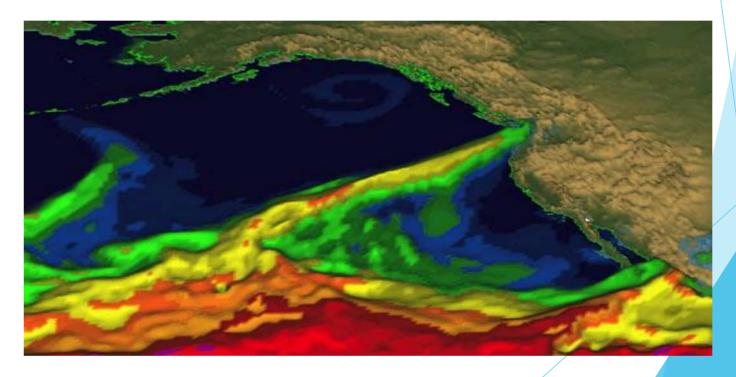


San Francisco Bay Area Advanced Quantitative Precipitation Information System Bay Planning Coalition 15 March 2022



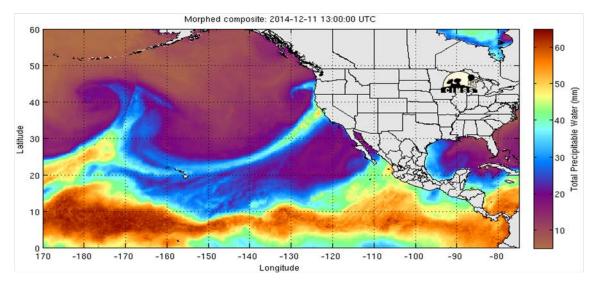


"AQPI represents a key demonstration of aligning federal, state, and local agencies' expertise and resources to provide critical information for flood emergency response and integrated water management tailored to a specific region's needs."

Mike Anderson, State Climatologist, California Department of Water Resources, Division of Flood Management



Impacts of Atmospheric Rivers (ARs)



- Provide 30-50% of California's annual rainfall
- Lack of ARs lead directly to droughts
- Cause >80% of flood damages in the Western US, typically >95% in CA
- Cause >\$1B in annual damage costs
- Increased frequency and intensity due to Climate Change

Project Team

Bay Area Partners

California Department of Water Resources Sonoma Water Valley Water San Francisco Public Utilities Commission East Bay **Municipal Utilities District Discharge and Parks** Alameda County Public Works District 7 Water District Contra Costa County Zone 7 Water Agency Marin County Flood Control, Municipal Water District Napa County San Mateo County Solano County **Bay Area Flood Protection Agency** Association National Weather Service

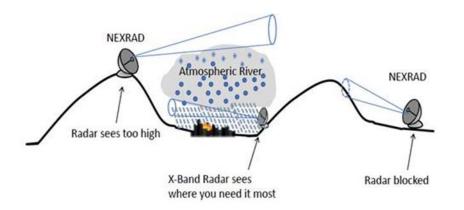


Technical Partners

- NOAA
 - Physical Sciences Laboratory
 - Global Systems Laboratory
 - National Severe Storm Laboratory
 - Cooperative Institute for Research in the Atmosphere (CIRA)
 - Cooperative Institute for Research in Environmental Sciences (CIRES)
- USGS
 - Pacific Coastal and Marine Science Center
- Colorado State University
- Department of Economics/Resource Economics
 Scripps Institution of Oceanography
 - Center for Western Weather and Water Extreme



SF Bay Area AQPI - A New Technology to Respond to Extreme Weather



Why is it needed?

- Existing radar is not optimal for West Coast terrain
- Public safety benefits
- Economic loss minimized



SF Bay Area AQPI System Overview

- State-of-the-art weather and water forecasting system
- Advanced forecast products and new decision support tools
- Supports planning and response decision-making in the SF Bay Area for:
 - Emergency response & flood managers
 - Water and wastewater managers

SF Bay Area AQPI System Components

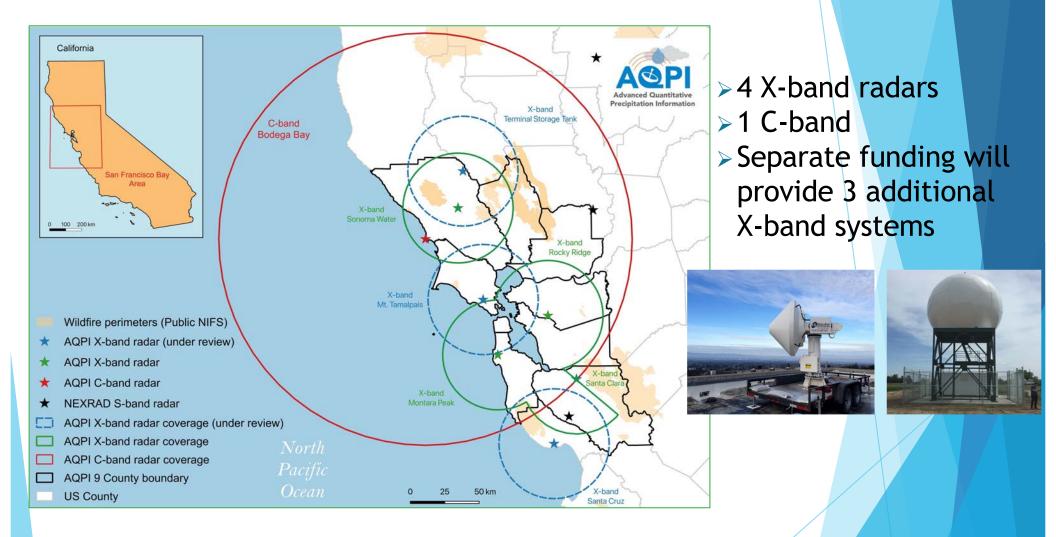
- New advanced weather radars and surface meteorology deployments
- Integration of observations and forecast models
- Precipitation, streamflow, and coastal storm surge forecasts
- Decision Support Tools Integrate & disseminate observations & forecast information



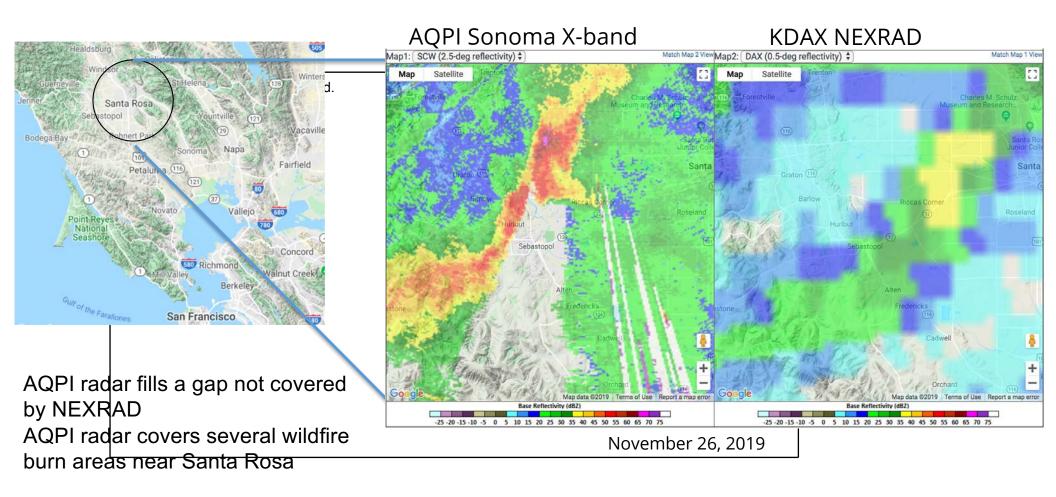


Surface Met

AQPI Radar network



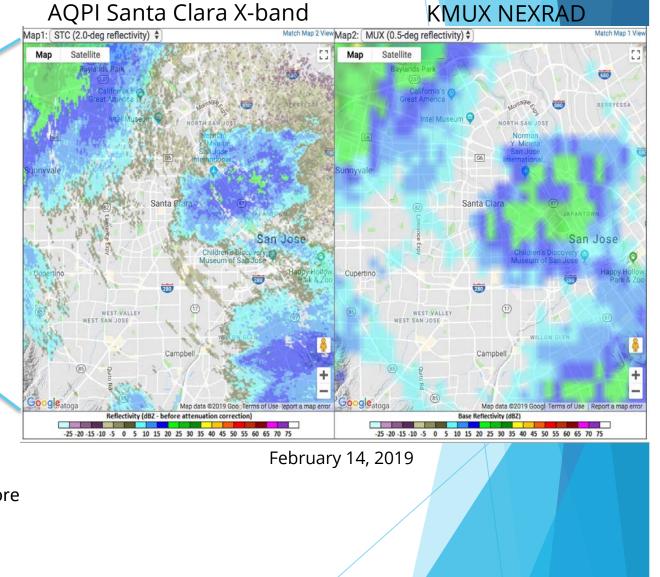
Value of AQPI Radar in the North Bay



Value of AQPI Radar in the South Bay



- AQPI radar has higher space and time resolution - better picture of the overall rainfall pattern
- AQPI radar sees closer to the ground more accurate rainfall estimates



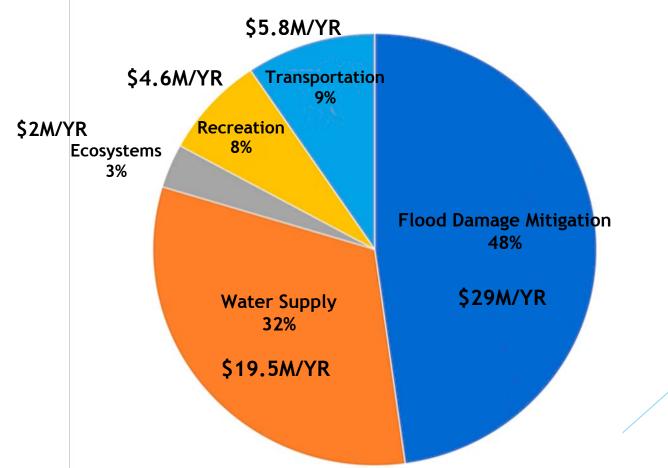


SF Bay Area AQPI Benefits Summary

- NOAA estimates \$60.9M in avoided costs per year
- Provides severe weather detection, tracking, & forecasting
- Improved situational awareness reduces risks to public safety & protects water quality and resources
- Improves early warning and emergency response support
- Leverages investments in observation networks established by local agencies
- Supports NOAA's Weather Ready Nation Initiative
- Supports Biden Administration's Executive Order to improve climate resilience



Annual Benefits / Avoided Costs By Category



Johnson LE, Cifelli R, White A. Benefits of an advanced quantitative precipitation information system. J Flood Risk Management. 2020;13 (Suppl. 1):e12573. https://doi.org/10.1111/jfr3.12573

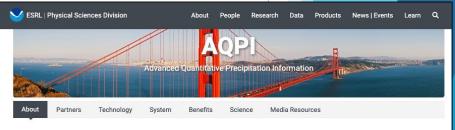


AQPI and other Web Sites

Sonoma Water

https://www.sonomawater.org/aqpi/

- NOAA Physical Sciences Laboratory https://psl.noaa.gov/aqpi/
- National Water Model Map
 <u>https://water.noaa.gov/map</u>
- Contra Costa County Flood Control's RainMap https://www.ccflood.us/rainmap.html



About

Go to AQPI Real-Time Radar Display >>

When big storms hit California, current technology does not provide forecasters with the detailed information needed to inform reservoir operations, flood protection, combined sewer-stormwater systems and emergency preparedness. Accurate and timely precipitation information is critical for making decisions regarding public safety, infrastructure operations, and resource allocations.

Standard weather radars, originally designed to look up into Midwest thunderstorms, are often unable to give an accurate picture of what is happening just above the complex landscape of California's coastal mountain ranges, where precipitation can be heaviest. Improved precipitation monitoring and prediction in the San Francisco Bay region can enhance public safety through early warning and storm tracking when hazardous weather events come onshore.

Advanced Quantitative Precipitation Information (AQPI) is a regional project awarded to NOAA and collaborating partners by the California Department of Water Resources. The AQPI system consists of improved weather radar data for precipitation estimation and short-term nowcasting (0-1 hours); additional surface measurements of precipitation, streamflow and soil moisture; and a suite of forecast modeling systems to improve lead time on precipitation and coastal Bay inundation from extreme storms-especially moisture-laden atmospheric rivers.



Atmospheric Rivers hitting the West Coast can bring droughtbusting precipitation or hazardous storm conditions.

Contacts

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Related Links Sonoma Water AQPI Info



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