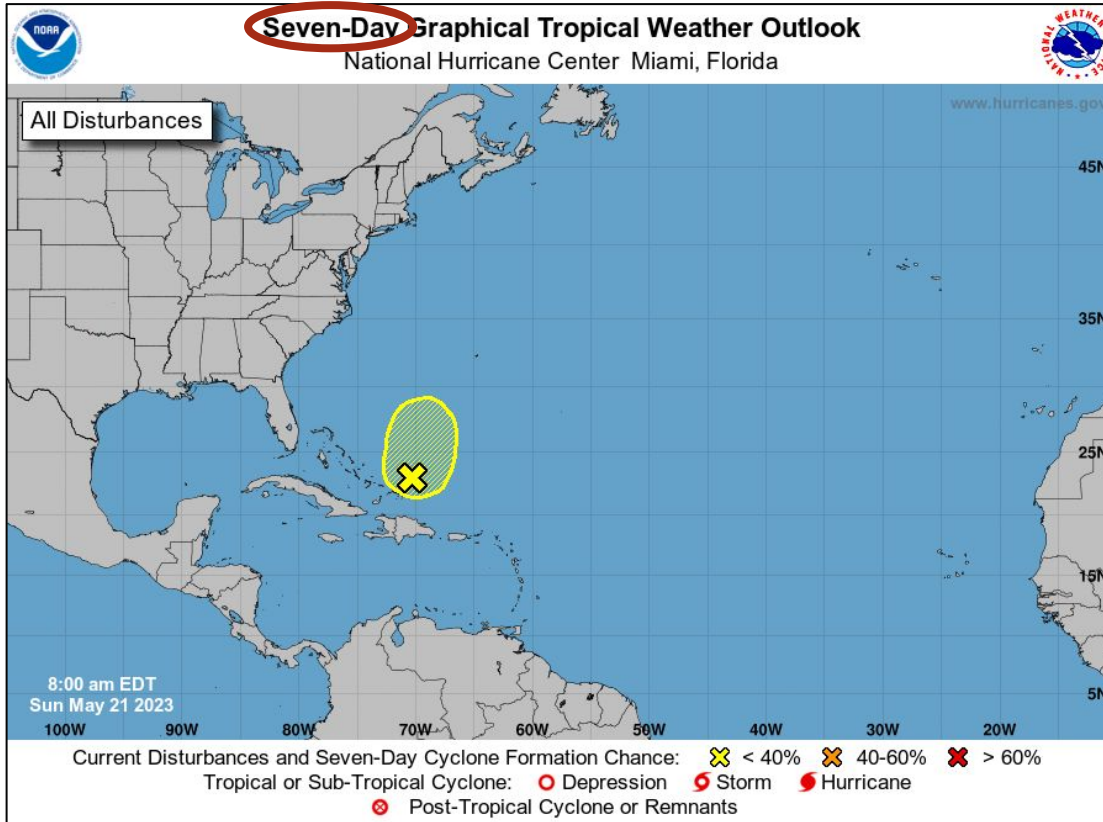
The Nation's Strongest storms in the past 100 years were all Tropical Storms 3 Days Before Landfall



Outline



Tropical Weather Outlook Extended to 7 Days in 2023



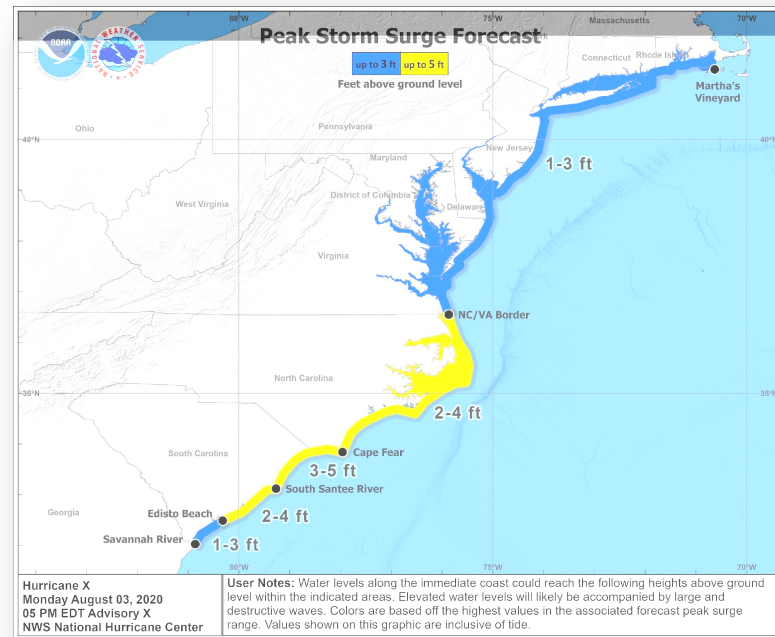
Forecasts of storm formation extended from 5 to 7 days

Issued every 6 hours from May 15 through November 30

Storm Surge Predictions Improved for 2023

New version of NOAA's storm surge model allows for forecasts of two hurricanes at the same time and extends forecast information out to 72 h in advance

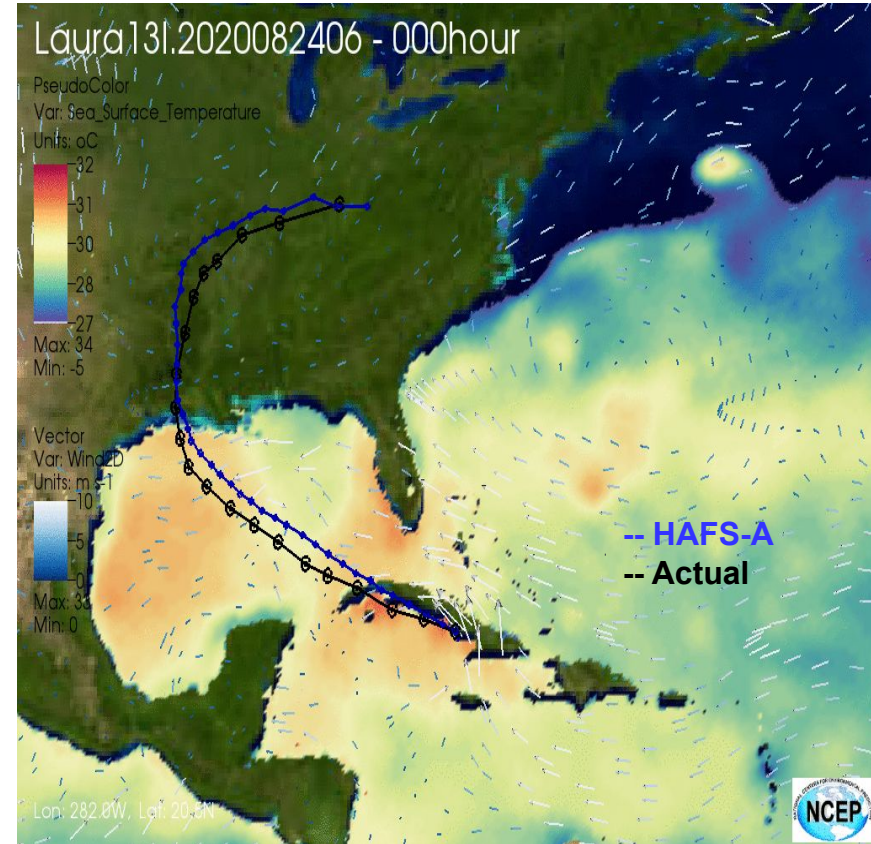
Improved storm surge products for Puerto Rico and the U.S. Virgin Islands



Peak Storm Surge Graphic Operational in 2023

Hurricane Analysis and Forecast System (HAFS)

- HAFS is NOAA's new hurricane modeling system within the Unified Forecast System (UFS) framework
- A result of transitioning tropical cyclone modeling research to operations
- HAFS has atmosphere-ocean-wave coupling, improved data analysis and physics, and detailed output following the storm
- HAFS will be implemented operationally this hurricane season (June/July)

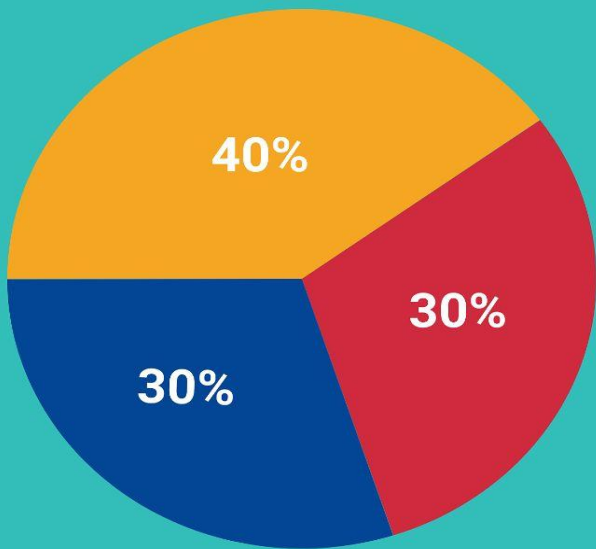


Outline





2023 Atlantic Hurricane Season Outlook



■ Above normal ■ Near normal ■ Below normal

Season probability

Named storms

12 - 17

Hurricanes

5 - 9

Major hurricanes

1 - 4

Be prepared: Visit hurricanes.gov and follow @NWS and @NHC_Atlantic on Twitter.

May 2023

NOAA's 2023 Hurricane Season Outlooks

All ranges of activity are given with a 70% probability.



Central Pacific
Above-Normal Season
4-7 Tropical Cyclones
Average is 4-5 TCs

Eastern Pacific
Above-Normal Season
14-20 Named Storms
7-11 Hurricanes
4-8 Major Hurricanes
90%-155% Median ACE
Averages are 15 NS, 8 H, 4 MH

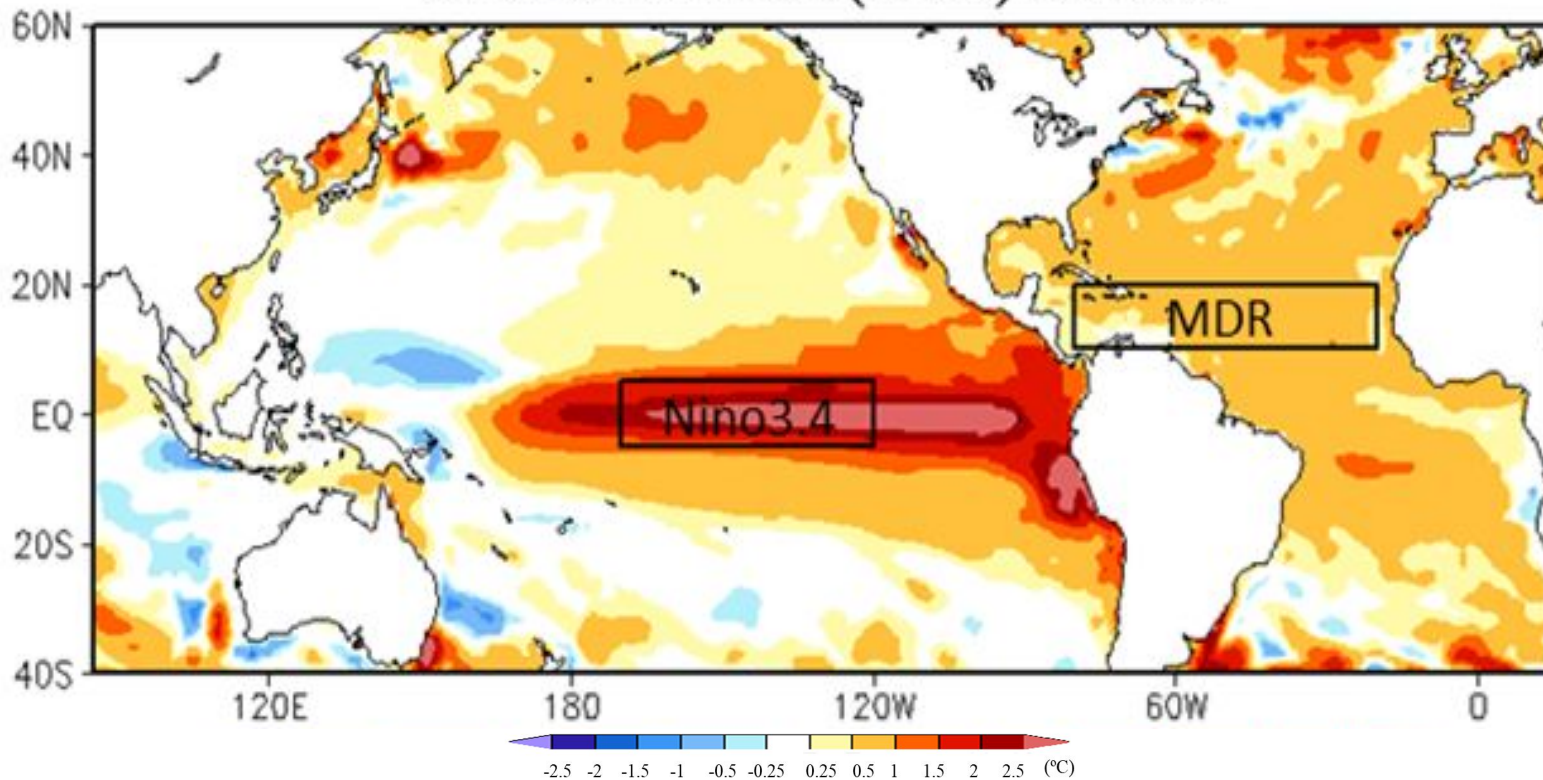
Atlantic
Near-Normal Season
12-17 Named Storms
5-9 Hurricanes
1-4 Major Hurricanes
70%-145% Median ACE
Averages are 14 NS, 7 H, 3 MH

	Atlantic	Eastern Pacific	Central Pacific
Above Normal	30%	55%	50%
Near Normal	40%	35%	35%
Below Normal	30%	10%	15%

Outlooks are for overall seasonal activity.
They are not a hurricane landfall forecast.

Predicted Sea Surface Temperature (SST) Anomalies

Predicted SST anomalies (°C) for August-October 2023



Expected Atlantic Conditions During August – October 2023

Expected ongoing high-activity era conditions
(warm phase of AMO),
but El Niño competing

Near-average
vertical wind shear
(high uncertainty)

Above-average SSTs

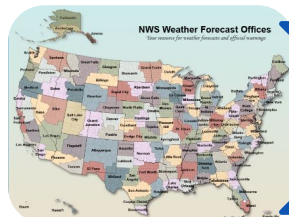
Weaker easterly trade
winds

Atlantic Main Development Region

Slightly stronger,
wetter West
African monsoon

Ways to Stay Informed & Help Your Constituents

- Follow your local NWS office (weather.gov) and NHC (hurricanes.gov) on social media (weather.gov/socialmedia), and share relevant content
- Model safe behavior, follow guidance from local authorities (i.e., don't travel when not recommended; evacuate when requested)
- Do you have a NOAA Weather Radio? (weather.gov/NWR)
- Become a Weather Ready Nation Ambassador (weather.gov/WRN)
- Are you on our congressional email list? Get localized significant weather event information (email: matthew.borgia@noaa.gov)



Follow Your
Forecast
Office



Have multiple
sources of
info! NOAA
Weather Radio



Outline



2023 Hurricane Season

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FEMA

We Are Ready



28 Urban Search and Rescue Teams
7,319 Surge Capacity Force Rostered
13,440 Overall Incident Management



1,163,326 people have received **\$1.9B+** dollars in Individual Assistance and **3,832** families received Direct Housing assistance due to policy changes.

Date: As of 5/31/23



4 National IMATs
7 Regional IMATs
48 Federal Coordinating Officers



30,618,202
Liters of Water



24,614,048
Meals



911
Generators



895,889
Blankets



72,106
Cots

FEMA's Posture



- FEMA restocked its inventory of commodities, transportable temporary housing units and resources.



- Our contracts and commodities are pre-staged and ready for rapid response operations from the Pacific to the Caribbean and along the Eastern Seaboard.



- This year, FEMA launched several new updates to HURREVAC, our free web-based tool that helps officials plan for hurricane risks and provides training to emergency managers.



FEMA



August 2022

2022-2026 FEMA National Tribal Strategy



Equity Efforts for 2023

- Expanded acceptable forms of documents to prove home ownership and occupancy.
 - Over 128,000 survivors, who would have previously been ineligible for assistance, received more than \$754 million to jumpstart their recovery.
- Released agency's first National Tribal Strategy & appointed first-ever National Tribal Affairs Advocate appointee.
- Held annual National Advisory Council meeting in Indian Country for the first time, where the first tribal citizen to hold the position of council chair was announced.
- Expanded Direct Technical Assistance to communities and tribes for additional access to BRIC and Flood Mitigation Assistance funding.

FEMA's Improved Preparedness Communication Efforts

- The FEMA App was updated with new features like **preparedness slideshows** about how to prepare for a hurricane and other hazards in both English and Spanish.
- A new fillable form on **Ready.gov** allows families to create an emergency plan on their mobile device where they can save it, or email it to family members.



FEMA

FEMA's Outreach to Older Adults

- Ready's National Preparedness Month will have a special focus on the older adult population.
- Join our efforts by talking to your older constituents to learn where they get their trusted information and identify the best avenues to reach them.
- Let's get the messages that save lives into the hands of those who need it most.



FEMA

The Time to Prepare is Now

- Hurricane season is just days away. There are actions your constituents can take today to prepare themselves, their families, and their pets
 - Visit [Ready.gov](https://www.ready.gov) and make an emergency plan.
 - Sign up for emergency alerts and warnings from your local officials, you can also download the FEMA App to receive weather alerts from up to 5 different locations.
 - Review insurance policies.
 - Know your evacuation zone and have a plan in place in case you need to evacuate.



Take advantage of our promotional toolkits to share preparedness information with your constituents.



FEMA



FEMA

Helping People Before, During, and After Disasters.

Outline



2023 Hurricane Season Readiness



1-800-REDCROS





THANK YOU FOR YOUR TIME AND INTEREST

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