

# Welcome to the 2022 RA-IV (Virtual) Workshop on Hurricane Forecasting and Warning

**Ken Graham, Director  
National Hurricane Center**

**Richard J. Pasch & Daniel P. Brown  
Senior Hurricane Specialists  
National Hurricane Center**

**Anne-Claire Fontan, Scientific Officer  
WMO Tropical Cyclone Program**

**February 28, 2022**



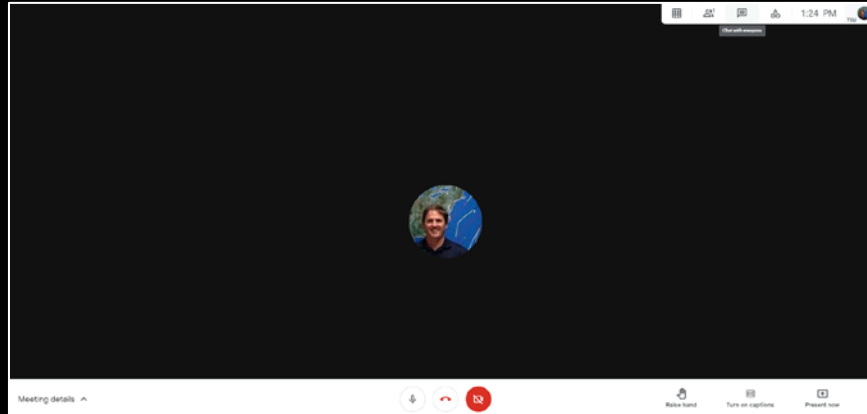


# Workshop Reminders

- Please log in a few minutes before the start of each session to minimize distractions
- Please come back from breaks on time
- Please turn on 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](mailto:Richard.j.pasch@noaa.gov) or [Daniel.p.brown@noaa.gov](mailto:Daniel.p.brown@noaa.gov)

# Google Meet Crash Course

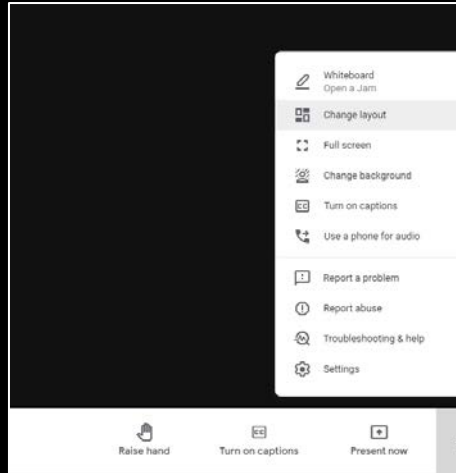
- You can change your view by selecting the options icon. These changes will not take effect until you rejoin the session. Please wait until a break to leave and return to the session to do this.



Click additional options icon (3 dots)

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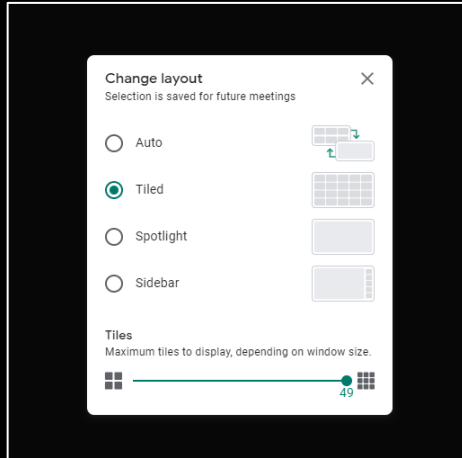
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Click "change layout"

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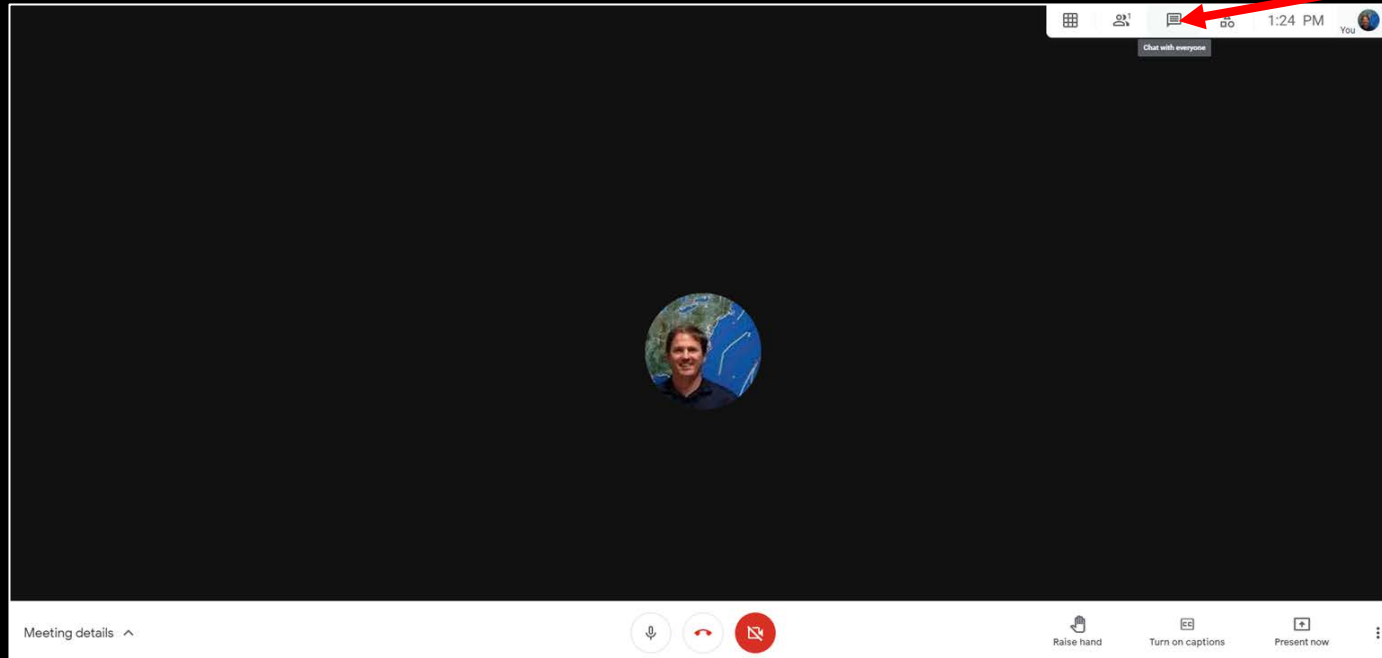
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To maximize the presentation size, use spotlight or sidebar.  
Sidebar allows you to see the speaker.

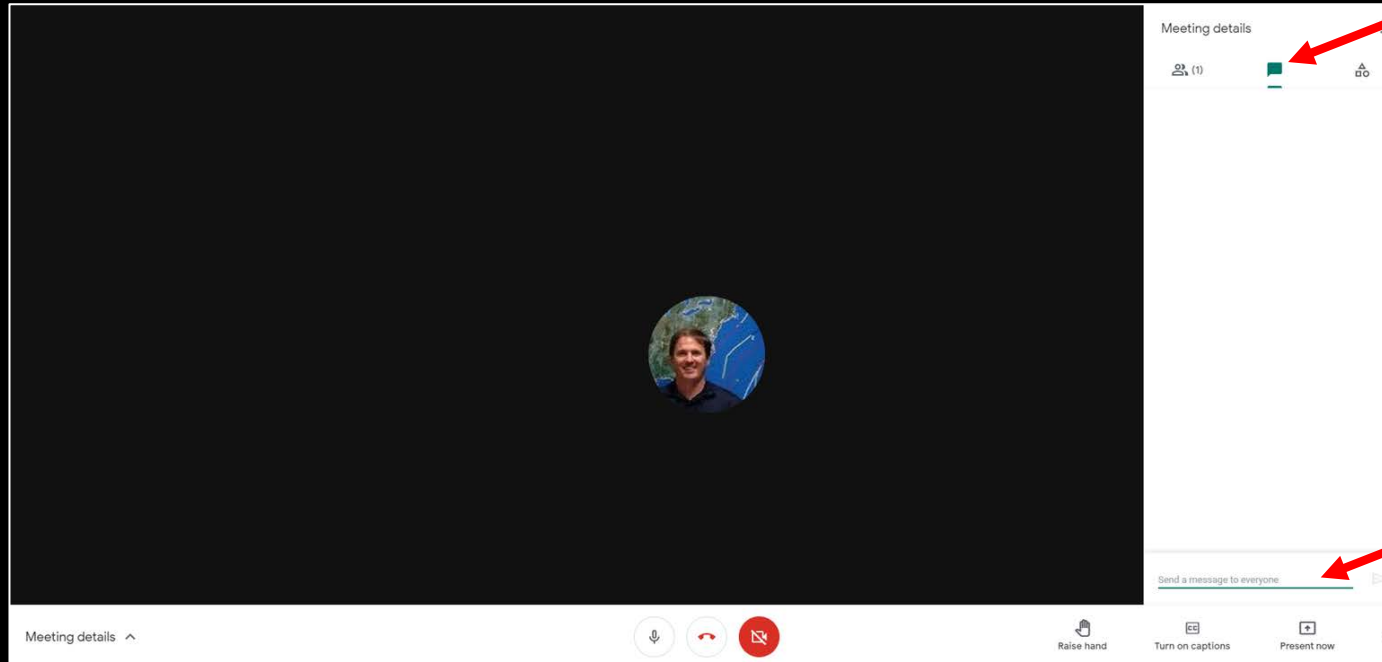
# Google Meet Crash Course

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



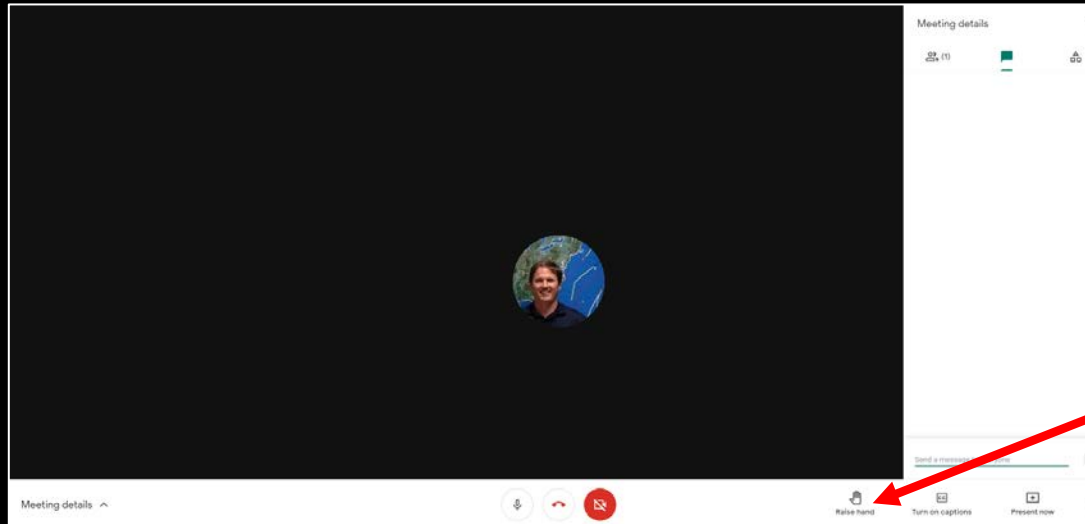
# Google Meet Crash Course

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# Google Meet Crash Course

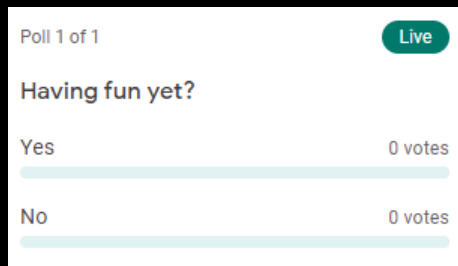
- When these opportunities arise, we will prompt the group to have individuals to “raise their hand”. Note, attendees can ask question throughout the presentations through the chat window





# 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

	<b>Monday, Feb 28</b>	<b>Tuesday, March 1</b>	<b>Wednesday, March 2</b>	<b>Thursday, March 3</b>	<b>Friday, March 4</b>
	Hurricane & Tropical Meteorology Science Lectures	TC Position, Intensity, and Size Estimation from Satellite and Aircraft	TC Analysis and Forecasting	TC Hazards and Forecast Exercise	Impact and Risk Communication
<b>1400</b>	RP/KG: Welcome and Introduction	JC/BR: Interpretation of Microwave Satellite Imagery	DH: Objective Satellite Intensity Estimates (ADT and SATCON) from UW/CIMSS	CF: Storm Surge Forecasting	RB: Communicating Probabilities and Risk
<b>1440</b>	KE: Hurricane Science Tutorial	JC/BR: Use of Scatterometer Data	AL/RP: TC Genesis	MC/JG: Rainfall Forecasting	AD: Briefing Emergency Management
<b>1520</b>	Break	Break	Break	Break	Break
<b>1540</b>	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
<b>1620</b>	BH: TC Phase Analysis	PP: TC Structure	JS: TC Modeling and Data Assimilation	MB/DB: Messaging, Watch/Warning Philosophy, and Coordination	Open Discussion, Course Evaluation
<b>1700</b>	End Session	End Session	End Session	End Session	Course Concludes



# Workshop Agenda



## 1800-2100 UTC Afternoon Session

	Monday, Feb 28 (cont.)	Tuesday, March 1 (cont.)	Wednesday, March 2 (cont.)	Thursday, March 3 (cont.)	Friday, March 4
1800	BK: General Circulation	JB: Dvorak Technique	EB: Interannual/ Intraseasonal Variability	RP/DB/DZ: TC Forecast Exercise	
1840	JC: Tropical Waves		WH: 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

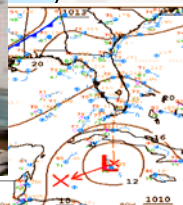
### Technology and Science Branch

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



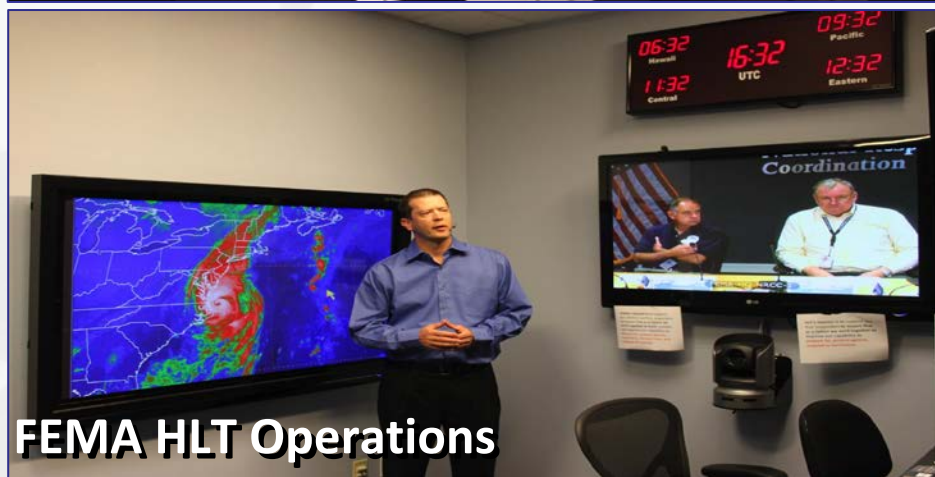
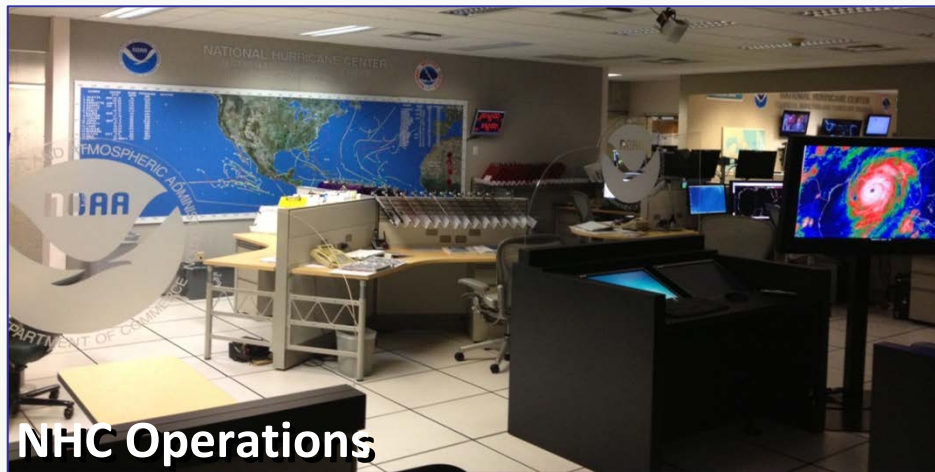
- Opened in 1995
- 25,000 square ft
- Design team included Herb Saffir
- Rest five feet above flood plain
- 10-inch thick walls made from 3000 cubic yards of concrete, reinforced with 45 miles of steel reinforcing rods
- More than 50 miles of electrical and communications wiring
- Also houses the NWS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





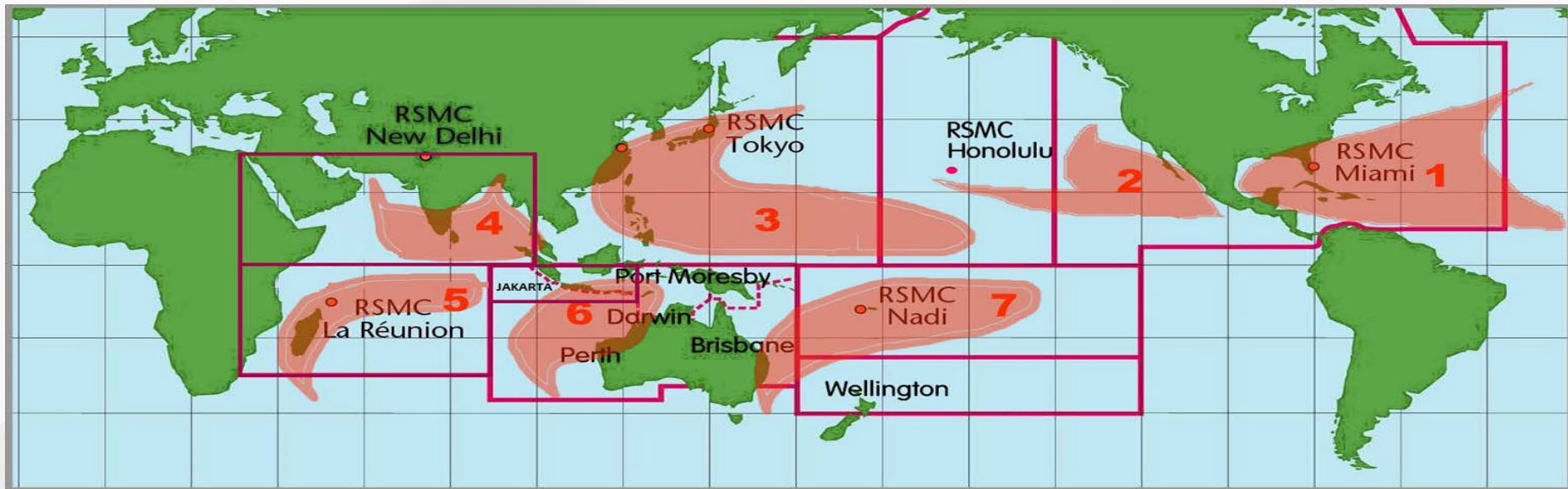


# Tour of Primary Operations Areas



# 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
- Limited Return in 2022 - U.S. Territories
- Full Return in 2023– Hopefully!
- 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



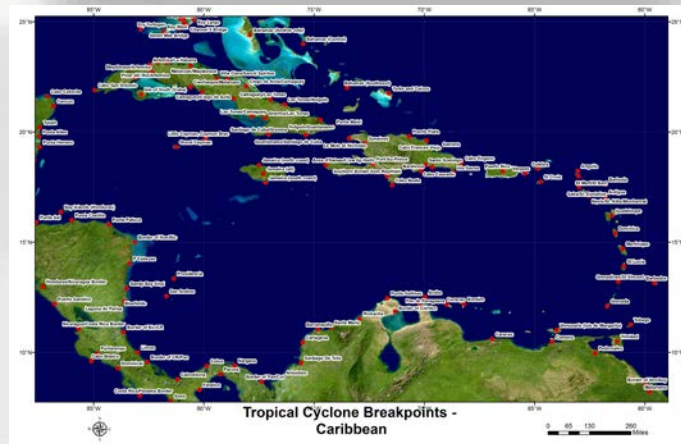
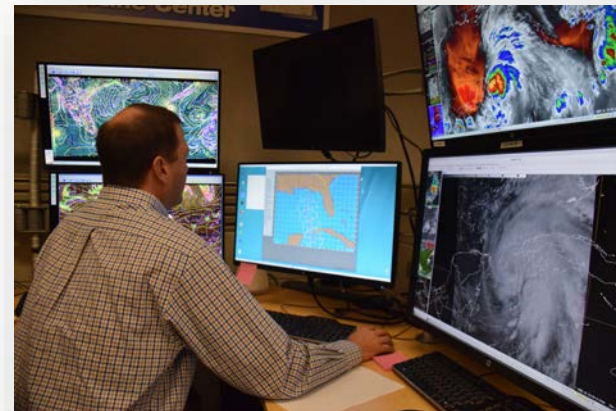
**RSMC= Regional Specialized Meteorological Center**

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

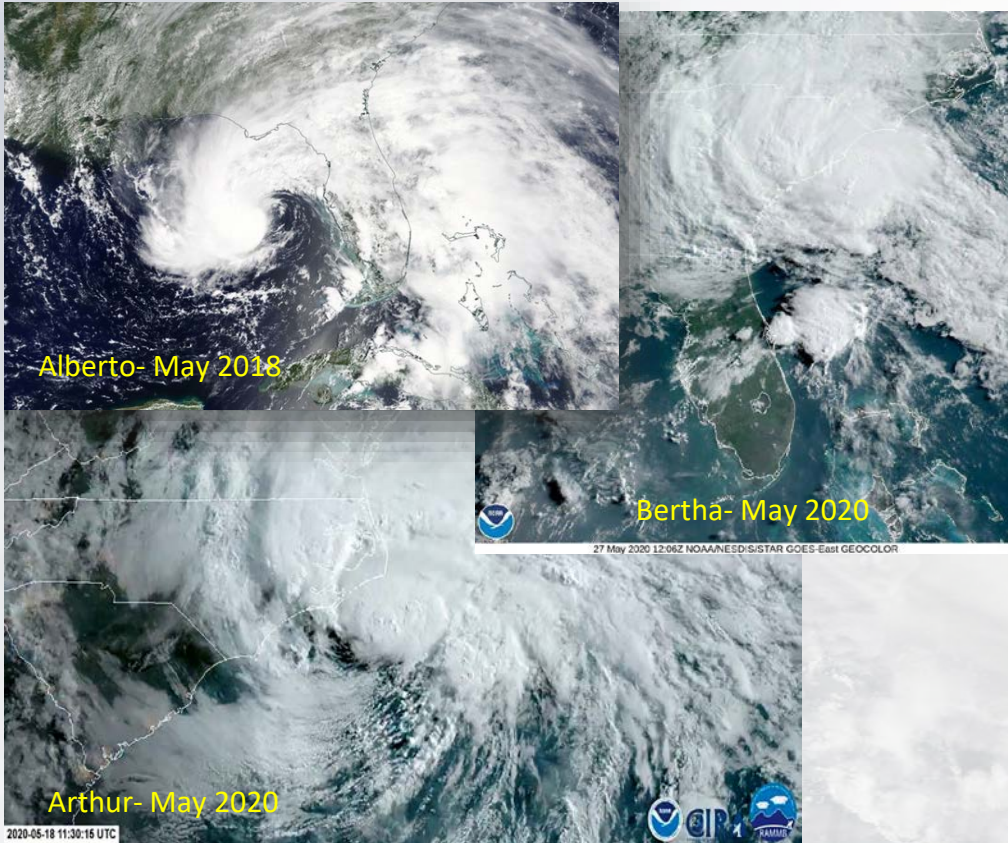


# Coordination of International Watches & Warnings

- Each country is responsible for issuing watches/warnings for their respective country or jurisdiction
  - NHC issues watches/warnings for Haiti
- NHC will recommend the placement of watches/warnings
- Coordinated with Met. Offices throughout the region
- Potential Tropical Cyclone advisories allow for the issuance of watches and warnings prior to the formation of a tropical depression



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



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

# *Reminder of a 2021 Change –* **World Meteorological Organization Tropical Cyclone Naming Update**

Supplemental List of Atlantic Tropical Cyclone Season		
Adria	Heath	Orlanda
Braylen	Isla	Pax
Caridad	Jacobus	Ronin
Deshawn	Kenzie	Sophie
Emery	Lucio	Tayshaun
Foster	Makayla	Viviana
Gemma	Nolan	Will

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



***Questions?***

