



Customer Use Cases and Analytics for Climate Data at NOAA's National Centers for Environmental Information

American Geophysical Union
Fall 2016 Meeting - IN51D – 08
Friday, December 16, 2016

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Key Message

“Millions of individuals and companies around the world use NCEI’s use-inspired data and information to make decisions and to build and deliver products and services.”

– *Tim Owen*



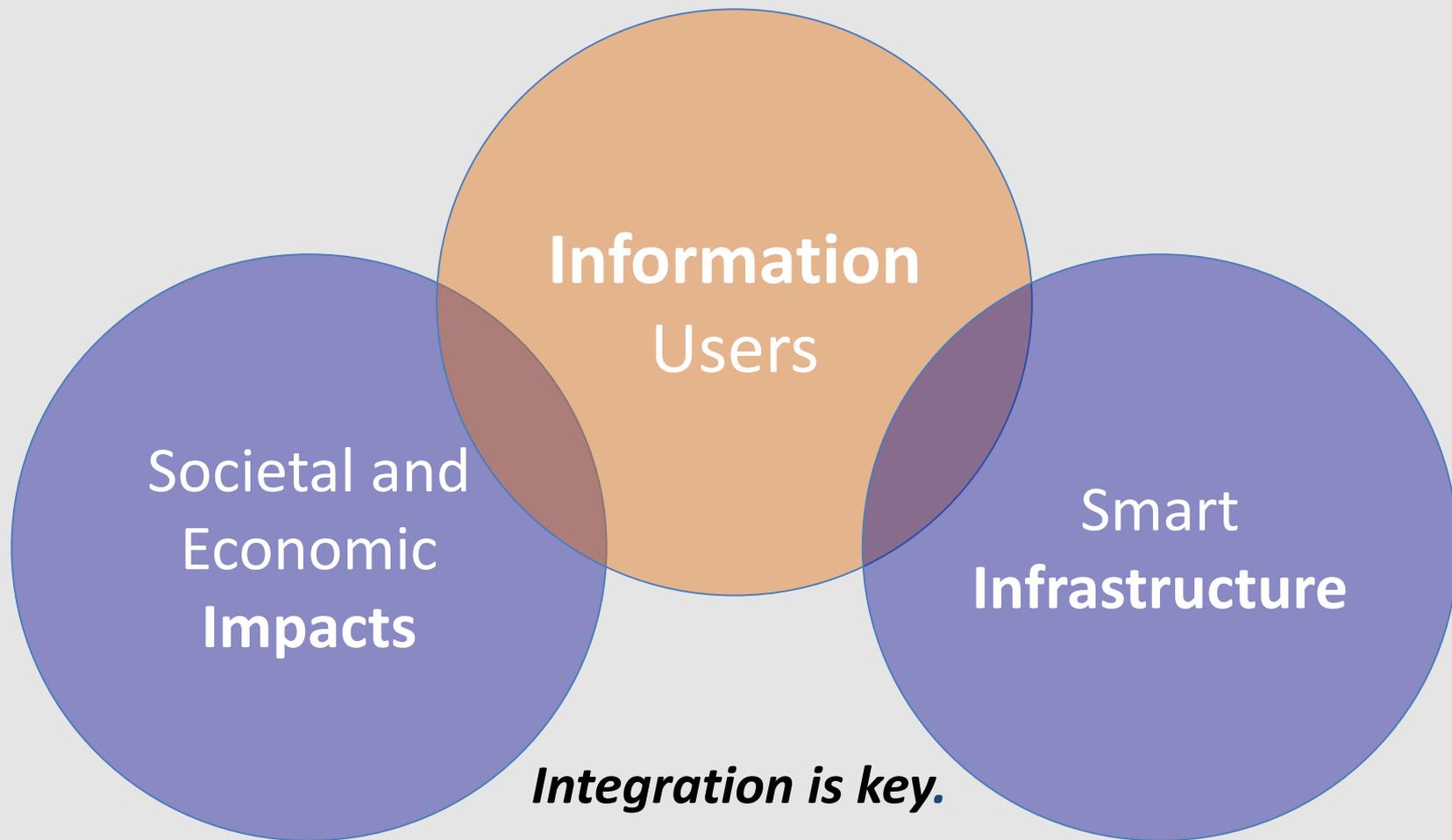
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NOAA’s National Centers for Environmental Information*

NCEI at  AGU

#AGU16 #NCEIatAGU

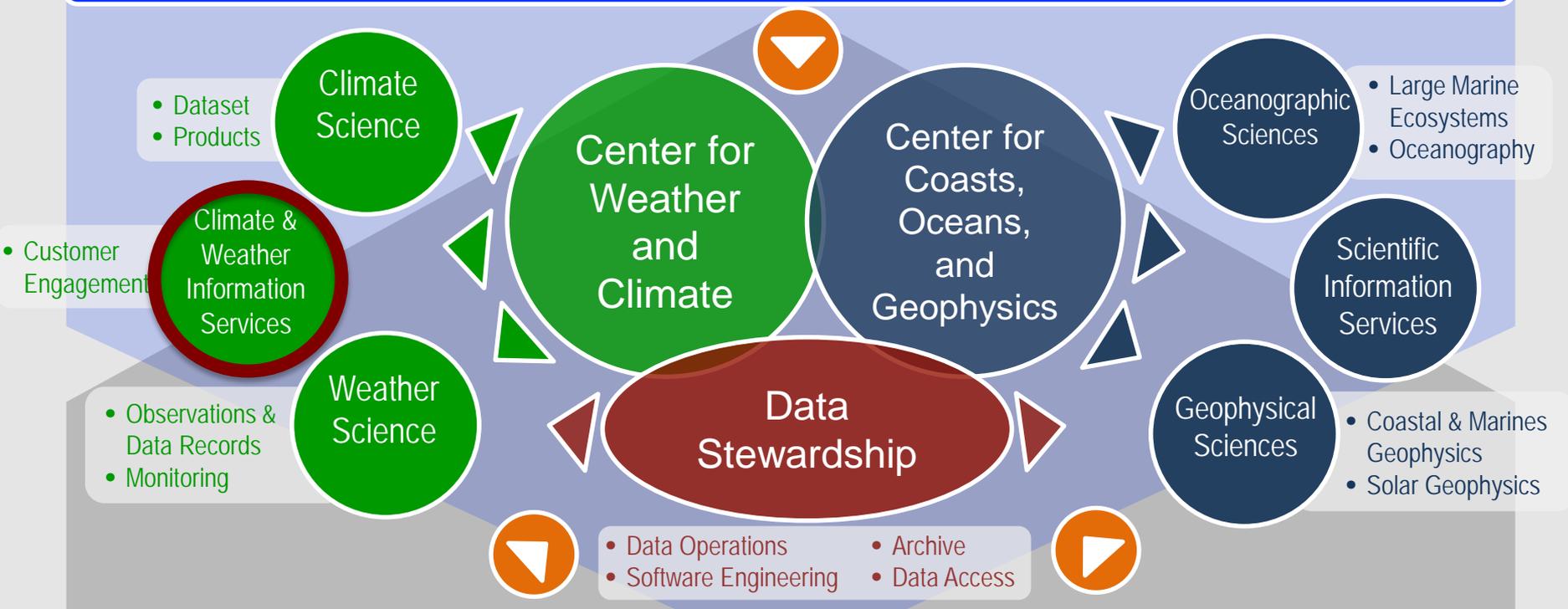


Overview



NOAA/National Centers for Environmental Information

NCEI Director's Office



Support Services

- Finance & Acquisitions
- Plans & Programs
- Communications & Outreach
- Standards & Evaluation

Information Technology

- Information Technology
- Logistics Support



NCEI Information Services

Objective: Deliver Use-Inspired Environmental Information that Supports the Nation's Prosperity and Resilience

Provide Information

Expand and Enrich Use of NCEI's Environmental Information



Understand Users

Understand User Needs and Translate Them Into Requirements



Strengthen Networks

Strengthen Networks for Developing and Delivering NCEI's Products and Services



Breadth of Environmental *Information Users*



Life and
Property



Aviation



Maritime



Space
Operations



Forests



Emergency
Management



Commerce



Ports



Energy



Hydropower



Reservoir
Control



Infrastructure



Construction



Agriculture



Recreation



Ecosystems



Health

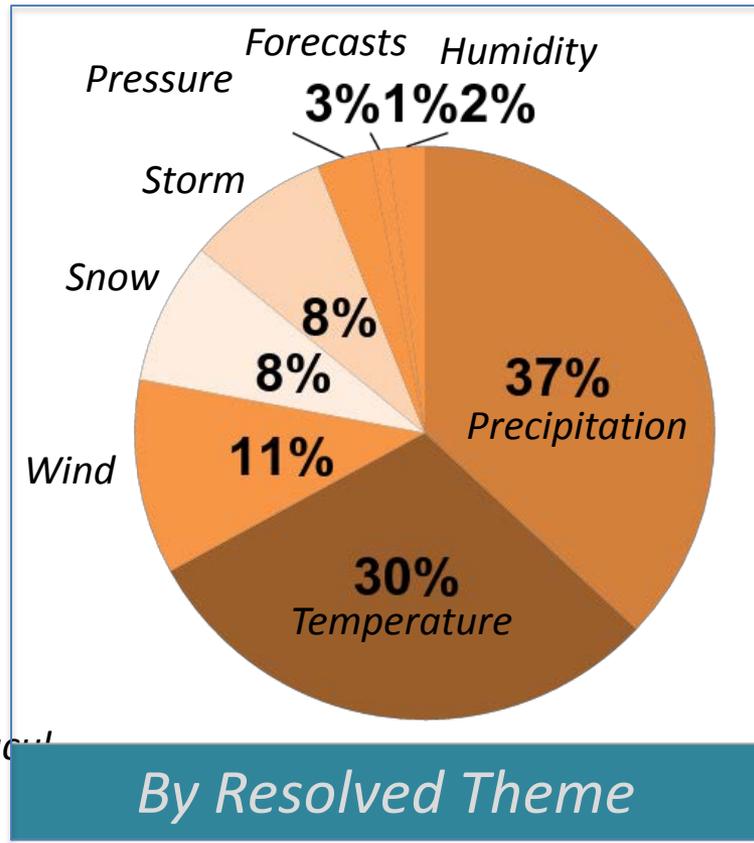
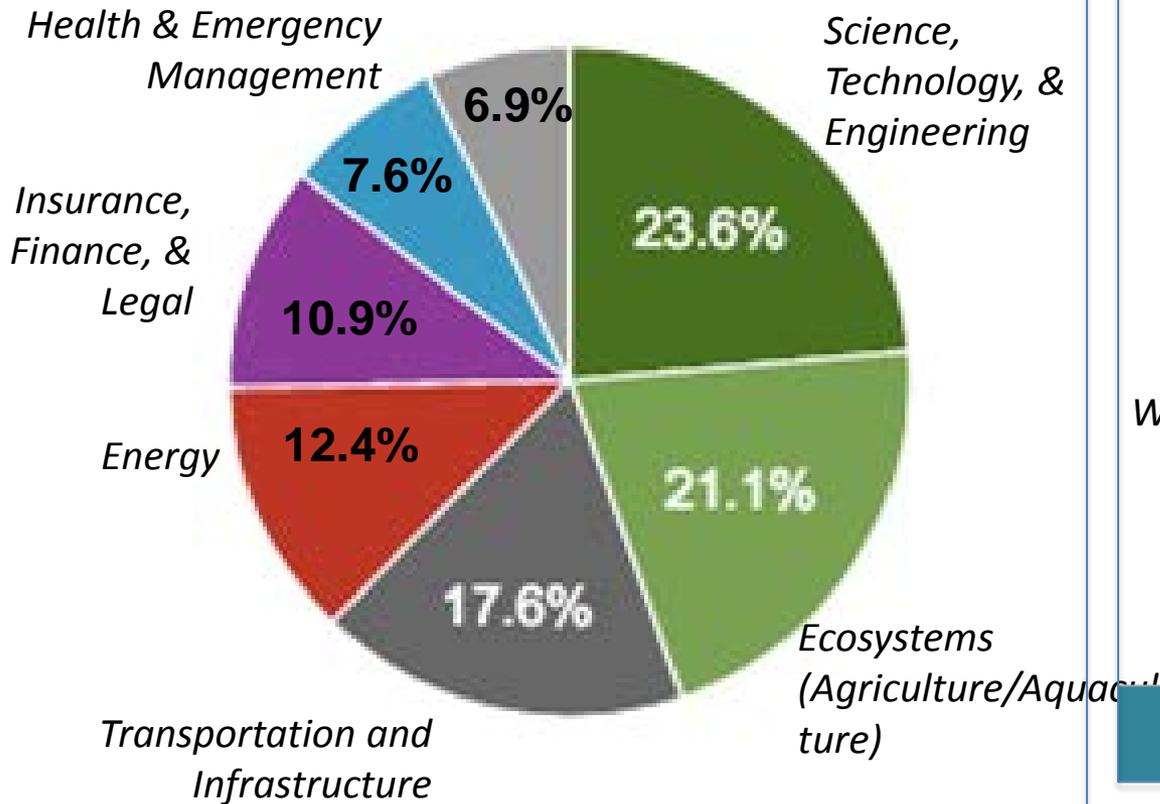


Environment



NCEI Information Users

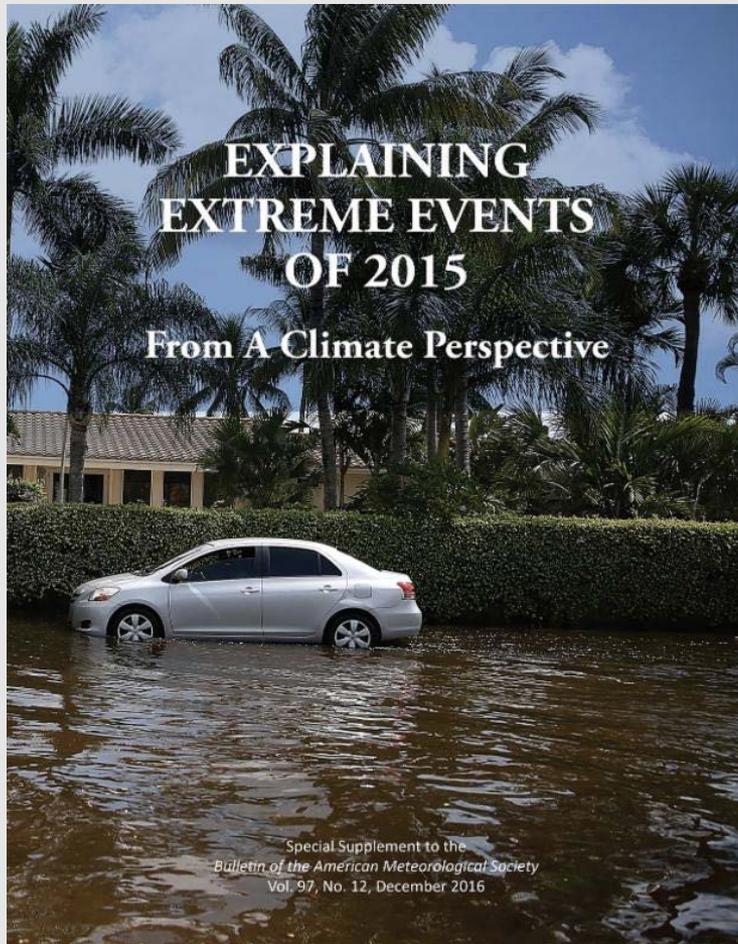
By Targeted Sector



By Resolved Theme



Impacts of Extreme Events



Extreme heat events in Europe, India, Pakistan, China, Indonesia, Japan and Australia

Heavy daily precipitation in December over Chennai, India

Extreme cold in the eastern US and Canada

Record winter sunshine in the United Kingdom

Florida's "sunny day" flood in September

Extreme May rainfall in southeast China

Extreme drought in southwestern Canada

Alaska's intense wildfire season

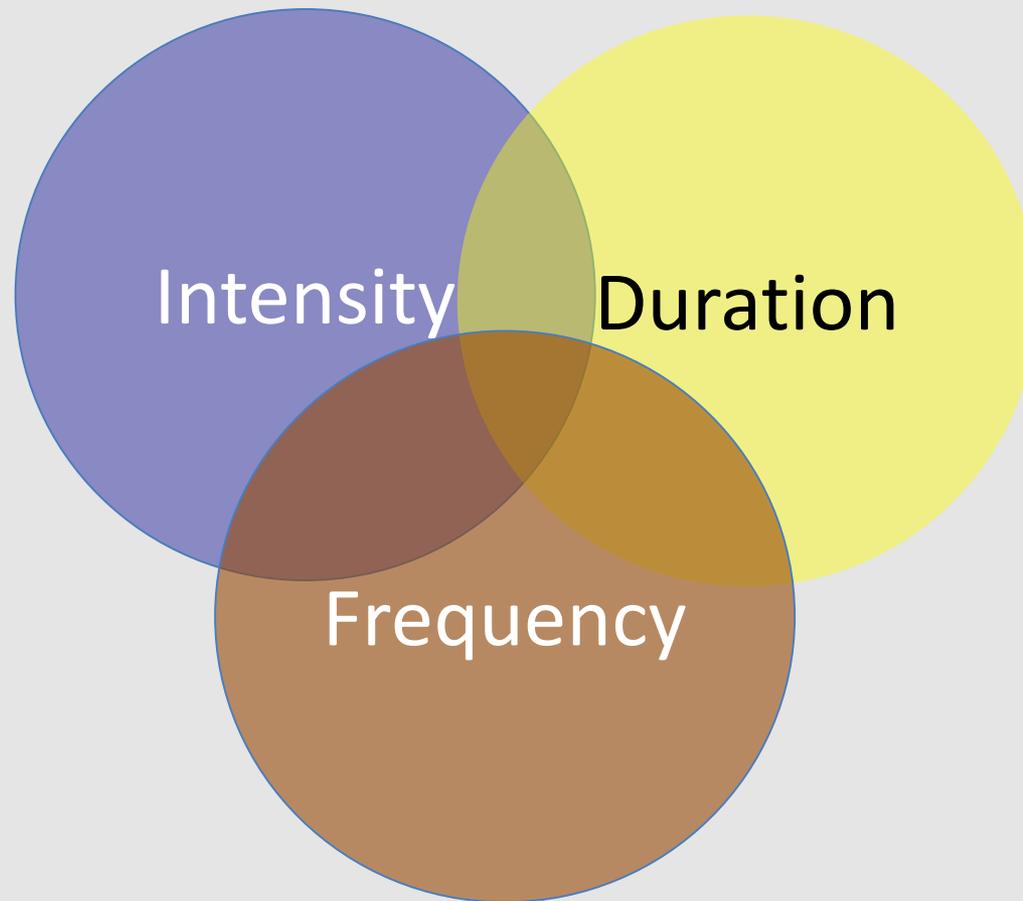
Record-low Arctic sea ice in March

The record average global temperature in 2015

BAMS Explaining Extreme Event of 2015 from a Climate Perspective report, <https://www.ametsoc.org/ams/index.cfm/publications/bulletin-of-the-american-meteorological-society-bams/explaining-extreme-events-from-a-climate-perspective/>

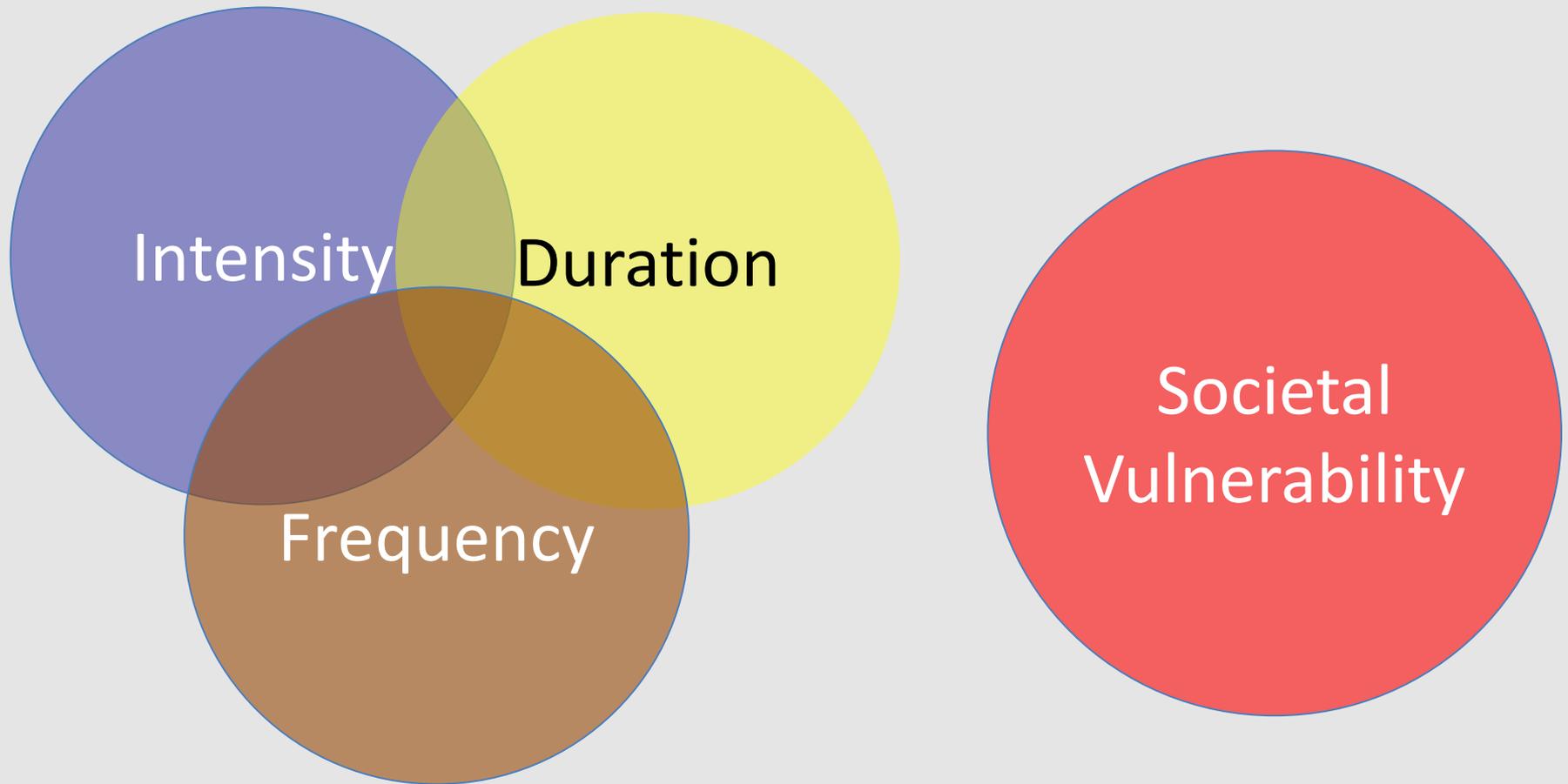


Dimensions of Extreme Events



In a changing climate, these are all potentially increasing.

Dimensions of Extreme Event *Impacts*



This is increasing.

Infrastructure: Planning is Prologue

- 66% of projected development by 2050 has yet to be built.
- 420 million people in U.S. in 2050: Need for...
 - 89 million new or replaced homes
 - 60 billion square feet of new office, institutional, and retail space
 - 130 billion square feet of replaced non-residential space.*
- We can thoughtfully adapt with climate-sensitive strategies
 - **New Infrastructure:**
 - **Siting**
 - **Existing Infrastructure:**
 - **Hardening/armoring**
 - **Relocation**
 - **Retreat**

* *Source:* Ewing, R. and R. Cervero, 2010: Travel and the Built Environment—A Meta-Analysis. *Journal of the American Planning Association*, 76 (3),265-294.



The Need for *Integration*

- In light of the increasingly expensive and devastating impacts of climate-related extreme events, it is now critical to build an integrated knowledge system that includes public and private partners.
 - Trenberth, Marquis, and Zebiak, The Vital Need for a Climate Information System, *Nature Climate Change*, December 2016, 1057-1059



Integration Pathways

Hazards Mitigation:

The effort to **reduce loss of life and property by lessening the impact of disasters**. Key is taking advance action to reduce human and financial consequences later (analyzing, reducing, and insuring against risk).

Key Steps:

1. Hazard identification
2. Vulnerability analysis
3. Defining a hazard mitigation strategy
4. Implementation of hazard mitigation activities and projects

Adaptation:

The impacts of climate change can also be reduced through local to national strategies to **adapt infrastructure to both increase resilience and reduce vulnerability to climate impacts**.

Benefits to Society:

1. Safer communities – reduced loss of life and property
2. Faster recovery from floods and other disasters
3. Lessens the financial impact

Sources: <http://www.fema.gov/what-mitigation>; National Research Council, 2010: *America's Climate Choices: Adapting to the Impacts of Climate Change*. Board of Atmospheric Sciences and Climate. National Academies Press, 272 pp.



NCEI Products and Services Delivery

*Expand and Enrich Use
of NCEI's Environmental Information*

- **Sectoral Engagement**

- Work with sectors based on

Socio-economic impact (vulnerability)
Infrastructure/application readiness

- **Regional Engagement**

- Outlooks and regional forums



*AMS – Energy Forum
Jan 2016*



*ASCE– Coastal Indicators
Forum - May 2016*



*RTP– Infrastructure Planning Forum
Sep 2016*



NCEI Customer Use Cases

*Understand User Needs
and Translate Them Into Requirements*

- **Sector-Based Use Cases**

Sector	NCEI Data	Outcome
<i>Agriculture</i>	Global Historical Climatology Network Daily (GHCN-D)	Optimal Nitrogen Management
<i>Aviation</i>	NEXRAD archive	Safer flying for the travelling public
<i>Natural resources (coral reefs)</i>	Pathfinder Climate Data Record (CDR)	Coral reef management



Thank You

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December 16, 2016, 9:45 to 10:00 a.m. PST
Moscone West 2000



NCEI at AGU



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