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Latha Malar Baskaran

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Education and Training

M.S, Geography, Pennsylvania State University, 2003
Bachelor of Engineering (B.E.), GeoInformatics, Anna University, India, 2001

Professional Experience

Research Staff at the Oak Ridge National Laboratory, Oak Ridge, TN (*September 2003 to present*):
Working on several projects that involve managing geographical data, watershed modeling, land use and land cover modeling, remote sensing, statistical analysis, habitat modeling and mapping.
Research Assistant at the Pennsylvania State University, University Park, PA (*August 2001 to July 2003*):
Data analyst at the Human-Environment Regional Observatory (HERO) to study environmental and socio-economic factors affecting land use and land cover changes. Worked at the Center for Integrated Regional Assessment (CIRA) and was involved in analyzing the uncertainty in maps derived from remote sensing imagery using statistical procedures and spatial visualization methods.

Project Experience

Forecasting Impacts of Biofuels on Water Quality and Aquatic Biodiversity (*October 2008 to present*):
Forecasting impacts due to biofuel industry expansion for both grain and biomass feedstock production pathways on water quality and aquatic biota using various tools and models.
Spatial Modeling of Geographic Patterns in Biodiversity and Biofuels Production (*October 2008 to October 2009*): Modeling the impacts of biofuel production and related land use changes on fish habitat and water quality, followed by changes in fish biodiversity.
Scale Dependent Metrics for Bioenergy: (*October 2007 to October 2009*): Developing scale dependent metrics to understand land-nutrient-water interactions under future bioenergy scenarios (using the Soil and Water Assessment Tool (SWAT) coupled with an optimization framework).
Bioenergy Resources and Engineering Systems (*November 2006 to present*): Resource analysis to predict the potential spatial distribution of biomass resources (forests and agricultural – energy crops).
MAST-DC: Modeling and Synthesis Thematic Data Center (*September 2006 to December 2007*) (<http://nacp.ornl.gov/mast-dc/>): Managing geographical data for the data systems component of the North American Carbon Program (NACP).
DAAC: Oak Ridge National Laboratory Distributed Active Archive Center (*March 2006 to September 2007*) (<http://www.daac.ornl.gov/>): Applying quality checks to spatial data (Ex. MODIS satellite data, climatic data) that are to be archived at ORNL DAAC.
RSim: A regional simulation model to explore impacts of resource use and constraints (*September 2003 to May 2006*) (<http://www.esd.ornl.gov/programs/SERDP/RSim/>): Managing geographical data in RSim. Performed model calibration and assisted in implementation of land cover, water quality and habitat sub models. A gopher tortoise habitat model was created for this project.
Integration of Ecological Information (*September 2003 to March 2006*): Development and mapping of land management categories relating to conservation, restoration and preservation of environmental features and relating to military planning efforts in Fort Benning, GA.

Publications

- McBride, A.C., V.H. Dale, L.M. Baskaran, M.E. Downing, L.M. Eaton, R.A. Efroymson, C.T. Garten Jr., K.L. Kline, H.I. Jager, P.J. Mulholland, E.S. Parish, P.E. Schweizer, and J.M. Storey. Accepted 2011. Indicators to support environmental sustainability of bioenergy systems. *Ecological Indicators*.
- Baskaran, L., H.I. Jager, P.E. Schweizer, and R. Srinivasan. 2010. Progress toward evaluating the sustainability of switchgrass as a bioenergy crop using the SWAT model. *Transactions of the American Society of Agricultural and Biological Engineers* 53(5): 1547-1556.
- Jager, H.I., L. M. Baskaran, C. C. Brandt, E. B. Davis, C. A. Gunderson, S. D. Wullschleger. 2010. Empirical geographic modeling of switchgrass yields in the United States. *Global Change Biology: Bioenergy* 2: 248-257.
- West, T.O., C.C. Brandt, L.M. Baskaran, C.M. Hellwinckel, R. Mueller, C.J. Bernacchi, V.P. Bandaru, B. Yang, B.S. Wilson, G. Marland, R.G. Nelson, D.G. De La Torre Ugarte, and W.M. Post. 2010. Cropland carbon fluxes in the United States: increasing geospatial resolution of inventory-based carbon accounting. *Ecological Applications*. 20:1074-1086.
- Baskaran, L., H. I. Jager, P. E. Schweizer, and R. Srinivasan. 2009. Use of the SWAT model to evaluate the sustainability of switchgrass production at a national scale. 2009 International SWAT Conference Proceedings, Boulder, CO. <http://twri.tamu.edu/reports/2009/tr356.pdf>
- Gunderson, C. A., E. Davis, H. Jager, T. West, R. Perlack, C. Brandt, S. Wullschleger, L. Baskaran, E. Wilkerson and M. Downing. 2008. Exploring potential U.S. switchgrass production for lignocellulosic ethanol. Oak Ridge National Laboratory. ORNL/TM-2008/103.
- Dale, V., F. Akhtar, M. Aldridge, L. Baskaran, M. Berry, M. Browne, M. Chang, R. Efroymson, C. Garten, E. Lingerfelt, and C. Stewart. 2008. Modeling the Effects of Land Use on Quality of Water, Air, Noise, and Habitat for a Five-County Region in Georgia. *Ecology and Society*. 13: [online] URL: <http://www.ecologyandsociety.org/vol13/iss1/art10/>
- Baskaran, L., V. Dale, W. Birkhead, and R. Efroymson. 2006. Habitat modeling within a regional context: An example using Gopher Tortoise. *American Midland Naturalist*. 155: 335-351.
- Baskaran, L., V. Dale, C. Garten, D. Vogt, C. Rizey, R. Efroymson, M. Aldridge, M. Berry, M. Browne, E. Lingerfelt, F. Akhtar, M. Chang and C. Stewart. 2006. Estimating land-cover change in RSim: Problems and constraints. *Proceedings for the American Society for Photogrammetry and Remote Sensing 2006 Conference*, Reno, NV, May 1-5 2006.
- Dale, V., M. Aldridge, T. Arthur, L. Baskaran, M. Berry, M. Chang, R. Efroymson, C. Garten, C. Stewart, and R. Washington-Allen. 2006. Bioregional Planning in Central Georgia. *Futures*. 38:471-489.
- Dale, V., D. Druckenbrod, L. Baskaran, M. Aldridge, M. Berry, C. Garten, L. Olsen, R. Efroymson, and R. Akhtar. 2005. Vehicle impacts on the environment at different spatial scales: Observations in west central Georgia, USA. *Journal of Terramechanics*.42: 383-402.
- Dale, V., and L. Baskaran. Identifying habitats of rare species on and around military installations. 2005. Proceedings from the Symposium and Workshop on Threatened, Endangered and At-Risk Species (TER-S) on DoD and Adjacent Lands, Baltimore, MD, June 7-9, 2005.
- Efroymson, R., V. Dale, L. Baskaran, M. Chang, M. Aldridge, and M. Berry. 2005. Planning transboundary ecological risk assessments at military installations. *Human and Ecological Risk Assessment*.11: 1193-1215.
- Baskaran, L., V. Dale, and W. Birkhead. 2004. Habitat modeling within a Regional Simulation Model (RSim) environment, *Proceedings for Fourth Southern Forestry and Natural Resource Management GIS Conference*, Athens, GA, December 16-17, 2004.
- Dale, V., D. Druckenbrod, L. Baskaran, C. Garten, L. Olsen, R. Efroymson, R. Washington-Allen, M. Aldridge and M. Berry. 2004. Analyzing land-use change at different scales in Central Georgia, *Proceedings for Fourth Southern Forestry and Natural Resource Management GIS Conference*, Athens, GA, December 16-17, 2004.

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Tran, L., S. T. Jarnagin, C. G. Knight and L. Baskaran. 2004. Mapping spatial accuracy and estimating landscape indicators from thematic land-cover maps using fuzzy set theory, 173-188. In R.S. Lunetta and J. G. Lyon (Eds) *Remote Sensing and GIS Accuracy Assessment*, CRC Press, Boca Raton, FL.

Presentations:

Baskaran, L. and V. Dale. 2009. Modeling the Impacts of Bioenergy Feedstock Driven Water Quality Changes on Habitat of Species. Presentation at the American Association of Geographers (AAG) Annual Conference, Las Vegas, NV, March 2009.

Baskaran, L. et al. 2008. Watershed Modeling and Spatial Optimization of Environmental Impacts from Bioenergy Feedstock. Poster presentation at the International ESRI Users Conference, San Diego, CA, August 2008.

Baskaran, L. and R. Cook. 2008. Sub-pixel analysis of a 1 km resolution land water mask. Poster presentation at the International ESRI Users Conference, San Diego, CA, August 2008.

Baskaran, L. et al. 2008. Data preparation for modeling bioenergy feedstock in the continental US. Poster presentation at the International ESRI Users Conference, San Diego, CA, August 2008.

Baskaran, L., R. B. Cook, P. E. Thornton, W. M. Post, B. E. Wilson, and U. Dadi. 2007. Modeling and Synthesis Support for the North American Carbon Program. Poster presentation at the American Geophysical Union Fall Meeting, San Francisco, CA, December 2007.

Baskaran, L., V. Dale, C. Garten, D. Vogt, C. Rizy, R. Efroymson, M. Aldridge, M. Berry, M. Browne, E. Lingerfelt, F. Akhtar, M. Chang and C. Stewart. 2006. Estimating land-cover change in RSim: Problems and constraints. Presentation at the American Society for Photogrammetry and Remote Sensing 2006 Conference, Reno, NV, May 2006.

Baskaran, L., V. Dale., M. Aldridge, M. Berry, M. Chang, R. Efroymson., C. Stewart, and R. A., Washington-Allen. 2006. RSim: A Simulation to Explore Impacts of Resource Use and Constraints. "Celebrate Women in Science" poster session sponsored by the Committee for Women and the Women's History Month Committee of Oak Ridge National Laboratory, Oak Ridge, TN., May 2006.

Baskaran, L., V. Dale, and W. Birkhead. 2004. Habitat modeling within a Regional Simulation Model (RSim) environment, Presentation at the Fourth Southern Forestry and Natural Resource Management GIS Conference, Athens, GA, December 2004.

Baskaran, L. Applications of GIS and Remote Sensing: The Regional Simulation Model (RSim) case study. Presentation at the Plateau PC Users Group, Inc in Crossville, TN, October 2004.

Baskaran, L. GIS and Remote Sensing today and an example of a research application – RSim. Invited presentation at the Plateau PC Users Group, Inc at Crossville, TN, October 2004.

Baskaran, L., V. Dale, M. Aldridge, M. Berry, M. Chang, R. Efroymson, C. Garten, and C. Stewart. 2004. RSim: A Regional Simulation to Explore Impacts of Resource Use and Constraints. Georgia URISA GIS/IT Conference at Peachtree City, GA, September 2004.

Baskaran, L., V. Dale, M. Aldridge, M. Berry, M. Chang, R. Efroymson, C. Garten, and C. Stewart. 2004. RSim: A Regional Simulation to Explore Impacts of Resource Use and Constraints. ESA 2004, Portland, OR, August 2004.

Baskaran, L. Remote Sensing applications to water resources. Guest lecture at the GEOG 421: Water Resources course. Pennsylvania State University, University Park, PA, Spring 2003.

Professional Activities and Honors

Ms. Baskaran has over 10 years of experience using GIS software and related products. Her research has involved using GIS in various environmental contexts such as habitat modeling, land-use and land-cover change, water quality modeling etc. She has presented her research at a number of professional conferences and forums, including the American Association of Geographers (AAG) Annual Conference, the International ESRI Users Conference, the American Geophysical Union (AGU) Annual conference and

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the American Society for Photogrammetry and Remote Sensing (ASPRS) Annual Conference. While at Anna University, Ms. Baskaran was honored with the University Gold Medal for overall academic excellence in four years of undergraduate study as well as the University Gold Medal for obtaining the highest grade point average in the 2nd, 3rd and 4th years of undergraduate study.

Other Professional Appointments:

Intern at the Institute of Remote Sensing (IRS), India (*June 1999 to August 1999*): Compiled various socio-economic and demographic data as a supplement to geographical data in a GIS for a project involving the preparation of a Panchayat (Sub District) Resource Information System.

Intern at the M. S. Swaminathan Research Foundation, India (*December 1998 to January 1999*): Assisted in preparing map products for the Information Village Project

Training:

The Soil and Water Assessment Tool (SWAT) workshop. Knoxville, TN, May 2008.

ArcGIS 9: The complete Geographic Information System. Training seminar by ESRI. Knoxville, TN, October 2004.

Image Classification techniques for the development of accurate, detailed, quantitative land cover data. Workshop at the APPRS Annual Conference, Denver, CO, May 2004.

Grid based map analysis techniques and modeling. Workshop at the APPRS Annual Conference, Denver, CO, May 2004.

Computer Skills:

GIS Packages: ArcGIS 9.x including ArcMap, ArcToolbox, ArcGIS Spatial Analyst, Geostatistical Analyst and 3D Analyst; ArcInfo 3.x, ArcView 3.x, ArcView 8.x,

Image Processing Software: ERDAS Imagine, ER Mapper, ENVI

Others: SAS Enterprise Miner, SPSS, Stata, AutoCAD 2000