

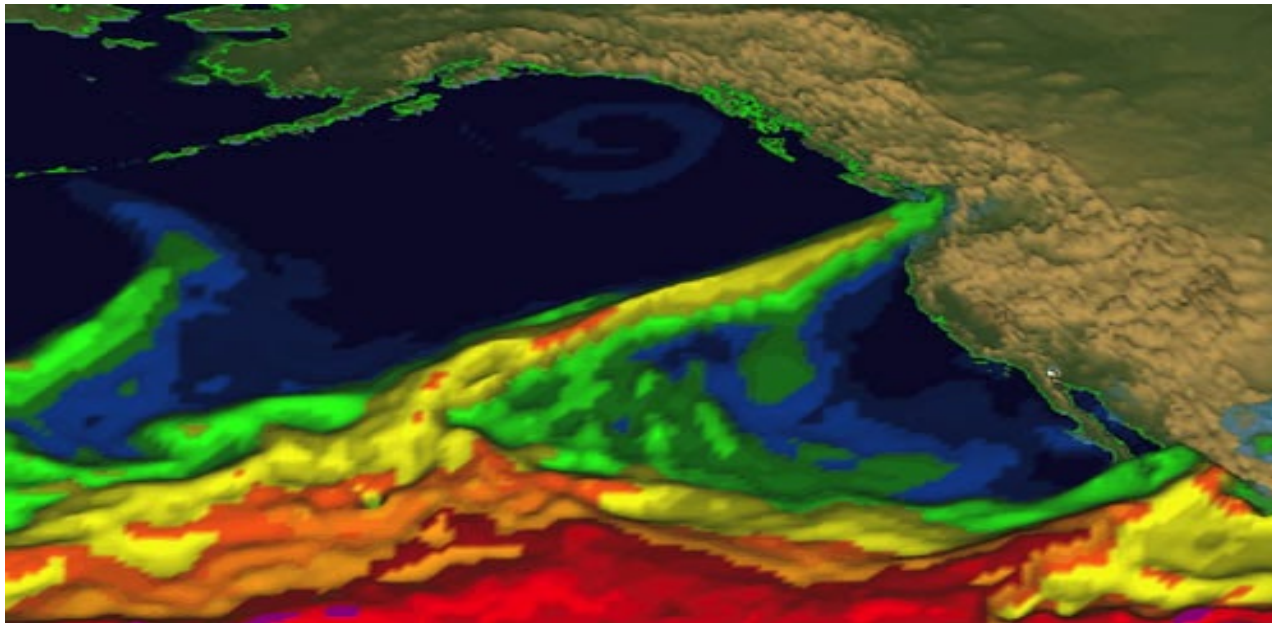
Improving Monitoring and Forecasting of Precipitation and Coastal Flooding in the San Francisco Bay Area

California - United Water Conference: Caldor Fire Tour

Grant Davis, Sonoma Water

June 23, 2024

Advanced Quantitative Precipitation Information (AQPI)

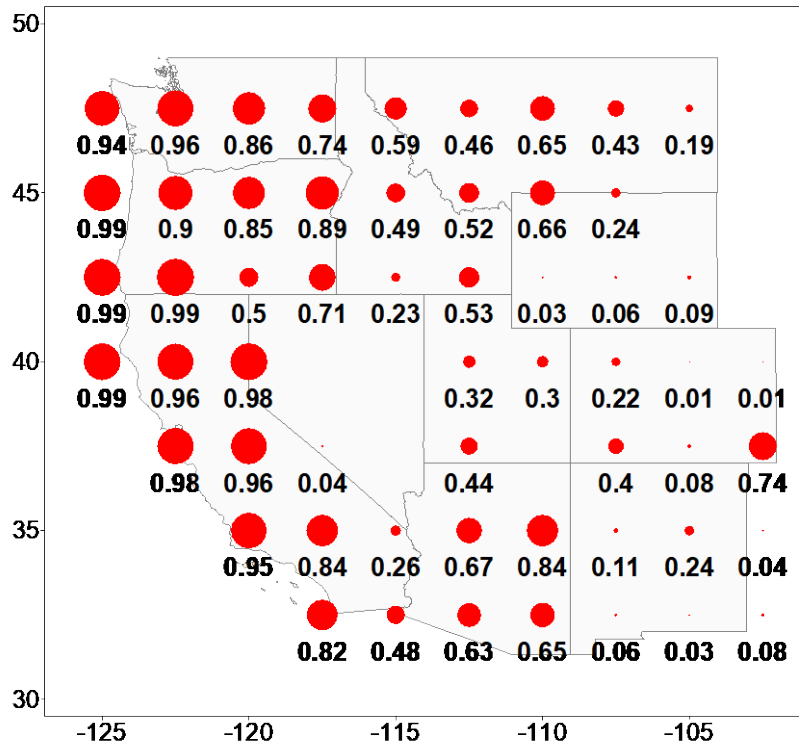


SF Bay Area AQPI Project Team Partners and Supporters



Atmospheric Rivers drive economic flood losses

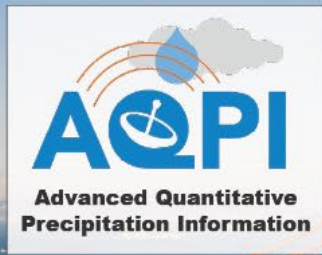
Proportion of Economic Losses Due to ARs



84% of insured losses in the 11 western states were caused by ARs

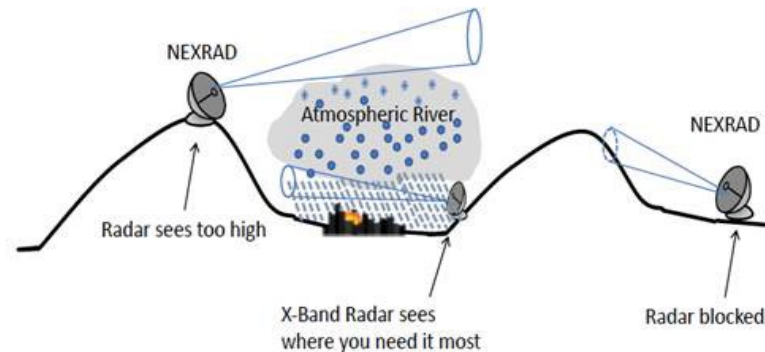


Post-Fire debris flows pose a serious hazard. This case killed >20 people near Montecito, CA.



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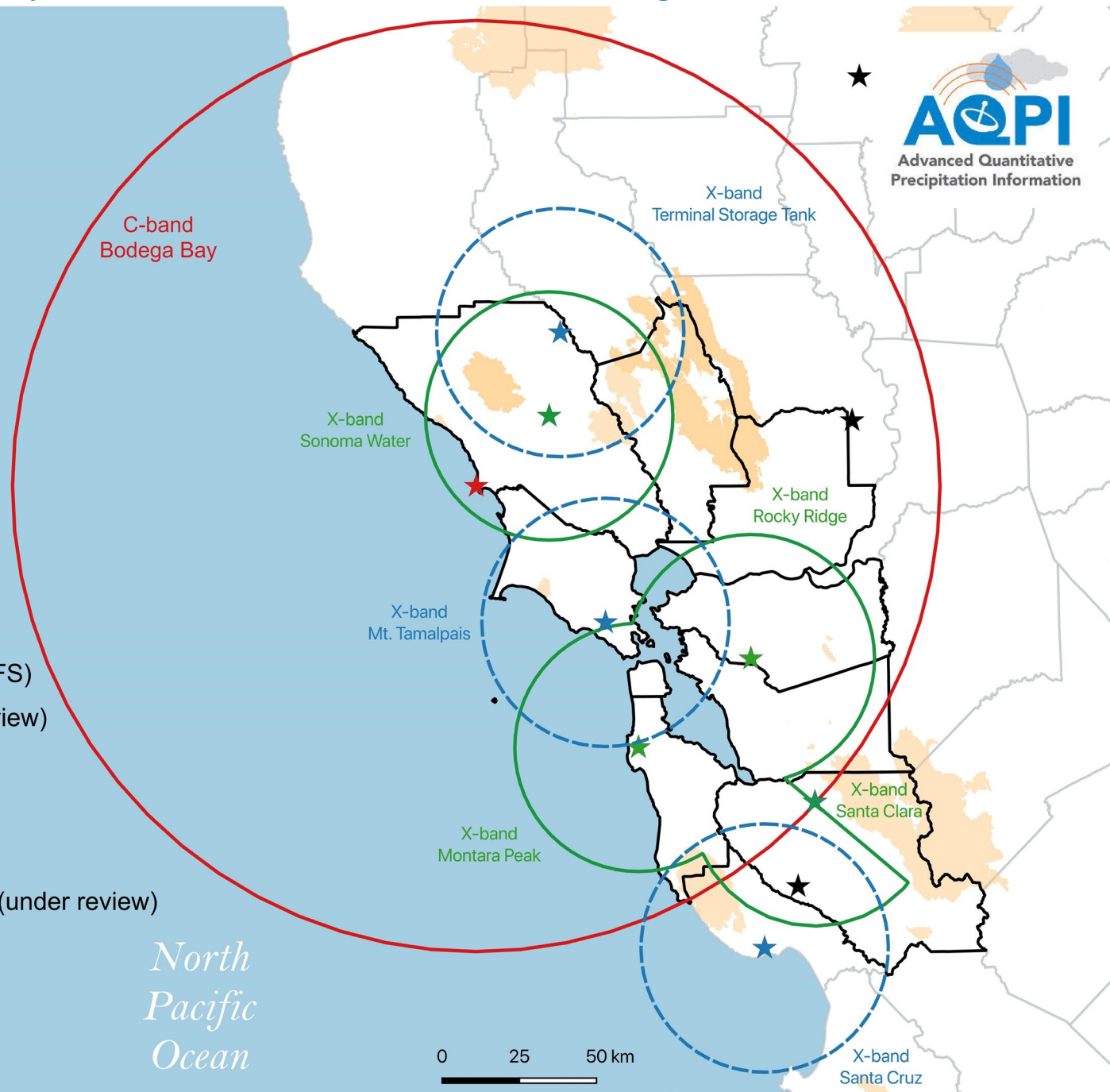
SF Bay Area AQPI - A New Technology to Respond to Extreme Weather



Why is it needed?

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

SF Bay AQPI Radar Locations and Range



- Wildfire perimeters (Public NIFS)
- AQPI X-band radar (under review)
- AQPI X-band radar
- AQPI C-band radar
- NEXRAD S-band radar
- AQPI X-band radar coverage (under review)
- AQPI X-band radar coverage
- AQPI C-band radar coverage
- AQPI 9 County boundary
- US County

SF Bay Area AQPI System Components

- ▶ 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



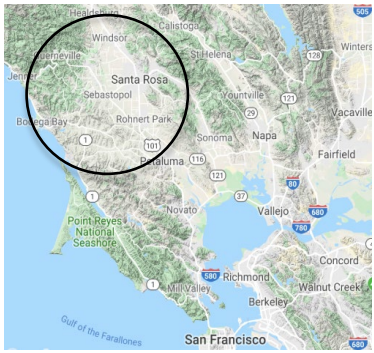
X-band Radar



C-band Radar



Surface Met

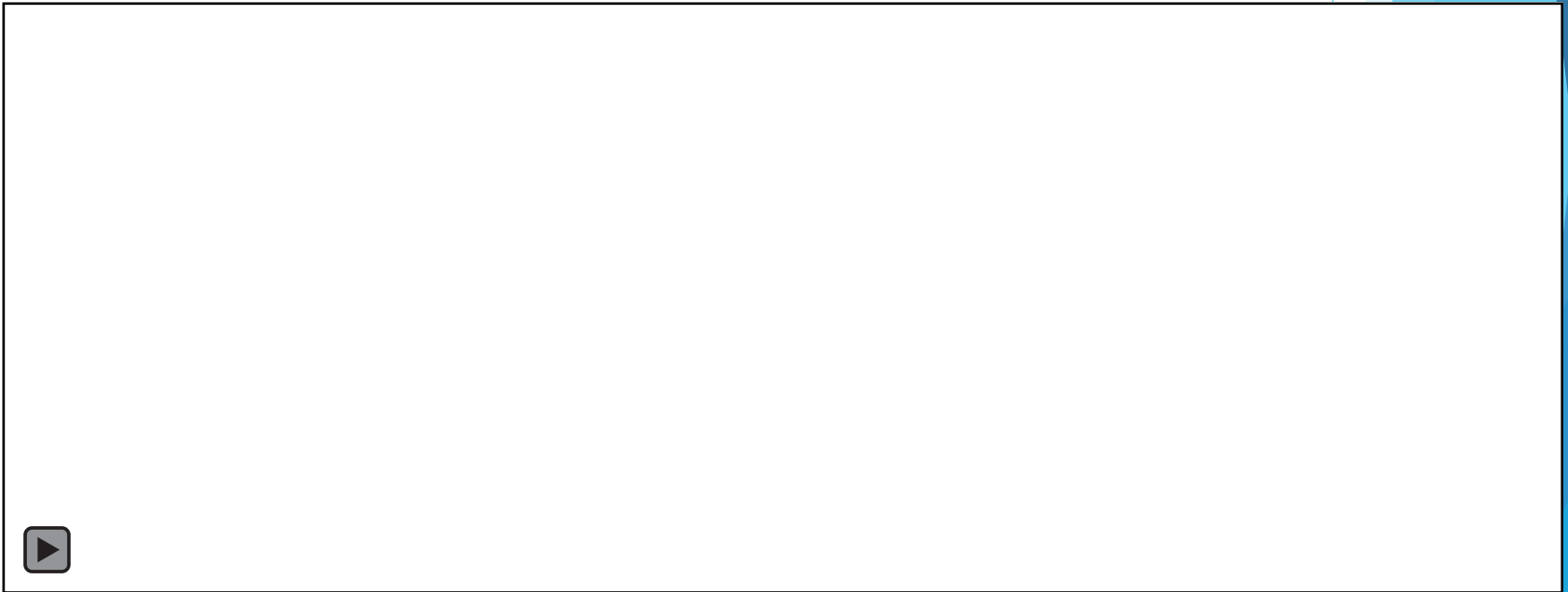


Sonoma County - Radar Comparison

January 27, 2021

NEXRAD (existing) Radar

AQPI X-Band Radar



- AQPI radar fills a gap not covered by existing radars, with more detail and frequency
- AQPI radar covers several wildfire burn areas near Santa Rosa

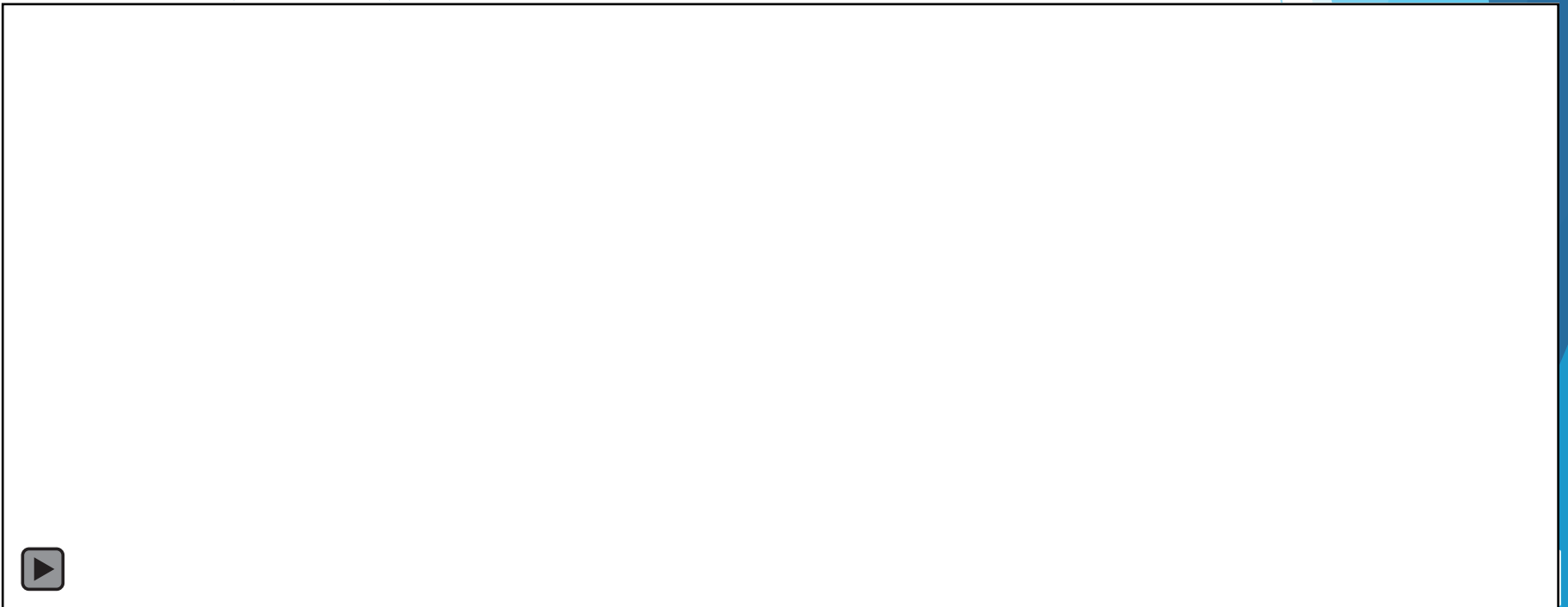
Santa Clara County - Radar Comparison

February 14, 2019

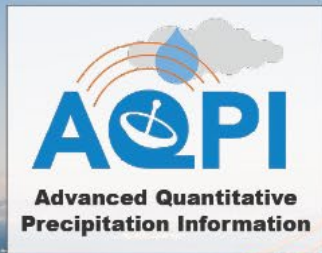


NEXRAD (existing) Radar

AQPI Santa Clara Radar



- NEXRAD is on a mountain top and doesn't see the rain close to the ground in the Santa Clara - San Jose area
- AQPI radar provides more detail on exactly where and when it's raining and not raining

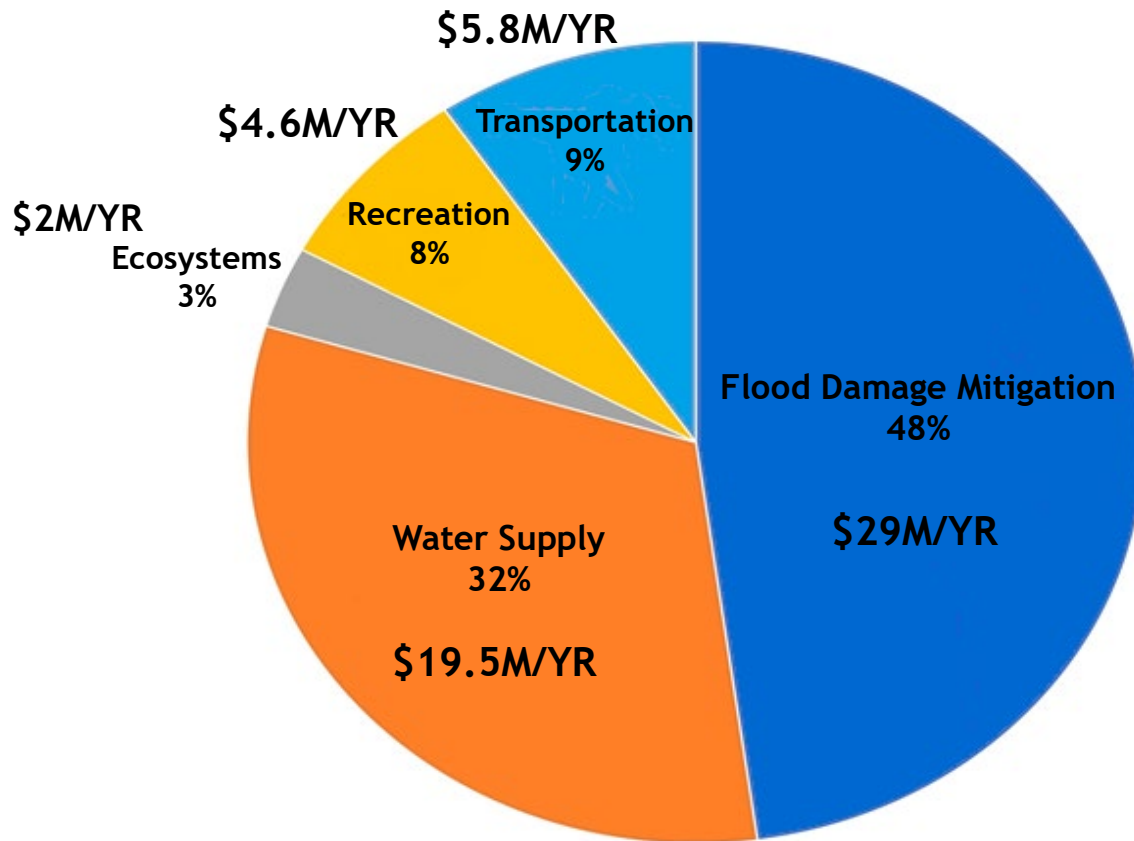


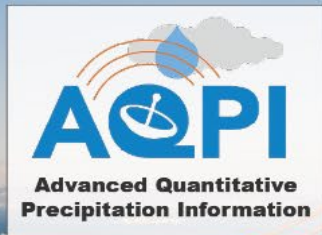
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SF Bay Area AQPI Benefits Summary

- ▶ 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

Annual Benefits / Avoided Costs By Category

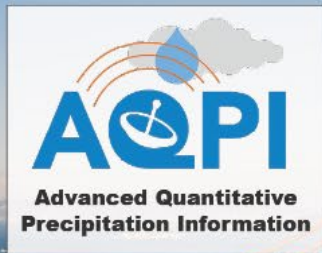




Improving Monitoring and Forecasting of Precipitation and Coastal Flooding in the San Francisco Bay Area

**AQPI Phase 1:
DWR \$20M IRWMP Grant - Placement of Radars**

**AQPI Phase 2:
Demonstrating 21st Century Tools
Supporting Bay Area Resilience to Extreme Precipitation**



Improving Monitoring and Forecasting of Precipitation and Coastal Flooding in the San Francisco Bay Area

“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

