

PRAJJWAL K. PANDAY

Assistant Professor

Nichols College

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Dudley, MA, USA

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Education

Clark University, Worcester, MA | Ph.D. in Geography | January 2013

Dissertation: Hindu Kush-Himalayan Region at the Forefront of Global Change: An Assessment of Snowmelt, Hydrology, Vegetation, and Climate

Advisor: Dr. Karen E. Frey

SUNY College of Environmental Science and Forestry, Syracuse, New York | M.Sc. | August 2007

Dissertation: Quantifying Water Quality from Spatially-Derived Watershed Characteristics in the Catskill-Delaware Watersheds

Advisor: Myrna Hall

St. Lawrence University, Canton, NY | B.Sc. in Chemistry/Environmental Studies | May 2005

Honors Thesis: (Environmental Studies) Comparative Analysis of Urban Watershed Pollution in Two Developing Countries: Case Studies from Kathmandu (Nepal) and Nairobi (Kenya). *Advisor:* Dr. Carrie Johns

Honors Thesis: (Chemistry) Developing an Alternative Potential Source Contribution Function Analysis Method and Its Application for Lake Champlain Mercury Study. *Advisor:* Dr. Ning Gao

Professional Experience

Assistant Professor, Environmental Science | Nichols College | July 2016 – present

Courses: Physical World, Natural Hazards, Global Climate Change, Sustainable Management, Environmental Resource Management, and World Economic Geography.

Research Scientist, Marsh Institute | Clark University | September 2018 – present

Visiting Assistant Professor | Clark University, Graduate School of Geography | Aug 2015 – May 2016

Courses: Weather and Climate, Introduction to Arctic Systems Science, Introduction to Earth Systems Science, and Water, Climate, and Society.

Postdoctoral Fellow | Woods Hole Research Center | Nov 2012 – Aug 2015

Coordinate application of ecosystem modeling, satellite observations, and global climate models to investigate sensitivity of Amazonia to anthropogenic change.

Research Assistant | Clark University, Graduate School of Geography | May 2008 – May 2010

Project: Impacts of Sea Ice Variability and Polynya Formation on Biological Productivity in the Northern Bering Sea

Research Assistant | University of Massachusetts Medical School | May 2008 – Aug 2008

Project: Neighborhood Risk Factors for Falls in the Elderly

Teaching Assistant | Clark University, Graduate School of Geography | Aug 2007 – May 2008
Course: Introductory Raster GIS

Research Assistant | SUNY College of Environmental Science and Forestry | May 2005 – Aug 2007
Project: Predicting Future Water Quality from Land Use Change Projections in the Catskill-Delaware Watershed

Research Assistant | St. Lawrence University, Department of Chemistry | May 2004 – Dec 2005
Project: Air Quality Study Based on IMPROVE data at Underhill and Lye Brook, Vermont

Hydrogeology Technician | Maine Geological Survey | Summer 2003
Project: Field technician for mapping groundwater wells in the State of Maine

Peer-Reviewed Publications

17. De Faria, B., Staal, A., Martin, P., **Panday, P.K.**, Castanho, A., and Dantas, V. (in press). Climate change and fragmentation boost post-fire grass invasion of Amazonian forests. *Global Ecology and Biogeography*.
16. Pelto, M., **Panday, P.**, Matthews, T., Maurer, J. and Perry, L.B., 2021. Observations of Winter Ablation on Glaciers in the Mount Everest Region in 2020–2021. *Remote Sensing*, 13(14), p.2692.
15. Kattel, D.B., Yao, T. and **Panday, P.K.**, 2018. Near-surface air temperature lapse rate in a humid mountainous terrain on the southern slopes of the eastern Himalayas. *Theoretical and Applied Climatology*, 1-13.
14. Faria, B., Brando, P., Macedo, M., **Panday, P.K.**, Soares-Filho, B., and Coe, M.T., 2017. Current and future patterns of fire-induced forest degradation in Amazonia. *Environmental Research Letters*. Online 29 March 2017.
13. Gruber, S., Stumm, D., Schmid, M., **Panday, P.K.**, Wester, P., Guegan, E., 2017. Review article: Inferring permafrost and permafrost thaw in the mountains of the Hindu Kush Himalaya region. *The Cryosphere*, 11(1): 81–99.
12. **Panday, P.K.**, 2017. Climate hazards in the Himalayan region. In T. Sternberg (eds). *Climate Hazard Crises in Asian Societies and Environments*. Routledge, Abingdon, London.
11. Coe, M.T., Macedo, M.N., Brando, P.M., Lefebvre, P., **Panday, P.K.**, and D. Silvério, 2016. The hydrology and energy balance of the Amazon Basin. In Nagy, L., Forsberg, B., and Artaxo, P. (eds). *Interactions Between Biosphere, Atmosphere and Human Land Use in the Amazon Basin*, Springer-Verlag Berlin Heidelberg.
10. **Panday, P.K.**, Coe, M.T., Macedo, M.N., Lefebvre, P., and A. Castanho, 2015. Deforestation and climate variability exert opposite effects on the water balance of Xingu River in eastern Amazonia. *Journal of Hydrology*, 523: 822–829
9. **Panday, P. K.**, Thibeault, J. M., and K. E. Frey, 2014. Changing temperature and precipitation extremes in the Hindu Kush-Himalayan region: An analysis of CMIP3 and CMIP5 simulations and projections. *International Journal of Climatology*.
8. **Panday, P.K.**, Williams, C.A., Frey, K.E., and M.E. Brown, 2013. Application and evaluation of a snowmelt

runoff model in the Tamor River basin in the eastern Himalaya using Markov Chain Monte Carlo (MCMC) data assimilation approach. *Hydrological Processes*. doi: 10.1002/hyp.10005

7. **Panday, P.K.**, and B. Ghimire, 2012. Time-series analysis of NDVI from AVHRR data over the Hindu-Kush Himalayan region for the period 1982–2006. *International Journal of Remote Sensing*, 33(21): 6710–6721. doi: 10.1080/01431161.2012.692836.
6. Ghimire, B., Rogan, J., Galiano, V., **Panday, P.K.**, and Neeti, N., 2012. An evaluation of bagging, boosting and random forests for land-cover classification in Cape Cod, Massachusetts. *GIScience and Remote Sensing*, 49(5): 623–643.
5. **Panday, P.K.**, 2012. Glaciers and glacial extent. In *Climate Change: An Encyclopedia of Science and History*. Edited by Black, B., Hassenzahl, D., Stephens, J., and G. Weisel.
4. **Panday, P.K.**, Frey, K.E., and B. Ghimire, 2011. Detection of the timing and duration of snowmelt in the Hindu Kush-Himalaya using QuikSCAT, 2000–2008. *Environmental Research Letters*, 6: 1–13. doi:10.1088/1748-9326/6/2/024007.
3. **Panday, P.K.**, Bulley, H.N., Haritashya, U., and B. Ghimire, 2011. Supraglacial lake assessment in the Sagarmatha region in the Nepal Himalaya. In *Geospatial Techniques: Managing World Resources*, edited by J. Thakur et al, Springer.
2. Brown, M., Ouyang, H., Habib, S., Shrestha, B., Shrestha, M., **Panday, P.**, Tzortziou, M., Policelli, F., Artan, G., Giriraj, A., Bajracharya, S., and A. Racoviteanu, 2010. HIMALA: Climate impacts on glaciers, snow, and hydrology in the Himalayan region. *Mountain Research and Development*, 30(4): 401–404
1. Polsky, C. and **P. K. Panday**, 2009. Climate change and globalization in the Arctic: an integrated approach to vulnerability assessment: Book Review, *Polar Research*, 28(3): 473–474.

Publications, Other

- Panday, P.**, 2013. Hindu Kush-Himalayan Region at the Forefront of Global Change: An Assessment of Snowmelt, Hydrology, Vegetation, and Climate. PhD Thesis, Graduate School of Geography, Clark University, Worcester, Massachusetts.
- Panday, P.**, 2007. Quantifying Water Quality from Spatially-Derived Watershed Characteristics in the Catskill-Delaware Watersheds, MS Thesis, SUNY-ESF.
- Panday, P.** and M. H. Hall, 2008. Exploration of the relation between 2002 land use and 2001–2003 water quality measurements, chapter 4.2.1 in M. H. Hall, R. Germain, M. Tyrrell (Eds.) Predicting Future Water Quality from Land Use Change Projections in the Catskill-Delaware Watersheds. Final report to the NY State Department of Environmental Conservation.

Grants and Awards

- Declined:** NASA-ROSES | 2019 – 2022 | PI | \$837,685
“Improving Glacier Dynamics and Glacio-Hydrology across High Mountain Asia”
- Declined:** NSF-IUSE | 2019 – 2022 | Co-PI | \$19,187
“A modified concept inventory method to evaluate a systems approach to environmental education”

Awarded: NESTVAL New England / St. Lawrence Valley Division AAG | 2017 – 2018 | PI | \$ 750
“*Modeling streamflow and nutrient dynamics using in-situ observations and SWAT model in the Little River Watershed, Connecticut.*”

Awarded: Clark University Liberal Education and Effective Practice (LEEP) | 2016 | Co-PI | \$ 2750
“*Spatiotemporal Assessment of the Future Environmental Water Demand in Khanbogd, Mongolia*”.
PI. Oyut Amarjargal (Student)

Awarded: NASA Interdisciplinary Research in Earth Science | 2014 – 2017 | Postdoc | \$1,534,341
“*Impacts of floods and droughts on aquatic macrophytes, forests, and fisheries of central Amazonian river floodplains.*”

Declined: NSF Geography and Spatial Sciences | 2014 | PI | \$402,478
“*Mapping Peatland Response to Hydrologic Regime and Human Activities in the Andean Dry Puna*”

Awarded: NASA Terrestrial Ecology | 2013 – 2016 | Postdoc | \$ 653,933
“*Climate and Land Use Change at the Amazonian Agro-frontier: Historical and Future Effects on the Surface Energy Balance.*”

Declined: NASA New Investigator Proposal | 2014 | PI | \$269,201
“*Climate and Land Cover Change in the Indo-Gangetic Basin Plains: Historical and Future Effects on the Regional Hydrology and Floodplain Inundation Dynamics*”

Awarded: NASA Earth and Space Science Fellowship | 2010 – 2013 | PI | \$ 90,000
“*Cryospheric and Hydrological Processes in the Hindu Kush-Himalayan Region: Implications of Climate Change for Snowmelt Hydrology, Seasonal Snow Cover and Glaciated Regions*”.

Awarded: NASA Graduate Student Summer Program Fellow | 2010 | \$6000
“*Snowmelt Runoff Modeling in the Tamor River Basin in the Eastern Nepalese Himalaya*”

Awarded: Pruser Dissertation Enhancement Award, Clark University | 2011 | PhD Candidate | \$ 750

Awarded: Sol Feinstone International Study Grant, St. Lawrence University | 2004 | \$ 2500
Supported field work and water quality research in Nairobi, Kenya

Awarded: Giltz Family Fund for International Study Grant, St. Lawrence University | 2003 | \$ 2000
Supported field work and water quality monitoring research in Kathmandu, Nepal

Field Experience & Workshops

Waterhackweek, University of Washington – eScience Institute, [Remote] | 2020

Early-career Geoscience Faculty Workshop, University of Maryland, Baltimore, Maryland | 2018

Geohackweek, University of Washington – eScience Institute, Seattle, Washington | 2017

Gordon Research Conference on Catchment Science, Bates College, Maine | 2017

River sampling in the Amazon River as part of the Global Rivers Observatory, Santarem, Brazil | 2014

Landscape dynamics modeling using DINAMICA-EGO, University of Vermont, Burlington | 2013

Climate System Modeling – University of Fairbanks, Alaska | 2012

Community Earth System Model (CESM) Tutorial, NCAR, Boulder, Colorado | 2011
Langtang, Nepal high altitude research, Third Pole Environment (TPE) Research Program | 2011
Weather Research and Forecasting (WRF Tutorial) Workshop, NCAR, Boulder, Colorado | 2011
GeoSFM hydrological model workshop with Guleid Artan, USGS, Sioux Falls, South Dakota | 2010
Aquatic sampling for energy budget of a stream in upstate New York (Systems Ecology course) | 2007
Senior year field work and interviews conducted for urban aquatic pollution in Nairobi, Kenya | 2004
Water quality sampling in Bagmati River, Kathmandu, Nepal | 2003
Shellfish research at the Beals Island Regional Shellfish Hatchery, Beals Island, Maine | 2002

Teaching Experience

Nichols College:

Physical World (with laboratory) | Fall, Spring, and Summer 2016 – present
Natural Hazards (with laboratory) | Fall 2018 & Spring 2019
Introduction to Statistical Modeling with R Cran | Spring 2021
Sustainable Management | Spring 2019
Environmental Resource Management | Spring 2017 & 2018
World Economic Geography | Fall 2018 and Fall 2019

Clark University:

Weather and Climate (with laboratory) | Instructor | Fall 2016
Introduction to Arctic Systems Science | Instructor | Fall 2016
Introduction to Earth System Science (with laboratory) | Instructor | Spring 2017
Water, Climate, and Society | Instructor | Spring 2017
Raster GIS | Teaching Assistant | Fall 2007 & Spring 2008

Conference & Meeting Presentations

22. Chogyal, T., Matthews, T., Perry, B., Singh, P., Koch, I., Pelto, M., **Panday, P.**, Khadka, A., Aryal, D., Shrestha, D., Kang, S., and Mayewski, P. (Upcoming). New weather observations from Mt. Everest reveal widespread winter melting and intense sublimation. 2021 Fall American Geophysical Union Meeting, New Orleans, Louisiana.
21. Pelto, M., **Panday, P.**, Matthews, T., Maurer, J. and Perry, L.B. (Upcoming). Observations of Winter Ablation on Glaciers in the Mount Everest Region in 2020–2021. 2021 Fall AGU Meeting, New Orleans, LA.
20. **Panday, P.K.**, 2019. The urban socio-hydrology of water resource management in Kathmandu Valley, Nepal. *Fall American Geophysical Union Meeting*, San Francisco, California.

19. **Panday, P.K.** 2019. The socio-hydrology of water supply and scarcity in Kathmandu Valley, Nepal. *Association of American Geographers Annual Meeting*, Washington D.C.
18. **Panday, P.K.** 2018 (Invited). Cryospheric and Hydrological Processes in the Himalayan region: An assessment of snowmelt dynamics, hydrology, and climatic hazards. Yale Himalaya Initiative, Yale University.
17. **Panday, P.K.** 2017. Climate hazards in the Himalaya. *Association of American Geographers Annual Meeting*, Boston, MA, April 5-9.
16. **Panday, P.K.** 2017. Climate hazards in the Himalaya region. *Himalayan Studies Conference V*, University of Colorado Boulder, Colorado September 1-4
15. **Panday, P.K.**, Coe, M.T., Lefebvre, P., Macedo, M., and L. Castello, 2015. Impacts of extreme hydrological events on Amazon floodplain hydrology and inundation dynamics. *2015 Fall American Geophysical Union Meeting*, San Francisco, California.
14. **Panday, P.K.**, Coe, M.T., Lefebvre, P., Macedo, M., and L. Castello, 2015. Impacts of extreme hydrological events on Amazon floodplain hydrology and inundation dynamics. 2015 NASA Carbon Cycle & Ecosystems Joint Science Workshop, Maryland, April 20-24, 2015.
13. **Panday, P.K.**, Coe, M.T., Macedo, M., Lefebvre, P., and A. Castanho, 2014. Effects of deforestation and climate variability on the hydrological balance of the Xingu River Basin. *2014 Fall American Geophysical Union Meeting*, San Francisco, California.
12. Coe, M.T., Macedo, M., Silverio, D., **Panday, P.** and P. Brando, 2014. Hydrological consequences of deforestation and forest degradation in the Amazon agricultural frontier. *2014 Fall American Geophysical Union Meeting*, San Francisco, California.
11. Castro, A., Cuartas, A., Coe, M.T. Koumrouyan, A., **Panday, P.K.**, Lefebvre, P., Padovani, C., Costa, M., and G. S. de Oliveira, 2014. Modeling the hydrological patterns on Pantanal wetlands, Brazil. *2014 Fall American Geophysical Union Meeting*, San Francisco, California.
10. **Panday, P.K.**, Coe, M.T., Macedo, M., and P. Beck, 2013. Evaluation of hydrological balance in the eastern Amazon using a terrestrial ecosystem model, and satellite-based evapotranspiration (MODIS) and terrestrial water storage (GRACE). *2013 Fall American Geophysical Union Meeting*, San Francisco, California.
9. **Panday, P.K.**, Williams, C.A., and K.E. Frey, 2012. An assessment of the snowmelt runoff model in the Tamor River basin in the eastern Himalaya using Markov Chain Monte Carlo (MCMC) data assimilation approach. *2012 Fall American Geophysical Union Meeting*, San Francisco, California, 3-7 December 2012.
8. **Panday, P. K.**, J. M. Thibeault and K. E. Frey, 2011. A multi-model analysis of changing climate in the Hindu Kush-Himalayan region using CMIP3 projections for temperature and precipitation. *2011 Fall American Geophysical Union Meeting*. San Francisco, California, 5-9 December 2011.
7. **Panday, P.K.**, and K. Frey, 2010. Detection of the timing and intensity of snowmelt in the Hindu Kush-Himalaya using QuikSCAT, 2000-2008. *Association of American Geographers Annual Meeting*, Washington DC, April 14-18, 2010.

6. Frey, K. E., Grebmeier, J. M., Cooper, L. W., Wood, C. L. and **Panday, P.K.**, 2011. Satellite-Derived Trends across a Marine Distributed Observatory in the Pacific Arctic Region. *Arctic Science Summit Week*. Seoul, Korea, March 27 – April 1, 2011.
5. **Panday, P.K.**, Bulley, H.N., Haritashya, U., Frey, K., and J. Rogan, 2009. Supraglacial lake assessment in the Sagarmatha region in the Nepal Himalaya. *Association of American Geographers Annual Meeting*, Las Vegas, March 22-27, 2009.
4. Frey, K. E., Cooper, L. W., Grebmeier, J. M., and **Panday, P. K.**, 2009. Long-term trends and recent interannual variability of sea ice cover in the northern Bering and Chukchi Seas. *Arctic Science Summit Week Symposium*, Bergen, Norway, 23–28, March 2009.
3. **Panday, P.K.**, Hall, M.H.P., and C.A.S. Hall, 2006. Predicting future water quality from land use change projections in the Catskill-Delaware watersheds. *Annual New York State Geographic Information Systems Conference*, Lake Placid, NY, October 23-24, 2006.
2. **Panday, P.K.**, and Hall, M.H.P, 2006. Building statistical water quality models for the Catskill-Delaware Watersheds as a function of landscape characteristics, *NY City Science and Technology Symposium*, Fishkill, NY, September 2006.
1. **Panday, P.K.**, Gao, N., Kim, E., Hopke, P.K., and R.L. Poirot, 2004. Source identification for fine particulate matter over Lye Brook, Vermont using source-receptor modeling techniques. *Annual Northeastern Regional Meeting of American Chemical Society*, Rochester, NY, October 31, 2004.

Professional Service

Nichols College

Research Development Workshop | 2018

Institutional Review Board Member | 2017 – present

Curriculum Committee | 2017 – present

Institute for Women’s Leadership member | 2017 – present

Search Committee for Faculty of Environmental Science | Nichols College | 2017

Clark University:

Graduate Admissions Committee | 2010 – 2011

Professional Development Workshop Committee | Clark Graduate School of Geography | 2010–2011

Promotion Committee -Karen E. Frey | 2009 – 2010

Graduate Speaker Series Committee | 2009 – 2010

Peer Review Activity

Journal of Climate | Journal of Hydrology | Journal of Geophysical Research – Atmosphere |

Earth and Space Science | Remote Sensing | International Journal of Remote Sensing | Mountain Research

Development | Science of the Total Environment | Geomatics, Natural Hazards and Risk | International

Journal of Climatology

Honors

Certificate for Excellence in Academics | SUNY-ESF | 2006 – 2007

Phi Beta Kappa | St. Lawrence University | 2005

Dean's List | St. Lawrence University | 2003 – 2005

University Scholar | St. Lawrence University | 2003 – 2005

Dean's List | University of Maine at Machias | 2001 – 2003

Associated Faculty of Maine System Scholarship | University of Maine at Machias | 2003

Professional Affiliations

Association of American Geographers | 2007– present

American Geophysical Union | 2010 – present

Water Resources Specialty Group AAG | 2008 – present

New England St. Lawrence Valley Geographical Society | 2015 – present

International Centre for Integrated Mountain Development (ICIMOD)

Select Media & Outreach

Research:

Mei, A., 2018. Prajjwal Panday on hydro-climatology of the Hindu-Kush Himalayan region. Yale Himalaya Initiative, Yale University. URL. <https://himalaya.yale.edu/prajjwal-panday-hydro-climatology-hindu-kush-himalayan-region>

Martinelli, L., 2018. Nichols students 'dig into' wetlands research. *Heard on the Hill*, Nichols College. URL <https://heardonthehill.nichols.edu/2018/08/30/nichols-students-dig-into-wetlands-research/>

Conservation Works: Forests for Water in Amazonia. Phy.Org, Retrieved March 23, 2015. URL <https://phys.org/news/2015-03-forests-eastern-amazonia.html>

Woods Hole Research Center, 2015. Conservation Works: Forests for Water in Amazonia. URL <http://whrc.org/conservation-works-forests-for-water-in-eastern-amazonia/>

Ascombe, N., 2011. Radar sounds out Himalayan snowmelt. Environmental Research Web.

Community Outreach:

Panday, P.K. (Invited) Global changes from the Himalayas to the Amazon. Minuteman High School, Lexington, MA.

Rai, D., 2018. From Amazon to Himalayas: Interview with Environmental Science Professor Prajjwal Panday. Sujhaab Chautaaari. URL <https://chautaaari.com/environmental-science-professor-prajjwal-panday/>

Dallaire, A., 2017. Nichols community experiences sounds of Himalayan fusion music. *Heard on the Hill*, Nichols College. URL <https://heardonthehill.nichols.edu/2017/10/12/nichols-community-experiences-sounds-of-himalayan-fusion-music/>

Steeves, G., 2017. Speaking for civility: Making way in American community. Webster Times, September 29, 2017. URL <https://bit.ly/2DoyCvx>

Computer Experience

GIS softwares | IDRISI, ArcGIS, ENVI, QGIS, ERDAS Imagine, GDAL |

Programming | R, Google Earth Engine, Python, MATLAB, NCL (NCAR Language), FORTRAN |

Statistical Packages | R, Origin, MATLAB, SAS, SPSS |

Collaborators & Co-Editors

Mauri Pelto | Vice President of Academic Affairs, Nichols College

Soni Pradhanang | Associate Professor, University of Rhode Island

Molly E. Brown | Research Scientist, University of Maryland College Park

Dambaru Kattel | Research Scientist, Chinese Academy of Sciences, Beijing

Eloise T. Biggs | Lecturer, University of Western Australia

Amarnath Giriraj | Researcher, International Water Management Institute

Patrick Jantz | Research Associate, Northern Arizona University