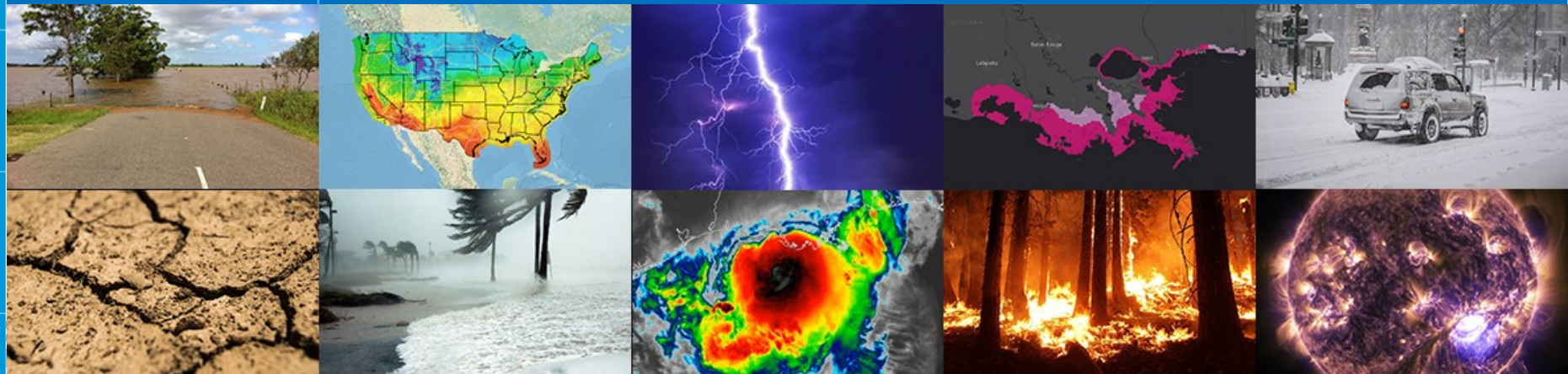
Air Quality Forecaster Focus Group Workshop

Kevin Garrett
Office of Science and Technology Integration

Contributions from:
Youngsun Jung, Jack Kain

NATIONAL WEATHER SERVICE

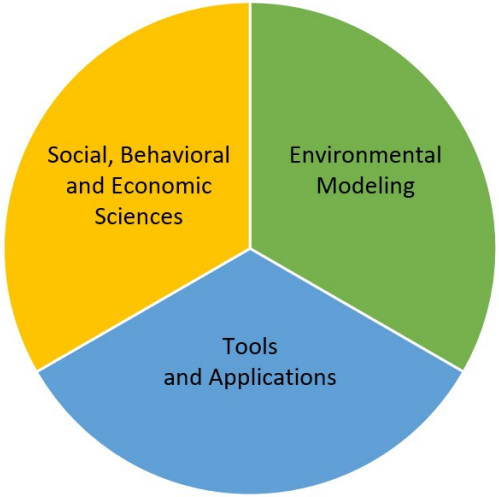
October 9, 2024



NWS Office of Science and Technology Integration Modeling Program

NWS/STI 10-year Vision

"Transform the NWS Mission through the Innovative Application of Science and Technology"



STI Modeling Division

"Advance NWS integrated operational environmental modeling through open science to support accurate, reliable, equitable, and actionable analysis and forecast information"

National Air Quality Forecast Capability Drivers

- Energy Policy Act (2002)
- NOAA/EPA MOA (2021)
- NOAA SAB Priorities in Weather Research report (2021)
- EMC Center Review (2023)
- Air quality forecasters

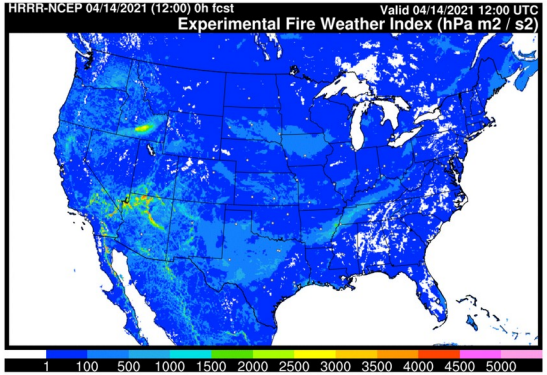
UFS R2O

Investments in Air Quality Forecasting

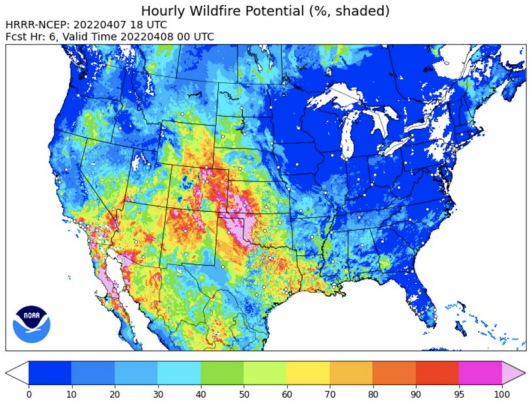
- NWS Air Quality Program - NAQFC ($1.4M)
  - AQM R2O, O&M
  - Wildfire Emissions
  - Bias correction
  - Visualization (airquality.noaa.gov)

- IIJA/BIL ($50M) — Ending ~FY26
  - Fire Weather Testbed
  - S2S / long term fire weather outlooks
  - Urban scale smoke/fire/fire behavior modeling and data assimilation
  - Wildfire impacts on PBL
  - Satellite-based emissions
  - SBES — Ending FY25
- FY22 Disaster Supplemental ($20M)
  - UFS-CMAQ (AQMv7 and beyond) and UFS-Smoke/Dust (HRRR-smoke successor)

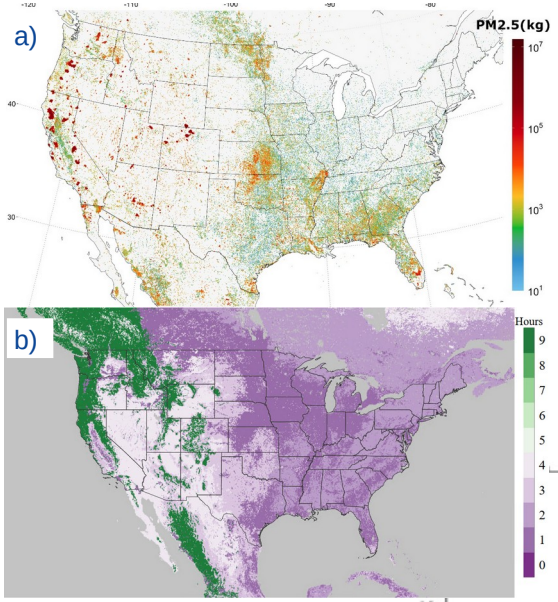
FY19 Supplemental Accomplishments



Fire Weather Index (FWI) delivered to SPC

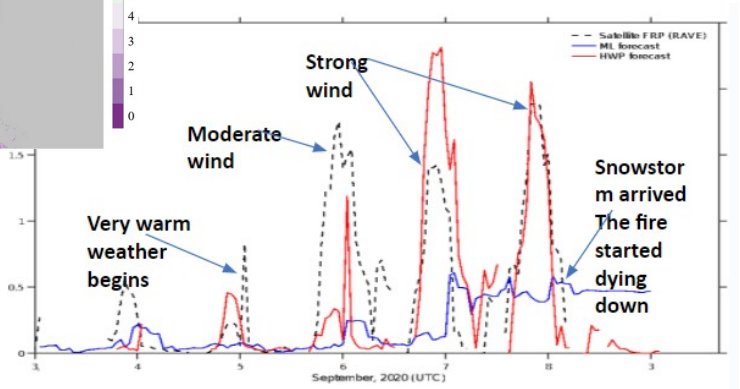


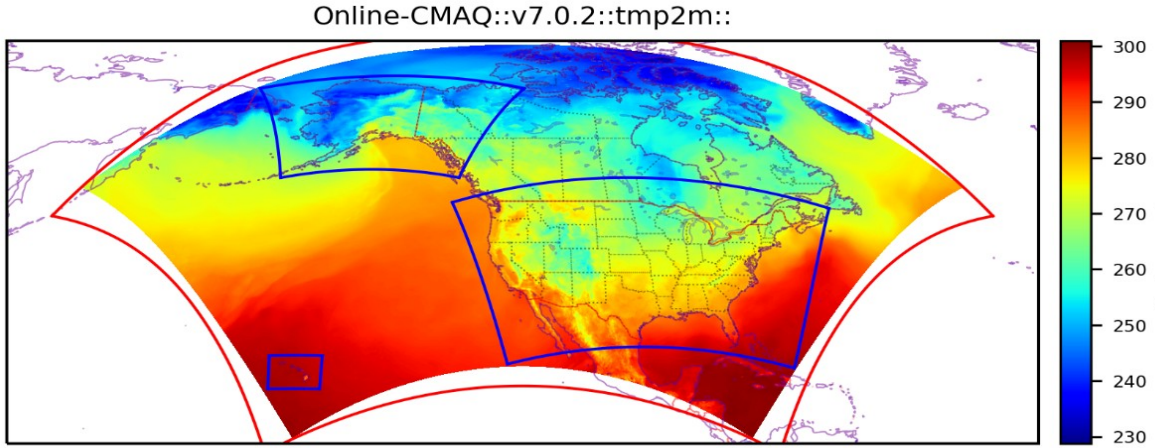
Hourly Wildfire Potential (HWP)



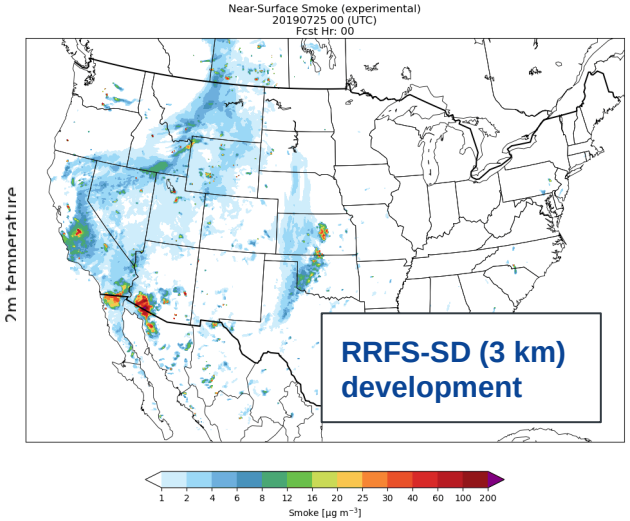
RAVE PM2.5 emissions in 3 km grids from April 2020 – March 2021 (a) and static fire duration map (b)

Improved diurnal cycle of fire emissions

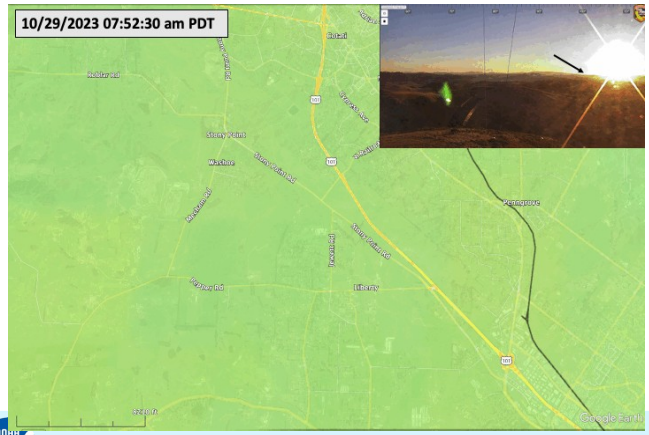




Accelerate implementation of online-CMAQ

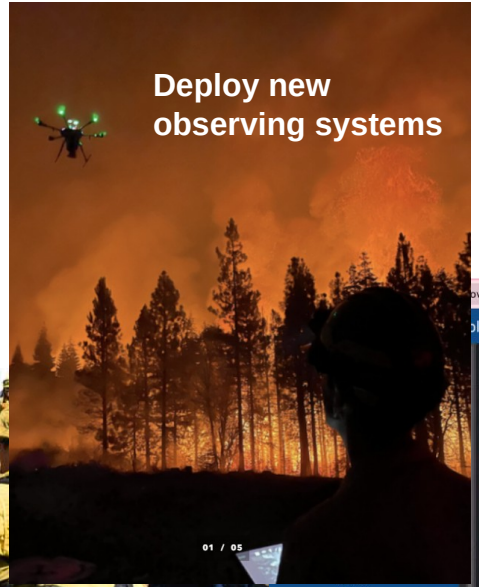


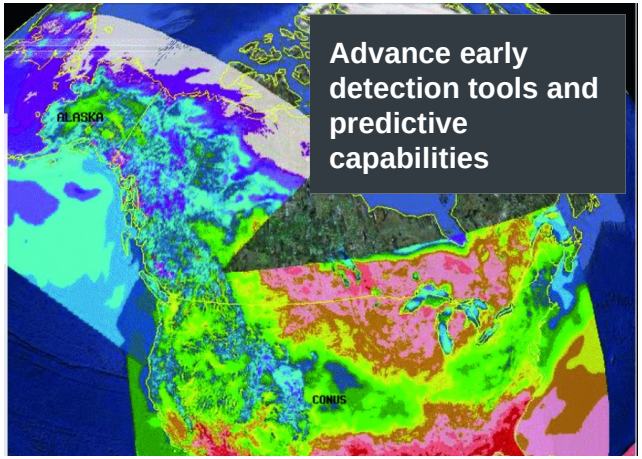
NOAA GOES-R Fire Detection Capability

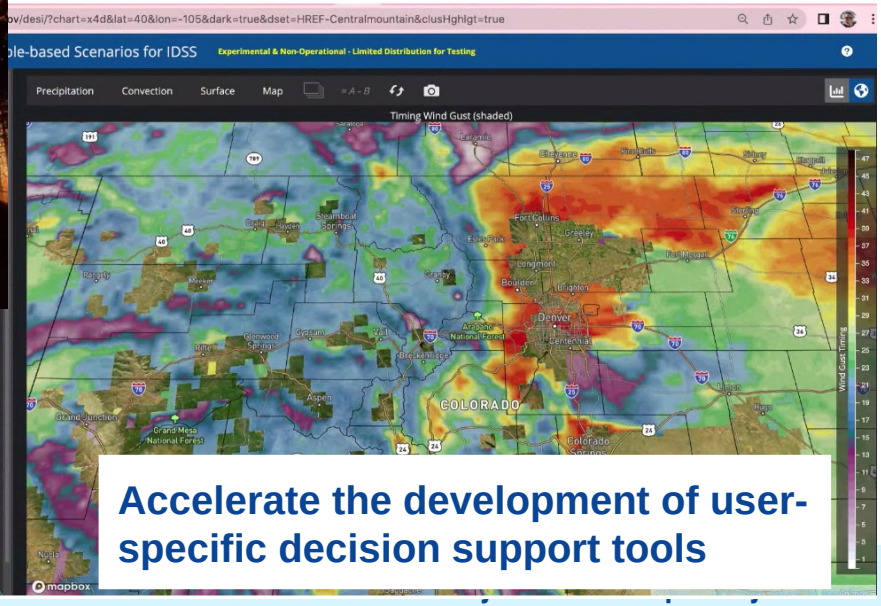


FY22 Disaster Supplemental Projects include…

IIJA/BIL Expected Outcomes







Accelerate the development of user-specific decision support tools

NAQFC Near-term Strategy

- UFS Framework
  - Unified modeling and data assimilation
  - Community modeling, open science
- Probabilistic guidance
  - Accelerate innovations - AI/ML
  - Risk communication
- Enhanced partnerships
  - State and local AQ agencies
  - International and federal agencies