

CV

TARIQ MUNIR

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PROFESSIONAL SUMMARY

- 2010-Present Adjunct Faculty & Approved Supervisor for Visiting PhD Students, Geography, University of Calgary. Dr. Munir taught and mentored undergraduate and graduate students and demonstrated a strong track record of 25+ publications in impactful journals. Many positive student reviews of teaching are received.
- 2019-2021 As a Postdoctoral Fellow with the Department of Geography & Planning, University of Saskatchewan, Dr. Munir partnered with Beavers to restore stream/river functions to adapt to climate change in the Alberta Rocky Mountains.
- 2015-2016 As a Lead Wetland Engineer with the Department of Environment – Imperial Oil Resources/Exxon Mobil, Tariq coordinated projects on the reclamation of decommissioned oil well pads in Cold Lake, AB and coordinated the modelling of water treatment wetlands in Fort McMurray, AB.
- 2010-2015 Dr. Munir completed a PhD in Geography, Geography, University of Calgary in 2015. Wetlands Biogeochemistry and Productivity under climate change scenarios were investigated and modelled for spatial and temporal scales.
- 2002-2009 Obtained a diverse field and laboratory research/coordination experience: As a GRA with Renewable Resources, University of Alberta (2009), Tariq supported undergrad and grad students in their greenhouse experiments aimed at restoring disturbed ecosystems in the boreal forest. As an Environmental Supervisor / Manager with Shell Canada (2005-2009) and EnviroTest Labs (2002-2004), Tariq gained extensive experience in the management of environmental or ecological sites.
- 1999-2002 As a Technical Services Officer with Engro Chemical Pakistan Ltd., Tariq demonstrated how soils meet or exceed their productivity with balanced fertilization in the field to help sustain food and water security in Pakistan.

TEACHING EXPERIENCE

2010-2023 GTA, Sessional Instructor, or Adjunct Assistant Professor
Geography, University of Calgary, AB

PREPARED & TAUGHT

- Geog 310 (Landforms and Soils)
- Geog 354 (Social and Cultural Geography)
- Geog 352 (Political, Economic & Urban Geography)
- Geog 326 (Geographies of Canada)
- Geog 415 (Physical Hydrology)
- Geog 313 (Soils and Vegetation)
- Geog 413/Arky 413 (Soil Character and Formation)
- ENSC 504 (Peatland Ecohydrology)
- Geog 516 (Ecohydrology)

MENTORED UNDERGRADUATE OR PhD STUDENT/THESIS, e.g.,

- a) Peatland vegetation functional groups affected by climate warming and water table drawdown (Mendel Perkins, 2012),
- b) Peatland vegetation functional groups under climate change (Emily Kaing, 2013),
- c) Peatland soil-plant-atmosphere C-flux across a range of peatland well-pad restoration treatments in Peace River, Alberta (Arohi Dixit, PhD, 2017-2019), and
- d) Individually Trained, mentored, or supervised 20 undergrad or grad students for biogeochemical (e.g., CO₂, CH₄, DOC, Nutrients), biophysical (e.g., vegetation surveys), hydrological, and environmental research at various Forest or Rocky Mountain research sites in Alberta.

2013-2016 Sessional Instructor / Adjunct Assistant Professor,
Geology, St. Mary's University, Calgary

PREPARED & TAUGHT

- Geog 381 (Canada: Regional Geography)
- Geog 203 (Human Environment)

RESEARCH/EXPERIENCE

2019-2021 POSTDOCTORAL FELLOW
Geography and Planning, University of Saskatchewan, SK

- Led, conducted, analyzed, and published research related to the stream restoration function of beavers and beaver dam analogues in the Canadian Rocky Mountains,

- Supported graduate students with their research projects and data/statistical analyses,
- Designed and conducted multiple experiments related to wetland hydrology, biogeochemistry, climate change, and water security in Alberta Rockies.

2015-2017 LEAD WETLAND ENGINEER (Postdoc, Environment – Oil Sands Development & Research)
Imperial Oil Resources Ltd. (Exxon Mobil), Calgary, Alberta

TEAM LEAD

- Coordinated modelling of a contaminated water treatment wetland for the possible release of quality water to the Athabasca River watershed,
- Proposed and received external funding (COSIA) and, designed, developed, and monitored a project to remotely monitor the success of reclamation of restored well pads – Eddy Covariance technique and static gas chambers were designed and used to monitor C-sequestration by vegetation,
- Reviewed innovative technology proposals on area fugitive emissions and, recommended COSIA’s GHG workgroup, and
- Coordinated SSHE representatives across Imperial to synergize common goals

2010-2014 PhD SCHOLAR / GTA / GRA
Geography, University of Calgary, AB

- Led 10 field trips/year (each trip week-long) to boreal forest, Alberta,
- Installed, maintained, and operated numerous micrometeorological equipment, and created climate change simulations,
- Measured greenhouse gases (CO₂, CH₄), dissolved organic carbon and nutrient cycling at natural and disturbed sites, and
- Handled, analyzed, and empirically modelled large data sets using Excel and SPSS, Minitab, SigmaPlot, JMP and other software.

2009 GRADUATE RESEARCH ASSISTANT
Department of Renewable Resources
University of Alberta

- Supported field teams for their greenhouse experiments in Smokey Lake, AB, and
- Helped to monitor the germination, propagation, and growth of boreal native plants.

2005-2009 MANAGER HEALTH, SAFETY & ENVIRONMENT (HSE)
Shell Canada Products Ltd.
Alberta & British Columbia

- Managed gasoline inventories, monitored gas & water piezometers to sustain the quality of surface and groundwater,
- Used due-diligence approaches to protect human health and the environment in compliance with Alberta EPEA and Water Act and reported to senior management,

- Provided 18, on-site trainings related to human and environmental health and safety.

2002-2004 LABORATORY SUPERVISOR (Agriculture & Environment)
EnviroTest Labs, Calgary, AB

- Provided consultancy services for reclamation, revegetation, and restoration of environmentally sensitive ecosystems based on soil and vegetation analyses,
- Monitored QA/AC, and reported to the lab information management system
- Authored analyses and technical reports for clients and senior management

1999-2002 TECHNICAL SERVICES OFFICER
Engro Chemical Pakistan Ltd.

- Developed and managed a soil, water, plant, and fertilizer testing laboratory
- Collaborated agricultural research and extension projects with growers and provincial government for adaptation to drought and warming
- Provided leadership to programs for nutrient management and sustainable crop yields

EDUCATION/TRAINING

2019-2021 Postdoctoral Fellow (Wetland Ecohydrology)
Global Institute for Water Security, Geography and Planning, University of Saskatchewan
Supervisor: Professor Cherie Westbrook
Project: partnering with beavers to restore stream function and adapt to climate change in Alberta Rockies.

2015-2016 Postdoctoral Fellow (Wetland Engineer)
Environment – Oil Sands Development and Research Imperial Oil Resources, Calgary, AB
Supervisor: Dr. Michelle Young
Projects: 1) Micrometeorological, C-sequestration Monitoring of reclaimed/restored wetlands in Cold Lake and, 2) treatment function modelling of an engineered wetland in Fort McMurray

2010-2015 PhD, Physical Geography
University of Calgary, AB
Supervisor/committee: Professors Maria Strack, Greg McDermid / Darren Sjogren, Dr. Jagtar Bhatti
Thesis title: Peatland Biogeochemistry and Plant Productivity Responses to Field-Based Hydrological and Temperature Simulations of Climate Change

1984-1994 BSc–H & MSc–H, Soil Science (Agriculture)
Department of Soil Science
University of Agriculture, Faisalabad, Pakistan
Thesis: Physical, Chemical and Nutritional Status of Soils under Citrus Orchards
Thesis: Rice Cropping in Salt-Affected Soils under Various Irrigation Management Systems

AFFILIATIONS, RECOGNITIONS, AWARDS, SOCIAL SERVICE

- 2011-2014 Queen Elizabeth II Doctoral Scholarship – Geography, University of Calgary, AB
- 2012-2014 Teaching Fellow – Geography, University of Calgary, AB
- 2017 Scholarly Teaching Activity Grant – Geography, University of Calgary, AB
- 2018-2019 Wetland Ambassador Mentor – (with funding to a PhD student and research completed in Peace River, AB) Society of Wetland Scientists, USA
- 2019-2021 Postdoctoral Fellow, Global Institute for Water Security, Centre for Hydrology, Geography & Planning, University of Saskatchewan
- 2013 TOP-Best Presentation Award – Alberta Biological Solutions Forum & CCEMC, AB
- 2011-2012 John D. Petrie Memorial Bursary – University of Calgary, AB
- 2012 [Dr. Karl C. Ivarson Award - Agricultural Institute of Canada Foundation](#)
- 1991 Sir William Robert Talent Scholarship – University of Agriculture, Faisalabad, Pakistan
- 2016-2024 Adjunct Faculty, Geography, University of Calgary
- 2015-2024 Licensed Professional Agrologist, Alberta Institute of Agrologists, Edmonton, AB
- 2015-2024 Session Chair – Forest, Wetland & Riparian Areas, and member and member Planning Committee, Alberta Soil Science Workshop
- 2009-2019 Registered Environmental Professional, Environmental Career Organization, Alberta
- 2009 Graduate Research Assistant, Department of Renewable Resources, University of Alberta
- 2020 Member Technical Review Committee for Fox Creek Wetlands – NAIT, AB
- 2009-2018 Environmental Professional – Environmental Career Organization (ECO), Canada

VOLUNTEER – PROFESSIONAL OR SOCIAL SERVICE

- 2015-Present Guest Editor or referee for impactful publishers, for example, Wiley, Wiley-Blackwell, Elsevier, MDPI, IOP Publishing, Springer Science + Business Media.
- 2020-2021 Doorstep Food delivery (COVID-19; Pak-Canada Association)
- 2016 Social Worker (WINS; Women in Need Society)
- 2015 Reception & Ticket Scanning (Imperial Cup Spruce Meadows)
- 2015 Registration Desk Services (Imperial Oil; Live Art Auction for Charity)

PROFESSIONAL TRAINING & CERTIFICATIONS

- 2010-2023 [University of Calgary, AB](#)
- Harassment and Violence Awareness Training
 - Time Management, and Cyber Security Awareness
 - University Teaching Certificate, and Instructional Skills Workshop
 - Occupational Health & Safety

- 2019-2020 University of Saskatchewan
- Cyber Security Awareness Course
 - Health & Safety Course
 - Time Management Course – Mitacs EDGE
 - Business Writing for Today's Professional
 - Developing Research Profile
 - Leading Change & Negotiating for Success
- 2009 University of Alberta
- Green Defensive Driving, and drug tests
- 2015-2016 Imperial Oil Resources, Calgary, AB
- Cyber Security Awareness (CSA)
 - Records Management & Protection
 - Frequent Driver Safety – Mentally Active Driving & Fleet Safety
 - Upstream Operations Integrity Management System (OIMS)
 - Workforce Security Awareness
 - Experimental Gate Process Following & Project Files Managing
 - Imperial Oil Field Operations Working With
 - Materials & Equipment - QA & QC
 - Research Projects - Decommissioning
 - Risk Screening & Management of Change for Experiments
 - Job Safety Analysis (JSA) & Pre-Job Planning
 - 1) Hazard Severity & MSDS, 2) Hazardous Materials Ordering, Receiving & Disposing, 3) WHMIS, and 4) Gas Alarm Responding To
 - Protective Clothing & Equipment + Eye Wash Units
 - Working or Travelling Alone
 - Technical Level Risk Assessment for Risk Screeners
 - Project Leader - One-Time Training
 - Data Integrity Assurance Management System (DIAMS)
 - H₂S and Hydrocarbon Gases-Handling, Storing, and Disposing of (S-2000)
 - Risk Assessment and Management for Decision Makers
 - Safety Management System (SMS)
 - Forest and Rangeland Management – Alberta Institute of Agrologists
 - Wetland Management – Alberta Institute of Agrologists
- 2005-2009 Shell Canada Products Ltd.
- Food Sanitation & Hygiene – Section 32, Calgary Health Region, AB
 - Emergency Response Scenarios
 - Health, Safety, Security & Environment

JOURNAL PUBLICATIONS

- 2024 Maes et al. (including **Munir TM**). 2024. Environmental drivers of increased ecosystem respiration in a warming tundra. *Nature* (final/technical revision submitted)
- Munir TM**, Westbrook CJ. 2024. Climate change impacts on carbon and nutrient biogeochemistry of Helen and Sibbald lakes in the Rocky Mountains (under preparation)
- 2022 **Munir TM**, Westbrook CJ. 2022. Comparison of Soil Nutrient Supply Patterns among Full and Drained Beaver Ponds and Undisturbed Peat in a Rocky Mountain Fen. *Wetlands*, 42: 1-13.
- Ahmad I, Malik SA, Saeed S, Rehman A, **Munir TM**. 2022. Phytoremediating a Wastewater-Irrigated Soil Contaminated with Toxic Metals: Comparing the Efficacies of Different Crops. *Soil Systems*, 6:77.
- 2021 **Munir TM**, Westbrook CJ. 2021. Thermal characteristics of a beaver dam analogues equipped spring-fed creek in the Canadian Rockies. *Water*, 13: 990.
- Kumar S, Meena RS, Singh RK, **Munir TM**, Datta R, Danish S, Yadav GS, Kumar S. 2021. Soil microbial and nutrient dynamics under different sowing environments of Indian mustard (*Brassica juncea* L.) in a rice-based cropping system. *Scientific Reports*, 11:5289.
- Bengtsson F, Rydin H, Baltzer JL, Bragazza L, Bu ZJ, Caporn SJ, Dorrepaal E, Flatberg KI, Galanina O, Gałka M, Ganeva A, Goia I, Goncharova N, Hájek M, Haraguchi A, Harris L I, Humphreys E, Jiroušek M, Kajukało K, Karofeld E, Koronatova NG, Kosykh NP, Laine AM, Lamentowicz M, Lapshina E, Limpens J, Linkosalmi M, Ma JZ, Mauritz M, Mitchell EA, **Munir TM**, Natali S M, Natcheva R, Payne RJ, Philippov DA, Rice SK, Robinson S, Robroek BJ, Rochefort L, Singer D, Stenøien HK, Tuittila ES, Vellak K, Waddington JM, and Granath G. 2021. Environmental drivers of Sphagnum growth in mires across the Holarctic region. *Journal of Ecology*, 109: 417-431.
- Ahmad I, Malik SA, Saeed S, Rehman A, **Munir TM**. 2022. Phytoextraction of Heavy Metals by Various Vegetable Crops Cultivated on Different Textured Soils Irrigated with City Wastewater. *Soil Systems*, 5:35.
- 2020 **Munir TM**, Westbrook CJ. 2020. Beaver dam analogue configurations influence stream and riparian water table dynamics of a degraded spring-fed creek in the Canadian Rockies. *River Research and Applications*, 37:330-342.
- Ahmed N, Habib U, Younis U, Irshad I, Danish S, Rahi AA, **Munir TM**. 2020. Growth, chlorophyll content and productivity responses of maize to magnesium sulphate application in calcareous soil. *Open Agriculture*, 5:792-800.
- Idrees M, Anjum MA, Mirza JI, Ahmad I, **Munir TM**. 2020. Potassium humate amendment regulates soil NPK supply and growth parameters of potato (*Solanum tuberosum* L.) in calcareous soil. *Pakistan Journal of Botany*, 52(5): 1647-1653.

Zafar-ul-Hye M, Wasim MM, **Munir TM**, Aon M, Shaaban M, Abbas M, Hussain M, Ahmad M. 2020. Co-application of sugarcane bagasse biochar, farmyard manure and mineral nitrogen improved growth indices of corn grown in alkaline calcareous soil. *Journal of Plant Nutrition*, 43(9): 1293-1305.

Younis U, Danish S, Malik SA, Ahmad N, Khalid R, **Munir TM**. 2020. Role of cotton sticks biochar in immobilization of Nickel under induced toxicity condition and growth indices of *Trigonella corniculata* L. *Environmental Science and Pollution Research*, 27:1752-1761.

2019 Danish S, Kiran S, Ahmad N, Ali MA, Tahir FA, Rasheed MK, Shahzad K, Li X, Wang D, Mubeen M, Abbas S, **Munir TM**, Hashmi MZ, Adnan M, Saeed B, Saud S, Khan MN, Ullah A, Nasim W. 2019. Alleviation of chromium toxicity in maize by iron toxicity and chromium tolerant ACC deaminase producing plant growth promoting rhizobacteria. *Ecotoxicology and Environmental Safety*, 185: 109706.

Hashmi S, Younis U, Danish S, **Munir TM**. 2019. Pongamia pinnata L. leaves biochar increased growth and pigments syntheses in *Pisum sativum* L. exposed to nutritional stress. *Agriculture*, 9(7): 153.

Zafar-ul-Hye M, Danish S, Abbas M, Ahmad M, **Munir TM**. 2019. ACC Deaminase-producing PGPR *Bacillus amyloliquefaciens* and *Agrobacterium fabrum* along with biochar improve wheat productivity under drought Stress. *Agronomy*, 9(7): 343.

Strack M, **Munir TM**, Khadka B. 2019. Shrub abundance contributes to shifts in dissolved organic carbon concentration and chemistry in a continental bog exposed to drainage and warming. *Ecohydrology*, 12(5): e 2100.

Bechtold M, De Lannoy GJM, Koster RD, Reichle RH, Mahanama SP, Bleuten W, Bourgault MA, Brümmer C, Burdun I, Desai AR, Devito K, Grünwald T, Grygoruk M, Humphreys ER, Klatt J, Kurbatova J, Lohila A, **Munir TM**, Nilsson MB, Price JS, Röhl M, Schneider A, Tiemeyer B. 2019. PEAT-CLSM: A specific treatment of peatland hydrology in the NASA catchment land surface model. *Journal of Advances in Modeling Earth Systems*, 11(7): 2130-2162.

2018 Ahmad I, Bibi F, Ullah H, **Munir TM**. 2018. Mango fruit yield and critical quality parameters respond to foliar and soil applications of zinc and boron. *Plants*, 7(4): 97.

Granath G, Rydin H, Baltzer JL, Bengtsson F, Boncek N, Bragazza L, Bu Z-J, Caporn SJM, Dorrepaal E, Galanina O, Gafka M, Ganeva A, Gillikin DP, Goia I, Goncharova N, Hájek M, Haraguchi A, Harris LI, Humphreys E, Jiroušek M, Kajukalo K, Karofeld E, Koronátova NG, Kosykh NP, Lamentowicz M, Lapshina E, Limpens J, Linkosalmi M, Ma J-Z, Maurit M, **Munir TM**, Natali SM, Natcheva R, Noskova M, Payne RJ, Pilkington K, Robinson S, Robroek BJM, Rochefort L, Singer D, Stenøien HK, Tuittila E-S, Vellak K, Verheyden A, Waddington JM, Rice SK. 2018. Environmental and taxonomic controls of carbon and oxygen stable isotope composition in sphagnum across broad climatic and geographic ranges. *Biogeosciences*, 15: 5189-5202.

- 2017 **Munir TM**, Khadka B, Xu B, Strack M. 2017. Mineral nitrogen and phosphorus pools affected by water table lowering and warming in a boreal forested peatland. *Ecohydrology*, 10(8): 1-15. e1893.
- Munir TM**, Khadka B, Xu B, Strack M. 2017. Partitioning forest-floor respiration into source-based emissions in a boreal forested bog: responses to experimental drought. *Forests*, 8: 1-17.
- 2016 Khadka B, **Munir TM**, Strack M. 2016. Dissolved organic carbon in a constructed and natural fens in the Athabasca oil sands region, Alberta, Canada. *Science of the Total Environment*, 557 – 558: 579-589.
- Munir TM**, Khadka B, Jamro GM, Ullah H. 2016. Black spruce productivity and foliar C:N ratio responses to peatland water-table level: A climate change standpoint. *Science International*, 28:4043-4048.
- 2015 Khadka B, **Munir TM**, Strack M. 2015. Effect of environmental factors on production and bioavailability of dissolved organic carbon from substrates available in a constructed and reference fens in the Athabasca oil sands development region. *Ecological Engineering*, 84: 596-606.
- Munir TM**, Perkins M, Kaing E and Strack M. 2015. Carbon dioxide flux and net primary production of a boreal treed bog: Responses to warming and water-table-lowering simulations of climate change. *Biogeosciences*, 12(4): 1-21.
- 2014 **Munir TM**, Strack M. 2014. Methane Flux Influenced by Experimental Water Table Drawdown and Soil Warming in a Dry Boreal Continental Bog. *Ecosystems*, 17(7): 1271-1285.
- Munir TM**, Xu B, Perkins M, Strack M. 2014. Responses of carbon dioxide flux and plant biomass to water table drawdown in a treed peatland in northern Alberta: a climate change perspective. *Biogeosciences*, 11: 807-820.
- 2013 **Munir TM**, Xu B, Perkins M, Strack M. 2013. Responses of carbon dioxide flux and plant biomass to drought in a treed peatland in northern Alberta: a climate change perspective. *Biogeosciences Discussions*, 10, 14999-15031.

BOOK CHAPTER, TECHNICAL REPORT OR SPECIAL ISSUE ARTICLE

Ingram R., **Munir, TM.**, and Xu B. 2021. Regional wetland status and sensitivity to disturbances near Fox Creek, Alberta; Geological Survey of Canada, Open File 8812, 66 p. <https://doi.org/10.4095/328584>

Munir TM, Khadka B, Xu B, Strack M. 2018. Partitioning Forest-Floor Respiration into Source-Based Emissions in a Boreal Forested Bog: Responses to Experimental Drought. In R. Jandl & M. Rodeghiero (Eds.), *Forest Soil Respiration under Climate Changing*: 146-162. Basel, Switzerland, MDPI.

Ahmad I, Malik SA, Saeed S, Rehman A. and **Munir TM**. 2022. Phytoremediating a Wastewater-Irrigated Soil Contaminated with Toxic Metals: Comparing the Efficacies of Different Crops. In A. Lavini & M. H. Sellami (Eds.), *Advancements in Soil and Sustainable Agriculture*: 67-83. Basel, Switzerland, MDPI.

Zafar-ul-Hye M, Danish S, Abbas M, Ahmad M, **Munir TM**. 2019. ACC Deaminase-producing PGPR *Bacillus amyloliquefaciens* and *Agrobacterium fabrum* along with biochar improve wheat productivity under drought Stress. In JM Rosa (Ed.), *Biochar as Soil Amendment*: 123-138. Basel, Switzerland, MDPI.

Ahmad I, Malik SA, Saeed S, Rehman A. and **Munir TM**. 2021. Phytoextraction of Heavy Metals by Various Vegetable Crops Cultivated on Different Textured Soils Irrigated with City Wastewater. In M. Spagnuolo, P. Adamo & G. Garau (Eds.), *Assessment and Remediation of Soils Contaminated by Potentially Toxic Elements*: 45-57. Basel, Switzerland, MDPI.

CONFERENCE PRESENTATIONS (with or without Publications in Proceedings)

2010 – 2024 30+ oral presentations (not provided here to maintain brevity; available upon request)

REFERENCES

1. Dr. Maria Strack, Professor and Canada Research Chair, Geography and Environmental Management, University of Waterloo, ON
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2. Dr. Bin Xu, NSERC Industrial Research Chair, Boreal Research Institute, NAIT, Peace River, AB
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3. Dr. Cherie Westbrook, Professor of Ecohydrology and Director – NSERC CREATE for Water Security, Centre for Hydrology, University of Saskatchewan
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