

Dr. Zulfiqar Ali

Contact Information **Current Address:** Office A204, Block A, College of Statistical Sciences, University of the Punjab **Cell Phone:** +923026153043
Permanent Address: Village Rajokey, P.O Box Same, Teh. Daska, Dist. Sialkot **E-mail:** zulfiqar.stat@pu.edu.pk

Personnel Information **Marital Status:** Married **Date of Birth:** 18 September 1990
Gender: Male **Country of Origin:** Pakistan
Present Nationality: Pakistani **Language:** English, Urdu

Current Position **Assistant Professor** From May 2022 • •
Organization: University of the Punjab, Lahore.
Department: College of Statistical Sciences

Research Interests Statistical Downscaling and post processing, Ensemble forecasting, Ecological Statistics, Environmental Statistics, Stochastic Process, Time series process modeling, Statistical theory and Methods, Modeling Aridity and Drought, Neural Network Forecasting, Spatio-temporal Modeling, Spatial Data Analysis, Longitudinal Data Analysis, Bio-Statistics

Education **Quaid-e-Azam University Islamabad, Pakistan** • •

Ph.D., Statistics, 2019 • •

* Thesis Topic: *Propagation of Different Stochastic Frameworks for Modeling, Forecasting and Spatial Analysis of Drought Hazard*

M.Phil, Statistics, Aug 2014 • •

* Topic: *Analyzing Spatio-Temporal Variability in Droughts in Northern Area and KPK*

University of Sargodha, Punjab, Pakistan • •

MSc., Statistics, August 2012

International Publications in Impact Factor Journal

1. Ali, Zulfiqar, et al. "A New Regional Drought Index under X-bar Chart Based Weighting Scheme–The Quality Boosted Regional Drought Index (QBRDI)". *Water Resources Management* (2023): 1-17.
2. Niaz, Rizwan, Anwar Hussain, Mohammed MA Almazah, Ijaz Hussain, **Zulfiqar Ali**, and A. Y. Al-Rezami. "Identifying inter-seasonal drought characteristics using binary outcome panel data models". *Geocarto International* 38, no. 1 (2023): 2178527.
3. Qamar, Sadia, Zulfiqar Ali, and Saad Shauket Sammen. "A new method for modelling precipitation variability in relation to climate change". *Journal of Water and Climate Change* 14, no. 1 (2023): 289-304.
4. Li, Zhenya, Saba Riaz, Sadia Qamar, Zulfiqar Ali, Javeria Nawaz Abbasi, and Rabia Fayyaz. "Development of adaptive standardized precipitation index and its application in the Tibet Plateau region". *Stochastic Environmental Research and Risk Assessment* 37, no. 2 (2023): 557-575.
5. Niaz, Rizwan, et al. "Proposing a new framework for analyzing the severity of meteorological drought". *Geocarto International just-accepted* (2023): 1-27.
6. Raza, Muhammad Ahmad, Mohammed MA Almazah, Zulfiqar Ali, Ijaz Hussain, and Fuad S. Al-Duais. "Application of Extreme Learning Machine Algorithm for Drought Forecasting". *Complexity* 2022 (2022).

7. Tehreem, Zara, Zulfiqar Ali, Nadhir Al-Ansari, Rizwan Niaz, Ijaz Hussain, and Saad Sh Sammen. "A Novel Appraisal Protocol for Spatiotemporal Patterns of Rainfall by Reconnaissance the Precipitation Concentration Index (PCI) with Global Warming Context". *Mathematical Problems in Engineering* 2022 (2022).
8. Ali, Farman, Bing-Zhao Li, and Zulfiqar Ali. "A New Weighting Scheme for Diminishing the Effect of Extreme Values in Regional Drought Analysis". *Water Resources Management* 36, no. 11 (2022): 4099-4114.
9. Ali, Farman, Saba Riaz, Zulfiqar Ali, Sadia Qamar, Bing-Zhao Li, and Muhammad Asif Khan. "The Spatiotemporal Weighted Efficient Drought Index—A new generalized procedure of regional drought indicator". *Ecohydrology* 15, no. 7 (2022): e2454.
10. Ali, Farman, Zulfiqar Ali, Bing-Zhao Li, Sadia Qamar, Amna Nazeer, Saba Riaz, Muhammad Asif Khan, Rabia Fayyaz, and Javeria Nawaz Abbasi. "Exploring regional profile of drought history-a new procedure to characterize and evaluate multi-scaler drought indices under spatial Poisson log-normal model". *Water Resources Management* 36, no. 9 (2022): 2989-3005.
11. Yuanbin, Sun, Sadia Qamar, Zulfiqar Ali, Tao Yang, Amna Nazeer, and Rabia Fayyaz. "A New Ensemble Index for Extracting Predictable Drought Features from Multiple Historical Simulations of Climate". *Tellus A: Dynamic Meteorology and Oceanography* 74, no. 1 (2022).
12. Li, Zhenya, Zulfiqar Ali, Tong Cui, Sadia Qamar, Muhammad Ismail, Amna Nazeer, and Muhammad Faisal. "A comparative analysis of pre-and post-industrial spatiotemporal drought trends and patterns of Tibet Plateau using Sen slope estimator and steady-state probabilities of Markov Chain". *Natural Hazards* 113, no. 1 (2022): 547-576.
13. Khan, Muhammad Asif, Xiang Zhang, Zulfiqar Ali, He Jiang, Muhammad Ismail, and Sadia Qamar. "A New Standardized Type Drought Indicators Based Hybrid Procedure for Strengthening Drought Monitoring System". *TELLUS SERIES A-DYNAMIC METEOROLOGY AND OCEANOGRAPHY* 74, no. 1 (2022): 119-140.
14. Khan, Muhammad Asif, Saba Riaz, He Jiang, Sadia Qamar, Zulfiqar Ali, Muhammad Islamil, Amna Nazeer, Muhammad Faisal, Samina Satti, and Xiang Zhang. "Development of an assessment framework for the proposed Multi-Scalar Seasonally Amalgamated Regional Standardized Precipitation Evapotranspiration Index (MSARSPEI) for regional drought classifications in global warming context". *Journal of Environmental Management* 312 (2022): 114951.
15. Niaz, Rizwan, Xiang Zhang, Zulfiqar Ali, Ijaz Hussain, Muhammad Faisal, Elsayed Elsherbini Elashkar, Jameel Ahmad Khader, Sadaf Shamshoddin Soudagar, Alaa Mohamd Shoukry, and Fares Fawzi Al-Deek. "A new propagation-based framework to enhance competency in regional drought monitoring". *Tellus A: Dynamic Meteorology and Oceanography* 73, no. 1 (2021): 1-12.
16. Ali, Zulfiqar, et al. "Reduction of Errors in Hydrological Drought Monitoring—A Novel Statistical Framework for Spatio-Temporal Assessment of Drought". *Water Resources Management* 35.13 (2021): 4363-4380.
17. Raza, Ahmad, Ijaz Hussain, Zulfiqar Ali, Muhammad Faisal, Elsayed Elsherbini Elashkar, Alaa Mohamd Shoukry, Fares Fawzi Al-Deek, and Showkat Gani. "A seasonally blended and regionally integrated drought index using Bayesian network theory". *Meteorological Applications* 28, no. 3 (2021): e1992.
18. Habeeb, Rimsha, Xiang Zhang, Ijaz Hussain, Muhammad Zaffar Hashmi, Elsayed Elsherbini Elashkar, Jameel Ahmad Khader, Sadaf Shamshoddin Soudagar, Alaa Mohamd Shoukry, Zulfiqar Ali, and Fares Fawzi Al-Deek. "Statistical analysis of

- modified Hargreaves equation for precise estimation of reference evapotranspiration”. *Tellus A: Dynamic Meteorology and Oceanography* 73, no. 1 (2021): 1-12.
19. Niaz, Rizwan, Ijaz Hussain, Zulfiqar Ali, and Muhammad Faisal. “A novel framework for regional pattern recognition of drought intensities”. *Arabian Journal of Geosciences* 14 (2021): 1-16.
 20. Ali, Farman, Bing-Zhao Li, and Zulfiqar Ali. “Strengthening drought monitoring module by ensembling auxiliary information based varying estimators”. *Water Resources Management* 35, no. 10 (2021): 3235-3252.
 21. Niaz, Rizwan, Ijaz Hussain, Xiang Zhang, Zulfiqar Ali, Elsayed Elsherbini Elashkar, Jameel Ahmad Khader, Sadaf Shamshoddin Soudagar, and Alaa Mohamd Shoukry. “Prediction of drought severity using model-based clustering”. *Mathematical Problems in Engineering* 2021 (2021): 1-10.
 22. Khan, Muhammad Asif, Muhammad Faisal, Muhammad Zaffar Hashmi, Amna Nazeer, Zulfiqar Ali, and Ijaz Hussain. “Modeling drought duration and severity using two-dimensional copula”. *Journal of Atmospheric and Solar-Terrestrial Physics* 214 (2021): 105530.
 23. Ali, Zulfiqar, et al. “Measuring and restructuring the risk in forecasting drought classes: an application of weighted Markov chain based model for standardised precipitation evapotranspiration index (SPEI) at one-month time scale”. *Tellus A: Dynamic Meteorology and Oceanography* 72.1 (2020): 1-10.
 24. Niaz, Rizwan, Ijaz Hussain, Zulfiqar Ali, Muhammad Faisal, Elsayed Elsherbini Elashkar, Alaa Mohamd Shoukry, Showkat Gani, and Fares Fawzi Al-Deek. “A novel spatially weighted accumulative procedure for regional drought monitoring”. *Tellus A: Dynamic Meteorology and Oceanography* 72, no. 1 (2020): 1-13.
 25. Ali, Zulfiqar, et al. “Bayesian network based procedure for regional drought monitoring: the seasonally combinative regional drought indicator”. *Journal of Environmental Management* 276 (2020): 111296.
 26. Jiang, He, Muhammad Asif Khan, Zhilong Li, Zulfiqar Ali, Farman Ali, and Sajid Gul. “Regional drought assessment using improved precipitation records under auxiliary information”. *Tellus A: Dynamic Meteorology and Oceanography* 72, no. 1 (2020): 1-26.
 27. Ali, Zulfiqar, et al. “On the more generalized non-parametric framework for the propagation of uncertainty in drought monitoring”. *Meteorological Applications* 27.3 (2020): e1914.
 28. Ali, Zulfiqar, et al. “Characterization of regional hydrological drought using improved precipitation records under multi-auxiliary information”. *Theoretical and Applied Climatology* 140 (2020): 25-36.
 29. Niaz, Rizwan, Ibrahim M. Almanjahie, Zulfiqar Ali, Muhammad Faisal, and Ijaz Hussain. “A novel framework for selecting informative meteorological stations using Monte Carlo Feature Selection (MCFS) algorithm”. *Advances in Meteorology* 2020 (2020): 1-13.
 30. Ali, Zulfiqar, et al. “A novel generalized combinative procedure for Multi-Scalar standardized drought Indices-The long average weighted joint aggregative criterion”. *Tellus A: Dynamic Meteorology and Oceanography* 72.1 (2020): 1-23.
 31. Ali, Zulfiqar, et al. “Propagation of the multi-scalar aggregative standardized precipitation temperature index and its application”. *Water Resources Management* 34 (2020): 699-714.
 32. Ullah, Imdad, Amina Zuberi, Humaira Rehman, Zulfiqar Ali, Per-Ove Thörnqvist, and Svante Winberg. “Effects of early rearing enrichments on modulation of brain monoamines and hypothalamic–pituitary–interrenal axis (HPI axis) of fish mahseer (*Tor putitora*)”. *Fish physiology and biochemistry* 46 (2020): 75-88.

33. Ali, Zulfiqar, et al. “An ensemble procedure for pattern recognition of regional drought”. *International Journal of Climatology* 40.1 (2020): 94-114.
34. Ali, Zulfiqar, et al. “A framework to identify homogeneous drought characterization regions”. *Theoretical and Applied Climatology* 137 (2019): 3161-3172.
35. Ali, Zulfiqar, et al. “Selection of appropriate time scale with Boruta algorithm for regional drought monitoring using multi-scalar drought index”. *Tellus A: Dynamic Meteorology and Oceanography* 71.1 (2019): 1604057.
36. Ali, Zulfiqar, et al. “A probabilistic weighted joint aggregative drought index (PWJADI) criterion for drought monitoring systems”. *Tellus A: Dynamic Meteorology and Oceanography* 71.1 (2019): 1588584.
37. Ali, Zulfiqar, et al. “A new weighting scheme in weighted markov model for predicting the probability of drought episodes”. *Advances in Meteorology* 2018 (2018): 1-10.
38. Ali, Zulifqar, et al. “A novel multi-scalar drought index for monitoring drought: the standardized precipitation temperature index”. *Water resources management* 31 (2017): 4957-4969.
39. Ali, Zulifqar, et al. “Forecasting drought using multilayer perceptron artificial neural network model”. *Advances in Meteorology* 2017 (2017).
40. Nazir, Hafiza Mamona, Ijaz Hussain, Mazhar Iqbal Zafar, **Zulfiqar Ali**, and Nasser M. AbdEl-Salam. “Classification of drinking water quality index and identification of significant factors”. *Water resources management* 30 (2016): 4233-4246.

**Submitted
Articles to
Journal for Peer
Review**

- (a) Ali, Zulifqar, et al. Development of Co-Integrated Standardized Procedure for the Joint Monitoring and Probabilistic Characterization of Climate Extremes
- (b) Ali, Zulifqar, et al. A Multimodal Blended Multiscalar Standardized Drought Index under Bayesian Networks Paradigm
- (c) Ali, Zulifqar, et al. Spatiotemporal Integration of Precipitation Data with Bayesian Network Theory to Infer Regional Drought
- (d) Ali, Zulifqar, et al. Strengthening Drought Forecasting based on Projections of Multiple Climate Models – A New Early Warning Indicator for Drought Preparedness and Management
- (e) Ali, Zulifqar, et al. A New Generalized Rank Based Spatiotemporal Hybrid Weighting (GRSTHW) Scheme for Multiple Global Climate Models (GCMs)
- (f) Ali, Zulifqar, et al. A New Generalized Spatio-temporal Weighting Scheme (GStWS) for Diminishing the Effect of Extreme Precipitation in Multimodel Climate Ensembles
- (g) Ali, Zulifqar, et al. A Novel Semi Data Dimension Reduction Type Weighting Scheme of the Multi-Model Ensemble for Accurate Assessment of 21st Century Drought
- (h) Ali, Zulifqar, et al. Development of a New Hybrid Ensemble Method for Accurate Characterization of Future Drought Using Multiple Global Climate Models
- (i) Ali, Zulifqar, et al. Integration of Exponential Weighted Moving Average Chart in Ensemble of Multiple Global Climate Models (GCMs)
- (j) Ali, Zulifqar, et al. A Novel Statistical Procedure for Accurate Assessment and Characterization of Drought Assessment under Global Climate Models
- (k) Ali, Zulifqar, et al. A Generalized Procedure for Joint Monitoring and Probabilistic Quantification of Extreme Climate Events at Regional Level
- (l) Ali, Zulifqar, et al. Development of MultiClimatM Drought Index – An Effective Drought Assessment Indicator for 21st Century Drought

- (m) Ali, Zulifqar, et al. The proposed drought index – HBNDI
- (n) Ali, Zulifqar, et al. Improving the Quality of the Hydrological Process (Dry/Wet Episodes) For the 21st Century under Global Circulation Models
- (o) Ali, Zulifqar, et al. Development of Multiscalar Standardized Drought Index in Relation with Climate Change with application

International Visit **Netherlands** From October 2018 to April 2019 • •
 Funding Organization: HEC Pakistan
 Purpose of Visit: To Enhance Research Capabilities

Professional Research Experience **Research Coordinator and Data Analyst** Feb 2013 to Sep 2015 •
 •
 Organization: Association For Social Development,
 Project Title: Making Birth Safe for Pakistan
 Supervisor: Dr Maqsood Ahmad

Research Coordinator and Data Analyst Feb 2013 to Sep 2015 •
 •
 Organization: Association For Social Development,
 Project Title: Delivering enhanced cardiovascular disease and hypertension care through private health care facilities in Pakistan.
 Supervisor: Dr Maqsood Ahmad
<http://comdis-hsd.leeds.ac.uk/projects/>

Research Coordinator and Data Analyst Feb 2013 to Sep 2015 •
 •
 Organization: Association For Social Development,
 Project Title: Enhanced diabetes and cardiovascular disease management through primary health care in Pakistan.
 Supervisor: Dr Maqsood Ahmad
<http://comdis-hsd.leeds.ac.uk/projects/>

Research Coordinator and Data Analyst Feb 2013 to Sep 2015 •
 •
 Organization: Association For Social Development,
 Project Title: Strengthening the delivery of asthma and chronic obstructive pulmonary disease care at primary health care facilities in Pakistan.
 Supervisor: Dr Maqsood Ahmad
<http://comdis-hsd.leeds.ac.uk/projects/>

Teaching Experience Instructor Fall 2016 • •
 Course Title: Population Study
 Class: BS Statistics
 Department of Statistics,
 Quaid-e-Azam university Islamabad
 Instructor Spring 2017 • •
 Course Title: Probability and Probability Distributions II
 Class: BS Statistics
 Department of Statistics,
 Quaid-e-Azam university Islamabad
 Instructor Spring 2017 • •

Course Title: Probability and Probability Distribution II
 Class: Msc Statistics
 Department of Statistics,
 Quaid-e-Azam university Islamabad
 Instructor Spring 2019 • •

Course Title: Basic Statistical Inference
 Class: BS 3rd Mathematics
 Department of Mathematics,
 Quaid-e-Azam university Islamabad
 Instructor Spring 2019 • •

Course Title: Probability and Statistics
 Class: BS 3rd Physics
 Department of Physics,
 Quaid-e-Azam university Islamabad
 Instructor Spring 2019 • •

Course Title: Probability and Statistics
 Class: BS Geo-Physics
 Department of Geo-Physics ,
 Quaid-e-Azam university Islamabad
 Instructor Spring 2020 • •

Course Title: Probability and Probability Distribution II
 Class: MSc Statistics
 Department of Mathematics and Statistics ,
 International Islamic University, Islamabad
 Instructor Spring 2020 • •

Course Title: Population Analysis and Official Statistics
 Class: BS Statistics
 Department of Statistics,
 Quaid-e-Azam university Islamabad
 Instructor Fall 2021 • •

Course Title: Probability and Probability Distributions II
 Class: Msc Statistics
 Department of Statistics,
 University of Sargodha
 Instructor Fall 2021 • •

Course Title: Quantitative methods in Geography II
 Class: BS Geography
 Department of Earth Sciences,
 University of Sargodha

References

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 Quaid-e-Azam University Islamabad, Pakistan

Dr. Marco Andreas Grzegorzczuk • •
 Associate Professor in Statistics, Phone: +31 50 363 3985
 room number: 449 (Bernoulliborg) E-mail: m.a.grzegorzczuk@rug.nl
 Nijenborgh 9 9747 AG Groningen Netherlands

Software Skills

Statistical Computational Programming:

• •
 * R, C, C++, SPSS, NCSS, Arc-GIS, Python, UNIX, Matlab