

ADRIANNE E. CARR

Physical Sciences Section
Environmental Science Division
Argonne National Laboratory

Education:

Ph.D. Stanford University, Geological and Environmental Sciences, 2007
B.S. Western Michigan University, Hydrogeology, 1997

Professional Experience:

2009-Present Hydrologist
Environmental Science Division
Argonne National Laboratory

Responsibilities focus primarily on examining environmental impacts of energy production on water flow in the surface and subsurface. Expertise includes development, calibration, and technical review of surface water and groundwater models using a variety of codes.

Summary of Previous Experience:

2007-2009 Hydrologist
Erler & Kalinowski, Inc., Burlingame, California

Specialized in surface water and groundwater modeling focusing on analyzing impacts of development on surface water runoff quantity and quality. Conducted stormwater quality evaluations, projections, treatment analysis, design, and Stormwater Management Model (SWMM) modeling. Developed Monte Carlo approach to investigate potential impacts to receiving water bodies. Conducted Superfund and RCRA site characterization and remediation. Performed groundwater modeling and environmental site assessment in support of litigation and Brownfields redevelopment. Evaluated water supply, conservation, and sustainability measures for municipal, industrial, and developer clients.

1999-2006 Research Assistant and Teaching Assistant
Department of Geological and Environmental Sciences
Stanford University, Stanford, California

Performed independent research leading to the completion of dissertation. Examined changes in surface water runoff resulting from logging in Mendocino County, CA using the Integrated Hydrology Model, a comprehensive, physics-based 3D subsurface and 2D surface water flow and transport model. Worked extensively with large time series data sets; evaluated model performance and model assumptions; and conducted site-specific investigations of surface

and subsurface soil properties such as hydraulic conductivity, soil-water retention, and soil texture in second and third growth forested catchments. Collaborated with research group on testing and improving the Integrated Hydrology Model, with two papers published from these efforts. TA'ed Advanced Geomorphology, Surface and Near-Surface Hydrologic Response, and a series of three environmental geology & urban planning classes.

1998-1999 Volunteer Hydrologist
AmeriCorps Watershed Stewards Project, Fortuna, California

US Forest Service, Casper Creek Watershed Study: Collected stream stage and turbidity data, installed and maintained equipment, and assisted with ongoing research (e.g. large woody debris surveys, channel mapping, landslide surveys, rainfall interception, road decommissioning). California Department of Fish & Game: Performed salmon habitat surveys, evaluated ecosystem suitability, wrote reports. Completed over 200 hours of community service primarily educating elementary school students on watershed processes, salmon habitat, and salmon lifecycle.

1997-1998 Undergraduate Research Fellow
Earth Sciences Division
Lawrence Berkeley National Laboratory, Berkeley, California

Assisted with the quantification of the electric charge of the air-water interface by measuring clay adsorption at different pHs and ionic strengths. Completed an independent research project quantifying virus transport in an unsaturated homogeneous sand. Prepared a scientific poster and created two web-sites towards completion of the program.

Research Interests:

Cumulative impacts of land use on hydrologic response and aquatic ecosystems
Impacts of climate change on hydrology
Quantitative simulation of hydrologic response at multiple scales
Model performance evaluation

Professional Activities:

American Geophysical Union
American Water Resources Association
Groundwater Resources Association of California

Publications:

Author or co-author of 2 journal articles and 4 conference presentations and proceedings.