BIJAN SEYEDNASROLLAH

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HIGHLIGHTS

* Daily work with big data including NEON phenocam data (1 million new images per month)
* Strong quantitative, ecological and data science background
* Developer of several web-based applications (on Shiny)
* Developer of several R-packages (more than 12k downloads)
* Proficient programmer in multiple platforms and languages
* Organized and taught scientific workshops for diverse audience
* Developments of contents and tutorials for public users (collaborated with NEON educators)

EDUCATION

Ph.D. in Quantitative Environmental Science, Duke University, Durham, NC 2017

M.Sc. in Mechanical Engineering, Energy Conversion, Sharif University of Technology, Tehran, Iran 2006

B.Sc. in Mechanical Engineering, Heat and Fluid Flow, University of Semnan, Semnan, Iran 2003

PROFESSIONAL EXPERIENCE

PhenoCam-NEON Data Scientist, *PhenoCam Network, Harvard Univ. / Northern Arizona Univ.* 2017 - present

- Leading data curation of PhenoCam Dataset including NEON phenocams, a total of 1800 site-years
- Developed Shiny apps for interactive data processing and quality control
- Developed R packages including xROI, phenocamapi, hazer to facilitate data processing
- Organized several workshops on phenocam data processing (e.g., NEON-PhenoCam Workshop at AGU)

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

- Designed a hierarchical state-space model to study green-up phenology from MODIS reflectance data
- Extracted and analyzed the continental-scale land surface temperature data from MODIS to monitor drought
- Developed the Forest Radiation Model (FoRM) to estimate energy fluxes in snow-covered watersheds
- Developed the Gap Radiation Model (GaRM) to quantify the radiative energy in forest gaps

Research and Development Engineer, *Research Institute of Petroleum Industry, Iran* 2006 - 2011

- Developed a 3D simulator of multiphase flow in porous media in C/C++ to model oil reservoir
- Co-Developed the Energy Performance and Assessment Tools in C# for energy management in power plants
- Co-Developed the Pars Basin Modeler (PBM) in C/C++/Fortran to model sedimentary basins

SKILLS

Programming and Scripting:

- C/C++/C#, R, Python, Markdown, MATLAB, Mathematica, Java, VBA, Fortran, Pascal, Shell, HTML/CSS,
- Object Oriented Programming (OOP), High Performance Computing (HPC), Multithreaded Programming

Quantitative, Geospatial and Visualizations:

- Hierarchical Modeling, Bayesian Statistics, Markov Chain Monte Carlo (MCMC), Machine Learning,
- GIS, Geospatial Analysis, Remote Sensing, Data Elevation Model (DEM) Processing, Image Processing,

SELECTED MEDIA COVERAGE

LTER Network Science Update: Keeping an eye out for drought May 29, 2019

NAU News: Maybe I could just do this: NAU Researcher Develop Real-time Drought Monitoring Tool April 2, 2019

Weather Nation: A Faster and More Accurate Way to Monitor Drought March 13, 2019

Futurity: Free Drought Eye Maps Ecpicts Thermal Stress March 5, 2019

Science Daily: Thermal Stress Measurements Sound the Alarm About Drought Conditions Sooner March 4, 2019

Selected Peer-reviewed Datasets and Open-source Software Applications

B. Seyednasrollah, et al. (2019) "PhenoCam Dataset v2.0: Vegetation Phenology from Digital Camera Imagery, 2000-2018". ORNL Distributed Active Archive Center https://doi.org/10.3334/ORNLDAAC/1674.

B. Seyednasrollah, T. Milliman and A. D. Richardson (2018), "xROI: A Toolkit to 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, "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.

Selected Funding and Fellowships

NEON-ESA Early Career Scholars, National Ecological Observatory Network	2019
NEON Data Institute Fellowship, National Ecological Observatory Network	2018
Outstanding Accomplishments Fellowship, The Duke University Graduate School, $22,470	2016 - 2017
Bass Online Apprentice Fellowship, Duke University, $11,235	2016
Bass Instructional Teaching Assistant Fellowship, Duke University, $11,235	2015
Pathfinder Fellowship, The Consortium for the Advancement of Hydrologic Science Inc. (CUAHSI), $4,996	2014

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", Scientific Data, in review.

B. Seyednasrollah, A. D. Richardson, T. Milliman, "Data extraction from digital repeat photography using xROI: An interactive framework to facilitate the process", ISPRS Journal of Photogrammetry and Remote Sensing, Volume 152, June 2019, Pages 132-144, doi:10.1016/j.isprsjprs.2019.04.009.

B. Seyednasrollah, J. C. Domec, J. S. Clark (2019) "Spatiotemporal sensitivity of thermal stress for monitoring canopy hydrological stress in near real-time", Agricultural and Forest Meteorology, Volumes 269270, 15 May 2019, Pages 220-230, doi:10.1016/j.agrformet.2019.02.016.

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.

Selected Invited Talks

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

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 2018, Washington DC.

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

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 (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 2015, Durham, NC.

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 2015, Durham, NC.