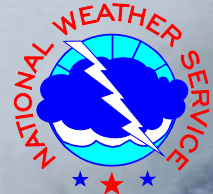


Welcome to the 2021 RA-IV (Virtual) Workshop on Hurricane Forecasting and Warning



Ken Graham, Director
Richard J. Pasch and Daniel P. Brown,
Senior Hurricane Specialists
National Hurricane Center
April 26, 2021





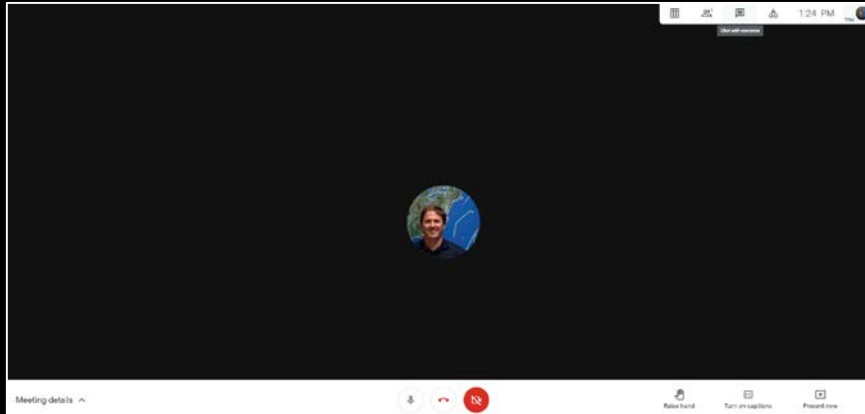
Workshop Reminders



- Please log in a few minutes before the start of each session to minimize distractions
- Please come back from breaks on time
- Please use camera during discussion and questions and answer period
- Schedule:
 - Session from 1400-1700 UTC and 1800-2100 UTC
 - Lunch break from 1700-1800 UTC
 - Ends at 1700 UTC on Friday
- Technical issues please email: Richard.j.pasch@noaa.gov or Daniel.p.brown@noaa.gov

Google Meet Crash Course

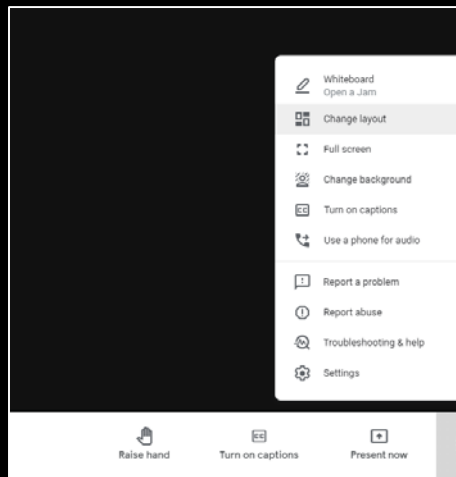
- You can change your view by selecting the options icon. These changes will not take effect until you rejoin the session. Please wait until a break to leave and return to the session to do this.



Click additional options icon (3 dots)

Google Meet Crash Course

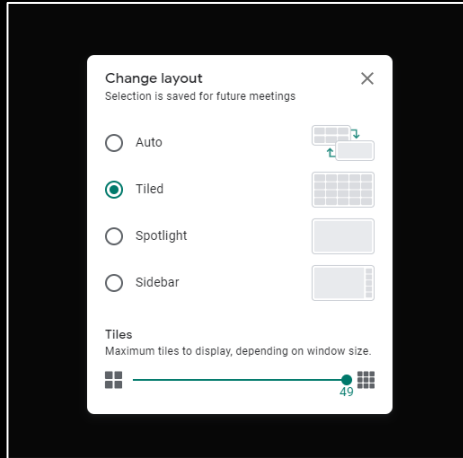
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Click "change layout"

Google Meet Crash Course

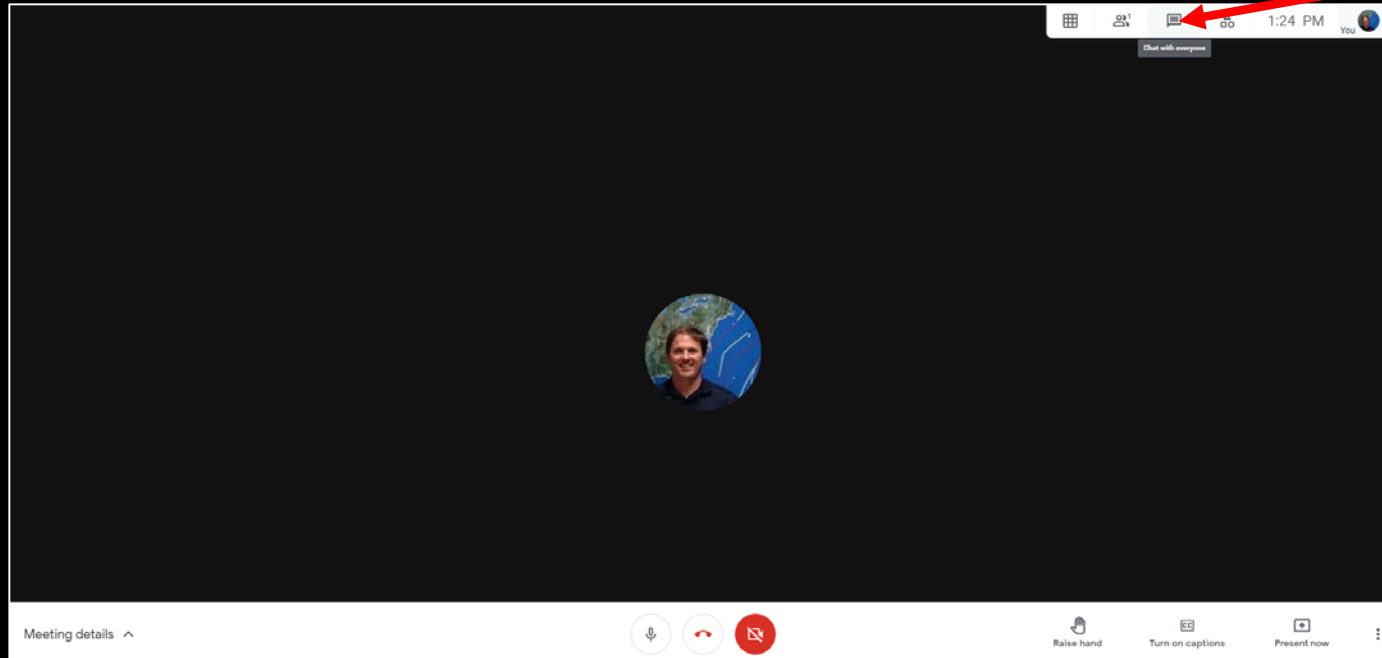
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To maximize the presentation size, use spotlight or sidebar. Sidebar allows you to see the speaker.

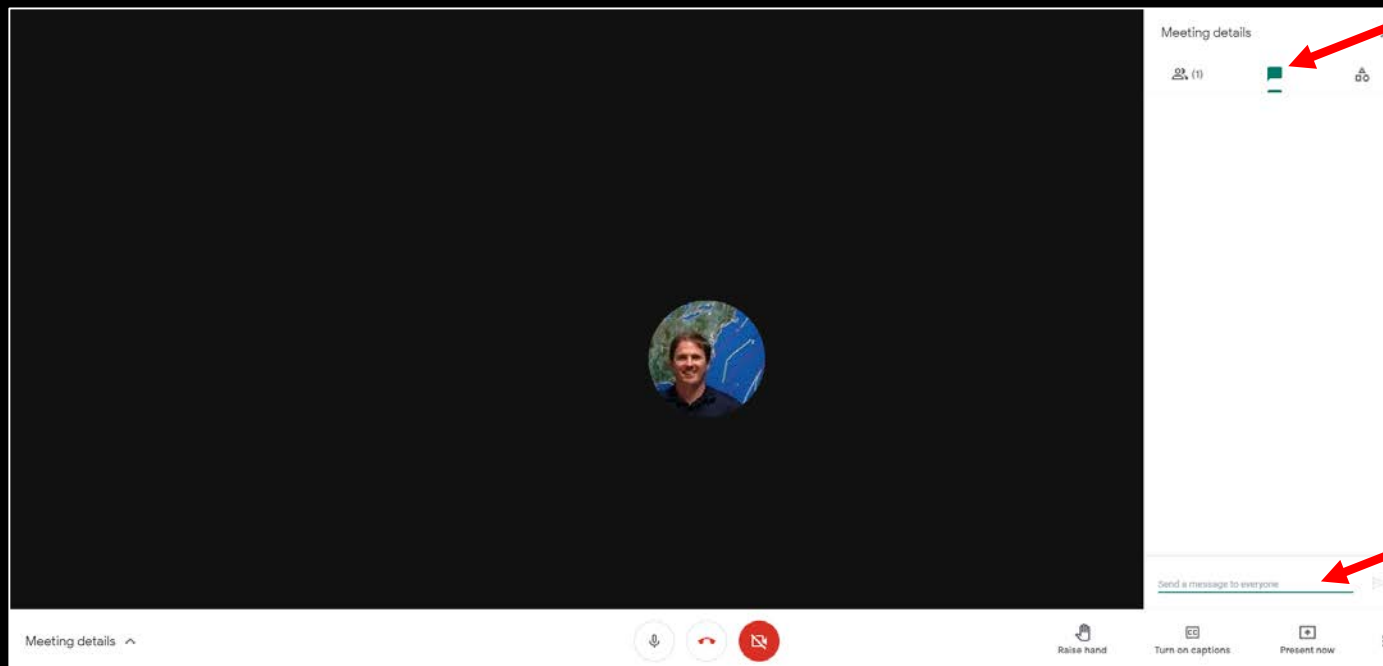
Google Meet Crash Course

- We highly encourage interaction during the webinar. This can be done in a few different ways: **Click chat icon**



Google Meet Crash Course

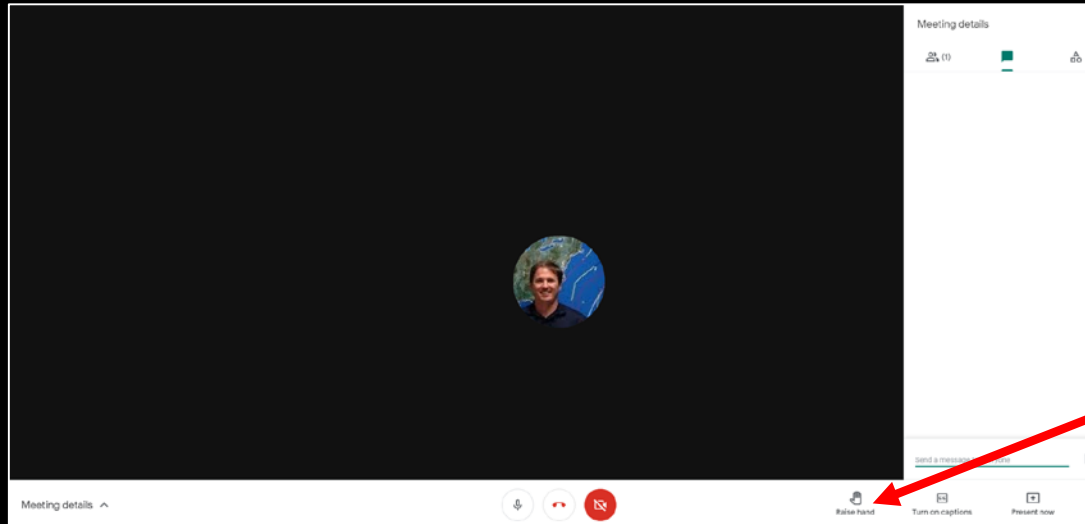
- We highly encourage interaction during the webinar. This can be done in a few different ways: [Click here](#)



Then enter
message here

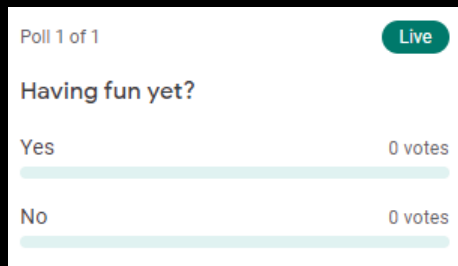
Google Meet Crash Course

- When these opportunities arise, we will prompt the group to have individuals to “raise their hand”. Note, attendees can ask question throughout the presentations through the chat window



Google Meet Crash Course

- There will be several opportunities for poll questions throughout the workshop. We will let you know to look for the indicator for poll questions when they are being asked.



Poll 1 of 1 Live

Having fun yet?

Yes 0 votes

No 0 votes

The screenshot shows a Google Meet poll interface. At the top, it says "Poll 1 of 1" and "Live" in a green bubble. The question is "Having fun yet?". There are two options: "Yes" and "No", each with a progress bar and "0 votes" next to it.

A couple of quick rules

- Please mute yourself at all times unless we unmute you to speak. You are more than welcome to keep your camera on so we can see the audience and you can see others as well.
- Please do not share your screen unless you are a presenter. You will know who you are
- Please have fun and interact with us in order to get the most out of this experience!



Workshop Agenda



1400-1700 UTC Morning Session

	Monday, April 26 Hurricane & Tropical Meteorology Science Lectures	Tuesday, April 27 TC Position, Intensity, and Size Estimation from Satellite and Aircraft	Wednesday, April 28 TC Analysis and Forecasting	Thursday, April 29 TC Hazards and Forecast Exercise	Friday, April 30 Impact and Risk Communication
1400	RP/KG: Welcome and Introduction	JC/BR: Interpretation of Microwave Satellite Imagery	MO/PP: TC Structure / ET Transition	CF: Storm Surge Forecasting	RB: Communicating Probabilities and Risk
1440	KE: Hurricane Science Tutorial	JC/BR: Use of Scatterometer Data	AL/RP: TC Genesis	MC/JG: Rainfall Forecasting	AD: Briefing Emergency Management
1520	Break	Break	Break	Break	Break
1540	JK: Climate Change	JF: Aircraft Reconnaissance Data Analysis	RR: Aircraft Observations in TCs	DB: Wind Speed Probabilities	DS: Effective Messaging - Changing the Outcome of the Event
1620	BH: TC Phase Analysis	DH: Objective Satellite Intensity Estimates (ADT and SATCON) from UW/CIMSS	JS: TC Modeling and Data Assimilation	MB/DB: Messaging, Watch/Warning Philosophy, and Coordination	Open Discussion, Course Evaluation
1700	End Session	End Session	End Session	End Session	Course Concludes



Workshop Agenda



1800-2100 UTC Afternoon Session

	Monday, April 26 (cont.)	Tuesday, April 27 (cont.)	Wednesday, April 28 (cont.)	Thursday, April 29 (cont.)	Friday, April 30
1800	BK: General Circulation	JB: Dvorak Technique	EB: Interannual/ Intraseasonal Variability	TC Forecast Exercise	
1840	JC: Tropical Waves		SS: Radar Analysis of Tropical Cyclones		
1920	Break	Break	Break	Break	
1940	FM: Hurricane Research	Dvorak Technique (cont.)	DZ/RP: TC Track Forecasting (including ensembles)	TC Forecast Exercise (cont.)	
2020	CL: TAFB Operations and Products		MD: TC Intensity Forecasting		
2100	End Session	End Session	End Session	End Session	



National Hurricane Center

Organizational Structure



Hurricane Specialist Unit

Develop, coordinate (domestically and abroad), and issue tropical cyclone warnings, forecasts, and outlooks in text and graphical formats (~700 full advisory packages/yr)

“Off-season” outreach and public awareness programs

Applied research

Tropical Analysis and Forecast Branch

Marine/ocean and satellite analyses, forecasts and warnings in text and graphical formats, 24x7, (~100 products/day)

Conduct tropical cyclone (Dvorak) analyses for the hurricane specialists

Augments operational support staffing

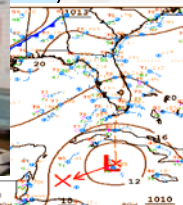
Technology and Science Branch

Computer systems support 24x7

Applications development and technology infusion

Storm surge guidance (real time; community planning; preparedness)

Emergency operational support staffing





Facts About the NHC Facility

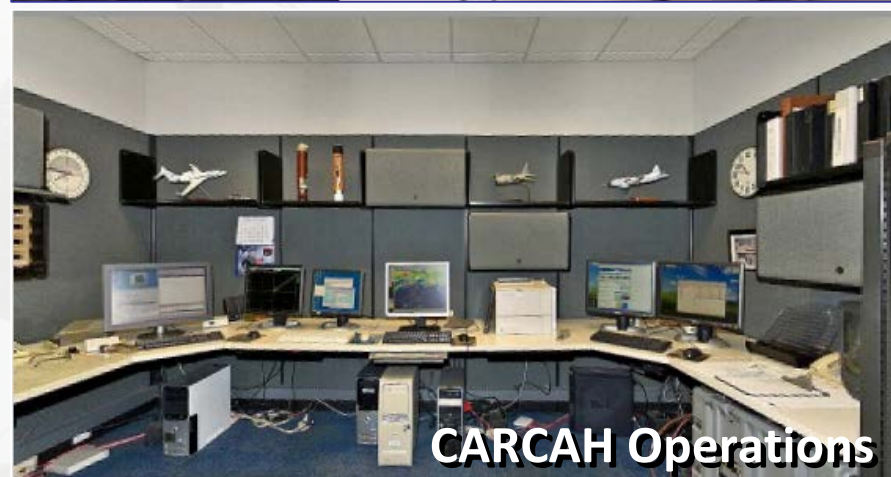
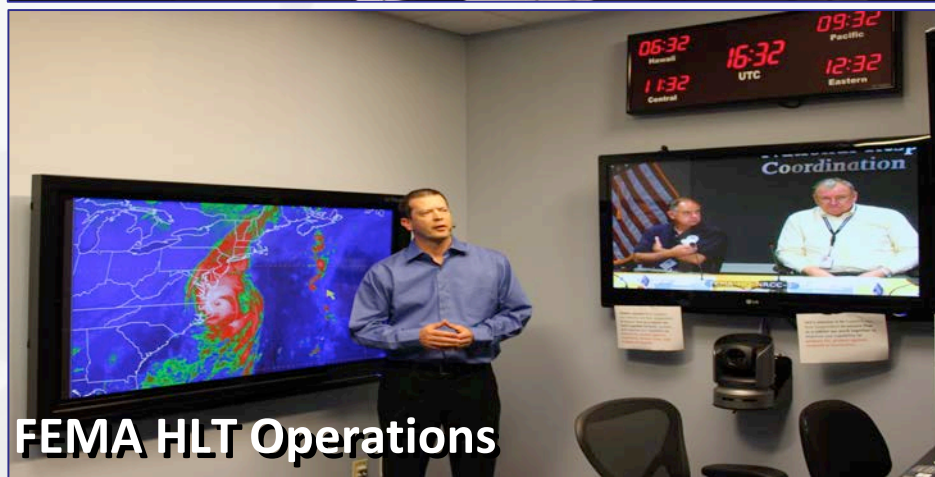
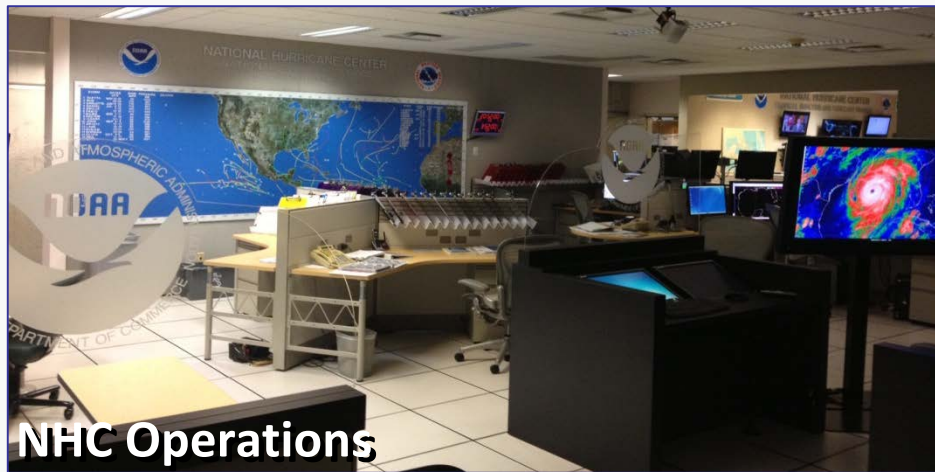


- Opened in 1995
- 25,000 square ft
- Design team included Herb Saffir
- Rest five feet above flood plain
- 10-inch thick walls made from 3000 cubic yards of concrete, reinforced with 45 miles of steel reinforcing rods
- More than 50 miles of electrical and communications wiring
- Also houses the NWS Miami Weather Forecast Office





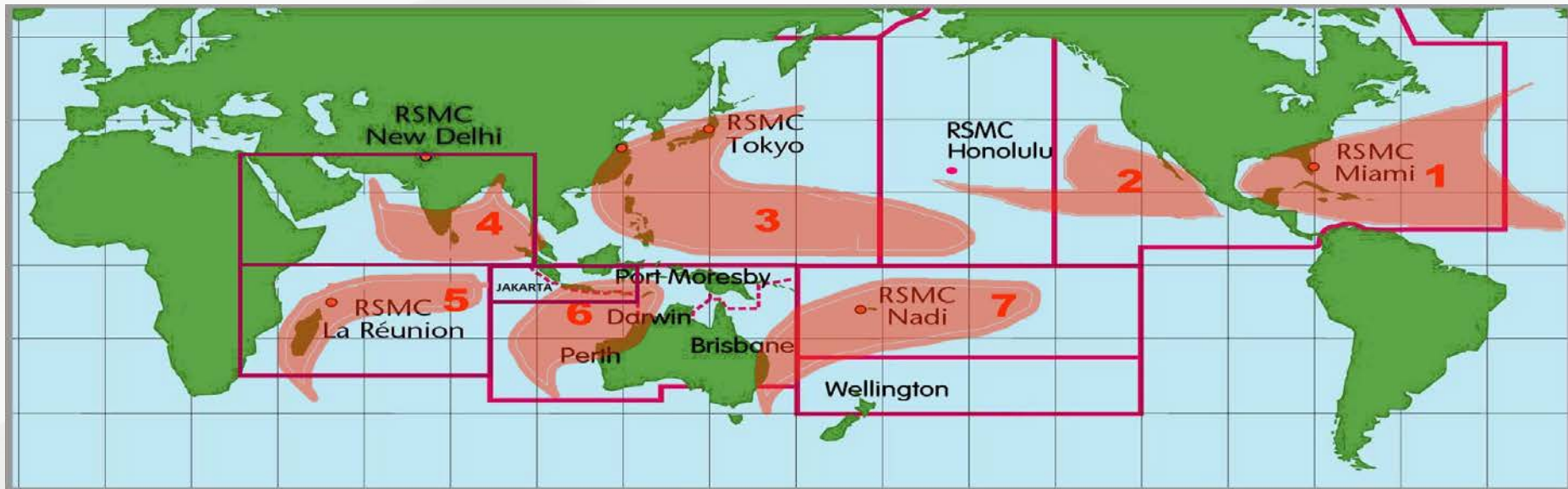
Tour of Primary Operations Areas





World Meteorological Organization

Regional Specialized Meteorological Centers (RSMC)



- NHC is one of 7 RSMCs that produce and coordinate tropical cyclone forecasts for various ocean basins.
- NHC is responsible for both the Atlantic & eastern North Pacific Ocean basins.



International Collaboration Highlights



- Open exchange of meteorological data among countries
- NHC provides forecasts and guidance on watches and warnings to 28 WMO member nations
- NHC hosts and teaches two-week workshop on tropical cyclones for international government meteorologists
- NHC Director serves as Chairman of the WMO RA-IV Hurricane Committee. Annual meeting updates the Region's "Hurricane Operational Plan"
- U.S. conducts annual Caribbean Hurricane Awareness Tour
- Storm surge projects





Hurricane Awareness Tour



- 2020 and 2021 – Canceled due to the pandemic
- Hopeful for a return in 2022 – Stay tuned!
- Opportunity to increase hurricane awareness by meeting with emergency managers, media, and general public
- Tour of hurricane hunter aircraft





NHC's International Coordination

World MET. ORGANIZATION - Regional Association IV Coordination



RSMC= Regional Specialized Meteorological Center

RA-IV countries include Caribbean area, Central America, Mexico, Canada, and Bermuda.

- **NHC issues watches/warnings for Haiti**

- **NHC will recommend the placement of watches/warnings**

- **Coordinated via phone with Met. Offices throughout the region**

- **Tropical Storm or Hurricane Watches and Warnings are currently not issued prior to the formation of a tropical depression**

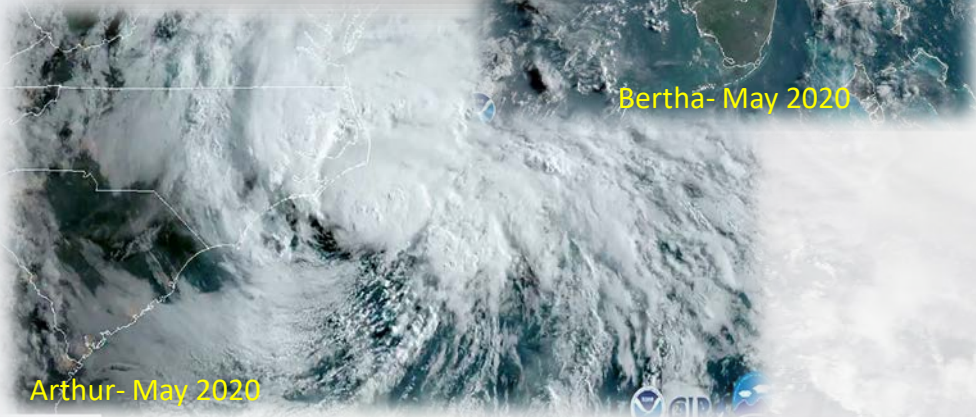


Tropical Cyclone Breakpoints - Caribbean

2021 Change - May 15 Start of NHC Atlantic Tropical Weather Outlooks



Alberto- May 2018



Bertha- May 2020

Arthur- May 2020

- In 2021, NHC will begin issuing the Tropical Weather Outlooks on **May 15**
 - No change to the official start of hurricane season
 - Will provide information on possible development prior to June 1
- 6 straight years with at least one named storm prior to June 1st
 - In 2020, 36 special TWOs issued prior to June 1!
- 5 of the recent pre-season storms have impacted the United States

2021 Change – World Meteorological Organization Tropical Cyclone Naming Update

Retired Tropical Cyclone Names

Dorian
2019



Laura
2020



Eta
2020



Iota
2020



- Four hurricane names were retired from the 2019-2020 seasons
 - Dorian replaced with Dexter (2025)
 - Laura replaced with Leah (2026)

Supplemental List of Atlantic Tropical Cyclone Season

Adria
Braylen
Caridad
Deshawn
Emery
Foster
Gemma

Heath
Isla
Jacobus
Kenzie
Lucio
Makayla
Nolan

Orlanda
Pax
Ronin
Sophie
Tayshaun
Viviana
Will



- Overflow name list no longer includes the Greek Alphabet
- Supplemental name lists for Atlantic and Eastern Pacific basins

Questions?

