



Photo credit: John Hannon, Reclamation

# WTMP Model Development Overview

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# Peer Review Panel Question #7

- For the Trinity River, Clear Creek, American River and Stanislaus River systems: **Briefly address** Mid-Term Peer Review questions regarding:
  1. Modeling design
  2. Extreme hydrologic/storage conditions in future application
  3. Representation of unique features
  4. Data sufficiency and gap handling
  5. Confidence in model performance
  6. Documentation

# Peer Review Panel Question #9

- Are the models, in **forecast mode**, adequate for the intended real-time and seasonal planning purposes
  - (i.e., forecast period ranges from 3- to 5-days to
  - six months into the future),
- based on performance measures, uncertainty, and the fidelity with which the models represent physical processes?



# Peer Review Panel Questions #10

- Is the proposed plan to **manage the range of expected variability** (e.g., hydrology and meteorology) from future climate projections adequate?



# Model Development Documentation (Part I)

- Document Link:
  - [WTMP Model Development, Calibration, Validation and Sensitivity Analysis](#)
- Technical Memorandum Status:
  - Final Draft
  - Enhancements since Mid-Term Peer Review:
    - New material related to Trinity/Whiskeytown, American, and Stanislaus systems
    - Minor modifications based on MTC feedback
    - Significant modifications based on Panel feedback/recommendations



# Model Development Documentation (II)

- Technical Memorandum Chapters Highlighted:

- Introduction
- Background
- Sacramento/Trinity
- American
- Stanislaus
- Recommendations
- Summary
- References
- Guide to Appendices

} Model Development  
Calibration, Validation, Sensitivity



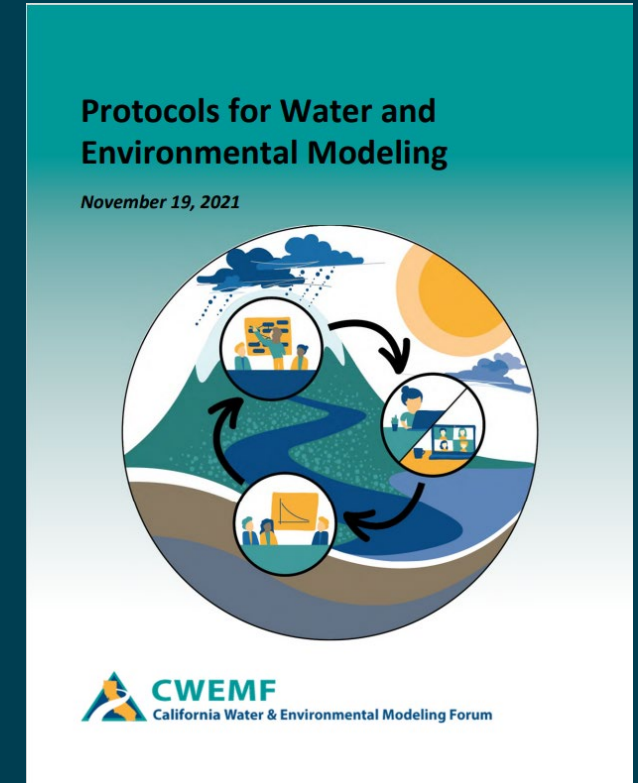
# Term “Validation” Defined

- The WTMP documentation employs the term validation consistent with CWEMF as the “process of applying a fitted model to an independent set of observed data to evaluate model fit” and appreciates the more recent nomenclature of “testing” or “evaluation.”
- [California Water and Environmental Modeling Forum \(2021\)](#)



# Technical Memorandum Highlights (Part I)

- Employment of CWEMF protocols (as applicable)
  - “good” modeling practices
- Multiple models and multiple systems with extended calibration periods
- Automated reporting and extensive model performance information
- Detailed background
  - Systems/Basins
  - Unique attributes
  - Data Development TM nexus/support



Source: CWEMF





# Technical Memorandum Highlights (II)

- Calibration approach
  - Pre-defined performance metrics (Objective driven)
  - Target reservoir and river performance descriptions to guide calibration
  - Role of validation (calibration and metric comparisons)
- Sensitivity analysis
  - Defined sensitivity levels for calibration
  - Employ model performance metrics
  - Phase II activities (forecasting and long-term planning)



# Presentation Layout

- Geometric Representation, Boundary, and Initial Conditions
- Unique Features
- Calibration, Validation, and Sensitivity
  - Approach
  - Performance

