

GEHENDRA KHAREL

TCU BOX 298835, Fort Worth, TX 76129
g.kharel@tcu.edu • 817.257.5318 • <https://ensc.tcu.edu/staff/768/>

Curriculum Vitae

Passionate multi-disciplinary professional dedicated to research and teaching in water resources, streamlining student success through motivating, educating, and inspiring full engagement in the rapidly globalizing 21st century in concepts such as: watershed hydrology, environmental studies, geographic information systems, climate change, land use, regional planning, sustainability, and the realm of human-environment interactions. Research and teaching movements with a focus on coupled human-nature systems. Drive personal and professional success of learners by encouraging global awareness and global engagement to meet the challenges of our time, utilizing a variety of topics, technologies, and graphic mediums to ensure provision of the highest quality learning experience that will produce global citizens and leaders prepared to positively shape the future of the United States and the world beyond.

Expertise Includes:

Research & Teaching Interests: Hydrology • Climate Change • Water Resources Management • Hydrological Modeling • Geospatial Technologies • Regional Planning • Coupled Nature-Human Systems • Food-Energy-Water Nexus

Analytical: GIS & Remote Sensing (ArcGIS, ERDAS IMAGINE) • Hydrological Modeling (SWAT) • Statistics (SPSS) • System Modeling (STELLA, VenSim) • Integrated Modeling (ENVISION) • Stakeholder Analysis (SWOT-AHP/ANP)

Computing/Programming: Python • R • SQL • MS Office Suite

Education and Credentials

PhD in Earth System Science and Policy, 2015 University of North Dakota, Grand Forks, ND

Dissertation: *The impacts of climate, land use, economics, and conservation policies on the hydrology of the Devils Lake basin*

Supervisor: Dr. Andrei Kirilenko

Masters in City and Regional Planning, 2010 University of Texas, Arlington, TX

Specialization: *Environmental Policy, Planning & Management*

Supervisor: Dr. Ardeshir Anjomani

Bachelor of Science in Environmental Studies, 2007 University of Nebraska, Omaha, NE

Specialization: *Geography & Planning*

Professional Experience

Assistant Professor • Texas Christian University, Fort Worth, TX • 2019–Current

Postdoctoral Research Fellow • Oklahoma State University, Stillwater, OK • 2016–2019

Graduate Research Assistant • University of North Dakota, Grand Forks, ND • 2011–2015

Graduate Research Assistant • University of Texas, Arlington, TX • 2008–2010

Teaching Experience

Instruction

Spring 2020: ENSC 40970/70970 *Environmental Modeling*

Fall 2019: *GEOL 50493 Physical Hydrology (Lecture & Lab)*

Fall 2017: *NREM 3083 Geospatial Technologies for Natural Resources (Lecture & Lab)*

Fall 2017: *NREM 5443/4443- Watershed Hydrology and Water Quality (Lab)*

Fall 2016: *NREM 5443/4443- Watershed Hydrology and Water Quality (Lab)*

Guest Lectures

9. *NREM 3083- Geospatial Technologies for Natural Resources: "GIS Application and Career"*. Invited by Dr. Bryan Murray, Oklahoma State University, September 05, 2018.
8. *NREM 4473- Global Issues of Water and Ecosystem Management: "Managing Water Resources in the Great Plains: A Case of Devils Lake, North Dakota"*. Invited by Dr. Chris Zou, Oklahoma State University, April 13, 2016.
7. *ESSP 502- Biogeochemical Cycles: "Hydrological Modeling and Regional Climate Change"*. Invited by Dr. Andrei Kirilenko, University of North Dakota, 2015.
6. *ESSP 502- Biogeochemical Cycles (lab): Carbon Cycle, Phosphorus Cycle, and Rock Cycle using STELLA Tool with Reference to IPCC Report on Climate Mitigation, Adaptation and Vulnerability*. University of North Dakota, 2015.
5. *ESSP 570- Communicating Environmental Information: "Let's Talk or Communicate?"* Invited by Dr. Rebecca Romsdahl, University of North Dakota, Spring 2015.
4. *ESSP160- Sustainability & Society: "Sustainability in Nepal"*. Invited by Dr. Rebecca Romsdahl, University of North Dakota, Spring 2015.
3. *ESSP 501- Environment and Society: "Addressing Long-term Flood Risks under Changing Climate: A Green Paradiplomacy Perspective"*. Invited by Dr. Rebecca Romsdahl, University of North Dakota, Fall 2014.
2. *ESSP 502- Biogeochemical Cycles: "Endorheic Lakes under Changing Climate: A Case of Devils Lake, North Dakota"*. Invited by Dr. Andrei Kirilenko, University of North Dakota, Spring 2014.
1. *NRCS 3344- Land Use Planning: "The Impacts of Climate and Land Use Change on Environmental Resources"*. Invited by Mr. Erick Castle, University of Minnesota - Crookston, Spring 2012.

Student Mentoring

Ph.D. Dissertation

2. Yu Zhong • PhD • Land use impact on soil and water ecosystem sustainability in the grassland and forest ecotone of the Great Plains of the USA • 2020 (expected) – Role: committee member
1. Solmaz Rasoulzadeh Gharibdousti • PhD • Evaluating the least cost selection of agricultural management practices in the Five Milk Creek area of Fort Cobb Watershed • 2018 – Role: committee member

M.S. Thesis

2. Holly Gould • M.S. • Green Infrastructure and Urbanization in Dallas-Fort Worth Region • 2021 (expected) – Role: advisor
1. Summer Barrett • M.S. • Acid Mine Drainage into the Beaver Creek Watershed: Tar Creek Superfund Site • 2021 (expected) – Role: committee member

Online Course Mentoring at Coursera

1. *Geospatial and Environmental Analysis*: provide academic support to the course learners in the topics related to geospatial analysis tools and project

Research Accomplishments

Proposal Development

10. **Foundational Program 2019:** Sustainable management of the forest-grassland transition- At-risk agroecosystems [as Co-PI with Chris Zou et al.] (*not funded*)
9. **USDA NIFA 2018:** Valuing environmental benefits of Lesser Prairie Chicken conservation in the southern Great Plains [as Co-PI with Omkar Joshi et al.] (*not funded*)
8. **USDA AFRI Foundational Program 2018:** Sustainable management of the forest-grassland transition- At-risk agroecosystems [as Co-PI with Chris Zou et al.] (*not-funded*)
7. **South Central Sun Grant 2017:** Sustainable development of biofuel, bioproduct, and bioenergy in Oklahoma: A social acceptability analysis [as Co-PI with Omkar Joshi and Chris Zou] (*not funded*)
6. **USGS 104G 2017:** Assess the effects of land-use changes and hydrometeorological extremes on water quantity, quality, stream ecosystems and associated socio-economic impacts in Midwest and southern watersheds [as Co-PI with Omkar Joshi] (*not funded*)
5. **USGS 104B 2017:** Assessing the impacts of climate variability, land use and management practices on surface flow and ground water recharge in the Cimarron Terrace and Alluvial Aquifer [as Co-PI with Chris Zou] (*not funded*)
4. **JSFP 2017:** Understanding social factors affecting co-management of wildland fire risk: A case study based approach [as collaborator with Omkar Joshi (PI), John Weir (Co-PI), Neelam Poudyal (Co-PI)] (*not funded*)
3. **USDA AFRI 2016:** Economics of alternative land management practices in Cross-timbers region [as Co-PI with Omkar Joshi (PI), Rod Will (Co-PI), Chris Zou (Co-PI), Dwayne Elmore (Co-PI)] (*not funded*)
2. **USGS 104G 2016:** Assess the effects of climate change and hydro-meteorological extremes on water quantity, quality, stream ecosystems and associated socio-economic impacts in southern-forested watersheds [as Co-PI with Chris Zou (PI), Rod Will (Co-PI), Jim Long (Co-PI), Lei Qiao (Co-PI)] (*not funded*)
1. **UND Summer Doctoral Fellowship 2014:** The impacts of climate, land use, economics and conservation policies on the hydrology of the Devils Lake Basin [Gehendra Kharel (PI), \$5,000] (*funded*)

Publications

Peer-Reviewed

* denotes graduate students supervised/mentored

17. Joshi, O., Chapagain, B., Kharel, G., Poudyal, N., Murray, B., Mehmood, S. 2020. Benefits and challenges of online instruction in agriculture and natural resource education. *Interactive Learning Environments*. <https://doi.org/10.1080/10494820.2020.1725896>
16. Hao, Y., Liu, Q., Li, C., Kharel, G., An, L., Stebler, E., Zhong, Y., Zou, C. 2019. Interactive effect of meteorological drought and vegetation types on root-zone soil moisture and runoff in rangeland watersheds. *Water*. Special Issue- Hydrology. <https://doi.org/10.3390/w11112357>
15. Joshi, O., Will, R., Zou, C., **Kharel, G.** 2019. Sustaining Cross-timbers Forest Resources: Current Knowledge and Future Research Needs. *Sustainability*. <https://doi.org/10.3390/su11174703>
14. Gharibdousti, S.*, **Kharel, G.**, Stoecker, A. 2019. Modeling the impacts of agricultural best management practices on runoff, sediment, and crop yield in an agriculture-pasture intensive watershed. *PeerJ*. DOI: [10.7717/peerj.7093](https://doi.org/10.7717/peerj.7093)
13. Gulbin, S., Kirilenko, A., **Kharel, G.**, Zhang, X. 2019. Wetland loss impact on long term flood risks in a closed watershed. *Environmental Science & Policy*. <https://doi.org/10.1016/j.envsci.2018.12.032>
12. Gharibdousti, S.*, **Kharel, G.**, Miller, R., Stoecker, A. 2019. Projected climate could increase water yield and cotton yield but decrease winter wheat and sorghum yield in an agricultural watershed in Oklahoma. *Water*. DOI: [10.3390/w11010105](https://doi.org/10.3390/w11010105)

11. Acharya, B., **Kharel, G.**, Zou, C., Wilcox, B., Halihan, T. 2018. Woody plant encroachment impacts on groundwater recharge: A review. *Water*. DOI:10.3390/w10101466
10. **Kharel, G.**, Joshi, O., Miller, R., Zou, C. 2018. Perceptions of government and research expert groups and their implications for watershed management in Oklahoma, USA. *Environmental Management Journal*. DOI: 10.1007/s00267-018-1108-4
9. **Kharel, G.**, Romsdahl, R., Kirilenko, A. 2018. Managing the wicked problem of Devils Lake flooding along the USA-Canada border. *International Journal of Water Resources Development*. DOI: 10.1080/07900627.2018.1523050
8. **Kharel, G.**, Kirilenko, A. 2018. Comparing CMIP-3 and CMIP-5 climate projections on flooding estimation of Devils Lake of North Dakota, USA. *PeerJ*. DOI: [10.7717/peerj.4711](https://doi.org/10.7717/peerj.4711)
7. Joshi, O., Fontanier, C., Harris, D., Poudyal, N., **Kharel, G.** 2018. Determinants of public golf course visitation and willingness to pay for landscape enhancements: A case study from Oklahoma, USA. *Journal of Cleaner Production*. <https://doi.org/10.1016/j.jclepro.2018.09.125>
6. Joshi, O., Parajuli, R., **Kharel, G.**, Poudyal, N., Taylor, E. 2018. Stakeholder opinions on scientific forest management policy implementation in Nepal. *PLoS ONE* 13(9): e0203106. DOI: 10.1371/journal.pone.0203106
5. Li, C., Zhang, Y, **Kharel, G.**, Zou, C. 2018. Climate variability and changing landscape pattern impact water budget and nutrient loads in a peri-urban watershed – a coupled analysis using process-based hydrological model and landscape indices. *Environmental Management Journal*. DOI: <https://doi.org/10.1007/s00267-018-1019-4>
4. Khanal, S., Lal, R., **Kharel, G.**, Fulton, J. 2018. Identification and prioritization of critical soil and water conservation areas in Muskingum River Basin in Ohio. *Journal of Soil and Water Conservation*. DOI: 10.2489/jswc.73.2.213
3. **Kharel, G.**, Zheng, H., Kirilenko, A. 2016. Can land use change mitigate long-term flood risks in the Prairie Pothole Region? The case of Devils Lake, North Dakota, USA. *Regional Environmental Change*. DOI: 10.1007/s10113-016-0970-y
18. **Kharel, G.**, Kirilenko, A. 2015. Considering climate change in the estimation of long-term flood risks of Devils Lake in North Dakota. *Journal of the American Water Resources Association*. DOI: 10.1111/1752-1688.12300
1. Lemons, R., Hewitt, A., **Kharel, G.**, New, C., Kirilenko, A., Zhang, Xi. 2012. Evaluation of satellite-derived agro-climate variables in the Northern Great Plains of the United States. *Geocarto International*. DOI: 10.1080/10106049.2011.653408

Proceedings and Reports

3. **Kharel, G.**, Miller, R., Zou, C., Koch, J., Boyer, T., McCarthy, H., Dilekli, N., Huhnke, R. 2018. An integrated modeling approach coupling stakeholders' values and policy trade-offs in Oklahoma, USA. Proceedings of the 9th International Environmental Modelling and Software Society (iEMSs), June 24-28, Fort Collins, Colorado, USA.
2. **Kharel, G.**, Kirilenko, A. 2014. Estimating long-term flood risks under changing climate: A case of Devils Lake, North Dakota. In: Ames, D.P., Quinn, N.W.T., Rizzoli, A.E. (Eds.), Proceedings of the 7th International Environmental Modelling and Software Society (iEMSs), June 15-19, San Diego, California, USA. ISBN: 978-88-9035-744-2.
1. Kockelman, K., Anjomani, A., Paul, B., Nostikasari, D., Tayyebi, A., **Kharel, G.** 2010. Design and Application of Accessible Land-Use Modeling Tools for Texas Regions, Center for Transportation Research, Bureau of Engineering Research, University of Texas at Austin.

Conference Presentations

15. **Kharel, G.** Miller, R., Zou, C., Koch, J., Boyer, T., McCarthy, H., Dilekli, N., Huhnke, R. An integrated modeling approach coupling stakeholders' values and policy trade-offs in Oklahoma, USA. 9th International Congress on Environmental Modelling and Software, Fort Collins, Colorado, June 24-28, 2018.
14. Rasoulzadeh, S., Stoecker, A., **Kharel, G.** Evaluating the least cost selection and placement of crops and agricultural management practices in the Five-Mile Creek area of Fort Cobb Watershed. Oklahoma Clean Lakes and Watersheds Association. 27th Annual Conference, Stillwater, OK, April 4-5, 2018.

13. Rasoulzadeh, S., Stoecker, A., **Kharel, G.** Evaluating effectiveness of agricultural conservation practices in the Upper Washita River basin, OK. Oklahoma Clean Lakes and Watersheds Association. 27th Annual Conference, Stillwater, OK, April 4-5, 2018.
12. Rasoulzadeh, S., Stoecker, A., **Kharel, G.**, Storm, D. Evaluating the effectiveness of agricultural management practices under climate change for water quality improvement in a rural agricultural watershed of Oklahoma, USA. *American Society of Civil Engineers, Unconventional Resource Technology Conference*, Austin, TX, July 24-26, 2017.
11. **Kharel, G.**, Zou, C., Fuhlendorf, S., Joshi, O., Miller, R., Melstrom, R., Boyer, T. Coupling natural and human systems: An integrated modeling approach in Oklahoma, USA. *American Association of Geographers Annual Meeting*, Boston, MA, April 05–April 09, 2017.
10. Rasoulzadeh, S., Stoecker, A., **Kharel, G.**, Storm, D. Evaluating the effectiveness of agricultural management practices under climate change for water quality improvement in a rural agricultural watershed of Oklahoma, USA. *American Geophysical Union Fall Meeting*, San Francisco, CA, December 12-16, 2016.
9. **Kharel, G.**, Zou, C., Melstrom, R. The lower Cimarron River watershed under changing climate: A coupled nature-human system approach. *Oklahoma Clean Lakes and Watersheds Association Annual Conference*, Stillwater, OK, March 29-30, 2016
8. Kirilenko, A., **Kharel, G.**, Zheng, H., Gulbin, S. Effects of climate and land use change on the long-term flooding in the Devils Lake, North Dakota watershed. *Association of American Geographers Annual Meeting*, San Francisco, CA, March 28 - April 2, 2016.
7. **Kharel, G.**, Kirilenko, A. Taking Climate Change into Estimation of Long-Term Flood Risks: A Case of Devils Lake of North Dakota, USA. *American Geophysical Union Fall Meeting*, California, December 15-19, 2014.
6. **Kharel, G.**, Kirilenko, A. Estimating Long-term Flood Risks under Changing Climate: A Case of Devils Lake, North Dakota. *7th International Congress on Environmental Modelling and Software*, San Diego, CA, June 15-19, 2014.
5. **Kharel, G.**, Kirilenko, A. Taking Climate Change into Estimation of Long-Term Flood Risks: A Case of One Billion Dollar Disaster. *Water and Society: A Space-Time Framework for Integrated Studies*. CAES CNRS, France, May 11-17, 2014.
4. **Kharel, G.**, Kirilenko, A. Estimating Devils Lake Water Levels Using the Soil and Water Assessment Tool (SWAT). *SWAT International Conference & Workshops*. Toulouse, France, July 16-19, 2013.
3. **Kharel, G.**, Kirilenko, A. Estimating Future Devils Lake Water Levels Using the Soil and Water Assessment Tool (SWAT). *ND EPSCoR State Conference*. North Dakota, September 18, 2012.
2. Lemons, R., Hewitt, A., **Kharel, G.**, New, R., Kirilenko, A., Zhang, X. Evaluation of satellite-derived agro-climate variables in the Northern Great Plains. *ND-SD joint EPSCoR conference*, NDSU, Fargo, ND, October 4, 2011.
1. **Kharel, G.** Impacts of urbanization on environmental resources: A case study of Austin, Texas.

Academic Activities & Service

Journal Refereeing

- Journal of the American Water Resources Association
- Journal of Hydrology
- Journal of Soil and Water Conservation
- Water
- Sustainability
- Environmental Management
- Environmental Monitoring and Assessment
- Environment and Natural Resources Research
- Environmental Management & Sustainable Development

Professional Memberships

- American Association of Geographers
- American Geophysical Union
- International Environmental Modelling and Software Society

Relevant Services

- Session moderator, South Central Section Meeting, Geological Society of America, Fort Worth, TX, 2020
 - Evaluation panelist, Science Mathematics And Research for Transformation (SMART) Scholarship Program, U.S. Department of Defense, 2020
 - Panel member, *Panel on Culture*, International Student Services, Texas Christian University, 2019
 - Panel member, *Panel on University Life*, International Student Services, Texas Christian University, 2019
 - Judge, *oral and poster presentations*, 2017 Students Water Conference at Oklahoma State University, 2017
 - Presenter, *Authentic Research Experience for Teachers (ARET)*. Provided a demonstration on the coupled natural-human systems integrated modeling to Oklahoma School teachers, 2016
 - Integrated modelling platform for coupled nature-human system Workshop. Participation and training, 2016.
 - Co-organizer, *Climate & Culture Festival*, University of North Dakota, 2015.
 - Treasurer, *Nepalese Student Association*, University of Texas at Arlington, 2009
 - Vice President, *Environmental Club*, University of Nebraska at Omaha, 2006
-

Awards

- 5th Summer School on Sustainable Climate Risk Management Fellowship • Penn State University • 2017.
 - Summer Doctoral Fellowship • University of North Dakota • 2014
 - Summer School Fees Gratuity • Water and Society: Space-Time Framework for Integrated Studies, CAES-CNRS • 2014
 - Student Travel Grant • American Geophysical Union • Fall Meeting, California • 2014
 - Conference Travel Grant • University of North Dakota Graduate School • 2013/2014
 - Student Grant • International SWAT Conference and Workshops • EcoLab, France • 2013
 - Conference Travel Grant • School of Aerospace Science • University of North Dakota • 2013
 - Texas Chapter American Planning Association Scholarship • University of Texas at Arlington • 2009-2010
 - Graduate Fellowship • University of Texas at Arlington • 2008-2010
-