Natural Disasters: How Data Helps Build Resilience

Wednesday, August 1, 2018
Kim Tyrrell
Environment Program Director
National Conference of State Legislatures

kim.tyrrell@ncsl.org
Poll Everywhere

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In the body of the text, type NCSLENVIRO
Framing

▪ There are many types of data. First need to know what questions you are seeking answers to in order to know the type of data needed.

▪ How can states use data to demonstrate and communicate mitigation ROI to their colleagues and constituents?

▪ How can states increase collaboration and data sharing among municipal, state and federal stakeholders.
Presenters

**Anne Stauffer**, Director Fiscal Federalism, Pew Charitable Trusts: New report on state tracking of disaster spending including data gaps.

**Dr. Ken Wolfenbarger**, Manager Civil Programs, NASA Jet Propulsion Laboratory: Data on water levels, snowpack, sea-level rise, carbon cycle, rainfall (atmospheric rivers), levy monitoring, etc. and how this data can be delivered and utilized.

What We Don’t Know About State Spending on Natural Disasters Could Cost Us
Findings

Most states don’t comprehensively track spending

Information we received shows wide variation

Recommend commitment to data collection
Key Questions

- Why should states collect spending data?
- Why is tracking state spending so challenging?
- What do the available state spending data tell us?
Why should states collect spending data?

- Federal disaster funding is important to all states
- Spending is on the rise
- Federal government trying to manage rising costs
Why is tracking so challenging?

- Spending is spread across many agencies
- Disasters are episodic
What do the data we collected tell us?

- States have different approaches
  - Varied investment in state-level programs
  - State-funded mitigation
  - Splitting costs with local governments

pewtrusts.org/fiscal-federalism
Takeaways

- Policy implication: Impacts of federal changes would vary from state to state

- State policymakers should prioritize the collection of comprehensive disaster spending data

- *You can’t manage what you don’t track.*
NASA Earth Science
Missions: Present through 2023
(no DS new starts or future Venture Class shown)

ISS Instruments
LIS (2020), SAGE III (2020)
(CLARREO-PF (2020)), EMIT (TBD)

JPSS-2 Instruments
OMPS-Limb (2019)

InVEST/CubeSats
RAVAN (2016)
IceCube (2017)
MiRaTA (2017)
HARP (2018)
TEMPEST-D (2018)
RainCube (2018)
CubeRRT (2018)
CIRIS (2018*)
CSIM (2018)

* Target date, not yet manifested
Application Themes & Societal Benefit Areas

Programmatic Focus on:
- Capacity Building
- Disasters
- Ecological Forecasting
- Health and Air Quality
- Water Resources
- Wildland Fires

Disasters Focus

- Earthquakes
- Volcanoes
- Landslides
- Floods
- Fires
- Land Subsidence
Levee Monitoring in the Sacramento Delta

Radar-derived surface movement

Slope Instability

Subsidence Levee
A damage proxy map for the M7.1 quake was delivered to the Mexican Space Agency (AEM) and Mexico National Center for Prevention of Disasters (CENAPRED) on Sept. 20 – a record within-a-day delivery – to support their earthquake response.
Flood Proxy Map (ALOS-2 Aug 27, Delivered Aug 28)
An Applications Process Summary

Federal, State and Commercial Collaborations

- Collaborate with Decision Makers to Identify Support Needs
- Identify Available Observations and Model Needs
- Demonstrate Products and Quantify Uncertainty
- Transfer Capabilities

- Operational Agencies
- State Agencies
- Commercial Sector

Identifying the Decision Support Need is a Critical First Step
Richard Leadbeater, Esri
Global Manager:
State Government Industry

rleadbeater@esri.com
Data isn’t helpful, until it’s put in context.

Context allows insight…
Each year, floods kill more people and cause more economic damage than any other natural disaster. Every state suffers from at least one form of flooding—coastal, riverine or flash floods—and many are vulnerable to all three. In 2018, the U.S. experienced 32 Major Disaster declarations and 6 Emergency Declarations involving flooding. As more people and more development move into flood risk areas, the numbers are rising. The Flood Apex is using new technologies and new approaches to turn this situation around.
Comparative distribution of tornadoes by month:

- January
- February
- March
- April
- May
- June
- July
- August
- September
- October
- November
- December

Data: NOAA Storm Prediction Center

@john_m_nelson | AdventuresInMapping.com
Thailand Cave Rescue
The Bare Earth Project
Washington DNR

Washington Geological Survey, a Division of the Washington State Department of Natural Resources

https://arcgis/1DGeqL
Devils Slide in Whatcom County

Imagery comparison:
- Natural Color Photograph,
- 10-meter DEM hillshade, and
- LiDAR hillshades (Grey)
- LiDAR hillshades (Color)
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LANDSLIDES — CEDAR RIVER

In a photo of the same area the landslides are virtually invisible, hidden underneath a green blanket of trees.

Visit the Washington Geological Survey's (WGS) landslide webpage to learn more about landslide hazards in Washington.
LANDSLIDES — CEDAR RIVER

In this bare-earth lidar image, multiple landslides are visible along the Cedar River in King County.
The 2009 Nile landslide blocked the Naches River and covered State Route 410.
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