SECURE WATER FUTURE
QUARTERLY NEWSLETTER

JANUARY - MARCH, 2025

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SWF Q1 Highlights

- **Publications**
  - 6 academic journal publications.
- **Events**
  - SWF Markets virtual workshop organized by Dr. Ellen Bruno (UCB).
- **Research**
  - Dr. David Rosenberg (USU) created an immersive model for Lake Mead based on the principle of divide reservoir inflow. - ***LINK***
- **Graduations**
  - Dr. Hadia Akbar (USU) successfully defended her Ph.D. proposal.

Upcoming Events

- **PPIC - Research Priorities for Climate-Resilient California Water Policy:**
  - April 15 - 17
- **CASA ELE 2025:**
  - May 22-31
- **Climate Fluency for Faculty Teaching Agriculture & Water Classes:**
  - May 20-22



CASA ELE 2024 graduate student participants at the Bosque del Apache National Wildlife Refuge.

This work is supported by Agriculture and Food Research Initiative Competitive Grant no. 2021-69012-35916 from the USDA National Institute of Food and Agriculture.

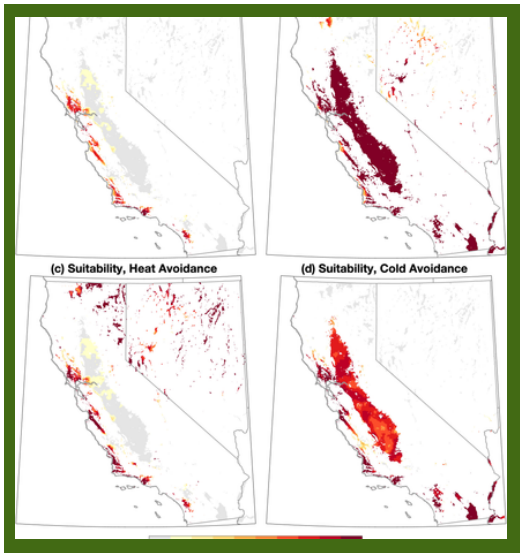
Recent Research

Classifying Climate-Suitable Lands in California for Coffee Cultivation

Kenneth B. Prewitt, John T. Abatzoglou, Joshua H. Viers, Colleen C. Naughton

Classifying Climate-Suitable Lands in California for Coffee Cultivation investigates the potential for growing coffee in California by analyzing current and future climate conditions. The study identifies over 230 square kilometers of agricultural land in coastal southern and central California that are currently thermally suitable for coffee cultivation, given appropriate management practices. The research also examines how climate change may alter these suitable areas, providing insights for future agricultural planning in the region.

- *Link to publication here*



Thermal suitability for Arabica coffee based on future climate of 2021–2050 incorporating thermal management. Results are shown for (a) overall thermal suitability, (b) energy requirement suitability, (c) heat avoidance suitability and (d) cold avoidance suitability. Scores are shown on a scale from 0 (no years suitable) to 100 (all years suitable), and noncultivated lands are masked out.

Additional SWF Publications

What Do Utahns Think About Global Warming and Climate Change?
Hotaling, S., Becker, K. M. L., Narine, L. K., Ulrich-Schad, J. D., McCann, R., & Howe, P. D., (2025). Utah State University Extension.

Evaluating levee setback distance for the co-benefits of groundwater recharge and riparian ecosystem function
Calderwood, A. J., Rodriguez, A., Foglia, L., & Dahlke, H. E. (2024). Frontiers in Environmental Science.

Climate Change Exposure of Agriculture Within Regulated Groundwater Basins of the Southwestern United States
Parker, L. E., Zhang, N., Kisekka, I., Abatzoglou, J. T., Elias, E. H., Steele, C. M., & Ostoja, S. M. (2025). Climate.

Shorter growing seasons may moderate climate change effects on crop water demands
Abatzoglou, J. T., et.al., Abatzoglou, J. T., Parker, L.E., Viers, J.H., Medellín-Azuara, J., Escriva-Bou, A., Huntington, J.L., Williams, E.L., Rajagopalan, K. (2025). Environmental Research Letters.

Predicting Road-Crossing Passability for River Connectivity Analysis
Goodrum, G.C., Hawkins, C.P., Walsworth, T.E. and Null, S.E. (2025). River Res Applic.

Press Releases

Meeting information needs for water markets: Understanding water diversion and use

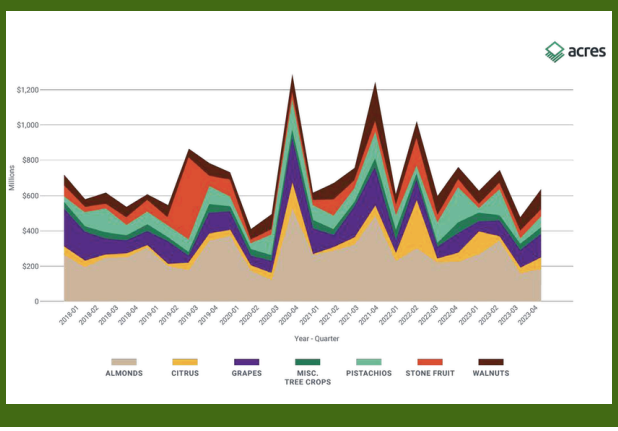
Nell Green Nylen and Molly Bruce



Water markets can enhance climate resilience by promoting sustainable use and helping users adapt to water supply variations, but their effectiveness depends on adequate information about water diversion and use. A recent report examines whether current measurement and reporting systems in the U.S. Southwest meet these information needs to ensure fair and effective water markets.

Click here for the full report on 'Information Needs for Water Markets'. [November, 2024].





Real Estate Values and Agricultural Transitions in California's Central Valley

Porse, E.C., Viers, J., Shew, A., Kishore, S. (2025). The Confluence.

Two studies presented in a panel session during workshops at UC Merced in October 2024, co-sponsored by the California Institute for Water Resources and Secure Water Future at UC Merced, explore the relationships between land prices and environmental factors, including water scarcity. Click here for more on "Real estate values and agricultural land transitions in California's Central Valley."

Event Highlight

59th annual Western Pecan Growers Association (WPGA) Conference



Jamin Miller (NMSU) presenting at the 59th annual Western Pecan Growers Association (WPGA) Conference

The 59th annual Western Pecan Growers Association (WPGA) Conference was held at the Las Cruces Convention Center, March 2-4, 2025. Dr. Richard Heerema has served as coordinator for the educational program for this event since 2006. Turnout and interest for the conference was strong despite economic uncertainties facing the industry, with initial registration estimates showing over 500 pecan farmers and industry representatives from across the southwestern region and beyond in attendance.
Several prominent SWF-related extension and outreach activities took place at this year's conference.

On Monday morning Dr. Salim Bawazir gave an oral presentation about SWF-funded research that showed strong correlations between evapotranspiration (ET) estimates made by the ensemble of the six models used by the freely-available online OpenET platform and measured ET using the "gold-standard" eddy covariance method. The data for this work had been previously published in the Journal of Remote Sensing (Tawalbeh et al., 2024). Having already created confidence in the validity of the OpenET data for pecan growers, this presentation was immediately followed up by a how-to presentation by SWF funded Master's student, Jamin Miller (advisor Dr. Richard Heerema). Jamin went online to show the growers step-by-step exactly how to enter the website and how to find the estimated ET data for their own pecan orchards for different time ranges. Furthermore, he described what the data mean for pecan growers and how they can use this to more precisely time irrigations. This presentation tied in directly with Jamin's Master's research, where he plans to use OpenET to validate an online irrigation scheduling tool for flood irrigation that also accounts for variation in soil water holding capacity among orchards and variation in maximum allowable depletion thresholds among growers.

Team Profile
Yara Pasner



Yara is pursuing a Ph.D. in the Hydrologic Sciences Graduate Group at UC Davis, working with Professors Helen Dahlke and Graham Fogg. She studies regional groundwater policy and management, with a focus on numerical flow modeling. Yara holds a B.S. in mathematics and an M.S. in hydrologic sciences, both from UC Davis.

Publications

[In preparation]. The unmet potential of vertical hydraulic gradients in the management and modeling of sedimentary aquifer systems.
Pasner, Y. M., Fogg, G. E., Harter, T., & Dahlke, H. E.University of California, Davis.

Current trends and biases in groundwater modelling using the community-driven Groundwater Model Portal (GroMoPo)
Zamrsky, D., Ruzzante, S., Compare, K., Kretschmer, D., Zipper, S., Befus, K. M., Reinecke, R., Pasner, Y. M., Gleeson, T., Jordan, K., Cuthbert, M., Castronova, A. M., Wagener, T., & Bierkens, M. F. P.Hydrogeology Journal.

Bulletin

- **Utah State University**
  - If you're interested in collaborating with Utah State University on developing factsheets in the semi-arid southwest—reach out to Dr. Scott Hotaling (*scott.hotaling@usu.edu*) to explore opportunities for engagement.

- **New Mexico State University**
  - Dr. Heerema (*rjheerem@nmsu.edu*) has plans for future Extension outreach opportunities to deliver practical research results to New Mexico agricultural stakeholders, including a field day in the Mesilla Valley during the upcoming growing season (tentatively, late August).

Contact:

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This work is supported by Agriculture and Food Research Initiative Competitive Grant no. 2021-69012-35916 from the USDA National Institute of Food and Agriculture.



Climate Fluency

for Faculty Teaching Agriculture & Water Classes



Program includes:

A 3 day mini-camp that includes short classes on:

- Climatology and climate change
- How to use climate data
- Water resources
- Climate impacts on agriculture
- Agricultural economics
- Use of free, online climate and Ag tools

And a virtual component after the mini-camp of one of the following:

- Co-develop curriculum/modules that can be used in classes and shared with others
- A small research project using online tools and/or the Ag/climate data provided

Logistics:

- 3-day on campus training at UC Merced in May 20–22, 2025
- Virtual component should be completed in approximately 80 hours (2–3 weeks)
- Weekly check-in with the group
- Twice weekly check-ins with CNAP mentor(s)
- Compensation available to support participation and travel to UC Merced will be reimbursed

Boot camp will be led by climate and economic researchers who are part of the California Nevada Adaptation Program (CNAP).

Apply using the QR code. Applications are due April 15th.

w w w.dri.edu/cnap/water-resilience