

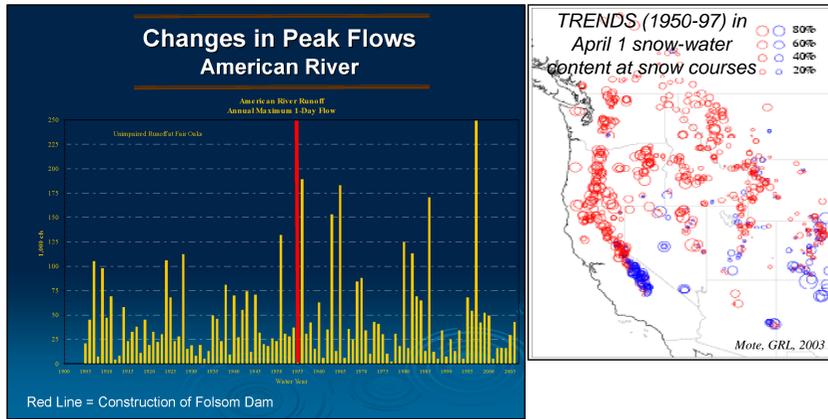


# The NOAA, California Department of Water Resources, and Scripps Hydrometeorology Testbed Legacy Project

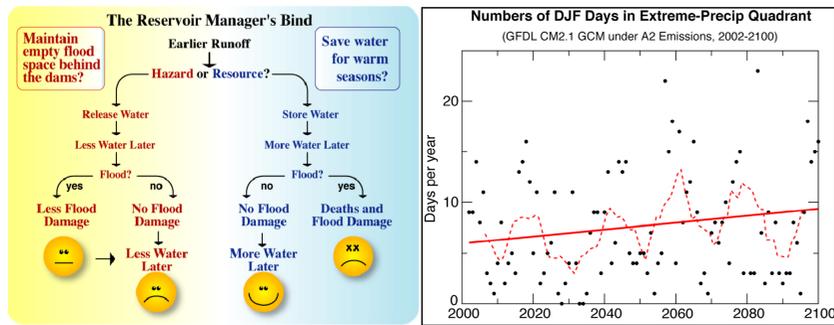


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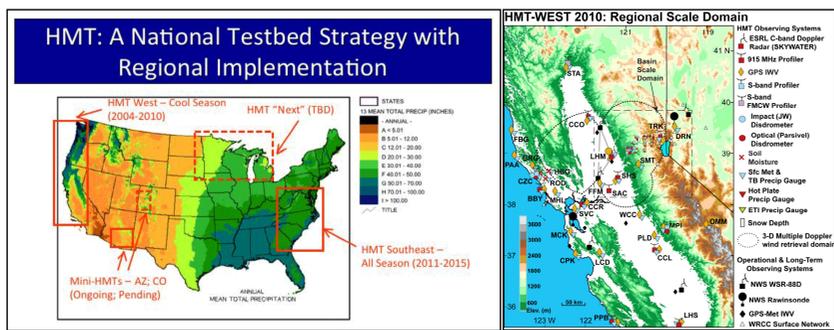
## The Challenge



- The game is changing in California with respect to climate change and water resource management. For example, the five largest unimpeded annual peak daily flows on the American River have occurred since Folsom Dam was built in 1955.
- In addition, observational and modeling studies suggest that spring runoff will occur earlier in the year, perhaps encroaching on the winter storm season, which will further complicate reservoir management.

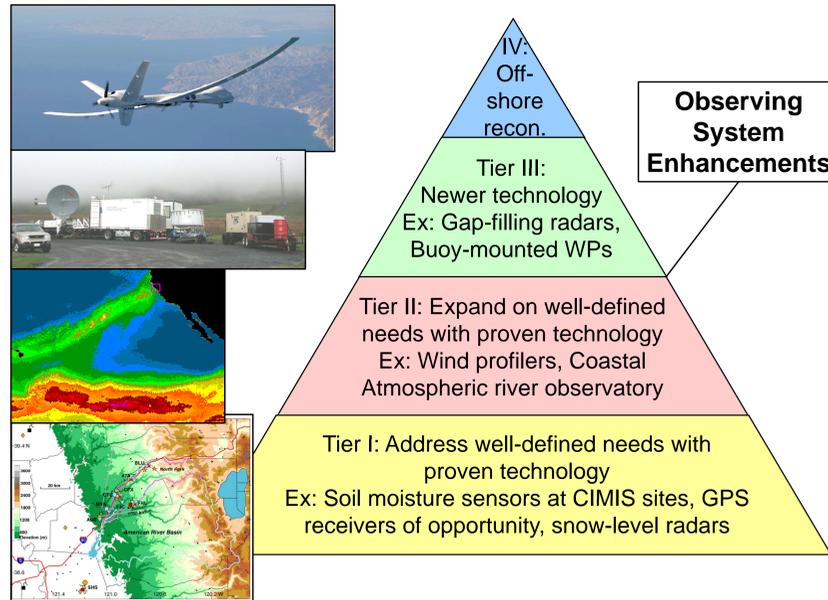


- To top it off, climate models suggest an increase in the number of extreme precipitation events from an average of 6/year to 9/year, a 50% increase in the number of flood-worthy events.

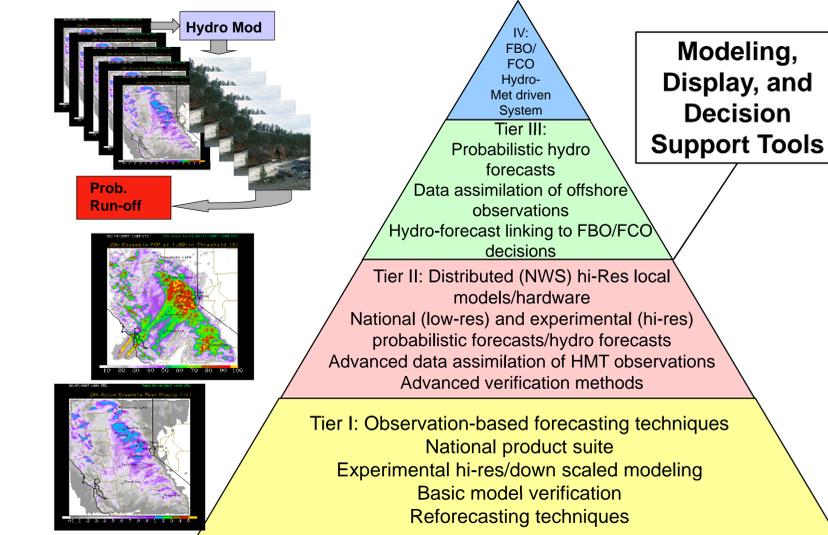


- NOAA's Hydrometeorology Testbed (HMT) has conducted field operations in the American River Basin since the winter of 2005/06. But California has many other watersheds to be concerned with and HMT plans to focus its resources in other regions of the country (Ralph et al. 2005, BAMS).

## Building an HMT Legacy for CA

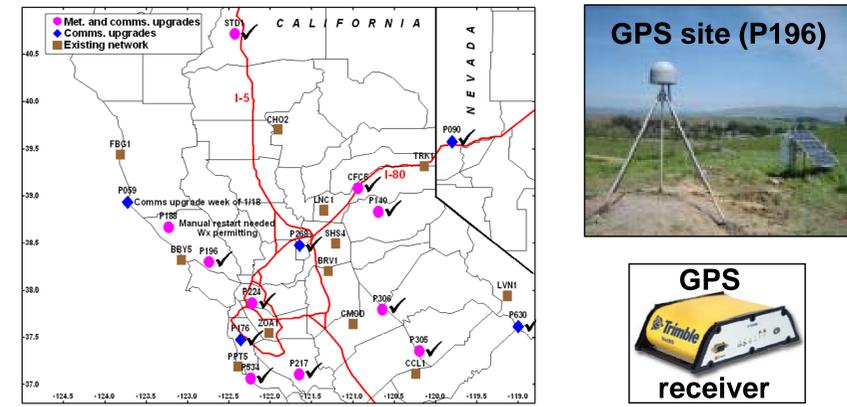


- HMT Legacy efforts in California include implementation of new observations, modeling and display methods, as well as gaining a better understanding of atmospheric rivers and their impacts on flooding and water supply in a changing climate.
- Over time, these observations will create an important climate record and datasets with which forecast models can be verified and forecasts improved.
- CA-DWR is supporting the two lower tiers of observing system enhancements in a 5-year (Jun 2008–May 2013) Memorandum of Agreement with NOAA/ESRL.
- The first set of observing systems were installed in time for the 2009/10 winter season.

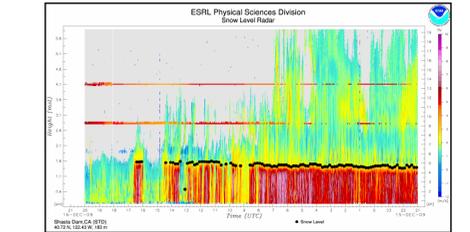
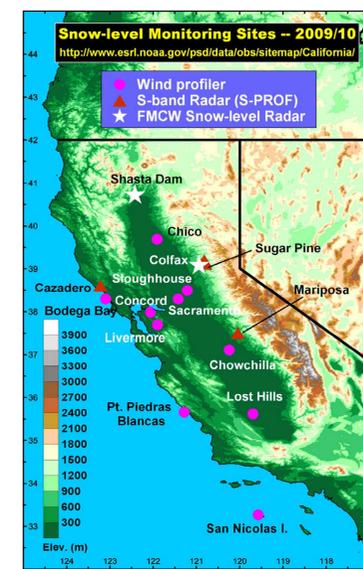


- To realize the full value of the new observations, advanced data assimilation, modeling, and display systems need to be developed to take full advantage of the resulting data streams.
- CA-DWR is supporting the two lower tiers of the assimilation, modeling, display, and decision support activities.

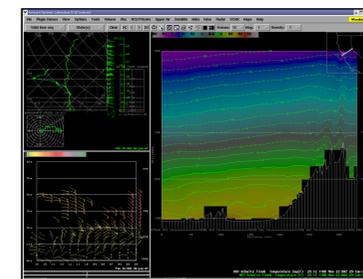
## Some Accomplishments to Date



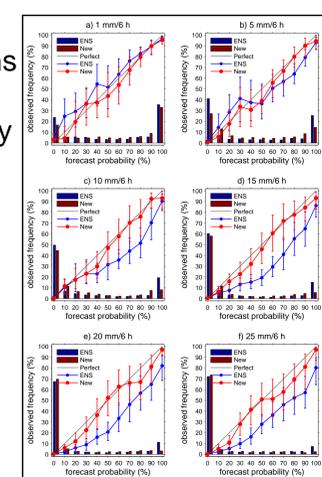
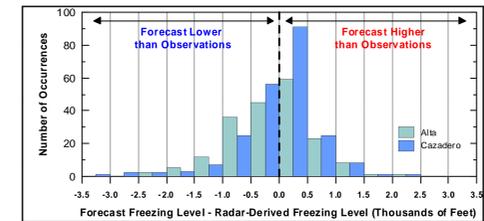
- 15 (out of 36) new integrated GPS-surface meteorology sites for retrieving measurements of integrated water vapor.



- 2 (out of 10) new FM-CW S-band radars designed specifically for this project to measure the snow level at a tenth of the cost of traditional pulsed radar systems.



ALPS workstations deployed successfully to 5 NWS Offices



- Performance of NWS snow-level forecasts (White et al. 2010, JHM)
- Probabilistic QPF (Yuan et al. 2008, JHM)