

DANIEL PEDER AMES, PH.D., P.E.

CURRICULUM VITAE

Contact Information

Address: 327 Red Fox Dr., Ammon, Idaho 83401
Phone: (h)208-522-4970, (w)208-282-7851, (m)208-406-8055
E-mail: amesdani@isu.edu

Education

Ph.D. Civil and Environmental Engineering, Utah State University, Logan, Utah (2002).

Dissertation: "Bayesian Decision Networks for Watershed Management."

M.S. Civil and Environmental Engineering, Utah State University, Logan, Utah (1998).

Thesis: "Seasonal to Interannual Streamflow Forecasts Using Time Series Methods and Climate Information."

B.S. Civil and Environmental Engineering, Utah State University, Logan, Utah (1996).

Appointments

Assistant Professor, Department of Geosciences, Idaho State University - Idaho Falls, August 2004 to present. Teaching and research topics include GIS, GPS, watershed analysis, decision support systems, terrain analysis, spatial statistics, probabilistic modeling, and environmental systems modeling. Program coordinator for M.S. GISci program, director of Idaho Falls Geospatial Software Lab, and project leader, MapWindow GIS project.

Research Assistant Professor, Utah Water Research Laboratory, Logan, Utah, May 2002 to August 2004. Responsibilities and research include: GIS-based decision support systems for watershed management; workshops for spatial data analysis for watershed modeling; mentoring graduate and undergraduate students on projects in GIS, water resources, hydrologic modeling, water quality, and decision support systems.

Senior Research Engineer, Utah Water Research Laboratory, Logan, Utah, March 1998 to May 2002. Responsibilities and research included: spatial and temporal watershed data analysis; GIS-based reference watershed approaches to water quality modeling; training seminars on ArcView/BASINS water quality modeling software package; supervising programmers and research assistants developing models and GIS tools.

Peer Reviewed Publications (graduate students underlined)

Ames, D.P., E. Rafn, R. Van Kirk, and B. Crosby, 2008. Estimation of Stream Channel Geometry in Idaho using GIS-Derived Watershed Characteristics. *Environmental Modeling and Software* (in review).

Ames, D.P., U. Lall, 2008. Developing Total Maximum Daily Loads Under Uncertainty: Decision Analysis And The Margin Of Safety. *UCOWR Journal* (in review).

- Ames, D.P., R. Rope, U. Lall, A. Said, and G. Sehlke, 2008.** Integrated Watershed Management in the Big Lost River Watershed: Issues, Challenges, and a Probabilistic Modeling Approach. *Idaho Academy of Science* (in review).
- Ames, D.P., P. Mercer, and S. Panda, 2008.** An Approach to Adaptive Environmental Assessment and Management in the Grand Canyon Ecosystem Using Bayesian Decision Networks. *Ecology and Society* (in review).
- Ames, D. P. and S. Panda, 2008.** Decision Support Systems for Water Resources Management: Historical Review and Software Design Considerations. *Water Resources Management* (in review).
- Panda, S. S., S. Panigrahi, D. Steele, and D.P. Ames, 2008.** Precision water management in corn using automated crop yield modeling. *Agricultural Water Management* (in review).
- Panda, S.S., I. Chaubey, and D.P. Ames, 2008.** Learning vector quantization based geospatial modeling approach for inland water quality remote prediction. *Hydrologic Sciences Journal* (in review).
- Panda, S.S., S. Panigrahi, and D.P. Ames, 2008.** Application of vegetation indices for crop yield prediction using neural network. *Applied GIS* (in review).
- Panda, S.S. and D.P. Ames, 2008.** Crop yield estimation spatial modeling: Textural feature extraction from radiometric and geometric corrected aerial images. *Asian Journal of Geoinformatics* (in review).
- Panda, S.S. and D. P. Ames, 2008.** Crop yield estimation spatial modeling: Learning vector quantization approach for crop yield estimation zoning. *Asian Journal of Geoinformatics* (in review).
- Chen, L. and D.P. Ames, 2008.** Open Hydro - An Open Source GIS Implementation of the Arc Hydro Hydrologic Data Model. *Journal of Spatial Hydrology* (in review).
- Rafn, E., B. Contor, and D.P. Ames, 2008.** Evaluation of a Method for Estimating Irrigated Crop-Evapotranspiration Coefficients from Remotely Sensed Data in Idaho. *ASCE Journal of Irrigation and Drainage Engineering* (in press).
- Michaelis, C. and D.P. Ames, 2008.** Evaluation and Implementation of OGC Web Processing Service for use in Client-Side GIS. *Geoinformatica*, doi: 10.1007/s10707-008-0048-1
- Ames, D.P., C. Michaelis, and H. Dunsford, 2007.** Introducing the MapWindow GIS Project. *OSGeo Journal 2*: 8-10.
- Michaelis, C. and D.P. Ames, 2007.** Evaluation of the OGC Web Processing Service for Use in a Client-Side GIS. *OSGeo Journal 1*:50-55.
- Ames, D. P., 2006.** Estimating 7Q10 Confidence Limits from Data: A Bootstrap Approach, *J. Water Resour. Plng. and Mgmt.* 132 (3): 204-208.
- Ames, D. P., B.T. Neilson, D.K. Stevens, and U. Lall, 2005.** Using Bayesian networks to model watershed management decisions: an East Canyon Creek case study. *Journal of Hydroinformatics* 7(4): 267-282.
- Ames, D.P., 2002.** Bayesian Decision Networks for Watershed Management. Ph.D. dissertation, Dept. of Civil and Environmental Engineering, Utah State University, Logan, Utah.

Books

- Watry, G. and **D.P. Ames**, 2007. A Practical Look at MapWindow GIS. Lulu.com, Morrisville, North Carolina.
- Ames, D.P.**, 2007. MapWinGIS Reference Manual: A function guide for the free MapWindow GIS ActiveX map component. Lulu.com, Morrisville, North Carolina.

Book Chapters

- Michaelis, C., and **D.P. Ames**, 2008. Web Mapping Service (WMS) Web Feature Service (WFS) Web Processing Service (WPS). In: *Encyclopedia of GIS*. Sashi Shekhar and Hui Xiong (Editors). Springer, New York, pp. 1259-1261.
- Ames, D.P.**, C. Michaelis, A. Anselmo, L. Chen, and H. Dunsford, 2008. MapWindow GIS. *Encyclopedia of GIS*. Sashi Shekhar and Hui Xiong (Editors). Springer, New York, pp. 633-634.
- Jolma, A., **D.P. Ames**, N. Horning, H. Mitsova, M. Neteler, A. Racicot, and T. Sutton, 2008. Environmental Modeling and Management Using Free and Open Source Geospatial Tools. *Encyclopedia of GIS*. Sashi Shekhar and Hui Xiong (Editors). Springer, New York, pp. 275-279.
- Ames, D.P.** and A. Anselmo, 2008. Bayesian Network Integration with Geographic Information Systems. *Encyclopedia of GIS*. Sashi Shekhar and Hui Xiong (Editors). Springer, New York, pp. 39-45.

Presentations

- Ames, D.P. A. and Jolma, 2007. Free and Open Source GIS Applications in Environmental Modeling. International Symposium on Environmental Software Systems. Prague, Czechoslovakia, May 2007.
- Dunsford, H. and D.P. Ames, 2007. Development of an Open Source Geoprocessing Function Library for Microsoft .NET – Based Environmental Modeling Applications. International Symposium on Environmental Software Systems. Prague, Czechoslovakia, May 2007.
- Rafn, E., D.P. Ames, C. Michaelis, P. Duda, J. Kittle, and R. Kinerson, 2007. The BASINS Watershed Analysis System – Integrating with Open Source GIS. International Symposium on Environmental Software Systems. Prague, Czechoslovakia, May 2007.
- Ames, D.P., C. Michaelis, P. Duda, J. Kittle, and R. Kinerson, 2007. BASINS Watershed Analysis System – Integrating with MapWindow Open Source GIS. Spring Runoff Conference. Utah State University, Logan, Utah, April, 2007.
- Veluppillai, J. and D.P. Ames, 2007. Development of an Open Source GIS Interface to the USDA Soil and Water Assessment Tool (SWAT) Watershed Model. Spring Runoff Conference. Utah State University, Logan, Utah, April, 2007.
- Rafn, E. and D.P. Ames, 2007. Estimating Stream Channel Cross Sections from Watershed Characteristics. Spring Runoff Conference. Utah State University, Logan, Utah, April, 2007.
- Chen, L. and D.P. Ames, 2007. Performance Considerations of Open Hydro in an Enterprise Scale Deployment. Intermountain GIS. Tamarack, Idaho, April 2007.

- Anselmo, A. and D.P. Ames, 2007. MWBayes: An Engine for Visualization of Bayesian Decision Networks in Geographic Information Systems. Intermountain GIS, Tamarack, ID, April 2007.
- Forsgren, C. and D.P. Ames, 2007. Introducing the Idaho State University GeoTechnology Programs: Master of Science in Geographic Information Science, Post-Baccalaureate GeoTechnology Certificate, and Undergraduate Minor in GeoTechnologies. Intermountain GIS. Tamarack, Idaho, April 2007.
- Anselmo, A. and D.P. Ames, 2006. Where Is My Stream? A Comparison Of Stream Network Delineation Methods, National Hydrologic Data, And Reality. GIS and Water Resources AWRA Spring Specialty Conference. Houston, Texas, May 2006.
- Michaelis, C. and D.P. Ames, 2006. GC-GML-WFS-WMS-WCS-WCAS: The Open GIS Alphabet Soup and Implications for Water Resources GIS. GIS and Water Resources AWRA Spring Specialty Conference. Houston, Texas, May 2006.
- Rafn, E. and D.P. Ames, 2006. Estimating Stream Channel Cross Sections from Watershed Characteristics. GIS and Water Resources AWRA Spring Specialty Conference. Houston, Texas, May 2006.
- Chen, L. and D.P. Ames, 2006. An Open Source GIS Implementation of ArcHydro. GIS and Water Resources AWRA Spring Specialty Conference. Houston, Texas, May 2006.
- Kittle, J., P. B. Duda, D.P. Ames, and R. Kinerson, 2006. The BASINS Watershed Analysis System -- Integrating With Open Source GIS. GIS and Water Resources AWRA Spring Specialty Conference. Houston, Texas, May 2006.
- Ames, D.P. and J. Horsburgh, 2005. A Slinky Space Streamflow Estimator for TMDLs: Time Series Analysis Meets Geostatistics. AWRA Annual Conference. Seattle, Washington, November 2005.
- Ames, D.P. 2005. Watershed Management Decision Support Systems. Presented as part of the Hydrology Lecture Series, sponsored by University of Idaho and the Idaho Water Resources Research Institute. Idaho Falls, Idaho. February 10, 2005.
- Ames, D.P. 2004. Terrain-Based Water Quality Modeling Using GIS. Presented at GIS Day 2004, sponsored by the GIS Training and Research Center. Pocatello, Idaho. November 17, 2004.
- Ames, D.P., and J. Horsburgh, 2003. MapWindow GIS, a Data Distribution Solution. Presented at the Utah Geographic Information Council annual conference. September 8-10, 2003.
- Ames, D.P., 2002. Phosphorous modeling in Newton Reservoir watershed using GIS terrain analysis techniques. Pre-conference training seminar at the Society of Environmental Toxicologists and Chemists annual meeting. Salt Lake City, Utah, November, 2002.
- Ames, D.P. and L. White, 2002. An adaptive sub-surface sampling scheme for optimal uncertainty reduction. Presented at SPECTRUM 2002, International Conference on Nuclear and Hazardous Waste Management, American Nuclear Society. Reno, Nevada, August 2002.
- Ames, D.P. 2002. Modeling groundwater and surface water interactions at the INEEL. Presented at the AWRA Summer Specialty Conference, Ground Water / Surface Water Interactions. Keystone, Colorado, July 1-3, 2002.

- Ames, D.P., and B.T. Neilson 2001. A Bayesian decision network engine for Internet-based stakeholder decision-making. Presented at the ASCE EWRI, World Water and Env. Res. Congress, May 2001.
- Tarboton, D.G., and D.P. Ames, 2001. Advances in the mapping of flow networks from digital elevation data. Presented at the ASCE EWRI, World Water and Env. Res. Congress, May 2001.
- Ames, D.P., 2000. The TMDL Toolkit: A MapObjects-Based Application Supporting Water Quality Modeling in EPA BASINS. Presented at the ESRI International Users Convention, June 2000.
- Ames, D.P., 1999. A Probabilistic Modeling Approach to TMDL Analysis. Presented at the 1999 International Water Resources Engineering Conference. ASCE, Seattle, Washington.
- Ames, D.P., 1998. Long-range snowpack forecasting based on north Pacific Ocean sea surface temperatures. Western Snow Conference Proceedings, 1998.
- Ames, D.P., 1998. North Pacific Ocean climate connections to streamflow in the Yakima River. American Water Resources Association, Second Place, Utah Section Student Paper Competition, 1998.

Reports

- Ames, D.P., and J. Horsburgh, 2002. Probabilistic Modeling of Sediment and Temperature in the South Fork Payette. Idaho State Department of Environmental Quality.
- Ames, D.P., and B.T. Neilson, 2000. GIS and Bayesian networks for total maximum daily load analysis. Department of Energy, INEEL Project Final Report URC V810012, Sep. 2000.

Current and Recent Projects

Big Sky Carbon Sequestration Project. (DOE 2005-). Data analysis and development of a web-based GIS mapping system for exploring carbon sequestration opportunities in the intermountain west.

BASINS 4 – MapWindow GIS Integration. (EPA 2006-). Development of open source GIS software (MapWindow) for use within the BASINS 4 watershed modeling system.

Data for Environmental Modeling. (EPA 2006-). Development of modular GIS analytical tools for generic data acquisition and processing in any environmental model.

SWAT MapWindow Interface. (EPA 2007-). Development of a GIS interface to the Soil and Water Accounting Tool watershed model.

Boise Center Aerospace Laboratory. (NOAA 2005-). Improving education and application of remote sensing and geotechnologies in the State of Idaho through collaborative teaching and research efforts between facilities and researchers at Boise, Idaho Falls and Pocatello and through the development of a geospatial outreach specialist program.

Pacific Northwest Research Collaboratory – Cheatgrass Detection and Decision Support. (NASA 2005-2007). Development of web-based GIS and remote sensing tools to provide Cheatgrass coverage information to land managers in Idaho and the Pacific Northwest.

Bear River Basin Watershed Project: A Multi-State Effort at Collaborative Decision Making. (EPA-2004). GIS-based alternative futures modeling, and has recently been funded by EPA with sponsorship from the governors of Utah, Wyoming and Idaho.

WRIA-1 Watershed Management Decision Support System, (Washington State 2002-2004). Integration of surface and subsurface hydrology, water quality and fish habitat models with data in a GIS-based decision support system for watershed management.

TMDL Support for Newton, Otter and Echo Reservoirs, (Utah DEQ 2002-2004). Spatial data analysis and hydrological/water quality modeling to support the total maximum daily load analysis in Newton, Otter and Echo Reservoir and associated tributaries.

Integrated Watershed Information Management Tools, (INEEL 1998-2003). Development of a decision support system for streamflow and water quality data visualization and analyses, including a 3-D data viewer, and watershed delineation tools.

Web-Based Geospatial Water Resource Management, (USBR 2000). A web-based GIS interface to an online water data repository in of the Emery County Water Conservancy District including live and historical databases accessible through the GIS interface.

US EPA BASINS Training, (EPA 1999-2002). Developed ArcView/BASINS watershed modeling training materials and conducted quarterly training for personnel from local and state agencies, as well as university and private consulting individuals.

Courses Taught

- Geol 503 – Principles of GIS
- Geol 504 – Advanced GIS
- Geol 507 – GPS Applications in Research
- Geol 508 – Geotechnology Seminar
- Geol 528 – Beginning GIS Programming
- Geol 599 – Watershed Modeling

- Geol 628 – Advanced GIS Programming
- Geol 648 – Special Topics Groundwater Modeling with GIS
- Workshop – Water Quality Modeling Using BASINS
- Workshop – GIS Based Water Quality Analysis
- Workshop – MapWindow GIS
- Workshop – ArcGIS Model Builder

Volunteer Activities

Graduate Student Advising:

- Brian Marchionni, M.S. GISci (current) – Open tools for hydrologic information systems.
- Jeyakanthan Veluppillai, M.S. GISci (current) – SWAT Watershed Modeling Tool
- Guowen Hu, M.S. GISci (current) – Open standards based hydrologic information system
- Ahmad Aburizaiza, M.S. GISci (current)
- Kit Na Goh, M.S. GISci (current) – A relational database for FGDC metadata.
- Danny Anderson, Ph.D. Engineering and Applied Science (current) – Probabilistic modeling of surface water-groundwater interactions.
- Ted Dunsford, Ph.D. Engineering and Applied Science (current) – Development of integrated watershed modeling tools using open source GIS.
- Allen Anselmo, M.S. GISci (current) – Integration of Bayesian Networks with Geographic Information Systems.
- Eric Rafn, M.S. GISci (2007) – Geospatial Estimation of Evapotranspiration and Stream Channel Characteristics in Support of Numerical Simulation Modeling in Idaho.
- Chris Michaelis, M.S. GISci (2007) – OGC Specifications on Client-Side GIS.
- Forest (Lailin) Chen, M.S. GISci (2007) – “Open Hydro” - An Open Source GIS Hydrologic Data Model and Toolset.
- Jessica Mitchell, M.S. GISci (2007) – Supervised and unsupervised cheatgrass classification from remote sensing imagery.
- Kelli Taylor, M.S. Geography (2003) – GIS-based probabilistic modeling of habitat risk in the South Wind River Landscape in Southern Wyoming (co-advisor).

Conference Session Organizer International Symposium on Environmental Software Systems. Prague, Czech Republic, 2007.

Journal Reviewer: OSGeo Journal (associate editor), Computers and Geosciences, Environmental Modeling and Software, Journal of the American Water Resources Association, AQUA, and Journal of Hydrology

Committee Vice-Chair: ISU Campus Planning Council 2007-2008.

Consulting Activities

- Hydromap Engineering Software Solutions, Ammon, Idaho (Principal).
- The Soil Company, Groningen, Netherlands. Development of GIS algorithms.
- Utah Department of Transportation, Salt Lake City, Utah, Internet-based stakeholder data system using GIS-linked SQL databases.

- Cirrus Ecological Solutions, Logan, Utah, 2002, building custom GIS-based data visualization applications for the Bear River, Utah watershed.
- PAQ Services, Logan Utah, 1998-2005 software development services.
- Worker Rehabilitation Services, Boulder, CO, 1999-2006 software development services.

Original Software

MapWindow Programmable Geographic Information System – An extensible, customizable map-based tool used for spatial data analysis, map-interaction, data visualization and modeling needed for environmental and water resources applications (see www.MapWindow.org)

MKNN – Forecasts streamflow time series using a nonparametric nearest neighbor algorithm.

Low Flow Calculator – Allows a user to load a time series for a particular stream gauging station and compute the 7Q10 or other requisite period expected low flow from either a normal or log-normal distribution. Bootstrapping is used to generate confidence limits.

Interactive Time Series Multivariate Adaptive Regression Splines (ITSMARS) – Used for forecasting streamflow using a nonparametric autoregressive algorithm and predictor data sets such as sea-surface temperatures