Integrating Social and Physical Sciences at the National Weather Service to Understand the Ready in Weather-Ready Nation

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Social, Behavioral, and Economic Sciences (SBES) Program
Office of Science & Technology Integration (OSTI)
National Weather Service (NWS)

July 26, 2023

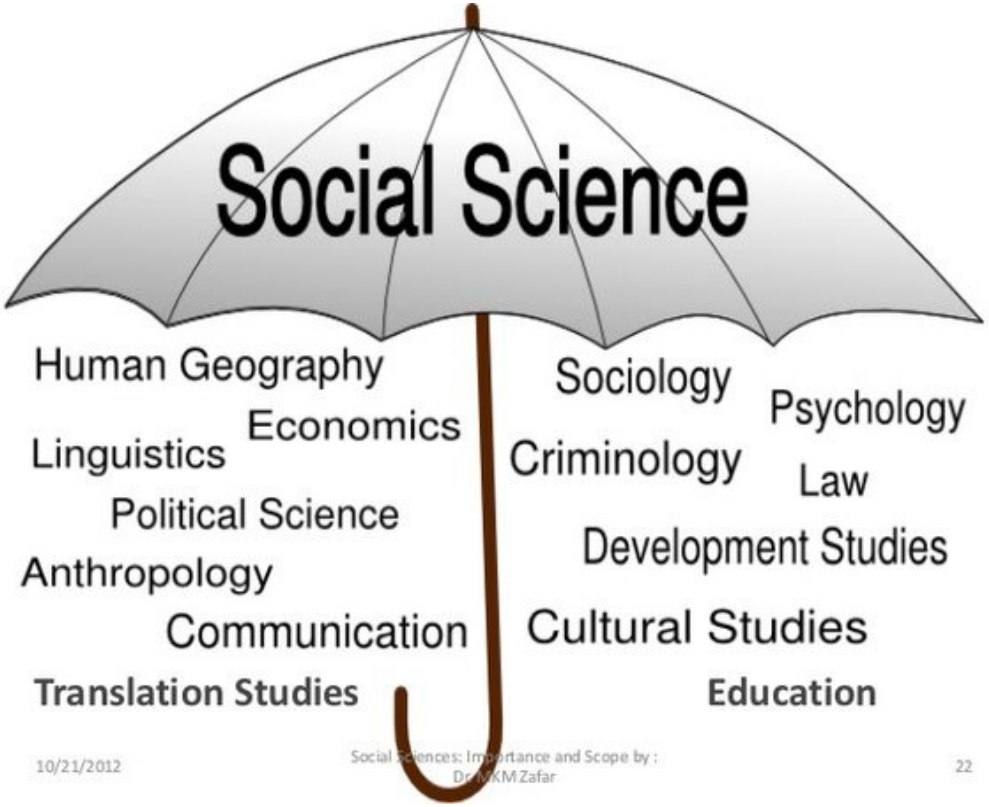
Overview

- Introduction to Social Science
- Program Direction & Goals
- Current & Future Projects
- Next Steps for Integration

What is Social Science?

Social Science Defined

What is social science?



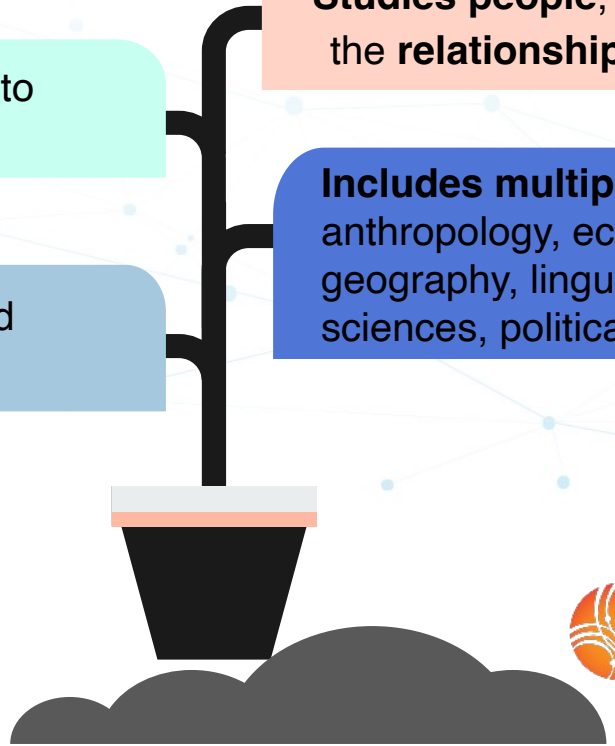
Social Science Value

Helps us make **better decisions** to **improve our quality of life**

Employs **quantitative** and **qualitative** methods

Studies people, **societies**, and the **relationships** among them

Includes multiple disciplines (e.g. anthropology, economics, human geography, linguistics, communication sciences, political science)



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Social Science Methods

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NWS OSTI SBES Program Direction

Vision Statement:
Turning weather, water, and climate information into social action

Mission Statement:
Making the National Weather Service better through social science

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NWS OSTI SBES Program Goals

Goals:

1. **Advance the Science**: Conduct innovative research on the links among humans, weather, water, and climate.
2. **Build SBES Capacity**: Grow the utility of SBES to the NWS.
3. **Collaborate Internally**: Improve processes and promote better application of SBES.
4. **Engage Externally**: Leverage expertise and establish best practices to advance service equity.

Core Values: R^6

- Rigor
- Relevance
- Respect
- Relationships
- Revolutionary
- Responsive

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Research Priorities

Ensuring Equitable Services to all Communities

Understand Place	Communicate Risk	Evaluate Products	Assess Impact
			
Examining the convergence of society, space, and weather	Refining tools and messages to communicate risk and uncertainty	Improving products and services for all partners, including the public	Developing measures and studying the outcomes of weather

Questions

How to integrate social science into the weather enterprise?

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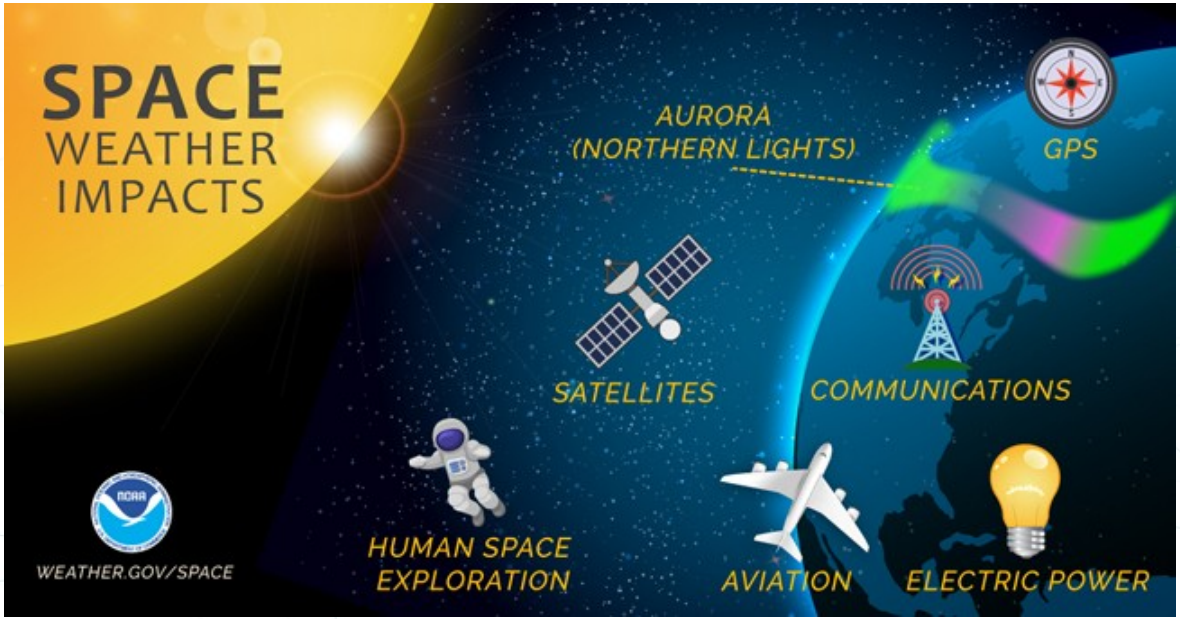
Current Projects

				
Understanding the Human Response to Water Hazard Products (BIL Prov.3)	✓	✓	✓	✓
Understanding the Human Response to Fire Weather Products (BIL Prov.5)	✓	✓	✓	✓
Supporting the Improvement of Tsunami Warning Messages		✓	✓	
Opportunities for WCMs to Support Service Equity and Use of Weather and Hydrologic Data Products	✓		✓	
Collaborative Science, Technology, and Applied Research (CSTAR) Program 2022 Projects	✓			
Supporting the Improvement of Winter Weather Products		✓	✓	
Space Weather Advisory Group User Needs Support			✓	

Current Projects

				
Supporting the Improvement of Severe Weather Products		✓	✓	
Statistically Exploring the Relationship between Social Vulnerability and Tornado Warning Reception, Comprehension, and Response	✓			✓
Using Colormaps to Communicate Risk		✓	✓	
Supporting the Evolution of the Weather Dashboard				✓
Analysis for Probabilistic and Risk Reduction Decision Support for Fire Weather Services		✓	✓	
Literature Review of Prior NWS Funded Research Projects		✓	✓	
Testing the Waters: Using Social Science Methods to Incorporate Stakeholder Needs to Co-Develop WPC precipitation Products and Services			✓	
Societal Data Insights Initiative				✓

Space Weather Advisory Group User Needs Survey



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Understanding the Human Response to Water Hazard Products

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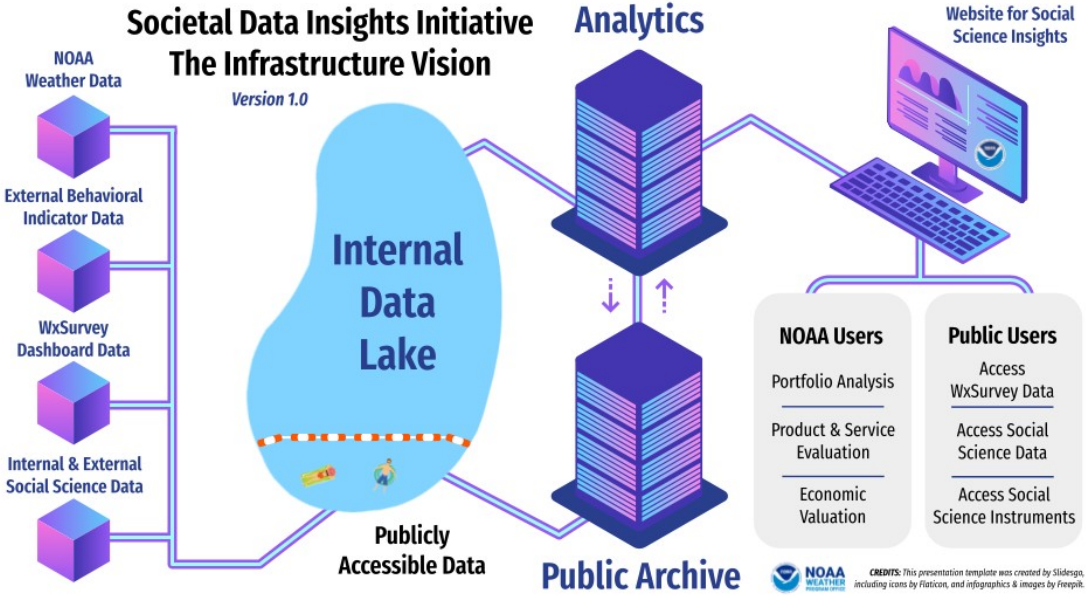
Societal Data Insights Initiative



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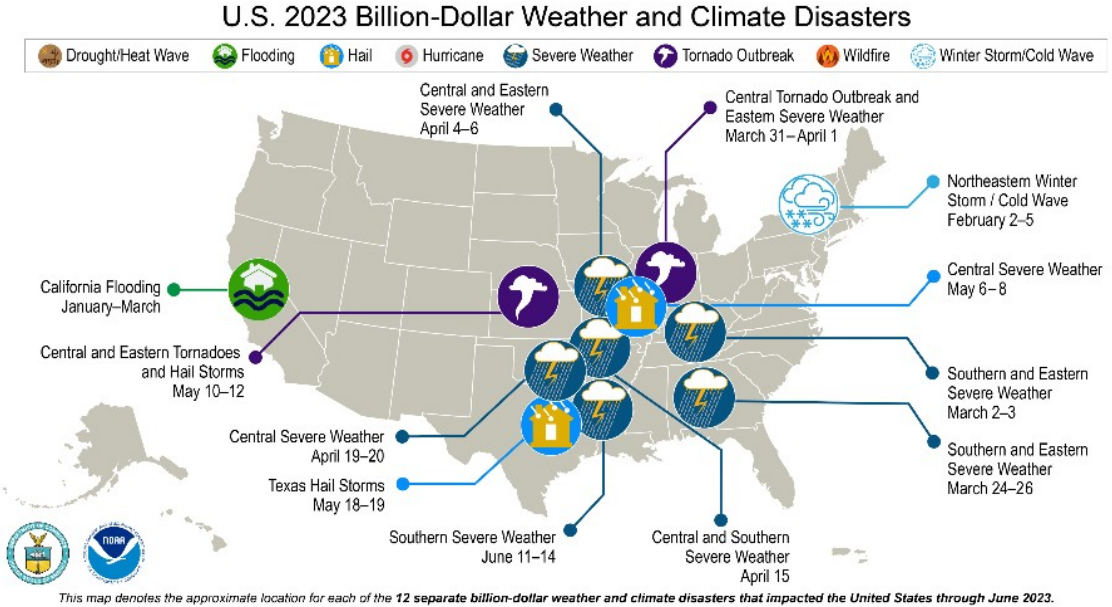
Potential Future Projects

				
Conduct Social Network Analysis of Selected Communities and Hazards	✓			✓
Conduct Case Studies of Specific Weather Hazards and Communities	✓	✓	✓	✓
Conduct an assessment of existing NWS databases including the Storm Events, Damage Assessment Tool, NOESS, etc.	✓	✓	✓	✓
Depict Risk and Severity Across Weather Hazards Consistently		✓	✓	
Develop Culturally Diverse Products and Services in Multiple Languages	✓	✓	✓	
Improve Forecast Literacy Among the Public	✓	✓	✓	✓
Quantify and Understand the impacts of weather and NWS investments on communities	✓			✓

Potential Future Projects

				
Understand the impacts of NWS Products and Services to Mitigate the Impacts of Weather	✓	✓	✓	✓
Support Local WFOs and CSCs in Conducting SBES Research	✓	✓	✓	✓
Develop a systematic processes for gathering SBES requirements, designing research, and transitioning research into operations		✓	✓	
Craft Achievable Metrics to Fulfill the NWS Mission	✓	✓	✓	✓
Review the Product Development Process to Better Integrate SBES		✓	✓	
Design an Evaluation Framework to Align Assessments and Case Studies to Identify Best Practices and Challenges	✓	✓	✓	✓
Integrate/Develop a SBES Testbed for the NWS			✓	

Assessment of Existing NWS databases including the Storm Events, Damage Assessment Tool, NOESS, etc.



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SBES Testbed for the NWS (or integrate into others)

Arctic Testbed

Aviation Weather Testbed

Climate Testbed

Coastal and Ocean Modeling Testbed

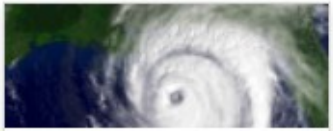
Developmental Testbed

Satellite Proving Ground

Hazardous Weather Testbed

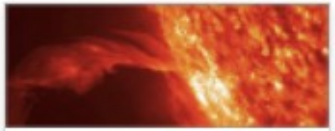
Hydrometeorology Testbed

Joint Center for Satellite Data Assimilation



Hurricane and Ocean Testbed

Operations Proving Ground



Space Weather Prediction Testbed

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Thank You!

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Questions