

Tyler Erickson : CV

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Tyler A. Erickson

Research Scientist

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Research Interests

My research interests are in the area of developing innovative geospatial estimation methods for characterizing environmental parameters, and of developing internet-based information systems for distributing environmental data. Of particular interest is the explicit modeling of spatial scales, and the effect of upscaling and downscaling of spatial estimates. I have designed relational database systems for managing environmental measurements, including the University of California's Mammoth Mountain Ski Area Energy Balance Monitoring Site database and the meteorological database for the Niwot Ridge Long Term Ecological Research (LTER) site. I have extensive experience in the field collection of ground truth datasets for remote sensing sensor validation, having led the weekly snowpit characterization field work for the University of Colorado's Niwot Ridge LTER site from 2000-2004, participated in the field collection for NASA's Cold Land Processes Field Experiment in 2002 and 2003, as well as fieldwork for glacier ablation sensor maintenance for the Bering Glacier in southern Alaska.

Education

- 2004 Ph.D., [Geography](#), [University of Colorado](#)
- 1999 Engineer Degree, [Civil and Environmental Engineering](#), [Stanford University](#)
- 1995 M.S., [Civil Engineering](#), [California Institute of Technology](#)
- 1993 B.S. (Summa Cum Laude), [Civil Engineering](#), [Colorado State University](#)

Positions Held

[Michigan Tech Research Institute](#) (Sept 2006 - present)

[Altarum Institute](#) (2004 - 2006)

Research Scientist II

- Primarily responsible for technical leadership and project management on variety of geospatial information data management and analysis projects for federal, state, and local agencies including the BLM, EPA, USDA-NRCS, and Michigan DOT.

[Institute of Arctic and Alpine Research](#), [University of Colorado at Boulder](#) (2000-2004)

Graduate Researcher

- Graduate studies focusing on the application of geostatistical techniques to the characterization and modeling of snow properties and occurrence.

[Radium Technologies](#) (August 2000 - June 2002)

Database Architect

- Created relational data models and database implementations for a variety of clients, including the Mammoth Mountain Ski Area Energy Balance Monitoring Site, a research site that records snowpack and meteorological conditions for research studies.

[Robert Half International Consulting, San Francisco, California](#)

Database Architect/Programmer (September 1999 - August 2000)

- Created comprehensive database for the Hooked on Phonics website in Microsoft SQL Server, including e-commerce and online dynamic content. Created a database and desktop interface to automate calculate the relative difficulty of children's books using Microsoft Access and Visual Basic.

[Stanford University, Stanford, California \(September 1997 - August 1999\)](#)

Graduate Researcher/Teaching Assistant

- Assisted in teaching a graduate-level Introduction to Geostatistics course. Created toolbox of MATLAB routines to perform standard geostatistical techniques. Produced a summary map of basement rock in the Bering sea from hardcopy maps of dissimilar scales and projections using ArcInfo and ArcView GIS software. Wrote scripts in ArcView's object-oriented programming language, Avenue, to allow for modeling of geologic faults.

[Shepherd Miller, Inc., Fort Collins, Colorado](#)

Staff Level II (September 1996 - June 1997)

Staff Level I (September 1995 - September 1996)

- Performed surface and groundwater hydrologic analyses for clients. Assisted in designing and maintaining a large GIS of recent and historical chemical measurements for a tailing impoundment in central Wyoming using Intergraph MGE. Modeled the extent of chemical plumes using Voxel Analyst. Constructed models of stratigraphic surfaces for groundwater models using ERMA Site Geologist and MGE Terrain Analyst. Combined four partially redundant Access databases of over 100,000 records for a uranium tailings reclamation project into a single SQL Server database. Designed an Access interface for viewing the data stored in the SQL Server database. Designed an Access database to store survey measurements from over 200 houses in a Denver, Colorado suburb. Wrote Visual Basic modules to determine whether the houses passed or failed various performance criteria. Produced maps of soil expansion and data summaries for use in legal proceedings using Access forms and reports. Designed import filters using Visual Basic for an Access database containing radiation survey data from a New England nuclear power plant.

Service

Journal Reviewer

- [Water Resources Research \(WRR\)](#)
- [Hydrological Processes](#)
- [Arctic, Antarctic, and Alping Research](#)

Member

- [American Geophysical Union \(AGU\)](#)
- [IEEE Geoscience and Remote Sensing Society](#)
- [American Society for Photogrammetry and Remote Sensing \(ASPRS\)](#)
- [Improving Michigan's Access to Geographic Information Networks \(IMAGIN\)](#)
- Registered Engineer-in-Training (1993)

Funding

- PI "Space-time Inverse Modeling with Remotely Sensed Data" DoD, \$300,000
- Co-I "Development of Decision Support Products for Spatial Quantification of Carbon Emissions from Wildfire for North America" NASA, \$839,715

Honors and Awards

Honors

- CSU Outstanding Civil Engineer, 1993
- CSU Dean's List, 1989-1993

Fellowships and Scholarships

- Sussman Grant (CU), 2002
- Beverly Sears Graduate Student Grant Award (CU), 2002
- Departmental Fellowship (CU), 2000-2002
- W.M. Keck Fellowship (CU), 1999-2000
- National Science Foundation Graduate Fellowship, 1994-1999
- Teaching Assistantship (SU), 1998-1999
- School of Engineering Fellowship (SU), 1997-1999
- University Fellowship - NSF supplement (SU), 1997-1999
- William Garland Memorial Scholarship (SU), 1997-1998
- Robert T. and Pearl Knapp Fellowship (CIT), 1994-1995
- Thomas J. Watson IBM Scholarship, 1989-1993
- Harold Short Scholarship (CSU), 1993
- Harry Francis Denning Memorial Trust Scholarship (CSU), 1993
- Walter J. Scott Memorial Engineering Scholarship (CSU), 1989-1993
- CSU Presidential Scholarship, 1990-1993
- CSU Honors Scholarship, 1989-1990
- CSU Mathematics Department Scholarship, 1989-1990
- AAL Scholarship, 1989-1993

Publications and Presentations

- **Erickson, T. A.** and **Brooks, C.**. 2008. À la carte Geospatial: Integrating Proprietary and Open-Source Software to Create Server-Based Geospatial Data Management Systems. [Improving Michigan's Access to Geographic Information Networks \(IMAGIN\) IMAGIN Annual Conference and Expo, GIS: Strengthening our Economic Future](#), May 4-7.
- **Erickson, T. A.**. 2008. [Modern Methods for Web Distribution of Geographic Datasets](#). [Michigan Technological University RSI Seminar Series](#), March 31.
- **Erickson, T. A.**. 2008. Water Resource Characterization and Remote Sensing Data Analysis using Geostatistical Techniques. [Michigan Technological University Environmental Engineering Graduate Seminar](#), March 31.
- **Erickson, T. A.**. 2008. Software Research Needs: Geospatial and Decision Support Tools/Models: Applying Geospatial Decision Support Tools to Assess Water Quality and Human Health Risk in the Great Lakes Region. [Graham Environmental Sustainability Institute Conference on Water, Health, and the Environment: Setting the Research Agenda](#), March 26-27. (INVITED)
- **Erickson, T. A.**. 2007. [MichiganView Consortium: Promoting Remote Sensing in the Great Lakes Region](#). [Great Lakes Regional Data Exchange 2007 and CRSS/ASPRS 2007 Specialty Conference](#), October 29, Ottawa, Ontario, Canada.
- **Erickson, T.A.** and P. Gienke. 2007. [What's going on out there? Using GeoServer for management of Spatio-Temporal Environmental Data](#). Presented at [2007 Free and Open Source Software for Geospatial \(FOSS4G\) Conference](#), Sept 24-27, 2007, Victoria, British Columbia, Canada.
- Brooks, C., R. Schuchman, E. Keefauver, B. Koziol, **T. Erickson**, C. Ide. 2007. The Great Lakes Environmental and Molecular Sciences (GLEAMS) Center: Enhancing Community Decision Making through Geospatial Decision Support System (DSS) Tools. Michigan Environmental Health Association (MEHA) 63rd Annual Education Conference, Kalamazoo, MI.

- **Erickson, T.A.** and A.M. Michalak. 2007. [Application of Geostatistical Inverse Modeling to Satellite Remote Sensing Data](#). Presented at [2007 Inverse Problem Symposium](#), Michigan State University, June 12, East Lansing, MI.
- **Erickson, T.A.** 2007. [MichiganView Program Overview](#). Presented at [IMAGIN's 2007 Annual Conference, "Geography on the Move: Affecting Decisions"](#), May 7, Kalamazoo, MI.
- Bannick, R. R., and **T. A. Erickson**. 2006. [Geomapping Drive-Time Based Market Areas for DoD TRICARE Beneficiaries](#). Presented at the 2006 ESRI Health GIS Conference, October 23-26, Denver, Colorado.
- **Erickson, T. A.**, and A. M. Michalak. 2006. [Merging of Variable-resolution Imagery Using Geostatistics and Sensor PSFs](#). in American Society for Photogrammetry and Remote Sensing, Reno, Nevada, U.S.A.
- **Erickson, T. A.**, and A. M. Michalak. 2006. [What Does a Pixel Represent? Accounting for the Non-Uniform Spatial Information Content of Remotely-Sensed Data Used for Data Assimilation](#). Eos Trans., AGU 87(52): Fall Meet. Suppl. Abstract 31A-0869.
- **Erickson, T. A.**, M. W. Williams, and A. Winstral. 2005. Persistence of topographic controls on the spatial distribution of snow in rugged mountain terrain, Colorado, USA. *Water Resources Research* 41:doi:10.1029/2003WR002973.
- **Erickson, T. A.**, S. Savage and R. Shuchman. 2005. Ecological and Human Health Risk Assessment for the Kalamazoo River Superfund Site Using a Web-based GIS Talk presented at the Geocomputation 2005 International Conference, August 1, 2005.
- Manty, D., M. Hodges, S. Balla, **T. A. Erickson**, C. Brooks, S. Bihn, and B. Levin. Bringing High-tech GIS Tools to Community Decision-Making. Presented July 13, 2005 at the 2005 USEPA Community Involvement Conference, Buffalo, New York.
- Brooks, C., **T. A. Erickson**, R. Shuchman, S. Savage, M. O'Haver, C. Ide, and J. Means. 2005. Lake St. Clair Web-based Geospatial Information Management System for Watershed Data. Presented at the Lake Michigan: State of the Lake - 4th Biennial Conference, Green Bay, Wisconsin.
- **Erickson, T. A.** 2004. Working with Spatially Correlated Measurements in the Modeling of Environmental Properties. Presented April 2, 2004 at the Cryospheric and Polar Processes Division Seminar, National Snow and Ice Data Center, Boulder, Colorado. (INVITED)
- **Erickson, T. A.** 2004. Development and Application of Geostatistical Methods to Modeling Spatial Variation in Snowpack Properties, Front Range, Colorado. Ph.D. dissertation submitted to the Department of Geography, University of Colorado, Boulder, Colorado.
- **Erickson, T. A.**, and M. W. Williams. 2003. The Soddie Lysimeter Array: Spatially-variable Snowmelt Data and Analyses. Presented at the International Workshop on Mountain Hydrology, Einsiedeln, Switzerland.
- **Erickson, T. A.**, and M. W. Williams. 2002. Snow Guillotine: visualization and statistics of meltwater flowpaths in a wet snowpack. Presented at the 2002 International Snow Science Workshop, Penticton, British Columbia, Canada.
- **Erickson, T. A.**, M. Williams, and R. Sommerfeld. 2000. Spatial Statistics of Snowmelt. Pages 1147-1152 in L. R. Bentley, J. F. Sykes, C. A. Brebbia, W. G. Gray, and G. F. Pinder, editors. XIII International Conference on Computational Methods in Water Resources. A.A. Balkema, Calgary, Alberta, Canada.
- **Erickson, T. A.** 2000. Contributions to best linear unbiased estimation. Engineer thesis submitted to the Department of Civil and Environmental Engineering. Stanford University, Stanford, California.