

National Weather Service Status Update:

- Evolve effort to Build a Weather Ready Nation
- April 18 – An Historic Day for Weather Enterprise
- Infrastructure:
 - Observations
 - Computing
 - Dissemination
 - Next Generation Model


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May 4, 2017 – AMS Washington Forum
Washington D.C.

Mission

- Provide weather, water, and climate data, forecasts and warnings for the protection of life and property and enhancement of the national economy
- Mission applied from “the sun to the sea”
- Model suite supporting NWS mission extends from climate scale to mesoscale; from space weather to oceans

NWS Strategic Outcome: A Weather- and Water-Ready Nation



“Ready, Responsive, Resilient”

Becoming a Weather-Ready Nation is about building community resiliency in the face of increasing vulnerability to extreme weather, water and climate events

*Better forecasts and warnings
Consistent products and services*

*Actionable environmental intelligence
Connecting forecasts to decisions*

Involves the entire US Weather, Water and Climate Enterprise WORKING TOGETHER

We have **5200+** WRN Ambassadors

The Job Doesn't End with Forecasts and Warnings




“First, it should be understood that forecasts possess no intrinsic value. They acquire value through their ability to influence the decisions made by users of the forecasts.”

“What is a Good Forecast? An Essay on the Nature of Goodness in Weather Forecasting”
– by Allan H. Murphy; *Weather and Forecasting* (June 1993)

Realizing the Full Value of Forecasts: Connecting Forecasts to Critical Decisions

* Completing the Forecast, National Academies of Science, 2006

Generating forecasts and warnings

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Connecting those forecasts & warnings with impacts (IDSS)

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Realizing Intrinsic Value and Mission Success

“Impact-based Decision Support Services”

Provide the best hydrological and meteorological forecasting in the world



Develop relationships and know partner needs



Support partner decision making before, during, and after events



Embed when needed



Build trust



Explain uncertainty
Practice, Practice, Practice

Pulling it all together to build a Weather-Ready Nation and to accomplish our mission to save lives and property

Ready, Responsive, Resilient

Saving Lives and Property

5200+ WRN Ambassadors

Multi-faceted Communication Strategy

Deep Relationships Core Partners

NWS Employees Providing Impact-Based Decision Support Services (IDSS)

Accurate & Consistent Forecasts/Warnings

Social Science

Fully-integrated Field Structure through a Collaborative Forecast Process

National Blend of Models: Forecast starting point

One NWS, One Dissemination Network

Observations and Numerical Weather Prediction

↑ Save Lives and Property

↑ Producing Observations, Forecasts and Warnings

Recent Success Stories

Predicting extreme events 6-8 days in advance

- October 2015 South Carolina 20" Rain
- December 2015 Central U.S. Post Christmas Storm
- January 2016 East Coast Blizzard
- March 2016 Flooding
- June 2016 Southwest Heat Wave
- October 2016 Hurricane Matthew
- Winter 2016-17 West Coast Storms and Flooding
- February 2017 New Orleans Tornadoes
- February 2017 Northeast Blizzard
- February 2017 Texas Wildfires



Successful Weather, Water and Seasonal IDSS provided to local, state, federal, and Tribal partners before, during and after events

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2017 East New Orleans Tornado



Date:	February 7, 2017
Strength:	EF-3
Track Width:	1/3 mile
Tornado Track Length:	10 miles
Warning lead time:	~33 minutes
Injuries:	33
Fatalities:	0

- NWS local outreach and preparedness activities over a 4-year period
- Deep relationships with Emergency Managers/WRN Ambassadors
- Dissemination of forecasts and warnings
- Public awareness
 - Daytime event, visual confirmation, schools sheltered
- Collaborative forecast preparations within NWS and the larger enterprise a success
 - Over 100 meetings and table-top exercises held in the city in the years preceding event
- IDSS provided days in advance of the tornado

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Post Christmas Storm (Dec. 25-28, 2015): The Spectrum of IDSS

Preparedness

- Federal and State Actions**
- Maintained situational awareness through NWS and liaison briefings (as early as Dec 22)
 - Alerted response teams and assets for possible activation or deployment (over holiday weekend)
 - Increased level of coordination across federal, state and local jurisdictions



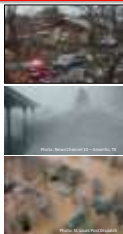
Immediate Response

Tornadoes
WFO Fort Worth created preliminary tornado tracks in collaboration with SR-ROC and liaisons; FEMA analyzed impacts to support activation and deployment decisions

Blizzard
State and local municipalities mobilized to address road conditions and open shelters

Flooding
• Emergency Response Specialist (ERS) deployed to FEMA VII Regional Response Coordination Center
• NOAA Liaison to FEMA and ERS highlighted greatest flood risk to support staging operations

States of Emergency Declared
Dec 27: TX, NM, MO; Dec 28: OK; Dec 29: IL; Dec 30: MS/LA



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Fire Weather in Texas February 23-24, 2017



- Advance warning services allowed Texas to pre-position critical resources
- GOES-16 detection of fires and rapid response is credited for saving 300 homes

"I am (thrilled) with the level of preparedness that we had yesterday. Undoubtedly, we were situationally aware. That fact contributed mightily to successes and opportunities of yesterday."
- Drew Daily, Oklahoma Forestry Services.

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A Measure of Success

"Partnership with the NWS has revolutionized the EM community from one that reacts to events to one that proactively prepares and stays ahead of extreme events."

Eric Waage*
Director of Emergency Management, Hennepin County Minnesota

*Northern Plains Winter Weather Workshop, Nov 2016

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April 18, 2017

- President signs the Weather Research and Forecasting Innovation Act of 2017
- National Academy of Science: First meeting on decadal survey for Weather Enterprise
- Next Generation Global Prediction System (NGGPS) community meeting

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Weather Research and Forecasting Innovation Act of 2017

- Profound law for the Weather Enterprise
 - Read it
 - Re-read it

- Section 101. Public Safety Priority

“In conducting research, the Under Secretary shall prioritize improving weather data, modeling, computing, forecasting, and warnings for the protection of life and property and for the enhancement of the national economy.”

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Components of the Weather Act

- Observations (from the ground up) - exploring new commercial opportunities, satellites (GPRO;GEO), OSSE's OSE...
- Research: Hurricane Forecast Improvements Program; Tornado Warning Improvement Program; Cloud Micro Physics
- US Weather Research Program reauthorized
- Focus areas:
 - Seasonal to subseasonal (entire section)
 - High impact weather...includes Artic
 - Tsunami (entire section)
- Models - computers - data assimilation
- Research to Operations
 - Testbeds - OAR/NWS formalized relationship
 - Outreach to other agencies (NSF; NASA)
 - Oversight (SAB; EISWG)
- Role of the private sector - recognized in law for the first time!
- Recognizes all aspects of IDSS from “Practice, Practice, Practice” to operational applications (WCM position authorized)

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Next Generation Global Prediction System (NGGPS)

- NWS agreed with the panel recommendation to build the NGGPS off the GFDL FV3 dynamic core
- Activities
 - Transition efforts from current GFS to FV3 based GFS underway. Working toward FY19 implementation
 - Boulder DTC – outreach to community is underway
 - Implications for the Global Ensemble Forecast System (GEFS) and scheduled replacement underway
 - Implications for data assimilation through the Joint Effort for Data assimilation Integration (JEDI) underway
- 100+ members of weather enterprise attended a 3 day workshop

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NWS Infrastructure Examples of Projects and Activities Supported in Omnibus Budget

- Observations – supported in Omnibus Budget:
 - Mesonets
 - NEXRAD Service Life Extension Program (SLEP)
 - ASOS Service Life Extension Program (SLEP)
- Dissemination – “One NWS Network”
 - Almost complete (weather.gov, NWSChat, SPOT still not transferred)
- Computing: Working toward final upgrade within current IBM contract to 4.2 PF by Q2 FY18

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Thank You to Our Partner Agencies

- **NASA**
 - Joint Center for Satellite Assimilation (AIRS, IDST, SNPP, JPSS)
 - Support for satellite programs (GOES-16, JPSS)
 - Space weather, models (NSF tool)
- **US Department of Energy**
 - Development agency on exoscale computing
- **National Science Foundation**
 - Development agency on exoscale computing
 - Visiting Scientists – student program
 - Social science development
 - UCAR/NCAR – Development Test Center; new WRFHydro; COMET...
- **US Navy**
 - NWS has adopted Navy ocean models for operations - saving years
 - Arctic! National Ice Center

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Backup Slides

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