

NOAA
National Environmental Satellite,
Data, and Information Service

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NESDIS User Engagement, Social Science, and Economic Studies

Kat Hawley - STAR Lead Scientist for User Engagement (NESDIS STAR)

Renata Lana - NESDIS Enterprise Engagement and Integration Lead (NESDIS OSE)

Jeff Adkins - ISS Senior Economist (NWS OSTI)

Presented by:

Jeff Key - Chief, Advanced Satellite Products Branch (NESDIS STAR)

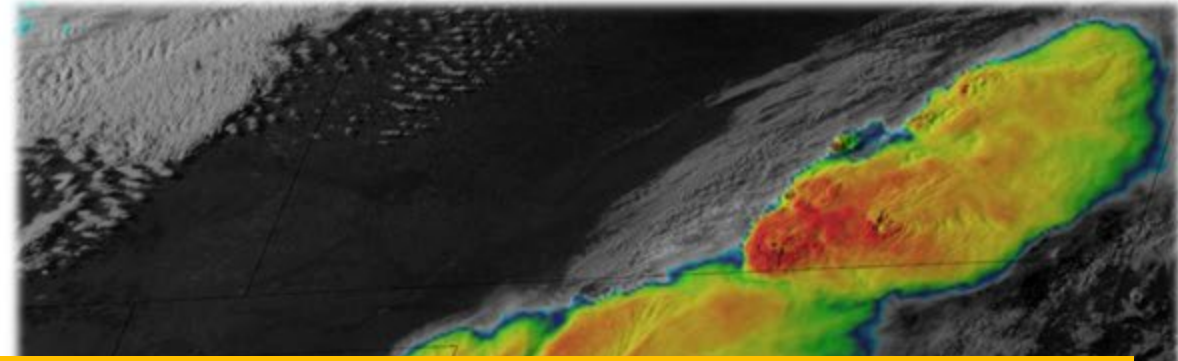
Outline

1. Why are Social, Behavioral, and Economic Sciences important?
2. User Engagement
3. Value Studies
4. Economic Studies
5. Closing Thoughts

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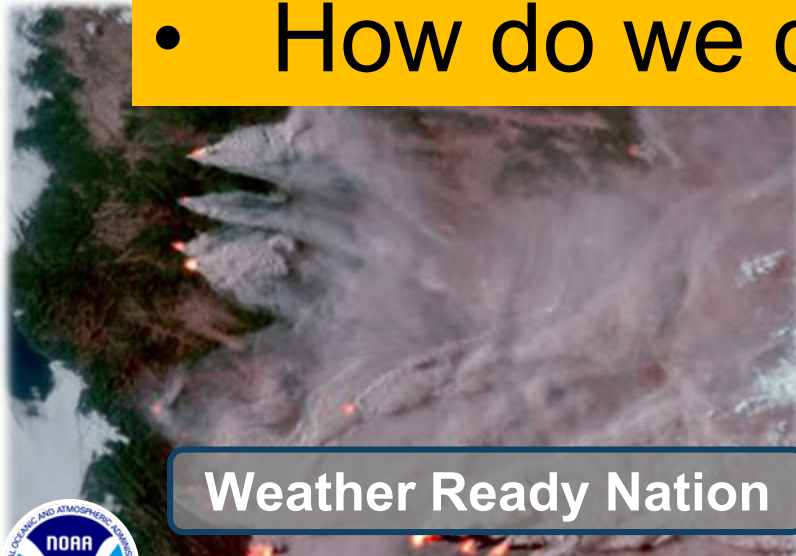
1. **Why are Social, Behavioral, and Economic Sciences important?**
2. User Engagement
3. Value Studies
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Addressing Societal Challenges Across NOAA Mission Service Areas



What we do in NOAA is for the public good!

- Do we understand the beneficiaries of our work?
- How do we quantify the benefits?



Weather Ready Nation



Climate



Healthy Oceans



Resilient Coasts



Social, Behavioral, and Economic Sciences – Examples from NWS and NMFS

Social science is the study of people - what they think, how they feel, and how they respond - in a particular context.

NWS:

- Understand societal needs and decision making to determine what types of forecast improvements will produce the **greatest societal benefit**.
- Assess how people receive, interpret, perceive, and respond to weather information.

NOAA Fisheries:

- Conduct economic and socio-cultural research to ensure that all communities that depend on marine life are considered.
- By studying both the social and economic aspects of communities, manage fisheries and protected species in a way that works best for everyone. Economic and socio-cultural analyses help managers evaluate the benefits and costs of different activities, prioritize needs, and encourage policies that **maximize societal benefits** from ocean and coastal resources.



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What is User Engagement (UE)?

UE is an evidence-based, multidisciplinary practice that focuses on understanding **users and their needs in context**.

It looks at how satisfying those needs can yield **socioeconomic and/or environmental benefits**.

It encompasses activities that help us get to know our users and know **how to design and deliver** products, services and observing systems which **optimize benefits** to users.



NESDIS USER ENGAGEMENT



NESDIS has a *User Engagement Policy* (Feb 2023)



User Engagement Integrated into all NESDIS Missions



User Engagement Lead
Katherine Hawley
katherine.hawley@noaa.gov

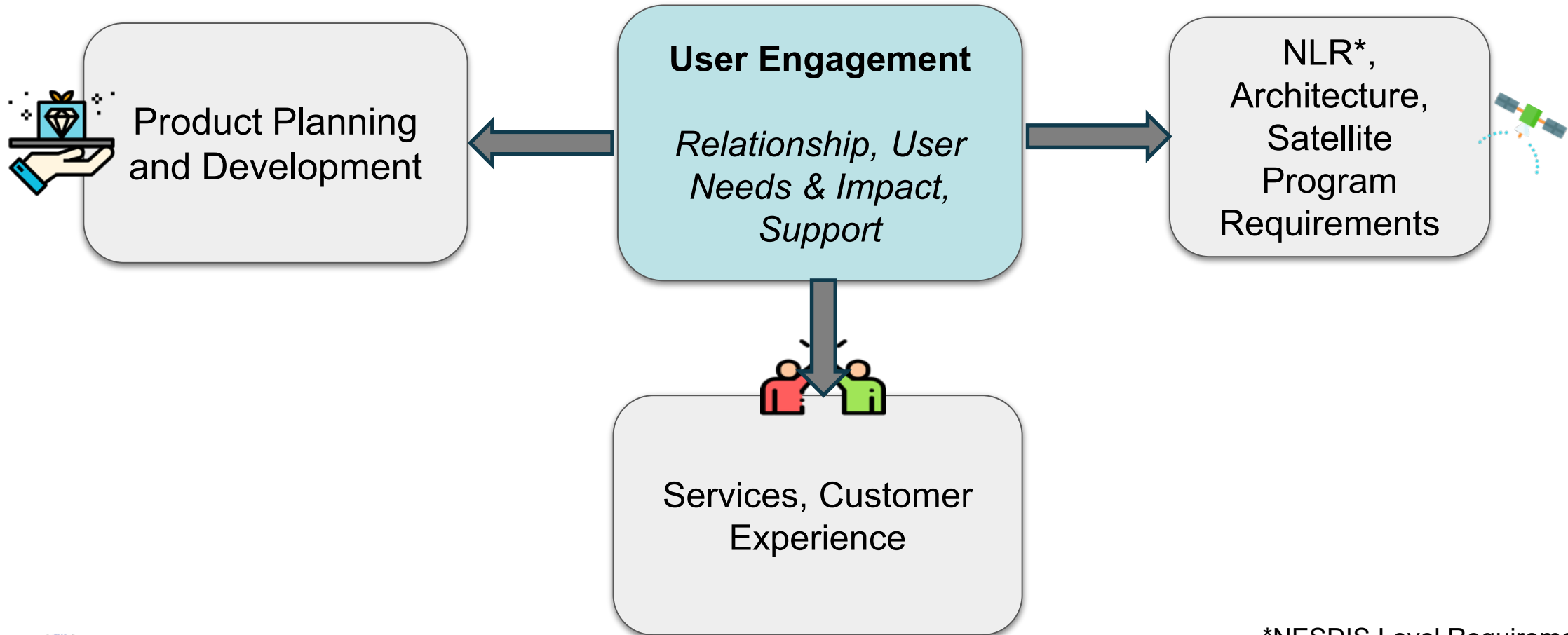


User Engagement Lead
Erin Lynch & Nai-Yu Wang
erin.lynch@noaa.gov nai-
yu.wang@noaa.gov



User Engagement Lead
Bill Sjoberg
bill.sjoberg@noaa.gov

The UE Policy Directs NESDIS to Incorporate User Research into NESDIS Decision-Making

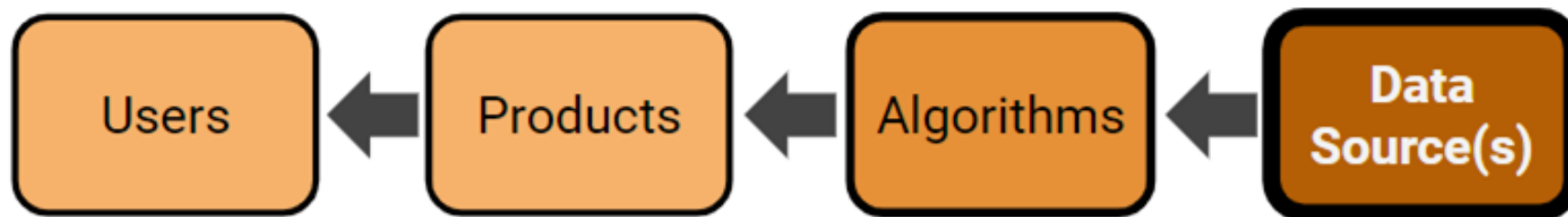


*NESDIS Level Requirements



We are shifting from a data-centric to an outcome-centric framework

Data/Algorithm/Product Centric Framework



Outcome Centric Framework



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Value Studies



NOAA by the NUMBERS NOAA's Value To The Nation

June 2018
Chief Economist Team
Performance, Risk and Social Science
Office of the Chief Financial Officer
performance.noaa.gov/economics

Value studies measure the benefits provided by current or future systems (data, products and services) to businesses, government agencies, and the public.

To what degree does it improve societal outcomes like reducing losses from wildfire and extreme weather, reducing threats to human health and safety, increasing agricultural productivity, or reducing the cost to government agencies?

An Investigation of the Economic and Social Value of Selected NOAA Data and Products for Geostationary Operational Environmental Satellites (GOES)

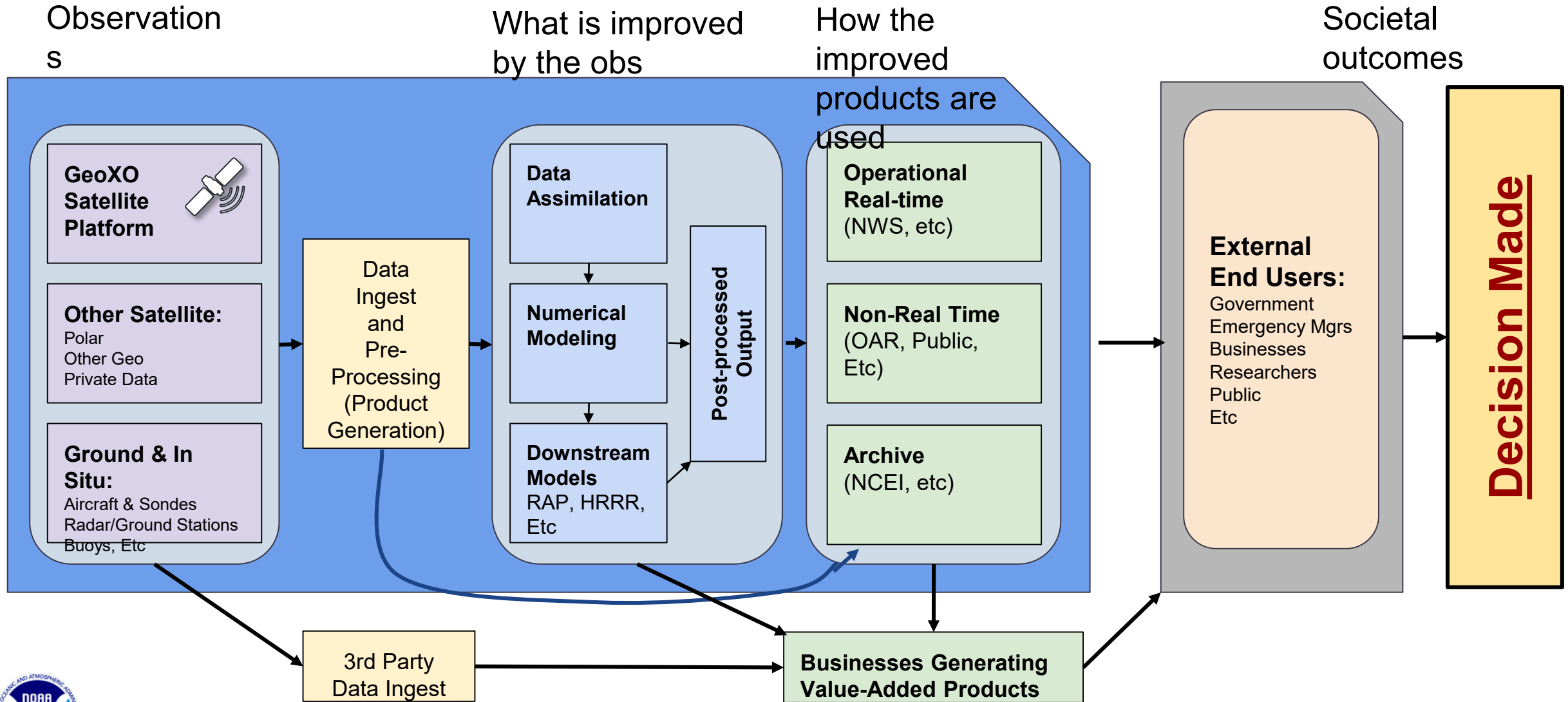
A Report to NOAA's National Climatic Data Center
NOAA Satellite and Information Services
National Environmental Satellite, Data, and Information Service

Submitted by:
CENTREC
Consulting Group, LLC
Centrec Business Center
3 College Park Court
Savoy, IL 61874
Phone: 217.352.1190
Web site: www.centrec.com
E-mail: centrec@centrec.com
February 28, 2007

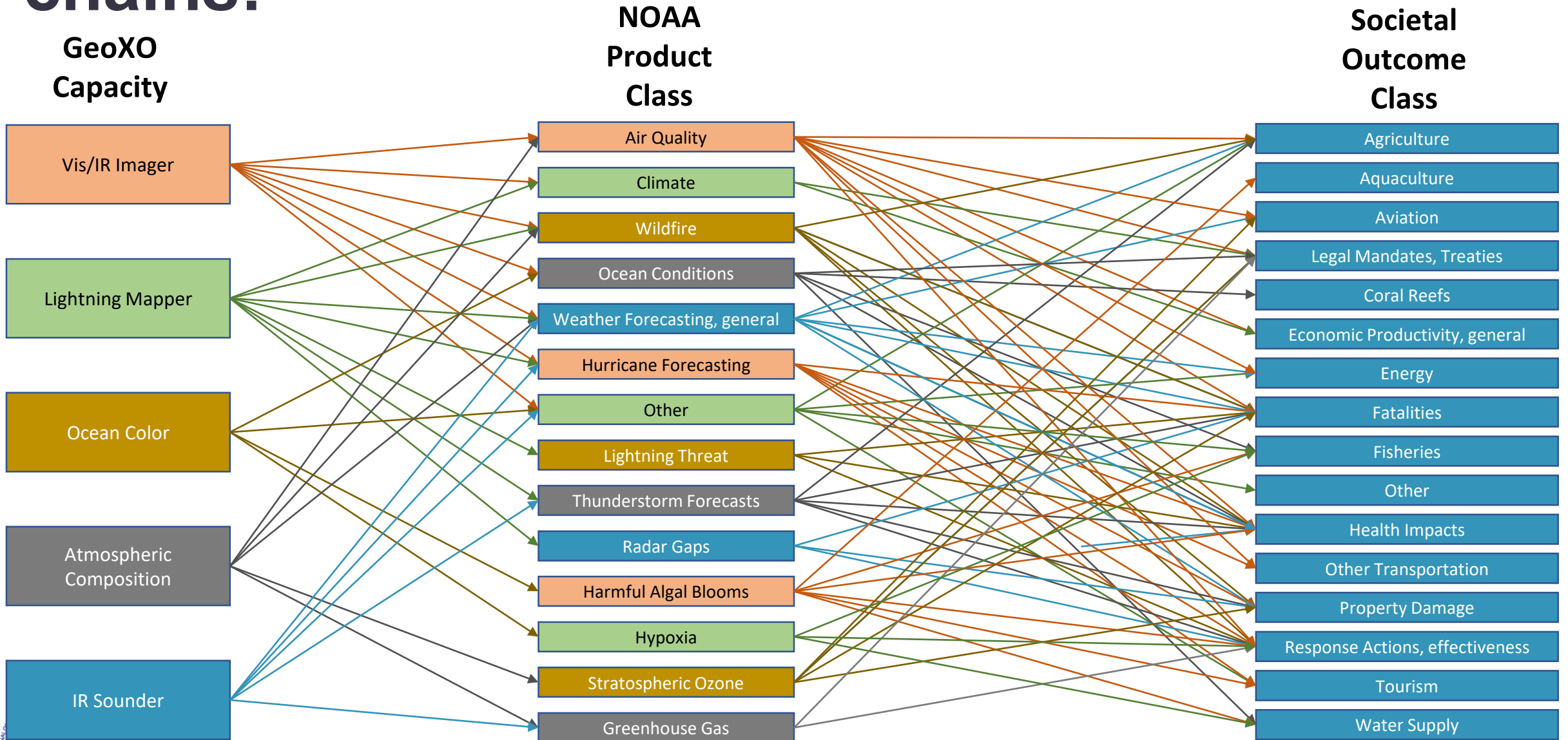
An Agency within the National Oceanic and Atmospheric Administration



Value Chains Link Observations to Improved Outcomes



Satellites produce a complex system of value chains!



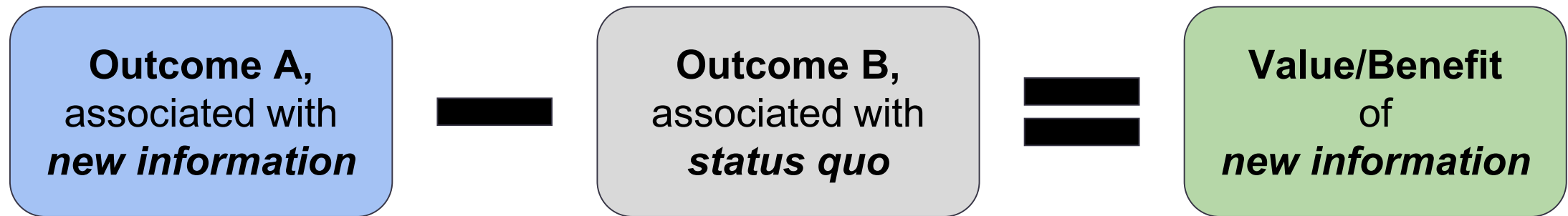
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Measuring the Economic Value of Information

- Value of information is realized when **information influences decisions** that **affect outcomes**.



- The **benefit of new information is difference** between outcomes with and without new information.

*“Data have value when they are used in decision making. If not, then the economic value of such data/information is effectively zero.”
(Williamson et al 2002)*

GeoXO Big Picture

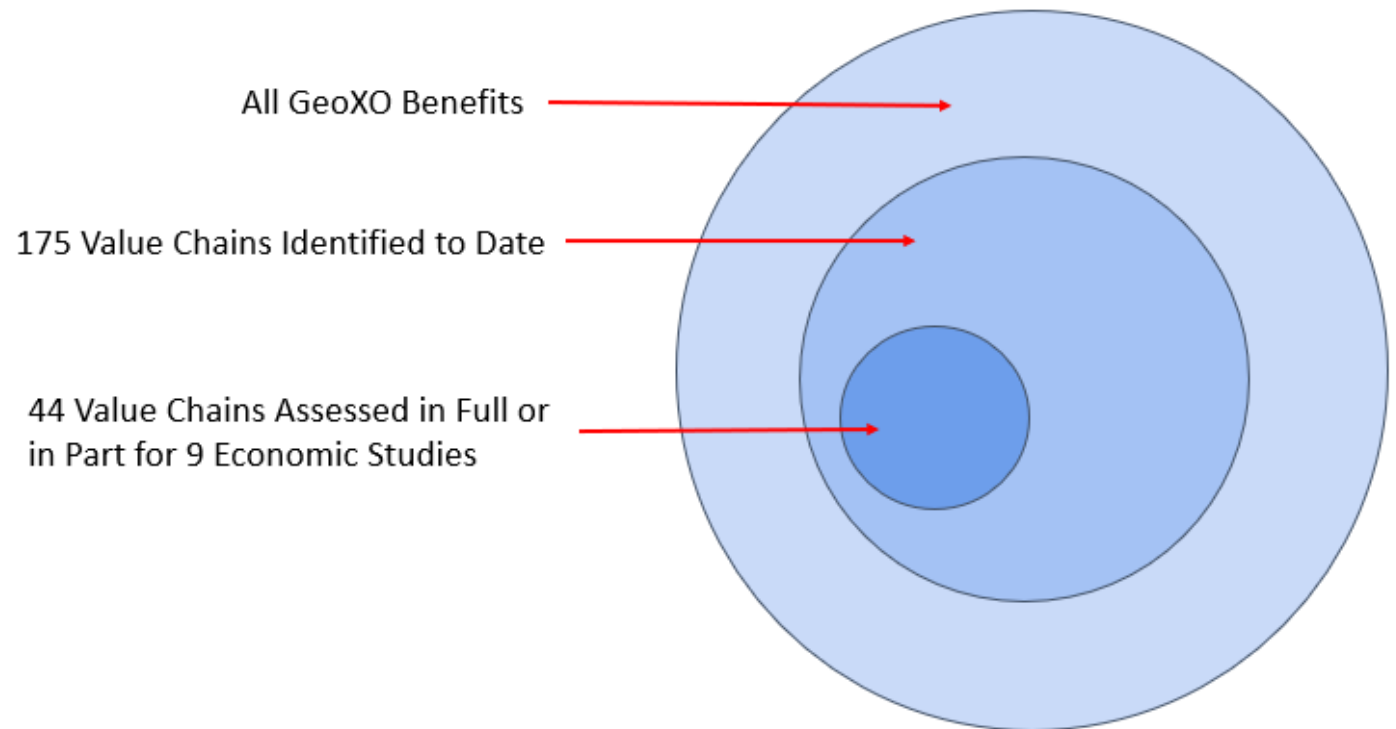
Highlights

- 175 value chains identified
- 9 economic studies
- 44 with quantified benefits
- Most of the 44 are only partial assessments

GeoXO observations can be used to:

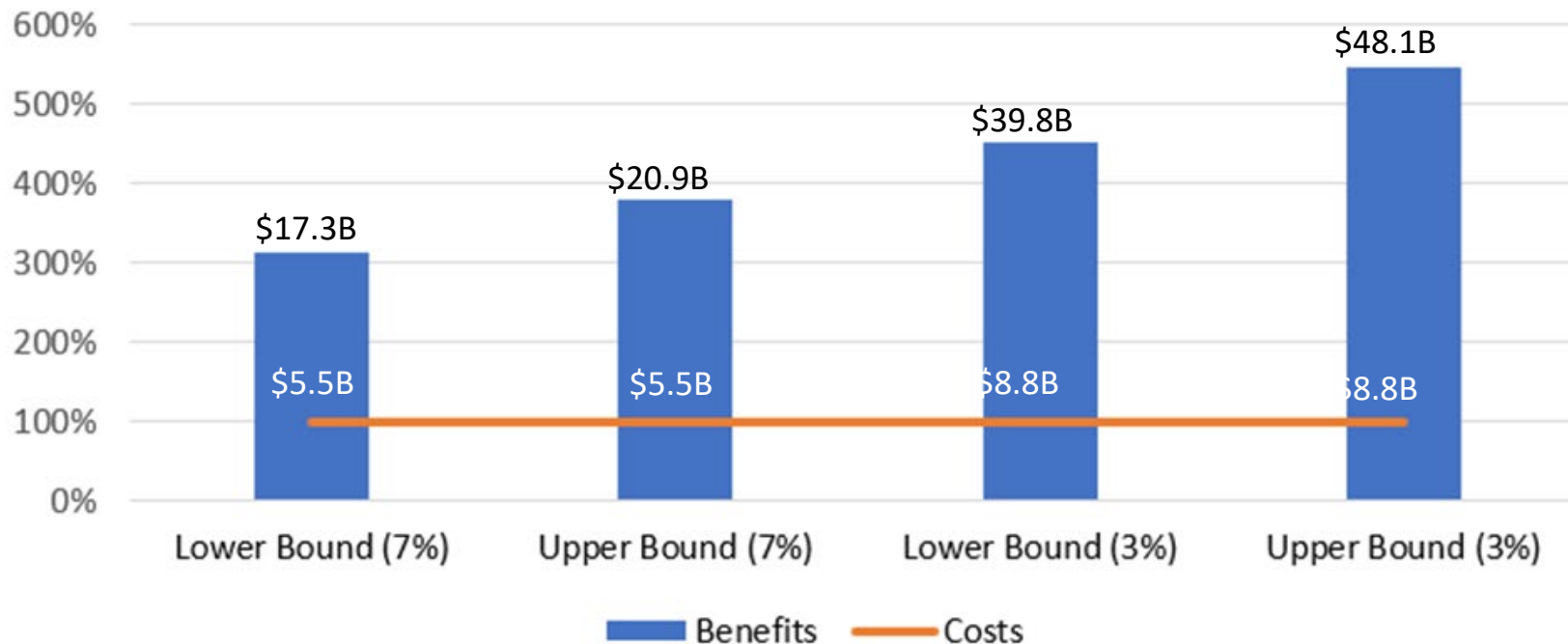
- reduce impacts of natural hazards
- reduce cost of response to warnings
- increase human health and safety
- increase economic productivity
- improve NOAA's ability to meet observational mandates and international agreements

The Economic Value of GeoXO



GeoXO Constellation Benefit-Cost Comparison

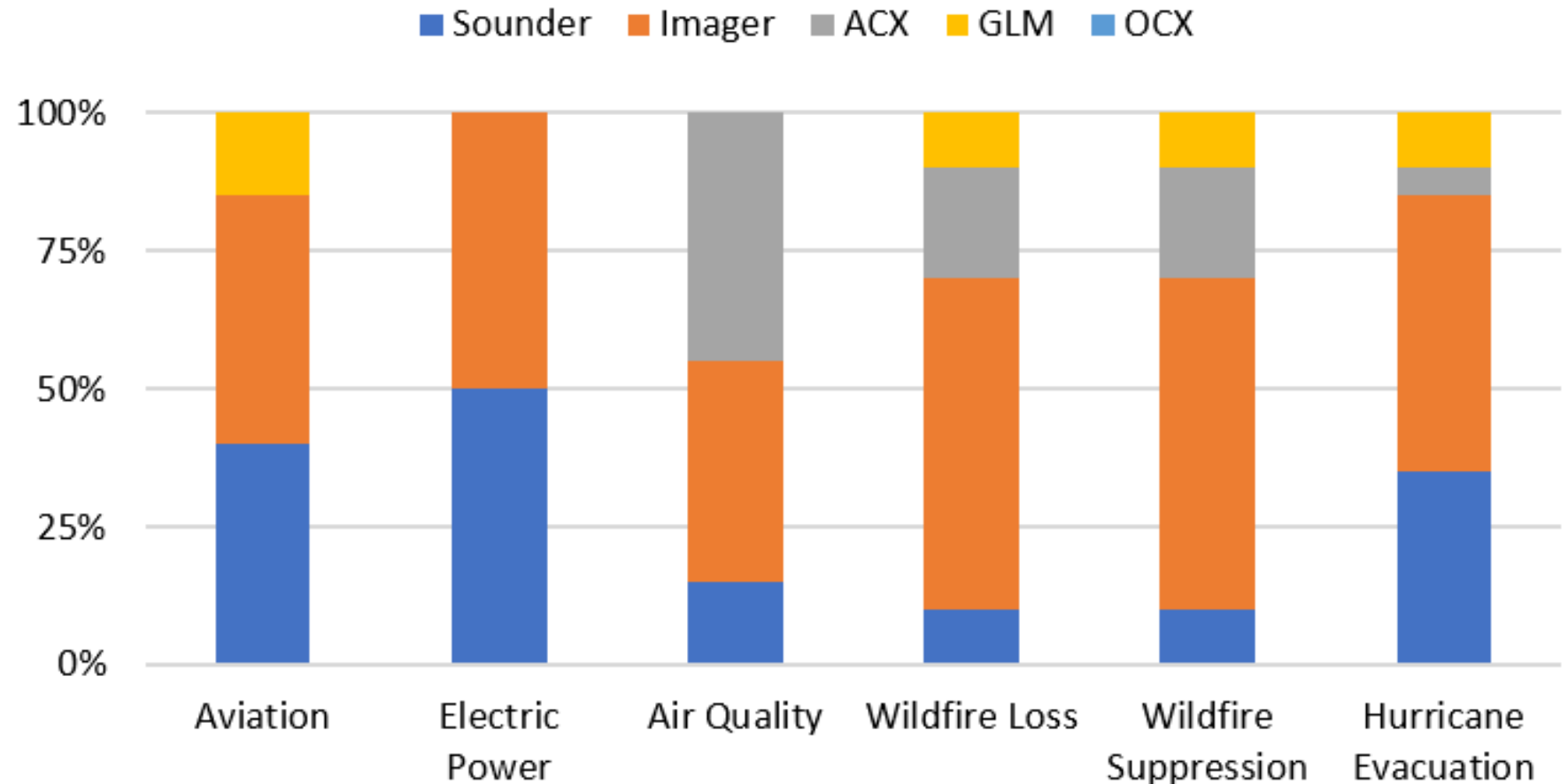
GeoXO Constellation: Benefit / Cost Comparison
Partial Benefits/Full Costs



- The chart shows benefits indexed to costs = 100
- The present value of benefits and costs is presented on charts in billions of dollars.
- Benefits and costs are presented at 2019 price levels.
- Lower bound benefits: 314 percent to 452 percent of total GeoXO costs
- Upper bound benefits: 380 percent to 547 percent of total GeoXO costs
- **Bottom line: The benefits of a GeoXO constellation are about 3-5 times the cost.**

Attributing Benefits to GeoXO Instruments

The contribution of specific instruments to the benefits that were estimated in 4 of the 9 GeoXO economic studies.



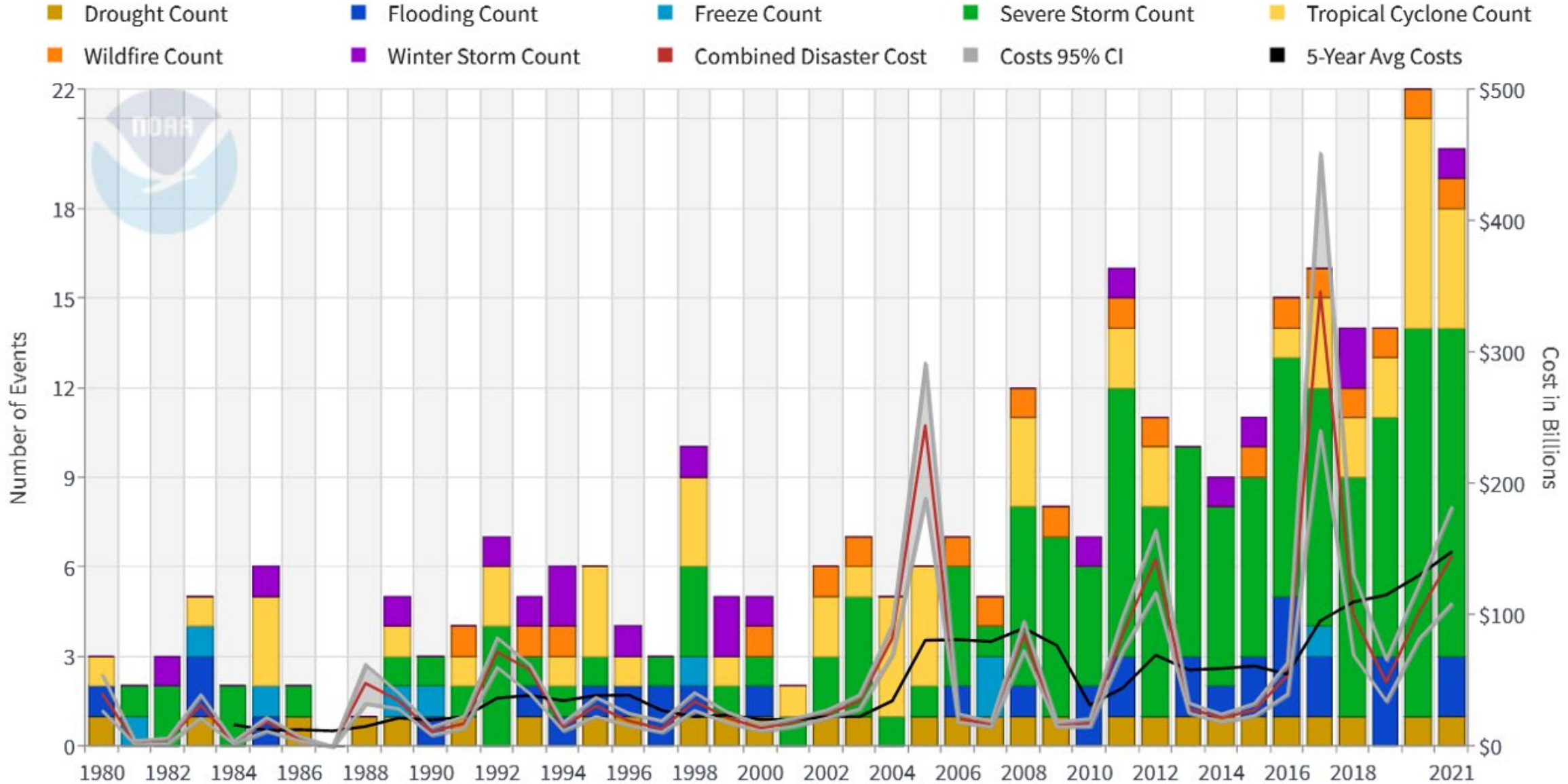
Source: GeoXO Team



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United States Billion-Dollar Disaster Events 1980-2021 (CPI-Adjusted)



Summary

- Our climate is changing, and more people are being impacted from disastrous events. As the frequency of these events is rising, we are facing new challenges.
- Impactful products and services are more important now than ever before.
- In order for us to reach a Climate Ready Nation, we must understand how information is used.
- Incorporating social and economic sciences is key to that understanding.

THANK YOU!

For more information, please reach out!

Kat Hawley

STAR Lead Scientist for User Engagement

Katherine.Hawley@noaa.gov

