

Muhammad Ali

University of Parma
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EDUCATION AND TRAINING

Doctor of Philosophy Ph.D. in Earth Sciences

University of Parma, Italy [01/11/2024 – Present]

Thesis: Epiglacial lakes and endo- and sub-glacial water pockets in the Alps, risk assessment in the context of climate change

Master of Science in Earth Sciences

COMSATS University Islamabad, Abbottabad Campus [15/09/2020 – 15/09/2022]

Thesis: Debris Flow Hazard Assessment: A case study from Garhi Habibullah to Balakot, Khyber Pakhtunkhwa, Pakistan

Skills Acquired: Hazard assessment | Statistical modeling | Morphometric analysis | Source-based & Propagation-based susceptibility mapping | Runout modeling (Flow-R & Debris flow predictor) | Grain size distribution analysis (Parametric studies)

Bachelor of Science in Applied Geology

The University of Haripur [15/09/2015 – 09/08/2019]

Thesis: Reservoir Characterization of Chorgali Formation, Kallar Kahar, Eastern Salt Range, Punjab, Pakistan

Skills Acquired: Reservoir characterization | Petrographic analysis | Microfacies analysis | SEM analysis | Plug porosity test | Impact of diagenetic processes on reservoir quality |

Bachelor of Science

Hazara University Mansehra [17/09/2013 – 04/09/2015]

Chemistry | Zoology | Botany |

WORK EXPERIENCE

Research Assistant

Department of Earth Sciences, COMSATS University, Islamabad [01/11/2023 – 30/09/2024]

Job Responsibilities:

Responsible for reviewing existing literature pertinent to the project, planning and executing field campaigns for data collection, processing and analyzing collected data, conducting geological mapping, and performing hazard and risk assessments. I was also tasked with writing and publishing articles based on findings and assisting master's and bachelor's students with their respective projects.

Senior Geologist

BK Engineering Pvt. Ltd. Islamabad, Pakistan. [01/10/2022 – 31/10/2023]

Job Responsibilities:

Responsible for the comprehensive feasibility studies to assess the stability of slopes in various geological conditions. Utilized geological and geotechnical data to evaluate potential risks and provide recommendations for slope stabilization measures. Remote sensing technologies, such as satellite imagery and aerial photography, to analyze and monitor slope-related projects. Interpreted remote sensing data to identify geological features, detect changes in slope conditions, and assess potential hazards. Compiled and prepared comprehensive technical reports summarizing geotechnical investigations, slope stability analyses, and remote sensing studies.

Geologist

Upper Tanawal Progressive Council (UTPC) Non-Profit Organization. [01/09/2021 – 30/09/2022]

Job Responsibilities:

Responsible for identifying potential Dolerite prospects in the region, and also conducted a thorough evaluation of the quality and yield of Dolerite deposits. The primary objective was to develop effective strategies that maximize yield from any area while ensuring minimum environmental disturbance. Additionally, I was also involved in assessing and mitigating the environmental impact of mining operations, ensuring that they are conducted in an environmentally responsible manner.

Engineering Geologist

BK Engineering Pvt. Ltd. Islamabad, Pakistan. [01/09/2019 – 31/10/2020]

Job Responsibilities:

Proficiently collected soil/rock samples for analysis, meticulously performed different site tests (ASTM D-1586), prepared samples for lab tests and competently performed different lab tests according to ASTM. Also prepared borehole logs and borehole layout plan for the drilling project. Moreover, prepared in-depth reports and recommendations provided to improve soil conditions. Carried out feasibility studies for slope failures, dimension stone quarries, and settlement analysis for high-rise structures.

Projects:

1. Soil investigation of **Naya Pakistan Housing Program**, Barakahu, Islamabad
2. Soil investigation of **Naya Pakistan Housing Program**, Sangjani, Rawalpindi
3. Slope stability analysis **Murree Improvement Trust Colony**, Murree, Rawalpindi
4. Settlement analysis & pressure grouting for high-rise **Faisal Hills, Islamabad**
5. Feasibility reports for the development of granite quarries (**Tunny Pak Oghi, Mansehra**)

RESEARCH PROJECTS

1. A comparative landslide susceptibility mapping using LNRF, SI, and IVM statistical techniques along Kaghan Valley, North Pakistan.
2. Cross-Valley Barriers and their Impact on Landscape Evolution and Valley Incision in Naran-Kaghan Valley, NW Himalaya, Pakistan.
3. Debris Flow Hazard Assessment: A case study from Garhi Habibullah to Balakot, KhyberPakhtunkhwa, Pakistan.
4. Integrated geophysical, geochemical, and geospatial tools to characterize water resources in GAIE, Eastern Peshawar basin, Pakistan.
5. Reservoir Characterization of Chorgali Formation, Kallar Kahar, Eastern Salt Range, Punjab, Pakistan.

PUBLICATIONS

1. Daud, H., Tanoli, J. I., Asif, S. M., Qasim, **M., Ali, M.**, Khan, J., Bhatti, Z. I., & Jadoon, I. A. K. (2024). Modelling of debris-flow susceptibility and propagation: a case study from Northwest Himalaya. *Journal of Mountain Science*, 21(1), 200–217. <https://doi.org/10.1007/s11629-023-7966-0>
2. Daud, S., Lisa, M., Bin, U., Javed, N., Tanoli, I., & **Ali, M.** (2024). Groundwater characteristics using geophysical, geospatial, and hydrogeological studies in Peshawar Basin, Pakistan. *Environmental Earth Sciences*, 2018. <https://doi.org/10.1007/s12665-024-11462-z>
3. Tanoli, J. I., Jehangir, A., Qasim, M., Rehman, M. ur, Shah, S. T. H., **Ali, M.**, & Jadoon, I. A. K. (2023). Application of bivariate statistical techniques for landslide susceptibility mapping: A case study in Kaghan Valley, NW Pakistan. *Geological Journal*, 58(12), 4576–4595. <https://doi.org/10.1002/gj.4836>

CONFERENCES

M. Ali 1*, G. Leonelli 1, R. Francese 1, M. Maugeri (2026) Glacial Lake Outburst Floods (GLOFs) in the European Alps: linking Glacier Distribution, Warming Trends and Ice-Controlled Processes. [Alpine Glaciological Meeting 29 2026 \(Book of Abstract AGM 2026\), 69-70](#)

M., Ali, Tanoli, J. I., & Jehangir, A., (2024). Debris flow source-based susceptibility and propagation modeling: a case study from Garhi Habibullah to Balakot, Northwestern Himalayas, Pakistan. [7th Int. Conf. Earth Sci. Pakistan, 02-04 June. 2024.](#)

E., Ullah, **M., Ali**, & I., Ahmad, (2024). Unveiling the diagenetic evolution and its impact on the reservoir character of Anisian-Norian Kingriali Formation, Paniala Section, Khisor Range Pakistan. [7th Int. Conf. Earth Sci. Pakistan, 02-04 June. 2024.](#)

WORKING PAPERS

1. Glacial Lake Outburst Floods (GLOFs) in the European Alps: linking Glacier Distribution, Warming Trends and Ice-Controlled Processes.
2. Beyond Susceptibility Mapping: A Process-Based Framework Linking Debris-Flow Propagation, Catchment Morphometry, and Grain-Size Controls in a Tectonically Active Mountain Region.

SCHOOLS

- One week summer school on *Water and Geological Risks in a Warming Climate* (23 hours of lectures and 19 hours of working groups) 14-19, 2025

COURSES

- **FLAC-3D Training:** A 16-hour training course by **HARPACEAS** (25/03/2026 – 01/04/2026)
- **Geospatial Analysis with ArcGIS**, authorized by the **University of California**, Davis (Instructor: Eric Howard)
- **Mountains 101:** A 12-week online course authorized by the **University of Alberta** (Taught by: Zac Robinson, Associate Professor & David Hik, Professor)

HONOURS AND AWARDS

Excellent Leadership Award | Young Explorer's Society [30/04/2019]

Presented with an award for excellent leadership and outstanding performance as a president for the session of 2018-2019.

Outstanding Performance Award | Young Explorer's Society [30/03/2018]

Presented with an award for outstanding performance as a vice president for the session of 2017-2018.

Organized the First **International Conference on Challenges of Education in Pakistan** on March 20- 22, 2019. The University of Haripur [22/03/2019]

Organized the first **international workshop on Nano Science and Technology (IWNST) 2018** The University of Haripur Business & Incubation Centre (UOH) [31/10/2018]

INTERNSHIPS

Pakistan Museum of Natural History [01/08/2018 – 31/08/2018]

Vertebrate and invertebrates' paleontology | Thin-section preparation | Petrographic studies |

Junior Geologist (BK Engineering Pvt. Ltd.) [01/06/2018 – 31/07/2018]

Rock/soil descriptions | Rock/soil sampling | Soils gradation & classification | Maintaining Daily Progress Reports |

VOLUNTEERING

Advisor at Young Explorer's Society [01/11/2019 – 30/11/2021]

Helped the newly elected cabinet of the Young Explorer's Society with event planning and industrial linkages.

LANGUAGE SKILLS

IELTS Academic: Overall Band Score: 7.0

Listening 7.5

Writing 7.0

Reading 6.5

Speaking 6.0

DIGITAL SKILLS

ArcGIS / QGIS / Manifold GIS / R-Studio / Data Gathering, Data Processing, Data Visualization, Data Analysis / Microsoft Office/ Origin Pro / Google Earth Pro / Coral Draw / OptikaPro View