

Eva Sinha

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RESEARCH INTERESTS

Eva's interests lie in understanding the impact of human-induced climate change on water quality via nutrient loading to water bodies. In particular her work focusses on understanding the drivers of nutrient delivery from watershed to continental scales and studying the impact of changes in the precipitation patterns and changes in land use and land management on nutrient delivery.

EDUCATION

Stanford University, Stanford, CA Expected October 2018
PhD in Earth System Science
Advisors: Anna Michalak and Chris Field
Dissertation title: Understanding the impact of climate change, land use, and land management on riverine nitrogen loading

University of Illinois at Urbana-Champaign, IL July 2004
MS in Civil & Environmental Engineering
Advisor: Barbara Minsker
MS thesis title: Multiscale Island Injection Genetic Algorithms for Groundwater Remediation

Indian Institute of Technology, Kanpur, UP, India May 2002
BTech in Civil Engineering
Advisor: Onkar Dikshit
Senior-year thesis title: Segmentation Based Classification for Thematic Mapping

RESEARCH & WORK EXPERIENCE

Research Assistant, Stanford University 2013-Present
Developed spatially and temporally explicit estimates of total nitrogen loading within the continental United States and investigated the drivers of spatial and temporal variability and the impact of change in precipitation patterns and societal choices on nitrogen loading by the end-of-the century.

Project Engineer, Paul C. Rizzo Associates, Oakland, CA 2011-2013
Performed run-off analysis, drainage analysis, and site characterization for proposed Power Plants.

Civil Engineer IV, Black & Veatch, Boston, MA 2005-2011
Conducted infrastructure planning studies, hydraulic modeling of water, wastewater, and combined sewer systems and water quality modeling for various public utilities.

Research Associate, U. S. Environmental Protection Agency, Chicago, IL 2004
Performed spatial, temporal, and statistical analysis of groundwater monitoring data to evaluate

the level of cleanup achieved at contaminated sites.

Research Assistant, University of Illinois at Urbana-Champaign 2002-2004
Identified optimal design for groundwater remediation using numerical models coupled with multi-scale parallel genetic algorithms.

Senior Year Project, Indian Institute of Technology 1998-2002
Developed an alternative approach, namely region based segmentation, for image per-pixel classification and developed an interactive interface for image classification in Visual C++.

TEACHING EXPERIENCE

ESS 211 Fundamentals of Modeling Autumn, 2017
Earth System Science, Stanford, CA

ESS 214 Introduction to Geostatistics & Modeling of Spatial Uncertainty Spring, 2016
Earth System Science, Stanford, CA

PUBLICATIONS

1. **Sinha, E.**, A. M. Michalak, K. V. Calvin, P. J. Lawrence, (2018) “Societal choices about climate mitigation will have dramatic impacts on eutrophication in the 21st century,” *In prep.*
2. Del Giudice D, Y. Zhou, **E. Sinha**, A. M. Michalak (2018) “Long-Term Phosphorus Loading and Springtime Temperatures Explain Interannual Variability of Hypoxia in a Large Temperate Lake,” *Environmental Science & Technology*, 52 (4), 2046–2054, [doi: 10.1021/acs.est.7b04730](https://doi.org/10.1021/acs.est.7b04730).
3. **Sinha, E.**, A. M. Michalak, V. Balaji (2017) “Eutrophication will increase during the 21st century as a result of precipitation changes,” *Science*, 357 (6349), 405–408, [doi:10.1126/science.aan2409](https://doi.org/10.1126/science.aan2409).
4. **Sinha, E.**, A. M. Michalak, (2016) “Precipitation dominates interannual variability of riverine nitrogen loading across the continental United States,” *Environmental Science & Technology*, 50 (23), 12874–12884, [doi:10.1021/acs.est.6b04455](https://doi.org/10.1021/acs.est.6b04455).
5. Li, C., **E. Sinha**, D. E. Horton, N. S. Diffenbaugh, A. M. Michalak, (2014) “Joint bias correction of temperature and precipitation in climate model simulations,” *Journal of Geophysical Research: Atmospheres*, 119 (23), 3153–3162, [doi:10.1002/2014JD022514](https://doi.org/10.1002/2014JD022514).
6. **Sinha, E.**, B. S. Minsker, (2007) “Multiscale Island Injection Genetic Algorithm for Ground Water Remediation,” *Advances in Water Resources* 30(9), 1933–1942, [doi:10.1016/j.advwatres.2007.03.006](https://doi.org/10.1016/j.advwatres.2007.03.006).

CONFERENCE PRESENTATIONS & POSTERS (invited talk marked with *)

1. * **Sinha, E.**, J.C. Ho, A. M. Michalak (2018) Eutrophication will increase during the 21st century as a result of precipitation changes. NOAA Science Seminar, 9th January.
2. * **Sinha, E.**, A. M. Michalak, V. Balaji (2017) Precipitation Dominates Interannual Variability of Riverine Nitrogen Loading Across the CONUS. IAGLR 2017. Detroit, MI, 15-19 May.

3. **Sinha, E.**, A. M. Michalak, V. Balaji (2017), Climate change impacts on riverine nitrogen loading within the Continental US. ASLO 2017. Honolulu, HI, 26 March-3 April. Abstract 29969.
4. **Sinha, E.**, A. M. Michalak (2015) Role of Precipitation Variability in Interannual Variation of Nitrogen Loading in Streams in the Continental U.S. American Geophysical Union (AGU) 2015. Fall Meeting, San Francisco, CA, 14-18 December. Abstract H13C-1548.
5. **Sinha, E.**, A. M. Michalak (2014) Predicting Nitrogen Loading in Streams Under Climate Change Scenarios in the Continental United States. American Geophysical Union (AGU) 2014. Fall Meeting, San Francisco, CA, 15-19 December. Abstract H31H-0733.
6. **Sinha, E.**, J. Kumar, F. M. Hoffman (2012) Analysis and Intercomparison of CMIP5 Models Using Clustered Climate Regime. American Geophysical Union (AGU) 2012. Fall Meeting, San Francisco, CA, 3-7 December. Abstract IN21C-1486.

MEMBERSHIPS

1. American Geophysical Union (2012-Present)

REGISTRATION

Professional Engineer - State of New Hampshire (since June, 2008)

SKILLS

Programming: R, NCAR Command Language (NCL), Matlab, Fortran, C, MPI, Visual Basic
Modeling Software: WaterGEMS, InfoWater, H2OMap, InfoSWMM, InfoWORKS, HEC-RAS, HEC-HMS

General: ArcGIS, LaTeX

Languages: Hindi (native), English (fluent)

HONORS

1. Recipient of Yeh Endowed Chair Fund Fellowship, University of Illinois at Urbana-Champaign, Sept, 2002 - May, 2003.
2. New Jersey Department of Environmental Protection Interconnection Study project received the 2009 Engineering Excellence Award from the New Jersey American Council of Engineering Companies.