

Thomas Meixner

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RESEARCH INTERESTS

Watershed hydrology and biogeochemistry, hydrologic controls on water quality, GIS, remote sensing, hydrochemical modeling, atmospheric chemistry, aqueous geochemistry, water quality modelling, sensitivity analysis, automatic parameter estimation, and multi-criteria analysis.

EDUCATION

- PhD 1999** Hydrology and Water Resources, minor in Atmospheric Sciences
University of Arizona
BS 1992 Soil and Water Conservation
University of Maryland at College Park
BA 1992 History of Science and Technology
University of Maryland at College Park

EMPLOYMENT

- 2005-Present:** Associate Professor and Hydrochemist, Department of Hydrology and Water Resources, University of Arizona
1999-2004: Assistant Professor and Hydrologist, Department of Environmental Sciences, University of California, Riverside
1992-1999: Department of Hydrology and Water Resources, University of Arizona (Graduate College Fellowship 1992-93, NSF Graduate Research Fellowship 1993-1994 and 1995-1997, Research Assistant May 1997 - Nov 1997, Canon National Park Science Scholars Program 1997-present)

HONORS

- 2001** NSF CAREER Award
1997 Canon National Park Science Scholar
1993 National Science Foundation Graduate Fellow
1992 Graduate College Fellowship, University of Arizona

PROFESSIONAL ACTIVITIES

- 2004-Present** Chair AGU Water Quality Technical Committee

2001-2003 Associate Editor of Water Resources Research

2001-2002 Secretary for Consortium of Universities for the Advancement of Hydrologic Sciences Inc. (CUAHSI)

2001-Present UC-Riverside Representative to CUAHSI

2000-Present AGU Water Quality Technical Committee (session convener 4 times)

1995-Present Manuscript reviews for Water Resources Research, Atmospheric Environment, Journal of Hydrology, Biogeochemistry, Restoration Ecology, and Water, Air, and Soil Pollution.

1995-Present Proposal reviews for National Science Foundation, Environmental Protection Agency, National Park Service, United States Geological Survey, USDA-NRI, USDA-CSREES-SBIR

PROFESSIONAL SOCIETIES

American Geophysical Union, American Meteorological Society, American Society of Limnology and Oceanography, American Society for the Advancement of Science, American Society of Agricultural Engineers, Soil Science Society of America.

PUBLICATIONS

Refereed Journals

- A. J. Chinkuyu, T. Meixner, T. J. Gish, and A. P. Nejadhashemi. Prediction of NO₃-N losses in surface runoff from a field with seepage zones using GLEAMS and RZWQM. *Transactions of the American Society of Agricultural Engineers*, 49, 1179-1790, 2006.
- A. Sirulnik, E. B. Allen, T. Meixner, M. E. Fenn, and M. F. Allen. Changes in N cycling and microbial N with elevated N in exotic annual grasslands of southern California. *Applied Soil Ecology*, in press, 2007.
- A. Sirulnik, E. B. Allen, T. Meixner, and M. F. Allen. Impacts of anthropogenic N additions on nitrogen mineralization from plant litter in exotic grasslands. *Soil Biology and Biochemistry*, 39, 24-32, 2006.
- T. Meixner, A. K. Huth, P. D. Brooks, M. H. Conklin, N. B. Grimm, R. C. Bales, P. A. Haas, and J. R. Petti. Dissolved organic matter and organic and inorganic nitrogen concentrations during monsoon floods, San Pedro River, Arizona. *Journal of Geophysical Research Biogeosciences*, in review, 2007.

- Y. A. Wood, T. Meixner, P. J. Shouse, and E. B. Allen. Altered ecohydrologic response drives native shrub loss under conditions of elevated nitrogen deposition. *Journal of Environmental Quality*, 35, 76-92, 2006.
- A. van Griensven, T. Meixner, S. Grunwald, and R. Srinivasan. Fit-for-purpose uncertainty versus calibration uncertainty in model-based decision making. *Hydrology and Earth Systems Sciences*, in review, 2006.
- T. Meixner, M. E. Fenn, P. Wohlgemuth, M. Oxford, and P. Riggan. N saturation in chaparral catchments are not reversed by prescribed fire *Environmental Science and Technology*, 40, 2887-2894, 2006
- X. Li, T. Meixner, J. O. Sickman, A. E. Miller, J. P. Schimel, and J. Melack. Decadal-Scale dynamics of water, carbon, and nitrogen in a California Chaparral ecosystem: DAYCENT modeling results. *Biogeochemistry*, 77, 217-245, 2006.
- A. van Griensven and T. Meixner. A global and efficient multi-objective auto-calibration and uncertainty estimation method for water quality catchment models. *Journal of Hydroinformatics*, accepted, 2006.
- A. van Griensven, L. Breuer, M. Di Luzio, V. Vandenberghe, P. Goethals, T. Meixner, J. Arnold, and R. Srinivasan. Environmental and ecological hydroinformatics to support the implementation of the European Water Framework Directive for River Basin Management (in Europe), *Journal of Hydroinformatics*, 8(4), 239-252, 2006.
- A. van Griensven, T. Meixner, S. Grunwald, T. Bishop, M. Diluzio, R. A. Srinivasan. A global sensitivity analysis tool for the parameters of multi-variable watershed models. *Journal of Hydrology*, 324, 10-23, 2006.
- A. van Griensven and T. Meixner. Methods for quantifying and identifying the sources of uncertainty for river basin water quality models. *Water Science and Technology*, 53, 51-59, 2005.
- C. French, L. Wu, T. Meixner, D. Haver, J. Kabashima, and W. A. Jury. "Modeling nitrogen transport in the Newport Bay/San Diego Creek watershed of southern California" *Agricultural Water Management*, 81, 199-215, 2005.
- A. E. Miller, J. P. Schimel, T. Meixner, J. O. Sickman, and J. Melack. Episodic rewetting enhances carbon and nitrogen release from chaparral soils. *Soil Biology and Biochemistry*, 37, 2195-2204, 2005.
- A. J. Chinkuyu, T. Meixner, T. J. Gish, and C. S. T. Daughtry. Prediction of pesticide losses in surface runoff from agricultural fields using GLEAMS and RZWQM. *Transactions of the American Society of Agricultural Engineers*, 48, 585-599, 2005.
- G. Michalski, T. Meixner, M. E. Fenn, L. Hernandez, A. Sirulnik, E. B. Allen, and M. Thiemens. Tracing atmospheric nitrate deposition in a complex semiarid ecosystem using $\Delta^{17}\text{O}$. *Environmental Science and Technology*, 38, 2175-2181, 2004.
- T. Meixner and M. E. Fenn. Biogeochemical budgets in a Mediterranean catchment with high rates of atmospheric N deposition - Importance of scale and asynchrony. *Biogeochemistry*, 70, 331-356, 2004.
- S. L. Stephens, T. Meixner, M. A. Poth, B. McGurk, and D. Payne. Prescribed fire and nutrient cycling in the Lake Tahoe Basin. *International Journal of Wildland Fire*, 13, 27-35, 2004.
- A. J. Chinkuyu, T. Meixner, T. J. Gish, and C. S. T. Daughtry. Importance of seepage zones on predicting soil moisture content and surface runoff from watersheds with GLEAMS and RZWQM. *Transactions of the American Society of Agricultural Engineers*, 47, 427-438, 2004.
- T. Meixner, J. R. Shaw, and R. C. Bales. Temporal and spatial variability of mineral weathering in an alpine watershed. *Hydrological Processes*, 18, 1759-1776, 2004.
- T. Meixner, C. Gutmann, R. C. Bales, A. Leydecker, J. Sickman, J. Melack, and J. McConnell. Multidecadal hydrochemical response of a Sierra Nevada watershed: sensitivity to weathering rate and changes in deposition. *Journal of Hydrology*, 285, 272-285, 2004.
- M. E. Fenn, J. S. Baron, E. B. Allen, H. M. Rueth, K. R. Nydick, L. Geiser, W. D. Bowman, J. O. Sickman, T. Meixner, D. W. Johnson, and P. Neithlich. Ecological effects of nitrogen deposition in the western United States. *BioScience*, 53, 404-420, 2003.
- T. Meixner and R. C. Bales. Importance of snow cover for biogeochemical modeling of alpine ecosystems *Biogeochemistry*, 62, 289-308, 2001.
- T. Meixner, L. A. Bastidas, H. V. Gupta, and R. C. Bales. Multi-criteria parameter estimation for models of stream chemical composition. *Water Resources Research*, 38, 9-1-9-9, 2001.
- T. Meixner, R. C. Bales, M. W. Williams, D. H. Campbell, and J. S. Baron. Stream chemistry modeling of two watersheds in the Front Range, Colorado. *Water Resources Research*, 36, 77-87, 2000.
- T. Meixner, H. V. Gupta, L. A. Bastidas, and R. C. Bales. Sensitivity analysis using mass flux and

concentration. *Hydrological Processes*, 13, 2233-2244, 1999.

- T. Meixner, A. D. Brown, and R. C. Bales. Importance of biogeochemical processes in modeling stream chemistry in two watersheds in the Sierra Nevada, California. *Water Resources Research*, 34(11), 3121-3133, 1998.

Refereed Book Chapters

- T. Meixner, H. V. Gupta, L. A. Bastidas, and R. C. Bales. Multi-criteria parameter estimation for model of stream chemical composition, in *Advances in Calibration of Watershed Models*, edited by Q. Duan, S. Sorooshian, H. V. Gupta, A. N. Rousseau, and R. Turcotte, AGU, Washington, DC, 213-228, 2003.
- M. E. Fenn, J. M. Castro-Sevin, T. Hernandez-Tejeda, N. Krage, C. Goodson, and T. Meixner. Heavy metals in forest soils, vegetation and drainage waters in the Basin of Mexico. Chapter 8 in M. E. Fenn, M. L. de Bauer, and T. Hernandez-Tejeda (eds.) *Urban Air Pollution and Forests: Resources at Risk in the Mexico City Air Basin*. Ecological Studies Series Volume. Springer-Verlag, New York, NY. 194-224, 2002.

Conference Proceedings

- T. Meixner, M. E. Fenn, and P. Wohlgemuth. Fire disturbance and nitrogen deposition impacts at the watershed scale in southern California. In *Proceedings of First Inter-Agency Conference on Research in the Watersheds, Benson, Arizona*, Oct. 28-30 2003, pp. 637-643.
- T. Meixner and P. Wohlgemuth. Climate variability, fire, vegetation recovery, and watershed hydrology. In *Proceedings of First Inter-Agency Conference on Research in the Watersheds, Benson, Arizona*, Oct. 28-30 2003, pp. 651-656.
- E. B. Allen, A. G. Sirulnik, L. Egerton-Warburton, S. N. Kee, A. Bytnerowicz, P. E. Padgett, P. J. Temple, M. E. Fenn, M. A. Poth, and T. Meixner. Air pollution and vegetation change in southern California shrublands. Proceedings of the Symposium on "Planning for Biodiversity: Bringing research and Management Together", Feb. 29-Mar. 3, 2000, USDA Forest Service Pacific Southwest Research Station, Riverside, California, in press.

Abstracts

- R. Bales, J. Dozier, J. Famiglietti, G. Fogg, J. Hopmans, T. Meixner, N. Molotch, K. Redmond, R.

Rice, J. Sickman, J. Warwick. Plan for a Sierra Nevada Hydrologic Observatory: Science Aims, measurement Priorities, Research opportunities and Expected Impacts. *EOS, Transactions, American Geophysical Union*, 85(47), Fall Meeting Suppl. Abstract XXXXX-XX, 2004.

- T. Meixner, G. Michalski, M. Fenn, P. Wohlgemuth, P. Riggan. Retention of Atmospheric and Biogeochemically Cycled Nitrogen in a Mediterranean Climate. *EOS, Transactions, American Geophysical Union*, 85(47), Fall Meeting Suppl. Abstract XXXXX-XX, 2004.
- E. Scott and T. Meixner. Long-term Stream Flow Impact of Wildfires in Mediterranean Shrubland Ecosystems. *EOS, Transactions, American Geophysical Union*, 85(47), Fall Meeting Suppl. Abstract XXXXX-XX, 2004.
- B. Valeron and T. Meixner. Post-Fire Overland Flow Frequency, Volume and Quality. *EOS, Transactions, American Geophysical Union*, 84(47), Fall Meeting Suppl. Abstract XXXXX-XX, 2003.
- J. Sjolín, T. Meixner, B. Hibbs, C. Amrhein, and J. Walker. Selenium and Arsenic - Nitrate-Facilitated Pyrite Oxidation in an Urban Watershed. *EOS, Transactions, American Geophysical Union*, 84(47), Fall Meeting Suppl. Abstract XXXXX-XX, 2003.
- J. Alder, A. van Griensven, and T. Meixner. Web-Based Model Visualization Tools to Aid in Model Optimization and Uncertainty Analysis. *EOS, Transactions, American Geophysical Union*, 84(47), Fall Meeting Suppl. Abstract XXXXX-XX, 2003.
- A. E. Miller, J. O. Sickman, J. M. Melack, J. P. Schimel, and T. Meixner. Soil Nitrogen Dynamics During Seasonal Transitions: N Retention and Loss in Ecosystems of the Sierra Nevada, California. *EOS, Transactions, American Geophysical Union*, 84(47), Fall Meeting Suppl. Abstract XXXXX-XX, 2003.
- J. O. Sickman, A. E. Miller, J. M. Melack, J. P. Schimel, and T. Meixner. Nitrogen Dynamics Along the Western Slope of the Sierra Nevada, California. *EOS, Transactions, American Geophysical Union*, 84(47), Fall Meeting Suppl. Abstract XXXXX-XX, 2003.
- A. van Griensven and T. Meixner. Parameter Uncertainty Assessment for Distributed Water Quality Models. *EOS, Transactions, American Geophysical Union*, 84(47), Fall Meeting Suppl. Abstract XXXXX-XX, 2003.
- T. Meixner and A. van Griensven. Assessing Model Structural Uncertainty Using a Split Sam-

- ple Approach for a Distributed Water Quality Model. *EOS, Transactions, American Geophysical Union*, 84(47), Fall Meeting Suppl. Abstract XXXXX-XX, 2003.
- L. Hernandez, G. Michalski, T. Meixner, M. E. Fenn, and M. Thiemens. Assessing Nitrate Deposition in Southern California Ecosystems using $\Delta^{17}\text{O}$. *EOS, Transactions, American Geophysical Union*, 83(47), Fall Meeting Suppl. Abstract XXXXX-XX, 2002.
- A. J. Chinkuyu, T. Meixner, T. J. Gish and C. S. Daughtry. The Importance of Seepage Zones in Predicting Surface Runoff, $\text{NO}_3\text{-N}$ and Pesticide Loss From Watersheds with GLEAMS and RZWQM. *EOS, Transactions, American Geophysical Union*, 83(47), Fall Meeting Suppl. Abstract XXXXX-XX, 2002.
- T. Meixner. Estimating the Optimal Spatial Complexity of a Water Quality Model Using Multi-Criteria Methods. *EOS, Transactions, American Geophysical Union*, 83(47), Fall Meeting Suppl. Abstract XXXXX-XX, 2002.
- G. Michalski, L. Hernandez, T. Meixner, M. E. Fenn, and M. Thiemens. Tracing Nitrate Deposition Using $\Delta^{17}\text{O}$. *EOS, Transactions, American Geophysical Union*, 82(47), Fall Meeting Suppl. Abstract XXXXX-XX, 2001.
- T. Meixner, and P. Wohlgemuth. The San Dimas Experimental Forest - Long Term Study of Fire, Water and Vegetation. *EOS, Transactions, American Geophysical Union*, 82(47), Fall Meeting Suppl. Abstract XXXXX-XX, 2001.
- T. Meixner, M. Fenn and M. A. Poth. Controls on N Deposition Impacts in Semi-Arid Catchments. *EOS, Transactions, American Geophysical Union*, 82(20), S140, 2001.
- T. Meixner and R. C. Bales. Integrated Hydrologic and Carbon-Nitrogen Modeling of an Alpine Ecosystem. *EOS, Transactions, American Geophysical Union*, 81(48), F521, 2000.
- C. Gutmann, T. Meixner, and R.C. Bales. Multidecadal Hydrochemical Response of a Sierra Nevada Watershed: Sensitivity to Mineral Weathering Rate. *EOS, Transactions, American Geophysical Union*, 81(48), F527, 2000.
- T. Meixner. Multi-Criteria Calibration for Water Quality Models. , 81(48), F527, 2000 Annual Meetings Abstracts 2000, ASA-CSSA-SSSA, 32, 2000
- M. Fenn, M. Poth, and T. Meixner. Atmospheric Nitrogen Deposition and Habitat Alteration in Terrestrial and Aquatic Ecosystems in Southern California: Implications for Threatened and Endangered Species. IN *Proceedings of the symposium, Planning for Biodiversity: Bringing Research and Management Together. California Polytechnical University, Pomona, CA, Feb. 29-Mar. 2, 2000.* USDA-Forest Service, Pacific Southwest Research Station, Albany, CA. (In Press).
- T. Meixner, L. A. Bastidas, H. V. Gupta, and R. C. Bales. Multi-response data and calibrating models of stream chemistry *EOS, Transactions, American Geophysical Union*, 80(46), F406, 1999.
- T. Meixner, L. A. Bastidas, H. V. Gupta, and R. C. Bales. Multi-criteria Parameter Sensitivity and Estimation with the Alpine Hydrochemical Model *Limnology and Oceanography: Navigating into the Next Century, American Society of Limnology and Oceanography*, 122, 1999.
- T. Meixner, R. C. Bales, M. W. Williams, D. H. Campbell, and J. S. Baron. Flow Routing in Two Watersheds in the Rocky Mountains, Colorado. *EOS, Transactions, American Geophysical Union*, 79(45), F318, 1998.
- T. Meixner, L. A. Bastidas, H. V. Gupta, and R. C. Bales. Multiobjective sensitivity analysis for the Alpine Hydrochemical Model. *EOS, Transactions, American Geophysical Union*, 78(46), F195, 1997.
- T. Meixner, A. D. Brown, and R. C Bales. Modeling of biogeochemistry of two alpine watersheds in the Sierra Nevada, California. *EOS, Transactions, American Geophysical Union*, 78(17), S173-S174, 1997.
- T. Meixner, A. D. Brown, and R. C Bales. Nitrogen Cycling in Two Watersheds in the Sierra Nevada, California. In *Chapman Conference on Nitrogen Cycling in Forested Catchments*, 25, 1996.

CURRENT AND PAST GRANTS

National Science Foundation - SGER "Post-Fire Hydrology, Biogeochemistry and Vegetation Response", \$94,236, PI, 3/04-2/06.

Santa Ana Regional Water Quality Control Board, PI

"Selenium and Arsenic Factors in the Impairment of Water Bodies in the Newport Bay/San Diego Creek Watershed", \$207,000, 2001-2004.

National Science Foundation, Co-I "Microbial and Hydrological Controls of Nitrogen Losses from Alpine and Chaparral Ecosystems During Seasonal Transitions", \$84,587, 2001-2004.

University of California Water Resources Center, PI

"Landscape level Controls on Nitrate Nitrogen in Forested and Chaparral Catchments of Southern California", \$56,000, 2000-2002.

United States Forest Service, PI “Moving SDEF Long-Term Hydrologic and Meteorological Data On-Line”, \$60,000, PI, 6/00-12/04.
NSF-CAREER Award, PI “Evaluation of Biogeochemical Watershed Models, How do We Know When a Model is Wrong?”, \$250,000, PI, 7/01-6/06.
EPA-Biopollution, PI “Abiotic Controls on Invasive Species and Biodiversity: Comparison of Forest and Shrubland”, \$448,122, PI, 7/01-6/04.

CURRENT AND PAST ADVISEES

Kristi Alger - M.S. Soil and Water Science (2004)
Jennifer Sjolín - M.S. Soil and Water Science (2004)
Bridgette Valeron - M.S. Soil and Water Science (2005)
Ann van Griensven - Post-Doctoral Associate (2003)
Adion Chinkuyu - Post-Doctoral Associate (2001-2004)
Yvonne Wood - Post-Doctoral Associate (2001-2004)
Xuyong Li - Post-Doctoral Associate (2003-2004)