



Building a Weather Ready Nation

Tribal Public Health & Emergency Preparedness Conference

June 13, 2019

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National Weather Service
Portland, OR*

Weather-Ready Nation
National Oceanic and Atmospheric Administration



Outline

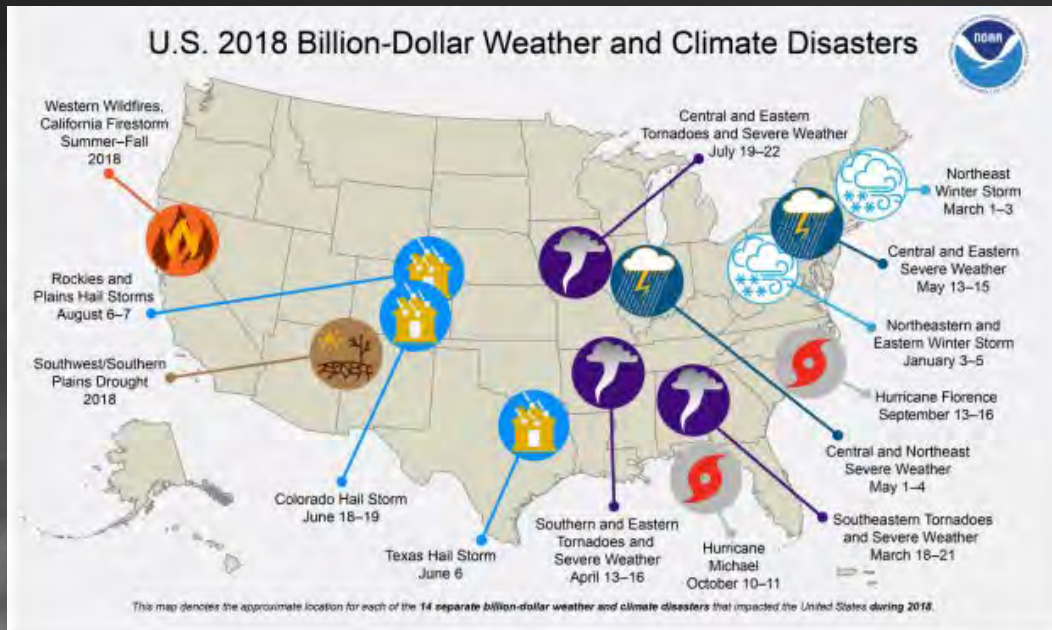
- **Billion Dollar Disasters**
 - *Weather Ready Nation*
- **Happenings at the NWS**
 - *NWS Evolve*
 - *Hazard Simplification*
 - *Science & Technology Improvements*
 - *Evolving our Workforce*



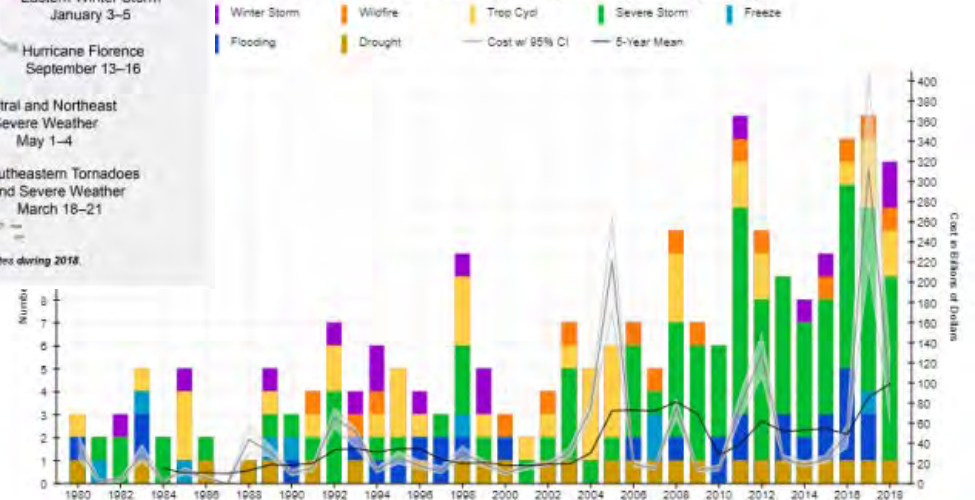
Billion Dollar Disasters

Are they the new Normal?

- 14 weather events in 2018 that caused at least \$1B each in damage



Billion-Dollar Disaster Event Types by Year (CPI-Adjusted)





Billion Dollar Disasters

- **2 Hurricanes**
- **8 Severe Storms**
- **2 winter storms**
- **Wildfires**
- **Drought**
- **2018 – 14 events**
– *\$91B*
- **2017 – 16 events**
– *\$312B*
- **2016 – 15 events**





Hurricane Michael



- Cat 4 hurricane
- 160 mph winds
- 15 ft storm surge
- 31 fatalities
- \$25B damage



Hurricane Michael making landfall on the [Florida Panhandle](#) at peak intensity on October 10

Formed	October 7, 2018
Dissipated	October 16, 2018 (Extratropical after October 11)
Highest winds	1-minute sustained: 160 mph (260 km/h)
Lowest pressure	919 mbar (hPa); 27.14 inHg
Fatalities	31 direct, 43 indirect
Damage	\$25.1 billion (2018 USD)





Hurricane Florence

(Aug 31, 2018)

- Cat 1 hurricane at landfall
 - *Cat 4 hurricane at sea*
- 39.53 inches of rain in NC
- 10 ft storm surge
- 24 fatalities
- \$24B in damage





California Wild Fires



- **Camp Fire in Northern Calif**
 - *Deadliest and costliest fire in CA history*
 - *85 fatalities*
 - *\$16.5B in damage*
 - *18,500 buildings destroyed*





Bringing it Home

- **Wildfires (2017-2018)**





Bringing it Home to Oregon



Two Federal Disaster Declarations

- *Feb 23-26 Snow*
 - President Trump signed and approved
- *April 6-21 flooding*
 - In-progress





A Weather-Ready Nation

Ready, Resilient, and Responsive

NWS is addressing the challenge by:

- **Decision Support Services**
- **Improving Technology**
- **Evolving our Workforce**

To achieve far-reaching national preparedness for weather events.



Building a Weather Ready Nation



Happenings at the NWS



- **NWS Evolve**
- **Hazard Simplification**
- **New Science & Technology**
- **Workforce Evolution**



NWS Evolve

- Stepping up our Decision Support Service to core partners → You!
- Continue **building and sustaining relationships** with core partners
- Knowing partner **decision points & thresholds** and risk preferences
- Enhance our Science and Technology capabilities

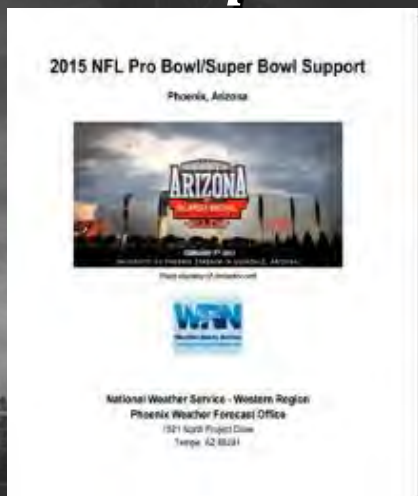
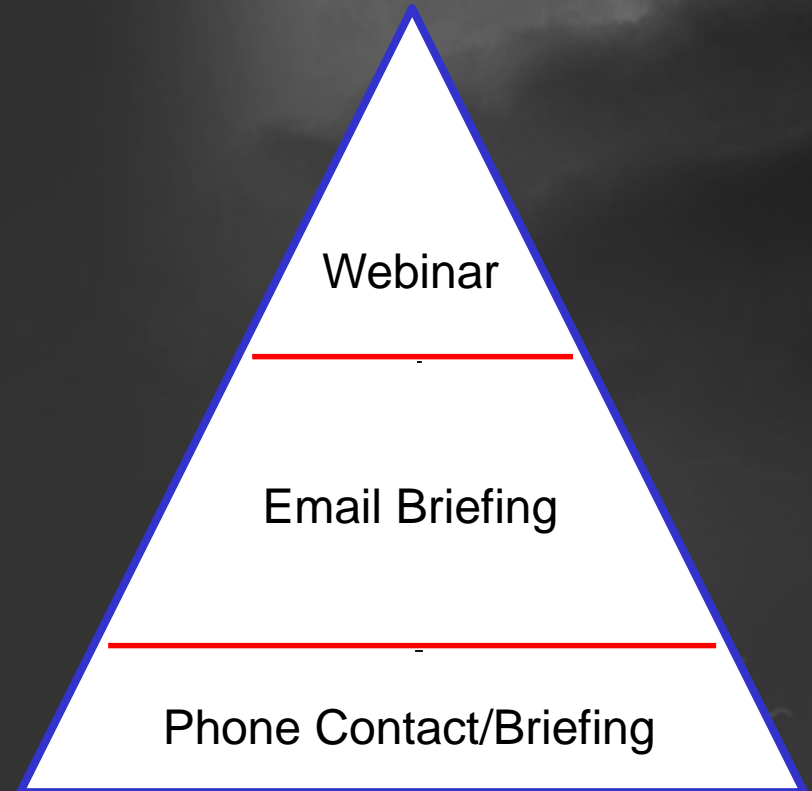


NWS Vision: A society that is prepared for and responds to extreme weather & flood events = **Weather Ready Nation**



Enhance our Decision Support Services

- NWS Briefings to Partners
- Weather Services for Special Events
 - *EOCs*
 - *Special Events*
- Deployed forecasters



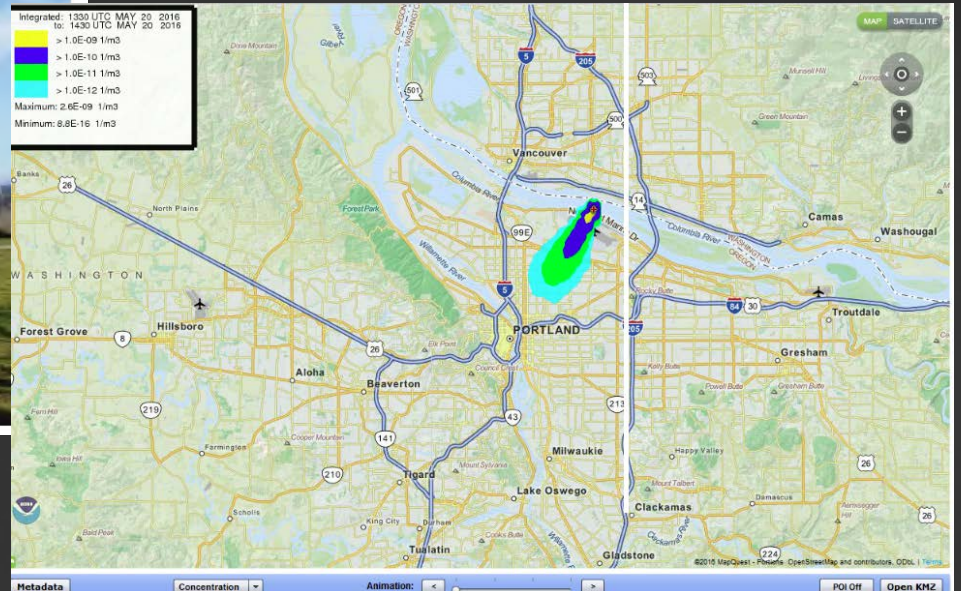
Support to First Responders

- Hazardous Materials

Evacuation Area Expanded After Junk Yard Fire



By Pat Boyle | Mar 12, 2018 @ 9:33 AM





NWS Hazard Simplification

Hazard Simplification

[Weather.gov](#) > NWS Hazard Simplification

NWS Hazard Simplification

National Program

Hazard Simplification

Project History

Options for Repair

Options for Revamp

Reference Materials





Hazard Simplification

- *For decades, NWS has used the Watch, Warning, and Advisory (WWA) system to alert users of hazards*
- *Perception is current WWA system is difficult to communicate*
- *“Advisory” is often misunderstood*
- *“Watch” and “Warning” sometimes confused*
- *Too many products*

AMS Town Hall
National Weather Service
HAZARD SIMPLIFICATION PROJECT
Monday, January 5th, 12:15pm
Boxed lunch provided by the University of Oklahoma

#HazSimp

Weather-Ready Nation
National Oceanic and Atmospheric Administration

CURRENT WWA	NEW HEADER	VERB/COLOR?	IMPACT
Emergency	Warning	Take Action	Widespread/Catastrophic
Warning		Take Action	Life-Threatening
Advisory		Take Action	Potentially Dangerous
Watch	Potential*	Prepare	Higher Risk
Outlook		Be Aware	Lower Risk



WWA Logic - NO

Watch

Watch

Warning

Warning

Advisory

Watch

Advisory

Warning

Advisory



WWA Logic - Yes

Warning

Event imminent, occurring or highly likely
Take Action

Watch

Heads up
Event Probable

Advisory

Exercise Caution



Hazard Simplification

- Reformat – Winter Weather Products
- Bullet format
- Succinct

– **What:**


– **When:**

– **Where:**

HAZARD SIMPLIFICATION THROUGH CONSOLIDATION AND REFORMATTING

CONSOLIDATION By consolidating various message types for winter weather, the NWS will reduce the number of Watch, Warning and Advisory messages.

REFORMATTING NWS is creating a consistent message format that will initially be used for winter and flood products. The “What, Where and When” will be addressed up front, followed by precautionary and preparedness actions.





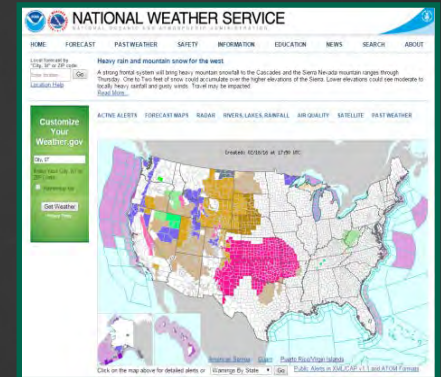
Other items getting looked at

- Red / Yellow / Green system
- Terminology
 - *Be Prepared (Watch)*
 - *Take Action (Warning)*
 - *Be Aware (Advisory)*
- Support for a simpler color scheme on webpages





Enhancing our Dissemination and Communications



Then

Now



Partner Interaction – Enhancing Relationships



- Striving to have you get to know the people in our offices who support you 24x7
- It's about our staff knowing you



- Meeting you
- Learning your concerns. Knowing your impacts, trigger points



Social Science

Better Understanding of Human Behavior

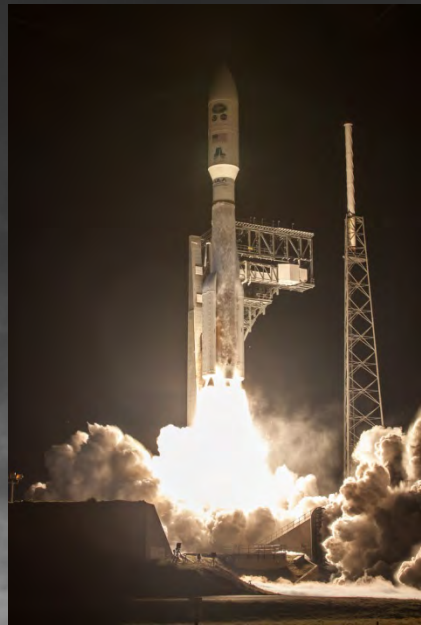
- Improve our messaging to support better societal response

To Prevent





Science & Technology



GOES-R System Architecture



GOES-R launched in Nov 2017 (eastern US)
 GOES-S launched in March 2018 (western US)



GOES – R/S Faster Scanning

- 5 times faster to scan the skies
- 4 times the resolution
- 3 times the channels

Scan 3 areas “simultaneously”

Full Disk every 15 minutes

Previously every 3 hours

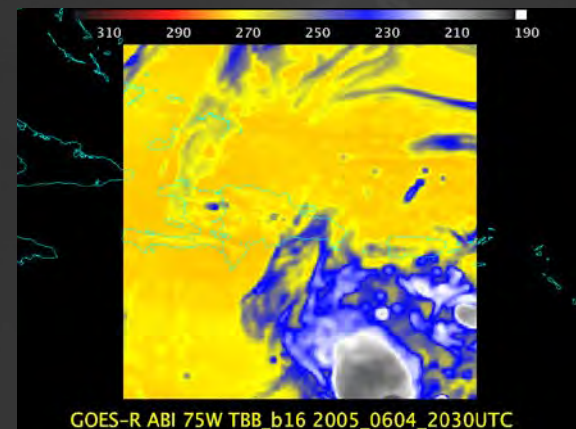
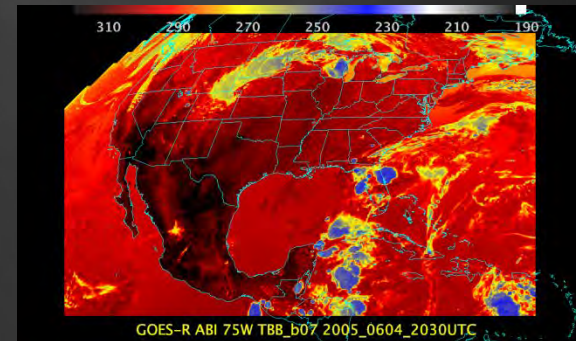
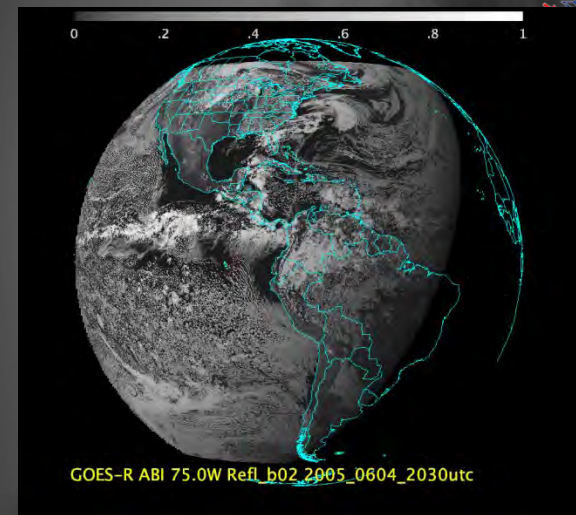
CONUS every 5 minutes

Previously every 15 or 7.5 minutes

Mesoscale (two) every minute

Previously 1 area, every 5 minutes

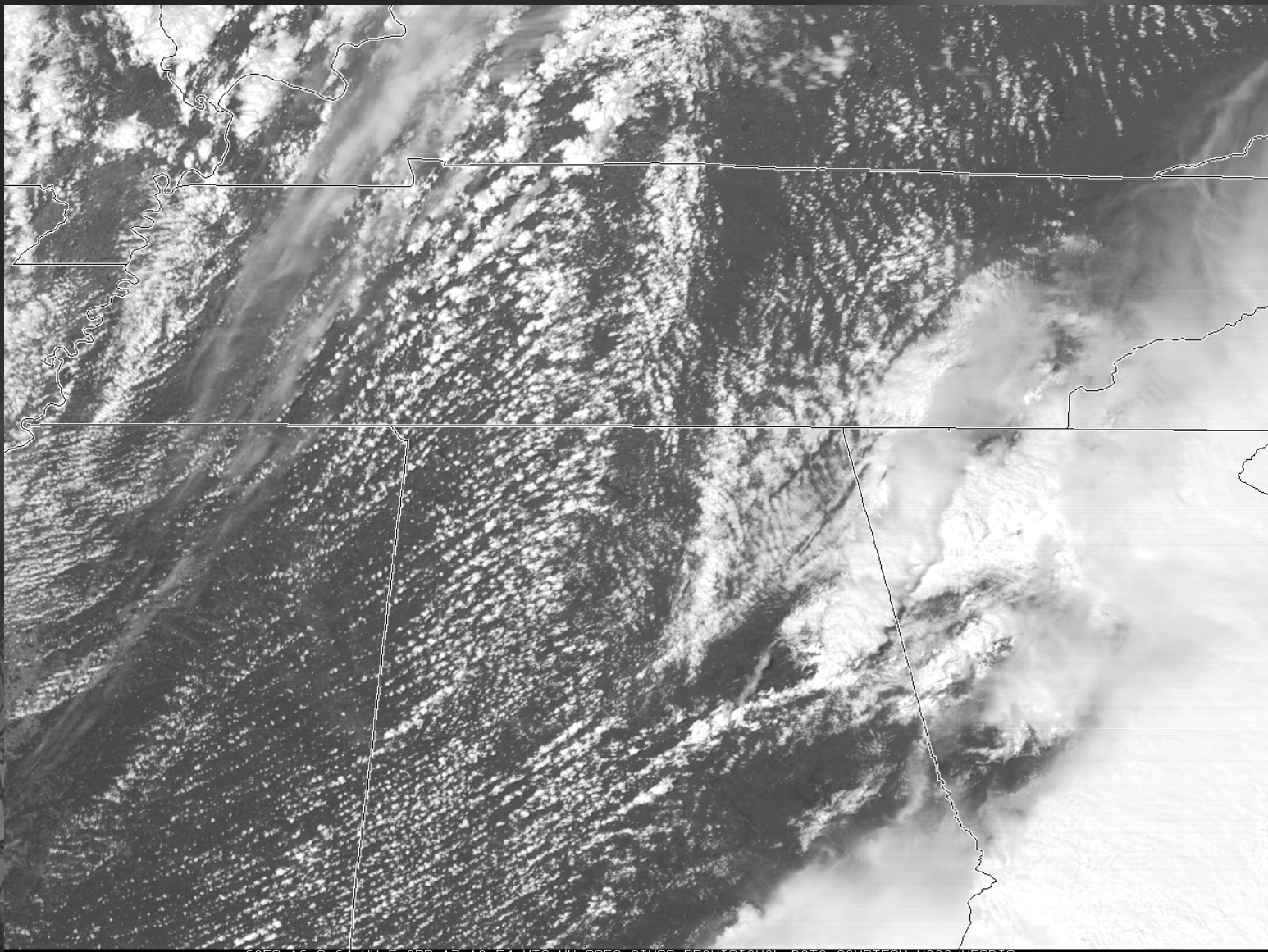
- Need for mesoscale view (“Rapidscan”), like for a hurricane, won’t interrupt normal scanning





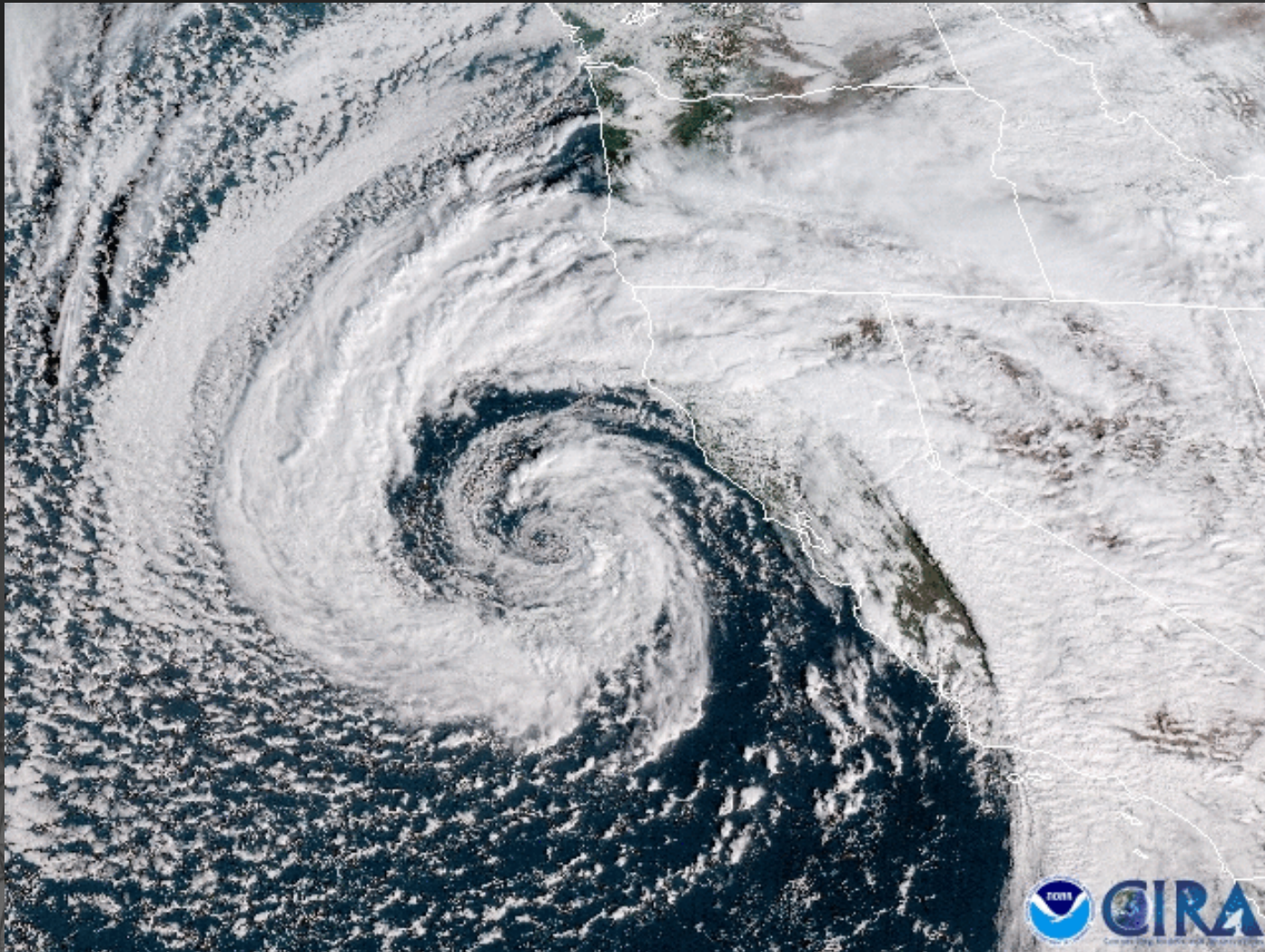
GOES – R/S Faster Scanning

1-min mesoscale imagery





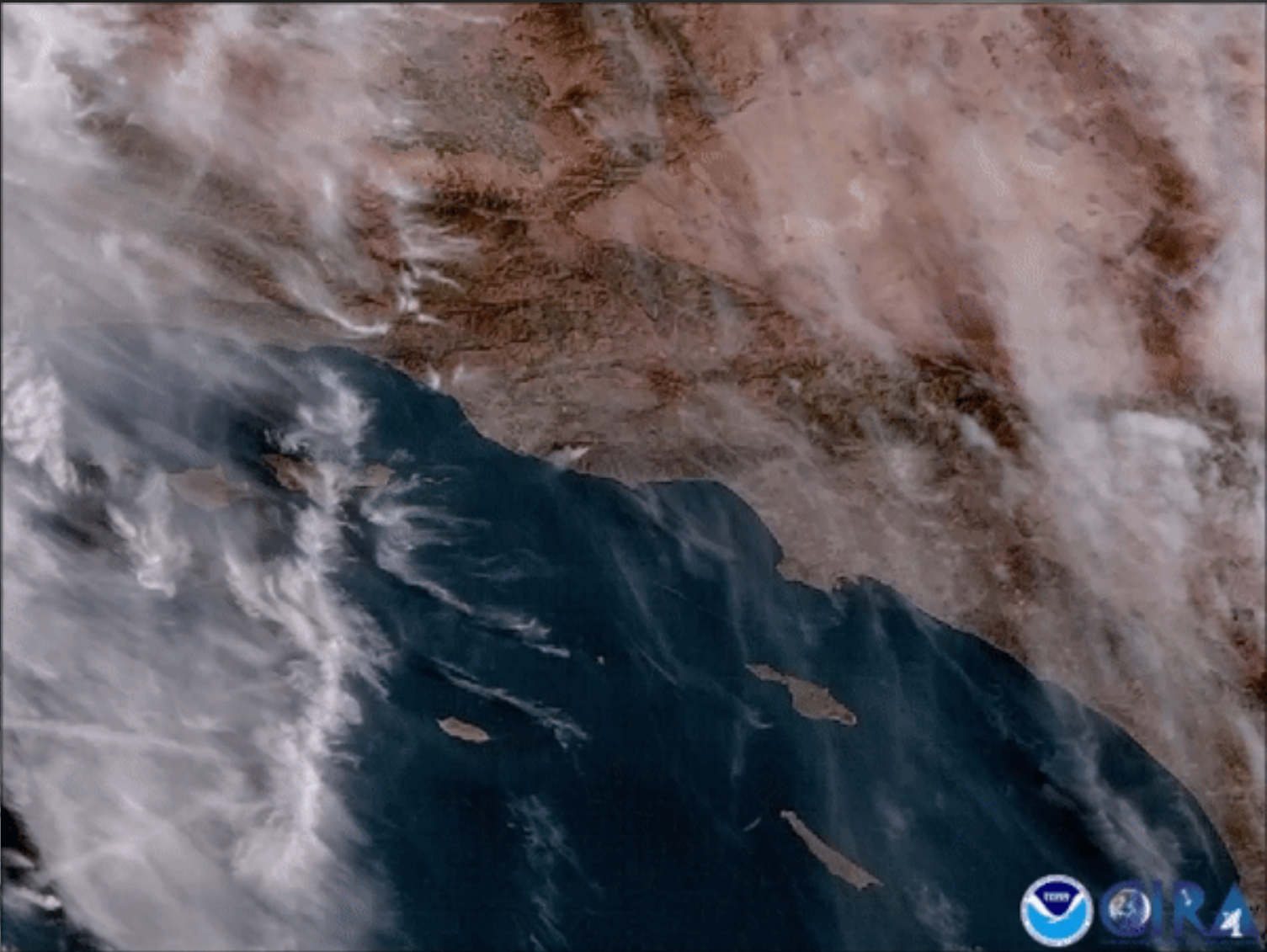
GOES – High Resolution



https://www.nesdis.noaa.gov/sites/default/files/GOES17_2feb19_California_low.gif



Tracking Wildfires



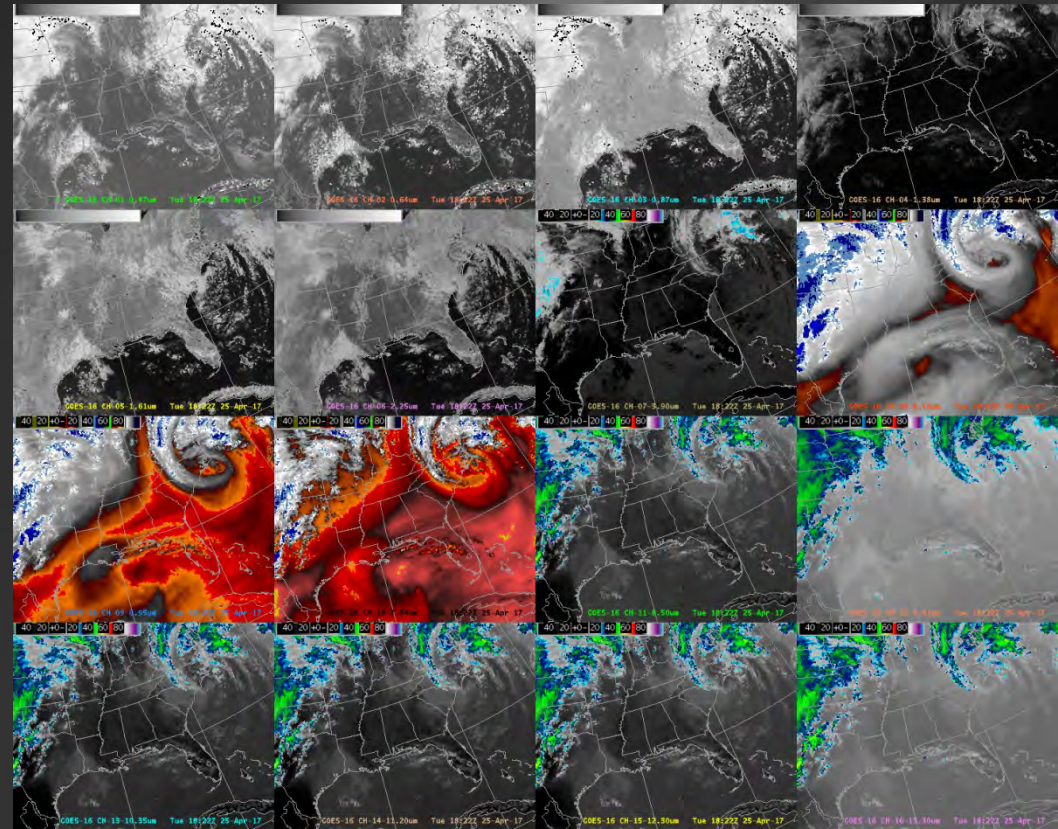
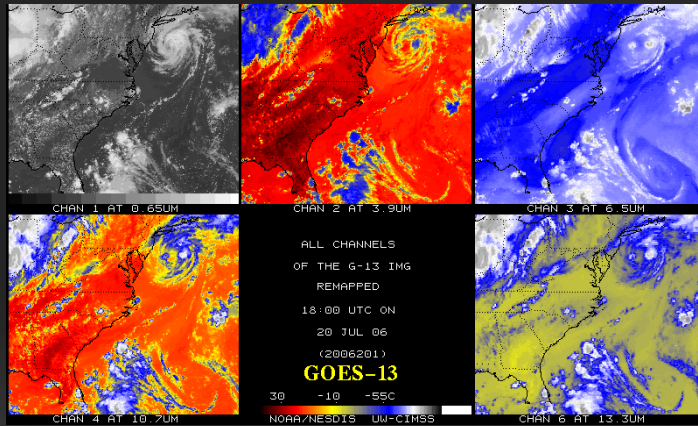


GOES – R/S More Channels/Bands

5 bands

vs

16 bands



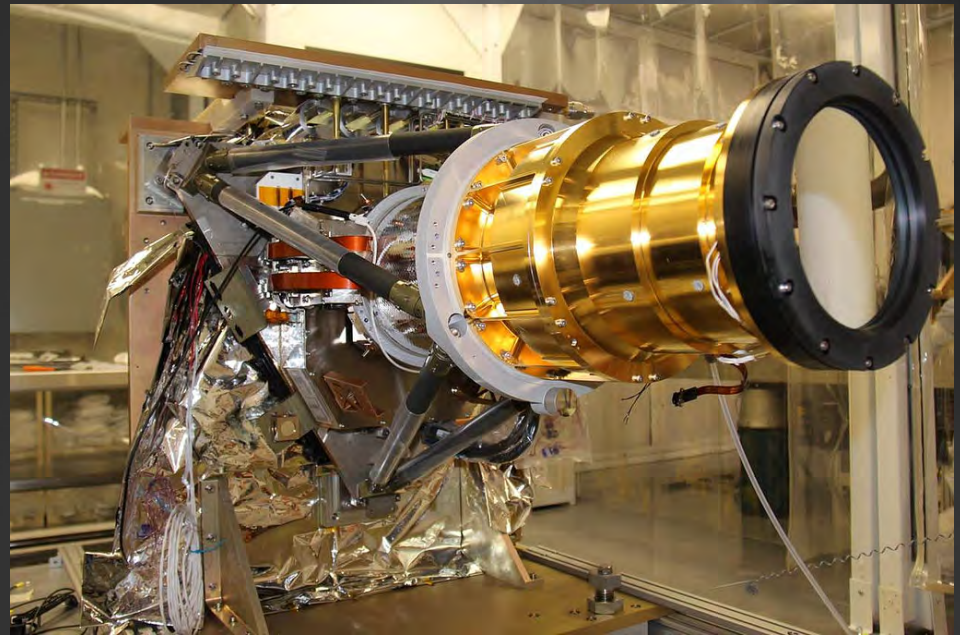


GOES – R/S Lightning Mapper

Geostationary Lightning Mapper (GLM)

Space-based instrument has “constant” accuracy

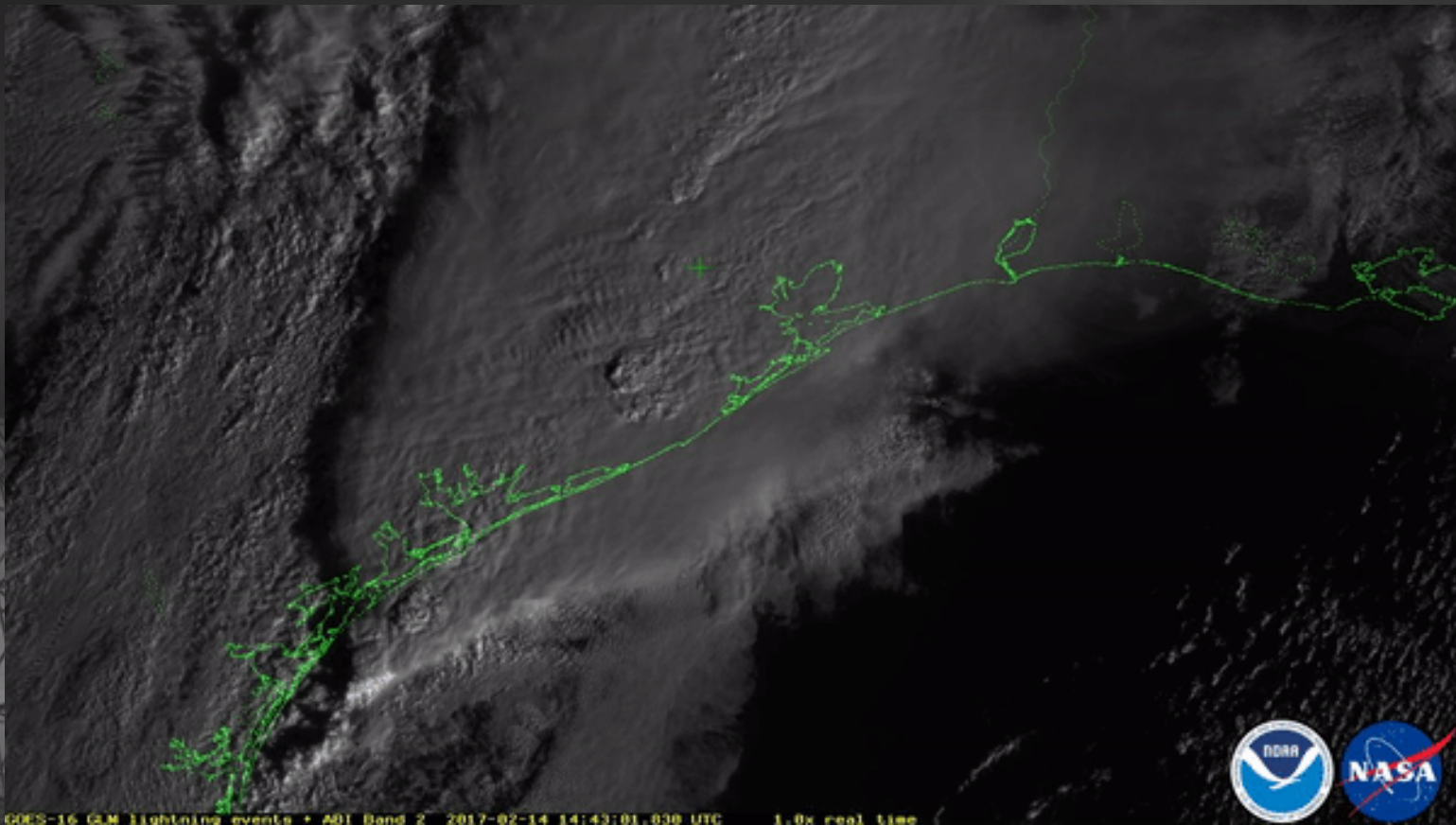
500 frames-per-second
8-km resolution
90% detection day & night





Geostationary Lightning Mapper (GLM)

- Cannot distinguish between Cloud-to-Ground and In-Cloud lightning – Only Total Lightning
- Changes in Total Lightning frequency have been tied to updraft changes and severe weather





Evolving our Workforce for WRN

Workforce Evolution:

New training for staff focused on identifying professional competencies

- ICS
- Team Skills:
 - Communication
 - Collaboration
 - Leadership
- Social Science
- GIS





Thank You!



Weather-Ready Nation
National Oceanic and Atmospheric Administration



Weather Ready Nation Ambassadors

- Please become one!
- <https://www.weather.gov/wrn/ambassadors>
- We need to use it to build partnerships and joint collaborative community engagement

