



January 27, 2023

## **Activity Area 4:**

# Effective Communication and Coordination of Weather Research

Dr. Castle Williamsberg, Social Science R2X Coordinator























## **Activity Area 4: Effective Communication and Coordination of Weather Research**

The Weather Program Office seeks recommendations regarding our mechanisms for cross-line office communication, coordination, and collaboration with internal & external stakeholders throughout the Weather Enterprise.

The WPO activities included in this area are:



#### Supplemental Appropriations

WPO provides 360° coordination of the planning, budget execution, monitoring, reporting, and communication of projects funded by supplemental appropriations.



### Social Science Program

WPO funds research that plays a critical role in connecting the improvements of NOAA's weather forecast information to the public's growing forecast needs.



## Policy, Partnerships & Communications

WPO embraces its role at the nexus of weather policy and R&D, through purposeful collaborations and partnerships, while helping to bridge gaps across the Weather Enterprise.















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#### **AUTHORIZATION VS. APPROPRIATION**

Authorization is Congress saying that money **can** be spent on a given item—not that it necessarily **will** be spent on that item. Appropriations, on the other hand, are done by Congress via legislation that authorizes agencies to make payments from the Federal Treasury.



#### **Authorization**

- Gives NOAA authority or mandates for specific activities
- Can authorize funding for an activity



#### **Appropriation**

- Funds Federal agencies
- Can give very specific directives for the use of funds appropriated















## WHAT ARE SUPPLEMENTAL APPROPRIATIONS?

A **supplemental appropriation** occurs outside of the annual appropriation, and is intended to address urgent needs.

As a result of increasing natural disasters, supplemental appropriations have also increased. A driver for WPO involvement with supplemental appropriations is high impact weather events and the related emergencies that arise involving:

- (1) the safety of human life
- (2) the protection of property



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# **EVOLUTION OF THE SUPPLEMENTAL APPROPRIATIONS PROGRAM**

Working with NWS, NOS, and NESDIS, WPO leads the organization of quarterly reporting. Program management by WPO has become the standard for other quarterly reporting programs. Communication across Line Offices has evolved over the last 5 years.



#### Management Implementation Structure



























## **SUPPLEMENTAL APPROPRIATIONS - 5-YEAR HIGHLIGHTS**

## FY18 Supplemental Program

### **FY22 Supplemental Program**

Improving Forecasting and Assimilation Portfolio (FY18)

#### **27 Total Projects**

\$1.5M dedicated to Social Science research, to accelerate effective risk communications of warnings

#### **Focus Areas**

Weather Forecasting, Floods, Hurricanes, & Data Assimilation

## \$50 Million

Across 4 Focus Areas

#### **Focus Areas**

Expanded to include Wildfires, Extreme Precip. & Social Science

## \$170 Million

Across 7 Focus Areas

#### **Program Growth**

Management of 4
Supplementals, including
the Bipartisan
Infrastructure Law (BIL)

#### **76 Total Projects**

\$40M of BIL funding for NOAA's Service Delivery / Social, Behavioral, and Economic Sciences

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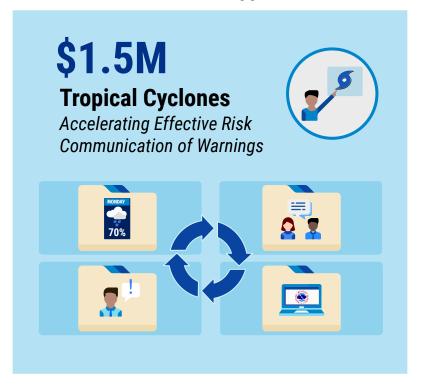






# SUPPLEMENTAL APPROPRIATIONS FOR SOCIAL SCIENCE & SERVICE DELIVERY

#### FY18 Disaster Supplemental



#### Disaster Relief Act of 2022

\$2M

#### **Extreme Precipitation**

Using Social Science Methods to Co-Develop Precipitation Products & Services



#### Bipartisan Infrastructure Law (BIL)

\$1.5M

Fire Weather Infrastructure

~\$10M

Societal Data Insights Initiative

















### **SOCIAL SCIENCE PROGRAM**

#### **Our Challenge**

Recent societal impacts from hurricanes, floods, wildfires, and other weather hazards shows a great need to understand the intersection of people and meteorology.

#### **Our Mission**

The Social Science Program funds research that plays a critical role in connecting the improvements of NOAA's weather forecast information to the publics' growing forecast needs.

#### **Our Focus Areas**

- Social Science Data & Research
- Research to Applications (R2X)
- Portfolio Analysis & Evaluation





















## **WPO SOCIAL SCIENCE PROGRAM -5 YEAR HIGHLIGHTS**

### FY17-19

## Wx Act

Social Science mentioned throughout Weather Act Implementation Plans.

## FY18 HSupp

Partnered with NWS & AOML to focus on tropical risk communication.

#### **2019 SBES R20** Workshop

Goal of workshop was to understand the unique roles and capacities of people and organizations in the SBES & weather communities.

Gathered feedback from the SBS and weather community partners to identify ways to better integrate SBS research into operations.

### FY20-22

## **Increased Demand**

Various reports and policy documents call for more social science research.

### **NSF & NHC**

Partnered to encourage SBES data & instrument publication.

#### **Social Science** Featured in **Strategic Plans**

OAR Strategic Plan 2020-2026

**NOAA R&D Vision Areas** 

**NOAA Strategic Plan** FY22-FY26

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# TO BE SUCCESSFUL, OUR SBES INITIATIVES NEED CROSS-SECTOR PARTNERSHIPS

### **Ongoing & Past Partnerships**













### **Partnerships for Future Initiatives**



Fire Weather Infrastructure

OAR Global Systems Laboratory





Societal Data Insights Initiative

Private Sector Companies



#### A STRATEGY FOR THE FUTURE

At the intersection of the Weather Enterprise\*, WPO will use its new strategic plan to bolster our role within the weather research network. Over the next 5 years, WPO will be increasingly intentional about driving policy initiatives and building partnerships, as we strive to advance innovative weather research.



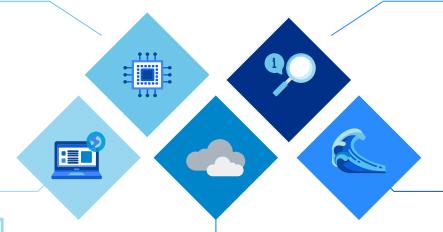


#### **POLICY ON THE HORIZON**

As we move forward, policy and legislation on the horizon will continue to serve as foundational to WPO's overall strategic vision and programmatic activities. The following are several pieces of legislation we are closely monitoring for their potential impact on WPO:

#### BIL

Bipartisan Infrastructure Law



#### IRA

Inflation Reduction Act

#### **LEGENDS Act of 2021**

Learning Excellence and Good Examples from New Developers Act of 2021

#### Weather Act 3.0

The Weather Research and Forecasting Innovation Act

#### **FLOODS Act**

The Flood Level Observation, Operations, and Decision Support Act



#### **UPCOMING PRESENTATIONS**

## Activity Area 4: Effective Communication and Coordination of Weather Research



















Mark Vincent, Ben Woods, Chris Spells, & Renee Richardson



20 Minutes

Social Science
Program
Gina Eosco



20 Minutes

# Policy, Comms & Partnerships Tamara Battle



**20 Minutes** 

#### Q&A Session



11:15-12:30pm











January 27, 2023

# **Supplemental Appropriations Program**

Dr. Mark Vincent, Supplemental Program Manager Ben Woods, Supplemental Program Lead Dr. Chris Spells, Bipartisan Infrastructure Law (BIL) Lead Renee (Richardson) Keller, Program Coordinator

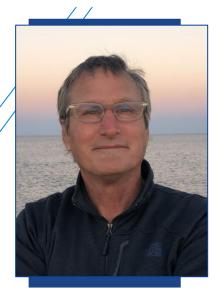
Activity Area 4: Effective Communication and Coordination of Weather Research







### **OUR TEAM**



**Dr. Mark Vincent**Supplemental
Program Manager



**Ben Woods**Supplemental
Program Lead



Dr. Christopher
Spells
BIL Lead



Renee (Richardson)
Keller
Program Coordinator

## Program Scope















## SUPPLEMENTAL APPROPRIATIONS PROGRAM

#### **Mission:**

We provide end-to-end coordination and facilitation of congressionally directed research activities intended to improve forecasting and prediction capabilities, in response to significant weather events and natural disasters.

### **CATALYSTS**

2017
Hurricane Harvey
Hurricane Maria
Hurricane Irma

**2019** Wildfires

2018
Hurricane Florence
Hurricane Michael
Typhoon Yutu

**2020**Hurricanes
Wildfires

2021
Hurricanes
Wildfires

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# **SUPPLEMENTAL/BIL APPROPRIATIONS**CROSS-LINE OFFICE ROLES AND RESPONSIBILITIES











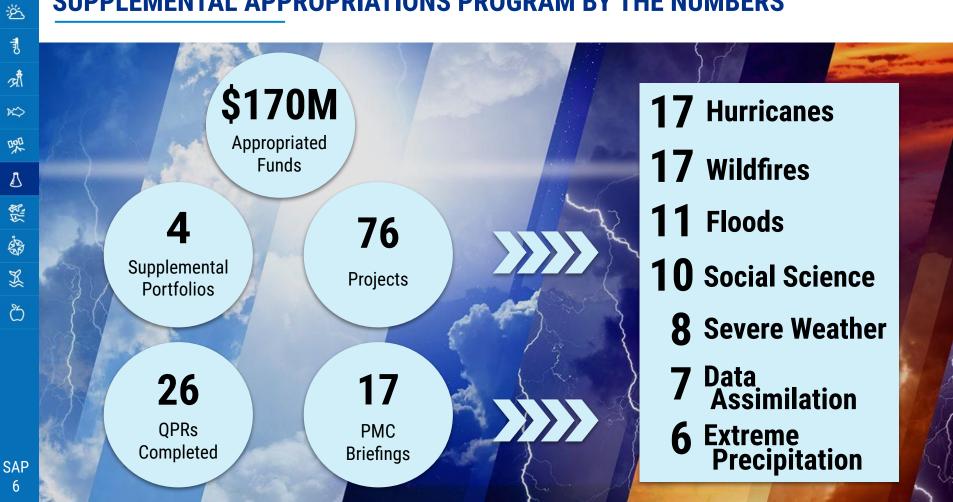
Dorothy Koch, OAR WPO\* John Ten Hoeve, OAR, WPO\*

Jennifer Mahoney, OAR Stephan Smith, NWS Mitch Goldberg, NESDIS

Mark Vincent, OAR WPO\*
Nicole Kurkowski, NWS
Kevin Garrett, NWS
[vacant], NESDIS

Ben Woods, OAR WPO\*
Chris Spells, OAR WPO\*
Renee R. Keller, OAR WPO\*
Linden Wolf, NWS
Cammye Sims, NWS

### SUPPLEMENTAL APPROPRIATIONS PROGRAM BY THE NUMBERS



## SUPPLEMENTAL APPROPRIATIONS PORTFOLIOS

The program coordinates **\$170 Million** in scientific investments across 4 portfolios.

**FY18 Improving Forecasting** and Assimilation (IFAA) **Amount** \$50 Million **Duration** FY18 - 4 Years Investment 27 projects

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**Improving Forecasting of** Hurricanes, Floods, and Wildfires (IFHFW) **Amount** \$25 Million **Duration FY19 - 3 Years** Investment 11 projects

**FY19** 

**Appropriations Act of 2022** (DRSA) **Amount** \$55 Million **Duration** FY22 - 3 Years Investment 28 projects

**FY22** 

**Disaster Relief Supplemental** 

**Bipartisan Infrastructure Law Provision 3 Amount** \$40 Million **Duration** FY22 - 5 Years Investment 10 projects

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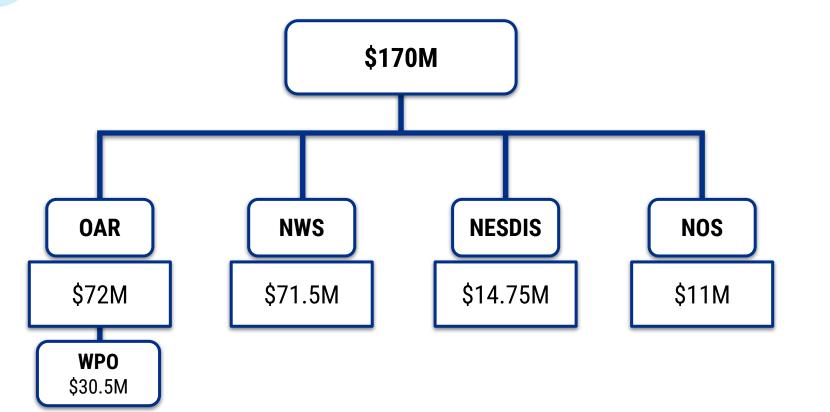






#### **NOAA LINE OFFICE BREAKDOWN**

The financial management of the majority of the \$170M in appropriated funds spans across four NOAA Line Offices: OAR, NWS, NESDIS, and NOS.



## Program Implementation

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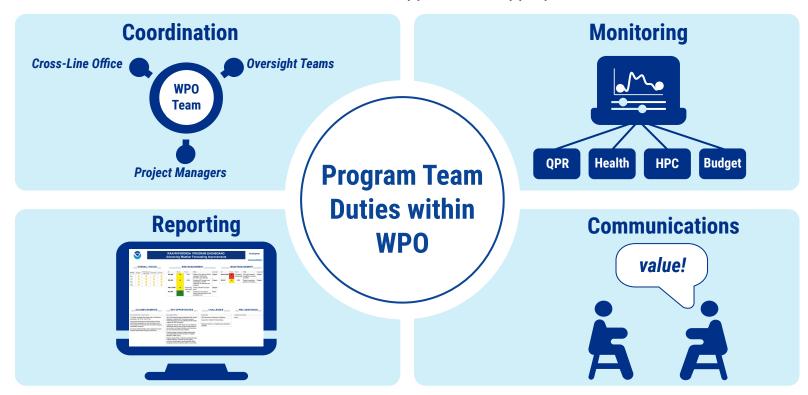




WPO TEAM: MANAGEMENT LEAD

**SUPPLEMENTAL APPROPRIATIONS** 

The Supplemental Appropriations Program team within WPO leads the coordination, monitoring, reporting, and communications of the Supplemental Appropriations.





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## SUPPLEMENTAL APPROPRIATIONS

**WPO TEAM: MANAGEMENT LEAD** 

### **Program Team Duties Within WPO:**

### **Coordination**





- Develop templates and manage core documents (Project Plans, Progress Reports)
- Communicate budget guidance and constraints to Project Managers
- Facilitate weekly meetings with budget, program, and Executive staff



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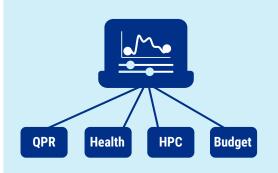


## SUPPLEMENTAL APPROPRIATIONS WPO TEAM: MANAGEMENT LEAD

### **Program Team Duties Within WPO:**

## **Monitoring**





- Conduct Quarterly Project Reviews
- Monitor status of budget execution
- Monitor HPC requirements vs. capacity
- Monitor status and threats to completion of project milestones















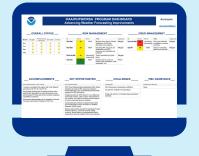


## SUPPLEMENTAL APPROPRIATIONS WPO TEAM: MANAGEMENT LEAD

### **Program Team Duties Within WPO:**

## Reporting





- Report Portfolio Status to NOAA Program Management Council on quarterly basis
- Report and track transitions
- Report, track, and mitigate program/project risk/issue register



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## SUPPLEMENTAL APPROPRIATIONS

WPO TEAM: MANAGEMENT LEAD



### **Communications**





- Communicate Value to Stakeholders
- Communicate Results through ArcGIS StoryMaps
- Provide conduit for communication between Project Managers and Oversight Teams

## Highlights

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### SUPPLEMENTAL APPROPRIATIONS **COMMUNICATION**







**Congress** 

**Stakeholders** 

**Public** 

**ArcGIS StoryMaps are used to communicate** budget summaries, partner organizations, and research results and progress from each of the portfolio focus areas.



"...very impressed with the quality of the report, the information it conveys, and the success being generated."

Gary Matlock, Ph.D. **Deputy Assistant Administrator for Science for OAR** 





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SUPPLEMENTAL APPROPRIATIONS

DRSA STORYMAP



The DRSA StoryMap is now publicly available and highlights the efforts to come with this portfolio.

Includes Model Operational Implementation, Transitions, Partner Organizations....and more!

### Project Manager Highlights

#### Avichal Mehra, PhD

Dr. Avichal Mehra is the Chief of the Dynamics and Coupled Modeling Group at National Weather Service's National Center for Environmental Prediction and Environmental Modeling Center (NWS/NCEP/EMC). He and his team have had a profound impact on hurricane research. For the HSUP portfolio, his project, "Accelerate re-Engineering of Hurricane Analysis and Forecasting System (HAFS)" resulted in hurricane model improvements that will be implemented into existing operational hurricane models in 2023. Avichal also contributed mightily to the DSUP portfolio with his project. "Advance Ocean Data Assimilation and Coupling of Air-Sea Models in the NOAA Unified Forecast System (UFS) in Support of Improved Flood and Inundation Forecasting Through Coordination with the National Weather Service and National Ocean Service." This project is enabling a comparison of ocean models and DA methods and future leveraging of research activities for improved coupled















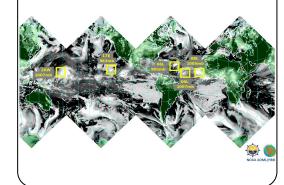


### SAP 18

## SUPPLEMENTAL APPROPRIATIONS PROJECT HIGHLIGHTS

#### HAFS

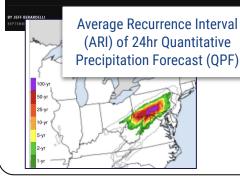
The Hurricane Analysis and Forecast System (HAFS) v1.0 operational implementation is on track for the 2023 hurricane season.



#### WPC

The Weather Prediction Center (WPC) Extreme Precipitation Monitor went operational on September 22, 2021.

Ida's remains threaten once-in-a-century flood event in Northeast



#### FIM

Flood information over SW Florida was provided to FEMA the day after Hurricane Ian made landfall using techniques being advanced and developed to improve Flood Inundation Mapping (FIM).



## Path Forward















## SUPPLEMENTAL APPROPRIATIONS PROGRAM CHALLENGES / OPPORTUNITIES FOR EXCELLENCE / A LOOK FORWARD

CHALLENGES	OPPORTUNITIES
Budgets are large	Ensure outcomes to the American public
Expectations are high	Communicate results to key stakeholders
Lead time is short for new supplementals	Be agile and proactive
Numerous funding constraints	Educate and communicate
Scientists should do science	Implement efficient processes
Project dependencies are complex	Identify, monitor, and coordinate mitigation
More supplementals may come	How scalable is the gold standard established by the Program?











January 27, 2023

### **Social Science Program**

Dr. Gina Eosco, Social Science Program Manager

Activity Area 4: Effective Communication and Coordination of Weather Research



















# WHAT IS SOCIAL SCIENCE?

"Social science is the process of describing, explaining and predicting human behavior and institutional structures in interaction with their environments..."

-NOAA Science Advisory Board

Psychology Communication Economics

Geography Anthropology Sociology

And many others!





















# A BRIEF HISTORY OF THE WPO SOCIAL SCIENCE PROGRAM

**2019 SBES R20** 

**Workshop Findings** 

To measure impact and

change, NOAA needs to

build infrastructure for

SBES data collection,

management, and archival.

There is a growing need to streamline R2X transition

processes, and a demand

to understand how to

transfer knowledge.

### FY17-FY19

### Staff of 2

The demand for social science exceeded capacity

### \$1.5 Million

Secured FY18 hurricane supplemental funding

### **FY20-Present**



WPO established the Social Science Program

### ~\$3 Million

Established average yearly program budget

# Monumental Changes to the Program

Transformed workshop findings into strategic focus areas

Increased staff capacity

Received additional funds to advance focus areas

















### **SOCIAL SCIENCE PROGRAM**

#### **Focus Areas**



Social Science
Data and
Research



Social Science Research to Applications (R2X)



Portfolio Analysis & Evaluation

### **Our Challenge**

Recent societal impacts from hurricanes, floods, wildfires, and other weather hazards shows a great need to understand the intersection of people and meteorology.

### **Our Mission**

The Social Science Program funds research that plays a critical role in connecting the improvements of NOAA's weather forecast information to the publics' growing forecast needs.

















### THERE IS AN OPPORTUNITY TO BUILD OUT **NOAA'S INFRASTRUCTURE FOR SBES DATA**



To measure NOAA's mission critical factors, such as impact and change, there is a need and an opportunity to build infrastructure for social science data collection, management, and archival, by supporting research activities that prioritize the collection & archival of baseline, longitudinal, and event-based SBES data.



#### **Baseline Data**

Data that provides a starting point for comparison purposes. Baseline information is a key component needed to measure change.



### **Longitudinal Data**

Data collected for more than one time period, and sometimes involves collecting data from the same people to understand changes over time.



#### **Event-Based Data**

Perishable data that must be quickly gathered following a weather event. These data are often used as a validity check alongside other data.



### PARTNERSHIP SPOTLIGHT - NATURAL HAZARDS CENTER









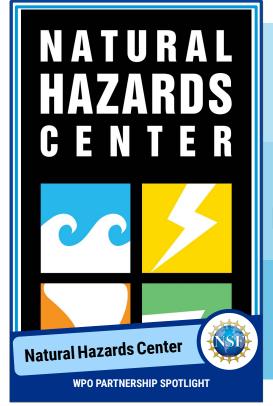












About NHC

Why Partner?

Quick Response Program The NHC at the University of Colorado Boulder is one of the nation's oldest social science hazards & disaster research centers. It serves as the **NSF-designated information clearinghouse** for the societal dimensions of disasters.

The NHC is the one academic center in the nation with the **research and administrative infrastructure** and the **trust and recognition already established** to support the collection of perishable, event-based data for NOAA.

Since the mid-1980s, the NHC has administered the Quick Response Research Grant Program. This program distributes funds to **collect perishable data in the aftermath of extreme events** to document disasters before memories fade.













### WEATHER READY RESEARCH PROGRAM



Launched in 2020, this initiative continues to support the collection of **perishable**, **event-based data** that contributes to our understanding of how to prepare for and communicate extreme weather, water, and climate events.

- Call #1: All Weather Hazards
- Call #2: Data and Instrument Publication
- Call #3: Tornadoes (Ongoing)
- Call #4: Wildfires (Ongoing)

### **Future Opportunities with NHC:**

New Call on Extreme Rainfall & Flooding

Workshop on Secondary Data Use



















# TRANSFERRING SOCIAL SCIENCE KNOWLEDGE FROM HURRICANE SUPPLEMENTAL PROJECTS



Section 104 of the Weather Act provided NOAA with a unique opportunity to integrate social science into NOAA's tropical products, information, and services.



Four projects were developed with a complementary design, but still produced lengthy, individual reports that detailed the findings from each project.



NWS and WPO social scientists synthesized and translated findings across projects to develop actionable recommendations for NOAA research, development, & operations.





### **PARTNERSHIP SPOTLIGHT - NWS TROPICAL ROADMAP TEAM**

2 Social Science
Research to
Applications



















About The Team The NWS Tropical Roadmap Team is made up of both policy-level meteorologists and operational meteorologists at the local and national scales and was created to evaluate upcoming possible changes to NWS tropical products and services, as well as NWS policy.

Why Partner?

Collaborating alongside the Tropical Roadmap Team has created several unique opportunities to share and iterate on social science project findings with operational and policy-level meteorologists to accelerate the R2X process.

The Tropical Roadmap The Tropical Roadmap was developed to direct the strategic vision of the NWS Tropical Program over the next 10 years. The expected outcome is to produce a suite of highly accurate, scientifically validated tropical products and services that are relevant to partners and publics.











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# USING OUR R2X PROCESS FOR FUTURE ACTIVITIES & SUPPLEMENTALS

### Social Science Research to Applications

### **Using a Cohort Approach**

Instead of managing projects individually, we treated our principal investigators as a cohort. This approach allowed us to consider project findings as a collective body of research and acted a virtual space for social science researchers to have a sense of community.





### **Upcoming Supplemental Efforts**



# Extreme Precipitation Products

Nurture Nature Center



# Fire Weather Testbed Product Codevelopment

Global Systems Laboratory









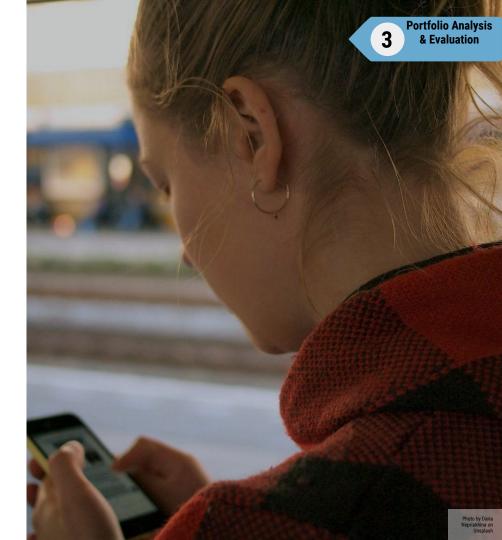




# PORTFOLIO ANALYSIS & EVALUATION

Measuring and evaluating the Social Science Program's evolving research and development (R&D) portfolio, its progress, and impact.

How do we know we've made a difference or an impact?





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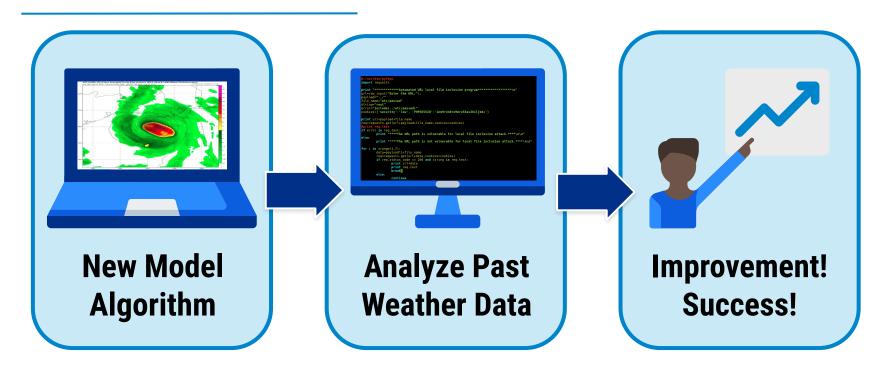






# HOW DO OUR PHYSICAL SCIENCE COUNTERPARTS KNOW THEY HAVE MADE A DIFFERENCE?





Please note: This is an **oversimplified example** for the purposes of providing a connection between what would similarly be needed to evaluate success for social science metrics.















# THE FUTURE OF SOCIAL DATA ANALYSIS IN NOAA: THE SOCIETAL DATA INSIGHTS INITIATIVE



This *OneNOAA Initiative*, led by WPO, will take a first step toward developing a social science data infrastructure that will significantly enhance NOAA's capabilities to **integrate and synthesize social and meteorological data** and provide user insights to evaluate societal responses to products and services.





data from a variety of sources (including weather data).



Develop a data integration environment to access, analyze, and explore SBES data.



Design a dynamic website to view and share societal insights.



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# ENGAGING INTERNAL AND EXTERNAL PARTNERS TO MODERNIZE THE USE OF SOCIAL DATA

Portfolio Analysis & Evaluation

### Internal Partner

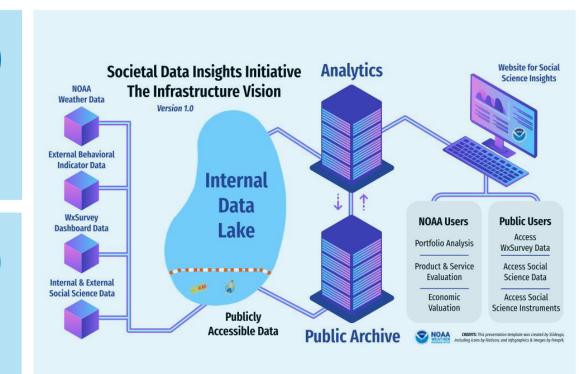
### National Center for Environmental Information

Explore new ways to integrate social science and meteorological data to enhance and evaluate products & services.

# External Partner Possibilities

Amazon, Microsoft, or Google for Cloud Platform/Data

Use existing NOAA CRADAs to explore opportunities with cloud providers.



















# LOOKING FORWARD: FUTURE PROGRAM ACTIVITIES

The Social Science Program's focus areas and associated activities address critical short-term societal needs, while also building the broader infrastructure needed for social science integration at a larger scale.

### **Future Social Science Activities**

Data & Research

Select and fund new projects to support social science R&D

Communicate SBES data & instrument publication using strategic partnerships

Research to Applications Transfer knowledge from the FY18 SBES Hurricane Supplemental projects

Refine the SBES R2X process using customer satisfaction feedback

Portfolio Analysis & Evaluation

Conduct NOAA stakeholder engagement activities on SBES data needs across NOAA to inform the development of the BIL Societal Data Insights Initiative







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### **Thank You! Have Questions?** We Look Forward to the Live Q&A













Dr. Gina Eosco





SSP Deputy Program Manager

Dr. Alison **Agather** 

SSP Competition Lead

**Dr. Stephanie** Hoekstra

SSP **VORTEX** Lead

**Dr. Jonathon** Mote

**SSP Data** Engagement Lead

**Dr. Castle** Williamsberg

SSP R2X Lead











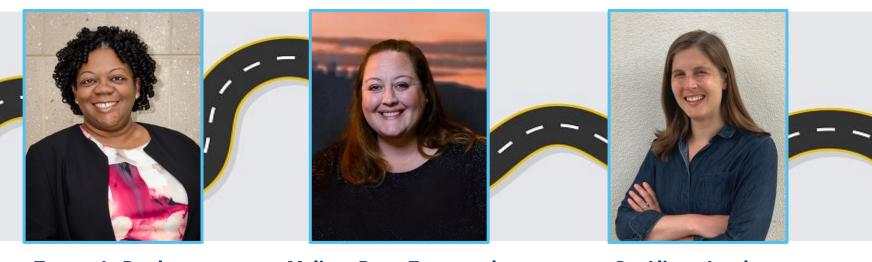
### Partnerships: The Way Forward

Tamara L. Battle, Policy & Partnerships Lead

Activity Area 4: Effective Communication and Coordination of Weather Research



### **EXCELLENCE IN PARTNERSHIP**



Tamara L. Battle Policy & Partnerships Lead and **PRT Strategic Visionary** 

**Melissa Pratt-Zossoungbo** Administrative Officer and PRT Design Extraordinaire

**Dr. Alison Agather FACETs Program Coordinator and** PRT Organizational and **Communications Guru** 

## Retrospective











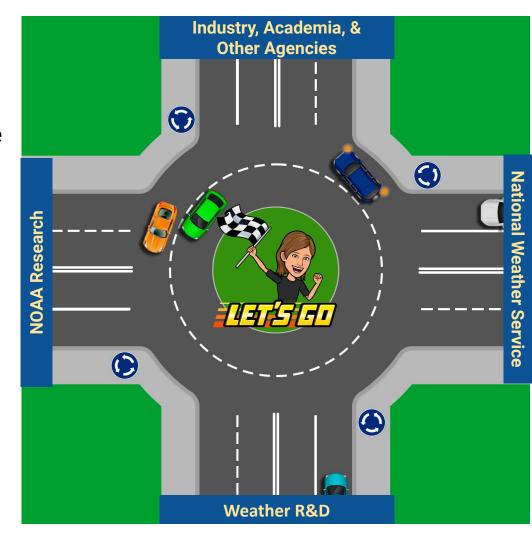




### **A UNIQUE ROLE**

**Policy**, **Partnerships**, and **Communication** are the bedrock underpinning everything we do in the office. WPO facilitates R&D through partnerships with the Weather Enterprise, and shepherds that research through the transition process as an innovative leader.

Centered at the hub of physical and social science R2O, WPO plays a key role in earth system modeling development, to improve and accelerate research and forecasting innovation towards a Weather-Ready and Climate-Ready Nation.



### **OUR PARTNERS**



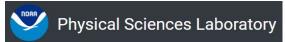




























#### Air Resources Laboratory

Investigating processes in th Earth's Boundary Layer













United States Global Change Research Program





















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### **NOTABLE ACCOMPLISHMENTS**

### Congressional Recognition

Wx Act, Reauthorizations, Enacted Legislation

### Interagency Cooperation

NSF, DoD, DOI, NASA

### Cross-agency Coordination

Partnership with NWS/STI Supplemental Appropriations Oversight

### Improved Communication

Office Rebrand Stakeholder Outreach Showcasing Science

## Prospective

### **FORGING INTO NEW TERRITORY**

WPO is integral to achieving a Weather-Ready and Climate-Ready Nation, and will be guided by policy, partnerships, and communications to accomplish its mission.

Our commitment to leading and coordinating weather research was reinforced through the creation of a federal position focused on WPO reaching a broader audience, and discovering new collaborations and partners.



Policy & Partnerships Lead







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### **ON THE HORIZON**



#### **PRECIP Act**

Providing Research and Estimates of Changes in Precipitation Act

#### **LEGENDS Act of 2021**

Learning Excellence and Good Examples from New Developers Act of 2021





#### Weather Act 3.0

The Weather Research and Forecasting Innovation Act





**Policy & Legislation Support** 



#### **FLOODS Act**

Flood Level Observation, Operations, and Decision Support Act





Inflation Reduction Act



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## **Minority Serving Institutions**

Reaching HBCUs and other MSIs

Integrate and mentor new talent in the workforce

Expanding opportunities for non-atmospheric science majors

### International Connections

World Meteorological Organization (WMO)

**UK Met Office** 

**ECMWF** 



### **Private Sector**

CRADAs

Social Science Data Partnerships

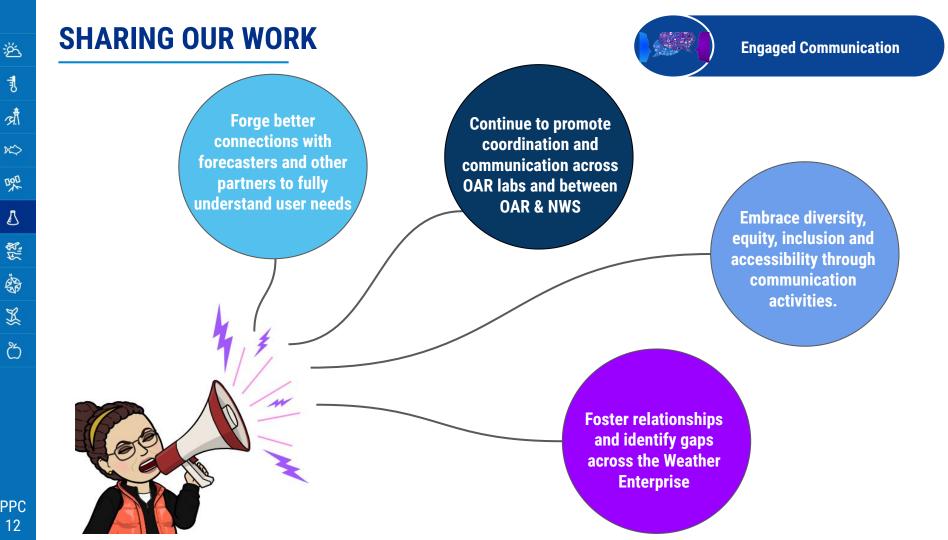
> Insurance/Risk Companies

#### **NOAA**

Other Line Offices

OAR Labs, Programs & CIs

WPO Student
Education Strategy























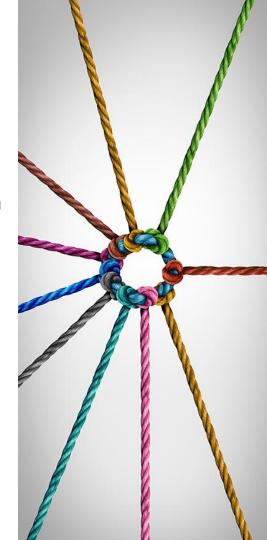






### THE TIES THAT BIND

- Ensure alignment with the Weather Act and other guiding legislation
- Establish new collaborations with non-traditional partners
- Integrate social science into NOAA programs
- Provide equitable resources for Testbeds and reduce administrative burden
- Broaden Earth System Community Modeling under UFS and EPIC
- Expedite and improve transition processes and technology transfer
- Leverage our NOFO to support longer-term funding opportunities, while promoting innovative high/risk high/reward approaches
- Improve fire weather and atmospheric composition predictive capabilities
- Accelerate and advance observations and S2S research to support Earth System model performance
- Sustain mechanisms to develop the next generation workforce
- Expand DEIJA efforts for WPO and its partners



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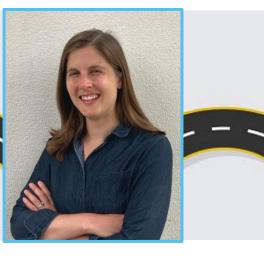
# EXCELLENCE IN PLANNING AND PREPARATION: WPO PROGRAM REVIEW TEAM











Tamara L. Battle
Policy & Partnerships Lead and
PRT Strategic Visionary

Melissa Pratt-Zossoungbo

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