



Muhammad Waseem (Ph.D.)

Assistant Professor:

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Professional Experience

Assistant Professor	Center of Excellence in Water Resource Engineering, University of
Jan-2017-to date	Engineering and Technology Lahore, Pakistan

Education:

Ph.D.	Civil and Environmental Eng. (Water Resources and Environmental Eng.)_
2012-2016	Hanyang University, South Korea
M.Sc.	Water Resources Eng.
2009-2012	University of Engineering & Technology Lahore, Pakistan
B.Sc. (Hons)	Agricultural Engineering
2005-2009	University of Agriculture Faisalabad, Pakistan

Research Interest:

Drought Assessment, Projection, and Outlook

Climate-Vegetation-Hydrology interaction mechanism

Ungauged Catchment Modeling

Hydrological Modeling and Simulation (Statistical and Distributed)

Research Projects:

On Going:

- [1] Title: Drought and Agricultural Production Nexuses in Punjab: Historical Patterns, Spatiotemporal Variability and Probabilistic Projection under climate change

Funding Organization: Higher Education Commission of Pakistan

- [2] Title: Multivariate Drought Projection framework for characterization of 21st century drought in Pakistan

Funding Organization: Higher Education Commission of Pakistan

- [3] Title: Flood Management Characterization and Vulnerability Analysis using an Integrated RS-GIS and 2D Hydrodynamic Modelling Approach

Funding Organization: Higher Education Commission of Pakistan

Completed:

- [4] Title: Development of Assessment Techniques for Hydrological Drought Risk.

Funding Organization: National Research Foundation of Korea.

- [5] Title: Multivariate Climatological Drought Assessment and Projection to strengthen preparedness and adaptation to droughts in Korean peninsula.

Funding Organization: Korean BK21 Program

- [6] Title: Technology to Improve Urban Disaster Prevention Performance for Flood Proofing Facilities and Development of Optimal Design & Operation system for urban drainage network.

Funding Organization: Korean BK21 Program

- [7] Title: Monitoring, Evaluation, and Prediction of Water-Related Disasters using Various

Observation Sensor.

Funding Organization: Korea Agency for infrastructure Technology Advancement.

Publications

- 1 Waseem M, Hanbo Y, Huimin L, Ajmal M, Dawen Y. 2018. Improving the Regional Applicability of Satellite Precipitation Products by Ensemble Algorithm. *Remote Sensing*. 10, 577.
- 2 Chen S., Waseem M., et al., .2018. Assessment of Probabilistic Multi-Index Drought using a Dynamic Naïve Bayesian Classifiers. *Water Resource Management*, 32(13): 4359–4374
- 3 Masood M., Waseem, M., et al., Integrated Framework for Estimating Merged Satellite Product in Pakistan. *Fresenius Environmental Bulletin*. 27(12B), 9747-9754
- 4 Ijaz A., Waseem M., Lei, H., Yang, H., Yang, D. 2018. Harmonious level indexing for ascertaining human–water relationships. *Environmental Earth Science*. 77,125
- 5 Ijaz A., et al., 2018. A linear bi-level multi-objective program for optimal allocation of water resources. *PLOS One*. 0192294
- 6 Waseem, M., Ajmal, M., Lee, J. H., Kim, T.W. 2016. Multivariate drought assessment considering the antecedent drought conditions. *Water Resources Management*. 30(12), 4221-4231
- 7 Waseem, M., Park, D.H., Kim, T.w. 2016. Comprehensive Climatological Drought Projection over South Korea under Climate Change. *Procedia Engineering*. 154, 284-290.
- 8 Waseem, M., Ajmal, M., Kim, T.W. 2015. Development of a new composite drought index for multivariate drought assessment. *Journal of Hydrology*. 527, 30-37.
- 9 Waseem, M., Ajmal, M., Kim, U.T., Kim, T.W. 2016. Extended Inverse Distance Weighting Method for Regional Stream flow Estimation at Ungauged Sites. *Hydrology Research Journal*. 47.2, 333-343

- 10 Waseem, M., Ajmal, M., Kim, T.W. 2016. Improving Flow Duration Curve Predictability at Ungauged Site Using Constrained Hydrologic Regression Technique. *Journal of Korean Society of Civil Engineers*. doi:10.1007/s12205-016-0357-1
- 11 Ajmal, M., Waseem, M., Ahn, J.-H, Kim, T.W. 2016. Runoff Estimation using NRCS Slopeadjusted Curve Number in Mountainous Watersheds. *Journal of Irrigation and Drainage Engineering*, DOI: 10.1061/(ASCE)IR.1943-4774.0000998
- 12 Ajmal, M., Waseem, M., Waqas, A, Kim, T.W. 2016. Soil moisture dynamics with hydroclimatological parameters at different soil depths. *Environmental Earth Sciences*. 75:133. DOI: 10.1007/s12665-015-5021-3
- 13 Ajmal, M., Waseem, M., Kim, H.S, Kim, T.W. 2016. Potential implications of prestorm soil moisture on hydrological prediction. *Journal of Hydro-environment Research*. 11,1-15.
- 14 Waseem, M., Ajmal, M., Kim, T.W. 2015. Ensemble hydrological prediction of stream flow percentile at ungauged basins in Pakistan. *Journal of Hydrology*. 525, 130-137.
- 15 Waseem, M., Shin, J.Y., Kim, T.W. 2015. Comparing Spatial Interpolation Schemes for Constructing a Flow Duration Curve in an Ungauged Basin. *Water Resources Management*. 29(7), 2249-2265
- 16 Ajmal, M., Waseem, M., Ahn, J.-H, Kim, T.W. 2015. Evolution of a parsimonious rainfall runoff model using soil moisture proxies. *Journal of Hydrology*. 530, 623-633.
- 17 Ajmal, M., Waseem, M., Ahn, J.H., Kim, T.W. 2015. Improved Runoff Estimation Using Event-Based Rainfall-Runoff Models. *Water Resources Management*. 29(6), 1995-2010.

18 Jisoo, Y., Waseem, M., Shin, J. Y., Kim, T.W. 2015. Evaluation of extended inverse distance weighting method for construction flow duration curve at ungauged basin. Journal of Korean Society of Hazard Mitigation. 15 (3), 329-337

Conference Proceedings .

- 1 Waseem, M., Kim, T.W. (2016) Comprehensive climatological drought projection over South Korea under climate change. 12th International Conference on Hydro informatics; South Korea, 21-26 Aug/2016
- 2 Waseem, M., Shin, J. Y., Lee, J.H., Kim, T.W. (2015) Comprehensive Drought Monitoring Based on Coupled Drought Indices. 12th Asia Oceania Geosciences Society (AOGS) 2015, Singapore; 2-7Aug/2015
- 4 Waseem, M., Kwon, H.H., Kim, T.W. (2015) Drought Future Projection Over Korean Peninsula by Considering Changes in Hydrological Balance. 12th Asia Oceania Geosciences Society (AOGS), 2015, Singapore; 2-7 Aug/2015
- 5 Waseem, M., Kim, T.W. (2014) Hydrological information transfer for ungauged basin prediction. 4th International Symposium on Fusion Tech; South Korea, 15-17 Jan/2014
- 6 Waseem, M., Ajmal, M., Kim, T.W. (2014) Prediction of regionalize flow duration curve using multiple factor weighted sorting algorithm. Korea Water Resources Association Conference; 15-16 May/2014
- 7 Waseem, M., Ajmal, M., Kim, T.W. (2013) Regional Approach for Estimating Design Discharge at Ungauged site in Pakistan. 6th Conference of the Asia Pacific Association of Hydrology and Water Resources (APHW) (Climate Change and Water Security), South Korea; 19-21 Aug/2013

- 9 Waseem, M., Kim, T.W., Ahn, J.H. (2013) Hydrological modelling of natural streams in Himalayan ungauged region of Pakistan. 2nd International Symposium on Advanced Technology for River Management; South Korea, 7-9 Nov/2013

Supervised/Student Research: (On going)

- 1 Impact of climate variation on hydrological behavior of snow fed catchment, a case study of Chitral basin
- 2 Understanding the Hydrological response to climate and human: a case study of the Hunza River basin, Pakistan
- 3 Assessment of hydrological drought in Anthropocene : A case of reservoirs effect in arid region
- 4 Ascertainment of Hydropower potential sites in Hunza River Basin using Location Analysis Algorithm
- 5 Statistical Modelling for assessment of drought Water quality Nexus in Sargodha Region
- 6 Preliminary assessment of SM2Rain Satellite Precipitation Product in diverse climatic condition of Pakistan
- 7 Flood Forecasting using Model Dependent vs statistical approach.