

NOAA's Hydrometeorological Testbed (HMT)

The Empirical Approach to Observing System Design & Demonstration

<http://hmt.noaa.gov/>

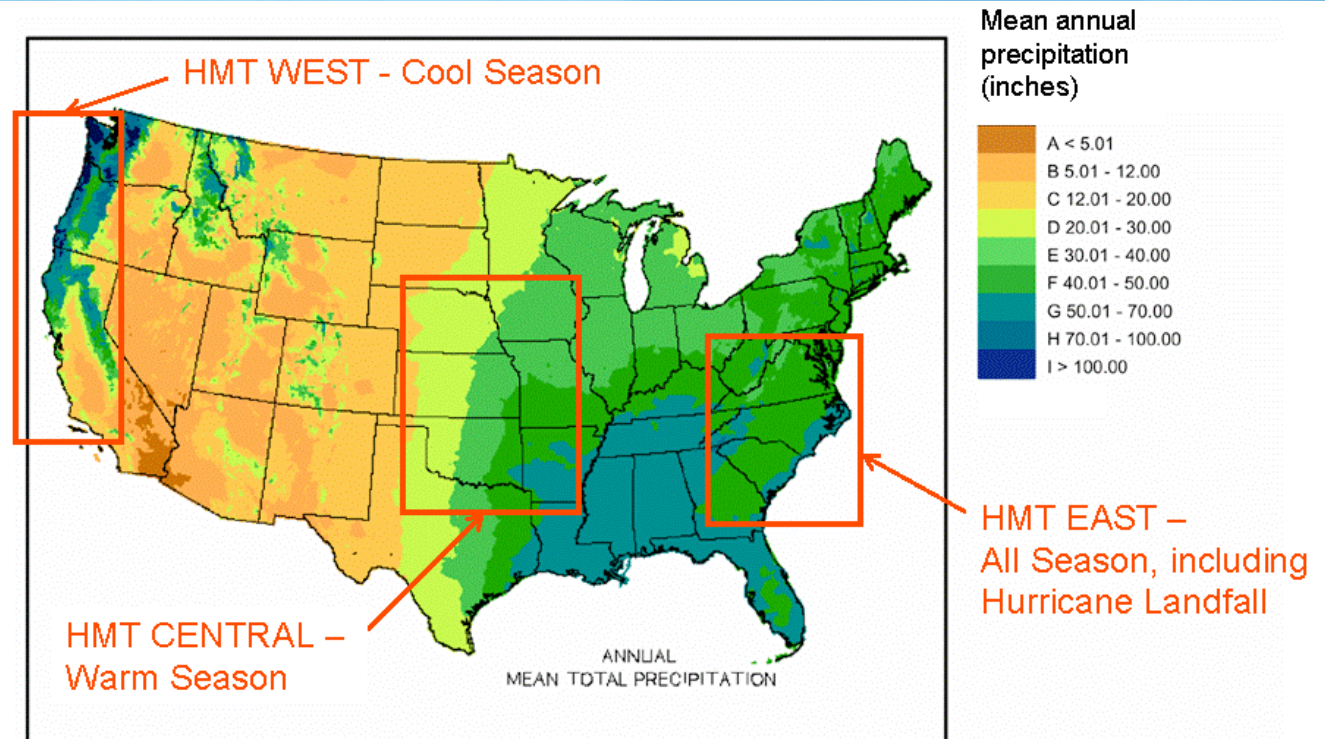
Contact: Timothy.Schneider@noaa.gov

June 6, 2007

National Testbed Strategy Regional Implementation

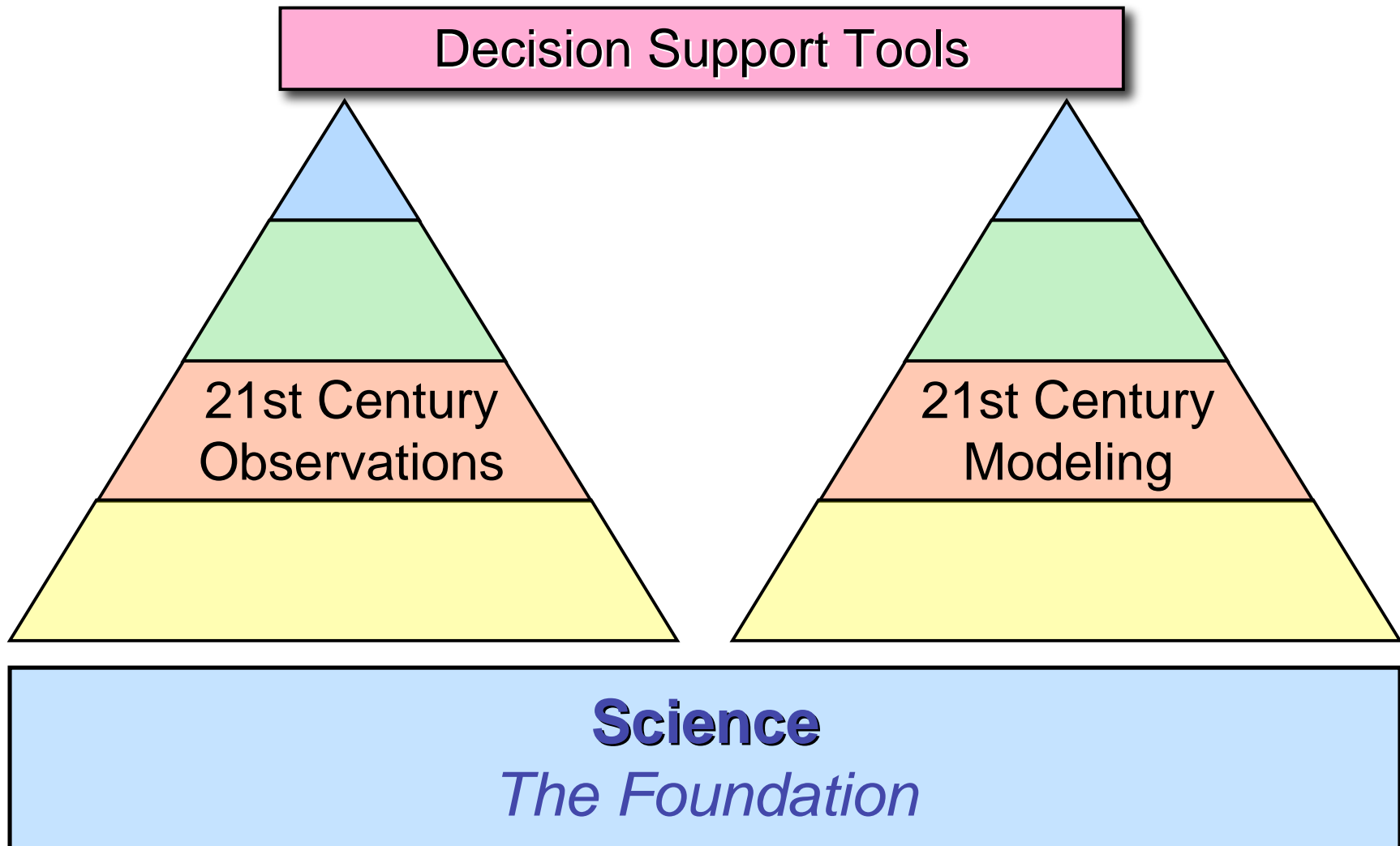
Foci

- QPE
- QPF
- Hydrology
- Verification
- Enhancing & Accelerating Research to Operations
- Building Partnerships

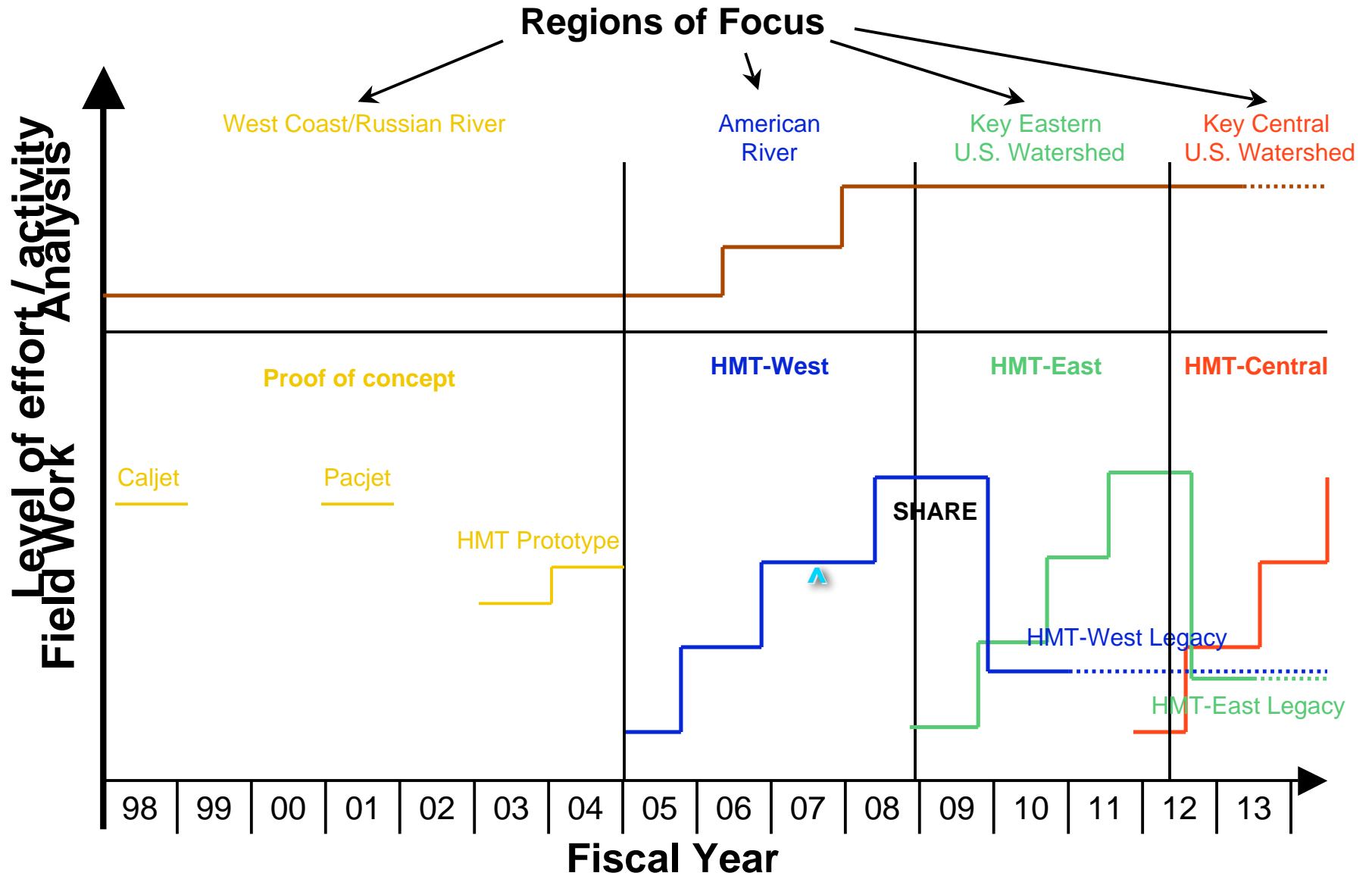


The national Hydrometeorological Testbed program will be implemented incrementally in different regions of the U.S.

HMT's Products



Hydrometeorology Testbed Timeline



NOAA Hydrology Program
(Water Resources Data Assimilation)

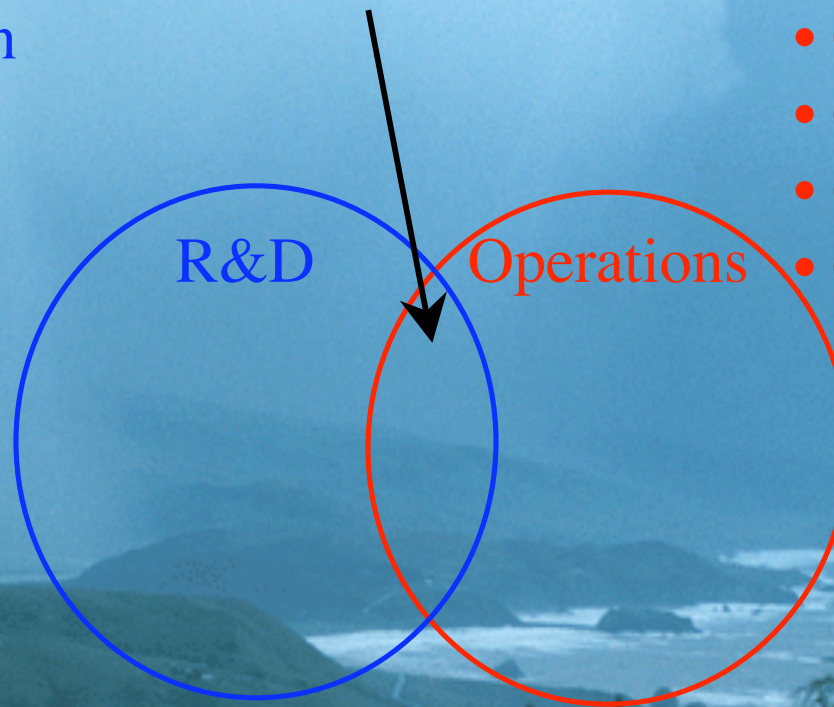
NOAA Science and Technology Infusion Program
(Hydrometeorology Testbed)

R&D and Operational Perspectives: Observing Systems

R&D Priorities

- Exploratory
- Higher Resolution
- Multi-Sensor
- New Variables
- Publication

Testbed Domain



Operational Priorities

- Reliability
- Cost Effectiveness
- COTS (plug n' play)
- Continuity
- GPRA Measures

Basic R&D

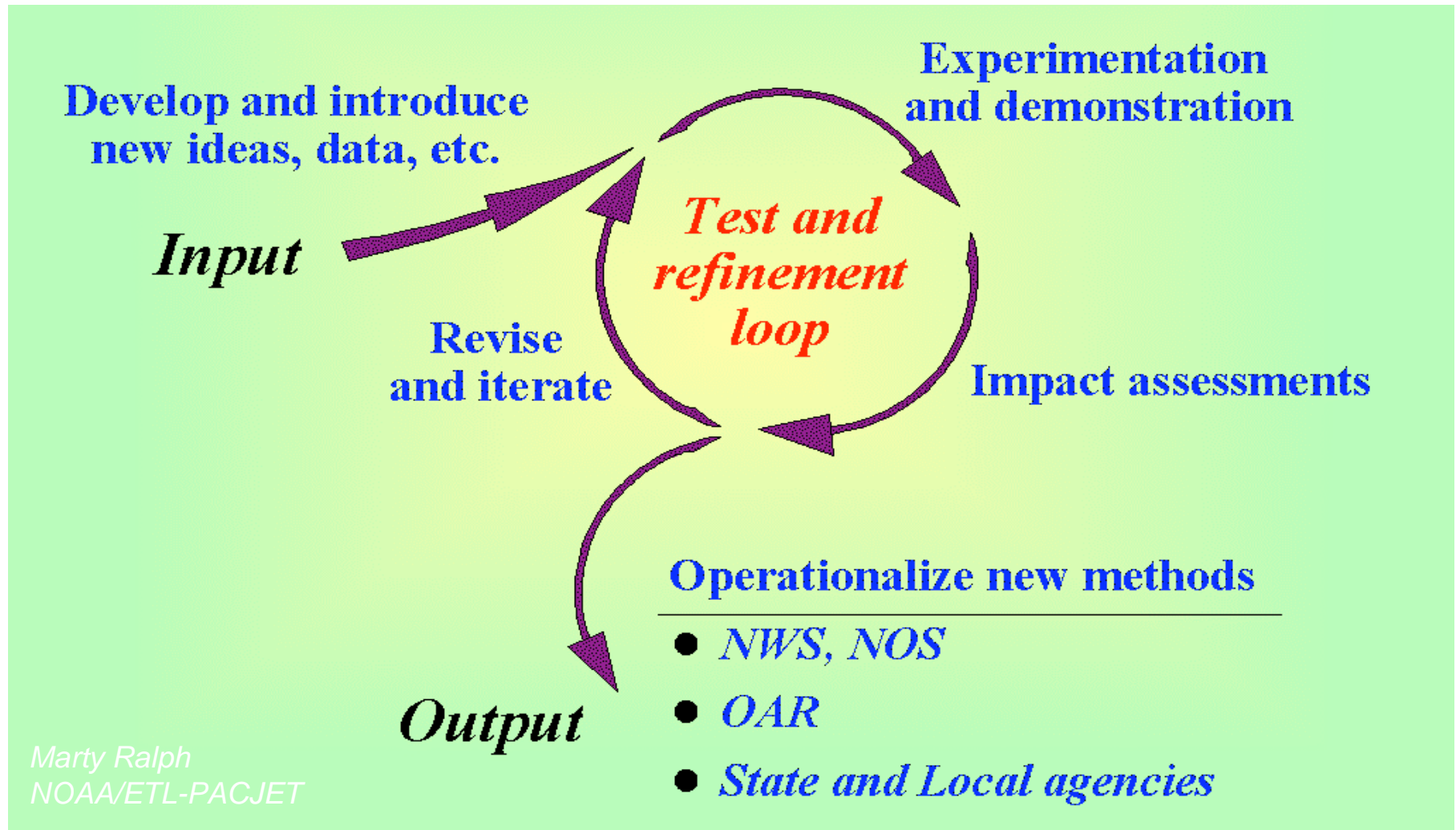
Improved User
Decisions

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“Culture”

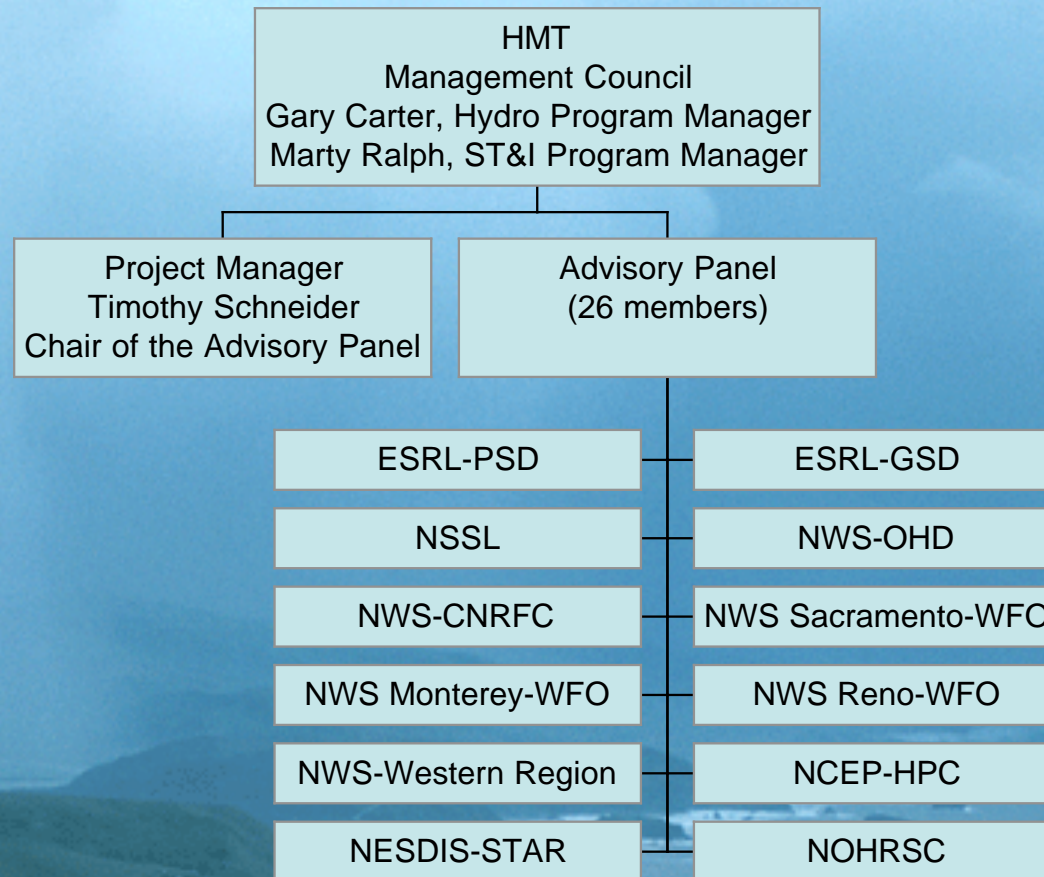
The HMT Concept

Testbed as a Process



See: Dabberdt et. al. 2005 Bull. Amer. Meteor. Soc.

Building Partnerships

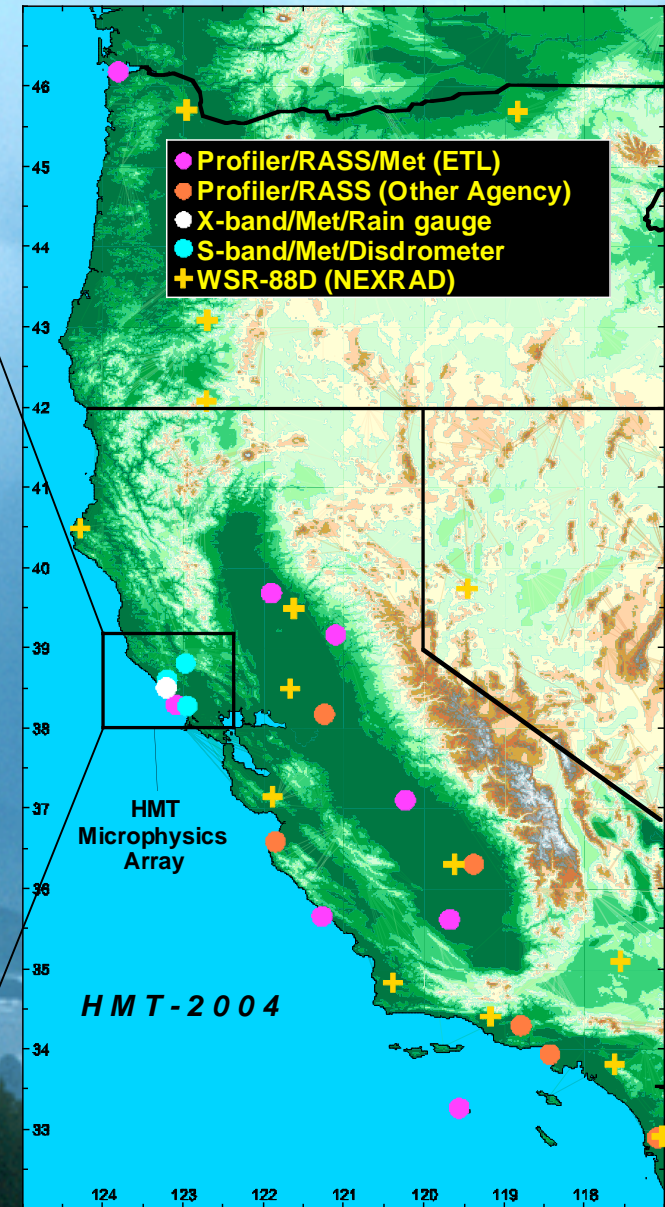


➤ Critical Element: engaging local, state and federal stakeholders...

HMT-2004

A Hydrometeorological Testbed (HMT) for the Russian River Watershed

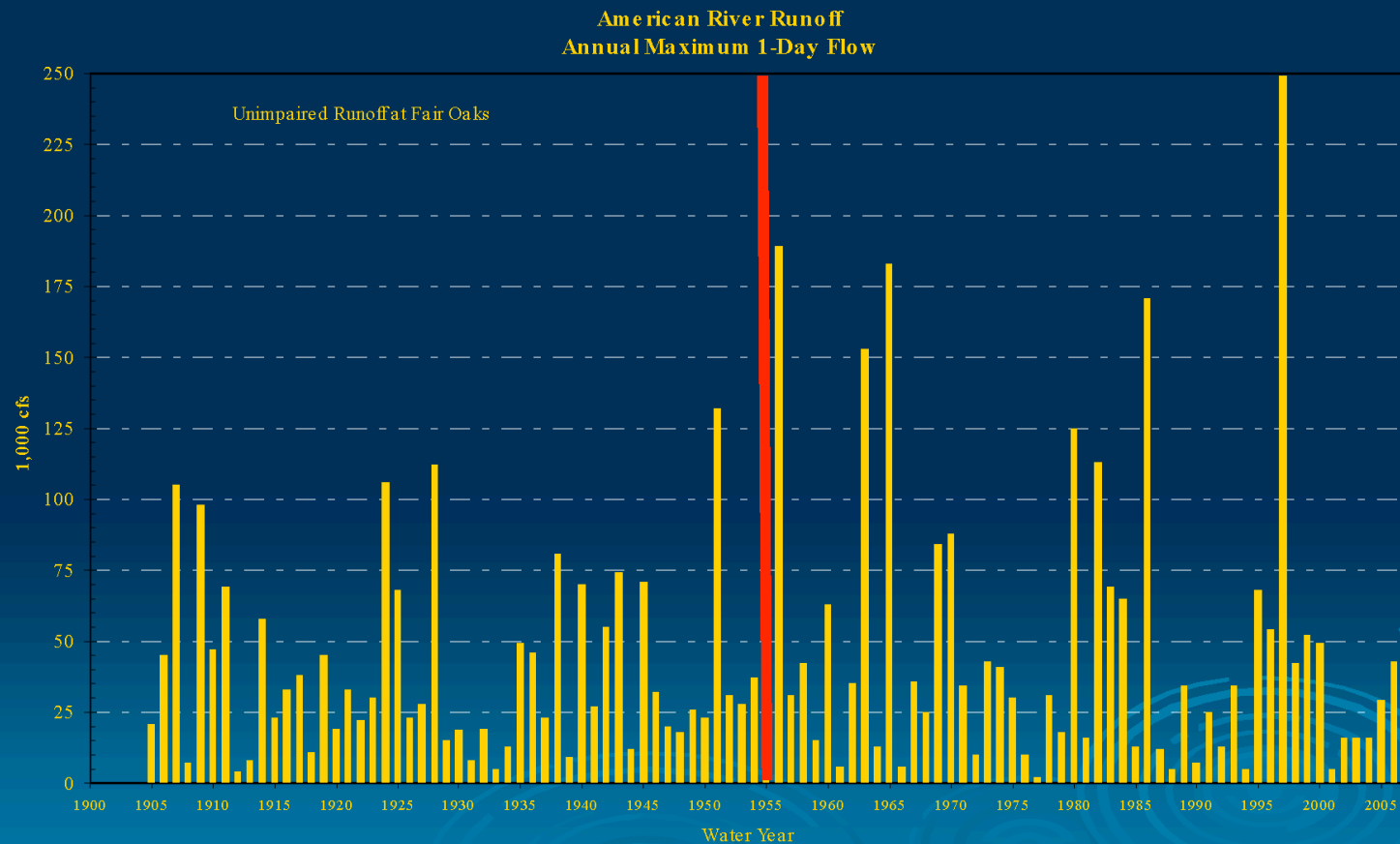
HMT-2004 Microphysics Array



- | | |
|------------------------|-------------------|
| BBY = Bodega Bay | HBG = Healdsburg |
| BSC = Big Sulfur Creek | HLD = Hopland |
| CVD = Cloverdale | LSN = Lake Sonoma |
| CZC = Cazadero | ROD = Rio Dell |
| FRS = Fort Ross | SPT = Salt Point |
| GRK = Goat Rock | |

Why the American River Basin?

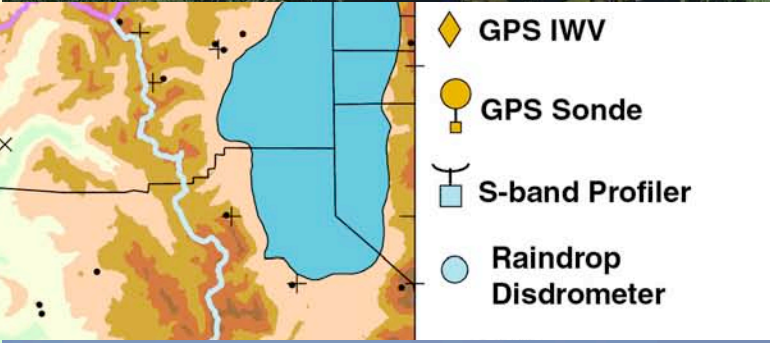
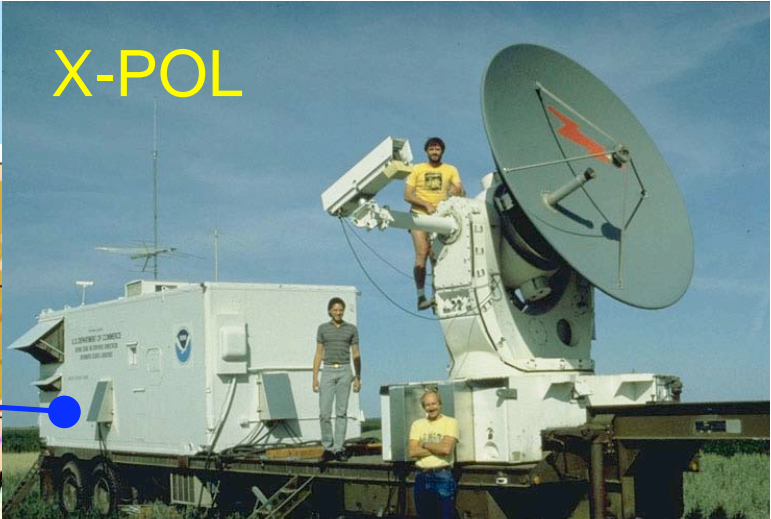
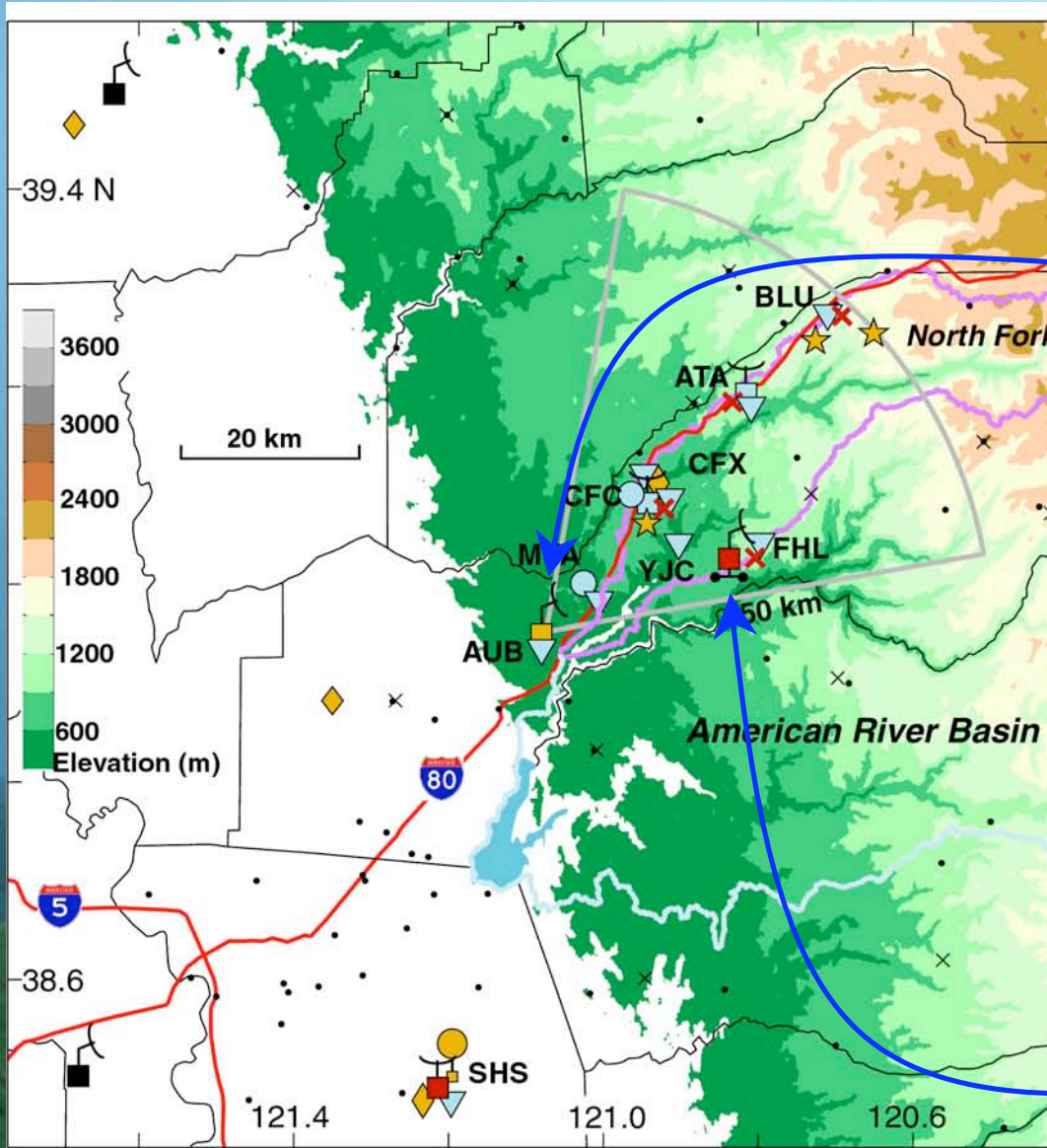
Changes in Peak Flows American River



Red Line = Construction of Folsom Dam

Lester Snow, CA-DWR

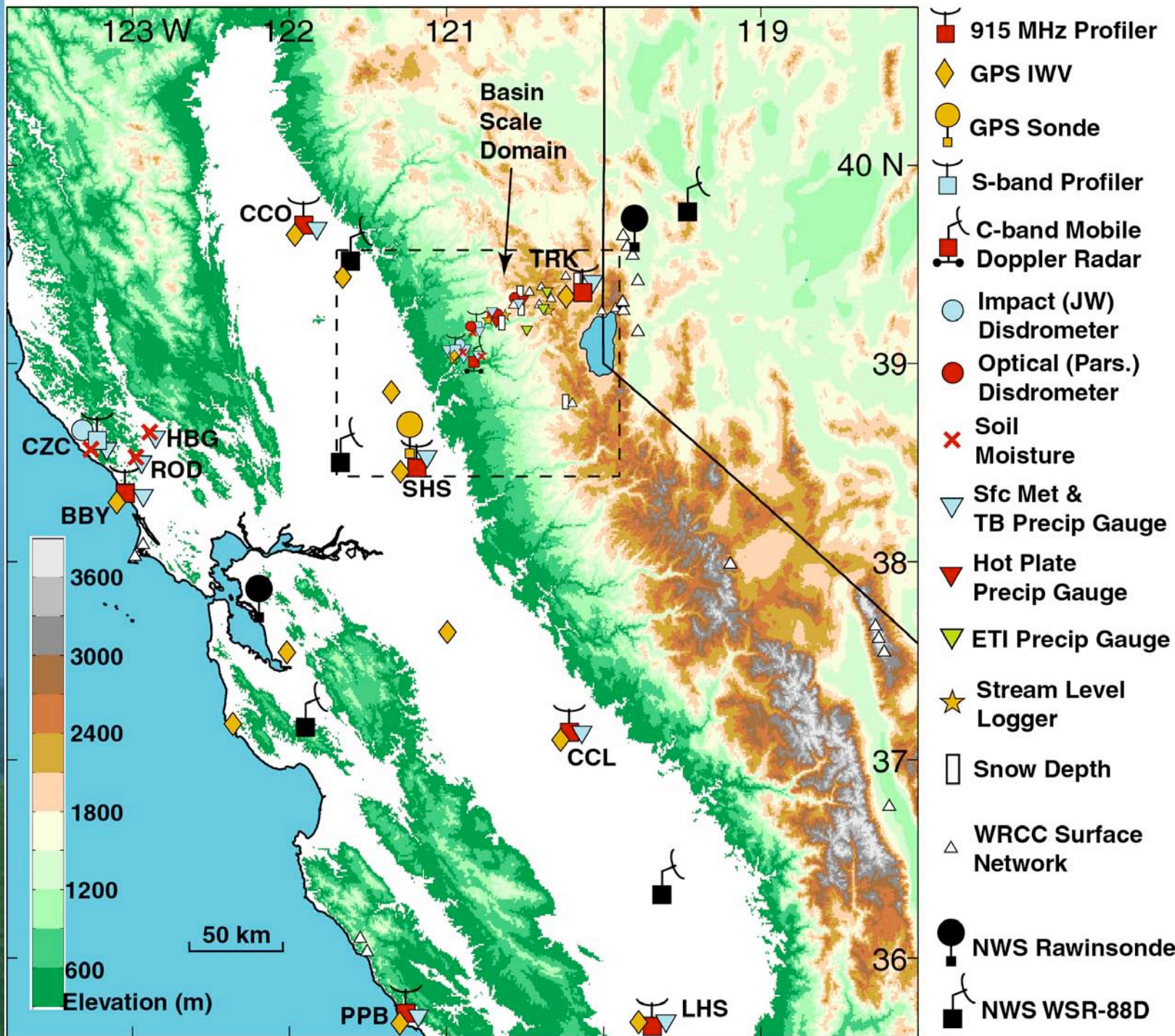
HMT-West 2006 Basin Scale Map



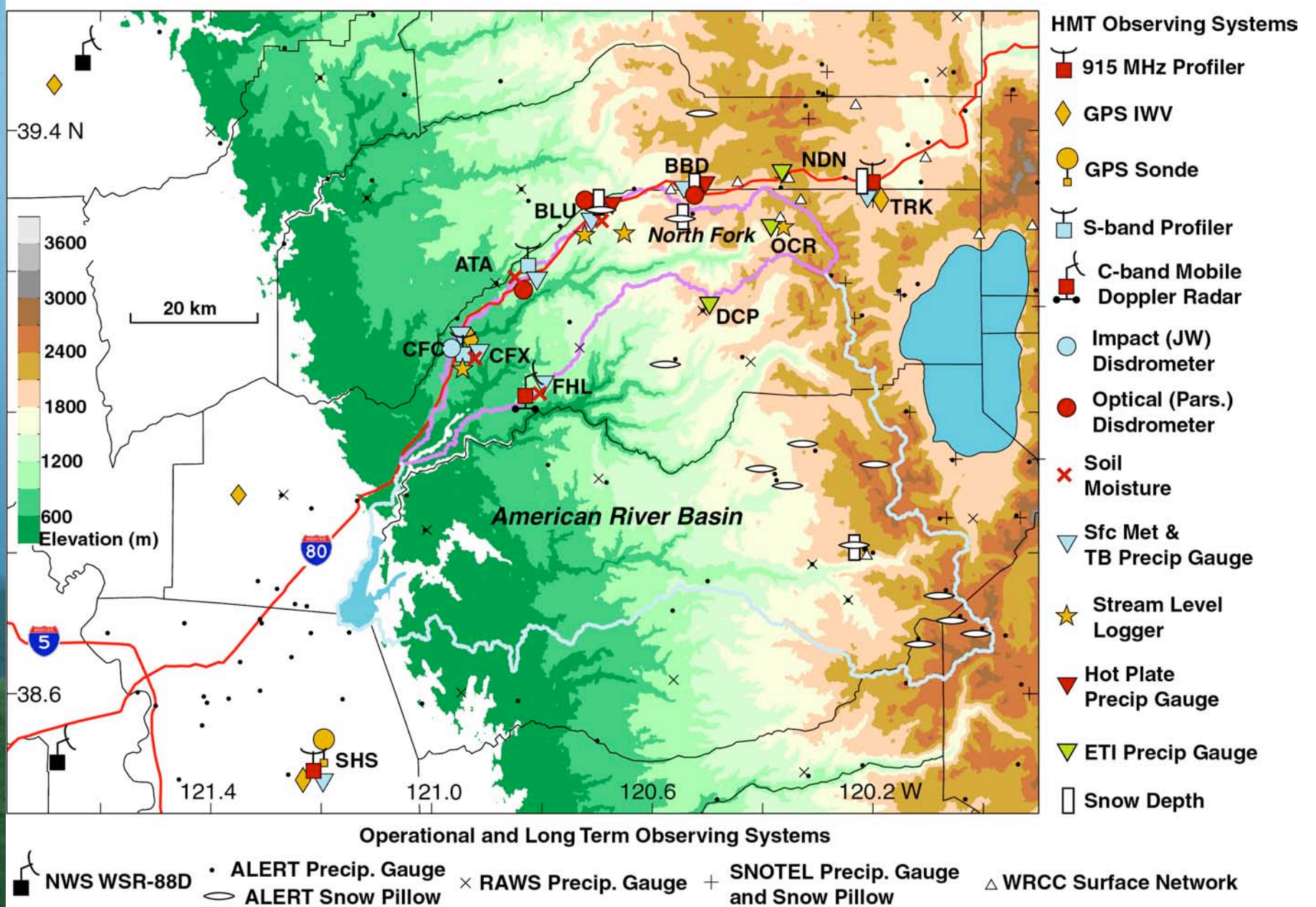
Operational Observing Systems

NWS WSR-88D
 ALERT Precip. Gauge
 RAWS Precip. Gaug

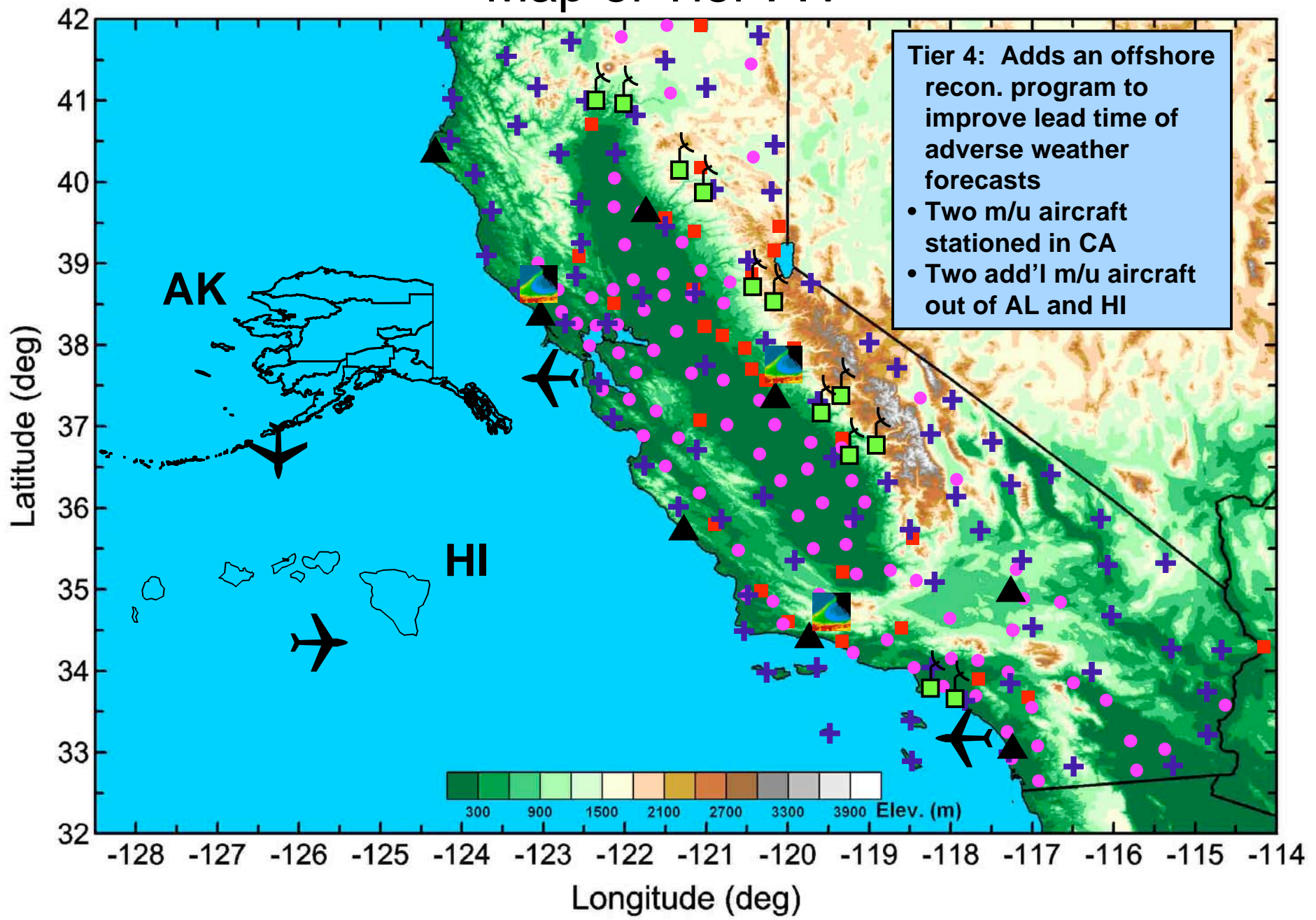
HMT-West 2007 Regional Scale Map



HMT-West 2007 Basin Scale Map



Map of Tier I-IV



Observations & Modeling

- Diagnoses
- Quantitative precipitation estimation (QPE)
- Climate change monitoring
- * Assimilation in numerical weather prediction (NWP) models
- * Verification
 - Confidence and credibility in QPF is achieved through verified
- * Observing System Simulation Experiments (OSSE)
- * NWP can improve QPE through assimilation

* Indicates a direct linkage between the observational and modeling components of this vision