

Santosh Rijal, Ph.D.

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Current Position

Collegiate Assistant Professor
Department of Geography
Virginia Tech

Teaching Expertise and Interest

- Introductory/Advanced Geographic Information System (GIS)
- Introductory/Advanced Remote Sensing
- Spatial Analysis
- Cartography and Visualization
- Environmental Science and Policy

Research Expertise and Interest

- Application of geospatial technology in multiple disciplines
- Modeling and Prediction of land condition
- Spatial analysis
- Ecosystem Services

Education

Ph.D., Environmental Resources and Policy, Southern Illinois University Carbondale (SIUC), Illinois, 2017. Dissertation Title: Monitoring and Assessment of Military Installation Land Condition under Training Disturbance using Remote Sensing. Advisor: Dr. Guangxing Wang

M.S., Earth System Science and Policy, University of North Dakota (UND), North Dakota, 2011. Thesis Title: Developing a remote sensing algorithm for deriving soil moisture from spectral reflectance. Advisor: Dr. Xiaodong Zhang

B.S., Forestry, Tribhuvan University (TU), 2008. Project Title: Landslide hazard zonation mapping of Tilpung Khola sub-watershed using GIS. Advisor: Dr. Keshav D Awasthi

Teaching Experience

Virginia Tech

GEOG 2084: Principles of GIS

GEOG 5064: Elements of GIS

GEOG 4354: Introduction to Remote Sensing

GEOG 5354: Advanced Remote Sensing

GEOG 4084: Modeling with GIS
GEOG 5084: Advanced Modeling with GIS
GEOG 5004: Current Geographic Research

Southern Illinois University Carbondale

GEOG 406/506: Introduction to Remote Sensing
GEOG 416/516: Cartography and Visualization
GEOG 401: Introduction to GIS
GEOG 404: Spatial Analysis
GEOG 408: Advanced Remote Sensing

Professional Experience

2019-Present: Collegiate Assistant Professor, Department of Geography, Virginia Tech.
Teaching responsibilities include Principles of GIS, Elements of GIS, Modeling with GIS, and Advanced Modeling with GIS, Introduction and Advanced Remote Sensing

2017-2019: Visiting Assistant Professor, Department of Geography, Virginia Tech.

2017: Research Assistant, Department of Geography and Environmental Resources, SIUC.
Worked in a military project as a research assistant. Primary responsibilities include analyzing multi-source and multi-scale data, data fusion, mapping and real-time dynamic monitoring of land condition vulnerability, and assessing quality of data and map products.

2011-2016: Graduate Research Assistant, Environmental Resources and Policy, SIUC.
Worked as a graduate research assistant to develop remote sensing based indicators to monitor and assess land condition in Fort Riley Military Installation.

2013: Internship at Johnson County Illinois 911. Worked for Johnson County 911, Illinois, as a paid summer internship. Primary job responsibilities include collection and editing of GIS data, development of geodatabases, and preparation of several maps such as fire district maps for emergency management

2008-2009: Carbon auditing Committee Member, University of North Dakota. Worked as a member of 1st carbon auditing committee of the University of North Dakota (UND) for estimating carbon emission of UND

2008-2011. Graduate Research Assistant, Department of Earth System Science and Policy (ESSP), UND. Worked as a graduate research assistant in the geospatial laboratory at ESSP. Worked in collaboration with several research organizations such as Upper Midwest Aerospace Consortium (UMAC), Center for People and the Environment (CP&E), and Digital Northern Great Plains (DNGP), where several remote sensing imageries (e.g. Landsat, Aster, LiDAR, MODIS, AEROCam) are processed to develop products, services, and information for agriculture and natural resource management.

Peer-reviewed Journal Articles

- Rijal, S., G. Wang, P.B. Woodford, Q. Wang. 2018. (In final preparation) Differentiation of the common plant species of the tallgrass prairie ecosystem using in-situ hyperspectral observation.
- Rijal, S., G. Wang, P.B. Woodford, H.R. Howard, J.M.S. Hutchinson, S. Hutchinson, J. Schoof, T.J. Oyana, R. Li., Park, L.O. 2018. Detection of gullies in Fort Riley military installation using LiDAR generated high resolution DEM. *Journal of Terramechanics*, 77, 15-22.
- Rijal, S., G. Wang, P.B. Woodford, H.R. Howard, J. Schoof, T.J. Oyana, L.O. Park, R. Li. 2017. Comparison of military and non-military land condition using an image derived soil erosion cover factor. *Journal of Soil and Water Conservation*, 72(5), 425-437.
- Wang, G., D. Murphy, A. Oller, H.R. Howard, A.B. Anderson, S. Rijal, N.R. Myers, P.B. Woodford. 2014. Spatial and temporal assessment of cumulative disturbance impacts due to military training, burning, haying, and their interactions on land condition of Fort Riley. *Environmental Management*, 54(1), 51-66.
- Rijal, S., X. Zhang, X. Jia. 2013. Estimating Surface Soil Water Content in the Red River Valley of the North using Landsat 5 TM Data. *Soil Science Society of America Journal (SSSAJ)*, 77(4), 1133-1143. doi:10.2136/sssaj2012.0295.
- McElroy, A.K., S. O'Neil, S. Rijal, N. Thapa, J. Yang J. 2009. Greenhouse Gas Emission Inventory at the University of North Dakota. *Catalyst*, 1, 51-60

Service to Student Research

- 2020 Committee Member of MS student Mohammad Yunus Naseri, Virginia Tech
Topic: Flood Inundation Delineation Using National Water Model Reanalysis Discharge Data and Synthetic Aperture Radar's Timeseries Method
- 2020 Committee Member of MS student Eric West, Virginia Tech
Topic: The Digitization of American Viticultural Area Boundaries: An Efficient Method for Constructing GIS Polygons from Federal Government Data Sources

Service to the Profession

- ❖ Reviewer of peer-reviewed journal articles:
 - Remote Sensing – Open Access Journal from MDPI
 - International Journal of Applied Geospatial Research
 - Hydrology – Open Access Journal from MDPI
 - Water – Open Access Journal from MDPI
 - Applied Sciences – Open Access Journal from MDPI
 - Sensors – Open Access Journal from MDPI

- Sustainability – Open Access Journal from MDPI
- ❖ Member of Reviewer Board of Remote Sensing – MDPI Journal
- ❖ Guest Editor for “Statistical and Machine Learning Models for Remote Sensing Data Mining - Recent Advancements”, a special issue of the Remote Sensing Journal
- ❖ Reviewer of Book Proposal “Geospatial Intelligence for Environmental Hazards: Modeling and Management” presented to Springer Nature.

Conference Presentations

- Session Chair: American Association of Geographers (AAG) Annual Meeting, New Orleans (April 10-14, 2018): In-situ hyperspectral observation of some dominant grass, forb, and shrub species of the tallgrass prairie ecosystem
- American Association of Geographers (AAG) Annual Meeting, Chicago (April 21-25, 2015): Mapping gullies in a military disturbed land using LiDAR data
- Illinois GIS Association (ILGISA) Regional Meeting, Carbondale (Feb 19, 2015): Mapping burned areas using image-derived cover factor in Fort Riley Military Installation
- American Society of Photogrammetry and Remote Sensing (ASPRS) Annual Conference, Louisville (March 23-28, 2014): Developing image derived indices for quantifying land condition recovery in a military disturbed land-Fort Riley Installation, Kansas
- Soil Science Society of America International Annual Meeting, Tampa (Nov 3-6, 2013): Assessment of military induced impacts on land condition recovery of Fort Riley Installation by comparison with Konza Prairie ecosystem
- ASPRS Specialty Conference, Tampa (Oct 29-Nov1, 2012): Assessment of Fort Riley’s land condition recovery under multiple disturbances due to military training, burning and haying
- American Association of Geographers (AAG) West Lakes Division Annual Meeting, Chicago (November 10-12, 2011): Estimating surface soil moisture in the Red River Valley of the North using Landsat 5TM data
- Art, science and application of reflectance spectroscopy, an international scientific symposium (Feb 23-25, 2010), Boulder: Effect of soil moisture on reflectance: an artifact observed in the continuous operation of ASD
- Biodiversity in a rapidly changing world, Washington (Dec 8-10, 2008): Biodiversity in the Northern Great Plains: assessing the impacts and trade-offs between multiple resource uses.

Technical Skills

Google Earth Engine, ArcGIS, ERDAS IMAGINE, ENVI, Python, SPSS, MATLAB, R, Analytical Spectral Devices (ASD) FieldSpec, IDRISI, MCAS, Cartalinx, Whitebox GAT, VBA, C, C++

Grants and Awards

- Sustainability travel award: Received sustainability travel award from the Sustainability Council at Southern Illinois University Carbondale to attend the ASA, CSSA, and SSSA Annual meetings, Tampa (Nov 3-6, 2013)
- Research grant of \$200 from ConForM/Danida Fellowship program for landslide hazard zonation mapping of Tilpung Khola Sub watershed using GIS
- Outstanding student award in Forest Management, Institute of Forestry, Pokhara from Nepal Foresters Association (NFA), Nepal

Leadership

2014-2018 Education Advisory Committee Member, Illinois GIS Association
2012-2014 President, GIS Club - A registered student organization at SIUC
2015-2016 President, Nepalese Students Society Carbondale
2005-2006 Secretary, Self Help Environment Awareness Camp (SHEAC)

Volunteering Activities

- Virginia Tech Science Festival: Looking Down is Looking Up – Fall 2017, 2018
- Summer Camp at Virginia Tech: How GPS works? – Summer 2018, 2019
- Poster Judge: GIS and Remote Sensing Research Symposium at Virginia Tech - Spring 2018, 2019

Professional Society Memberships

Illinois GIS Association (ILGISA)
American Society of Photogrammetry and Remote Sensing (ASPRS)
Soil Science Society of America (SSSA)
American Association of Geographers (AAG)