Muhammad Azmat

Associate Professor

Institute of Geographical Information Systems

Email: azmat@igis.nust.edu.pk
Contact: 518864477
LinkedIn:

About

Dr. Muhammad Azmat is working as Associate Professor in the Institute of Geographical Information Systems. Dr. Muhammad Azmat has a PhD in Water Resources and Climate Change . Dr. Muhammad Azmat has published 43 research articles & conference papers having a citation count of 684, carried out 11 projects and filed 1 intellectual property.

Qualifications

PhD in Water Resources and Climate Change 2012 - 2015
Polytechnic Institute of Turin , Italy

MPhil in Water Resources Management 2008 - 2011
UET Lahore , Pakistan

BE in Agricultural Engineering 2004 - 2008
University of Agriculture Faisalabad , Pakistan

Experience

Associate Professor 2025- Present
Institute of Geographical Information Systems

Associate Professor 2021 - 2025
Institute of Geographical Information Systems

Assistant Professor 2019 - 2021
Institute of Geographical Information Systems

Assistant Professor 2016 - 2019
Institute of Geographical Information Systems

Assistant Professor 2016 - 2016
Institute of Geographical Information Systems

Assistant Professor 2015 - 2016
Institute of Geographical Information Systems

Awards

Post Doc scholarship 2017
Swiss Govt grant Post Doc scholarship under "Swiss Govt Excellence Scholarship"

HEC PhD Scholarship 2012
HEC grant me fully funded PhD scholarship

Professional Memberships

PEC Since 2008

Research Projects

National Projects

Research-based Habitat Planning for a Resilient Ishkoman Valley through Modelling and Assessment of Remote Sensing and In-valley Hazards and Glacial Water Variability under Climate Change 2022

Funding Agency: Agha Khan Planning and Building Service Pakistan (AKPBS,P)
Amount: PKR 7,100,000.00
Status: Approved_inprocess

Impact of Climate Vulnerabilities on Crop Production and Agriculture Water Resources Management in Indus Basin, Pakistan 2019

Funding Agency: Swiss Seed Mondey Grants with South Asia and Iran
Amount: PKR 2,688,000.00
Status: Completed

Forecasting to Adaptations: An Economic Based Water-Agriculture Sector Risk Assessment to Changing Climate 2022

Funding Agency: HEC
Amount: PKR 10,290,000.00
Status: Completed

An autonomous IoT based approach toward monitoring and subsequently identifying invasive Dengue/Zika vectors prevalence and possible dengue outbreak areas 2022

Funding Agency: IST
Amount: PKR 7,162,000.00
Status: Completed

Implications of Climate Change on Snow Cover Dynamics and Hydrological Behaviour in HK-Karakorum-Himalayan Ranges 2017

Funding Agency: HEC
Amount: PKR 459,400.00
Status: Completed

Impacts of Climate Vulnerabilities on Crop Production and Agriculture Water Resources Management in Indus Basin, Pakistan 2019

Funding Agency: University of Applied Sciences, Zurich, Switzerland
Amount: PKR 2,688,000.00
Status: Completed

Urban expansion as an incursive factor for food security: An assessment of Spatio-temporal variations in Punjab Province, Pakistan 2017

Funding Agency: HEC
Amount: PKR 3,050,000.00
Status: Approved_inprocess

vulnerability of Climate Change on water resources and its consequences on agriculture water management in Pakistan 2017

Funding Agency: HEC
Amount: PKR 5,410,000.00
Status: Completed

International Projects

HI-PATH: Pathways for Climate Resilient Development in the Hindu Kush Himalayan Region 2021

Funding Agency: International Development Research Centre: IDRC
Amount: PKR 5,500,725.00
Status: Approved_inprocess

Industry Projects

National Projects

A study of the IWT and implications of its violations 2020

Client: NIL

Amount: PKR 1,000,000.00

Status: Approved_inprocess

Design for Construction of Mini Dam at Tehsil Naushera, District Khushab 2020

Client: N/A

Amount: PKR 1,804,910.00

Status: Approved_inprocess

International Projects

Research Articles

Channel morphology of the Indus, and the growing risk of floods related damages in the Indus River basin 2025

Raveen Fatima Salman Atif Monique Fort Muhammad Azmat

Natural Hazards , Pages 1-33

Impact Factor: 3.700 | **Quartile:** 1

DOI: 10.1007/s11069-025-07429-3

High-resolution monthly gridded temperature dataset development and trend analysis across Afghanistan: a spatio-temporal approach 2025

Maghfoorullah SHAKIL AHMAD Muhammad Azmat Mohammad Uzair Rahil Khalil Ahmad

Theoretical and Applied Climatology, Volume:156, Issue:5, Article Number 280

Impact Factor: 2.800 | **Quartile:** 3

DOI: https://doi.org/10.1007/s00704-025-05484-1

Growing Glacial Lake Outburst Flood Risks in Ghizer District: A Karakoram Anomaly Region 2025

Yusra Mazhar Salman Atif Muhammad Azmat Shakil Ahmad Fahim Ullah

IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing, Volume 18, Pages 7811-7828

Impact Factor: 4.700 | **Quartile:** 1

DOI: 10.1109/JSTARS.2024.3522950

Hydro-Climatic variability in the Potohar Plateau of Indus River Basin under CMIP6 climate projections 2024

Ahsan Ullah Khan SHAKIL AHMAD Khalil Ahmad Muhammad Azmat Zakir Hussain Dahri Muhammad Wasif Khan Zafar Iqbal

Theoretical and Applied Climatology, Volume 156, Article Number 20

Impact Factor: 2.800 | **Quartile:** 3 | **Citations:** 2

DOI: https://doi.org/10.1007/s00704-024-05274-1

An Application of Hybrid Bagging-Boosting Decision Trees Ensemble Model for Riverine Flood Susceptibility Mapping and Regional Risk Delineation 2024

Javeria Sarwar Saud Ahmed Khan Muhammad Azmat Faridoon Khan

Water Resources Management, Pages 1-31

Impact Factor: 3.900 | **Quartile:** 1 | **Citations:** 4

DOI: https://doi.org/10.1007/s11269-024-03995-6

Local surface warming assessment in response to vegetation shifts over arid lands of Central Asia (2001-2020) 2024

Sikandar Ali Akash Tariq Patient Mindje Kayumba Fanjiang Zeng Zeeshan Ahmed Muhammad Azmat Richard Mind'je Tianju Zhang

Science of The Total Environment, Volume 929 , Article Number 172628

Impact Factor: 8.200 | **Quartile:** 1 | **Citations:** 13

DOI: https://doi.org/10.1016/j.scitotenv.2024.172628

A comparative analysis of feature selection models for spatial analysis of floods using hybrid metaheuristic and machine learning models 2024

Javeria Sarwar Saud Ahmed Khan Muhammad Azmat Faridoon Khan

Environmental Science and Pollution Research, Volume 31, Pages 33495-33514

Impact Factor: 0 | **Citations:** 14

DOI: https://doi.org/10.1007/s11356-024-33389-5

Analyzing land use land cover (LULC) changes induced by the run-of river project and respondent survey: a case of Ghazi Barotha Hydropower Project on Indus River, Pakistan 2024

Ehsan Inam Ullah Shakil Ahmad Muhammad Faheem Khokhar Umer Khayyam Muhammad Azmat Muhammad Arshad Faizan ur Rehman Qaiser

Environmental Research Communications, Volume 6, Issue 3, Article Number 035002

Impact Factor: 2.500 | **Quartile:** 3 | **Citations:** 1

DOI: 10.1088/2515-7620/ad2bb5

Evapotranspiration estimation using a satellite-based surface energy balance: a case study of Upper Bari Doab, Pakistan 2023

Muhammad Naufil Zahid SHAKIL AHMAD Junaid Aziz Khan Muhammad Dilshad Arshad Dr. Muhammad Azmat Dr. Muhammad Ukasha

Environmental Earth Sciences , Volume:82, Issue:24, Pages: 14

Impact Factor: 2.8 | **Quartile:** 2 | **Citations:** 7

DOI: 10.1007/s12665-023-11284-5

Development of high resolution daily gridded precipitation and temperature dataset for potohar plateau of indus basin 2023

Muhammad Wasif Khan Shakil Ahmad Zakir Hussain Dahri Zain Syed Khalil Ahmad Firdos Khan Muhammad Azmat

Theoretical and Applied Climatology, Volume 154, pages 1179–1201

Impact Factor: 3.4 | **Quartile:** 2 | **Citations:** 7

DOI: https://doi.org/10.1007/s00704-023-04626-7

Comparative assessment of spatiotemporal variability in cryosphere and hydro-climatic regime of the Hunza, Astore and Shigar Basins (Hindukush-Karakoram–Himalaya Region) in Pakistan 2023

Aneela Khan Sana Khan Muhammad Azmat Humera Farah

Arabian Journal of Geosciences, Volume 16, Article Number 350

Impact Factor: 0

DOI: https://doi.org/10.1007/s12517-023-11440-y

Hydrological and ecological impacts of run off river scheme; a case study of Ghazi Barotha hydropower project on Indus River, Pakistan 2023

Ehsan Inam Ullah Shakil Ahmad Muhammad Fahim Khokhar Muhammad Azmat Umer Khayyam Faizan ur Rehman Qaiser

Heliyon , Volume 9, Issue 1, Article Number e12659

Impact Factor: 3.776 | **Quartile:** 2 | **Citations:** 7

DOI: https://doi.org/10.1016/j.heliyon.2022.e12659

Identification of Potential Natural Aquifer Recharge Sites in Islamabad, Pakistan, by Integrating GIS and RS Techniques 2022

Farooq Alam Muhammad Azmat Riaz Zarin Shakil Ahmad Abdur Raziq Hsu-Wen Vincent Young Kim-Anh Nguyen Yuei-An Liou

Remote Sensing, Volume 14(23), Article Number 6051

Impact Factor: 5.349 | **Quartile:** 1 | **Citations:** 10

DOI: https://doi.org/10.3390/rs14236051

Estimation of Water Balance for Anticipated Land Use in the Potohar Plateau of the Indus Basin Using SWAT 2022

Muhammad Idrees Shakil Ahmad Muhammad Wasif Khan Zakir Hussain Dahri Khalil Ahmad Muhammad Azmat Irfan Ahmad Rana

Remote Sensing, Volume 14(21), Article Number 5421

Impact Factor: 5.349 | **Quartile:** 1 | **Citations:** 11

DOI: https://doi.org/10.3390/rs14215421

Long-Term Performance Evaluation of the Latest Multi-Source Weighted-Ensemble Precipitation (MSWEP) over the Highlands of Indo-Pak (1981–2009) 2022

Sikandar Ali Yaning Chen Muhammad Azmat Patient Mindje Kayumba Zeeshan Ahmed Richard Mind'je Abdul Ghaffar Jinxiu Qin Akash Tariq

Remote Sensing, Volume 14(19), Article Number 4773

Impact Factor: 5.349 | **Quartile:** 1 | **Citations:** 16

DOI: https://doi.org/10.3390/rs14194773

Agricultural system modeling: current achievements, innovations, and future roadmap 2022

Zeeshan Ahmed Dongwei Gui Zhiming Qi Yi Liu Yunfei Liu Muhammad Azmat

Arabian Journal of Geosciences, Volume 15, Article Number: 363

Impact Factor: N/A

DOI: https://doi.org/10.1007/s12517-022-09654-7

Hydroclimatology of the Chitral River in the Indus Basin under Changing Climate 2022

Zain Syed Shakil Ahmad Zakir Hussain Dahri Muhammad Azmat Muhammad Shoaib Azhar Inam Muhammad Uzair Qamar Syed Zia Hussain Sarfraz Ahmad

Atmosphere , Volume 13(2), Article Number 295

Impact Factor: 2.686 | **Quartile:** 3 | **Citations:** 25
DOI: https://doi.org/10.3390/atmos13020295

Impacts of climate change on wheat phenology and yield in Indus Basin, Pakistan 2021
Muhammad Azmat Fatima Ilyas Afia Sarwar Christain Huggel Saeid Ashraf Vaghefi Tao Hui Muhammad Uzair Qamar Muhammad Bilal Zeeshan Ahmed
Science of the Total Environment, Volume 790, Article Number 148221
Impact Factor: 10.753 | **Quartile:** 1 | **Citations:** 22
DOI: https://doi.org/10.1016/j.scitotenv.2021.148221

Flood Hazard Assessment for the Tori Levee Breach of the Indus River Basin, Pakistan 2021
Babar Naeem Muhammad Azmat Hui Tao Shakil Ahmad Muhammad Umar Khattak Sajjad Haider Sajjad Ahmad Zarif Khero Christopher R. Goodell
WATER, https://www.mdpi.com/journal/water
Impact Factor: 3.530 | **Quartile:** 2 | **Citations:** 23
DOI: https://doi.org/10.3390/w13050604

Trends of Aerosol Optical Thickness Using VIIRS S-NPP During Fog Episodes in Pakistan and India 2021
Muhammad Umar Salman Atif Mark L. Hildebrandt Ali Tahir Muhammad Azmat Muhammad Zeeshan Ali Khan
Atmosphere, Volume 12(2), Article Number 242
Impact Factor: 3.110 | **Quartile:** 3 | **Citations:** 2
DOI: https://doi.org/10.3390/atmos12020242

Landfill site selection by integrating fuzzy logic, AHP, and WLC method based on multi-criteria decision analysis 2021
Riaz Zarin Muhammad Azmat Salman Raza Naqvi Qaisar Saddique Saif Ullah
Environmental Science and Pollution Research, Pages 1-16
Impact Factor: 5.190 | **Quartile:** 2 | **Citations:** 60
DOI: https://doi.org/10.1007/s11356-020-11975-7

Deficit irrigation improves maize yield and water use efficiency in a semi-arid environment 2021
Zou Yufeng Qaisar Saddique Ali Ajaz Xu Jiatun Muhammad Imran Khan Qing Mu Muhammad Azmat Huanjie Cai Kadambot H.M. Siddique
Agricultural Water Management, Volume 243, Article Number 106483
Impact Factor: 6.611 | **Quartile:** 1 | **Citations:** 96
DOI: https://doi.org/10.1016/j.agwat.2020.106483

Analyzing the Performance and Application of CERES-Wheat and APSIM in the Guanzhong Plain, China 2020
Qaisar Saddique Yufeng Zou Ali Ajaz Jianmei Ji Jiatun Xu Muhammad Azmat Muhammad Habib ur Rahman Jianqiang He Huanjie Cai
Transactions of the ASABE, Volume 63(6), Pages 1879-1893
Impact Factor: 1.188 | **Quartile:** 3 | **Citations:** 8
DOI: https://doi.org/10.13031/trans.13631

Climatic and hydrological projections to changing climate under CORDEX-South Asia experiments over the Karakoram-Hindukush-Himalayan water towers 2020
Muhammad Azmat Abdul Waheed Aasia Wahab Christian Hugge Muhammad Uzair Qamar Ejaz Hussain Shakil Ahmad
Science of the Total Environment, Volume 703, Article Number 135010
Impact Factor: 7.963 | **Quartile:** 1 | **Citations:** 29
DOI: https://doi.org/10.1016/j.scitotenv.2019.135010

Pitfalls in transboundary Indus Water Treaty: a perspective to prevent unattended threats to the global security 2019
Muhammad Uzair Qamar Pierluigi Claps Muhammad Uzair Qamar Muhammad Azmat Pierluigi Claps
NPJ Clean Water, Volume 2, Article number: 22
Impact Factor: 0 | **Citations:** 17
DOI: https://doi.org/10.1038/s41545-019-0046-x

Future climate and cryosphere impacts on the hydrology of a scarcely gauged catchment on the Jhelum river basin, Northern Pakistan 2018
Muhammad Azmat Muhammad Uzair Qamar Christian Huggel Ejaz Hussain
Science of The Total Environment, Volume 639, Pages 961-976
Impact Factor: 5.589 | **Quartile:** 1 | **Citations:** 69
DOI: 10.1016/j.scitotenv.2018.05.206

Flow duration curve regionalization with enhanced selection of donor basins 2018
Muhammad Uzair Qamar Daniele Ganora Pierluigi claps Muhammad Azmat Muhammad Adnan Shahid Rao Arsalan Khushnood
Journal of Applied Water Engineering and Research, Volume: 6, Issue: 1, Pages: 70-84
Impact Factor: 0 | **Citations:** 6

DOI: 10.1080/23249676.2016.1196621

Water Pricing and Implementation Strategies for the Sustainability of an Irrigation System: A Case Study within the Command Area of the Rakh Branch Canal 2018

Muhammad Uzair Qamar Muhammad Azmat Azhar Abbas Muhammad Usman Muhammad Adnan Shahid Zahid Mahmood Khan

Water , Volume 10(4), Article Number 509

Impact Factor: 2.524 | **Quartile:** 2 | **Citations:** 17

DOI: 10.3390/w10040509

Ensembling Downscaling Techniques and Multiple GCMs to Improve Climate Change Predictions in Cryosphere Scarcely-Gauged Catchment 2018

Muhammad Azmat Muhammad Uzair Qamar Shakil Ahmad Muhammad Adnan Shahid Ejaz Hussain Sajjad Ahmad Rao Arsalan Khushnood

Water Resources Management, Volume 32, Pages 3155–3174

Impact Factor: 2.987 | **Quartile:** 1 | **Citations:** 13

DOI: 10.1007/s11269-018-1982-9

Optimizing Irrigation Deficit of Multipurpose Cascade Reservoirs 2018

Muhammad Usman Rashid Abid Latif Muhammad Azmat

Water Resources Management, NULL

Impact Factor: 2.987 | **Quartile:** 1 | **Citations:** 20

DOI: https://doi.org/10.1007/s11269-017-1897-x

Regional Groundwater Quality Management through Hydrogeological Modeling in LCC, West Faisalabad, Pakistan 2017

Aamir Shakoor Zahid Mahmood Khan Muhammad Arshad Hafiz Umar Farid Muhammad Sultan Muhammad Azmat Muhammad Adnan Shahid Zafar Hussain

Journal of Chemistry, Article Number: 2041648

Impact Factor: 1.726 | **Quartile:** 3 | **Citations:** 18

DOI: https://doi.org/10.1155/2017/2041648

Application of HEC-HMS for the event and continuous simulation in highaltitude 2017

Muhammad Azmat M.U. Qamar S. Ahmed Ejaz Hussain M. Umair

European Water, Vol.57, Pages 77-84

Impact Factor: -

DOI: NA

Rainfall Extremes: a Novel Modeling Approach for Regionalization 2017

Muhammad Uzair Qamar Muhammad Azmat Muhammad Adnan Shahid Daniele Ganora Shakil Ahmad Muhammad Jehanzeb Masud Cheema Muhammad Abrar Faiz Abid Sarwar

Water Resources Management, Volume 31, Issue 6, Pages 1975-1994

Impact Factor: 2.644 | **Quartile:** 1 | **Citations:** 9

DOI: 10.1007/s11269-017-1626-5

Impacts of changing climate and snow cover on the flow regime of Jhelum River, Western Himalayas 2017

Muhammad Azmat Umar Waqas Liaqat Muhammad Uzair Qamar Usman Khalid Awan

Regional Environmental Change, Volume 17, Issue 3, Pages 813-825

Impact Factor: 3.149 | **Quartile:** 2 | **Citations:** 56

DOI: 10.1007/s10113-016-1072-6

Model swapping: A comparative performance signature for the prediction of flow duration curves in ungauged basins 2016

Muhammad UzairQamar Muhammad Azmat Muhammad Jehanzeb Masud Cheema Muhammad Adnan Shahid Rao Arsalan Khushnood Sajjad Ahmad

Journal of Hydrology, Volume 541, Pages 1030-1041

Impact Factor: 3.483 | **Quartile:** 1 | **Citations:** 13

DOI: http://dx.doi.org/10.1016/j.jhydrol.2016.08.012

Performance Evaluation of Hose-Reel Sprinkler Irrigation System 2016

Sarfraz Hashim Sajid Mahmood Muhammad Afzal Muhammad Azmat Hafiz Abdur Rehman

Arabian Journal for Science and Engineering, Volume: 41, Issue: 10, Pages: 3923-3930

Impact Factor: 0.865 | **Quartile:** 3 | **Citations:** 12

DOI: 10.1007/s13369-015-1953-x

Precipitation variability assessment of northeast China: Songhua River basin 2016

Muhammad Imran Khan Dong Liu Qiang Fu Muhammad Azmat Mingjie Luo Yuxiang Hu Yongjia Zhang Faiz M Abrar

Journal of Earth System Science, Volume 125, Issue 5, Pages 957-968

Impact Factor: 0.955 | **Quartile:** 4 | **Citations:** 14

DOI: 10.1007/s12040-016-0715-9

Hydrological modeling to simulate streamflow under changing climate in a scarcely gauged cryosphere catchment 2016

Muhammad Azmat Minha Choi Tae-Woong Kim Umar Waqas Liaqat

Environmental Earth Sciences , Volume: 75, Issue: 3

Impact Factor: 1.569 | **Quartile:** 3 | **Citations:** 44

DOI: 10.1007/s12665-015-5059-2

Estimation of Water Resources Availability and Mini-Hydro Productivity in High-Altitude Scarcely-Gauged Watershed 2015

Muhammad Azmat Francesco Laio Davide Poggi

Water Resources Management, Volume: 29, Issue: 14, Pages: 5037-5054

Impact Factor: 2.437 | **Quartile:** 1 | **Citations:** 19

DOI: https://doi.org/10.1007/s11269-015-1102-z

Conference Proceedings

Genetic algorithm based optimization of multipurpose cascade reservoirs for sustainable economic growth 2019

Muhammad Usman Rashid Muhammad Azmat F. Raees

11th World Congress on Water Resources and Environment (EWRA 2019), res.country(68,)

Citations: N/A

DOI: N/A

Application of HEC-HMS for the event and continuous simulation in highaltitude scarcely-gauged catchment under changing climate 2017

Muhammad Azmat M.U. Qamar Shakil Ahmad Ejaz Hussain Muhmmad Umair

10th World Congress of EWRA, res.country(88,)

Citations: N/A

DOI: Nil

Application of HEC-HMS for the event and continuous simulation in high-altitude scarcely-gauged catchment under changing climate 2017

M. Azmat M.U. Qamar S. Ahmed E. Hussain M. Umair

10th World Congress of EWRA 'Panta Rhei', res.country(88,)

Citations: N/A

DOI: N/A

The Integrated Modeling Approach for Urban Flooding in the Context of Changing Climate (Case of Lai Nullah, Pakistan) 2016

Dr. Shakil Ahmad Engr. Hammayun Zulifqar Rana Dr. Muhammad Azmat

Water and Environment for Sustainable Development in Changing Climate, res.country(177,)

Citations: N/A

DOI: http://waterenvironmentforum.pk/detail/proceedingsreport.pdf

Editorial Activities

2021

Reviewed Papers for Journals
Impact Factor: 6.551

2021

Reviewed Papers for Journals
Impact Factor: 6.551

2021

Reviewed Papers for Journals
Impact Factor: 3.645

2019

Reviewed Papers for Journals
Impact Factor: 5.58

2019

Edited Journal Issue / Proceeding / Book
Impact Factor: -

2019

Reviewed Papers for Journals
Impact Factor: 0.529

2019

Reviewed Papers for Journals
Impact Factor: 2.767

2018

Reviewed Papers for Journals
Impact Factor: 5.589

2018

Reviewed Papers for Journals
Impact Factor: 1.76

2018

Reviewed Papers for Journals
Impact Factor: 1.871

2018

Reviewed Papers for Journals
Impact Factor: 1.76

Intellectual Property

Copyrights

Patents

Industrial Designs

IoT connected water throw monitor 2020
Status: Granted Filed

Trademarks