

David R. Purkey, Ph.D.

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Current Professional Situation

I am the Director of the Water Resources Group of the Stockholm Environment Institute-US Center. In this capacity, I am responsible for all hydrological assessment and modeling work conducted by the Institute. Much of this work involves the development of data management systems, including GIS databases, and the application of water resources models to explore the implications of future management scenarios regarding the use, conservation and protection of water resources. The Water Evaluation and Planning (WEAP) system developed by SEI-US is central to much of this work. My career has evolved from an early focus on irrigation engineering to a broader focus on the hydrology of irrigated catchments, to my current focus on integrated water management at a variety of scales. The question of the potential impact of climate change on water management, and appropriated management adaptations is an increasing focus of our research at SEI-US. My areas of technical expertise include, surface water hydrology, hydrogeology, and water resources systems analysis.

Education and Training

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| 1998 | Ph.D., Hydrology. University of California, Davis. Thesis: A Coupled Surface-Subsurface Model of the western San Joaquin Valley, California. |
| 1989 | M.S., Water Science and Engineering. University of California, Davis. Thesis: Infiltration Under Surge Flow Irrigation. |
| 1983 | B.A., Geology. Carleton College, Northfield, Minnesota. Thesis: An Investigation into the St. Peter Sandstone Aquifer. |
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Important Elements of Recent Employment Record

Director, Stockholm Environment Institute-US Center, Davis, CA, 06/06-present

Manage the Water Resources Group, one of six research programs, at the US Center, one of six research centers, of a major international research organization focusing on sustainable natural resource management (www.sei.se). This post includes responsibility for the management and development of the Water Evaluation and Planning (WEAP) software system that SEI has been developing for over 15 years (www.weap21.org). WEAP is used by partners around the world to investigate and evaluate water management scenarios in order to identify strategies that: (1) better balance the needs of humans and aquatic ecosystem; (2) more equitably allocated water between various water user communities; and (3) do so in a cost-effective manner. By virtue of its innovative linkage of hydrologic and water management logic in a single modeling environment, WEAP is increasingly used to support climate change vulnerability and adaptation analysis in the water sector. Much of this work has been focused on California where SEI-US used WEAP to conduct climate change impact and adaptation analysis for Governor Schwarzenegger's Climate Action Team. WEAP is also used increasingly in the developing world to support vulnerability and adaptation analysis conducted as part 2nd National Communications under the United Nations Framework Convention on Climate Change. SEI-US is defining the methodology that will be used to integrated climate change considerations in to water management planning worldwide. Manage a team of eight senior researchers.

Director, Natural Heritage Institute, Sacramento, CA, 03/02-06/06

Managed the Water Resources Modeling and Analysis Unit of a California-based natural resource management policy think-tank which deployed cutting edge approaches to Integrated Water Resources Management in California, other regions of the United States and around the world. Some examples include a project to link the principal planning model of the California water system, which had previously lacked any reasonable representation of groundwater resources, to a groundwater model via the use of unit response functions. Work in California also included a project to link a water resources systems model to a rainfall-runoff model to facilitate climate change impact and adaptation analysis. This project, done in collaboration with the Stockholm Environment Institute, included the theoretical development of a linkage between SEI existing Water Evaluation and Planning (WEAP) system and a rainfall runoff model of the terrestrial components of the hydrologic cycle. Elsewhere in the United States, developed a DSS tool on the WEAP platform for urban water utilities to use in evaluating long-range water management scenarios that balance competing objectives for shared water resources with their need to plan, finance and realize reliable and affordable potable water supplies for their customers. Used WEAP to develop a model for the international river basin commission seeking to develop a water allocation agreement for the Okavango River shared by the Southern African nations of Angola, Namibia and Botswana.

Selected Refereed Publications

- Mosepele, K, P. Moyle, G. Merron, **D. Purkey**, B. Mosepele. 2009 *Fish, floods, and ecosystem engineers: Aquatic conservation in the Okavango Delta, Botswana*. Bioscience 59(1):53-64
- Vicuna, S., D. Maurer, B. Joyce, J. Dracup, **D. Purkey**. 2007. *The sensitivity of California water resources to climate change scenarios*. Journal of the American Water Resources Association. Vol. 43, No. 2. pp. 482-498.
- Purkey, D.**, A. Huber-Lee, D. Yates, M. Hanemann. 2007. *Integrating a climate change assessment tool into stakeholder-driven water management decision-making processes in California*. Water Resources Management. Vol 21. pp. 315-329.
- Purkey, D.**, A. Huber-Lee. 2006. *A DSS for long-term water utility planning*. Southwest Hydrology. Vol. 4. pp. 18-31.
- Yates, D., **D. Purkey**, M. Gunter, E. Mansfield. 2006. *Implications of climate warming on local water management in the South Fork American River, California*. Water Resources Impact, Vol. 4, No. 5. pp. 18-21.
- J. Sieber, D. Yates, A. Huber Lee, and **D. Purkey**, 2005. *WEAP a demand, priority, and preference driven water planning model: Part 1, model characteristics*. Water International. Vol. 30, No. 4. pp. 487-500
- Yates, D., **D. Purkey**, H. Galbraith, A. Huber-Lee, and J. Sieber, 2005. *WEAP a demand, priority, and preference driven water planning model: Part 2, Evaluating freshwater ecosystem services*. Water International. Vol. 30, No. 4. pp. 501-512
- Purkey, D.R.** and W.W. Wallender. 2001. *Drainage reduction under land retirement over a shallow water table*. ASCE Journal of Irrigation and Drainage Engineering. Vol. 127, No. 1. pp. 1-7. (**winner of Environmental Water Resources Institute's Best Practice Paper of 2001**).
- Purkey, D.R.** and W.W. Wallender. 2001. *Habitat restoration and agricultural production under land retirement*. ASCE Journal of Irrigation and Drainage Engineering. Vol. 127, No. 4. pp. 240-245.