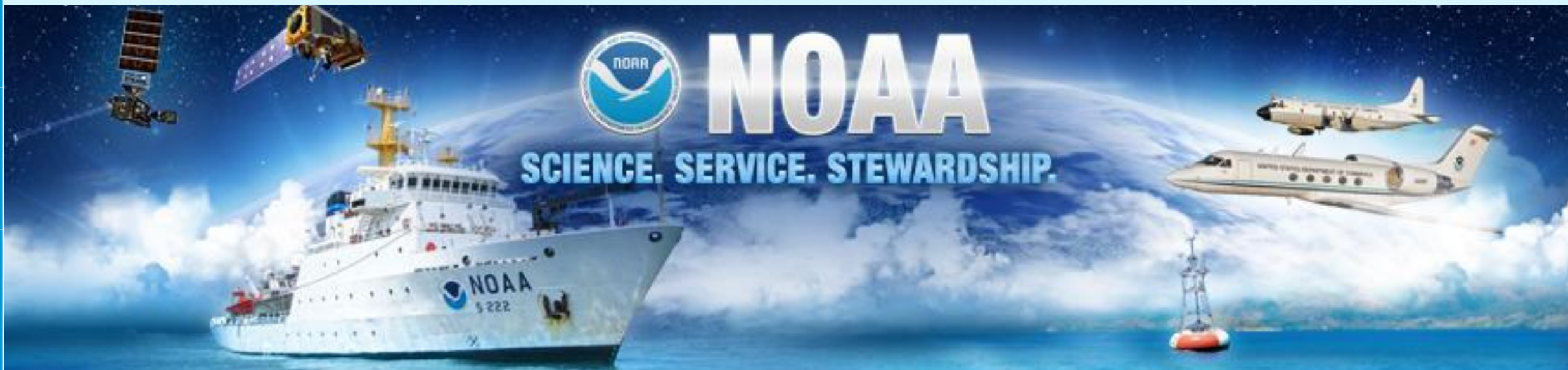




Extreme Weather and Climate Preparedness: Innovative ways NOAA supports decision makers in state, local, and tribal communities





NOAA

*National
Oceanic and
Atmospheric
Administration*



Dr. Rick Spinrad

Under Secretary of Commerce
for Oceans and Atmosphere

NOAA Administrator





15 weather/ climate disasters with losses exceeding \$1 Billion each (through Oct 15)



Annual Average for Extreme Natural Events is Increasing



1980 - 1989 3.1 Events



2010 - 2019 12.2 Events

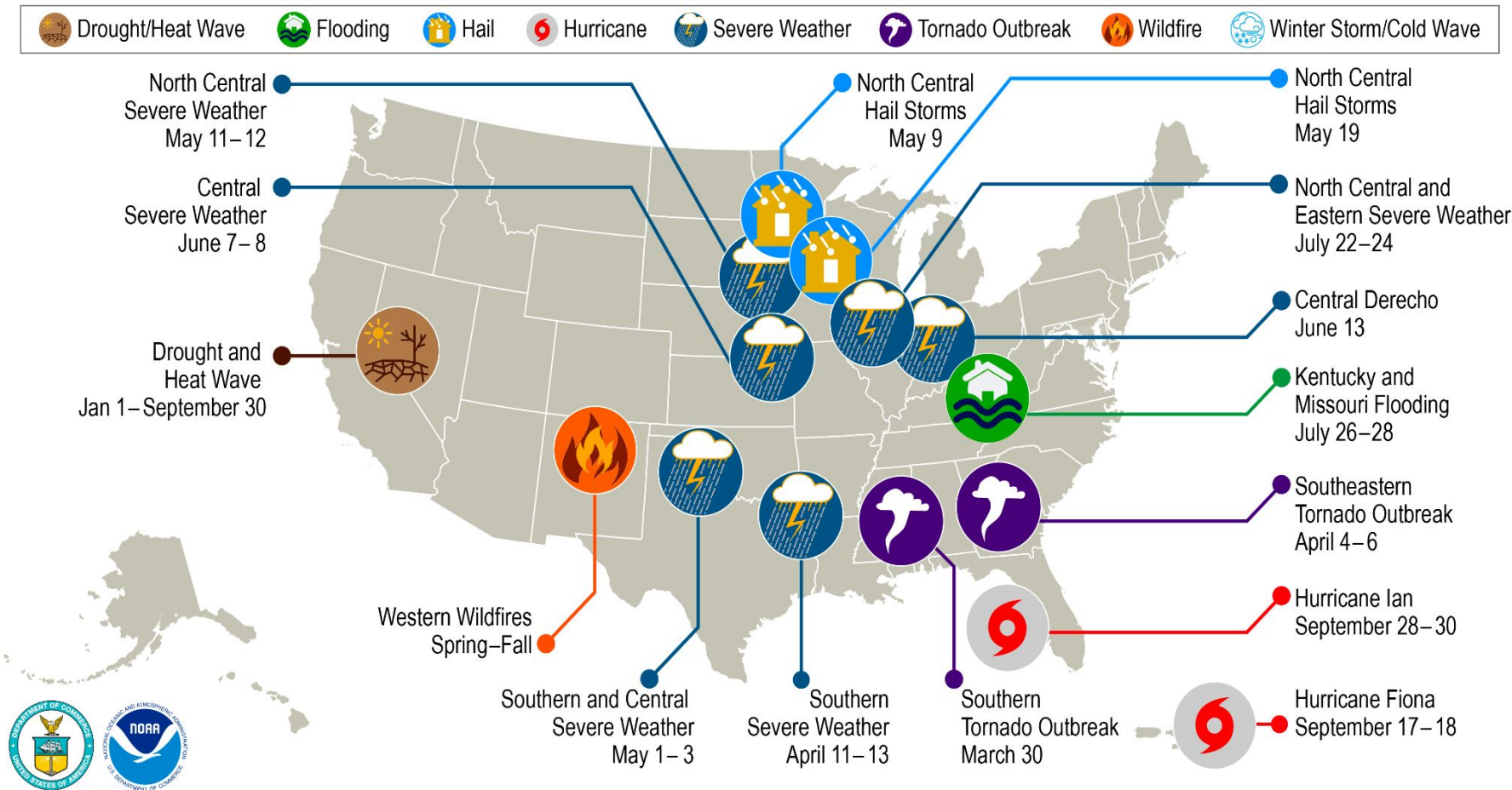


2017 - 2021 17.8 Events



It Has Been Busy!









U.S. 2022 Billion-Dollar Weather and Climate Disasters



This map denotes the approximate location for each of the 15 separate billion-dollar weather and climate disasters that impacted the United States January – September of 2022.

Source: <https://www.ncdc.noaa.gov/billions/>

U.S. 1980 Billion-Dollar Weather and Climate Disasters

-  Drought/Heat Wave
-  Flooding
-  Hail
-  Hurricane
-  Tornado Outbreak
-  Severe Weather
-  Wildfire
-  Winter Storm/Cold Wave



This map denotes the approximate location for each of the 3 separate billion-dollar weather and climate disasters that impacted the United States in 1980



NOAA Core Assets

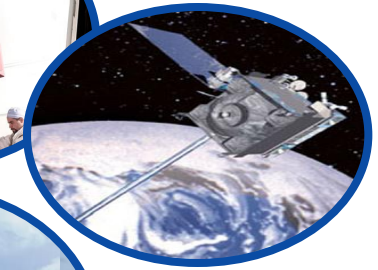
Over 100 Observing Systems, including:

- 122 Doppler radars
 - 16 NOAA Operated Satellites
 - Buoy Networks (Weather, DART, TAO, etc)
- Ships and Aircraft
 - 15 ships and 10 aircraft engaged in research and survey operations in support of NOAA's missions
 - High Performance Computing
 - 2 operational supercomputers executing numerical models to produce environmental forecasts
 - 3 weather and climate research supercomputers to support development of new models and scientific understanding

POES



GOES



TAO Buoy



Doppler Radar



NOAA Ship
Oscar Dyson



NOAA G4 and P3



Research
Supercomputers

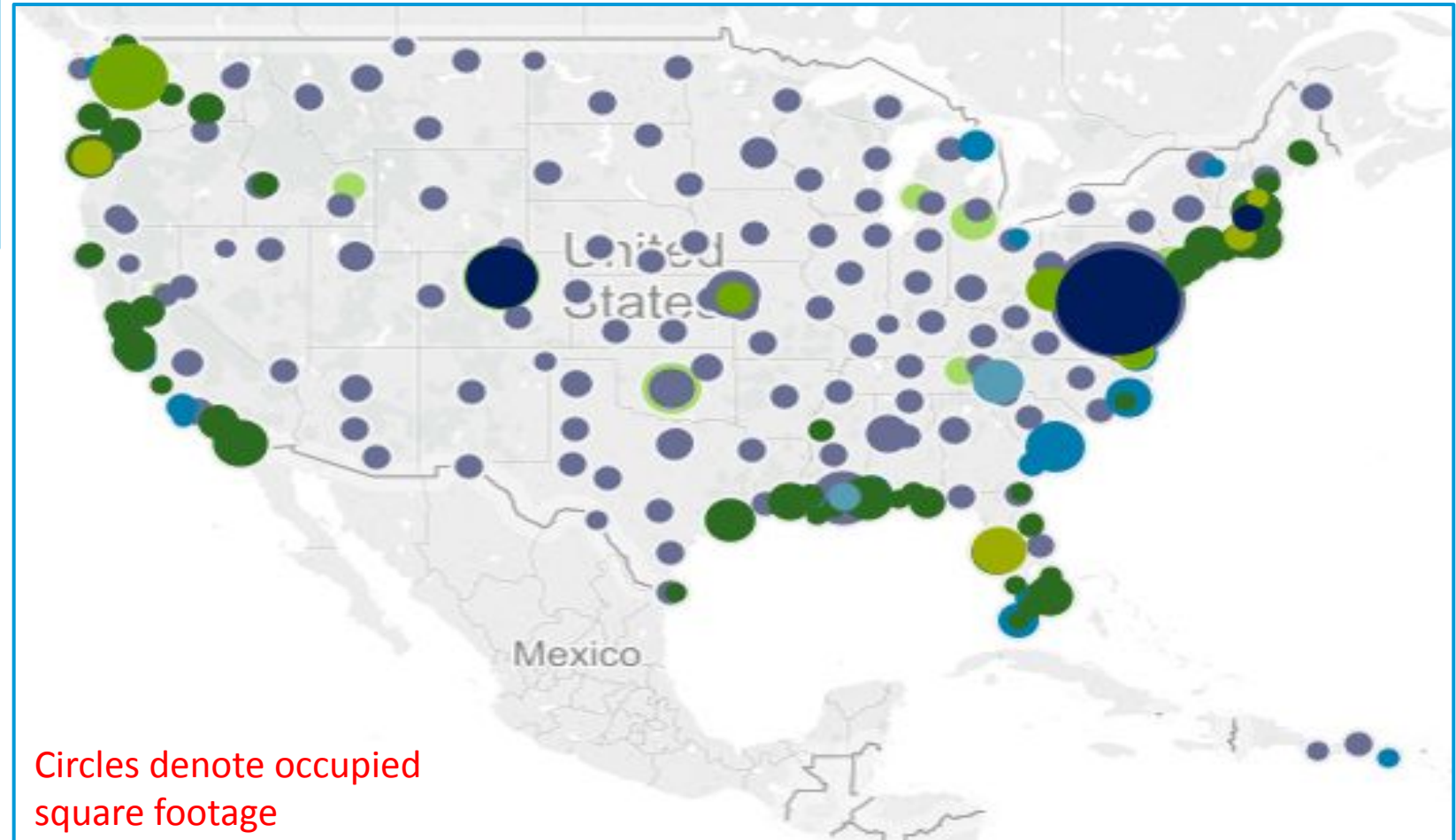
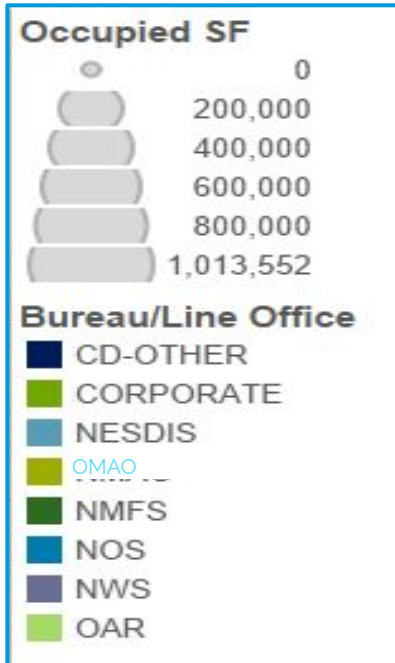
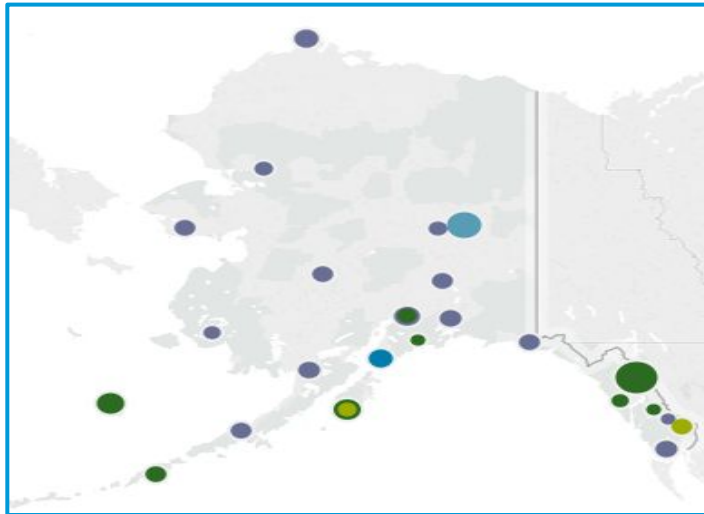


Operational Weather
Supercomputers



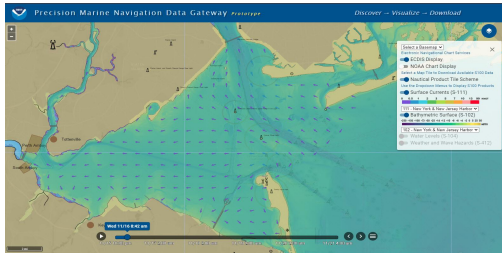
Where is NOAA?

- NOAA has a broad and diverse geographic footprint throughout the entirety of the United States
- > 700 facilities and assets across the U.S. and territories
- NOAA in your State: <http://www.legislative.noaa.gov>

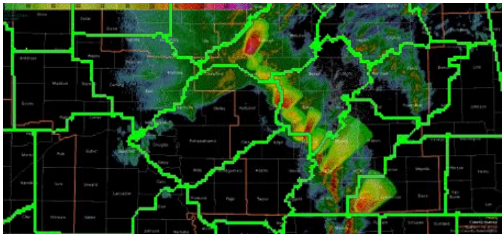


Circles denote occupied square footage

NOAA Decision Support Products and Services



Ocean Mapping Data & Nautical Charts



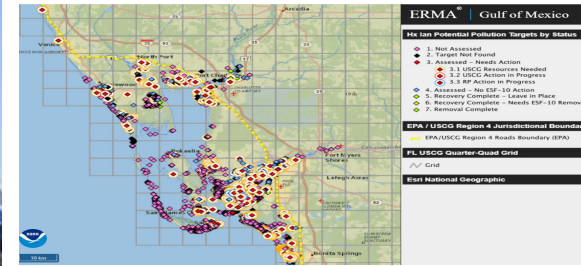
Probabilistic Hazard Information



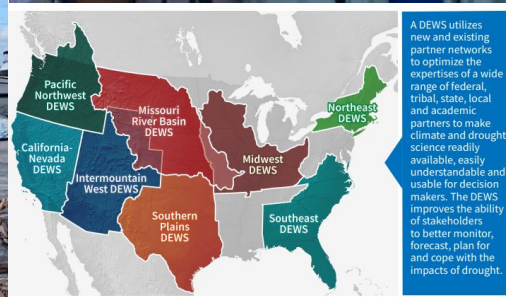
Welcome to HEAT.gov

Heat related illnesses and death are largely preventable with proper planning, education, and action. Heat.gov serves as the premier source of heat and health information for the nation to reduce the health, economic, and infrastructural impacts of extreme heat.

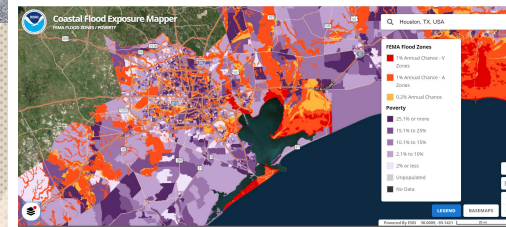
Heat.gov is the web portal for the National Integrated Heat Health Information System (NIHHIS)



Emergency Response Support



National Integrated Drought Information System

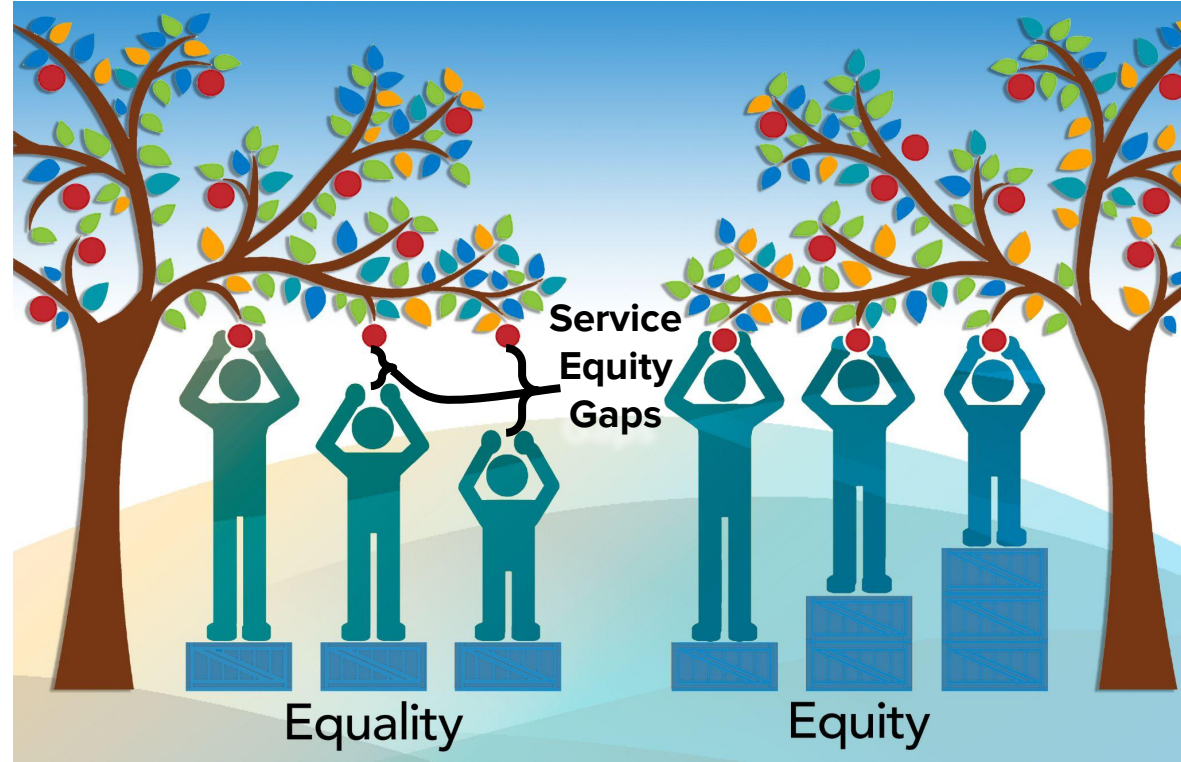


Coastal Resilience and Management



Serving the Most Vulnerable

Building a Climate-Ready Nation, One Community at a Time



“One-Size” Services
 ☐ Unequal Outcomes

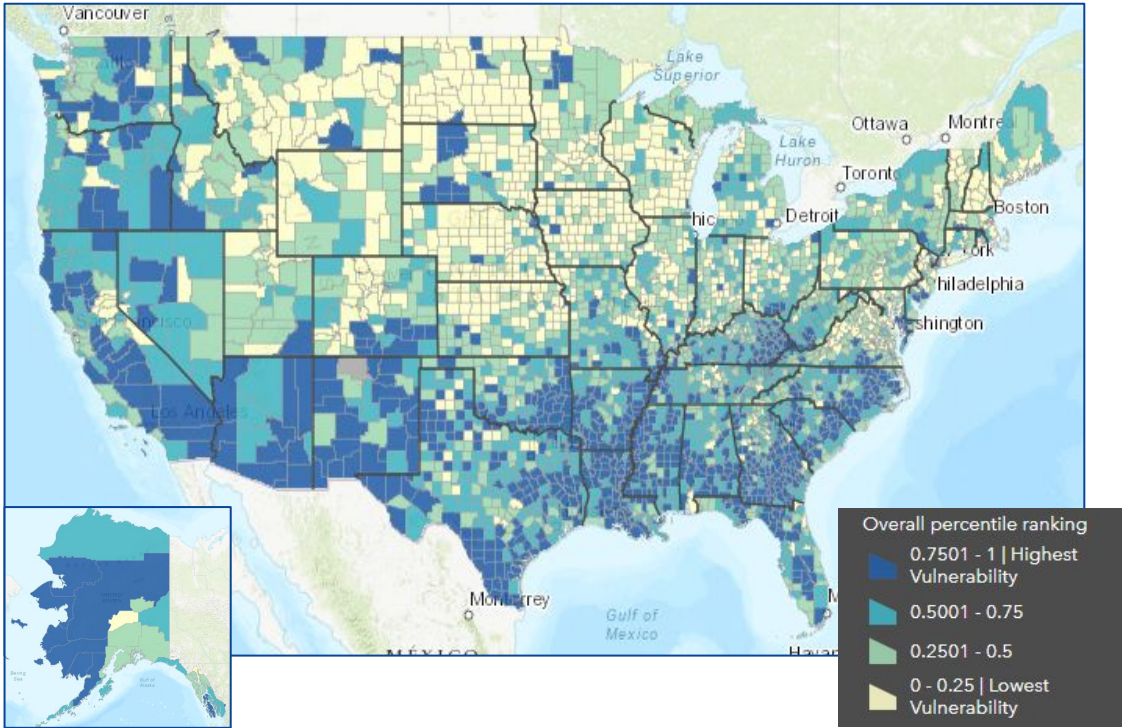
Equitable Services ☐
 Equality of Outcomes



Where Are We Going?

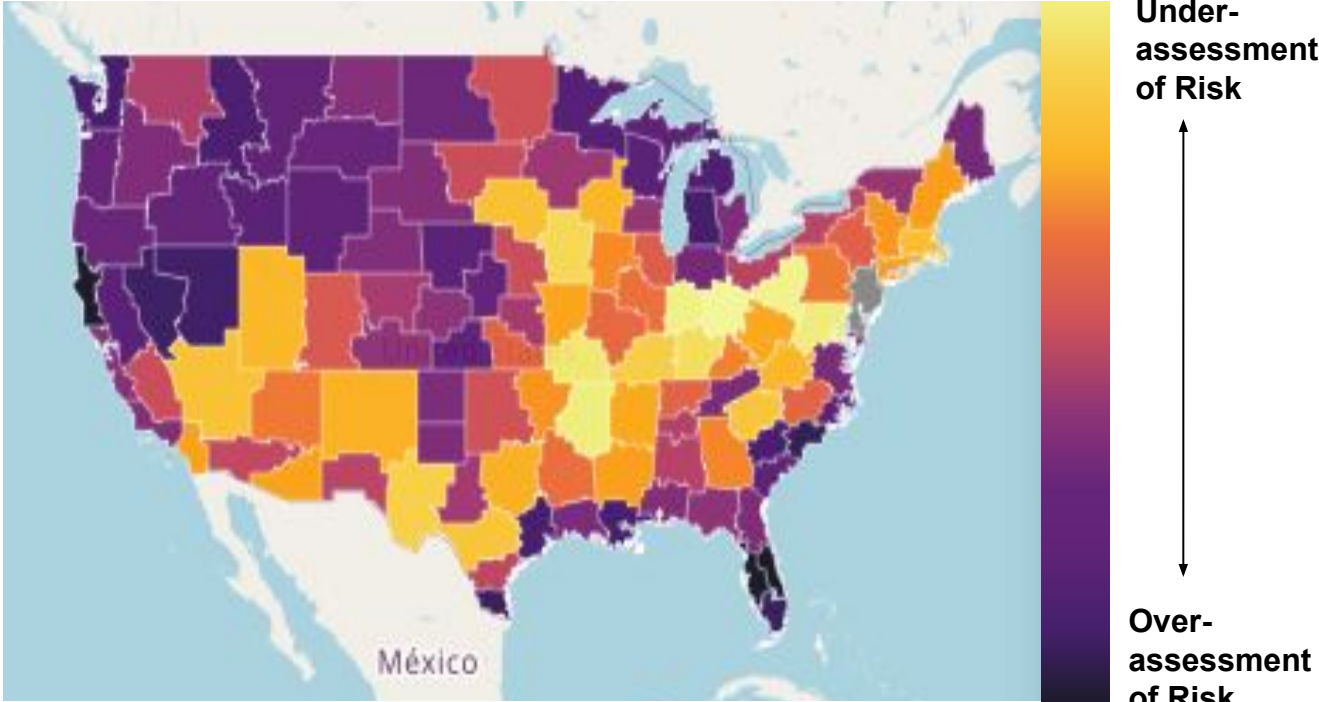
Serving the Most Vulnerable

CDC - Social Vulnerability Index (SVI) by Counties



Focusing education and outreach where the public has a false sense of security

Social, Behavioral, Economic Sciences Longitudinal Survey Data: Baseline of User Risk Perception of Flooding



This map shows the difference between Risk Perceptions and Objective Frequency

Challenge: We Can't Do This Alone



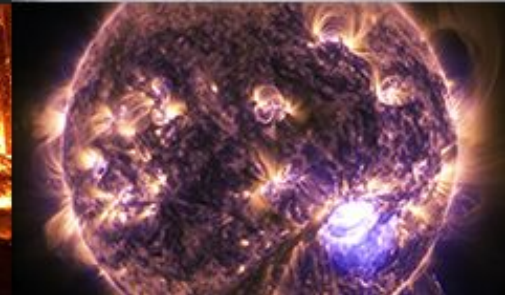
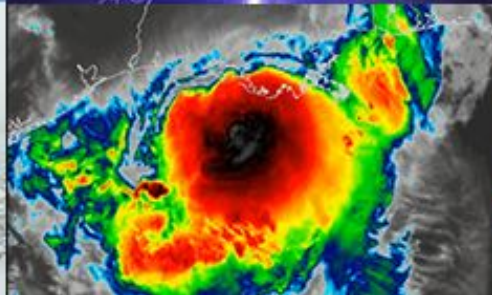
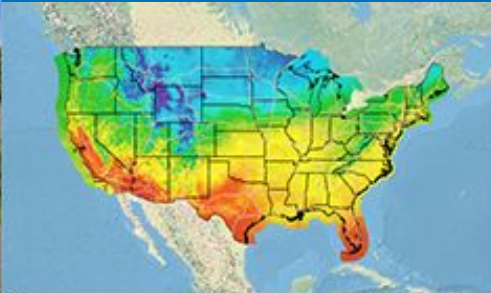


**NATIONAL
WEATHER
SERVICE**

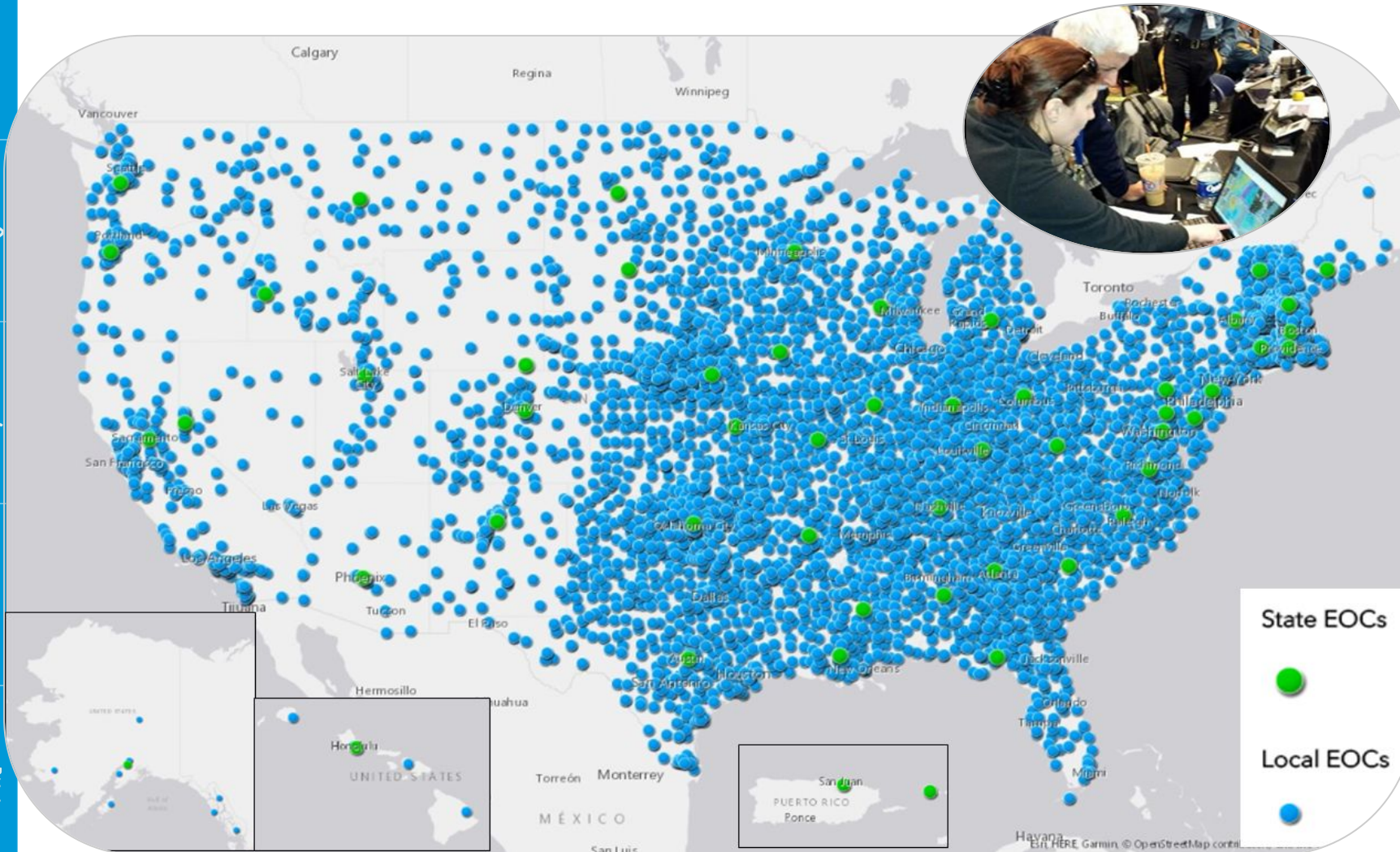


Ken Graham

Assistant Administrator for Weather Services
Director, National Weather Service



We have to grow our collaboration, before, during, and after the big event!



59 state EOCs
5,895 local EOCs



And, We Are With You!

122
Weather Forecast Offices

21
Center Weather
Service Units

13
River Forecast
Centers

9
National Centers for
Environmental Prediction

7
National/Regional
Headquarters

2
Tsunami Warning
Centers

1
National Water Center



With You, Eye to Eye

**NWS forecasts
and warnings**



**Connected to the
decision-making process**



**Impact-based
Decision
Support
Services**

**Provide the Best
Forecasts in the World
confidence, context, social
science**



**Establish Relationships,
Know Partner Needs**

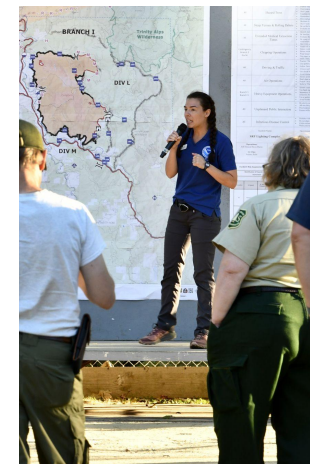


**Practice,
Practice,
Practice**

**Work Together
Tabletops, Feedback,
Engagement**



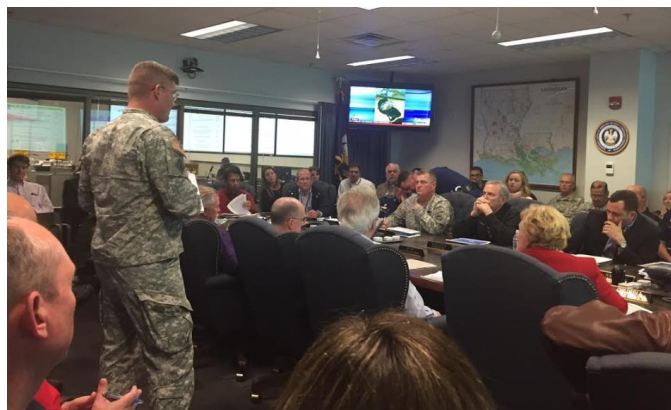
Build TRUST



My Personal Experiences of Successful IDSS

Ones You Read About

- Hurricane Isaac
- Hurricane Dorian
- Deep Water Horizon
- New Orleans Tornado Outbreak
- IMET (Deployed on the front lines)



Ones You Don't Read About

- Superbowl
- State Fair
- Boy Scout Jamboree
- USCG Support



On duty 24/7 365 to keep you safe!

Key Messages for November 16-20 Lake Effect Snow Updated Nov 16, 2022 5:00 PM EST

Periods of intense lake effect snow through Sunday. Paralyzing snowfall possible in some areas.

- Periods of heavy lake effect snow will persist through Sunday downwind of each of the Great Lakes. The most intense snowfall is expected tonight through Friday.
- East of Lakes Erie and Ontario, snowfall will at times be accompanied by lightning, thunder, gusty winds, and rates of 3"/hr. This will produce near zero visibility, snow covered roadways, scattered damage to infrastructure, and potentially paralyze the hardest-hit communities.
- Snowfall rates will likely reach 1-2"/hr along the eastern shores of Lakes Superior and Michigan, which will combine with gusty winds to produce near zero visibility and dangerous travel.
- Total snow amounts of 1 to 2 feet are likely in many locations. Snow accumulations may locally exceed 4 feet near Buffalo, NY.
- Very cold temperatures will accompany this event with high temperatures possibly more than 20 degrees below normal by the weekend.

Probability of 12+'' of snow (7 PM Wed - 7pm Sat EST)**
**Additional heavy snow likely Sun

Winter Storm Severity Index through 1pm Sat EST

Winter weather potential:
 Minor Impacts: A few inconveniences to daily life.
 Moderate Impacts: Disruptions to daily life.
 Major Impacts: Considerable disruptions to daily life.
 Extreme Impacts: Substantial disruptions to daily life.