Curriculum Vitae

SHAMSUDDIN SHAHID
Associate Professor
Department of Water and Environmental Engineering
Faculty of Civil Engineering, Universiti Teknologi Malaysia (UTM)
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Google H-Index: 47 Scopus H-Index: 39
Listed as the World's most influential climate scientists by Thomson-Reuters
Ranked World's top 2% scientists in Atmospheric Research

Areas of Specialization

Modeling Climate Variability and Changes, Water Resources Modeling and Management, Natural Hazard Vulnerability and Risk Assessment, Statistical Hydrology, Hydro informatics

Education

- **PhD, Hydrology**, Indian Institute of Technology (IIT) - Kharagpur, India, 2001.
  Thesis Title: Groundwater potential modeling of a soft rock region using GIS based Integrated Geophysical Approach

- **M.Sc., Applied Physics & Electronics**, Rajshahi University, Bangladesh, 1989 Result: First position in the First Class

- **B.Sc. (Honors), Applied Physics & Electronics**, Rajshahi University, Bangladesh, 1988; Result: First Class

Teaching/Research Experience

- **Associate Professor**, Department of Hydraulics & Hydrology, Faculty of Civil Engineering, Universiti Teknologi Malaysia, Malaysia
   June 2011 – till
   Teaching courses: Statistical Hydrology, Groundwater Hydrology, Research Methodology

- **Senior Lecturer**, Department of Geology, University of Malaya, Malaysia

June 2009 – 2011

Teaching courses: Hydrosphere, Earth System Sciences, Geostatistics.

☐ **Georg Foster Fellow of Alexander von Humboldt Foundation**, Department of Geoinformatics, Hydrology and Modelling, Institute of Geography, Friedrich-Schiller Universität Jena, Germany.
January 2007 – March 2008

Responsibility: Development of a Participatory Spatial Decision Support System for Integrated Water Resources Management in Poorly Gauged River Basins in the Context of Global Climate Change.

☐ **Rhodes University Research Fellow**, Rhodes University, South Africa.
January 2006 – October 2006

Responsibility: Participatory Irrigation Water Resources Management, Scenario-based Planning, Application of Geoinformation Science in disaster management.

• **Postdoctoral Fellow**, Remote Sensing and GIS, Asian Institute of Technology (AIT), Thailand
January 2005 – December 2005

Responsibility: Research on Assessment of hydro-environment of Northwestern Bangladesh using Remote Sensing & GIS.

• **Assistant Professor**, Applied Physics & Electronics, Rajshahi University, Bangladesh
October 2000 – June 2009

Teaching Applied Geophysics and Computer Programming. Supervision of postgraduate research: Supervised Four Master's Thesis and more than 30 B.Sc. (Honors) research projects.

☐ **Scientific Officer**, Space Research and Remote Sensing Organization, Bangladesh. **August 1995 – October 2000**

Responsibilities: Applications of Remote Sensing and GIS in Water Resources

Awards/Fellowships/Honors/Recognitions

• Listed as the World's most influential climate scientists by Thomson-Reuters
• Ranked among World's top 2% scientists in Atmospheric Research by Stanford University
• Highly Cited Researcher 2019 (Universiti Teknologi Malaysia)
• Citra Karisma 2019: Journal Publication (Universiti Teknologi Malaysia)
• Citra Karisma 2018: Academic Excellence (Universiti Teknologi Malaysia)
• Citra Karisma 2018: Journal Publication (Universiti Teknologi Malaysia)
• Award for Student Supervision: 2018 (School of Civil Engineering)
• Award for Publication 2018 (School of Civil Engineering)
• Cendekiabitara Award 2018- University of Pahang Malaysia
• Citra Karisma 2017: Journal Publication (Universiti Teknologi Malaysia)
• Citra Karisma 2016: Journal Publication (Universiti Teknologi Malaysia)
• Award for Research book 2016: Research Institute for Sustainable Environment (RISE), UTM

- Excellent service Award 2016: Research Institute for Sustainable Environment (RISE), UTM
- Award for H-Index 2016: Research Institute for Sustainable Environment (RISE), UTM
- Award for Writing Articles 2016:Research Institute for Sustainable Environment (RISE), UTM
- Citra Karisma 2015: Journal Publication (Universiti Teknologi Malaysia)
- Citra Karisma 2014: Academic Excellence (Universiti Teknologi Malaysia)
- *Research Award 2013*, Faculty of Civil Engineering, Universiti Teknologi Malaysia
- *Georg Foster Fellowship* of Alexander von Humboldt Foundation, Bonn, Germany
- *Rhodes University Postdoctoral Research Fellowship 2006*, Rhodes University, South Africa.
- *AIT Postdoctoral Fellowship 2005*, Asian Institute of Technology, Thailand
- *Indian Council for Cultural Relation Fellowship* for PhD in Indian Institute of Technology, Kharagpur, India.
- *Rajshahi University Award,* for best performance in Master of Science
- *University Grant Commission Fellowship*, for performance in Bachelor of Science

Professional Membership / Qualifications / Recognition

1. Life Member of European Geosciences Union, 2013 – to date
2. Member of International Statistical Hydrology Society, 2014 – to date
3. Member of International Society for Agricultural Meteorology, 2014 – to date
4. Senior Member of Asia-Pacific Chemical, Biological and Environmental Engineering Society (APCBEES), 2013 – to date
5. Research Fellow, Centre for Coastal and Ocean Engineering, Research Institute of Sustainable Environment, Universiti Teknologi Malaysia, 2018 to date
6. Associate Fellow at Institute of Oceanography and Environment (INOS), University Malaysia Terengganu, 2019 – to date
7. Associate Fellow of Centre for Environmental Sustainability and Water Security (IPASA), 2015 to 2018

Supervision:

Postdoctoral Supervision:
Completed
1. Morteza Mohsenipour, 2016-2017. Modeling climate change on groundwater-dependent irrigation system
2. Kamal Ahmed, Jan. 2018-Dec 2019: Reduction of Uncertainties in Climate Change Projection
3. Zaher Mundher Yaseen, Jul. 2018-till: Rainfall variability on the river flooding pattern: The application of hybrid intelligent models

PhD Main Supervision:

Completed
1. Morteza Mohsenipour (Graduated on 17/06/2015). Nitrate Movement Simulation in Saturated Porous Media in Presence of Kaolin Particles

2. Hussein Abed Obaid (Graduated on 15/02/2016). Modelling Sewer Overflow of Karbala City with Large Floating Population
3. Kamal Ahmed (Graduated on 5/010/2016). Modelling Seasonal Meteorological Droughts in a Data Scarce Arid Region Under Climate Change Scenarios
4. MD. Mahiuddin Alamgir (Graduated on 05/04/2017). Climate Change Projection and Drought Characterization in Bangladesh
5. Zulfaqar Bin Sa'adi (Graduated on 15/08/2018). Spatiotemporal Changes in Climate and Hydrology of Sarawak Under Different Representative Concentration Pathways Scenarios
6. Saleem Abdulridha Salman (Graduated on 12/12/2018). Modelling Impacts of Climate Change on Agricultural Water Stress in Iraq
7. Mohammed Sanusi Shiru (Graduated on 26/09/2019). Modelling Impacts of Climate Change on Meteorological Droughts During Cropping Seasons and Ground Water Sustainability
8. Najeebullah Khan (Graduated on 19/11/2019). Projection and Prediction of Heat Waves for An Arid Region in the Context of Climate Change
9. Mohammed Hamza (Graduated on 25/03/2020). Modelling Construction Labour Productivity from Labour's Characteristics
10. Mohamad Rajab Houmsi (Graduated on 28/06/2020). Modelling Impacts of Climate Change on Aridity and Crop Water Demand in Syria
11. Mohamed Salem Mohamed Hassan Nashwan (Graduated on 30/06/2020). High-Resolution Gridded Climate Dataset for Data-Scarce Region

On-going

12. Mohd Khairul Idlan Bin Muhammad, Development of Empirical Potential Evapotranspiration Models for Reduction of Uncertainty in Projections
13. Ghaith Falah Ziarh, Development of Empirical Potential Evapotranspiration Models for Reduction of Uncertainty in Projections
14. Zafar Iqbal, Integrate Hydrological modelling of water resource using System dynamics and Artificial intelligence

PhD Co-supervision:

Completed

1. Sahar Hadipour (Graduated on 03/08/2016). Robust Statistical Downscaling of Rainfall and Temperature for Reduction of Uncertainty in Climate Change Impact on River Discharge
2. Muhammad Noor, Rainfall Intensity-Duration-Frequency Curves with Uncertainty Levels at Ungauged Location Under Climate Change Scenario

On-going

3. Obaidullah Salehie, Impact Assessment of Climate Change on Water Resources and Future Hydro-Climatic Extremes in Amu Darya Basin
4. Saiful Islam, Performance Evaluation of Reference Evapotranspiration Models and Trend Analysis Under Climate Variability in Semi-Arid Region
5. A.B.M. Abu Haider, Evaluation of Wetland Changes Associated with Climate and Anthropogenic Factors Using Remote Sensing and Physical Data

Master's Thesis Main Supervision:

Completed

1. Sumaiya Jarin Ahammed (Graduated on 09/05/2017). Agricultural Water Stress and Risk Assessment Using Integration of Catastrophe Theory and Entropy Methods
2. Zafar Iqbal (Graduated on 21/05/2019). Assessment of Climatic Water Balance Under Climate Change Scenario in Upper Indus River Basin

Master's Thesis Co-Supervision
3. Muhammad Noor (Graduated on 04/10/2017). Climate Change Impacts on Rainfall IntensityDuration-Frequency Curves of Peninsular Malaysia

Research Projects:

<u>Project Leader</u>

International Ongoing Projects:
1. Developing effective flood mitigation tools measures to combat urban flooding in Peninsular Malaysia. Staffordshire University QR GCRF 2020-21 (Four sub-projects total funding £16,000). From Jan 2019 to June 2021
2. A Decision Support System for Strategic Planning of Sustainable Water Security in Some Asian Belt & Road Countries. The Belt and Road Science and Technology Fund on Water and Sustainability, 批准号： 2019491311 (RMB 158,000). From 31-12-2019 to 31-12-2021
3. Urban Water Challenges in Asian Cities Due to Climate Change and Their Mitigation. The Belt and Road Science and Technology Fund on Water and Sustainability, 批准号： 2019491311 (RMB 158,000). From 01-01-2021 to 31-12-2022

Completed Projects:
1. Hybrid Intelligent Model for Forecasting Rainfall Extremes. Universiti Teknologi Malaysia: - (RM 35,600). From 01-7-2020 to 31-12-2020
2. Reduction of Uncertainties in Climate Change Projection. Universiti Teknologi Malaysia: - (RM 125,600). From 01-01-2018 to 31-12-2019
3. Rainfall variability on the river flooding pattern: The application of hybrid intelligent models. Universiti Teknologi Malaysia: 04E47 (RM 125,600). From 01-07-2020 to 31-12-2020
4. Vulnerability and Adaption to Climate Change in Groundwater-Dependent Irrigation System: Case Study Malaysia. Universiti Teknologi Malaysia: - (RM 65,000). From 01-03-2016 to 28-02-2017
5. Identification of Low Impact Development Structures for Mitigation of Urban Floods Reduction of Uncertainties in Climate Change Projection. Universiti Teknologi Malaysia: - (RM 50,000). From 01-03-2016 to 28-02-2017
6. Modeling Hydrological and Hydro-Geochemical Properties of A Tropical Peat Catchment In Sarawak. Universiti Teknologi Malaysia: 14H84 (RM 50,000). From 01-07-2016 to 31-12-2017
7. The Influence of Large-Scale Ocean-Atmosphere Phenomena on River Discharge In Major Urban Water Supply Catchments In Malaysia. Universiti Teknologi Malaysia: 10H36 (RM 49,000). From 01-05-2015 to 31-01-2017

8. Modeling Socio-economic interactions with hydrological processes for improved projection of water balance. Ministry of Education Malaysia: 4F541 (RM 59,000). From 01-07-2014 to 30-06-2016
9. Vulnerability and Adaptation to Climate Change in Groundwater-dependent Irrigation System. Universiti Teknologi Malaysia: 00M40 (RM 42,340). From 01-05-2014 to 31-07-2016
10. A system dynamic approach for forecasting water demand in urban areas of Malaysia. Universiti Teknologi Malaysia: 06H36 (RM 48,000). From 01-04-2014 to 30-11-2015
11. Climate change vulnerability and adaptation in groundwater-dependent irrigation system in Asia-Pacific region. Asia Pacific Network: 4B142 (RM 105,856). 01-03-2014 to 05-11-2015
12. Statistical Analysis of Climate Data to Assess Climate Change Impacts on Hydrological Extremes and Adaptation Needs in the East Coast of Malaysia. Ministry of Education Malaysia: 4L084 (RM 69,800). From 15-06-2012 to 14-09-2014
13. Modelling the Impacts of Climate Variability and Changes on Groundwater Resources in Tropical Region. Universiti Teknologi Malaysia: 06J15 (RM 25,000). From 01-05-2012 to 30-04-2013

Members in Noteworthy Projects:
1. Mapping of the Coastal Mangrove Ecosystem Vulnerability to Sea Level Rise-Phase 1
2. Flood Analysis, Risk, And Control: Approaches Toward Sustainability
3. Distributed Rainfall-Runoff Modelling through Integration using Empirical Models for the Simulation of Floods
4. A Decision Support System for Planning Sustainability in Water Resources in Malaysia
5. A Climate Change Resilient Forecasting Model of Extreme Rainfall of Peninsular Malaysia
6. Entity-Based Dynamics in Hydrological Simulation Under Changing Environment
7. Utm-Trg 2.3 Improvement of Water Efficiency of Water Distribution Network of UTM
8. Estimation of Uncertainties in Climate Change Projections in Peninsular Malaysia
9. Non-Stationary Return Periods of Floods in The East Coast of Peninsular Malaysia Due to Climate Change
10. Bivariate Frequency Analysis of Flood Variables Using Copula in Kelantan River Basin
11. A coupled hydrologic-hydraulics model to simulate the flood extents and dept in Kelantan River Basin
12. Impacts of Landuse and Climate Change on River Discharge and Sediment Flux
13. Reduction of the Impact of Oil Palm Expansion on Climate Emissions
14. Multi-Model Projections of Extreme Weather Events in Peninsular Malaysia Under Climate Change Scenario
15. Integration of Distributed and Lumped Hydrological Models for Enhanced Prediction of Catchment Runoff
16. Developing an Integrated Disaster Risk Index considering Climate Change - A pilot project for Malaysian River Basin
17. A watershed storage study for understanding the threshold of flood mechanism

Consultancy

1. National Urban Policy 2 (Dasar Perbandaran Negara 2), The Ministry of Urban Wellbeing, Housing and Local Government (KPKT), Consultant (Water and Climate Change), RM 30,000, June 2014 to May 2015

2. Drought hazard risk maps and report (Bangladesh) - (2012-2013) - Asian Disaster Prevention Center & Geoinformatics Center (AIT), Thailand, Consultant, RM15,000, Jan 2013 to Dec 2013

Intellectual Property

1. R-code for non-stationary analysis of extreme rainfall return period (Ref: LY2020005407; Date: 19/10/2020)
2. R-codes for the development of high-resolution gridded temperature datasets (Ref: LY2020005387; Date: 19/10/2020)
3. R-code for estimation of hydrological hazard susceptibility index (Ref: LY2020005390; Date: 19/10/2020)
4. A novel approach for selection of global climate models (Ref: LY2020004401; Date: 01/10/2020)

Publications

Journal Articles (Web of Science indexed with impact factor):

1. Tao, H., Al-Bedyry, N. K., Khedher, K. M., Shahid, S., & Yaseen, Z. M. (2021). River Water Level Prediction in Coastal Catchment using hybridized relevance vector machine model with improved grasshopper optimization. Journal of Hydrology, 126477.
2. Sun, J., Wang, X., Yin, Y., & Shahid, S. (2021). Analysis of historical drought and flood characteristics of Hengshui during the period 1649–2018: a typical city in North China. Natural Hazards, 1-19.
3. Song, Y. H., Chung, E. S., & Shahid, S. (2021). Spatiotemporal differences and uncertainties in projections of precipitation and temperature in South Korea from CMIP6 and CMIP5 GCMs. International Journal of Climatology. DOI: https://doi.org/10.1002/joc.7159
4. Adnan, R. M., Parmar, K. S., Heddam, S., Shahid, S., & Kisi, O. (2021). Suspended Sediment Modeling Using a Heuristic Regression Method Hybridized with Kmeans Clustering. Sustainability, 13(9), 4648.
5. Muhammad, M. K. I., Shahid, S., Ismail, T., Harun, S., Kisi, O., & Yaseen, Z. M. (2021). The development of evolutionary computing model for simulating reference evapotranspiration over Peninsular Malaysia. Theoretical and Applied Climatology, 144(3), 1419-1434.
6. Momade, M. H., Shahid, S., Falah, G., Syamsunur, D., & Estrella, D. (2021). Review of construction labor productivity factors from a geographical standpoint. International Journal of Construction Management, 1-19.
7. Shiru MS, Shahid S, Park I. Projection of Water Availability and Sustainability in Nigeria Due to Climate Change. Sustainability. 2021; 13(11):6284. https://doi.org/10.3390/su13116284
8. Abba SI, Abdulkadir RA, Shauket S, Usman AG, Gajbhiye S, Malik A, Shahid S (2021) Comparative implementation between neuro-emotional genetic algorithm and novel ensemble computing techniques for modelling dissolved oxygen concentration. Hydrological Sciences Journal/Journal des Sciences Hydrologiques. DOI: 10.1080/02626667.2021.1937179

9. Islam, A. R. M. T., Islam, H. T., Shahid, S., Khatun, M. K., Ali, M. M., Rahman, M. S., ... & Almoajel, A. M. (2021). Spatiotemporal nexus between vegetation change and extreme climatic indices and their possible causes of change. Journal of Environmental Management, 289, 112505.

10. Jonah, K., Wen, W., Shahid, S., Ali, M. A., Bilal, M., Habtemicheal, B. A., ... & Tiwari, P. (2021). Spatiotemporal variability of rainfall trends and influencing factors in Rwanda. Journal of Atmospheric and Solar-Terrestrial Physics, 219, 105631.

11. Malik, A., Tikhamarine, Y., Sammen, S. S., Abba, S. I., & Shahid, S. (2021). Prediction of meteorological drought by using hybrid support vector regression optimized with HHO versus PSO algorithms. Environmental Science and Pollution Research, 1-20.

12. Shahinuzzaman, M., Haque, M. N., & Shahid, S. (2021). Delineation of groundwater potential zones using a parsimonious concept based on catastrophe theory and analytical hierarchy process. Hydrogeology Journal, 29(3), 1091-1116.

13. Salehie, O., Ismail, T., Shahid, S., Ahmed, K., Adarsh, S., Asaduzzaman, M., & Dewan, A. (2021). Ranking of gridded precipitation datasets by merging compromise programming and global performance index: a case study of the Amu Darya basin. Theoretical and Applied Climatology, 144(3), 985-999.

14. Bhagat, S. K., Pyrgaki, K., Salih, S. Q., Tiyasha, T., Beyaztas, U., Shahid, S., & Yaseen, Z. M. (2021). Prediction of copper ions adsorption by attapulgite adsorbent using tuned-artificial intelligence model. Chemosphere, 276, 130162.

15. Jerin, J. N., Islam, H. T., Islam, A. R. M. T., Shahid, S., Hu, Z., Badhan, M. A., ... & Elbeltagi, A. (2021). Spatiotemporal trends in reference evapotranspiration and its driving factors in Bangladesh. Theoretical and Applied Climatology, 144(1), 793-808.

16. Pham, Q. B., Sammen, S. S., Abba, S. I., Mohammadi, B., Shahid, S., & Abdulkadir, R. A. (2021). A new hybrid model based on relevance vector machine with flower pollination algorithm for phycocyanin pigment concentration estimation. Environmental Science and Pollution Research, 1-16.

17. Iqbal, Z., Shahid, S., Ahmed, K., Ismail, T., Ziarh, G. F., Chung, E. S., & Wang, X. (2021). Evaluation of CMIP6 GCM rainfall in mainland Southeast Asia. Atmospheric Research, 254, 105525.

18. Khan N, Shahid S, Ismail TB, Behlil F (2021) Prediction of heat waves over Pakistan using support vector machine algorithm in the context of climate change. Stochastic Environmental Research and Risk Assessment. DOI: 10.1007/s00477-020-01963-1

19. Yaseen ZM, Ali M, Sharafati A, Al-Ansari N, Shahid S (2021) Forecasting standardized precipitation index using data intelligence models: regional investigation of Bangladesh. Scientific Reports 1, 3435

20. Safari Z, Rahimi ST, Ahmed K, Sharafati A, Ziarah GF, Shahid S, Ismail T, Al-Ansari N, Chung ES, Wang XJ (2021) Estimation of Spatial and Seasonal Variability of Soil Erosion in a Cold Arid River Basin in Hindu Kush Mountainous Region Using Remote Sensing. Sustainability 13(1549):1-14

21. Ziarh GF, Asaduzzaman M, Dewan A, Nashwan MS, Shahid S (2020) Integration of catastrophe and entropy theories for flood risk mapping in peninsular Malaysia. Journal of Flood Risk Management. DOI: 10.1111/jfr3.12686

22. Ziarh GF, Shahid S, Ismail T, Asaduzzaman M, Dewan A (2020) Correcting bias of satellite rainfall data using physical empirical model. Atmospheric Research 251:105430. DOI: 10.1016/j.atmosres.2020.105430

23. Adnan RM, Heddam S, Yaseen ZM, Shahid S, Kisi O, Li, B (2020) Prediction of Potential Evapotranspiration Using Temperature-Based Heuristic Approaches. Sustainability, 2020, DOI:

10.3390/su13010297

24. Noor M, Ismail T, **Shahid S**, Asaduzzaman M, Ashraf D (2020) Evaluating intensity-durationfrequency (IDF) curves of satellite-based precipitation datasets in Peninsular Malaysia. Atmospheric Research, 248, 105203. https://doi.org/10.1016/j.atmosres.2020.105203

25. Sharafati A, Yaseen ZM, **Shahid S** (2020) A novel simulation-optimization strategy for stochastic-based designing of flood control dam: A case study of Jamishan dam. Flood Risk Management. https://doi.org/10.1111/jfr3.12678

26. Song YH, Nashwean MS, Chung ES, **Shahid S** (2020) Advances in CMIP6 INM-CM5 over CMIP5 INM-CM4 for precipitation simulation in South Korea. Atmospheric Research, 247, 105261. https://doi.org/10.1016/j.atmosres.2020.105261

27. Mohsenipour M, **Shahid S**, Ziarh GF Yaseen ZM (2020) Changes in monsoon rainfall distribution of Bangladesh using quantile regression model. Theor Appl Climatol 142, 1329–1342 (2020). https://doi.org/10.1007/s00704-020-03387-x

28. Salih SQ, Alakili I, Beyaztas U, **Shahid S**, Yaseen ZM (2020) Prediction of dissolved oxygen, biochemical oxygen demand, and chemical oxygen demand using hydrometeorological variables: case study of Selangor River, Malaysia. Environ Dev Sustain (2020). https://doi.org/10.1007/s10668-020-00927-3

29. Sarker MLR, Janet N, Mansor SA, Ahmad BB, **Shahid S**, Chung E-S, Reid JS, Siswanto E (2020) An Integrated Method for Identifying Present Status and Risk of Drought in Bangladesh. Remote Sens. 2020, 12, 2686.

30. Khan N, **Shahid S**, Chung ES, Behlil F, Darweish MSJ (2020) Spatiotemporal changes in precipitation extremes in the arid province of Pakistan with removal of the influence of natural climate variability. Theor Appl Climatol 142, 1447–1462 (2020). https://doi.org/10.1007/s00704020-03389-9

31. Sun J, Wang XJ, **Shahid S** (2020) Precipitation and runoff variation characteristics in typical regions of North China Plain: a case study of Hengshui City. Theor Appl Climatol 142, 971–985 (2020). https://doi.org/10.1007/s00704-020-03344-8

32. Wahiduzzaman M, Islam ARMT, Luo J., **Shahid S**, Uddin MJ, Shimul SM, Sattar MA (2020) Trends and Variabilities of Thunderstorm Days over Bangladesh on the ENSO and IOD Timescales. Atmosphere 2020, 11, 1176.

33. Uddin MA, Kamal AM, **Shahid S**, Chung E-S (2020) Volatility in Rainfall and Predictability of Droughts in Northwest Bangladesh. Sustainability 2020, 12, 9810.

34. Sharafati A, Khazaei MR, Nashwean MS, Ansari NA, Yaseen ZM, **Shahid S** (2020) Assessing the Uncertainty Associated with Flood Features due to Variability of Rainfall and Hydrological Parameters. Advances in Civil Engineering, 2020, 7948902, https://doi.org/10.1155/2020/7948902

35. Shiru MS, **Shahid S**, Dewan A, Chung ES, Alias N, Ahmed K, Hassan Q (2020) Projection of meteorological droughts in Nigeria during growing seasons under climate change scenarios. Scientific Reports 10(2020):10107. DOI: 10.1038/s41598-020-67146-8

36. Hadipour S, Wahab AKA, **Shahid S**, Asaduzzaman M, Dewan A (2020) Low Impact Development Techniques to Mitigate the Impacts of Climate-Change-Induced Urban Floods: Current Trends, Issues and Challenges. Sustainable Cities and Society. DOI: 10.1016/j.scs.2020.102373

37. Shiru MS, Chung ES, **Shahid S**, Alias (2020) GCM selection and temperature projection of Nigeria under different RCPs of the CMIP5 GCMS. Theoretical and Applied Climatology. DOI: 10.1007/s00704-020-03274-5

38. Salman S, Nashwan MS, Ismail T, **Shahid S** (2020) Selection of CMIP5 general circulation model outputs of precipitation for peninsular Malaysia. Hydrology Research. DOI: 10.2166/nh.2020.154

39. Pour SH, Wahab AKA, **Shahid S**, Ismail Z (2020) Changes in reference evapotranspiration and its driving factors in peninsular Malaysia. Atmospheric Research. DOI: 10.1016/j.atmosres.2020.105096

40. Mohammed A, Al-Janai AMS, Ghaali AH, Yusuf B, Shauket SS, Afan HA, Al-ANsari N, **Shahid S**, Mundher ZY (2020) Optimizing Height and Spacing of Check Dam Systems for Better Grassed Channel Infiltration Capacity. Applied Sciences 2020(10):3725. DOI: 10.3390/app10113725

41. Tao H, Salih S, Saggi MK, Dodangeh E, Voyant C, Al-Ansari N, Yaseen ZM, **Shahid S** (2020) A Newly Developed Integrative Bio-Inspired Artificial Intelligence Model for Wind Speed Prediction. IEEE Access 8(1):2169-3536. DOI: 10.1109/ACCESS.2020.2990439

42. Sharafati A, Pezeshki E, **Shahid S**, Motta D (2020) Quantification and uncertainty of the impact of climate change on river discharge and sediment yield in the Dehbar river basin in Iran. Journal of Soils and Sediments. DOI: 10.1007/s11368-020-02632-0

43. Nashwan MS, **Shahid S**, Chung ES (2020) High-Resolution Climate Projections for a Densely Populated Mediterranean Region. Sustainability 12(9):3684. DOI: 10.3390/su12093684

44. Iqbal Z, **Shahid S**, Ahmed K, Ismail T, Khan N, Virk ZT, Johar W (2020) Evaluation of global climate models for precipitation projection in sub-Himalaya region of Pakistan. Atmospheric Research. DOI: 10.1016/j.atmosres.2020.105061

45. Sa'adi Z, **Shahid S**, Pour SH, Ahmed K, Chung ES, Mundher ZY (2020) Multi-variable model output statistics downscaling for the projection of spatio-temporal changes in rainfall of Borneo Island. Journal of Hydro-environment Research. DOI: 10.1016/j.jher.2020.05.002

46. Suliman AHA, Awchi T, Al-Mola M, **Shahid S** (2020) Evaluation of remotely sensed precipitation sources for drought assessment in Semi-Arid Iraq. Atmospheric Research 105007. DOI: 10.1016/j.atmosres.2020.105007

47. Salman S, **Shahid S**, Afan HA, Shiru MS, Al-Ansari N, Yaseen ZM (2020) Changes in Climatic Water Availability and Crop Water Demand for Iraq Region. Sustainability 2020 (12):3437. DOI: 10.3390/su12083437

48. Ahmed K, **Shahid S**, Chung ES, Nawaz N, Khan N, Rasheed B (2020) Divergence of potential evapotranspiration trends over Pakistan during 1967–2016. Theoretical and Applied Climatology. DOI: 10.1007/s00704-020-03195-3

49. Salih S, Sharafati A, Ebtehaj I, Sanikhani H, Siddique R, Deo R, Bonakdari H, **Shahid S**, Yaseen ZM (2020) Integrative stochastic model standardization with genetic algorithm for rainfall pattern forecasting in tropical and semi-arid environments. Hydrological Sciences Journal/Journal des Sciences Hydrologiques. DOI: 10.1080/02626667.2020.1734813

50. Pour SH, AKA Wahab, **Shahid S** (2020) Spatiotemporal changes in precipitation indicators related to bioclimate in Iran. Theoretical and Applied Climatology 141(1). DOI: 10.1007/s00704-02003192-6

51. Momade MH, **Shahid S**, Hainin MR, Nashwan MS, Umar AT (2020) Modelling Labour Productivity using SVM and RF: A Comparative Study on Classifiers Performance. International Journal of Construction Management. DOI: 10.1080/15623599.2020.1744799

52. Iislam S, Abdullah RAB, Dabruddin IA, Algahtani A, **Shahid S**, Irshad K, Makkick J, Hirol H, Alsubih M, Elouni MH, Kahla NB (2020) Calibration And Validation Of Reference Evapotranspiration Models In Semi-Arid Conditions. Applied Ecology and Environmental Research 18(1):1361-1386. DOI: 10.15666/aeer/1801_13611386

53. Khan N, Sachindra DA, **Shahid S**, Ahmed K, Shiru MS, Nawaz N (2020) Prediction of droughts over Pakistan using machine learning algorithms. Advances in Water Resources 139:103562. DOI: 10.1016/j.advwatres.2020.103562

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Academic Services

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3. Academic Editor PLOS Climate
4. Guest Editor, Sustainability (Impact Factor: 2.075)
5. Guest Editor, Complexity (Impact Factor: 2.591)
6. Sub-Editor of ARPN Journal of Engineering and Applied Sciences (Scopus Index

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8. Sub-Editor of UNESCO-IHP Proceeding on International Conference of Water Resources
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