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**Latha Baskaran, Ph.D.**

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**Summary:** I have 17+ years of experience working with remote sensing, GIS, image processing and spatial modeling applied across various environmental domains including global carbon cycle, biodiversity, water quality and land-use change. My expertise is in working with data collected across various temporal and spatial scales - space-borne, airborne and ground-based data to study landscape disturbances and their impact on ecosystem processes.

**Professional Experience**

Geospatial technologist, Carbon Cycle & Ecosystems Group, Jet Propulsion Laboratory, Pasadena, CA (2019 – present)

Research scientist, Environmental Science Division, Oak Ridge National Laboratory, Oak Ridge, TN (2005 – 2018)

Post-masters research associate, Environmental Science Division, Oak Ridge National Laboratory, Oak Ridge, TN (2003 – 2005)

**Education**

Ph.D., Geography, University of Tennessee, Knoxville, TN, 2017

M.S, Geography, Pennsylvania State University, State College, PA, 2003

Bachelor of Engineering (B.E.), GeoInformatics, Anna University, Chennai, India, 2001

**Technical Skills**

- Software and Programming: R, python, ArcGIS, ERDAS Imagine, ER Mapper, ENVI
- Statistical Packages: SPSS, Stata, SAS
- File Formats: HDF, netCDF, GeoTIFF, KML, shapefile, geodatabases
- Working Knowledge of Metadata standards such as ISO 19115 and Climate and Forecast Convention
- Expertise in working with aircraft data and satellite data products

**Proposal Awards**

- [Analyzing the land-use change impacts of oil and gas exploration related infrastructure changes on Arctic communities](#), NASA LCLUC, 01/01/2022 – 12/31/2024, \$450 K Principal Investigator
- Evaluating RADAR-Imaging spectrometer fusion approach to map post-fire vegetation structure, JPL Spontaneous R&TD, 11/01/2020 – 04/30/2021, \$44 K, Principal Investigator

**Other Activities**

- Reviewer for NASA ROSES proposals and internal JPL proposals
- Moderator for professional workshop panels

## Refereed Publications

- Yang, D., Morrison, B.D., Hanston, W., McMahon, A., **Baskaran, L.**, Hayes, D.J., Miller, C.E. and Serbin, S.P. 2023. Integrating very-high-resolution UAS data and airborne imaging spectroscopy to map the fractional composition of Arctic plant functional types in Western Alaska. *Remote Sensing of Environment*, 286, p.113430. <https://doi.org/10.1016/j.rse.2022.113430>.
- Dozier, J., Bair, E.H., **Baskaran, L.**, Brodrick, P.G., Carmon, N., Kokaly, R.F., Miller, C.E., Miner, K.R., Painter, T.H. and Thompson, D.R. 2022. Error and Uncertainty Degrade Topographic Corrections of Remotely Sensed Data. *Journal of Geophysical Research: Biogeosciences*, 127(11). <https://doi.org/10.1029/2022JG007147>.
- Baskaran, L.M.**, Elder, C.M., Bloom, A.A., Shuang, M., Thompson, D.R., and Miller, C.E. 2022. Geomorphological Patterns of Remotely Sensed Methane Hot Spots in the Mackenzie Delta, Canada. *Environmental Research Letters*, 17(1). <https://doi.org/10.1088/1748-9326/ac41fb>.
- Norton, A.J., P.J. Rayner, Y.P. Wang, N.C. Parazoo, **L. Baskaran, L.**, P.R. Briggs, V. Haverd, and R. Doughty. 2022. Hydrologic connectivity drives extremes and high variability in vegetation productivity across Australian arid and semi-arid ecosystems. *Remote Sensing of Environment*, 272, 112937. <https://doi.org/10.1016/j.rse.2022.112937>.
- Liu, J., **L. Baskaran**, K. Bowman, D. Schimel, A.A. Bloom, N. Parazoo, T. Oda, D. Carroll, D. Menemenlis, J. Joiner, and R. Commane. 2021. Carbon monitoring system flux net biosphere exchange 2020 (CMS-Flux NBE 2020). *Earth System Science Data*, 13(2), pp.299-330. <https://doi.org/10.5194/essd-13-299-2021>.
- Parish, E.S., **L. Baskaran**, and V. H. Dale. 2021. Framework for assessing land management effects on species of concern: An example using wood pellet production and the gopher tortoise. *WIREs Energy and Environment*, 10(1), p.e385. <https://doi.org/10.1002/wene.385>.
- Langholtz, M., B.H. Davison, H.I. Jager, L. Eaton, **L.M. Baskaran**, M. Davis, and C.C. Brandt. 2021. Increased nitrogen use efficiency in crop production can provide economic and environmental benefits. *Science of the Total Environment*, 758, p.143602. <https://doi.org/10.1016/j.scitotenv.2020.143602>.
- Gorelick, D. E., **L. M. Baskaran**, and H.I. Jager. 2019. Visualizing feedstock siting in biomass production: Tradeoffs between economic and water quality objectives. *Land Use Policy*, 88, 104201.
- Jager, H. I., R. A. Efromyson, and **L. Baskaran**. 2019. Avoiding conflicts between future freshwater algae production and water scarcity in the United States at the energy-water nexus. *Water*, 11(4). <https://doi.org/10.3390/w11040836>.
- Wang, G., H. I. Jager, **L. M. Baskaran**, and C. C. Brandt. 2018. Hydrologic and Water Quality Responses to Biomass Production in the Tennessee River Basin. *GCB Bioenergy*, 10(11). <https://doi.org/10.1111/gcbb.12537>
- Jager, H. I., M. Wu, M. Ha, **L. Baskaran** and J. Krieg. 2017. Water Quality Responses to Simulated Management Practices on Agricultural Lands Producing Biomass Feedstocks in Two Tributary Basins of the Mississippi River, in R.A. Efromyson et al. eds., 2016 Billion-Ton Report: Advancing Domestic Resources for a Thriving Bioeconomy, Volume 2: Environmental Sustainability Effects of Select Scenarios from Volume 1. ORNL/TM-2016/727. Oak Ridge National Laboratory, Oak Ridge, TN, pp.140-182. DOI: 10.2172/1338837
- Jager, H. I., **L.M. Baskaran**, P.E. Schweizer, A.F. Turhollow, C.C. Brandt, and R. Srinivasan. 2015. Forecasting changes in water quality in rivers associated with growing biofuels in the Arkansas-White-Red river drainage, USA. *Global Change Biology: Bioenergy*. 7(4): 774-784.

- Parish, E.S., M. Hilliard, **L.M. Baskaran**, V.H. Dale, N.A. Griffiths, P.J. Mulholland, A. Sorokine, M.E. Downing, R. Middleton, and N.A. Thomas. 2012. Multimetric spatial optimization of switchgrass plantings across a watershed. *Biofuels, Bioproducts and Biorefining*. 6: 58-72.
- 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. 2011. Indicators to support environmental sustainability of bioenergy systems. *Ecological Indicators*. 11: 1277-1289.
- 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. Wulschleger. 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.
- 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.
- 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.
- 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.

### Other Publications

- Dale, V., **L. Baskaran**, and E. Parish. 2021. Assessing Effects on Biodiversity from Wood Pellet Production in the Southeastern United States. *World Biomass*, 2020(1).
- Baskaran, L.** 2017. Effects of switchgrass related land-use changes on aquatic macroinvertebrates. PhD Dissertation. University of Tennessee, Department of Geography, Knoxville, TN.
- Wolfe, A. K., V. H. Dale., T. Arthur and **L.M. Baskaran**. 2017. Ensuring that ecological science contributes to natural resource management using a Delphi-derived approach, In SA Gray et al. eds., Environmental Modeling with Stakeholders: Theory, Methods and Applications. Springer, pp. 103–124, DOI: 10.1007/978-3-319-25053-3\_6
- Baskaran, L.**, H. Jager, A. Turhollow. Understanding shifts in agricultural landscapes: context matters when simulating future changes in water quantity and quality. *ORNL TM Report - ORNL/TM-* 2013/531.
- 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. Wulschleger, **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.
- 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. *Proceedings for the American Society for Photogrammetry and Remote Sensing 2006 Conference*, Reno, NV, May 1-5 2006.
- 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.
- 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.
- 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.
- Baskaran, L.** 2003. Analyzing the effect of topography on remote sensing imagery. Master's Thesis. The Pennsylvania State University.

#### **Presentations:**

- Baskaran, L.** et al. 2022. Challenges in Characterizing Geospatial Relationships of Topography in the Arctic. Poster presentation at the 2022 American geophysical Union (AGU) Annual Meeting, December 2022.
- Baskaran, L.** 2022. Monitoring Earth's surface and atmosphere using Imaging spectroscopy: Example applications future space-borne missions. Invited talk at the Remote Sensing Interdisciplinary Graduate Education Program Seminar series, Blacksburg, VA, March 2022.
- Baskaran, L.** et al. 2020. The use of LiDAR to derive tree heights and other structural vegetation characteristics: Applications for mapping habitats in a post-fire environment. Guest presentation at the NASA and the Trees Around the GLOBE Student Research Campaign, March 2020.
- Baskaran, L.** et al. 2019. Environmental Drivers of Arctic Methane Emissions Hot Spots Determined from Remote Sensing Datasets. Poster presentation at the 2019 American geophysical Union (AGU) Annual Meeting, San Francisco, CA, December 2019.
- Baskaran, L.** and V. Dale. 2017. Framework to Identify Effects of Forest Management for Wood-based Pellets on Biodiversity. Presentation at the Annual Society of American Foresters (SAF) National Convention, Albuquerque, NM, November 2017.
- Baskaran, L.** 2016. Exploring the Potential for Sustainable Future Bioenergy Production in the Arkansas-White-Red River Basin. Poster presentation at the American geophysical Union (AGU) Annual Meeting, San Francisco, CA, December 2016.
- Baskaran, L.** 2016. Identifying opportunities for sustainable bioenergy production in two southern tributary basins of the Mississippi River Basin: focus on water quality, quantity and biodiversity. Presentation at the 2016 American Association of Geographers (AAG) Annual Meeting, San Francisco, CA, April 2016.

- Baskaran, L.** 2015. Aquatic Macroinvertebrates for Assessing Water Quality Effects associated with Bioenergy. Presentation at the Center for Bioenergy Sustainability (CBES) forum, Oak Ridge, TN, May 2015.
- Baskaran, L., V. Dale, and L. Tran.** 2013. Cross-Scale Analysis of Factors Affecting Aquatic Macroinvertebrate Distribution in Tennessee. Presentation at the Association of American Geographers (AAG) Annual Meeting, Los Angeles, CA, April 2013.
- Baskaran, L., V. Dale, and L. Tran.** 2012. Modeling the effects of switchgrass management on aquatic macroinvertebrates. Presentation at the 2012 American Water Resources Association Conference, Jacksonville, FL, November 2012.
- Baskaran, L., V. Dale and E. Parish.** 2011. Evaluating bioenergy sustainability using indicators and a watershed-scale optimization model. Presentation at the Frontiers in Bioenergy Conference, West Lafayette, IN, May 2011.
- 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.