



Science Advisory Board

# Update on Priorities for Weather Research (PWR)

11 June 2021

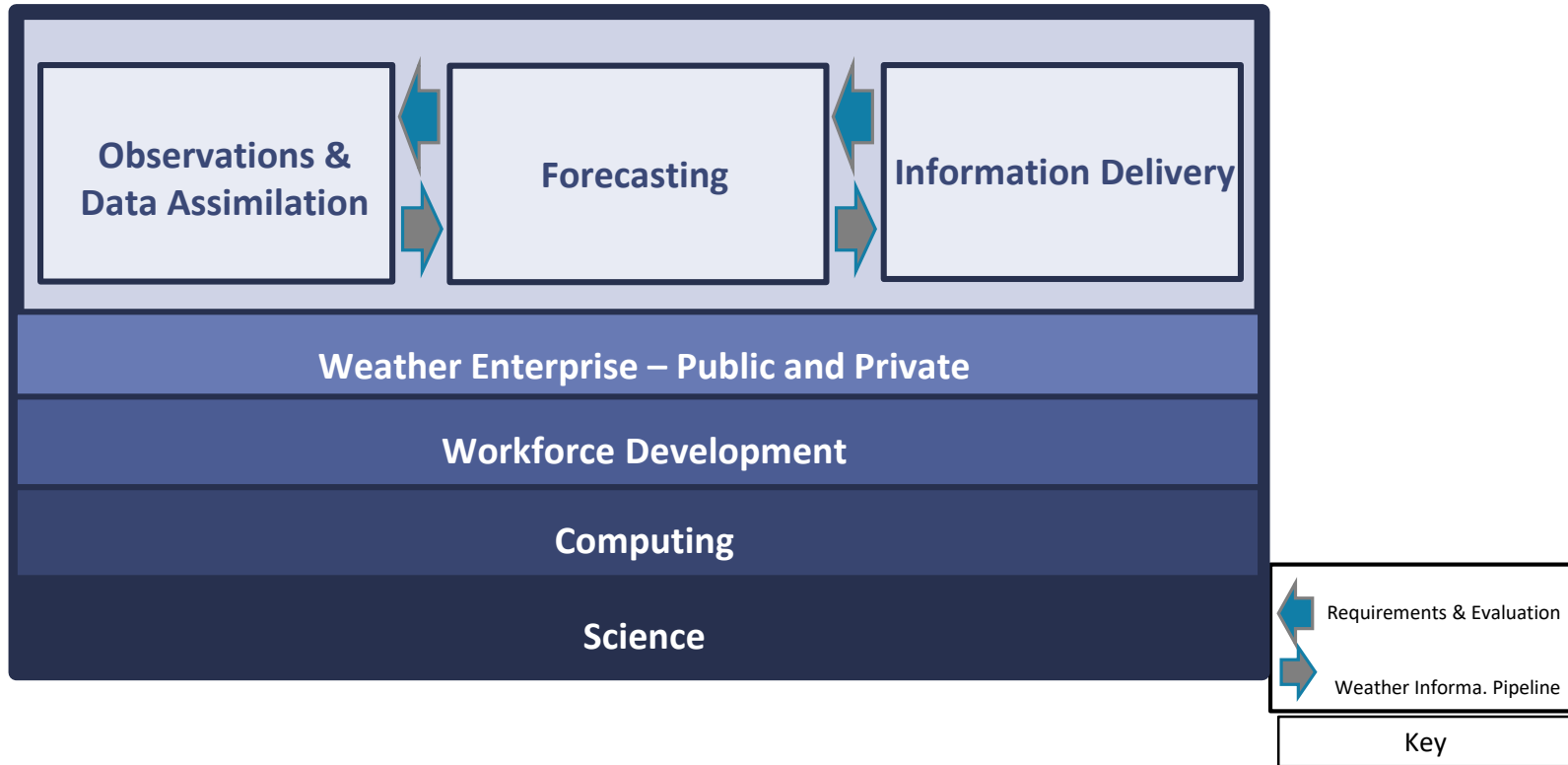
Brad Colman and Scott Glenn, PWR Co-Leads

# FY21 Omnibus (Dec 2020) Appropriations Act Language

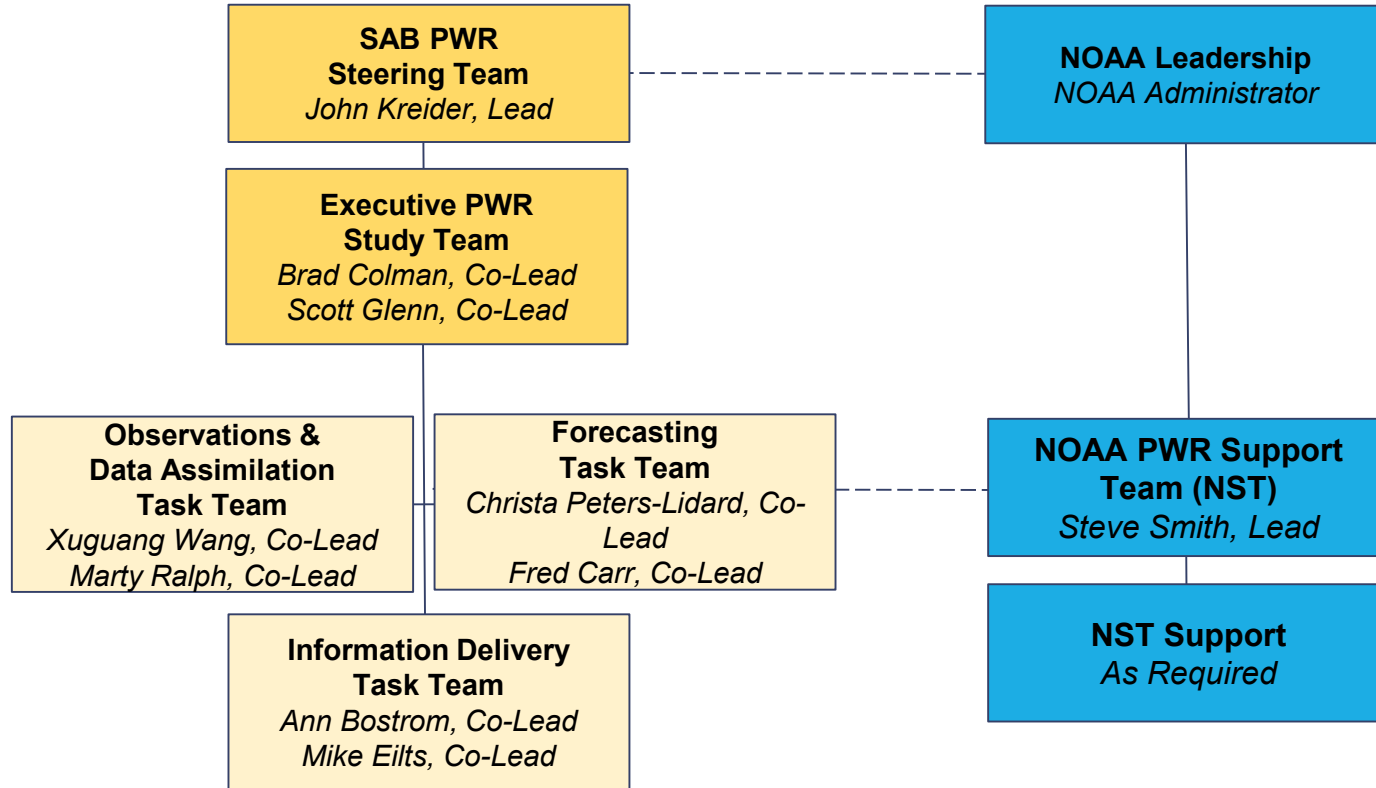
*Report on Weather Research Priorities - In lieu of House language on a Weather Decadal, the agreement directs [NOAA's Science Advisory Board](#) to publish a report, not later than one year after enactment of this Act, that provides [policymakers](#) with the relevant information necessary to prioritize investments in weather forecasting, modeling, data assimilation, and supercomputing over the next ten years; and that evaluates future potential Federal investments in science, satellites, radars, and other observation technologies, to include surface and boundary layer observations so that [all domestic users](#) of weather information can receive data in the most efficient and effective manner possible.*

# Priorities for Weather Research (PWR) Investments

## Strategic Framework: 3 Pillars & 4 Foundational Elements



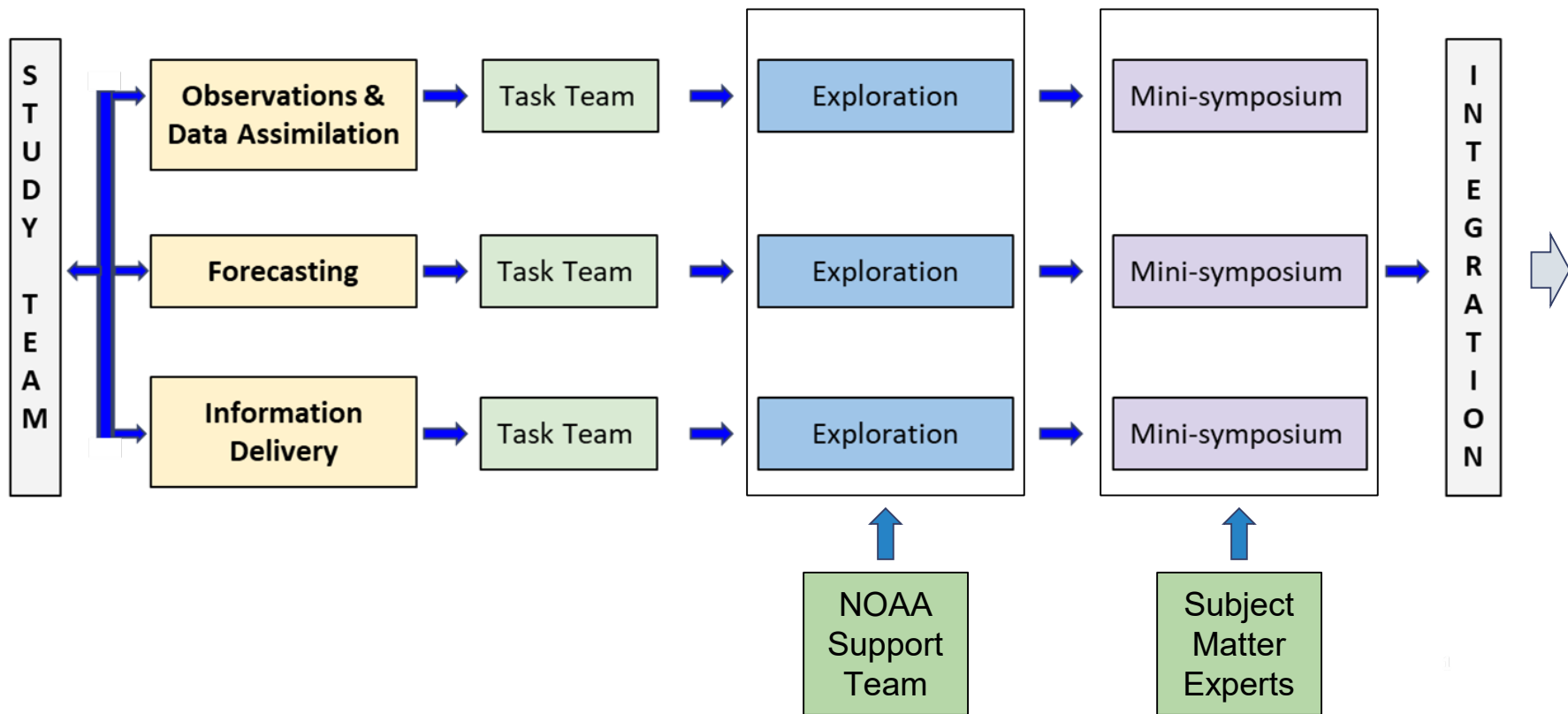
# PWR Study Team Organization



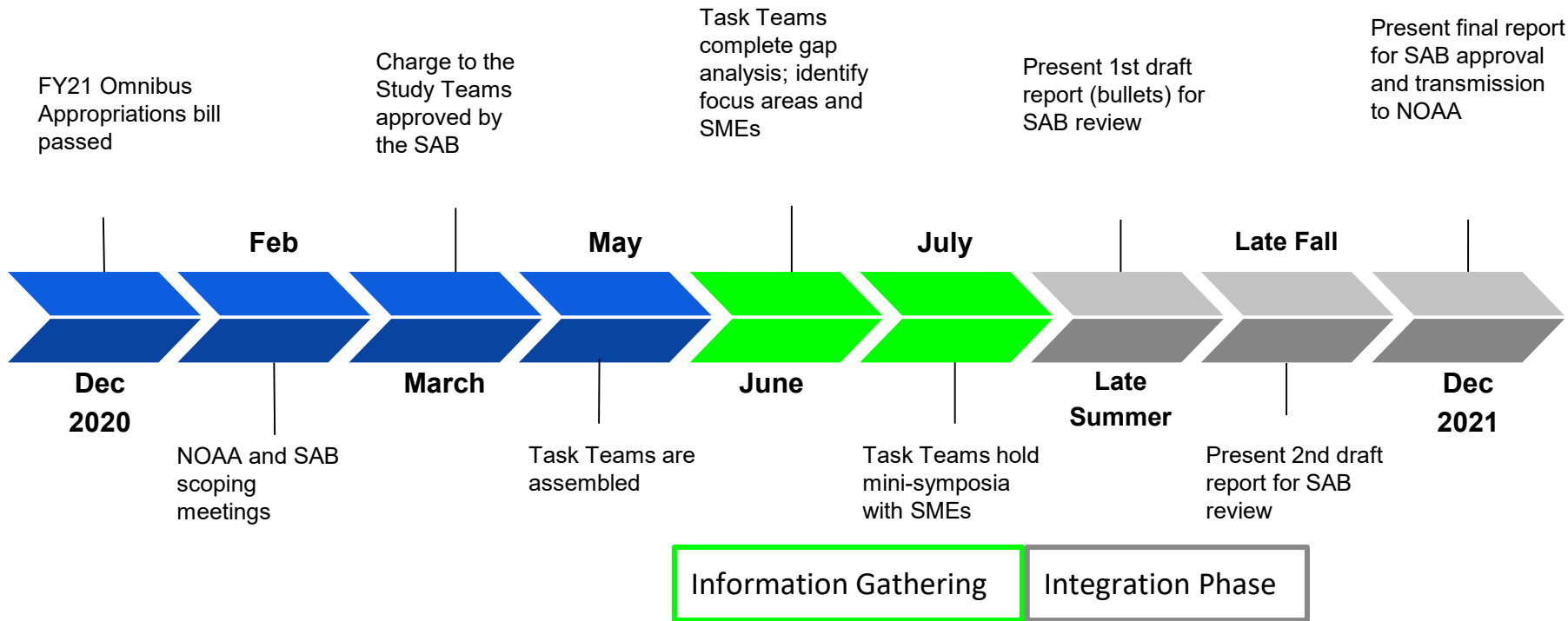
# PWR Team Members (>50 total; TT members on backup slide)

| SAB Steering Team  | Executive Study Team  | NOAA Support Team  | SAB Office Support  |
|--|---|--|---|
| <p>John Kreider<br/>Everette Joseph<br/>Eugenia Kalnay</p> | <p>Brad Colman<br/>Scott Glenn<br/>Bill Gail<br/>Bill Hooke<br/>Marshall Shepherd<br/>Bob Winokur</p> <p><u>Co-Leads of Task Teams:</u><br/>Xuguang Wang<br/>Marty Ralph<br/>Christa Peters-Lidard<br/>Fred Carr<br/>Ann Bostrom<br/>Mike Eilts</p> | <p>Steve Smith (NWS), Lead<br/>John Cortinas (OAR)<br/>Jenn Mahoney (OAR)<br/>Dave Helms (NESDIS)<br/>Carl Gouldman (NOS)<br/>Nate Mantua (NMFS)<br/>Wendy Lewis (OMAO)<br/>Plus support personnel</p> | <p>Cynthia Decker<br/>Courtney Edwards*<br/>Tiffany Atkinson<br/>Bonnie Morehouse**</p> <p>*Program Manager<br/>**Integration Phase</p> |

# PWR Study Team Parallel Information Gathering Pipeline



# PWR Timeline



# Mini-Symposia Objectives

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- Build on the NOAA foundational data from the NOAA Support Team by targeting gaps and updates
- Primary source of information from an Enterprise perspective
- Provide a community forum to discuss innovative ideas, perspectives, & priority
- Subject Matter Expert (SME) material, along with mini-symposia summaries, will provide critical content for the overall report
- Topics covered should be limited to those deemed most relevant by the Task Teams and should NOT be comprehensive of all possible topics within that pillar
- Overall length - ½ to 1 day



# Schedule & Milestones

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- Mini-Symposia Dates:
  - June 29 (Wednesday) - Information Delivery
  - July 7 (Wednesday) - Forecasting
  - July 8 & 9 (Thursday & Friday) - Observations and Data Assimilation
- July 20 & 22 - SAB Meeting PWR update
- July 25 - Full PWR Study Team Plenary with SAB Steering Team
- August - Foundational Cross-cut Plenary & Recommendations

# Report Outline

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- Omnibus Act language - the request from Congress (*1 page*)
- Executive Summary (*2 pages*)
- Introductory Sections (*3 pages*)
  - Context, Scope, Strategic Framework (3 Pillars + 4 Cross-cuts)
- External Context and Overarching Themes (*5 pages*)
- Pillar 1: Observations and Data Assimilation (*7 pages*)
- Pillar 2: Forecasting (*7 pages*)
- Pillar 3: Information Delivery (*7 pages*)
- Foundational Element Cross-cuts (*5 pages*)
  - Science, Computing, Workforce, Weather Enterprise
- Concluding Remarks (*1 page*)
- Appendices
  - Approach, NOAA Document Repository, ...

**Total:**  
**~40 Pages +**  
**Appendices**

Backup slides follow

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# Task Team: Observations and Data Assimilation

| Name                      | Affiliation               | Expertise  |
|---------------------------|---------------------------|--|
| Xuguang Wang (co-lead)    | University of Oklahoma    | DA and numerical weather prediction from convective to global scales, assimilation of radar, ground based remote sensing profilers, aircraft borne observation, in-situ and satellite radiances, R2O2R |
| Marty Ralph (co-lead)     | Scripps                   | meteorology/hydrometeorology, airborne, ground-based, remote sensing systems and integrated networks, R2O2R  |
| Ron Birk                  | Aerospace Corp            | Remote sensing system, observation system simulation experiments, satellite observations   |
| Thomas Auligne            | JCSDA                     | Satellite data assimilation, global and regional numerical weather prediction  |
| Dave Stensrud             | Penn State University     | Mesoscale Meteorology, Meso/convective scale data assimilation and numerical weather prediction, synoptic meteorology  |
| Xubin Zeng                | University of Arizona     | satellite and in situ observations, model parameterizations, hydrometeorology, R2O2R   |
| Vanda Grubisic            | NCAR                      | mountain and dynamic meteorology, diverse range of sensor types from ground-based and airborne, to in-situ and remote  |
| Bruce Cornuelle           | Scripps                   | oceanography, ocean observations and S2S prediction  |
| V. Chandrasekar (Chandra) | Colorado State University | radar meteorologist, weather radar, including polarimetric   |
| Aneesh Subramanian        | University of Colorado    | weather and climate predictability, air-sea interaction, data assimilation in geophysical models   |

# Task Team: Forecasting

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| <b>Name</b>                     | <b>Affiliation</b>           | <b>Expertise</b>  |
|---------------------------------|------------------------------|---|
| Christa Peters-Lidard (co-lead) | NASA                         | Land Surface, Hydrology, Land Data Assimilation   |
| Fred Carr (co-lead)             | University of Oklahoma       | NWP, Mesoscale Met., Warn on Forecast, evaluation of new observing systems  |
| Jim Kinter                      | George Mason University      | climate variability and predictability on sub-seasonal and longer time scales   |
| Elizabeth Page                  | COMET                        | Forecasting, professional development, cloud physics and microclimate effects of wildfire burn scars                      |
| Peter Neilly                    | The Weather Company          | mesoscale weather forecasting, terrain-induced turbulence, and applications of machine-learning for optimized forecasting |
| Sonia Kreidenweis               | Colorado State University    | Atmospheric chemistry, particulate matter   |
| Rick Leuttich                   | University of North Carolina | Storm surge   |
| Louisa Nance                    | NCAR                         | mesoscale modeling and verification; community improvement of operational models  |
| Shuyi Chen                      | University of Washington     | tropical meteorology, hurricanes, air-sea interaction, coupled modeling   |

# Task Team: Information Delivery

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| Name                  | Affiliation                                     | Expertise  |
|-----------------------|---|--|
| Ann Bostrom (co-lead) | University of Washington                        | Risk perception, risk and science communication, decision making under uncertainty, environmental policy   |
| Mike Eilts (co-lead)  | Weather and Nature (ret. Weather Decision Tech) | Weather analytics and their application to business solutions, weather safety and communication  |
| Julie Demuth          | NCAR  | Risk communication, risk perceptions, responses to hazardous weather events  |
| Lans Rothfus          | NSSL (ret.)                                     | Operational meteorology, co-founder of StormReady program, helped spearhead the FACETS program   |
| Chris Davis           | NCAR  | Mesoscale and synoptic-scale phenomena, numerical simulation and observational analysis, chair of the World Weather Research Programme Science Steering Committee within WMO |
| May Yuan              | University of Texas at Dallas                   | Geospatial Information Sciences, both fundamental and applied, e.g., to wildfire risks, tornado hazards, air pollution   |
| Mike Cetinich         | Boeing/Jeppesen (ret.)                          | Meteorology and aviation, private sector perspective   |
| Ron Birk              | Aerospace Corporation                           | Development and management of remote sensing systems and related space-based Earth science and technology R&D for practical applications to benefit society                  |
| Nick Nauslar          | BLM   | Fire, NICC, NIFC   |
| Jason Hickey          | Google  | Machine learning, weather and climate  |

# NOAA Support Team - Document Repository

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|--------------------------|-----------|
| Overview - Read Me First | 9         |
| Obs & DA                 | 22        |
| Forecasting              | 10        |
| Information Delivery     | 11        |
| Weather Enterprise       | 2         |
| Workforce                | 4         |
| Computing                | 8         |
| Science                  | 5         |
| <b>Total</b>             | <b>71</b> |

- Total of 71 documents so far
- More are being added as requested by TTs
- NWS Strategic Plan Brief - June 1
- NOAA R&D Vision Areas Brief - June 3
- OAR Strategic Plan Brief - TBD
- Water Brief - July 1
- NWS Office of Water Prediction Strategic Plan added to repository