

# BIJAN SEYEDNASROLLAH

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## ACADEMIC APPOINTMENTS

<b>Harvard University</b> , Department of Organismic and Evolutionary Biology/ <b>Northern Arizona University</b> , School of Informatics, Computing, and Cyber Systems Postdoctoral Research Associate	2017 - present
<b>Duke University</b> Doctoral Research and Teaching Assistant	2011 - 2017
<b>Research Institute of Petroleum Industry (Iran)</b> Senior Researcher	2006 - 2011

## EDUCATION

<b>Duke University</b> , Durham, NC Ph.D. in Environment Dissertation: "Ecosystem response to a changing climate: vulnerability, impact and monitoring" Advisor: Dr. Jim Clark, Committee: Dr. Jean-Christophe Domec, Dr. Alan Gelfand, and Dr. Jennifer Swenson	2017
<b>Sharif University of Technology</b> , Tehran, Iran M.Sc. in Mechanical Engineering, Energy Conversion	2006
<b>University of Semnan</b> , Semnan, Iran B.Sc. in Mechanical Engineering, Heat and Fluid Flow	2003

## SELECTED PEER-REVIEWED JOURNAL PUBLICATIONS

- B. Seyednasrollah**, F. Yousefi-Lalimi, J. Meyer "Active learning increased both attendance and performance of undergraduates: An environmental science case study", in review.
- B. Seyednasrollah**, A. D. Richardson, T. Milliman, "Data extraction from digital repeat photography using xROI: An interactive framework to facilitate the process", *Journal of Photogrammetry and Remote Sensing*, in review.
- B. Seyednasrollah**, J. C. Domec, J. S. Clark. "Remotely sensed canopy thermal stress to monitor droughts in near real-time", *Agricultural and Forest Meteorology*, in review.
- B. Seyednasrollah**, J. S. Clark (2018) "Nutrient-demanding species and drought vulnerability: the role of habitat heterogeneity", *Ecology*, in revision.
- A. D. Richardson, K. Hufkens, T. Milliman, D. M. Aubrecht, M. E. Furze, **B. Seyednasrollah**, M. B. Krassovski, J. M. Latimer, W. R. Nettles, R. R. Heiderman, J. M. Warren, and P. J. Hanson (2018) "Ecosystem warming extends vegetation activity but heightens cold temperature vulnerability", *Nature*, Volume 560, pages368371 (2018), doi:10.1038/s41586-018-0399-1.
- B. Seyednasrollah**, J. J. Swenson, J. C. Domec, J. S. Clark (2018) "Leaf phenology paradox: why warming matters most where it is already warm", *Remote Sensing of Environment*, Volume 209, May 2018, Pages 446-455, ISSN 0034-4257, doi:10.1016/j.rse.2018.02.059.
- J. S. Clark, D. Nemergut, **B. Seyednasrollah**, P. Turner, and S. Zhang (2017). "Generalized joint attribute modeling for biodiversity analysis: Median-zero, multivariate, multifarious data", *Ecological Monographs*, 87(1), 34-56. doi:10.1002/ecm.1241.
- B. Seyednasrollah**, and M. Kumar (2014). "Net radiation in a snow-covered discontinuous forest gap for a range of gap sizes and topographic configurations", *J Geophys Res-Atmos*, 119, 10,32310,342. doi:10.1002/2014JD021809.

**B. Seyednasrollah**, and M. Kumar (2013). "Effects of tree morphometry on net snowcover radiation on forest floor for varying forest densities", J Geophys Res-Atmos, 118, 12,50812,521, doi:10.1002/2012JD019378.

**B. Seyednasrollah**, M. Kumar, and T. E. Link (2013). "On the role of vegetation density on net snow cover radiation at the forest floor", J. Geophys. Res. Atmos, 118, 83598374, doi:10.1002/jgrd.50575.

#### PEER-REVIEWED OPEN-SOURCE MODELS AND PACKAGES

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**B. Seyednasrollah**, T. Milliman and A. D. Richardson (2018) "xROI: A Toolkit to Delineate Region of Interests (ROI's) and Extract Time-series Data from Digital Repeat Photography Images". Zenodo. <http://doi.org/10.5281/zenodo.1202273>

**B. Seyednasrollah**, J. J. Swenson, J. C. Domec, J. S. Clark (2018) "phenoCDM: Continuous Development Models for Incremental Time-Series Analysis". Zenodo. <http://doi.org/10.5281/zenodo.1204614>

**B. Seyednasrollah** "drawROI: An interactive toolkit to extract phenological time series data from digital repeat photography". Zenodo. <http://doi.org/10.5281/zenodo.1066588>

**B. Seyednasrollah** "hazer: Quantifying haze factor for RGB images to identify cloudy and foggy weather", Zenodo. <http://doi.org/10.5281/zenodo.1008568>, 2017.

**B. Seyednasrollah** "calcSolar: Solar position and radiation components (Version v1.0.0)", Zenodo. <http://doi.org/10.5281/zenodo.1006384>, 2016.

**B. Seyednasrollah** "GaRM: A Forest Gap Radiation Model", Zenodo. <http://doi.org/10.5281/zenodo.840998>, 2014.

**B. Seyednasrollah** "FoRM: A physically based forest radiation model ", Zenodo. <http://doi.org/10.5281/zenodo.841001>, 2014.

#### SELECTED PRESENTATIONS AND PUBLISHED ABSTRACTS

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**B. Seyednasrollah (invited)**, T. Milliman, A. D. Richardson "Tackling challenges of extracting time-series data from digital repeat photography", Early Career Researcher Symposium 2018, Computing Community Consortium, Washington, DC.

**B. Seyednasrollah (invited)**, A. Young, K. Duffy, T. Milliman, A. D. Richardson "Phenocams: Tracking vegetation activity from digital cameras", Data Institute 2018, National Ecological Observatory Network, Boulder, CO.

**B. Seyednasrollah**, T. E. Milliman, K. Hufkens, M. Kosmala, A. D. Richardson "An interactive toolkit to extract phenological time series data from digital repeat photography", American Geophysical Union Fall Meeting 2017, New Orleans, LA.

**B. Seyednasrollah (invited)**, J. Clark, "Understanding Phenology across Scales and Improving Linkages to Ecosystem Functions", American Geophysical Union Fall Meeting 2015, San Francisco, CA.

**B. Seyednasrollah**, J. Clark, "Attributing the effects of climate on phenology change suggests high sensitivity in coastal zones", American Geophysical Union Fall Meeting 2015, San Francisco, CA.

J. Clark, A. Berdanier, **B. Seyednasrollah**, Brad Tomasek, "Forecasting the forest and the trees: consequences of drought in competitive forests", American Geophysical Union Fall Meeting 2015, San Francisco, CA.

J. Clark, **B. Seyednasrollah**, B. Tomasek, "Forecasting the forest and the trees: climate impacts from individuals to communities to traits." , Coweeta LTER Summer Symposium and Meeting Agenda, June, 2015, Coweeta, NC.

**B. Seyednasrollah**, "Sensitivity of green-up phenology across different ecosystems using hierarchical modeling", Richardson Lab, Harvard University, Cambridge, MA, October 2015.

**B. Seyednasrollah**, "Dynamics of forest green-up across different ecosystems", Joint Ecology / Marine Lab (JEM) Symposium, Duke University, Beaufort, NC, November 2015.

**B. Seyednasrollah**, J. S. Clark, J.C. Domec, "Drought-induced stomatal closure rising canopy temperature observed from space", Ecological Society of America Annual Meeting 2015, Baltimore, MD.

J. S. Clark, B. Beckage, A. Berdanier, M. Dietze, C. M. Gough, B. Hardiman, M. Kwit, J. Mohan, S. M. Pearson, W. J. Platt, A. Schwantes, **B. Seyednasrollah**, B. J. Tomasek, C. W. Woodall, P. H. Wyckoff, K. Zhu, "Forecasting the

forest and the trees: Consequences of competition and climate for biodiversity change", Ecological Society of America Annual Meeting 2015, Baltimore, MD.

J HilleRisLambers, I. K. Breckheimer, **B. Seyednasrollah**, J. S. Clark, J. F. Franklin, A. J. Larson, J. A. Freund, "Competitive interactions between tree species will slow compositional turnover with climate change", Ecological Society of America Annual Meeting 2015, Baltimore, MD.

**B. Seyednasrollah (invited)**, Andrew Latimer, Leah Johnson, Janneke Hille Ris Lambers, "Applications of Joint Species Distribution Modeling with Case Studies", The Statistical and Applied Mathematical Sciences Institute (SAMSI), ECOL: Transition Workshop: May 4-6, 2015.

**B. Seyednasrollah**, "How fast forests green up in different habitats?", Duke University Ecology Symposium, Duke Marine Laboratory, Beaufort, NC, April 2015.

**B. Seyednasrollah (invited)**, Andrew Latimer, Ian Breckheimer, Janneke Hille Ris Lambers, "Applications of Joint Species Distribution Modeling with Case Studies", The Statistical and Applied Mathematical Sciences Institute (SAMSI), ECOL: Multivariate Models in Ecology: March 2-4, 2015.

**B. Seyednasrollah** "From Snow Hydrology to Forest Ecology", Nicholas School Graduate Students Seminar, Duke University, October, 2014.

M. Kumar, X. Chen, **B. Seyednasrollah**, A. Winstral, M. Reba, D. Marks, "Assessment of Hydrologic Impacts of Snowdrift in a Snow Dominated Watershed", American Geophysical Union Fall Meeting, 2014, San Francisco, CA.

M. Kumar, **B. Seyednasrollah**, T. E. Link, "In search of radiation minima for balancing the needs of forest and water management in snow dominated watersheds", American Geophysical Union Fall Meeting 2013, San Francisco, CA.

**B. Seyednasrollah**, M. Kumar, "Using Forest Radiation Model (FoRM) to Quantify the Role of Canopy Coverage on Net Snow Cover Radiation", American Geophysical Union Fall Meeting 2013, San Francisco, CA.

**B. Seyednasrollah**, M. Kumar, "Understanding the Role of Canopy Coverage and Tree Morphometry on Net Snow Cover Radiation Using Forest Radiation Model (FoRM)", CUAHSI Hydroinformatic 2013, Logan, UT.

T. E. Link, M. Kumar, J. Pomeroy, **B. Seyednasrollah**, C. Ellis, R. Lawler, and R. Essery, "Opportunities and challenges to conserve water on the landscape in snow-dominated forests: The quest for the radiative minima and more...", American Geophysical Union Fall Meeting 2012, San Francisco, CA.

**B. Seyednasrollah**, M. Kumar, T. E. Link, "Looking for Radiation Optimality on Snow Covered Forest Floor", American Geophysical Union Fall Meeting 2012, San Francisco, CA.

**B. Seyednasrollah**, M.Khosravy-el-Hossani, "Exergy Analysis of excess air variation in boilers", International Conference on Advances in Mechanical Engineering (ICAME), 2010, Malaysia.

**B. Seyednasrollah**, M.Khosravy-el-Hossani, "Investigation of Excess Air Variations Effects on Dry Flue Gas Loss", International Conference on Advances in Mechanical Engineering (ICAME), 2010, Malaysia.

R. M. Khorsani, B. Seyednasrollah, M. T. Manzari and S. K. Hannani. "Dimensional numerical simulation of hydrocarbon reservoirs using a black oil model implicit finite difference method", in Sharif Journal of Mechanical Engineering, 2010, Vol. 26, No. 1.

**B. Seyednasrollah**, F. Talebi and F. Yousefi. "Analysis and optimization of reducing steady state time for heating systems", in International Journal Of Advanced Design And Manufacturing Technology, 2009, Vol. 2 No. 2.

F. Yousefi, **B. Seyednasrollah**, F. Talebi, "Global Analysis for Two Effective Method to Reduction of Control Time in Steady State of Thermal Systems", The Annual Conference (International) on Mechanical Engineering (ISME), 2008, Kerman, Iran.

**B. Seyednasrollah**, S.E. Hossein. , F. Talebi, "An Effective Method to Reduction of Control Time in Steady State of Thermal Systems", The Annual Conference (International) on Mechanical Engineering (ISME), 2007, Tehran, Iran

F. Talebi., **B. Seyednasrollah**, "An Effective Method to Reduction of Control Time in Steady State Convective Heat Transfer", The Annual International Conference of Mechanical Engineering (ISME), 2005, Isfahan, Iran.

## TEACHING EXPERIENCE

<b>Co-founder</b> , SciCademy: A Science Academy for Teaching Quantitative Science	2018
<b>Certificate in College Teaching (CCT)</b> , Duke University	2017
<ul style="list-style-type: none"> <li>- Training on "Fundamentals of College Teaching"</li> <li>- Training on "College Teaching and Visual Communications"</li> <li>- Teaching Experience</li> <li>- Peer Observation of Teaching</li> </ul>	
<b>Instructor</b> , Duke University	
<ul style="list-style-type: none"> <li>- Ecohydrology using Mathematica and MATLAB (5 PhD students, teaching, holding office hours)</li> </ul>	2016
<b>Teaching Assistant</b> , Duke University	
<ul style="list-style-type: none"> <li>- Introduction to Environmental Science and Policy (85 undergraduates, guest lecturer, leading discussion groups, grading, holding office hours)</li> </ul>	2016
<ul style="list-style-type: none"> <li>- Ecohydrology (15 undergraduates/graduates, holding office hours)</li> </ul>	2015
<ul style="list-style-type: none"> <li>- California Water Crises (12 graduates, organizing course materials, holding office hours)</li> </ul>	2015
<ul style="list-style-type: none"> <li>- Watershed Hydrology (15 graduates, holding office hours, leading problem solving sessions, grading)</li> </ul>	2014
<ul style="list-style-type: none"> <li>- Hydrology Modeling (4+ graduates, co-teaching, grading, holding office hours)</li> </ul>	2012, 2013
<ul style="list-style-type: none"> <li>- GIS for Water Quantity and Quality Assessment (20+ graduates, leading problem solving sessions, lab assistant, grading, holding office hours)</li> </ul>	2012, 2013, 2014
<b>Instructor</b> , Research Institute of Petroleum Industry	
<ul style="list-style-type: none"> <li>- Visual Basic for Applications Programming in Engineering (20 senior engineers, designing the course, teaching, troubleshooting sessions)</li> </ul>	2010
<b>Teaching Assistant / Tutor</b> , University of Semnan	
<ul style="list-style-type: none"> <li>- Heat Transfer (20+ undergraduates, leading problem solving sessions)</li> </ul>	2003
<ul style="list-style-type: none"> <li>- Fluid Mechanics (20+ undergraduates, leading problem solving sessions)</li> </ul>	2003
<ul style="list-style-type: none"> <li>- Dynamics and Statics (2 undergraduates, private tutoring)</li> </ul>	2002, 2003
<ul style="list-style-type: none"> <li>- Thermodynamics (3 undergraduates, private tutoring)</li> </ul>	2002, 2003

## GRANTS, FUNDING AND FELLOWSHIPS

<b>NEON Data Institute Fellowship</b> , National Ecological Observatory Network	2018
<b>Outstanding Accomplishments Fellowship</b> , The Duke University Graduate School	2016 - 2017
Ecosystem response to a changing climate: vulnerability, impact and monitoring, \$22,470	
<b>The Summer Research Fellowship</b> , The Duke University Graduate School	2016
Remotely sensed canopy thermal stress to monitor droughts in near real-time, \$5,500	
<b>Bass Online Apprentice Fellowship</b> , Duke University, \$11,235	2016
<b>Bass Instructional Teaching Assistant Fellowship</b> , Duke University, \$11,235	2015
<b>Summer Research Award</b> , Nicholas School of the Environment, Duke University	2015
Long term monitoring of leaf out phenology using satellite observation at large scales, \$5,500	
<b>Pathfinder Fellowship</b> , The Consortium for the Advancement of Hydrologic Science Inc. (CUAHSI)	2014
Role of vegetation density and pattern on net snow cover radiation at the forest floor, \$4,996	
<b>NASA Snow School Travel Award</b> , NASA Snow School for Practitioners and Modelers, Fraser, CO	2014
<b>CUAHSI Travel Award</b> , CUAHSI Conference on Hydroinformatics and Modeling, Logan, UT	2013
<b>NSF Travel Award</b> , EarthCube Modeling Workshop for the Geosciences, Boulder, CO	2013

## HONORS AND RECOGNITIONS

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<b>National Elite</b> , The National Association of Elites (Iran)	2008
<b>1st Departmental Rank</b> , Mechanical Engineering Department, University of Semnan, Iran	2003
<b>34th National Rank</b> , Nationwide (Iran) Entrance Exam for Graduate Study in Mechanical Engineering	2003
<b>56th National Rank</b> , Nationwide (Iran) Entrance Exam for Graduate Study in Aerospace Engineering	2003

## SERVICES AND OUTREACH

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### Editorial Services:

**Reviewer:** Frontiers in Ecology and the Environment, Remote Sensing of Environment, Agricultural and Forest Meteorology, Ecosphere, Soil Earth, Journal of Geophysical Research: Atmospheres, International Journal of Digital Earth, Data, Asia-Pacific Journal of Chemical Engineering

**Editor:** Duke Science Review 2016

**Chairperson:** International Conference on Advances in Mechanical Engineering 2010 (ICAME2010)

**Editorial Board:** Mechanical Engineering Magazine, Iranian Society of Mechanical Engineers (2004-2007)

### Professional Services:

Judge, Outstanding Student Presentation Award, American Geophysical Union (AGU), New Orleans, LA 2017

VIP Consultant in Modeling, American Statistical Association (ASA), DataFest Competition, Durham, NC 2016

Statistician, United Nations Human Settlements Programme, UN-Habitat 2016 - 2017

Competition Judge, Student Academy of Science, State Science and Engineering Fair, Raleigh, NC 2016

Competition Judge, Student Academy of Science, Regional Science and Engineering Fair, Durham, NC 2015

Collaborator, Working group on "Ecology: Multivariate Models, Climate and Biodiversity", Statistical and Applied Mathematical Sciences Institute (SAMSI) 2014 - 2015

Member of the Nicholas School Diversity & Inclusion Committee, Duke University 2013 - 2015

Member of the Software Council, Research Institute of Petroleum Industry, Iran 2010 - 2011

Member of the Undergraduate Scientific Committee, University of Semnan, Iran 2000 - 2001

## SKILLS

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### Programming and Scripting:

C/C++/C#, R, R-Shiny, MATLAB, Mathematica, VBA, Fortran, Pascal, Python, Markdown, Batch Script, Object Oriented Programming (OOP), High Performance Computing (HPC), Multithreaded Programming, OpenMP and MPI, Socket programming, HTML/CSS, L<sup>A</sup>T<sub>E</sub>X, make, programming in Unix and Windows based platforms.

### Quantitative, Geospatial and Visualizations:

GIS, Geospatial Analysis, Remote Sensing, Data Elevation Model (DEM) Processing, Optimization, Numerical Methods, Hierarchical Modeling, Bayesian Statistics, Markov chain Monte Carlo (MCMC), Finite Difference Methods, Finite Element Methods, Finite Volume Methods.