BIJAN SEYEDNASROLLAH

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ACADEMIC APPOINTMENTS

Harvard University, Department of Organismic and Evolutionary Biology/ 2017 - present
Northern Arizona University, School of Informatics, Computing, and Cyber Systems
Postdoctoral Research Associate

Duke University, Nicholas School of the Environment 2011 - 2017
Doctoral Research and Teaching Assistant

Research Institute of Petroleum Industry (Iran), Department of Energy and Environment 2006 - 2011
Senior Researcher

EDUCATION

Duke University, Durham, NC 2017
Ph.D. in Quantitative Environmental Science
Dissertation: "Ecosystem response to a changing climate: vulnerability, impact and monitoring"
Advisor: Dr. Jim Clark

Sharif University of Technology, Tehran, Iran 2006
M.Sc. in Mechanical Engineering, Energy Conversion
Thesis: "Modeling of multi-phase flow in porous media"
Advisor: Dr. Mehrdad T. Manzari

University of Semnan, Semnan, Iran 2003
B.Sc. in Mechanical Engineering, Heat and Fluid Flow
Thesis: "Numerical modeling of conductive heat transfer"
Advisor: Dr. Farhad Talebi

SELECTED PEER-REVIEWED JOURNAL PUBLICATIONS

B. Seyednasrollah, A. M. Young, K. Hufkens, T. Milliman, M. A. Friedl, S. Frolking, A. D. Richardson, "Tracking vegetation phenology across diverse biomes using PhenoCam imagery: The PhenoCam Dataset v2.0", Nature Scientific Data, in prep.

M. S. Carbone, **B. Seyednasrollah**, T. T. Rademacher, D. Basler, J. Le Moine, S. Beals, J. Beasley, A. Greene, J. Kelroy, A. D. Richardson, "Flux Puppy an open source software application and portable system design for low-cost manual measurements of CO2 and H2O fluxes", 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 revision.

B. Seyednasrollah, J. S. Clark, "Nutrient-demanding species and drought vulnerability: the role of habitat heterogeneity", Ecological Applications, 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 Datasets and Open-source Software Applications

B. Seyednasrollah, D. Basler, S. Beals, J. Beasley, A. Greene, J. Kelroy, M. S. Carbone, and A. D. Richardson (2018), "FluxPuppy: Android Interface to Licor LI-820 and LI-840 gas analyzers". Zenodo. http://doi.org/10.5281/zenodo.1438548

A. D. Richardson, K. Hufkens, T. Milliman, D. M. Aubrecht, M. E. Furze, **B. Seyednasrollah**, M. B. Krassovski, and P. J. Hanson (2018), "SPRUCE Vegetation Phenology in Experimental Plots from Phenocam Imagery, 2015-2016." ORNLTESSFA (Oak Ridge National Lab's Terrestrial Ecosystem Science Scientific Focus Area (ORNL TES SFA)); Oak Ridge National Lab.(ORNL), Oak Ridge, TN (United States)

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, "solrad: To calculate solar radiation and related variables based on location, time and topographical conditions", Zenodo. http://doi.org/10.5281/zenodo.1249673, 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, Abstracts and other Publications

B. Seyednasrollah (invited), K. Duffy, A. M. Young, A. D. Richardson, "Flux-PhenoCam Data Fusion to Understand Surface Energy Balance", NEON Surface Atmosphere Exchange Workshop, Washington DC, 11/12/2018.

B. Seyednasrollah (invited), A. D. Richardson, "PhenoCam data and validation of remotely sensed vegetation indices", NASA CEOS LPV Workshop, Washington DC, 12/12/2018.

B. Seyednasrollah, T. E. Milliman, M. A. Friedl, A. D. Richardson, "Phenology of temperate deciduous forests: Roles of energy and moisture", American Geophysical Union Fall Meeting 2018, Washington, DC.

E. K. Melaas, **B. Seyednasrollah**, A. D. Richardson, K. Hufkens, M. A. Friedl, “Using PhenoCams and Landsat to improve understanding of photoperiod control on spring phenology of deciduous forests in the Eastern US”, American Geophysical Union Fall Meeting 2018, Washington, DC.

M. Kumar, X Chen, **B. Seyednasrollah**,T. Zi, T. E. Link, B. L. McGlynn, J. D. Albertson, “ Improving process representations in models: An exercise in scientific exploration or a societal need?”, American Geophysical Union Fall Meeting 2018, Washington, DC.

B. Seyednasrollah, 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 Convectional Heat Transfer”, The Annual International Conference of Mechanical Engineering (ISME), 2005, Isfahan, Iran.

Teaching and Mentorship Experience

Co-founder, SciCademy: A Science Academy for Teaching Quantitative Science 2018

Ongoing Mentorships

- Kevyn Sisante (Undergraduate student, work-study program, Northern Arizona University) 2018
- Amberlee Pavey (Undergraduate student, work-study program, Northern Arizona University) 2018
- Jasque Saydyk (Undergraduate student, Open-source software, Northern Arizona University) 2018
- Evan Russell (Undergraduate student, Open-source software, Northern Arizona University) 2018
- Ryan Ladwig (Undergraduate student, Open-source software, Northern Arizona University) 2018
- Yuxuan Zhu (Undergraduate student, Open-source software, Northern Arizona University) 2018

Workshop Organizer / Instructor

- Studying Environmental Change Using Repeat Photography: Introduction to PhenoCam Data Products and Software Tools, (Ecological Society of America Annual Meeting) 2019 (scheduled)
- Studying Biological Impacts of Environmental Change Using Repeat Photography: Introduction to PhenoCam Data Products and Software Tools (AGU Fall Meeting) 2018
- Source Control and Reprdocible Science (workshop for postdocs and graduate students, Northern Arizona University) 2018

Certificate in College Teaching (CCT), Duke University 2017

- Training on “Fundamentals of College Teaching”
- Training on “College Teaching and Visual Communications”
- Teaching Experience
- Peer Observation of Teaching

Instructor, Duke University
- Ecohydrology using Mathematica and MATLAB (5 PhD students, teaching, holding office hours) 2016

Guest Lecturer, Duke University
- Environmental Science and Policy (main course taught by Dr. Joel Meyer) 2017
- Ecohydrology (main course taught by Dr. Amilcare Porporato) 2016
- Watershed Hydrology (main course taught by Dr. Gaby Katul) 2014
- Hydrology Modeling (main course taught by Dr. Mukesh Kumar) 2012,2013

Teaching Assistant, Duke University
- Introduction to Environmental Science and Policy (85 undergraduates, leading discussion groups, grading, holding office hours) 2016
- Ecohydrology (15 undergraduates/graduates, holding office hours) 2015
- California Water Crises (12 graduates, organizing course materials, holding office hours) 2015
- Watershed Hydrology (15 graduates, holding office hours, leading problem solving sessions, grading) 2014
- Hydrology Modeling (4+ graduates, co-teaching, grading, holding office hours) 2012, 2013
- GIS for Water Quantity and Quality Assessment (20+ graduates, leading problem solving sessions, lab assistant, grading, holding office hours) 2012, 2013, 2014

Instructor, Research Institute of Petroleum Industry
- Visual Basic for Applications Programming in Engineering (20 senior engineers, designing the course, teaching, troubleshooting sessions) 2010

Teaching Assistant / **Tutor**, University of Semnan
- Heat Transfer (20+ undergraduates, leading problem solving sessions) 2003
- Fluid Mechanics (20+ undergraduates, leading problem solving sessions) 2003
- Dynamics and Statics (2 undergraduates, private tutoring) 2002, 2003
- Thermodynamics (3 undergraduates, private tutoring) 2002, 2003

GRANTS, FUNDING AND FELLOWSHIPS

NEON Data Institute Fellowship, National Ecological Observatory Network 2018

Outstanding Accomplishments Fellowship, The Duke University Graduate School 2016 - 2017
Ecosystem response to a changing climate: vulnerability, impact and monitoring, $22,470

The Summer Research Fellowship, The Duke University Graduate School 2016
Remotely sensed canopy thermal stress to monitor droughts in near real-time, $5,500

Bass Online Apprentice Fellowship, Duke University, $11,235 2016

Bass Instructional Teaching Assistant Fellowship, Duke University, $11,235 2015

Summer Research Award, Nicholas School of the Environment, Duke University 2015
Long term monitoring of leaf out phenology using satellite observation at large scales, $5,500

Pathfinder Fellowship, 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

NASA Snow School Travel Award, NASA Snow School for Practitioners and Modelers, Fraser, CO 2014

CUAHSI Travel Award, CUAHSI Conference on Hydroinformatics and Modeling, Logan, UT 2013

NSF Travel Award, EarthCube Modeling Workshop for the Geosciences, Boulder, CO 2013

HONORS AND RECOGNITIONS

National Elite, The National Association of Elites (Iran) 2008

1st Departmental Rank, Mechanical Engineering Department, University of Semnan, Iran 2003

34th National Rank, Nationwide (Iran) Entrance Exam for Graduate Study in Mechanical Engineering 2003

56th National Rank, Nationwide (Iran) Entrance Exam for Graduate Study in Aerospace Engineering 2003

SERVICES AND OUTREACH

Editorial Services:

Reviewer: Frontiers in Ecology and the Environment, Remote Sensing of Environment, Remote Sensing, Methods in Ecology and Evolution, Agricultural and Forest Meteorology, Ecosphere, Atmosphere, Climate Research, Soild Earth, Journal of Geophysical Research: Atmospheres, ISPRS International Journal of Geo-Information, Science of the Total Environment, 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, Virtual Poster Showcase, American Geophysical Union (AGU) 2018

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

VIP Consultant in Modeling, American Statistical Association, 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, Reg. 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 Diversity & Inclusion Committee, Nicholas School, 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

Programming and Scripting:

C/C++/C#, R, R-Shiny, Python, Markdown, MATLAB, Mathematica, Java, VBA, Fortran, Pascal, Batch Script, Object Oriented Programming (OOP), High Performance Computing (HPC), Multithreaded Programming, OpenMP and MPI, Socket programming, HTML/CSS, LaTeX, make, programming in Unix and Windows based platforms.

Quantitative, Geospatial and Visualizations:

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