Radost Stanimirova, PhD

Contact Information

E-mail: rkstan@bu.edu
Website: http://rkstan.github.io/
Address: Boston, MA 02215 USA

Research Interests

Climate variability and human transformation of the landscape, especially through agriculture
Data science & visualization, high performance computing, machine learning
Remote sensing of land use and land cover change

Skills

Programming: Python (scikit-learn, pandas, seaborn etc.), GDAL, Bash, R, git, Google Earth Engine, high performance computing
Applications: ArcGIS, QGIS, ENVI, LaTeX, Microsoft Suite
Statistics: Machine learning, multivariate analysis, time series analysis
Software: www.github.com/rkstan

Education

Boston University, Boston, Massachusetts, USA

Ph.D., Earth and Environment, January 2021
NASA Earth and Space Science Fellow, advised by Dr. Mark Friedl
Dissertation Title: *Using Multi-resolution Remote Sensing to Measure Ecosystem Sensitivity and Monitor Land Degradation in Response to Land Use and Climate Variability*

Barnard College of Columbia University, New York, New York, USA

B.A., Environmental Science, May 2012
Minors: Anthropology
Senior Thesis: *Organic Carbon Transport through Holocene and Pleistocene Sediment in Southeast Asia: Implications for Arsenic Mobilization*

Work Experience

Department of Earth and Environment
Boston University, Boston, Massachusetts, USA

Postdoctoral Associate **January 2021 - Present**

- Build scalable and efficient workflows for the curation of big training and assessment datasets, and for machine learning to classify land cover and change on Google Earth Engine
- Mentor a team of research fellows (3) and assistants (11) to successfully execute and deliver a complex project mapping the world's land cover
- Communicate and collaborate with an interdisciplinary team to create a global data product

Graduate Research Assistant **January 2015 - December 2020**

- Performed statistical analysis of satellite remote sensing observations to compare different land surface phenology algorithms
- Implemented an econometric model to climate and geospatial data to assess the sensitivity of global pasturelands to climate variation
- Designed and executed 2 research projects on quantifying land cover change and degradation using large datasets (50 TB) in a high performance Linux computing environment

International Research Institute for Climate and Society, Earth Institute
Columbia University, New York, New York, USA

Research Staff Assistant **June 2012 - July 2014**

- Conducted research to support a variety of climate risk management implementation projects relating to remote sensing, agriculture and index insurance

- Wrote 5 effective grant proposals and budgets for donor organizations including World Bank, World Food Programme and NASA
- Facilitated in-region capacity building workshops in English and Spanish

Department of Environmental Sciences
Barnard College of Columbia University, New York, New York, USA

Research Assistant **June 2010 - May 2012**

- Investigated the role of geochemistry in arsenic contamination of groundwater in Bangladesh and authored a 40 page thesis paper
- Developed a procedure for column experiments on sediment cores in collaboration with research mentor and a team of graduate students
- Executed laboratory experiments, performed detailed laboratory tasks, collected and analyzed data and conducted literature research

School for Field Studies, Atenas, Costa Rica

Research Assistant **January 2011 - May 2011**

- Performed a directed research project that utilized statistical and field research techniques
- Authored a 30 page research paper on the relationship between soil coverage and soil carbon sequestration on traditional and sustainable coffee plantations
- Collected field samples in order to determine if organic agroforestry systems are an appropriate strategy for reduction of emissions by deforestation and degradation

Publications

Graesser J., **Stanimirova, R.** & M.A. Friedl. 2022. Reconstruction of Satellite Time Series With a Dynamic Smoother. IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing, 15, 1803–1813. https://doi.org/10.1109/JSTARS.2022.3146081

Stanimirova, R. & R. Garrett. 2020. Pasturelands, Rangelands, and Other Grazing Social-ecological Systems. In *In Managing Soils and Terrestrial Systems, 2nd Edition.* Ed. B. Fath S. Jorgensen. Boca Raton: CRC Press, https://doi.org/10.1201/9780429346255

Vasilaky, K., S.M. Saenz, **R. Stanimirova**, & D.E. Osgood. 2020. Perceptions of Farm Size Heterogeneity and Demand for Group Index Insurance. Games, 11, 15. https://doi.org/10.3390/g11010015

Stanimirova, R., P. Arevalo, R.K. Kaufmann, V. Maus, M. Lesiv, P. Havlik, & M.A. Friedl. 2019. Modeling Sensitivity of Global Pasturelands to Climate Variability. Earth's Future, 7. https://doi.org/10.1029/2019EF001316

Stanimirova, R., Z. Cai, E.K. Melaas, J.M. Gray, L. Eklundh, P. Jönsson, & M.A. Friedl. 2019. An Empirical Assessment of the MODIS Land Cover Dynamics and TIMESAT Land Surface Phenology Algorithms. Remote Sensing 11(19): 2201. https://doi.org/10.3390/rs11192201

Publications in Preparation

Stanimirova, R., J. Graesser, & M.A. Friedl. Widespread Changes in Vegetation Cover and Composition in the Southern Cone of South America. Global Change Biology

Stanimirova, R., J. Graesser, & M.A. Friedl. Satellite-based Estimates of Land Degradation Across Ecoregions in the Southern Cone of South America in Support of the 2030 Agenda for Sustainable Development. Global Change Biology

Graesser J., **Stanimirova, R.** & M.A. Friedl. Temporally-consistent annual land cover from structured learning of Landsat time series. Remote Sensing of Environment

Conference Presentations

American Geophysical Union (AGU) - "Advances in the Application of Earth Observations to Characterize and Address Land Degradation and Associated Ecosystem Responses," Primary Convener and Chair, New Orleans, LA, December 2021

American Geophysical Union (AGU) - "Satellite-based Estimates of Land Degradation

Across the Southern Cone of South America in Support of the 2030 Agenda for Sustainable Development," eLightning and Virtual Poster Presentation, online, December 2020

American Geophysical Union (AGU) - "Mapping Pasture and Rangeland Degradation in the Southern Cone of South America using Landsat," Poster Presentation, San Francisco, CA, December 2019

Global Land Programme Open Science Meeting - "Mapping Pasture and Rangeland Degradation in the Southern Cone of South America using Landsat," Poster Presentation, Bern, Switzerland, April 2019

NASA Land Cover/Land Use Change Science Meeting - "Assessing Pastureland Degradation in the Southern Cone of South America Using Spectral Mixture Analysis," Lightning Talk and Poster Presentation, Rockville, MD, April 2019

American Geophysical Union (AGU) - "Mapping Continuous Fields of Bare Ground, Grass, and Woody Cover in the Southern Cone of South America using Landsat," Poster Presentation, Washington DC, December 2018

NASA Land Cover/Land Use Change Science Meeting - "Modeling the Dynamics of Global Pasturelands to Climate Variability and Human Impact," Lightning Talk and Poster Presentation, Gaithersburg, MD, April 2018

American Geophysical Union (AGU) - "Modeling Sensitivity of Global Pasturelands to Climate Variability and Human Management," Oral Presentation, New Orleans, LA, December 2017

American Geophysical Union (AGU) - "An Empirical Assessment of the MODIS Land Cover Dynamics and TIMESAT Land Surface Phenology Algorithms," Oral Presentation, San Francisco, CA, December 2016

American Geophysical Union (AGU) - "Organic Carbon Transport through Holocene and Pleistocene Sediment from Southeast Asia: Implications for Arsenic Mobilization," Poster Presentation, San Francisco, CA, December 2013

Invited Presentations

Natural Capital Symposium - "Earth Observations for Ecosystem Services," Stanford University, Stanford, CA, March 2018

Global Food+ Symposium - "Modeling and Monitoring Global Rangeland Dynamics," Oral Presentation, Tufts University, Boston, MA, February 2018

Leadership Experience

Graduate Women in Science and Engineering (GWISE)
Boston University, Boston, Massachusetts, USA

Communications Director **June 2017 - June 2019**

- Managed GWISE's website, social media, and bi-weekly newsletter, which reached all graduate women in STEM at Boston University
- Initiated and coordinated relationships with organizations both on and off campus

Girl Science Club Officer **June 2015 - August 2019**

- Coordinated volunteers for weekly hands on science activities with elementary school girls at the West End House Boys and Girls Club
- Managed the club's finances and reimbursements for all volunteers

Department of Earth and Environment
Boston University, Boston, Massachusetts, USA

Biogeosciences Officer **January 2015 - May 2018**

- Organized an alumni career panel, invited and hosted speakers at the department of Earth and Environment

- Coordinated and lead outreach and outing events for graduate students such as middle school science fair, science communication at farmer's markets and nature hikes

Teaching Experience

Teaching Fellow, Environmental Change and Sustainability, Boston University
- Designed and implemented weekly in-class worksheets and homework (2 semesters)

Teaching Fellow, Natural Environments: The Atmosphere, Boston University
- Instructed weekly lab lectures for up to 60 students introducing concepts and experiments for natural environment courses (1 semester)

Guest Lecturer, Environmental Change and Sustainability, Boston University
- Lecture Title: The Laws of Energy and Matter

Guest Lecturer, Remote Sensing of Environment, Boston University
- Lecture Title: Modeling dynamics of South American pasturelands to climate variability and human impact

Guest Lecturer, Environmental Change and Sustainability, Boston University
- Lecture Title: Driving Forces of Environmental Change

Field Experience

Argentina and Uruguay (2017-2018)
- Established connections with local collaborators
- Collected GPS coordinates and observations of land cover and crop type for assessment of remote sensing data

Dominican Republic (2012-2014)
- Facilitated four capacity building workshops and participatory games in English and Spanish
- Assisted in conducting a field financial instruments experiment

Costa Rica (2011)
- Collected soil samples from traditional and agroforestry coffee plantations

Honors and Awards

NASA Earth and Space Science Fellowship, 2017-2020 ($30,000/year)
Young Scientists Summer Program, International Institute for Applied Systems Analysis, Austria, Summer 2017 ($6,000)
Graduate Summer Fellowship, Frederick S. Pardee Center for the Study of the Longer-Range Future, Boston University, Summer 2016 ($6,000)
Biogeoscience Symposium Outstanding Elevator Pitch Award, Boston University, 2016
Dean's Fellowship, GRS Graduate Fellowship, Boston University, Spring 2015 ($10,250)
The Lillian Berle Dare Prize for advanced study in Geography, Barnard College, 2012 ($500)
Hughes Science Pipeline Project, Barnard College, 2010-2011 ($3,000)

Languages

Fluent in Bulgarian
Full Professional Proficiency in Spanish

Membership

American Geophysical Union
Global Land Programme
Association for Women in Science Massachusetts Chapter