



networks of the National Weather Service (NWS) and other agencies (Figure 3).

A special aspect of HMT-West 2010 will be its complementary interaction with the CalWater project sponsored by the California Energy Commission. The overarching objective of CalWater is to better understand how aerosols and atmospheric rivers are impacting the precipitation and snowpack variability in California. CalWater will benefit from the existing HMT-West field network and several new field sites deployed in support of CalWater will benefit HMT-West. Table 1 provides a comprehensive list of all the instrumentation that is associated with HMT-West 2010.

Data from HMT and operational sources will be merged in algorithms with the intent to produce multi-sensor (e.g., radar + gauge) estimates of precipitation. These blended estimates overcome deficiencies inherent in estimates based on single instrument types. Equally important, demonstrations and evaluations of precipitation forecast improvements will be conducted for the American River Basin using high-resolution numerical prediction models, now in use as research tools.

In addition to the ongoing evaluation of the practical usefulness of the various new observing and model tools, specific HMT-West 2010 research objectives include:

- Attaining accurate QPE over the basin with high spatial resolution.
- Demonstrate new high-resolution forecast models and model ensembles for QPF tailored to the HMT area.
- Accurately mapping the height of the melting layer and monitoring its evolution.
- Improving understanding of the Sierra Nevada barrier jet, how it influences precipitation distribution and how it is influenced by atmospheric rivers.
- Test and evaluate different in situ precipitation measurement devices for use in future HMT efforts that will encounter mixed-phase precipitation.
- Demonstrate the concept of a regional HMT as a conduit to infuse new science and technology into operations.