



Photo credit: John Hannon, Reclamation

# WTMP Limitations

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# Limitations

- Reclamation understands the WTMP has room to mature
- First phase of development, development will continue
- Limitations are opportunities to improve science and modeling

The only way of discovering the limits of the possible is to venture a little way past them into the impossible.

-Arthur C Clarke



# Data Management System

- Manages access to model ready data
- Due to Federal IT restrictions, available as Reclamation internal only
  - Link to RISE for external agency access
- Additional datatypes will be needed
- Ongoing efforts needed to maintain data quality



Conception of a DOI datacenter



# Models

- Aleatoric uncertainty within environmental processes
- Historic data quality and quantity
- Numerical process representations and parameterization
- Future data collection
  - Quality and quantity
- Out-of-set conditions
  - Climate change
  - Operations
  - Environmental management



# Temperature Target Logic

- Simplified implementation for temperature target locations and Boolean logic
- Development of more complex logic for scenario exploration
  - Driven mostly by the long-term operations use case



# Forecasting/Uncertainty

- Existing forecast products present a fundamental limit on WMTP performance
  - Short term – Meteorological forecasts
  - Seasonal – Seasonal climate forecasts
  - Long term – Climate projections
- The spatial/temporal scales introduce additional uncertainties
- Long-term climate input development
  - Need to explore methodologies for connecting CalSim 3 workflow with WTMP inputs



# Recommendations

- Documenting at each portion of the analysis
- Most of the technical memorandums include a recommendation section
- Additional recommendations come from hands-on system experience



# Recommendations - Model Calibration

- Develop a comprehensive and robust monitoring program
  - Focus on addressing the spatial and temporal data needs of flow and sub-daily temperature modeling
  - A coordinated multi-agency collaboration for data collection and monitoring can be most efficient
- The continued implementation of WTMP will include additional model development, if warranted, and calibration/re-calibration based on additional available data.
- Use hindcast to understand when re-calibration is required
- Build toward automated calibration methods





# Recommendations – Data Sharing

- Limited external access to the DMS
- Explore Federal access to the system
- Help enable external stakeholders
  - Continue data publication to RISE
  - Build scripts to pull data from RISE and format for model use
  - Evaluate building scripts to connect HEC-WAT plugin to RISE directly



# Continuous Growth

- Starting point, not an ending point
- Update with data, model improvements
- Incorporate stakeholder feedback
- Improve reporting outputs
- Simplify administration
  
- Long term platform that can grow with our understanding

