Taufique H. Mahmood

10/01/2025, https://und.edu/directory/taufique.mahmood

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1. Summary of education

- Ph.D. in Geological Science (Hydrology), Arizona State University, Tempe, AZ, 2012. (**Advisor**: Professor Enrique Vivoni).
- Ph.D. in Hydrology (Transferred to ASU, **Advisor**: Professor Enrique Vivoni), New Mexico Institute of Mining and Technology (2006-2009).
- M.S. in Engineering Science (RS and GIS), The University of Mississippi, 2003-2006.
- M.Sc. in Geology, University of Dhaka, Bangladesh, 2001-2003.
- B.Sc. in Geology, University of Dhaka, Bangladesh, 1996-2000.

2. Professional experience

- Founding Director, Center for Water Research, University of North Dakota (02/2023-Present).
- Graduate Director, Harold Hamm School of Geology and Geological Engineering, University of North Dakota, University of North Dakota (08/2022-Present)
- Associate Professor, Harold Hamm School of Geology and Geological Engineering, University of North Dakota, University of North Dakota (08/2021-Present)
- Assistant Professor, Harold Hamm School of Geology and Geological Engineering, University of North Dakota, (08/2015 – 08/2021)
- Post-doctoral Fellow, University of Saskatchewan, (06/2012 – 08/2015).
- RS and GIS analyst, Center for Environment and Geographic Information System, Bangladesh, (03/2003 - 07/2003).

3. Grants and Awards

Awarded Grants

Founders Day UND Foundation/McDermott Faculty Award (2024) for Excellence in Research and Creative Activity.

Dean's Outstanding Faculty Award (2022) for contribution in water resources research.

NSF CAREER award in Hydrologic Science and Climate Change (**PI**, $442,000): EAR-Climate: Impacts of Recent Wetting on Cold Region Hydrologic Change in the Northern Great Plains (**2022-2027**). (https://blogs.und.edu/cem/2022/03/und-awarded-nsf-funds-for-flood-research-and-native-american-outreach/).

North Dakota Water Resources Research Institute ($13,000, single PI): Groundwater Head Response to Seasonal Snowmelt, Rainfall Recharge, and Climate Variability in a Cold Region Unconfined Aquifer

Bureau of Land Management (single PI $499,000): Impacts of prescribed fire on water supply and water quality in the Indian Creek Watershed (2024-2027).

Bureau of Reclamation (single PI $437,000): Water forecasting in the Cannonball River Watershed (2024-2026).

USDA-NRCS-ND (Co-PI $489,000): Impacts of tillage practices on runoff and wetland water quality (2024-2027).

USDA-NRCS-ND award (single PI $314,000): Grassland dynamics to climatic and land use variability in Three Affiliated Tribes area (2023-2026).

USDA-NRCS-ND award (single PI $390,000): Impacts of Tillage Practices on Soil Health, Water Quality, Snow Accumulation and Runoff in the Turtle Mountain Reservation (2023-2026).

USGS – NC CASC award (Co-PI, $360,000): Impact of climate-driven water-level fluctuations on recreational fisheries in the Northern Glaciated Plains! (2022-2025).

North Dakota Department of Water Resources award (single **PI**, $165,000): Science-based Groundwater Appropriation Approach for Oakes Aquifer: Insights from the Cold Region Hydrologic Model (2022-2024).

ND EPSCoR GSRA award (PI, $90,000): Wetland Dynamics in a Terminal Lake Basin Using Remotely Sensed Imagery: Implications to Recent Hydroclimatic Evolution (2017-2019).

ND EPSCoR (PI, $28,000): Traditional Ecologic Theory to decipher past Hydrologic Change. (2019-2020).

NSF MRI award (Co-PI, $106,000): Acquisition of an Acoustic Doppler Current Profiler (ADCP) System for Profiling Open Channels (2018-2021).

NDWRRI (PI, $1800): Impacts of Recent Climatic Wetting on Distributed Snow and Streamflow Responses in a Terminal Lake Basin (2017).

NDWRRI (PI, $1000): Hydrological Changes Due to Recent Wetting in a Cold Region Riverine Headwaters Environment. (2020).

UND CEM (Facilitator, $90,000): Acquisition of an ICP-OES for the Environmental and Analytical Laboratory, University of North Dakota.

UND CEM (PI, $3,000): Online course development of Groundwater Monitoring and Remediation (GEOE 419) ($3000).

ND EPSCoR (PI, $84,000): Impacts of climate change on cold region hydrologic responses and nutrient export. Award amount: $83,700. ND EPSCoR start-up award (2015-2018).

Pending Grants

NSF EPSCoR (Collaborative Research: E-RISE) (PI, $1.41 Million): A Social-Ecological-Environmental Network for Statewide Engagement in Per- and Polyfluoroalkyl Substances Research (SENSE PFAS). (My portion is $630,000).

USDA-NIFA (Single-PI, $750,000): Influence of Land Management Practice on Soil health, Water Supply and Quality.

USDA-NIFA (**Seed Grant, Co-PI, $300,000**): Purification of Nutrient-rich Water from the Agricultural Watershed.

Bureau of Reclamation (single PI $437,000): Water forecasting in the Wind River Basin, WY, using field-based observation and process-based modeling.

Bureau of Reclamation (single PI $500,000): Recharge estimation and its sensitivity to climatic fluctuations in the Shell Valley Aquifer, ND.

NSF CAIG (**PI, 1,1 Million**): Streamflow-contributing area relationship to a novel wet climatic continuum in the Northern Great Plain.

4. Graduate Student Grant and Award

NSF Graduate Research Fellowship Program (2023 NSF GRFP award) for Michaela Neal (MS in Geological Engineering): Effects of Recent Deluge and Drought Climates on Water Supply and Security in a Missouri River Headwater Basin (2023-2028).
NSF Graduate Research Fellowship Program (2025 NSF GRFP Honorable Mention) for Elena Rodriguez (MS in Geological Engineering): Impact of Climate Variability on Cold Region Hydrologic Responses in the Cannonball River Watershed.

Outstanding Student Presentation Award (AGU 2022 Fall Meeting): Archambault, AL and **Mahmood, TH**. 2022. Remotely Sensed Wetland Storage Changes to Climatic Variability and their Implication on Streamflow Generation. AGU Fall Meeting, Chicago, IL. (Alexis Archambault is a Native American PhD student from the Standing Rock Reservation).

5. Publications

Published while at UND

1. Ahmmed, M.H., **Mahmood, T.H.,** Archambault, A.L. and Wainty, S., 2025. Relationships between surface water area and hydrologic fluxes in a cold region terminal lake basin. ***Journal of Hydrology: Regional Studies***, 62, p.102766. https://doi.org/10.1016/j.ejrh.2025.102766
2. Whitten, J., **Mahmood, T.H**. and Jeannotte, T.L., 2025. Pesticide presence and distribution in a cold region agricultural basin. ***Science of The Total Environment***, 1000, p.180477. https://doi.org/10.1016/j.scitotenv.2025.180477

3. Wainty, S., **Mahmood, T.H.**, Spence, C., Hoy, D.F., 2025. Cold region hydrologic changes to a wet climatic regime in the Northern Great Plain. ***Journal of Hydrology***, p.134246. https://doi.org/10.1016/j.jhydrol.2025.134246

4. Paul, S.S., **Mahmood, T.H.**, 2025. Long-term Landsat time series reveals mangrove vegetation fluctuations and drivers in the Sundarbans. ***Ecological Indicators.*** 181, 114401. https://doi.org/10.1016/j.ecolind.2025.114401

5. Bakelli, O., Said, S.H., Belkendil, A., **Mahmood, T.H.,** Dinar, H., Zeddouri, A. 2025. Multi-Seasonal and Multi-Year Groundwater Quality Assessment in an Arid Alluvial Aquifer System. ***Environmental Earth Sciences.*** **(Accepted, In Press).**

6. Mahmoud, H., **Mahmood, T.H.**, Korom, S. 2025. Groundwater Recharge Dynamics to Recent Wetting in a Cold Region Aquifer. ***Journal of Hydrology: Regional Studies,*** 62, 102902. https://doi.org/10.1016/j.ejrh.2025.102902

7. Osman, M., Kansara, P., and **Mahmood, T. H.** 2025. Integrated Hydroclimate Modeling of Non-Stationary Water Balance, Snow Dynamics, and Streamflow Regimes in the Devils Lake Basin Region. ***Meteorology***, *4*(4), 27. https://doi.org/10.3390/meteorology4040027

8. **Mahmood, T.H.,** Mahmoud, H., Korom, S.S. and Niewiaroski, J. (2024). Science-based Groundwater Appropriation Approach for Oakes Aquifer: Insights from the Cold Region Hydrologic Model. Final project report submitted to the ND Department of Water Resources.

9. Archambault, A.L. and **Mahmood, T.H.** 2024. A Remote Sensing Approach to Characterize Cold Region Watershed Storage and its Influence on Streamflow Generation. ***Wetlands*** 44, 95 https://doi.org/10.1007/s13157-024-01850-3.

10. Atashi, V., Lim, Y.H. and **Mahmood, T.H.** (2024). Cold Region River Flood Mapping and Scour Potential Prediction: Insights from Hydraulic Model using Advanced Autonomous Surface Vehicles. ***Environmental Processes***1(3), pp.1-25. .

11. Maldonado., M., **Mahmood, T.H.,** Coulter, D., Coulter, A., Chipps, S., Siller, M., Neal, M.L., Saha, A., and Kaemingk, M.A. 2024. Water-level changes impact angler effort in a large lake: implications for climate change. ***Fisheries Research*** 279, p107156.

12. Archambault, A.L., **Mahmood, T.H.**, Todhunter, P.E. and Korom, S.F., 2023. Remotely sensed surface water variations during drought and deluge conditions in a Northern Great Plains terminal lake basin. ***Journal of Hydrology: Regional Studies***, 47, p.101392.

13. Atashi, V., **Mahmood, T.H.** and Rasouli, K., 2023. Impacts of climatic variability on surface water area observed by remotely sensed imageries in the Red River Basin. ***Geocarto International***, 3*8*(1), p.2209541.

14. Putkonen, J. and **Mahmood, T.H.,** 2023. Twenty-Four Buried Ice Masses Remotely Mapped in Transantarctic Mountains, Antarctica. ***Geocarto International***, *38*(1), p.2158950.

15. Bakelli, O., Kegang, L., Nesheim, T., **Mahmood, T.H.,** and Khetib, Y., 2023, June. Spatial Data Analysis of Water Production from Unconventional Reservoirs, Case Study from the Williston Basin, North Dakota. In ARMA US Rock Mechanics/Geomechanics Symposium (pp. ARMA-2023).

16. Shoaib, S.A., **Mahmood, T.H.** and Sultana, N., 2022. The spectrum of uncertainty in flood damage assessment. ***Journal of Water and Climate Change***, *13*(6), pp.2337-2352.

17. Atashi, V., Rosati, M., Lim, Y.H. and **Mahmood, T.H. 2022.** Characteristics of Seasonality on 3D Velocity and Bathymetry Profiles in Red River of the North. In ***World Environmental and Water Resources Congress*** (pp. 252-263).
18. Bakelli, O., Hadj-Said, S., **Mahmood, T.H**., Zeddouri, A., Hamdi-Aissa, B. and Kharroubi, M., 2022, November. Hydrogeochemistry and Spatial–Temporal Groundwater Quality Assessment of the Alluvial Aquifer in the Guerrara Region (Algeria). In Euro-Mediterranean Conference for Environmental Integration (pp. 423-426). Cham: Springer Nature Switzerland.
19. **Mahmood, T.H.,** Putkonen, J. and Sobbe, A., 2021. Spatially Variable Precipitation and Its Influence on Water Balance in a Headwater Alpine Basin, Nepal. ***Water***, 13(3), p.254. https://doi.org/10.3390/w13030254
20. Shoaib, S.A., Khan, M.Z.K., Sultana, N. and **Mahmood, T.H.**, 2021. Quantifying Uncertainty in Food Security Modeling. ***Agriculture,*** *11*(1), p.33. https://www.mdpi.com/2077-0472/11/1/33
21. Todhunter, P., Jackson, C., **Mahmood, T.H.,** 2020. Streamflow Partitioning using the Budyko Hypothesis in a Northern Glaciated Watershed under Drought to Deluge Conditions. ***Journal of Hydrology.*** DOI:https://doi.org/10.1016/j.jhydrol.2020.125569
22. Rasouli, K., Scharold, K., **Mahmood, T.H**., Glenn, N.F. and Marks, D., 2020. Linking hydrological variations at local scales to regional climate teleconnection patterns. ***Hydrological Processes***. https://doi.org/10.1002/hyp.13982
23. Van Hoy, D.F., **Mahmood, T.H**., Todhunter, P.E. and Jeannotte, T.L., 2020. Mechanisms of Cold Region Hydrologic Change to Recent Wetting in a Northern Glaciated Landscape ***Water Resources Research,*** *56*(7), p.e2019WR026932.
24. Jeannotte, T.L., **Mahmood, T.H**., Vandeberg, G.S., Matheney, R.K., Hou, X. and Van Hoy, D.F., 2020. Impacts of Cold Region Hydroclimatic Variability on Phosphorus Exports: Insights from Concentration-Discharge Relationship. ***Journal of Hydrology***, 591, p.125312.
25. Rasouli, K., Nasri, B.R., Soleymani, A., **Mahmood, T.H.,** Hori, M. and Haghighi, A.T., 2020. Forecast of streamflows to the Arctic Ocean by a Bayesian neural network model with snowcover and climate inputs. ***Hydrology Research.*** doi.org/10.2166/nh.2020.164.
26. **Mahmood, T.H.,** Hasan, K. and Akhter, S.H., 2019. Lithologic mapping of a forested montane terrain from Landsat 5 TM image. ***Geocarto International***, *34*(7), pp.750-768.
27. **Mahmood, T.H**., Pomeroy, J.W., Wheater, H.S., & Baulch, H. 2017. Hydrological responses to climatic variability in a cold agricultural region. ***Hydrological Processes***, 31(4), 854-870.
28. **Mahmood**, T.H. & Vivoni, E. R. (2014). Forest ecohydrological response to bimodal precipitation during contrasting winter to summer transitions. ***Ecohydrology,*** 7(3), 998-1013.
29. **Mahmood**, T. H. & Vivoni, E. R. (2011a). A climate-induced threshold in hydrologic response in a semiarid ponderosa pine hillslope. ***Water Resources Research,*** 47(9), 1028-1038.
30. **Mahmood**, T.H. & Vivoni, E.R. (2011b). Breakdown of hydrologic patterns upon model coarsening at hillslope scales and implications for experimental design, ***Journal of Hydrology***, 411 (3-4), 309-321, doi: 10.1016/j.jhydrol.2011.10.011.

31. **Mahmood**, T.H, & Vivoni, E.R. (2008). Evaluation of distributed soil moisture simulations through field observations during the North American monsoon in Redondo Creek, New Mexico**.** ***Ecohydrology*****.** 1(3): 271-287.
32. Vivoni, E.R., Rinehart, A.J., Méndez-Barroso, L.A., Aragón, C.A., Bisht, G., Cardenas, M.B., Engle, E., Forman, B.A., Frisbee, M.D., Gutiérrez-Jurado, H.A. **Mahmood, T.H.,** and Hong, S.H., 2008. Vegetation controls on soil moisture distribution in the Valles Caldera, New Mexico, during the North American monsoon. ***Ecohydrology,*** 1(3), pp.225-238.
33. **Mahmood**, T.H. & Easson, G.L. (2006). Comparing ASTER and Landsat 7 ETM+ at spectral level for change detection studies, ASPRS annual conference 2006, Reno, Nevada.

Under Review & Submission

1. **Mahmood, T. H.,** Pomeroy, J. W., Wheater, H. S., Elliott, J. A., Baulch, H., and Lindenschmidt, K. 2025. Nutrient model development at multiple scales from streamflow-nutrient concentration relationship. (*In submission in* **Hydrologic Science Journal after reject and resubmit**).
2. Wainty S. and **Mahmood T.H.** 2025. Changes in the streamflow generation mechanism during a deluge period (experiencing cooling and warming). (**Under Review in Journal of Hydrology**).
3. Jeannotte, T. and **Mahmood,** T.H., 2025. Impacts of Climatic Variability to Distributed Snow Observations in a Cold Region Agricultural Basin. (**Under Review Journal of Hydrology**).
4. Neal, M.L., **Mahmood, T.H.**, Kaemingk, M.A., Coulter, A.A., Coulter, D.P., Chipps, S.R., Maldonado, M. and Siller, M., 2023. Mechanism of Cold Region Lake Responses to Climatic Wetting: Insights from a Physically-Based Hydrologic Model. (**Under Review in Journal of Hydrology, Regional Studies**).
5. Ngoyi, K., **Mahmood, T.H**., Ahmmed, Md., Mann, M. 2025. Concentration-streamflow relationship in the Red River to North near Grand forks, North Dakota. Under review in ***River***. (**Under Review in Hydrology Research**).
6. Wainty, S., **Mahmood, T.H.** 2025. Use of machine learning on lake level prediction: A case study on Devils Lake. In submission to ***Water Resources Research.***
7. Mahmoud, H., **Mahmood, T.H.**, Korom, S. 2025. Influence of climatic and anthropogenic drivers on the sustainability of cold-region aquifers. In submission to ***Environmental Science and Technology***.
8. Mahmoud, H., Antwi, F., **Mahmood, T.H** 2025. Impacts Of Snowmelt Recharge on Groundwater Table Fluctuations in A Cold Region Unconfined Aquifer. Major revisions in ***Earth***.
9. Ahmmed, M.H., **Mahmood, T.H.,** 2025. Contributing area reveals spatial patterns of nutrient exports. In submission to ***Science of The Total Environment.***

Past Graduate students

- **Diane Van Hoy** (MS in Geological Engineering, graduated in summer 2018): **Monitoring Team Scientist**, New Mexico Environmental Department, Santa Fe, NM.
- **Dr. Tyson Jeannotte** (MS in Geological Engineering (2018) and PhD in Environmental Engineering (2024)) (**Turtle Band of Chippewa**): **Research Engineer**, Center for Water Research, University of North Dakota.
- **Dr. Alexis Archambault** (**MS** in Geological Engineering, 2019, **PhD** in Geological Engineering, 2024). (**Standing Rock Tribe, Hunkpapa Lakota**): **Hydrologist,** Brave Heart

Society.

- **Dr. Jeffrey Whitten (PhD in** Environmental Engineering**),** Assistant Director, 22 Broadcast Media, California.
- **Dr. Vida Atashi (PhD in** Civil Engineering, **2023) (co-advised with** Dr. Howe Lim), Teaching assistant professor, University of North Dakota.
- **Michaela Neal (MS** in Geological Engineering, 2024, Staff Engineer, West Consultant, CA).
- **Julian Niewiaroski (**MS in Geology, 2023, Well Site Geologist, Selman Geological Services, PA**).**
- **Miranda Shanks** (MS in Geology, co-advised with Dr. Putkonen, 2021).
- **Ngoyi Kabamba** (MS in Energy System Science, 2019-2021, co-advised with Dr. Mann)
- **Fred Antwi** (MS in Geological Engineering, 2025, Engineer, Nevada Gold Mines)
- **Ayon Saha (**(MS in Geology, 2025) (PhD student, University of Colorado, Boulder).

Current Graduate students

- **Stevie Holmes** (PhD in Environmental Engineering, started spring, 2019)
- **Sharhad Wainty** (PhD in Geological Engineering, 2022-present).
- **Hesham Mahmoud** (PhD in Geological Engineering, 2022-present).
- **MD Helal Ahmmad (**PhD in Geological Engineering, 2023-present).
- **Elena Rodriguez** (MS in Geological Engineering, 2024-present)
- **O'Dane Mckoy** (PhD in Geology, 2024-present)
- **Candace Proksch** (MS in Geological Engineering, 2025-present)
- **John Oberholzer Dent** (PhD in Geological Engineering, 2025-present).
- **Sydney Magann (**MS in Geological Engineering, 2025-present).

6. Professional presentations

Presentations and abstracts since Aug 2015

1. **Mahmood,** T. H., Pomeroy, J. W., Wheater, H. S., Elliott, J. A., Baulch, H., and Lindenschmidt, K. 2015. Nutrient Models Developments Using Runoff-Nutrient Relationships in an Agricultural Prairie Basin, Manitoba, American Geophysical Union 2015 Fall Meeting, San Francisco, CA. (**Poster**)
2. **Mahmood**, T.H. and Van Hoy, D., 2016, Impacts of Recent Wetting on Snow Processes and Runoff Generation in a Terminal Lake Basin, Devils Lake, North Dakota. In AGU Fall Meeting Abstracts, San Francisco, CA. (Poster)
3. Van Hoy, D., **Mahmood, T.H.,** Jeannotte T., Todhunter, P. 2017. Impacts of Recent Climatic Wetting on Distributed Snow and Streamflow Responses in a Terminal Lake Basin. In AGU Fall Meeting Abstracts, New Orleans, LA. (Poster)
4. Jeannotte, T., **Mahmood, T.H.,** Matheney, R., Hou, X. 2017. Phosphorus Export Model Development in a Terminal Lake Basin using Concentration-Streamflow Relationship. In AGU Fall Meeting Abstracts, New Orleans, LA. (Poster)
5. Van Hoy, D., **Mahmood, T.H**., Jeannotte T. 2017. Hydrological Responses to Climate Change in the Mauvais Coulee Basin. ND EPSCoR 2017 Conference, Fargo, ND. (Poster).
6. Van Hoy, D., **Mahmood, T.H.,** Jeannotte T., Todhunter, P. 2018. Impacts of Recent Climatic Variability on Cold Region Hydrologic Responses in a Terminal Lake Basin. ND EPSCoR

2018 Conference, Grand Forks, ND.

7. Jeannotte, T., **Mahmood, T.H.,** Matheney, R., Hou, X., Van Hoy, D. 2018. Phosphorus Export Model Development in a Headwater Basin to Devils Lake. ND EPSCoR 2018 Conference, Grand Forks, ND.
8. Archambault A., **Mahmood T.H.** 2018. Wetland Dynamics in a Terminal Lake Basin Using Remotely Sensing Imagery. EPSCoR 2018 Conference, Grand Forks, ND.
9. Archambault A., **Mahmood T.H.** 2018. Wetland Dynamics in a Terminal Lake Basin Using Remotely Sensed Imagery: Implication to Recent Hydroclimatic Evolution. In AGU Fall Meeting Abstracts, Washington DC, DC. **(Selected for oral presentation).**
10. Jeannotte, T., **Mahmood, T.H.,** 2018. Impacts of Land Management Practices on Phosphorous Concentration-Stream flow Relationship. In AGU Fall Meeting Abstracts, Washington DC, DC. (Poster)
11. Archambault A., **Mahmood T.H.** 2019. Wetland Hysteresis Under Various Climatic Conditions in a Terminal Lake Basin. EPSCoR 2019 Conference, Fargo, ND. (Poster).
12. Archambault, A.L., **Mahmood, T.H.,** 2019, Remotely Sensed Surface Water Dynamics in a Terminal Lake Basin: Implications to Recent Hydroclimatic Evolution. In AGU Fall Meeting Abstracts, San Francisco, CA (Poster).
13. Holmes S., **Mahmood, T.H.,** Mann, M., 2020. Cold Region Hydrologic Variability Due to Recent Wetting in the Northern Great Plains. In AGU Fall Meeting Abstracts, San Francisco, CA.
14. Archambault AL., **Mahmood TH. (2021):** Impacts of Climatic Variability on Water Storage Change Using Remotely Sensed Imagery. ND EPSCoR 2021 State Conference (Poster Presentation).
15. Archambault, A.L. and **Mahmood, T.H.,** 2022, December. Remotely Sensed Wetland Storage Changes to Climatic Variability and their Implication on Streamflow Generation. In AGU Fall Meeting Abstracts (Vol. 2022, pp. H36D-02). (**Selected for oral presentation and received Outstanding Student Presentation Award**)
16. Jeannotte, T. and **Mahmood, T.H**., 2022, December. Impacts of Climatic Variability to Distributed Snow Observations in a Cold Region Agricultural Basin. In AGU Fall Meeting Abstracts (Vol. 2022, pp. H12L-0837).
17. Neal, M.L., **Mahmood, T.H.,** Kaemingk, M.A., Coulter, A.A., Coulter, D.P., Chipps, S.R., Maldonado, M. and Siller, M., 2023. Mechanism of Cold Region Lake Responses to Climatic Wetting: Insights from a Physically-Based Hydrologic Model. AGU23.
18. Wainty, S. and **Mahmood, T.H.,** 2023. Cold Region Plains Hydrology to Climatic Wetting under a Sequence of Cooling and Warming Conditions. AGU23.
19. Jeannotte, T. and **Mahmood, T.H.,** 2023. Cold Region Hydrologic Change to Recent Climatic Shifts: Insights from Field-Based Observations and Physically-Based Hydrologic Model. *AGU23*.
20. Hall, A. and **Mahmood, T**., 2023. Hydrology Outreach Activities to Tribal Youth: Insights from Cold Region Hydrology Workshop. In Geological Society of America Abstracts (Vol. 55, p. 393784).

21. **Mahmood, T.H**., Lawford, P., Pomeroy, J.W., Jeannotte, T. and Bhuiyan, K.A., 2023. Evaluation of Nutrient Export Simulations in a Cold Region Terminal Lake Basin. *AGU23*.
22. **Mahmood, T.H**. and Wainty, S., Hydrologic Changes to Recent Wetting in a Cold Region Agricultural Watershed. AGU24.
23. Saha, A., Neal, M.L., Kaemingk, M.A., Coulter, D.P., Coulter, A.A., Chipps, S.R., Maldonado, M., Siller, M. and **Mahmood, T.H**., 2024. Impacts of Climate Variability on Cold Region Hydrologic Change in the Prairie Pothole Region. *AGU24*. (**Selected for oral presentation**).
24. Mahmoud, H., Mahmood, T.H. and Korom, S.F. 2024. Groundwater Recharge to Cold Region Aquifer Using Process-Based Models. AGU24.
25. Ahmmed, M.H., Jeannotte, T. and **Mahmood, T.H.** 2024. Water Quality and Nutrient Dynamics in Cold Agricultural Landscapes: A Hydrological and Biogeochemical Perspective from the Souris River Basin, North Dakota, USA. AGU24.
26. Hall, A. and **Mahmood, T**., 2024. Hydrology Outreach Activities to Tribal Youth: Insights from Cold Region Hydrology Workshop. In Geological Society of America Abstracts (Vol. 55, p. 393784).

6. Courses taught

University of North Dakota 2015-present

Fall, 2015

- GEOE 484, Geological Engineering Senior Design, 3 credits, 8 students

Spring, 2016

- GEOE 485, Geological Engineering Senior Design, 3 credits, 8 students

1. Lider, CB, 2016. An Engineering Safety Analysis of Slope Failure along the Banks of the Red Lake River of Crookston, MN. An Honors Thesis submitted and Poster presented at ***University of North Dakota Honors Program Undergraduate Research Conference***, Grand Forks, ND. **Advisor: Dr. Taufique Mahmood.** (**Best Poster Award**).

2. Lider CB, Kniech D, Erickson E, and Joos, C, 2016. An Analysis of Long Term Slope Stabilization Methods along the Red Lake River. Poster presented at ***College of Engineering, UND Design Exposition Conference***, Grand Forks, ND. **Advisor: Dr. Taufique Mahmood.** *(***Best Poster Award** *in outstanding senior prototype design).*

3. Bogers BL, Gelhar D, Hoffert B, Preston K. 2016. Flood Mitigation Plan using Small Upstream Reservoirs in Devils Lake Drainage Basin, North Dakota. ***Poster presented at College of Engineering, UND Design Exposition Conference***, Grand Forks, ND. **Advisor: Dr. Taufique Mahmood.**

- GEOE 419, Groundwater Monitoring and Remediation, 3 credits, 4 students

Fall, 2016

- GEOE 484, Geological Engineering Senior Design, 3 credits, 10 students.
- GEOE 493, Special Topic in Geological Engineering (Cold Region Hydrologic Modeling), 3 credits, 4 students

Spring, 2017

- GEOE 485, Geological Engineering Senior Design, 3 credits, 9 students.

1. Scharold, K., Ali, M. 2017. Use of LIDER derived snow depth on evaluating a physically based distributed hydrologic model: Implications for watershed design and future climate change studies. ***Poster presented at College of Engineering, UND Design Exposition Conference,*** Grand Forks, ND. Advisor: Dr. Taufique Mahmood.
2. Tesfu, M., Nelson, C, Nelson, K. 2017. Perfluorinated Compound Contamination and Remediation in the Groundwater of St. Paul Suburb. Poster presented at College of Engineering, ***UND Design Exposition Conference***, Grand Forks, ND. Advisor: Dr. Taufique Mahmood.

- GEOE 419, Groundwater Monitoring and Remediation, 3 credits, 11 students
- GEOE 540, Water Sampling and Analyses, 3 credits, 8 students (co-taught with Dr. Matheney).
- GEOL 591, Directed Studies, 1 student.

Summer, 2017

- GEOE 996, Continued Enrollment, 1 student.

Fall, 2017

- GEOE 484, Geological Engineering Senior Design, 3 credits, 8 students.
- GEOE 493, Special Topic in Geological Engineering (Cold Region Hydrologic Modeling), 3 credits, 9 students (7 face to face + 2 Online).
- GEOL 591, Directed Studies, 1 student.
- GEOE 998, Thesis, 2 students.

Spring, 2018

- GEOE 485, Geological Engineering Senior Design, 3 credits, 8 students.

1. Muvundamina K, Johnson C, Sprengelmeyer D, and Weatherford, M, 2018. Multi-Well Numerical Reservoir Simulation For Infill Drilling. Poster presented at ***College of Engineering, UND Design Exposition Conference***, Grand Forks, ND. **Advisor: Dr. Taufique Mahmood.**
2. Schmidt B, Sobbe A, Renner W, and Brandenburger, W, 2018. Mechanisms and Mitigation of the 2011 Souris River Flood near Minot, North Dakota. Poster presented at ***College of Engineering, UND Design Exposition Conference***, Grand Forks, ND. **Advisor: Dr. Taufique Mahmood.**

- GEOE 419, Groundwater Monitoring and Remediation, 3 credits, 15 students (12 face to face + 3 Online).
- GEOL 540, Water Sampling and Analyses, 3 credits, 6 students (co-taught with Dr. Matheney).
- GEOE 998, Thesis, 2 students.

Summer, 2018

- GEOL 111, Views of Earth and Planets (Lecture) (Online), 3 credits, (8 Online students).
- GEOL 419, Groundwater Monitoring and Remediation (Online), 3 credits, (1 Online student).
- GEOL 591,Directed studies, 3 credits, (1 face to face student).

Fall, 2018

- GEOL 101, Introduction to Geology, 3 credits, 24 students.
- GEOE 419, Groundwater Monitoring and Remediation (Online), 3 credits, (1 Online).
- GEOE 493, Special Topic in Geological Engineering (Cold Region Hydrologic Modeling), 3 credits, 5 students (5 face to face).
- GEOE 998, Thesis, 2 students.

Spring, 2019
- GEOL 101, Introduction to Geology, 3 credits, 63 students (face to face).
- GEOL 540, Water Sampling and Analyses, 3 credits, 6 students (co-taught with Dr. Matheney).
- GEOE 998, Thesis, 1 student.
- GEOL 591,Directed studies, 1 credits, (1 face to face student).
- ENVE 591,Environmental Engineering Research, 3/6 credits, (2 online students).

Fall, 2019
- GEOL 101, Introduction to Geology, 3 credits, 41 students.
- GEOE 419, Groundwater Monitoring and Remediation, 3 credits, 13 students (10 face to face students+3 online students).
- GEOE 417, Hydrogeology, 3 credits, 14 students (8 face to face students+ 6 online students).

Spring, 2020
- GEOL 101, Introduction to Geology, 3 credits, 39 students (face to face).
- GEOL 540, Water Sampling and Analyses, 3 credits, 4 students (co-taught with Dr. Matheney).
- GEOL 591,Directed studies, 1 credits, (1 face to face student).
- ENVE 591,Environmental Engineering Research, 3/6 credits, (2 online students).

Summer, 2020
- GEOL 419, Groundwater Monitoring and Remediation (Online), 3 credits, (3 Online students).
- GEOL 417, Hydrogeology (Online), 3 credits, (5 Online students).

Fall, 2020
- GEOL 101, Introduction to Geology, 3 credits, 46 students.
- GEOE 417, Hydrogeology, 3 credits, 23 students (14 face to face students+ 9 online students).

Spring, 2021
- GEOL 101, Introduction to Geology, 3 credits, 22 students (face to face).
- GEOE 419, Groundwater Monitoring and Remediation, 3 credits, 12 students (9 face to face students+3 online students).
- GEOL 591,Directed studies, 1 credits, (1 face to face student).
- ENVE 591,Environmental Engineering Research, 3/6 credits, (4 online students).

Fall, 2021
- GEOE 417, Hydrogeology, 3 credits, 21 students (11 face to face students+ 10 online students).

Spring, 2022
- GEOL 342, Conservation of Hydrology, 3 credits, 10 students (face to face).
- GEOE 419, Groundwater Monitoring and Remediation, 3 credits, 8 students (4 face to face students+4 online students).

Fall, 2022
- GEOE 417, Hydrogeology, 3 credits, 20 students (12 face to face students+ 8 online students).
- GEOE 421, Cold Region Hydrologic Model, 3 credits, 16 students (11 face to face students+ 5 online students).

Spring, 2023
- GEOL 540, Water Sampling and Analyses, 3 credits, 6 students (co-taught with Dr. Matheney).

Fall, 2023
- GEOE 417, Hydrogeology, 3 credits, 20 students (9 face to face students+ 11 online students).

Spring, 2024
- GEOL 540, Water Sampling and Analyses, 3 credits, 6 students (co-taught with Dr. Matheney).

Fall, 2024
- GEOE 417, Hydrogeology, 3 credits, 33 students (13 face to face students+ 20 online students).
- GEOE 419, Groundwater Monitoring and Remediation, 3 credits, 16 students (16 online students).

Undergraduate advisee:
- **2015-16:** Bryan Boger, Carleigh Lider, Daniel Gelhar, Kathleen Preston, Emily Erickson, Cody Joos, Daniel Kniech and Bridget Hoffert.
- **2016-17:** Karis Scharold, Collette Nelson, Colt Nelson, Merry Tesfu, Shelby Johnson, Phillip Horn, Rylan Limesand, Mohamed Ali and Jason Myrvold.
- **2017-18:** Aaron Sobbe, Will Brandenberger, Cassie Johnson, Kabedi Muvundamina, Bradley Schmidt, Daniel Sprengelmeyer, Renner William and Michael Weatherford.
- **2018-2021:** Makayla Mather (McNair scholar, NSF funded undergraduate fellowship, **Tlingit and Haida's Indian Tribe** of Alaska): Numerical simulations of an alpine glaciers in the Rocky Mountain range.
- **2020-2021: Logan Dietrich:** Impacts of land cover types (agricultural and urban) on nutrient export to Red River to North.
- **2020-2021: Makayla Mather:** Impacts of recent wetting on the Edmore Coulee sub basin in the Devils Lake Basin.
- **2020-2021: Alyssa Schultz:** Impacts of recent wetting on the Stump Lake in the Devils Lake Basin.
- **2021-22: Rebecca May:** Winter Nitrification in Northern Great Plain Lakes and Wetlands.
- **2021-22: Noah Galloway:** Detecting trends and hotspots of nutrients in the Devils Lake during 1991-2020 **period.**
- **2022-23: Morgan Rach:** Recent wetting events on Hobart Lake in the Prairie Pothole Region, Barnes, ND.
- **2022-23: Jena Webber:** Urbanization growth and its impact on groundwater levels in West Fargo.

Undergraduate Research Assistant worked on various projects

- **Bryan Boger,** Undergraduate Research Assistant in Geological Engineering, University of North Dakota (2015-2016). (current position: Graduate research assistant in Geological Engineering, University of Wisconsin, Madison)
- **Carleigh Lider,** Undergraduate Honors thesis advisee, Geological Engineering, University of North Dakota (2015-2016).
- **Karis Scharold,** Undergraduate Research Assistant in Geological Engineering, University of North Dakota (2016-2017). (Current position: Geotechnical Engineer, Northern GN).
- **Aaron Sobbe,** Undergraduate Research Assistant in Geological Engineering, University of North Dakota (2016-2017).
- **MD Ahsan Habib**, Graduate Research Assistant in Geological Engineering, University of North Dakota (2016). (Current position: Graduate research assistant in Mechanical Engineering, University of Alabama, Huntsville).

ND EPSCoR Nature Summer Camp, 2018 Native American students: Curtis Ferris, Taylor Peltier, Wilma Little Bear and Mhaddie Poitra.

ND EPSCoR Nature Summer Camp, 2019 Native American students: Curtis Ferris and Mhaddie Poitra.

ND EPSCoR Nature Summer Camp, 2019 Native American students: Curtis Ferris, Mhaddie Poitra and Devin Black Fox.

Tribal College Student Summer Research 2022: Denver LaRoque, Marisela Madrid and Sheena Grant.

Tribal College Student Summer Research 2023: Shyanna LaRoque, RaeAna Cromwell and Caitlyn Davis.

Master's Thesis Committee

- Diane Van Hoy, Chair of Committee (Geological Engineering)
- Tyson Jeannotte, Chair of Committee (Geological Engineering)
- Alexis Archambault, Chair of Committee (Geological Engineering)
- Eric Roth, Chair of Committee (Geological Engineering)
- Kelsey Forward, member of Committee (Geology)
- Ogochukwu Ozotta, member of Committee
- Will Brandenberger, member of Committee (Geological Engineering)
- Sidike Abudureyimu, member of Committee (Geological Engineering)
- Courtney Jackson, member of Committee (Department of Geography and GIS)
- Timothy Wuenscher, member of Committee (Geology)
- Justin Mark, member of Committee (Environmental Engineering)
- Daniel Fife, member of Committee (Department of Civil Engineering)
- Ryan Hason, member of Committee (Department of Civil Engineering)

- Alexa Docioame, member of Committee (Department of Civil Engineering)
- Brianna Speldrich, member of Committee (Geology)
- Eohjin Lee, member of Committee (Department of Geography)
- Zachary Ranisate, member of Committee (Department of Civil Engineering)
- Miranda Shanks, co-Chair of Committee (Geology)
- Ayon Saha, Chair of Committee (Geology)
- Julian Niewiaroski, Chair of Committee (Geological Engineering)
- Michaela Neal, Chair of Committee (Geological Engineering)
- Fred Antwi, Chair of Committee (Geological Engineering)

Doctoral Dissertation Committee

- Bahareh Shoghli, member of Committee (Department of Civil Engineering)
- Stevie Holmes, chair of Committee (Department of Environmental Engineering)
- Jeffrey Whitten, chair of Committee (Department of Environmental Engineering)
- Alexis Archambault, chair of Committee (Department of Geological Engineering)
- Scott Aaron, member of Committee (Department of Atmospheric Science)
- Jared Marquis, member of Committee (Department of Atmospheric Science)
- Ali Alinezhad, member of Committee (Department of Environmental Engineering)
- Moones Alamooti, member of Committee (Department of Geology)
- Daniel Bruson, member of Committee (Department of Geology)
- Sidike Abudureyimu, member of Committee (Department of Geological Engineering)
- Vida Atashi, member of Committee (Department of Civil Engineering)
- Tyson Jeannotte, Chair of Committee (Environmental Engineering)
- Sharhad Wainty, Chair of Committee (Geological Engineering)
- Hesham Mahmoud, Chair of Committee (Geological Engineering)
- MD Helal Ahmmad, Chair of Committee (Geological Engineering)

7. Service

Department (Harold Hamm School of Geology and Geological Engineering**)**

- Member of the Geological Engineering curriculum committee (2016-present).
- Member of the scholarship committee (2016-17).
- Member of the graduate program Committee (2017-present).
- Manage and oversee Environmental and Analytical Research Laboratory (EARL) renovation (chemically resistant sink, countertop, storage and table), a new classroom development and in process of acquisition of ICP-OES.
- GGE ABET coordinator.
- Graduate Director (2022-present)
- Member of the GGE curriculum committee (2018-present).
- Faculty in charge of Environmental and Analytical Laboratory (EARL). (2016-2019)
- Served as a search committee member for Assistant Professor in Dinosaur Paleontology (2023).

College of Engineering and Mines (CEM**)**

- Member of the scholarship committee (2016- 2020).

- Tenure and Promotion Committee (2023- 2024).
- Serving as a search committee member for the Dean of the College of Engineering and Mines (2025).

Professional:

- Reviewed 100+ manuscripts for leading scientific journals such as Journal of Hydrology, Geocarto International, Hydrologic Sciences Journal, Water Resources Research, Water and Hydrology and Earth System Sciences.
- Reviewer and panelist for various federal funding agencies.
- **ABET Self-study report for Fall, 2021 visit**
    - **Mahmood, TH. (2021):** ABET Self-Study Report for the GEOLOGICAL ENGINEERING PROGRAM. Submitted for review to ABET PEV.

Invited talks

- 10/2/2015: Hillslope Scale Hydrologic Spatial Patterns in a Patchy Ponderosa Pine Landscape. LEEPS lecture, Harold Hamm School of Geology and Geological Engineering, University of North Dakota.
- 2/10/2016: Impacts of climatic variability on cold region hydrologic response and nutrient export. Weekly seminar, Department of Geography and Geographic Information Science, University of North Dakota.

Community/Outreach

- 6/8/2017: Hydrology and Water Quality of North Dakota. A talk presented to ND EPSCoR NATURE summer camp students (Native American students from North Dakota), University of North Dakota.
- 6/9/2018: Water sampling from the aquifer and stream. An on-field talk presented to ND EPSCoR NATURE summer camp students (Native American students from North Dakota), University of North Dakota.
- 6/6/2019: Water sampling from the aquifer and stream. An on-field talk presented to ND EPSCoR NATURE summer camp students (Native American students from North Dakota), University of North Dakota.
- ND EPSCoR video (Prepared by me) for online Nature Camp Outreach: https://www.youtube.com/watch?v=A6Bu51_xhgo&list=PLtz3kYc9fwTmEishawC8JA4QN-Urp0xAf&index=2&t=0s
- **Summer (2022) Research for Turtle Mountain Community College Students.**
- **Summer (2023) Research for Turtle Mountain Community College Students.**
- Service as a research advisor for AIHEC sponsored **Summer Research Camp** Tribal Community College students in 2021 and 2022.
- **Cold Region Hydrology Workshop** for White Shield High School (MHA nations, two workshops in 2023 and 2024 winters)

Served as an External examiner and Reviewer for following dissertation

- **Nikul Kumari – PhD candidate in University of New Castle (2021)**
  Title: A Global Eco-Hydro-Geomorphic Analysis in Aspect-driven Semiarid Ecosystems
- **Ankur Srivastava- PhD candidate in University of New Castle (2021)**
  Title: Climate – Soil – Vegetation Interactions: Eco-hydro-geomorphic Inferences from Landscape Evolution Models

Faculty Advisor of the following association

- Sigma Gamma Epsolon (SGE, 2016-2019), Bangladesh Student Association at UND (2015-2017) and Association of Environmental and Engineering Geologist (2015-2016).

8. Media

- NSF Award UND press.
- Grand Forks Herald Interview.