



Technical Workshop

Advanced Groundwater Modeling with MODFLOW

September 15-17, 2026 - 8:30am to 4:30pm
Woodard and Curran, Inc. Office
801 T Street, Sacramento, CA 95811

This workshop is open to CWEMF members only

Workshop Fee: \$200 or \$40 for students
Refreshments included. Lunch not included.

Please email cwemf@cwemf.org to reserve your seat and include "CWEMF Advanced MODFLOW6 Workshop" in the subject line
Payment is made via check to: CWEMF, P.O. Box 5051, Vacaville, CA 95696-5051
Please go to www.cwemf.org for information on renewing your CWEMF membership or becoming a CWEMF member

MODFLOW is a three-dimensional hydrologic simulator that is developed and maintained by the U.S. Geological Survey and cooperating partners. MODFLOW 6 is the current "core" version of MODFLOW that is actively supported, developed, and maintained by the USGS. Newly developed capabilities extend MODFLOW from a groundwater flow simulator into a hydrologic simulator with many features not available in prior versions.

In this in-depth **three-day workshop**, participants will gain working knowledge of the advanced hydrologic modeling capabilities in MODFLOW 6. For each section of the workshop, there will be presentations covering the underlying concepts and implementation followed by live demonstrations and class activities. The workflows presented in live demonstrations and developed in class activities can be applied or adapted for constructing complex, real-world, MODFLOW models.

Workshop participants will need to bring a laptop computer with several programs installed, including Python and the extended version of MODFLOW which will be installed through a Pixi environment, MS Excel, and a powerful text editor such as Notepad++. Before the workshop participants will need to download workshop materials from a course repository (will be made available) and follow installation instructions that are outlined in the repository to install a Pixi environment for this course.

Major course topics will include

- Advanced Packages including: UZF, SFR, LAK, MAW, CSUB, and MVR
- Custom model behavior using the MODFLOW Application Programming Interface
- Speeding up models by running them in parallel using the Extended version of MODFLOW
- Full three-dimensional anisotropy using XT3D multi-point flux approximation
- Simulating variable-density processes using groundwater flow and transport models
- Particle Tracking (PRT) Model
- Simulating surface and subsurface temperature patterns with the Groundwater Energy Model (GWE)
- Effective Python workflows for reproducible model construction and analyses

Course Instructors:

Josh Larsen, Hydrologist, U.S. Geological Survey, California Water Science Center
Eric Morway, Research Hydrologist, U.S. Geological Survey, Nevada Water Science Center
Alden Provost, Hydrologist, U.S. Geological Survey, Integrated Modeling and Prediction Division

Prerequisites: Participants should have a basic understanding of surface water and groundwater hydrology, basics of MODFLOW 6, and familiarity with Python programming.