

## Zulfiqar Ali

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### 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  
**Gender:** Male  
**Present Nationality:** Pakistani  
**Date of Birth:** 18 September 1990  
**Country of Origin:** Pakistan  
**Language:** English, Urdu

### Current Position

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

### Research Interests

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

1. Year (2024) Abdul Baseer and Zulfiqar Ali and et al. Development of Ridge Ensemble Standardized Drought Index (RESDI) for Improving Drought Characterization and Future Assessment. *Accepted in Environmental Monitoring and Assessment*.
2. Year (2024) Muhammad Shakeel and Zulfiqar Ali. Improving future drought predictions—a novel multi-method framework based on mutual information for subset selection and spatial aggregation of global climate models of precipitation. *Stochastic Environmental Research and Risk Assessment*, 1-22, <https://doi.org/10.1007/s00477-024-02746-8> .
3. Year (2024) Alina and Ali et al. Development of Divergence and Interdependence-based Hybrid Weighting Scheme (DIHWS) for Accurate Assessment of Regional Drought. Accepted in *Theoretical and Applied Climatology*.
4. Year (2024) Awan, W. B., Batool, A., Ali, Z., Xu, Z., Niaz, R., Sammen, S. S. (2024). A Unified procedure for the probabilistic assessment and forecasting temperature characteristics under global climate change. *Environment, Development and Sustainability*, 1-25. <https://link.springer.com/article/10.1007/s10668-024-05020-7>.
5. Year (2024). Batool, A., Ali, Z., Mohsin, M., Masmoudi, A., Kartal, V., Satti, S. Assessing the generalization of forecasting ability of machine learning and

- probabilistic models for complex climate characteristics. *Stochastic Environmental Research and Risk Assessment*, 1-21.
6. Year (2024). Mukhtar, A., Ali, Z., Nazeer, A., Dhahbi, S., Kartal, V., Deebani, W. A novel semi data dimension reduction type weighting scheme of the multi-model ensemble for accurate assessment of twenty-first century drought. *Stochastic Environmental Research and Risk Assessment*, 1-25.
  7. Year (2024). Naz, R., Ali, Z. A novel self-adjusting weight approximation procedure to minimize non-identical seasonal effects in multimodel ensemble for accurate twenty-first century drought assessment. *Stochastic Environmental Research and Risk Assessment*, 1-22.
  8. Year (2024). Saleem, J., Zakar, R., Butt, M. S., Aadil, R. M., Ali, Z., Bukhari, G. M. J., ... Fischer, F. Application of the Boruta algorithm to assess the multidimensional determinants of malnutrition among children under five years living in southern Punjab, Pakistan. *BMC Public Health*, 24(1), 167.
  9. Year (2024). Shakeel, M., Ali, Z. Integration of Exponential Weighted Moving Average Chart in Ensemble of Precipitation of Multiple Global Climate Models (GCMs). *Water Resources Management*, 38(3), 935-949.
  10. Year (2024). Batool, A., Ali, Z., Mohsin, M., Shakeel, M. A generalized procedure for joint monitoring and probabilistic quantification of extreme climate events at regional level. *Environmental Monitoring and Assessment*, 195(10), 1223.
  11. Year (2024). Baseer, A., Ali, Z., Ilyas, M., Yousaf, M. A new Monte Carlo Feature Selection (MCFS) algorithm-based weighting scheme for multi-model ensemble of precipitation. *Theoretical and Applied Climatology*, 155(1), 513-524.
  12. Year (2023). Ahmad, M., Ali, Z\*, Ilyas, M., Mohsin, M., Niaz, R. A Common Factor Analysis Based Data Mining Procedure for Effective Assessment of 21st Century Drought under Multiple Global Climate Models. *Water Resources Management*, Netherlands 0920-4741.
  13. Year (2023). Yousaf, M., Ali, Z\*, Mohsin, M., Ilyas, M., Shakeel, M. Development of a new hybrid ensemble method for accurate characterization of future drought using multiple global climate models. *Stochastic Environmental Research and Risk Assessment*, United States 1436-3259.
  14. Year (2023). Niaz, R., Almazah, M. M., Al-Rezami, A. Y., Ali, Z., Hussain, I., Omer, T. Proposing a new framework for analyzing the severity of meteorological drought. *Geocarto International*, United Kingdom 1752-0762, 38(1), 2197512
  15. Year (2023). Niaz, R., Hussain, A., Almazah, M. M., Hussain, I., Ali, Z., Al-Rezami, A. Y. Identifying inter-seasonal drought characteristics using binary outcome panel data models. *Geocarto International*, United Kingdom 1752-0762, 38(1), 2178527.
  16. Year (2023). Ali, Z., Qamar, S., Khan, N., Faisal, M., Sammen, S. S. A New Regional Drought Index under X-bar Chart Based Weighting Scheme – The Quality Boosted Regional Drought Index (QBRDI). *Water Resources Management*, Netherlands 0920-4741, 37(5), 1895-1911.
  17. Year (2022). Qamar, S., Ali, Z., Sammen, S. S. A new method for modelling precipitation variability in relation to climate change. *Journal of Water and Climate Change*, United Kingdom 2040-2244, 14(1), 289-304.
  18. Year (2022). Raza, M. A., Almazah, M., Ali, Z., Hussain, I., Al-Duais, F. S. Application of Extreme Learning Machine Algorithm for Drought Forecasting. *Complexity*, Egypt 1076-2787 Volume 2022, Article ID 4998200.

19. Year (2022). Tehreem, Z., Ali, Z., Al-Ansari, N., Niaz, R., Hussain, I., Sammen, S. S. A Novel Appraisal Protocol for Spatiotemporal Patterns of Rainfall by Reconnaissance the Precipitation Concentration Index (PCI) with Global Warming Context. *Mathematical Problems in Engineering*. United States 1024-123X, Volume 2022, Article ID 3012100.
20. Year (2022). Li, Z., Riaz, S., Qamar, S., Ali, Z., Abbasi, J. N., Fayyaz, R. Development of adaptive standardized precipitation index and its application in the Tibet Plateau region. *Stochastic Environmental Research and Risk Assessment*, United States 1436-3259, 37(2), 557-575.
21. Year (2022). Ali, F., Li, B. Z., Ali, Z. A New Weighting Scheme for Diminishing the Effect of Extreme Values in Regional Drought Analysis. *Water Resources Management*, Netherlands 0920-4741, 36(11), 4099-4114.
22. Year (2022). Ali, F., Riaz, S., Ali, Z., Qamar, S., Li, B. Z., Khan, M. A. The Spatiotemporal Weighted Efficient Drought Index (STWEDI) - A New Generalized Procedure of Regional Drought Indicator. *Ecology*, United Kingdom 1936-0584, 15(7), e2454.
23. Year (2022). Ali, F., Ali, Z., Li, B. Z., Qamar, S., Nazeer, A., Riaz, S., ... Nawaz Abbasi, J. Exploring Regional Profile of Drought History- a New Procedure to Characterize and Evaluate Multi-Scalar Drought Indices Under Spatial Poisson Log-Normal Model. *Water Resources Management*, Netherlands 0920-4741, 36(9), 2989-3005.
24. Year (2022). Yuanbin, S., Qamar, S., Ali, Z., Yang, T., Nazeer, A., Fayyaz, R. A New Ensemble Index for Extracting Predictable Drought Features from Multiple Historical Simulations of Climate. *Tellus, Series A: Dynamic Meteorology and Oceanography*. United Kingdom 1600-0870, 74, 236-249
25. Year (2022). Khan, M. A., Riaz, S., Jiang, H., Qamar, S., Ali, Z., Islamil, M., ... Zhang, X. 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*, United States 1095-8630, 312, 114951.
26. Year (2022). Khan, M. A., Zhang, X., Ali, Z., Jiang, H., Ismail, M., Qamar, S. A New Standardized Type Drought Indicators Based Hybrid Procedure for Strengthening Drought Monitoring System. *Tellus, Series A: Dynamic Meteorology and Oceanography*, United Kingdom 1600-0870, 74(1), 119-140.
27. Year (2022). Li, Z., Ali, Z., Cui, T., Qamar, S., Ismail, M., Nazeer, A., Faisal, M. 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*, Netherlands 1573-0840, 113(1), 547-576.
28. Year (2021). Ali, Z., Ellahi, A., Hussain, I., Nazeer, A., Qamar, S., Ni, G., Faisal, M. Reduction of Errors in Hydrological Drought Monitoring – A Novel Statistical Framework for Spatio-Temporal Assessment of Drought. *Water Resources Management*, Netherlands 0920-4741, 35(13), 4363-4380.
29. Year (2021). Niaz, R., Zhang, X., Ali, Z., Hussain, I., Faisal, M., Elashkar, E. E., ... Al-Deek, F. F. A new propagation-based framework to enhance competency in regional drought monitoring. *Tellus, Series A: Dynamic Meteorology and Oceanography*, United Kingdom 1600-0870, 73(1), 1-12.
30. Year (2021). Habeeb, R., Zhang, X., Hussain, I., Hashmi, M. Z., Elashkar, E. E., Khader, J. A., ... Al-Deek, F. F. Statistical analysis of modified Hargreaves equation for precise estimation of reference evapotranspiration. *Tellus, Series A: Dynamic Meteorology and Oceanography*, United Kingdom 1600-0870, 73(1), 1-12.

31. Year (2021). Niaz, R., Hussain, I., Ali, Z., Faisal, M. A novel framework for regional pattern recognition of drought intensities. *Arabian Journal of Geosciences*, Germany 1866-7538, 14, 1-16.
32. Year (2021). Niaz, R., Hussain, I., Zhang, X., Ali, Z., Elashkar, E. E., Khader, J. A., ... Shoukry, A. M. Prediction of Drought Severity Using Model-Based Clustering. *Mathematical Problems in Engineering*, United States 1024-123X, Volume 2021, Article ID 9954293.
33. Year (2021). Ali, F., Li, B. Z., Ali, Z. Strengthening Drought Monitoring Module by Ensembling Auxiliary Information Based Varying Estimators. *Water Resources Management*, Netherlands 0920-4741, 35(10), 3235-3252.
34. Year (2021). Raza, A., Hussain, I., Ali, Z., Faisal, M., Elashkar, E. E., Shoukry, A. M., ... Gani, S A seasonally blended and regionally integrated drought index using Bayesian network theory Meteorological Applications Science and Technology for Weather and Climate. *Meteorological Applications*, United States 1350-4827, 28(3), e1992.
35. Year (2021). Khan, M. A., Faisal, M., Hashmi, M. Z., Nazeer, A., Ali, Z., Hussain, I. Modeling drought duration and severity using two-dimensional copula. *Journal of Atmospheric and Solar-Terrestrial Physics*, United Kingdom 1364-6826, 214, 105530.
36. Year (2020). Niaz, R., Hussain, I., Ali, Z., Faisal, M., Elashkar, E. E., Shoukry, A. M., ... Al-Deek, F. F. A novel spatially weighted accumulative procedure for regional drought monitoring. *Tellus, Series A: Dynamic Meteorology and Oceanography*, United Kingdom 1600-0870, 72(1), 1-13.
37. Year (2020). Ali, Z., Hussain, I., Nazeer, A., Faisal, M., Ismail, M., Qamar, S., ... Ni, G. 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, Series A: Dynamic Meteorology and Oceanography*, United Kingdom 1600-0870 72(1), 1-10.
38. Year (2020). Ali, Z., Hussain, I., Grzegorzczak, M. A., Ni, G., Faisal, M., Qamar, S., ... Al-Deek, F. F. Bayesian network based procedure for regional drought monitoring: The Seasonally Combinative Regional Drought Indicator. *Journal of Environmental Management*, United States 1095-8630, 276, 111296.
39. Year (2020). Jiang, H., Khan, M. A., Li, Z., Ali, Z., Ali, F., Gul, S. (2020) Regional drought assessment using improved precipitation records under auxiliary information. *Tellus, Series A: Dynamic Meteorology and Oceanography*, United Kingdom 1600-0870, 72(1), 1-26.
40. Year (2020). Ali, Z., Hussain, I., Faisal, M., Grzegorzczak, M., Qamar, S., Shoukry, A. M., ... Gani, S. On the more generalized non-parametric framework for the propagation of uncertainty in drought monitoring. *Meteorological Applications*, United States 1350-4827, 27(3), e1914.
41. Year (2020). Ali, Z., Almanjahie, I. M., Hussain, I., Ismail, M., Faisal, M. A novel generalized combinative procedure for Multi-Scalar standardized drought Indices-The long average weighted joint aggregative criterion. *Tellus, Series A: Dynamic Meteorology and Oceanography*, United Kingdom 1600-0870, 72(1), 1-23.
42. Year (2020). Niaz, R., Almanjahie, I. M., Ali, Z., Faisal, M., Hussain, I. A Novel Framework for Selecting Informative Meteorological Stations Using Monte Carlo Feature Selection (MCFS) Algorithm. *Advances in Meteorology*, Egypt 1687-9317, Volume 2020, Article ID 5014280.

43. Year (2020). Ali, Z., Hussain, I., Faisal, M., Khan, D. M., Niaz, R., Elashkar, E. E., Shoukry, A. M. Propagation of the Multi-Scalar Aggregative Standardized Precipitation Temperature Index and its Application. *Water Resources Management*, Netherlands 0920-4741, 34, 699-714.
44. Year (2019). Ali, Z., Hussain, I., Faisal, M., Grzegorzczak, M. A., Almanjahie, I. M., Nazeer, A., Ahmad, I. Characterization of regional hydrological drought using improved precipitation records under multi-auxiliary information. *Theoretical and Applied Climatology*, Austria 1434-4483, 140, 25-36.
45. Year (2019). Ullah, I., Zuberi, A., Rehman, H., Ali, Z., Thörnqvist, P. O., Winberg, S. 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*, Netherlands 0920-1742, 46, 75-88.
46. Year (2019). Ali, Z., Hussain, I., Faisal, M., Shad, M. Y., Elashkar, E. E., Gani, S. An Ensemble Procedure for Pattern Recognition of Regional Drought. *International Journal of Climatology*, United Kingdom 1097-0088, 40(1), 94-114.
47. Year (2019). Ali, Z., Hussain, I., Faisal, M., Elashkar, E. E., Gani, S., Shehzad, M. A. Selection of appropriate time scale with Boruta algorithm for regional drought monitoring using multi-scaler drought index. *Tellus, Series A: Dynamic Meteorology and Oceanography*, United Kingdom 1600-0870, 71(1), 1604057.
48. Year (2019). Ali, Z., Hussain, I., Faisal, M., Almanjahie, I. M., Ahmad, I., Khan, D. M., ... Qamar, S. A Probabilistic Weighted Joint Aggregative Drought Index (PWJADI) criterion for drought monitoring systems *Tellus, Series A: Dynamic Meteorology and Oceanography*, United Kingdom 1600-0870, 71(1), 1588584.
49. Year (2019). Ali, Z., Hussain, I., Faisal, M., Shoukry, A. M., Gani, S., Ahmad, I. A framework to identify homogeneous drought characterization regions. *Theoretical and Applied Climatology*, Austria 1434-4483, 137, 3161-3172.
50. Year (2018). Ali, Z., Hussain, I., Faisal, M., Almanjahie, I. M., Ismail, M., Ahmad, M., Ahmad, I. A New Weighting Scheme in Weighted Markov Model for Predicting the Probability of Drought Episodes. *Advances in Meteorology*, Egypt 1687-9317, Volume 2018, Article ID 8954656.
51. Year (2017). Ali, Z., Hussain, I., Faisal, M., Nazir, H. M., Moemen, M. A. E., Hussain, T., Shamsuddin, S. A Novel Multi-Scalar Drought Index for Monitoring Drought: the Standardized Precipitation Temperature Index. *Water Resources Management*, Netherlands 0920-4741, 31, 4957-4969.
52. Year (2017). Ali, Z., Hussain, I., Faisal, M., Nazir, H. M., Hussain, T., Shad, M. Y., ... Hussain Gani, S. Forecasting Drought Using Multilayer Perceptron Artificial Neural Network Model. *Advances in Meteorology*, Egypt 1687-9317, Volume 2017, Article ID 5681308.
53. Year (2016). Nazir, H. M., Hussain, I., Zafar, M. I., Ali, Z., AbdEl-Salam, N. M. Classification of Drinking Water Quality Index and Identification of Significant Factors. *Water Resources Management*, Netherlands 0920-4741, 30, 4233-4246.

**International  
Visit**

**Netherlands**

From October 2018 to April 2019 • •

Funding Organization: HEC Pakistan

Purpose of Visit: To Enhance Research Capabilities

**Project**

Funding Organization: University of the Punjab, Lahore, Pakistan

Title: ON THE ACCURATE ASSESSMENT OF CLIMATE HAZARDS UNDER VARIOUS STATISTICAL PARADIGMS

Role: Principle Investigator  
Funds: 200000 PKR  
Status: Completed

**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/>

**ADVISORY  
SERVICES**

Member Departmental Doctoral Programme Committee (DDPC), at College  
of Statistical Sciences, University of the Punjab, Lahore. • •

Member Exams Inspection Committee (Internal), at College of Statistical  
Sciences, University of the Punjab, Lahore.

Member Decoration committee, Sport Fest 2023 committee at College of  
Statistical Sciences, University of the Punjab, Lahore.

Member HEC revision committee (Departmental Level)

Focal Person ORIC (Departmental Level)

Focal Person Carrying Counselling Center (Departmental Level)

**SYMPOSIA**

Symposium on Frontiers of Engineering Materials and Metallographic Competition  
2024 • •

FUNDAMENTALS AND MODERN TRENDS IN SUPPLY CHAIN 2024

<b>Thesis Supervision</b>	<p><b>MPhil Level</b> <span style="float: right;">• •</span></p> <p>Alina Mukhtar, 2023, Completed  Amina Batool, 2023, Completed  Muhammad Ahmad, 2023, Completed  Abdul Baseer, 2023, Completed  Mahrukh Yousaf, 2033, Completed  Sumaya Saif, 20323, Completed</p> <p><b>Ph.D Level</b> <span style="float: right;">• •</span></p> <p>Muhammad Shakeel, In-progress  Rabiya Fatima, In-progress  Rubina Naz, In-progress  Rashida Khalil, In-progress  Hussnain Abbas, In-progress</p>
<b>Course Taught</b>	<p><b>Undergraduate Level</b> <span style="float: right;">• •</span></p> <p>Population Study  Demography  Probability and Statistics  Epidemiology  Probability and Probability Distribution  Categorical Data Analysis  R Software  SPSS Software  Official Statistics  Introduction to Biomedical Research</p> <p><b>Post-Graduate and Ph.D Level</b></p> <p>Spatial Statistics  Time Series Analysis  Multivariate Analysis</p>
<b>References</b>	<p>· 1) Dr. Ijaz Hussain  Professor in Statistics, Phone: 051-9064-2183  Department of Statistics E-mail: ijaz@qau.edu.pk  Quaid-e-Azam University Islamabad, Pakistan</p> <p>· 2) Dr. Marco Andreas Grzegorzcyk  Professor in Statistics, Phone: +31 50 363 3985  room number: 449 (Bernoulliborg) E-mail: m.a.grzegorzcyk@rug.nl  Nijenborgh 9 9747 AG Groningen Netherlands</p>
<b>Software Skills</b>	<p>Statistical Computational Programming:</p> <p>· <b>R, C, C++, SPSS, NCSS, Arc-GIS, Python, UNIX, Matlab</b></p>