

MARK ALAN FONSTAD

CURRICULUM VITAE

CONTACT INFORMATION

Mark Fonstad, Associate Professor
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EDUCATION

Doctor of Philosophy, December 2000

Arizona State University, Department of Geography

NSF & Sigma Xi - Funded Dissertation: *Spatio-Temporal Variation in the Power of Mountain Streams*

GPA: 4.0 / 4.0

Master of Arts, August 1997

Ohio University, Department of Geography

Thesis: *Long-Term Erosional Shoreline Recession Rates in the Southwestern Lake Bonneville Basin, Utah*

GPA: 3.7 / 4.0

Bachelor of Science, May 1995

The University of Wisconsin – Madison, Department of Geography

Senior Thesis: *A Test of the Applicability and Precision of the HEC-2 Computer Model on Flood Level Flows: An Example from the Grant River, Wisconsin*

GPA: 3.4 / 4.0

HONORS AND AWARDS

- 2009 Appointed as new Environmental Sciences Editor of the *Annals of the Association of American Geographers*, post formally begins January 2010
- **2007 Marsico Visiting Scholar**, University of Denver
- 2006 Awarded a faculty developmental leave for the 2007-2008 academic year
- **2006 Dean's Award for Excellence in Scholarly/Creative Activities**, Texas State University
- 2006 Awarded Tenure and Promotion at Texas State University
- **2005 G.K. Gilbert Award for Excellence in Geomorphic Research**, Geomorphology Specialty Group of the Association of American Geographers
- **2005 Outstanding Professor Award** given by the Geography Graduate Student Forum, Texas State University
- **2004 Golden Apple Award for Excellence in Scholarly/Creative Activities**,

College of Liberal Arts, Texas State University

- Invited Speaker for the Spring 2002 United States Geological Survey Colloquium Series
- **2001 Graduate Student Paper Competition, winner**, Geomorphology Specialty Group, Association of the American Geographers
- Post-Doctoral Research Fellowship, Montana State University (June, 2000 -2001)
- Graduate Fellowship, Arizona State University (August, 1997 - 2000)
- Graduate Fellowship, Ohio University (September, 1995 - August, 1997)
- **1995 Undergraduate Geographer Award**, UW-Madison Geography Department
- **1994 UW-Madison Hilddale Research Fellowship Award** with Dr. Dorothy Sack

EXPERIENCE

Associate (2006-) and Assistant (2001-2006) Professor

Texas State University, Department of Geography, August 2001 – present

Supervisors; Phillip Suckling, Cynthia Opheim, Lawrence Estaville (Department Chairs)

My duties at Texas State include classes in physical geography, research design, field methods, advanced remote sensing of the environment, GIS in environmental geography, and water resources and policy. In addition to undergraduate and graduate responsibilities, I also advise graduate students, and I have served on the graduate, travel, equipment, colloquium, library, and several hiring committees for the department. The following is a list of courses offered.

Undergraduate Courses:

Geo 2410: Introduction to Physical Geography

Geo 2426: Fundamentals of GIS

Geo 3325: Geomorphology

Geo 3434: Water Resources Management

Geo 4325: Fluvial Processes

Geo 4412: Digital Remote Sensing

Geo 4430: Field Methods

Graduate Courses:

Geo 5395: Fluvial Processes

Geo 5334: Applied Water Resources Management

Geo 5430: Advanced Field Methods

Geo 5370: Modeling in Physical Geography

Geo 7300: Advanced Geographic Research Design

Geo 7313: Environmental Systems Analysis

Geo 7316: Remote Sensing and Environment

Geo 7318: GIS in Environmental Geography

Geo 7364: Geocomputation

Visiting Professor

University of Oregon, Department of Geography, June 2001 – present (summer appointments plus fall 2007 term)

Supervisors: Cathy Whitlock, Patricia McDowell (Department Chairs)

My research work has been centered on developing methods of remote sensing of river environments, numerical simulations of watershed dynamics, and building theories of geomorphic change across natural and human-altered landscapes. I also have lead associated fieldwork in Yellowstone National Park and various Oregon rivers.

Post-Doctoral Research Associate

Montana State University, Mountain Research Center, June 2000 – August 2001

Supervisors: W. Andrew Marcus and Rick Lawrence

As the field leader of the EPA Watershed Indicators Project, my duties included field direction of geomorphic, land cover, and human impact analysis of Yellowstone Basin watersheds, synthesis of watershed analyses from diverse research groups, development of new remote sensing and data manipulation techniques to indicate levels of watershed health, and co-authoring articles based on results generated by the project

Consultant Geomorphologist

Jones, Skelton & Hochuli, Winter 1998

Supervisor: Will Graf

My consulting work centered on the Antelope Canyon flash flood deaths case, including floodwave propagation calculations, regional flood hydrology analysis, and written reporting of the 1997 flood in Antelope Canyon, Arizona.

Lecturer, Teaching Associate, and Research Associate

Arizona State University, August 1997 – May 2000

Supervisors: Will Graf (advisor), Tony Brazel and Randy Cerveny (Teaching), and Bob Ohmart (Research)

As a lecturer, I had full course responsibility including lecture preparation, class project guidance, field trip planning and operation. As a TA, my jobs included the preparation of labs, instruction lab sections, and aiding in class development. My 1998 and 1999 summer research assistant work was a co-investigator for Costilla and Canadian basin baseline studies in Vermejo Park Ranch, NM-CO. I coordinated the fieldwork including the principal hydrologic and geomorphic investigation and riparian ecologic assessment of stream networks. In 1998, I also assisted Dr. Will Graf on his project "Downstream Geomorphic Impacts of Large Dams on American Rivers", where I collected and analyzed the principal hydrologic data used in the study.

Teaching and Research Assistant

Ohio University, September 1995 – May 1997

Supervisor: Dorothy Sack (advisor and associateship supervisor)

I instructed lab sections in Physical Geography and Geomorphology, aided in class development, and prepared and analyzed sediment samples.

Ranger and Backcountry Instructor

Philmont National High Adventure Base, Summers 1992 and 1995

Supervisor: Mike Dix (Training Ranger)

My work at Philmont included backpacking instruction, rangers duties, and geology instruction.

Research Assistant

University of Wisconsin – Madison, September 2003 – January 2005

Supervisors: James Knox and Dorothy Sack

I worked as a laboratory assistant in the Department of Geography's Geomorphology Lab, where I was responsible for particle size, carbonate fraction, and organic matter content analysis of sediment cores. I also worked as a field researcher in the summer of 1994 investigating Quaternary history of the Carrizozo Malpais lava flow in New Mexico. I also worked as a tour guide in the UW-Madison Geology Museum.

Consultant Field Geomorphologist

Bureau of Land Management, August 1994

Supervisor: Dorothy Sack

I assisted in site environment reconstruction using sedimentology analysis.

GIS Intern

City of Oshkosh, WI, Department of Public Works, June 1993 – January 1994

Supervisor: Gerald Konrad

My duties included quality control of GIS point attribute data, development of new layers, and the publication of new maps.

EDITED BOOKS/VOLUMES

Murray, A.B. and Fonstad, M.A. 2007. *Complexity in Geomorphology: Proceedings of the 38th International Binghamton Geomorphology Symposium*. Amsterdam: Elsevier. 407 pp. ISSN 01669-555x.

ARTICLES IN REFEREED JOURNALS

Murray, A.B. Lazarus, E., Ashton, A., Baas, A., Coco, G., Coulthard, T., Fonstad, M., Haff, P., McNamara, D., Paola, C., Pelletier, J., Reinhardt, L. 2009. Geomorphology, complexity, and the emerging science of the earth's surface. Geomorphology. Vol. 103, pp. 496-505.

Marcus, W.A. and Fonstad, M.A., 2008, Optical remote mapping of rivers at sub-meter resolutions and watershed extents, Earth Surface Processes and Landforms, vol. 33, pp. 4-24.

Giordano, A., Lu, Y., Anderson, S.A., Fonstad, M.A., 2007, Wireless mapping, GIS, and learning about the digital divide: a classroom experience, Journal of Geography, vol. 106, pp. 285-295.

Parsons, J.A. and Fonstad, M.A., 2007, A geographical cellular automata model of surface water flow, Hydrological Processes, vol. 21, no. 16, pp. 2189-2195.

- Fonstad, M.A., 2006, Cellular automata as analysis and synthesis engines at the geomorphology-ecology interface, Geomorphology, vol. 77, no. 3-4, pp. 217-234.
- Conyers, M.M. and Fonstad, M.A., 2005, The unusual channel resistance of the Texas Hill Country and its effect on flood flow predictions, Physical Geography, vol. 26, no. 5, pp. 379-395.
- Fonstad, M.A. and Marcus, W.A., 2005, Remote sensing of stream depths with hydraulically-assisted bathymetry (HAB) models, Geomorphology, vol. 72, no. 4, pp. 320-339.
- Dunham, S., Fonstad, M.A., Anderson, S.A., Czajkowski, K., 2005, Using multi-temporal satellite imagery to monitor the response of vegetation to drought in the Great Lakes region, GIScience and Remote Sensing, vol. 42, no. 3, pp. 185-201.
- Jordan, D.C. and Fonstad, M.A., 2005, Two-dimensional mapping of river bathymetry and power using aerial photography and GIS on the Brazos River, Texas, Geocarto, vol 20, no. 3. pp. 1-8.
- Fonstad, M.A., Reichling, J., Van de Grift, J.W., 2005, Design of a new transparent velocity head rod for rapid and precise stream velocity measurements, Journal of Geoscience Education, vol. 53, no. 1, pp. 44-52.
- Legleiter, C.J., Roberts, D.A., Marcus, W.A., Fonstad, M.A., 2004, Optical remote sensing of river channel morphology and in-stream habitat: physical basis and feasibility, Remote Sensing of Environment, vol. 93, pp. 493-510.
- Fonstad, M.A. and Marcus, W.A., 2003, Self-organized criticality in riverbank systems, Annals of the Association of American Geographers, vol. 93, no. 2, pp. 281-296.
- Legleiter, C.J., Lawrence, R.L., Fonstad, M.A., Marcus, W.A., Aspinall, R., 2003, Fluvial response to wildfire in northern Yellowstone: a spatially explicit analysis, Geomorphology, vol. 54, no. 3-4, pp. 119-136.
- Resler, L.M., Fonstad, M.A., Butler, D.R., 2003, Mapping the alpine treeline ecotone with digital aerial photography and textural analysis, Geocarto, vol. 19, no. 1, pp. 37-44.
- Fonstad, M.A., 2003, Spatial variation in the power of mountain streams in the Sangre de Cristo Mountains, USA, Geomorphology, vol. 55, no. 1-4, pp. 75-96.

CHAPTERS/ARTICLES IN EDITED VOLUMES

- Resler, L.M. and Fonstad, M.A., A Markov analysis of fine scale change at alpine treeline, In *The Changing Alpine Treeline in Glacier National Park, Montana, USA*. 2009. Walsh, S., Butler, D., Malanson, G. (eds).

Murray, A.B. and Fonstad, M.A. 2007. Preface: complexity (and simplicity) in landscapes. In *Complexity in Geomorphology: Proceedings of the 38th International Binghamton Geomorphology Symposium*. Murray, A.B. and Fonstad, M.A. (eds). 173-177.

REFEREED ARTICLES IN CONFERENCE PROCEEDINGS

Anderson, S.J., Fonstad, M.A., Delrieux, C.A. 2006. Satellite image restoration using the VMCA model. XII Congreso Argentino de Ciencias de la Computación. (Proceedings of the 12th Annual Computer Science Conference).

BOOK REVIEWS

Fonstad, M.A., 2006, Book Review: “*Integrating computer modeling and field observations in geomorphology*” edited by J.F. Schroder and M.P. Bishop. Geomorphology, vol. 74, no. 1-4, pp. 320-322.

Fonstad, M.A., 2002, Book Review: “*Mountain Rivers*” by E.E. Wohl, Geomorphology, vol. 46, no. 3-4, pp. 309-311.

ARTICLES AND BOOK CHAPTERS IN REVIEW

Fonstad, M.A. and Marcus, W.A. High-resolution, basin-extent observations of fluvial forms and implications for process understanding. Accepted with revisions to Earth Surface Processes and Landforms (Special Issue on Process Understanding and Modelling in Geomorphology: New Developments, Lawler, D., editor).

Marcus, W.A., Rasmussen, J., Fonstad, M.A. Fire and flood effects on local to watershed scale distributions of large wood in Yellowstone streams. Accepted with revisions to the Annals of the Association of American Geographers.

BOOKS AND EDITED VOLUMES IN PREPARATION

Fonstad, M.A. *Environmental Systems Analysis*.

Marcus, W.A. and Fonstad, M.A. Remote Sensing of Rivers: Special Edited Volume of *Earth Surface Processes and Landforms*. Currently 17 papers + 1 preface in progress.

ARTICLES AND BOOK CHAPTERS IN PREPARATION

Fonstad, M.A. Hyperspectral issues. Chapter 4 in *Remote Sensing of Rivers: Management and Implications*, Carbonneau, P. and Piegay, H. (eds).

Legleiter, C.J., Marcus, W.A., Fonstad, M.A. An introduction to the physical basis for deriving river information from remotely sensed data. Chapter 3 in *Remote Sensing of Rivers: Management and Implications*, Carbonneau, P. and Piegay, H. (eds).

Walther, S., Marcus, W.A., Fonstad, M.A. An evaluation of the HAB model at watershed extents, McKenzie River, Oregon, USA. In preparation for submission to Earth Surface Processes and Landforms (Special Issue on Remote Sensing of Rivers).

Marcus, W.A. and Fonstad, M.A. Preface: Remote sensing of rivers: New developments and opportunities for the future. In preparation for submission to Earth Surface Processes and Landforms (Special Issue on Remote Sensing of Rivers).

Parsons, J.A. and Fonstad, M.A. Cellular automata simulations of the rapid bedrock incision in Barranca de Caliza, Texas, USA. In preparation for submission to Physical Geography.

Fonstad, M.A. and Resler, L.M. Spreadsheet modeling for learning about biosphere-climate-soil connections (and disconnections) at the alpine treeline. In preparation for submission to Journal of Geography.

NON-REFEREED ARTICLES AND RESEARCH REPORTS

Fonstad, M.A., 2005. Integrated remote sensing and geospatial simulation for watershed management, *Proceedings of the International Seminar of the Precious Water Environment*, Shimane University, Japan.

Fonstad, M.A., 2000, Spatio-temporal Variation in the Power of Mountain Streams. *Ph.D. Dissertation*.

Fonstad, M.A., 1999, A Preliminary Assessment of Sand Composition Distribution within Great Sand Dunes National Monument. *Report to the staff of the Great Sand Dunes National Monument*.

Graf, W. L., Aben, L., Amoroso, L., Anderson, S., Armstrong, J., Bartley, J., Beauchamp, V., Cox, J., Curro, J., Dveris, B., Edmonds, J., Fairchild, S., Ferguson, K., Fonstad, M., Gomes, C., Hall, R., Henze, M., Hilley, G., Johnson, J., Johnson, H., Keane, J., Levine, C., McGuire, S., O'Day, C., Prud'homme, E., Richter, R., Roach, J., Roberge, M., Villa, N., Vose, R., Washburn, Z., Welter, J., Zoldak, M. 1999, Hydraulics and history: channel change on the Salt River in the Phoenix metropolitan area. *As part of the CAP LTER*

project. Student and faculty created book containing preliminary research results. Center for Environmental Studies, Arizona State University, Tempe, AZ. 148 pp.

Fonstad, M.A., 1999, Ecologic, hydrologic, and geomorphic assessment of streams in the Canadian basin. *Report to the Staff of the Vermejo Park Ranch, NM.*

Fonstad, M.A., 1998, Ecologic, hydrologic, and geomorphic assessment of streams in the Costilla basin. *Report to the Staff of the Vermejo Park Ranch, NM.*

Fonstad, M.A., 1998, Stream power variation and channel change in the Salt River basin, AZ. *ASU Department of Geography Field Exam, on file at ASU.*

Fonstad, M.A., 1997, Long-term erosional shoreline recession rates in the southwestern Lake Bonneville basin, Utah. *M.A. Thesis.*

Fonstad, M.A., 1995, A test of the applicability and precision of the HEC-2 computer model on flood level flows: an example from the Grant River, WI. *B.S. Thesis.*

PRESENTATIONS

- 2009 Association of American Geographers Annual Convention. "Hyperscale Tests of Fluvial Frameworks" to be presented March 26, 2007, Las Vegas, NV.
- 2009 Resler, L.M. and Fonstad, M. "Modeling Vegetation-Soil-Climate Connections (and Disconnections) at Alpine Treeline" Association of American Geographers Annual Convention, to be presented by L.M. Resler March 25, 2009, New Orleans, LA.
- 2009 Walther, S.C., Marcus, W.A., and Fonstad, M. "Evaluating the HAB-2 Bathymetric Mapping Model for Different River Characteristics on the McKenzie River, Oregon" Association of American Geographers Annual Convention, to be presented by S.C. Walther March 25, 2009, New Orleans, LA.
- 2008 American Geophysical Union Annual Convention. "Basin Extent Measurements of Geomorphology-Stream Habitat Interaction Scales" presented December 17, 2008, San Francisco, CA.
- 2008 British Society for Geomorphology Annual Conference. "The Local, the Link, and the Network: Hyperscale Comparisons of Remotely-Sensed River Environments" presented on July 4, 2008, Exeter, UK. (poster)
- 2008 Invited Talk for King's College, University of London. "Geographical Mapping and Modelling of Entire Riverscapes" presented on June 27, 2008, London, UK.

- 2008 Invited Talk for the British Hydological Society -- Ecohydraulics at Scales Relevant to Organisms meeting. "From Organism Ecohydraulics to Population Ecohydraulics: Making Riverscapes a Practical Reality" presented on June 5, 2008, Loughborough, UK.
- 2008 Invited Talk for the Loughborough University. "Mapping the Hyperscale Riverscape" presented on May 28, 2008, Loughborough, UK.
- 2008 Invited Talk for the University of Newcastle. "From Raster to Rivers: Explicitly Spatial Approaches in Fluvial Studies" presented on May 19, 2008, Newcastle, UK.
- 2008 Invited Talk for the University of Wales. "The Hyperscale Structure of Rivers" presented on May 8, 2008, Aberystwyth, UK.
- 2008 European Geosciences Union Annual Meeting. "Hyperscale, three-dimensional structure of the streams of the Edwards Plateau, Texas, by HAB-transformed digital orthophotoquad imagery " presented April 15, 2008, Vienna, Austria. (poster)
- 2008 Marcus, W. A. and Fonstad, M. "Creating the International Network of River Observatory Scientists (INROS)" European Geosciences Union Annual Meeting, presented by W. A. Marcus April 15, 2003, Vienna, Austria.
- 2008 Marcus, W. A. and Fonstad, M. "Making remote sensing of rivers accessible to river scientists and managers: The remote sensing of rivers on-line tutorial project" European Geosciences Union Annual Meeting, presented by W. A. Marcus April 15, 2003, Vienna, Austria. (poster)
- 2008 Invited Talk for the University of Exeter. "From Raster to Rivers" presented March 12, 2008, Exeter, UK.
- 2008 Buzo, D., Forstner, M.R.J., Green, M.C., Fonstad, M.A. "A GIS Predictive Habitat Distribution Model for the Houston Toad (*Bufo Houstonensis*) in Bastrop and Lee Counties, Texas" Texas Academy of Science Meeting, presented by Daniela Buzo March 7, 2008, Corpus Christi, TX.
- 2008 Invited Talk for the University of Birmingham. "Looking for the Four-Dimensional Structure of the Riverscape" presented March 3, 2008, Birmingham, UK.
- 2008 Invited Talk for the University of Liverpool. "Riverscapes: A View at Every Possible Scale" presented February 20, 2008, Liverpool, UK.
- 2007 American Geophysical Union Annual Convention. "Hyperscale Analysis of River Morphology Through Optical Remote Mapping of Water Depths" presented December 14, 2007, San Francisco, CA.

- 2007 Invited Talk for the University of Oregon. "Mapping the Riverscape" presented November 29, 2007, Eugene, OR.
- 2007 British Society for Geomorphology Annual Conference. "Remote Sensing-Based, Sub-Meter Resolution Mapping of Fluvial Forms and Processes at Watershed-Extents: Possibilities and Needs" presented by both W.A. Marcus and M.A. Fonstad, July 4, 2007, Birmingham, UK.
- 2007 Meeting of the Large Rivers Group, International Association of Geomorphology. "Physical Habitat Characterization of the Brazos River: A Geospatial and Remote Sensing Approach" presented June 26, 2007, Lyon, France.
- 2007 Invited Marsico Scholar Talk at the University of Denver. "Simplicity and Complexity in Riverscapes" presented May 16, 2007, Denver, CO.
- 2007 Invited Marsico Scholar Talk at the University of Denver. "Cellular Automata in Environmental Modeling" presented May 15, 2007, Denver, CO.
- 2007 Invited Marsico Scholar Talk at the University of Denver. "Measuring Past Climates and Past Climate Change" presented May 14, 2007, Denver, CO.
- 2007 Association of American Geographers Annual Convention. "The Three-Dimensional River Environment: Tests of Classical Hydraulic Geometry Predictions using Remote Sensing Approaches along the Brazos River, USA" presented April, 2007, San Francisco, CA.
- 2006 Invited Colloquium for the "How I Became a Scientist" Lecture Series at Texas State University. "The Light Fantastic: A Field Education from Running Rivers to Remote Sensing" presented October 6, 2006, San Marcos, TX.
- 2006 Association of American Geographers Annual Convention. "Spatial Maps of River Hydrodynamics Produced by the Unification of Remote Sensing and Cellular Automata Modeling" presented March, 2006, Chicago, IL.
- 2006 Invited Talk for Denver University. "The Remote Sensing of Rivers" presented January 6, 2006, Denver, CO.
- 2005 Invited Talk for Royal Holloway College, University of London. "Modelling, Management, and Method in River System Analysis" presented November 29, 2005, London, UK.
- 2005 Invited Keynote Speaker for the Geosolar International Workshop on Geomatics and Fish Habitat Modelling in Rivers and Estuaries. "Clearwater Riverine Habitats: From Remote Sensing to Hydrodynamical Modeling to Agent-Based Characterization" presented November 17, 2005, Quebec City, Quebec, Canada.

- 2005 Invited Talk for the University of Oklahoma. "A Geomorphologist in Wonderland: The Undiscovered Country between Physical Geography and Geographic Information Science" presented September 23, 2005, Norman, OK.
- 2005 Invited Talk for the University of Oregon. "Cellular Modeling in Erdas" presented July 4, 2005, Eugene, OR.
- 2005 Invited Talk for Virginia Tech University. "From Raster to Rivers: Spatially Dynamic Approaches in Physical Geography" presented April 22, 2005, Blacksburg, VA.
- 2005 Association of American Geographers Annual Convention Paper Session. "Rapid Bedrock Incision During the Spillway Flood Formation of Barranca de Caliza, Texas, USA" presented April 8, 2005, Denver, CO.
- 2005 Invited Talk for Shimane University, Japan. "River and Watershed Assessment Using Remote Sensing and Cellular Automata Models" presented January 29, 2005, Matsue, Japan.
- 2004 Invited Talk for the University of Texas. "Equilibrium, Criticality, and Other Spatial Paradoxes in River Studies and Policy" presented October 29, 2004, Austin, TX.
- 2004 American Society of Photogrammetry and Remote Sensing Annual Convention. "Physical Calibration Issues in Remote Imaging of Clearwater Stream Habitats" presented May 25, 2004, Denver, CO.
- 2004 Invited Talk for Syracuse University. "The Cellular River and the Mapping of Riverscapes" presented April 27, 2004, Syracuse, NY.
- 2004 Association of American Geographers Annual Convention. "Cellular Automata as Predictive Engines at the Geomorphology-Ecology Interface" presented March 16, 2004, Philadelphia, PA.
- 2003 Invited Talk for the Russian Academy of Sciences. "Self-Organized Criticality in River Channel Change and its Potential Measurement using Three-Dimensional Remote Sensing" presented November 26, 2003, Moscow, Russia.
- 2003 Invited Talk for King's College London. "The Cellular River: As seen by remote sensing and understood through cellular automata models" presented October 29, 2003, London, UK.
- 2003 Invited Talk for Texas A&M University. "From Raster to Rivers: Cellular Approaches in Physical Geography" presented September 26, 2003, College Station, TX.

- 2003 Fonstad, M. and Conyers, M. "Flood Prediction Errors due to Anomalously High Roughness Values Along the Balcones Escarpment" Living in Flood Alley Symposium, presented by M. Fonstad September 18, 2003, San Marcos, TX.
- 2003 Fonstad, M. and Marcus, W. A. "A New Method for High Resolution, Remote Mapping of Stream Habitats across Watersheds" Association of American Geographers Annual Convention, presented by M. Fonstad March 6, 2003, New Orleans, LA.
- 2003 Marcus, W. A. and Fonstad, M. "Remote Sensing of Stream Depths in Mountain Streams" Association of American Geographers Annual Convention, presented by W. A. Marcus March 6, 2003, New Orleans, LA.
- 2003 Conyers, M. and Fonstad, M. "A Regional Evaluation of Manning's Roughness Estimates in Streams of South-central Texas" Association of American Geographers Annual Convention, presented by M. Conyers March 7, 2003, New Orleans, LA.
- 2003 Dunham, S., Fonstad, M., Anderson, S., and Czajkowski, K. "Using Landsat Imagery to Monitor the Response of Vegetation to Drought in the Great Lakes Region" Association of American Geographers Annual Convention, presented by S. Dunham March 5, 2003, New Orleans, LA.
- 2002 Panel Discussant. "The Canyon Lake Flood of 2002" Southwestern Division of the Association of American Geographers Meeting, presented November 3, 2002, Laredo, TX.
- 2002 Fonstad, M., Wu, D., and Jordan, D.C. "Three-dimensional Riverbed Geodiversity Below Whitney Dam, Texas from Textural Analysis of Digital Imagery" Binghamton Symposium in Geomorphology Poster Session, presented October 12-13, 2002, Bloomsburg, PA.
- 2002 Invited Talk for Limnotech, Inc. "The Cellular River Concept and its Applications in Water Resource Management" presented June 28, 2002, Ann Arbor, MI.
- 2002 Invited Talk for the United States Geological Survey Colloquium Series. "The Cellular River: A New Direction in River Measurement, Modeling, and Management" presented April 4, 2002, Denver, CO.
- 2002 Fonstad, M. and Marcus, W.A. "Criticality, Prediction, and Management of Riverbank Failure at the Watershed Scale" Association of American Geographers Annual Convention, presented by M. Fonstad March, 2002, Los Angeles, CA.
- 2001 Fonstad, M. and Marcus, W.A. "Self-Organized Criticality as a General Principle of Riverbank Failure and Sediment Mobility" American Geophysical Union

Annual Convention, presented by M. Fonstad December, 2001, San Francisco, CA.

- 2001 Applied Geography Conference Paper Session. "The Fusion of Distributed Hydrologic Modeling, Remote Sensing, and River Channel Change Prediction" presented November 16, 2001, Fort Worth, TX.
- 2001 Fonstad, M. and Marcus, W.A. "A General Theory of Riverbank Instability" Geological Society of America Annual Convention, presented by M. Fonstad, November 6, 2001, Boston, MA.
- 2001 Invited Talk for the Binghamton International Symposium in Geomorphology. "Spatial Variation in the Power of Mountain Streams" presented October 20, 2001, Chapel Hill, NC.
- 2001 Association of American Geographers Annual Convention Paper Session. "The Instability of Classic Flood Assumptions: The Case of the 1999 Canadian River Flood" presented April, 2001, New York, NY.
- 2000 Anderson, S. and Fonstad, M. "An Assessment of Geographic Pattern Classification Through Spatial Power Spectra Deconvolution" American Society for Photogrammetry and Remote Sensing Annual Convention, presented by S. Anderson May 24, 2000, Washington, DC.
- 2000 Association of American Geographers Annual Convention. "Fragmentation of Stream Power Distributions in a High Mountain Setting" presented April 5, 2000, Pittsburg, PA. (poster)
- 2000 Zoldak, M.A. and Fonstad, M. "Regional Flood Hydrology: Characterization and Prediction in the Sangre de Cristo Mountains" Association of American Geographers Annual Convention, presented by M. Zoldak April 5, 2000, Pittsburg, PA. (poster)
- 2000 Anderson, S. and Fonstad, M. "A New Form of Geographic Pattern Recognition Through Spatial Power Spectra Deconvolution" Association of American Geographers Annual Convention presented by S. Anderson April 8, 2000, Pittsburg, PA.
- 2000 Villa, N, Fonstad, M., Vogt, B. "Total-Scale Analysis of Lava Flow Surface Complexity for SP Crater, Northern Arizona" Association of American Geographers Annual Convention, presented by N. Villa April 8, 2000, Pittsburg, PA.
- 2000 Vogt, B. and Fonstad, M. "Complexity-Scale Relationships in Montane Snowpack Depth: Potential Applications in Snow Process Research and Snow-Water

Equivalent Measurement” Association of American Geographers Annual Convention, presented by B. Vogt April 5, 2000, Pittsburg, PA.

- 1999 Geological Society of America Annual Convention. “The Canadian River Headwaters Flood of 1999: Hydrology, Geomorphology, and Riparian Interactions” presented October 28, 1999, Denver, CO.
- 1999 Association of American Geographers Annual Convention. “Stream Power Variation and Channel Change in the Salt River Basin, AZ” presented March 25, 1999, Honolulu, HI.
- 1999 Co-Presenter, All-Scientists Meeting, Central Arizona - Phoenix Long Term Ecological Research (CAP-LTER). “Salt River Historical Channel Change Project” presented May, 1999, Phoenix, AZ.
- 1998 Campbell, S.W. and Fonstad, M. Rocky Mountain Geological Society of America. “Pediment Surface Erosion Rates Derived From DEM/GIS Analysis and Chlorine-36 Dating Techniques” presented by S. Campbell May, 1998, Flagstaff, AZ. (poster)
- 1997 Geological Society of America Annual Convention. “Long-Term Erosional Shoreline Recession Rates in the Southwestern Lake Bonneville Basin, Utah” Salt Lake City, UT.
- 1997 Fonstad, T.A. and Fonstad, M. “Seasonal Aspects of Wisconsin Silent Sports” Wisconsin Geographical Society Annual Meeting, presented by T. Fonstad September 20, 1997, Whitewater, WI.
- 1996 Fonstad, M. and Sack, D. “Numeric Dating of the Carrizozo Malpais, New Mexico” Association of American Geographers Annual Convention, presented by M. Fonstad, Charlotte, NC. (poster)
- 1996 Ohio University Department of Geography Colloquium. “Stratigraphy and Numeric Dating of the Carrizozo Malpais Lava Flow, New Mexico” Athens, OH.

RESEARCH GRANT AND CONTRACT ACTIVITY

- 2007 “Complexity in Geomorphology: the 38th Binghamton Geomorphology Symposium” (\$33,000) funded by several Geoscience-related NSF programs (lead program: GLD) with co-PI Brad Murray of Duke University.
- 2007 “High Resolution, Large Watershed River Habitat Mapping” (\$63,114) submitted to the NSF Geography and Regional Science program, *not funded*.
- 2005 “Human-Environmental Sensitivity to Change with the Opening of the Island of St. Helena to Major Tourism” (\$209,743) submitted to the NSF Geography and Regional Science program with co-PI Alberto Giordano of Texas State University, *not funded*.
- 2005 “Dam Removal and New Geospatial Monitoring and Modeling Approaches” (\$523,704) submitted to the NSF CAREER Award program, *not funded*.
- 2004 “Pre and Post-Dam Removal Dynamics of the Elwha River System. Washington” (\$489,625) submitted to the NSF CAREER Award program, *not funded*.
- 2003 Hydrologic consultant to EPA-STAR grant “Developing Effective Ecological Indicators for Watershed Analysis” project analysis (\$5,000)
- 2002 Hydrologic consultant to EPA-STAR grant “Developing Effective Ecological Indicators for Watershed Analysis” project analysis (\$5,100)
- 2002 “A New Photogrammetric Method for Measuring Historic Three-Dimensional River Channel Change” - Southwest Texas State University REP grant (\$7,100)
- 2002 Hydrologic consultant to BioMedware, Inc. on “Spatially Explicit River Modeling” project design (\$2,200)
- 1998 “Spatio-temporal Variation in the Power of Mountain Streams”- National Science Foundation Doctoral Dissertation Improvement Grant (\$9,700)
- 1998 “Visualizing Spatial Variation in the Power of Mountain Streams”- Sigma Xi Grant (\$300)

CURRENT MAJOR PROJECTS

Watershed-Wide River Processes Mapping – Principal Investigator

Project to use airborne and spaceborne imaging coupled with cellular river process models to map river habitats and major river process variables at high resolution throughout complete watersheds in both the U.S. and in Europe.

Three-Dimensional River Change through the Twentieth Century – Principal Investigator

Project testing newly developed image processing techniques to extract geographical and sequential river change from historical aerial photos from the 1940's to today

PROFESSIONAL SERVICE

- 2009 Appointed Environmental Sciences Editor of the Annals of the Association of American Geographers. Post formally begins January, 2010.
- 2008 Invited member of NASA Surface Water Ocean Topography hydrology (SWOT) satellite mission workshop working group. Workshop on September 15-17, 2008 at Ohio State University in Columbus, OH.
- 2008 Invited member of National Institute for Environmental eScience working group "Individuals and Environmental Change: eScience for Sustainable Systems". Workshops in Gregynog, Wales on March 4-5, 2008 and the University of Cambridge, UK on July 18, 2008
- 2008 Co-organizer (with W. Andrew Marcus), "Remote Sensing of Rivers" Special Session at the 2008 European Geosciences Union meeting in Vienna, Austria
- 2007-2008 Chair, Mountain Geography Specialty Group, Association of American Geographers
- 2006-2007 Secretary/Treasurer, Mountain Geography Specialty Group, Association of American Geographers
- 2004-2007 Co-organizer (with A. Brad Murray) of the 2007 Binghamton International Geomorphology Symposium held at Duke University
- 1999-2005 Co-organizer of Silverton Geography Field School, Silverton, CO
- 2001 Volunteer consultant for the National Avalanche Center, Bozeman, MT
- 1998 Field trip leader, Arizona Geographic Alliance teachers' Annual GeoDayTrip; familiarized K-12 teachers with geography fieldwork in the desert southwest
- 1998 Volunteer field geomorphologist, *Verde River paleoflood reconstruction*, with the Arizona Geological Survey

Reviewer Activities:

- 2008-2009 Reviewer for *Geomorphology*, *Earth Surface Processes and Landforms*, *Annals of the Association of American Geographers*, *Geography Compass*,

Photogrammetric Engineering and Remote Sensing, the *SDE/GWIS Graduate Women in Science Fellowships*, and the National Science Foundation

- 2007-2008 Reviewer for *IEEE GIScience and Remote Sensing*, *Geomorphology*, *Earth Surface Processes and Landforms*, *Annals of the Association of American Geographers*, *Lakes & Reservoirs: Research and Management*, *River Research and Applications*, *Journal of Environmental Management*, and the National Science Foundation
- 2006-2007 Reviewer for *Geological Society of America Bulletin*, *Photogrammetric Engineering and Remote Sensing*, *Geomorphology*, and the National Science Foundation
- 2005-2006 Reviewer for *Remote Sensing of Environment*, *Journal of Environmental Management*, *Geomorphology*, *Photogrammetric Engineering & Remote Sensing*, *Geographical Analysis*, and the USDA-SBIR program
- 2004-2005 Reviewer for *River Research and Applications*, *Geomorphology*, and the National Science Foundation
- 2003-2004 Reviewer for *Geomorphology*, the *Professional Geographer*, *Remote Sensing of Environment*, and the National Science Foundation
- 2002-2003 Reviewer for *Geomorphology*, and the National Science Foundation
- 2001-2002 Reviewer for the *Journal of Geographical Systems*, *Geomorphology*, and the National Science Foundation

UNIVERSITY SERVICE

- 2005-2007 Department of Geography Liaison to the Faculty Senate, Texas State University
- 2006-2007 Member of Spring Lake Management Committee, Texas State University
- 2004-2005 Faculty Advisor, Texas State University chapter of the *American Society of Photogrammetry and Remote Sensing*
- 1999 Presenter, ASU *International Earth Science Day*, introducing remote sensing and geovisualization techniques to a diverse public audience
- 1999 Presenter, ASU *Discovery Tours*, a weekly informal educational session educating undergraduates on cutting edge geographic technologies

- 1999 Co-organizer, Graduate Earth and Life Sciences Symposium, Arizona State University
- 1998 Volunteer co-director, *Salt River Long Term Ecological Research Historic Channel Change* project, an interdisciplinary class educational and research effort in modeling large floods and reconstructing historic channel changes in the Salt River of Arizona

DEPARTMENTAL SERVICE

- 2008-2009 Associate Director, Texas Center for GIScience, Texas State Department of Geography Travel Committee (Chair), Remote Sensing Hiring Committee (Chair), Leader of the Workshop on Academic Job Preparation (for graduate students of the department)
- 2006-2007 Associate Director, Texas Center for GIScience, Texas State Department of Geography Travel Committee (Chair), Equipment Committee, Human Dimensions of Environmental Geography Hiring Committee (Chair), Leader of the Workshop on Academic Job Preparation (for graduate students of the department)
- 2005-2006 Associate Director, Texas Center for GIScience, Texas State Department of Geography Travel Committee (Chair), Graduate Committee
- 2004-2005 Texas State Department of Geography Travel Committee (Chair), Graduate Committee, GIScience Hiring Committee
- 2003-2004 Texas State Department of Geography Travel Committee (Chair), Graduate Committee, GIScience Hiring Committee
- 2002-2003 SWT Department of Geography Travel Committee (Chair), Library Committee (Secretary), Cartography and Visualization Hiring Committee, Working group to establish a Center of Geographic Information Science
- 2001-2002 SWT Department of Geography Travel Committee (Chair), Colloquium Committee (Secretary), GIScience and Water Resources Hiring Committee, GIScience Hiring Committee, Working Group to Establish a B.S. in Geography - Water Resources Degree

COLLABORATORS IN THE LAST 48 MONTHS

Sharolyn Anderson, Denver
Patrice Carbonneau, Durham
Mindy Conyers, Texas State
Kevin Czajkowski, Toledo

Claudio Delrioux, Nacional del Sur
Susan Dunham, South Carolina
Mike Durand, Ohio State
Alberto Giordano, Texas State

Stuart Lane, Durham
Carl Legleiter, UC Santa Barbara
Yongmei Lu, Texas State
David Jordan, Portland, Oregon
W. Andrew Marcus, Oregon

Brad Murray, Duke University
Jay Parsons, Texas State
Jim Rasmussen, Florida
Lynn Resler, Virginia Tech
Suzanne Walther, Oregon

THESIS ADVISING AND COMMITTEE MEMBERSHIP

Mindy Conyers (Dissertation Advisor, in progress)

Spatial prediction of channel instability in the Animas River Basin, Colorado

Jacob Maas (Dissertation Advisor, in progress)

Dam removal in fine sediment systems: geomorphology and ecology

Jay Parsons (Dissertation Advisor, in progress)

Participatory GIS in landcover and watershed change

C. Andy Day (Dissertation Advisor, in progress)

Hydrological and climate change across mountainous regions

Delbert Humberson (Thesis Advisor, 2008)

Applying the Cellular Automata Evolutionary Slope and River (CAESAR) model to a highly erosive reach of the Colorado River, Austin, Texas

Jane Heath (Thesis Advisor, 2006)

Criticality and river instability response to mountain environment control

Jonathan Frodge (Thesis Advisor, 2006)

Modeling the occurrence of springs and seeps along the Blanco River, Texas using logistic regression

Jason Pinchback (Thesis Advisor, 2005)

Spatial aspects of water quality management in Austin, Texas

Jay Parsons (Thesis Advisor, 2004)

A computational cellular automaton for modeling surface water flow within the Rocky Mountain National Park.

Mindy Conyers (Thesis Advisor, 2003)

A regional evaluation of Manning's roughness estimates in streams of south-central Texas

Susan Dunham (Thesis Advisor, 2003)

Using multitemporal satellite imagery to monitor the response of vegetation to drought in the Great Lakes region.

David Jordan, (Thesis Advisor, 2002)

Two-dimensional mapping of river bathymetry and power using aerial photography and GIS on the Brazos River, Texas.

Jon Kedrowski (Ph.D. Committee Member, in progress)

The Mount Everest project: A cross-section of overall climber demographics, Everest climbing experience, perception of climber's risk, and environmental and hazard assessment.

Jose Silvan Cardenas (Ph.D. Committee Member, in progress)

Modeling invasive species spread: a case study of Tamarisk along Rio Grande river basin

Xuelian Meng (Ph.D. Committee Member, in progress)

Urban CBD change analysis using high-resolution feature analysis

Junmei Tang (Ph.D. Committee Member, in progress)

Multitemporal study of urban growth using remote sensing and cellular automata modeling

Guangyu Wu (Ph.D. Committee Member, 2008)

Regional Climate Change and its Impact on Water Resources in Texas

Carol Sawyer (Ph.D. Committee Member, 2007)

The formation of patterned ground in Glacier National Park, Montana.

Brian Brettschneider (Ph.D. Committee Member, 2006)

Estimating Atlantic Basin Tropical Cyclone Landfall Probability for the United States

Derek Wu (Ph.D. Committee Member, 2006)

Urban land use classification using variogram-based post-classification

Jonathan Herbert (Ph.D. Committee Member, 2004)

Predicting future climate change in Big Bend National Park, Texas

Lynn Resler (Ph.D. Committee Member, 2004)

Conifer establishment sites on a periglacial landscape, Glacier National Park, Montana

Daniela Buzo, Dept. of Biology, Texas State (M.S. Committee Member, in progress)

Predictive Habitat Suitability Models for the Houston Toad

Chris (Andrew) Day (M.S. Committee Member, in progress)

Groundwater Contaminant Concentrations of Land Use Categories for the Barton Springs Edwards Aquifer, TX

Lynn Smollin (MAG Committee, 2006)

A Climatology of Steamflow for Glacier National Park, USA

Carl Schmiedeskamp (MAG Committee Member, 2005)

Remote sensing and cellular automata simulation of wildfire propagation

Matthew Thompson (MAG Committee Member, 2005)

The influence of land use/ land cover within riparian environments on channel change in mixed alluvial bedrock rivers: a comparative study between the Medina and Guadalupe rivers, Texas

Grady Reed (MAG Committee Member, 2004)

Development of a daily water demand model for selected Texas cities: A comparison of daily climate variations on water demand

Brian Plaster (M.S. Committee Member, 2003)

The geomorphic impact of marmots in Gothic, Colorado

Carol Sawyer (M.S. Committee Member, 2003)

Aerial-photographic inventory and analysis of landslides in northeastern Yellowstone National Park, Wyoming.

Chris Simek (MAG Committee Member, 2003)

Use of spectral mixture analysis to estimate Ashe Juniper coverage in Pedernales River subwatersheds.

Emily Manderson (M.S. Committee Member, 2002)

Plant composition on four basalt flows at El Malpais National Monument, New Mexico

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

Association of American Geographers
American Geophysical Union
European Geosciences Union
Geological Society of America
British Society for Geomorphology
Geomorphology Specialty Group AAG
Water Resources Specialty Group AAG
Remote Sensing Specialty Group AAG
Biogeography Specialty Group AAG
Mountain Geography Specialty Group AAG

ADDITIONAL ACTIVITIES

- 2007 Wrote "SATS" – a simple alpine treeline simulator that models the changes in alpine treeline position and structure with changes in various controlling factors in a simple spreadsheet format
- 2006 Wrote "The Cellular Treeline Simulator" - computer software that simulates the changes in alpine treeline position and structure with changes in various controlling factors
- 2003 Wrote "TreeFlow" - computer software that allows prediction of woody debris transport through Yellowstone streams
- 2003 Wrote "HAB-3" - computer software that allows estimation of water depths in an image without a priori discharge data
- 2002 Wrote "HAB-1" and "HAB-2" - computer software that allow estimation of water depths in an image using associated stream gage data
- 2002 Wrote "TRILATERATE" – computer software that allows automated planimetric mapping using a laser rangefinder
- 2001 Wrote "ISOVELS" - computer software that predicts spatial velocity distributions in a river section
- 2000 Wrote "The Stream Power Engine" - computer software that predicts the downstream variation in stream power based on the geometry of river form

SPECIAL SKILLS

| | |
|----------------------------|---|
| UNIX | PCI GEOMATICA |
| C | HEC-2 |
| DOS | HEC-6 |
| IDRISI | HEC-HMS |
| ERDAS IMAGINE | WINXSPRO |
| ENVI | FLOWPRO |
| BRYCE 3-D | RATIONAL FLOW |
| ARCVIEW | FLUVIAL-12 |
| NETLOGO | STELLA |
| MICRODEM | BOUNDARYSEER |
| MS-OFFICE | TOPMODEL |
| SPSS | Field Surveying |
| HEC-RAS | Multivariate and Time-Series Statistics |
| Cellular Automata Modeling | Quantitative Remote Sensing |

REFERENCES

Dr. W. Andrew Marcus

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Kansas State University
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