



May 14, 2019



OFFICE OF WEATHER AND AIR QUALITY

National Oceanic and Atmospheric Administration



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Supporting world-class research to advance timely and accurate weather information



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Goal 1. Improve **effective communication of weather information** to strengthen decision-making and forecasting ability.

Goal 2. Advance **models and forecast tools** to produce the best weather forecasts and warnings to build a Weather-Ready Nation

Goal 3. Effectively and efficiently manage the advancement and **transition of weather research.**

Goal 4. Develop and **support a diverse and inclusive work environment** that promotes equal access to the opportunities

OWAQ offers.



OWAQ Strategic Plan: <https://owaq.noaa.gov/Strategic-Plan>
OWAQ Accomplishments Report: <https://owaq.noaa.gov/About/Scientific-Accomplishments>



OWAQ Vision and Mission



Vision: A weather-ready nation informed by world-class weather research.

Mission: Finding, funding, and fostering **collaborative weather and air quality research to discover, develop, and transition products, tools, and services** for timely and accurate weather and air quality forecasts.





Operating Principles



Integrity

Act with honesty in all situations



Trust

Build trust in all office and stakeholder relationships



Accountability

Accept responsibility for all decisions



Transparency

Maintain open and truthful communications



Viability

Create long-term value for all relevant stakeholders



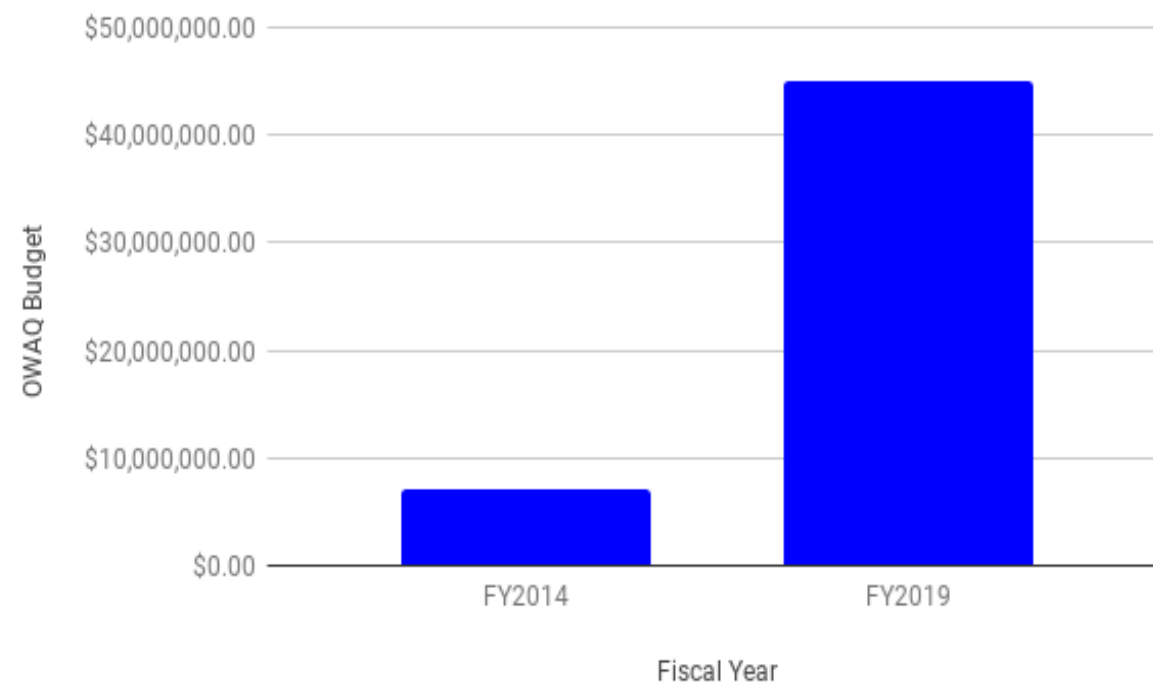
OWAQ Budget History



- OWAQ has seen significant budget improvements over the last 5 years as a result of shifting priorities, extreme weather events, and improved collaboration with the community.
- New programs such as Weather Act, NGGPS, FACETs, JTTI, S2S, and Hurricane Supplemental have allowed OWAQ to be a leader in steering R&D priorities



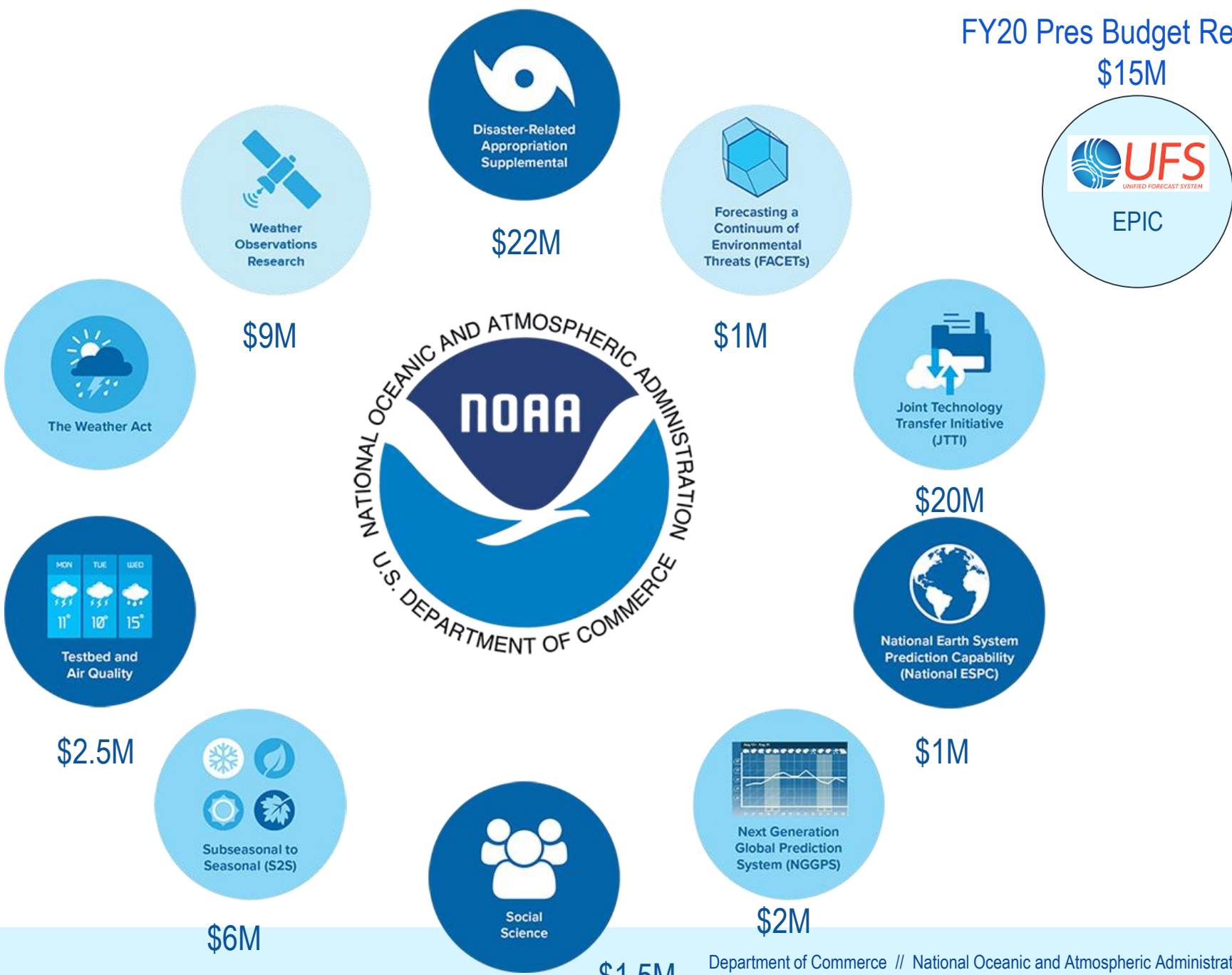
OWAQ Budget vs. Fiscal Year





OWAQ PROGRAMS

FY20 Pres Budget Request
\$15M



Source: Office of Weather and Air Quality. 2018. Retrieved from <https://owaq.noaa.gov/>.



\$16,200,000

8 GRANT COMPETITIONS
Approximate Total Grant Funding (Closes)

High Impact Weather Testbeds, \$2.1M (02/12/2019)

Joint Technology Transfer Initiative, \$2.0M (02/15/2019)

Air Quality Research and Forecasting, \$0.7M (12/19/2018)

Verification of the Origins of Rotation in Tornadoes
Experiment - Southeast U.S., \$3.0M (02/22/2019)

Infrasound Detection of Tornadoes and High Impact Weather,
\$2.0M (03/20/2019)

Next Generation of Mesoscale Weather Observing Platforms,
\$2.9M (03/06/2019)

Snowpack and Soil Moisture Observations and Data
Assimilation to Improve the National Water Model,
\$2.0M (02/15/2019)

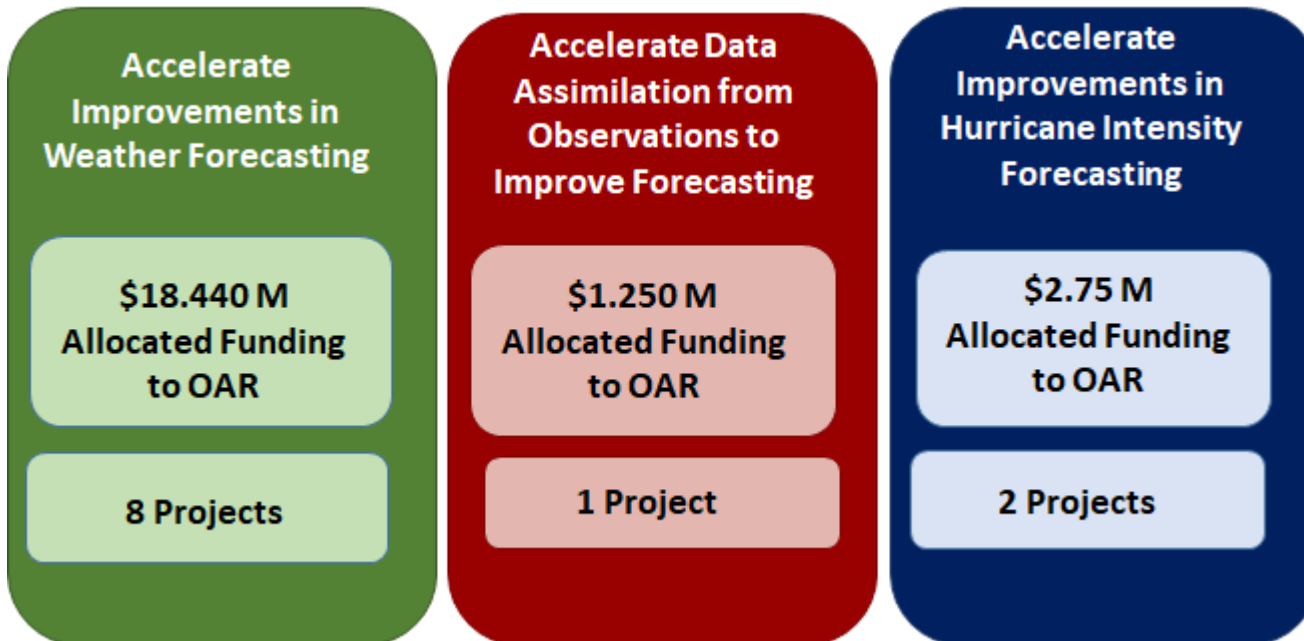
Subseasonal to Seasonal, \$1.5M (02/13/2019)

44 AWARDS

FUNDING RANGE



OAR was allocated \$22.44M of \$50M to improve forecasting and assimilation of hurricanes and extreme weather.

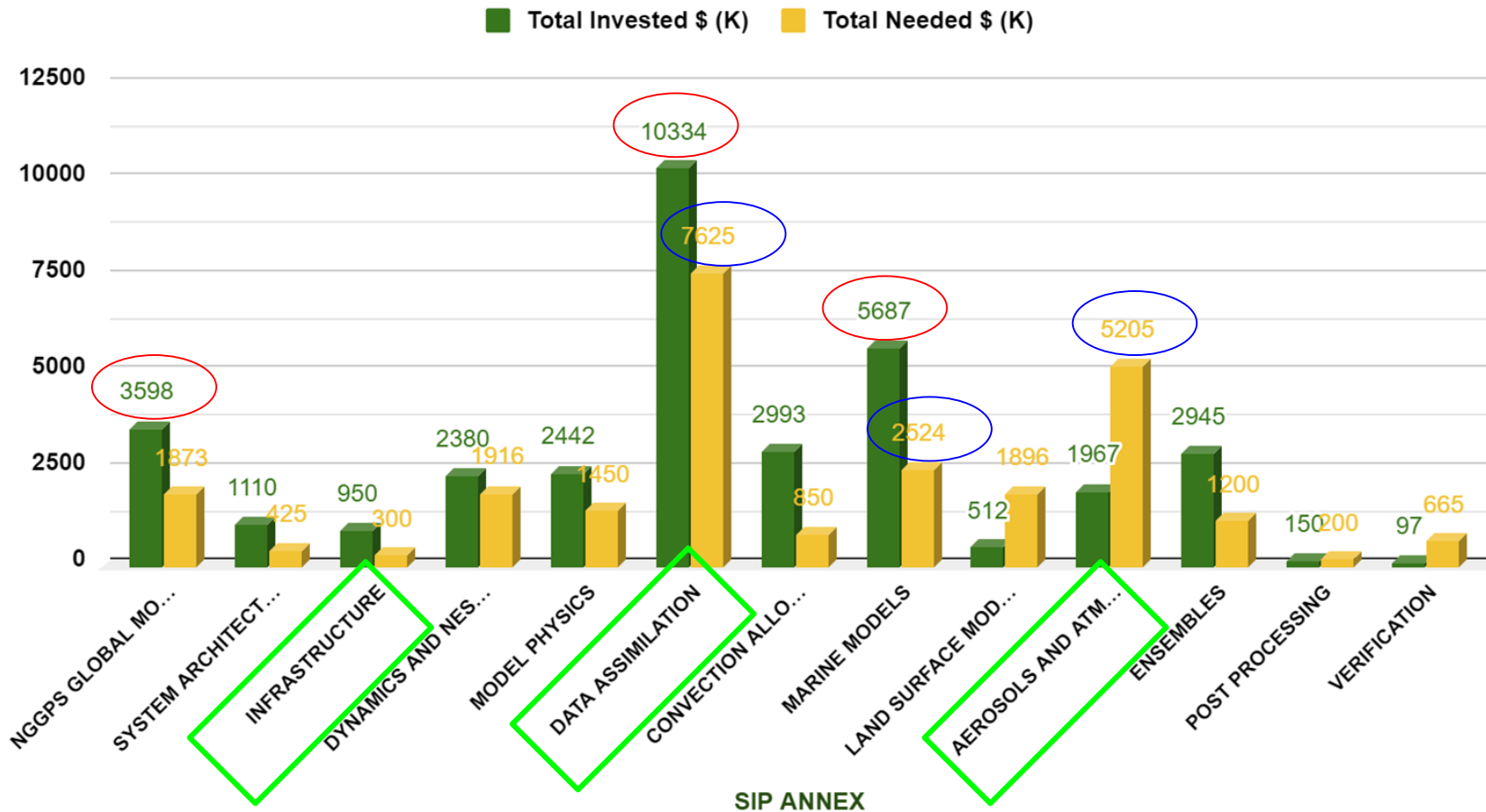


- Accelerate the improvements in model physics (CCPP) and infrastructure (HTF) to develop and improve NOAA’s unified forecasting system (UFS).
- Improve the advancements in communication of weather forecasts and warning particularly around hurricanes and severe storms to empower to decision makers.
- Utilize sustained ocean, airborne, and land-based observations to enhance Joint Effort for Data assimilation Integration (JEDI)
- CAMs (SAR FV3), MET+, CMEPS, Seasonal Hurricane Forecast

- The OAR Weather Portfolio assessed the **progress being made by the OAR Labs** towards each of the SIP project requirements
- A **gap analysis** was performed to determine investments vs needs, as well as the current level of activity and the labs priority ranking (**low**, **medium**, **high**) in the execution of each of the SIP Annexes
- This analysis will **evolve for FY20**, as it will be performed annually
- Labs (10) involved in analysis: ARL, AOML, CSD, GSD, GMD, GFDL, GLERL, PMEL, & NSSL

NGGPS GLOBAL MODEL SUITES PLANNED FOR NCEP/EMC OPERATIONS
SYSTEM ARCHITECTURE
INFRASTRUCTURE
DYNAMICS AND NESTING
MODEL PHYSICS
DATA ASSIMILATION
CONVECTION ALLOWING MODELS (CAM)
MARINE MODELS
LAND SURFACE MODELS (LSM) AND HYDROLOGY
AEROSOLS AND ATMOSPHERIC COMPOSITION
ENSEMBLES
POST PROCESSING
VERIFICATION

Resources Invested/Total \$ (K) and Resources Needed/Total \$ (K)



OAR's Weather Portfolio did an initial assessment of our investment of resources to implement the SIP:

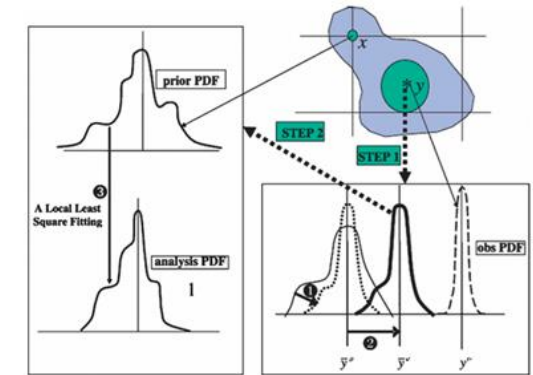
- Total invested across all annexes: \$35.1M
- Total gap across all annexes: \$26.1M
- Total Federal (FTE) invested: 27.6
- Total Federal (FTE) gap: 60.1
- Total Non-Fed invested: 60.2
- Total Non-Fed gap: 92.0

Top Activity Sections for OAR

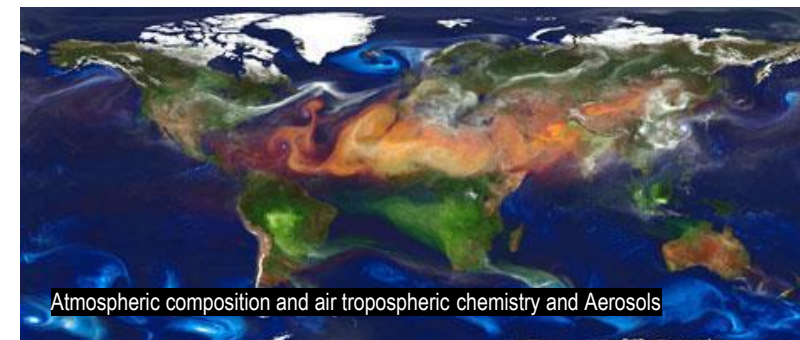
- Infrastructure (\$950K invested)
- Data Assimilation/Observations (\$10.3M)
- Aerosols and Atmospheric Composition (\$1.9M)

Areas of investment opportunity for FY19-FY20:

- Infrastructure and Systems Architecture
- Coupled modeling (S2S)
- Physics
- Post-processing
- Verification
- Ecosystem Modeling and Eco-Forecasting
- JEDI
- Ensemble CAM's
- Land DA and Modeling



Cartoon of the two-step data assimilation procedure.



- Alignment between OWAQ and OSTI continues to be an important partnership and we plan on building deeper relationships across the board with OAR labs and EMC
- OWAQ is making a significant investment into the UFS infrastructure (i.e. software engineers and program management) and should be considered partners in the development of the UFS
- Update charter for OWAQ's PM to be added as ex-officio member of the UFS Technical Oversight Board (TOB)
- Need more information on our strategy related to workflow, coupling, and S2S
- Holistic NOAA Cloud HPC strategy (maybe host workshop) is important to the success of the UFS
- NCAR-NOAA MoA implementation
- Social, behavioral, and economic (SBE) sciences should be part of our strategy to ensure we're communicating value add and collecting the necessary information for the SBE research community
- WG plans leading to better investment decisions. Enhanced connection between WG's and NOAA Funding Managers.
- Strategic Research Plan (4-8 years)

The EPIC Program and FY19 Tasks

- The OAR Office of Weather and Air Quality (OWAQ) is responsible for executing the EPIC program under the direction of the OWAQ Director
- Activities will be managed by the current OAR Program Manager for NGGPS
- Key EPIC element: Establish governance/management structure enabling NOAA R2O2R framework for earth system prediction model
- Funding for FY19 activities will be supported from several sources:
 - (1) FY18 Disaster Relief Supplemental funding
 - (2) the Joint Technology Transfer Initiative
 - (3) USWRP
 - (4) other base resources within OAR and NWS
- Collectively, it is estimated that approximately \$7M will be spent in FY19 to accomplish EPIC-related activities
- FY20 President's Budget includes \$15M for EPIC
- EPIC Timeline:
 - May 31 - Final internal revisions for EPIC vision document
 - June 14 - RFI released and EPIC vision document available to public
 - August 5-7 - Tentative Hold: EPIC Workshop and Industry Day

Special Thanks to OWAQ and Weather Portfolio Teams for the SIP Analysis

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