



Deconstructing Embodied Intersectionalities of Climate Crisis, Space and Gender in India.

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Submitted By : Dr. Sajad Ahmad Mir
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PROPOSAL DETAILS

(PDF/2023/001223)

Principal Investigator	Mentor & Host Institution
<p>Dr. Sajad Ahmad Mir mirsajad1731@gmail.com Professor(Water Resource Engineering) Contact No : +916005709846 Date of Birth : 17-Nov-1990 Name of Father/Spouse : Gh Rasool Mir</p>	<p>Abdul Qayoom Dar aqayoom2001@yahoo.com Professor and HoD(Civil Engineering) National Institute of Technology, Srinagar National institute of technology, hazartbal, Srinagar, Jammu and kashmir-190006 Contact No. : +919419001914 Registrar Email : registrar@nitsri.ac.in No. of PHD Scholars : 7 No. Post-Doctoral Fellow : 0</p>

Details of Post Doctorate

Ph.D. (Geography) [Degree Awarded on : 31-Mar-2023]

Groundwater Quality Assessment and its Impact on Human Health in North Kashmir

Research Supervisor/Guide & Institution :

Professor M Sultan Bhat

University of Kashmir ,Department of Geography and Disaster Management

Brief details of Thesis work :

Groundwater is emerging as vital resource in view of the changing climate and diminishing water surface availability. Due to the changing demographic and burgeoning demands for drinking water, the instances of over-abstraction and contamination are all pervasive. The pattern of groundwater quality deterioration and burdens of disease incidence manifest in Kashmir Himalayas as well. The geomorphological and cultural facets have strongly supported the occurrence and access to groundwater distribution and accessibility.

The study employed the physico-chemical and microbiological (30 sampled sites) parameters which largely suggest some selected pockets in the region faced with poor groundwater quality conditions and the disease incidence. Groundwater Quality Index, Disease Incidence, Sanitary Investigation Survey and finally Prioritization modeling was done with embedded intersectionality of socio-cultural factors. The thesis used socio-geospatial approach in investigating the groundwater quality conditions and human health.

The results of calcium, magnesium and iron reflect the slight changes during the pre-winter and post-winter seasons. The iron concentrations were above the permissible limits of BIS in most of the sample sites, with five sites showing highly increase in the iron contamination in the region. The mean faecal coliform forming unit (cfu/100 ml) detailed from the study ranged from 1 cfu/100 ml at sampling station SS1-BPN to 19 cfu/100 ml at SS15-BPS .The south and south-western region of the region indicates the microbial contamination owing to the improper sanitary conditions and unplanned waste disposal mechanism. The disease incidence mostly was found high in the areas having poor groundwater quality conditions. The spatial justice paradigm embedded with intersectionality of human and physical geographies was carried out on the basis of asymmetric social structures and disenfranchised communities placed at the brink of environmental and socio-ecological risks .The study also deduced that most of the places having poor groundwater quality and high disease burden were inhabited by marginalized communities. This study voiced for liberatory praxis for 'just' and safe spaces in terms of water governance and environmental rights which forms the kernel of nature-land relations in the discourse of environmental justice and egalitarian socio-spatial relations.

Technical Details :

Research Area : Earth & Atmospheric Sciences (Earth & Atmospheric Sciences)

Project Summary :

Rationale of Study The burden of climate change and changing power relations vis-à-vis space and environment is falling asymmetrically in vulnerable and marginalized communities of Global South. The matrix of power sustained through the existing conduits of relational and institutional mechanisms in terms of socio-spatial and resource inequalities has widened pervasively into the structural formations. The spatial markers that represent the socio-environmental milieu of any place have a direct bearing on the region's adaptability to any environmental risk and stresses . The intersectionalities of power, gender and environment thus form the foundational praxis for laying down the holistic and eco-humanistic perspective of exploring the spatial and social undercurrents that largely define the current model of structural and institutional functioning in most parts of India .The recent spate of weather extremes in India opens up a new stream of climate research in the region as the aspect of intersectionality has not been given that consideration as it demands given the unfolding spectrums of impending climate crisis in India This study would entail at reimagining and reorienting the territorial ontologies in terms of gender and spatial epistemes in light of decolonizing, subalternization of prevailing environmental injustices . The primary focus would be to decipher the exclusionary indexing of indigenous knowledge systems as being the kernel of contemporary cosmologies of 'decolonizing knowledge'. The burden becomes further heavier when structural and non-structural exacerbate the extreme events like floods, droughts and heat waves and thus affecting the most vulnerable populations and thereby highlighting the embodied intersectionalities of disasters and socio-spatial configurations of the place which would be main focus of this study. Finally, the case for solidarity and liberatory praxis would be mapped out on the basis of 'geographies of care and hope', pluversality and environmental justice **Significance of Research** The current scenario of floods and heat-wave events (Debnath,2023) in exhume the dark realities of the climate change impacts that are swiftly wreaking havoc across the fragile socio-geological and heavily 'developmental' hotspots (Panwar,2023) whereby the study is required for managing and understanding this widening gaps of socio-spatial and institutional pathways Climate extremes, such as heatwaves, droughts, floods, and cyclones, have far-reaching impacts on various aspects of society, including the environment, economy, and social fabric. In the specific case of India, a country highly vulnerable to climate change, these extreme events (Koll, 2023) are becoming more frequent and intense, exacerbating existing social inequalities.

Objectives :

- Intersectionalities of space, gender and environment would be carried out different spatial settings.
- The study regions would mostly be from mountain ecologies and coastal regions confronted by geo-environmental and social risks.
- To map out the existing inequalities in access and participation in different socio-spatial and environmental settings in gender and indigenous knowledge lens
- Exploring cognitive injustices, extractions, disposessions and environmental injustices in terms of colonial coloniality and power matrixes.
- The climate extreme events particularly heat waves and floods would be studied and the impacts would be mapped in context of lived experiences.

Keywords :

Climate Change, Lived Experiences, Climate Justice, Bioclimatology

Expected Output and Outcome of the proposal :

The study mostly dealing with environmental and climate justice frameworks would surely be heralding and adding to the existing frontiers of climatic literature in India's climatic understanding and research corpus .Given the scope and ensuing importance of the theme, this study would certainly be discussed and deliberated upon for unearthing the widening disparities in the social and cultural spectacles of climate 'crisis' discourse. This highly places the current research in being discussed and disseminated across the different regional and global platforms for enriching and making it more workable for the affected regions. Then the final outcomes would be delivered and argued in different mediums from conferences to workshops and most importantly to the aggrieved and dispossessed/distressed populations getting hit by the extremes of climate 'crisis's .

Reference Details :

S.No	Reference Details
1	<p>PROFESSOR M S BHAT DEPARTMENT OF GEOGRAPHY AND DISASTER MANAGEMENT UNIVERSITY OF KASHMIR, DARGAH HAZRATBAL, 190006, JAMMU AND KASHMIR, INDIA [+919416641664] Msbhatgeog@yahoo.com</p>
2	<p>DR AKHTAR ALAM, DEPARTMENT OF GEOGRAPHY AND DISASTER MANAGEMENT UNIVERSITY OF KASHMIR, DARGAH HAZRATBAL, 190006, JAMMU AND KASHMIR, INDIA [+919416641664] alamakhtar@uok.edu.in</p>

1. Proposal Title:

Deconstructing Embodied Intersectionalities of Climate Crisis, Space and Gender in India.

2. Introduction:

The burden of climate change and changing power relations vis-à-vis space and environment is falling asymmetrically in vulnerable and marginalized communities of Global South. The matrix of power sustained through the existing conduits of relational and institutional mechanisms in terms of socio-spatial and resource inequalities has widened pervasively into the structural formations. The spatial markers that represent the socio-environmental milieu of any place have a direct bearing on the region's adaptability to any environmental risk and stresses (Sulatana,2010, Mann & Toles, 2016) . The intersectionalities of power, gender and environment (Sultana,2014) thus form the foundational praxis for laying down the holistic and eco-humanistic perspective of exploring the spatial and social undercurrents that largely define the current model of structural and institutional functioning in most parts of India .This study would entail at reimagining and reorienting the territorial ontologies in terms of gender and spatial epistemes in light of decolonizing, subalternization of prevailing environmental injustices (Sulatana,2010a,2010b,Jazeel,2014) . The primary focus would be to decipher the exclusionary indexing of indigenous knowledge systems as being the kernel of contemporary cosmologies of '*decolonizing knowledge*'. The burden becomes further heavier when structural and non-structural exacerbate the extreme events like floods, droughts and heat waves (Goodell,2023,Kaufman,et.al,2021,Krishna,et.al,2021, Pritchard& Thielemans,2014) and thus affecting the most vulnerable populations and thereby highlighting the embodied intersectionalities (Tuana,2023) of disasters and socio-spatial configurations of the place which would be main focus of this study.Finally, the case for solidarity and liberatory praxis would be mapped out on the basis of 'geographies of care and hope', pluversity and environmental justice.

3. Objectives:

The following research questions would be part of this work:

- a) Intersectionalities of space, gender and environment would be carried out different spatial settings.
- b) The study regions would mostly be from mountain ecologies and coastal regions confronted by geo-environmental and social risks.
- c) To map out the existing inequalities in access and participation in different socio-spatial and environmental settings in gender and indigenous knowledge lens.
- d) Exploring cognitive injustices, extractions, dispossessions and environmental injustices in terms of colonial coloniality and power matrixes.
- e) The climate extreme events particularly heat waves and floods would be studied and the impacts would be mapped in context of lived experiences.

4. Methodology

- This research would explore the critical human geographical theorizations coupled with decolonial praxis framework on climate crisis and socio-ecological stressors. Vulnerability analysis would be carried out in summative and in sync with socio-ecological manifestations.
- The primary aim would be to extend the critical lens of '*intersectionality*' in deconstructing the environment and spatial inequalities encompassing cross-scalar inquiry. Gramscian *spatial historicism* would be invoked to delineate the temporal spatiality in terms of existing and embedded inequalities.
- The burgeoning studies on gender-environment would also be included in defining the intersectionality spectrum of power and space vis-à-vis pre disaster and post disaster scenarios adopted by the bureaucratic and at policy level hierarchies.
- The research agenda of my proposed work would mostly be centered on Farhana's critical geography framework (Sulatana,2021a,2021b,2023) and Rob Nixon's (Nixon,2011) environmental humanities approach in tackling the climate extreme events in relation to largely undermined marginalized voices that get affected during these catastrophic vagaries that are engulfing the world currently.

Significance

The current scenario of floods and heat-wave events (Debnath,2023) in exhume the dark realities of the climate change impacts that are swiftly wreaking havoc across the fragile socio-geological and heavily 'developmental' hotspots (Panwar,2023) whereby the study is required for managing and understanding this widening gaps of socio-spatial and institutional pathways

Climate extremes, such as heatwaves, droughts, floods, and cyclones, have far-reaching impacts on various aspects of society, including the environment, economy, and social fabric. In the specific case of India, a country highly vulnerable to climate change, these extreme events (Koll, 2023) are becoming more frequent and intense, exacerbating existing social inequalities. The following points spread out the importance of reviewing and acknowledging the intersections between climate extremes and consequent social disparities:

- I. **Environmental Displacement:** Climate extremes can displace communities due to factors like rising sea levels, floods, and droughts. Marginalized and vulnerable communities are often the most affected, leading to heightened social inequalities and further marginalization.
- II. **Agricultural Impacts:** India heavily relies on agriculture, and climate extremes can significantly impact crop yields, water availability, and livestock. Small-scale farmers, in particular, bear the brunt of these impacts, resulting in economic hardships and further widening social inequalities.
- III. **Public Health Challenges:** Climate extremes contribute to various public health challenges, including increased incidences of heat-related illnesses, waterborne

diseases, and respiratory problems. Marginalized communities with limited access to healthcare and proper infrastructure are disproportionately affected, leading to social disparities in health outcomes.

- IV. **Economic Disparities:** Climate extremes disrupt livelihoods and economic activities, particularly in sectors like agriculture, fishing, and tourism. The resulting economic losses deepen poverty and widen the income gap, disproportionately impacting marginalized communities.
- V. **Access to Resources:** Climate extremes worsen existing inequalities in accessing essential resources such as water, food, and energy. Marginalized communities already facing resource scarcity are further disadvantaged, intensifying social inequalities.
- VI. **Social Vulnerability:** Specific groups, including women, children, the elderly, and indigenous populations, are more vulnerable to climate extremes due to pre-existing social inequalities. These groups face additional challenges in coping with and recovering from climate-related events, exacerbating social disparities.

These points underscore the need for remedying the entwined concerns of climate extremes and socio-spatial inequalities, signifying their huge impact on the Indian subcontinent and the urgency for prospective all-encompassing and even-handed climate action. This study would strive to take up the alternative and people-centric approach towards exploring the phenomenon of climate extreme events in the prism of socio-ecological and spatial theorisation aiming at covering the subterranean connexions of these 'induced' and natural crisis's.

Evaluation and Dissemination

The study mostly dealing with environmental and climate justice frameworks would surely be heralding and adding to the existing frontiers of climatic literature in India's climatic understanding and research corpus. Given the scope and ensuing importance of the theme, this study would certainly be discussed and deliberated upon for unearthing the widening disparities in the social and cultural spectacles of climate 'crisis' discourse. This highly places the current research in being discussed and disseminated across the different regional and global platforms for enriching and making it more workable for the affected regions. Then the final outcomes would be delivered and argued in different mediums from conferences to workshops and most importantly to the aggrieved and dispossessed/distressed populations getting hit by the extremes of climate 'crisis's .

Research Plan and Timeline

The time-framing and subsequent workings and plan is given in the time below.

Quarter	Work to be Done
1-4 months	Introductory and interacting phase

4-8 months	Developing a framework for climate extreme theorisation
8-12 months	Identifying and Mapping of socio-spatial and geo-ecological parameters
12-16 months	Linking the study to climate justice frameworks and developing of new approach based on socio-spatial and lived experiences
16-20 months	Drafting and publication of results
20-24 months	Drafting and publication of results

References and Bibliography

Debnath, R., Bardhan, R., & Bell, M. L. (2023). Lethal heatwaves are challenging India's sustainable development. *PLOS Climate*, 2(4), e0000156.

Goodell, J. (2023). *Heat: Life and Death on a Scorched Planet*. Black Inc.

Jazeel, T. (2014). Subaltern geographies: Geographical knowledge and postcolonial strategy. *Singapore Journal of Tropical Geography*, 35(1), 88-103

Kaufmann, M., Priest, S., Hudson, P., Löschner, L., Raška, P., Schindelegger, A., ... & Vleesenbeek, T. (2021). Win-win for everyone? Reflecting on nature-based solutions for flood risk management from an environmental justice perspective. In *Nature-Based Solutions for Flood Mitigation: Environmental and Socio-Economic Aspects* (pp. 399-423). Cham: Springer International Publishing.

Krishna, R. N., Ronan, K., Spencer, C., & Alisic, E. (2021). The lived experience of disadvantaged communities affected by the 2015 South Indian floods: Implications for disaster risk reduction dialogue. *International Journal of Disaster Risk Reduction*, 54, 102046.

Sultana, F. (2010). Living in hazardous waterscapes: Gendered vulnerabilities and experiences of floods and disasters. *Environmental Hazards*, 9(1), 43-53.

Nixon, R. (2011). *Slow Violence and the Environmentalism of the Poor*. Harvard University Press.

Mann, M. E., & Toles, T. (2016). *The madhouse effect: How climate change denial is threatening our planet, destroying our politics, and driving us crazy*. Columbia University Press.

Panwar, Tikender, HP: Adaptive Strategies Require a Dramatic Shift, *NewsClick*, 11 July 2023. Accessed on 12 July 2023.

Pritchard, B., & Thielemans, R. (2014). 'Rising Waters Don't Lift All Boats': a sustainable livelihood analysis of recursive cycles of vulnerability and maladaptation to flood risk in rural Bihar, India. *Australian Geographer*, 45(3), 325-339.

Koll, Roxy (2023), With heatwaves on the rise, does India have a heat emergency plan?, *Frontline*, May 18 2023. Accessed on 20 May, 2023

- Sultana, F. (2014). Gendering climate change: Geographical insights. *The Professional Geographer*, 66(3), 372-381.
- Sultana, F. (2021a). Political ecology 1: From margins to center. *Progress in Human Geography*, 45(1), 156-165.
- Sultana, F. (2021b). Political ecology II: Conjunctures, crises, and critical publics. *Progress in human geography*, 45(6), 1721-1730.
- Sultana, F. (2022a). The unbearable heaviness of climate coloniality. *Political Geography*, 99, 102638.
- Sultana, F. (2022b). Critical climate justice. *The Geographical Journal*, 188(1), 118-124.
- Sultana, F. (2023). Political ecology III: Praxis-doing, undoing, and being in radical political ecology research. *Progress in Human Geography*, 03091325231157360.
- Tuana, N. (2023). *Racial Climates, Ecological Indifference: An Ecointersectional Analysis*. Oxford University Press.

BIO-DATA

1. Name and full correspondence address:

Dr. Sajad Ahmad Mir  <https://orcid.org/0000-0001-6154-3103>

**Department of Geography and Disaster Management,
University of Kashmir, Dargah Hazratbal,190006**

2. Email(s) and contact number(s)

Email(s):

1. Mirsajad1731@gmail.com
2. Sajad.meer000@gmail.com

Contact Number

+91 6005709846

3. Institution

Department of Geography and Disaster Management, University of Kashmir,Dargah Hazratbal,190006

4. Date of Birth

17/11/1990

5. Gender (M/F/T)

Male

7. Category Gen/SC/ST/OBC

GEN

8. Whether differently abled(Yes/No)

No

Academic Qualification (Undergraduate Onwards)

	Degree	Year	Subject	University/Institution	% of marks
1.	Graduation	2012	Geography	University of Kashmir	52.77
2.	Post-Graduation	2014	Geography	University of Kashmir	65.25
3.	PhD	2023	Geography	University of Kashmir	-
4.					

6. Ph.D. thesis title, Guide's Name, Institute/Organization/University, Year of Award.

Title: ***Groundwater Quality Assessment and its Impact on Human Health in North Kashmir (2023)***

Institute: **Department of Geography and Disaster Management, University of Kashmir, Dargah Hazratbal, 190006**

Supervisor: Professor , M Sultan Bhat, Department of Geography and Disaster Management
Email:msbhatgeog@yahoo.com

Professional Recognition/ Award/ Prize/ Certificate, Fellowship received by the applicant.

S.No	Name of Award	Awarding Agency	Year
1.	UGC-NET	University Grants Commission	2017
2.	Best Paper Award	NIT Srinagar	2019
3.	ICSSR Fellow	Indian Council of Social Science Research	2019

Publications (List of papers published in SCI Journals, in year wise descending order).

S.No.	Author(s)	Title	Name of Journal	Volume	Page	Year
1.	Sajad Mir, Mohammad Sultan Bhat, G. M. Rather, Durdanah Mattoo	<i>Groundwater Potential Zonation using Integration of Remote Sensing and AHP/ANP Approach in North Kashmir, Western Himalaya, India</i>	Remote Sensing of Land	05(1)	41-58	2021
2.	Durdanah Mattoo, Mohammad Sultan Bhat, Sajad Mir	<i>Inter-linkage of Climate and Streamflow Dynamics in Kashmir Himalayas</i>	Indian Journal of Ecology	48(05)	1458-1465	2021
3	Durdanah Mattoo, M. Sultan Bhat, Sajad. A. Mir, Malik Munazah Maheen	<i>Statistical Evidence of Climate Variability in The Upper Jhelum Catchment</i>	International Journal of Modern Agriculture	10(02)	4022-4034	2021
4	Sajad Ahmad Mir , Durdanah Mattoo, M Sultan Bhat, Malik Munazah Maheen	<i>Dynamics of Land-use/Land Cover Changes in Upper Jhelum Catchment of Kashmir Himalayas.</i>	Indian Journal of Ecology	49(5)	1634-1641	2022
5	Saleem Wani, Mohammad Sultan Bhat, Akhtar Alam, Sajad Ahmad Mir	<i>Assessing indigenous community's perspectives and attitudes toward tourism development impacts in the northwestern Himalayas, India</i>	Socio-Ecological Practice Research	5	63-78	2023
6	Durdanah Mattoo, Sajad Ahmad Mir and M. Sultan Bhat	<i>Modelling the impact of climate variability and LULC changes on the hydrological processes in the Upper Jhelum Basin catchment, Western-Himalayas</i>	Water Resources	50	215-230	2023
7	Sajad Ahmad Mir	<i>Ranajit Guha-A Voice of Subaltern Historiography</i>	Economic and Political Weekly	58(18)	4-5	2023

Books/Reports/Chapters/General articles etc.

S.No	Title	Author's Name	Publisher	Year of Publication
1.	Role of big geospatial data in the COVID-19 crisis	Sajad Mir, Mohammad Sultan Bhat, G. M. Rather, Durdanah Mattoo	Elsevier	2022
2.	Applications of Remote Sensing in the Groundwater Potential Analysis of Developing Countries	Sajad Mir, Durdanah Mattoo, Mohammad Sultan Bhat, G. Mohammad Rather	Taylor and Francis	2022
3.	Use of Remote Sensing Techniques in Land Degradation Mapping	Nusrat Rafique, Durdanah Mattoo, Sajad Mir, Tahir Muntazari	Taylor and Francis	2022

Forthcoming Publications

- **Sajad Ahmad Mir (2023).** Liberatory Praxis and Climate Justice in India. Climate Justice in India by Prakash Kashawan ,Cambridge University Press(2023) *Economic and Political Weekly* (**Book Review-forthcoming**)
- **Sajad Ahmad Mir (2023).** Shahjahanabad-Mapping Mughal City by Swapna Liddle (2023), Roli Books .*Association of American Geographers Review of Books* (**Book Review-forthcoming**)
- **Sajad Ahmad Mir (2023).** Envisioning Spatial Justice in Health Geographies and Groundwater Governance of Kashmir Himalayas using Socio-Geospatial Approach. *Sustainable Water Resource Management* (**Research Article-Under Review**).
- **Sajad Ahmad Mir (2023).** Threatening Dystopias-The Global Politics of Climate Change Adaptation in Bangladesh" published by Cornell University Press,(21 December,2021)*Asian Anthropology* (**Book Review -forthcoming**)

Any other Information (maximum 500 words).

➤ Conferences and Training Workshops

- Presented a Paper on “*The Geopolitics of China and India: The New Great Game Redefined.*” at Centre for Chinese and South East Asian Studies, Jawaharlal Nehru University, India- 14th April 2017.
- Presented a Paper on *Electrochemical Remediation and Bioremediation for Contaminated Groundwater –An Integrational Analysis* in 7th International Ground Water Conference (IGWC- 2017), IIT Roorke -Dec. 11-13, 2017, New Delhi, India.
- Presented a paper on International Conference On Contemporary Issues on “*Geopolitics and Sustainable Un-Development –Changing Interactions of Economic and Political Spaces*” in “Engineering, Agriculture, Applied Sciences and Humanities (EAH-2019) to be held at NIT Srinagar, Jammu and Kashmir, on 22nd -23rd June, 2019
- Presented a paper on “*Migration, Gender and Psychology in Post-Modern Times –A Radical Analysis*” at University of Kashmir organized by Department of Business Studies on Migration: Global and Local Perspective- *Addressing complex crisis in the 21st Century* on March 11, 2020.
- Presented a paper on “*Role Of Geospatial Data In The Covid-19 Crisis -A Case Study Of India*” at International Geographical Union (IGU)-INDIA International E – Conference on Implications of Covid-19 on Local and Regional Sustainable Development – A Glocal Perspective, June 27-28, 2020.
- Presented a Paper on *Groundwater Quality Assessment and Its Impact on Human Health using AHP and Cluster Analysis in North Kashmir, Western Himalayas India* in XIV INTERNATIONAL GEOGRAPHICAL UNION (IGU)-INDIA, March 6-8, 2020, West Bengal, India.
- Presented a paper on „*Application of Topographic Wetness Index in the Groundwater Zonation Analysis*” at 32nd Indian Institute of Geomorphologists (IGI) on “Geomorphology for Human Adaptation to Changing Environment” to be organized by the Department of Geography, West Bengal State University (WBSU), Barasat, WB, held in the online mode from 21 – 23rd January, 2021.
- Presented a paper on „*COVID-19 and the Changing Geopolitical Configurations of the World- A Deconstructive Analysis*” in the International Conference on Building Resilient and Sustainable Societies: Emerging Social and Economic Challenges, organized by Department of Geography, Jamia Millia Islamia, New Delhi during November 25-26,2020.
- Presented a paper on “*Pandemics and Climate Change-Are Disasters the New Normal*” at XV International Geography Online Conference Deccan Geographical Society of India Department of Geography, University of Allahabad,27 Nov 2021
- Presented a paper on “*Changing Forms Of Disaster Vis-A-Vis Climate Change-A Deontological Perspective*” in the International Conference (Online) on “Challenges of Disasters: Vulnerability, Adaptation and Resilience”, Organized by the Centre for Disaster Management, Department of Geography, Jamia Millia Islamia, New Delhi during March 02-03, 2021.
- Presented a paper on “*Changing Dynamics of Climate Perceptions in Kashmir Basin- NW Himalayas in* National Conference (Online) on Climate Change and Pathways to Self-Reliant India: Opportunities and Challenges for Sustainable Development March 15-16, 2021 Organized by Department of Geography Faculty of Natural Sciences, Jamia Millia Islamia, New Delhi.
- Presented a Paper on “*Migration, Space and Gender – A Critical Geographical Perspective*” in the conference on on Changing Patterns of Migration: Challenges and Integration in the time of Crisis- Addressing complex crisis in the 21st Century at Dept. of Business Studies, University of Kashmir, October 05 2021.
- Presented a Paper on “*Indigenous Knowledge and Landslide Risk Adaptation in Kashmir Valley*” in conference on Landslide Risk Assessment and Mitigation in India (November 01-02 2022) organized by Department of Geography Faculty of Natural Sciences, Jamia Millia Islamia, New Delhi.
- Presented a Paper on *Trends of Precision Farming in Kashmir Valley using Machine learning and Spatial Networking Approach* in conference on Agriculture, Environment and Sustainable Development in India: Post- Independence Scenario (November 05-06,2022) organised by Department of Geography Faculty of Natural Sciences, Aligarh Muslim University, New Delhi.

➤ Trainings and Online Courses

- 15 days training on “**Training And Facilitation In Hydrogeology To Enhance Civil Societies Capabilities In Watershed And Groundwater Management**”, Advanced Center for Water Resources Development and Management (ACWADAM) ,PUNE 1-18TH JANUARY 2019.
- Three Days Online Training Program on “**Climate Change and Future Trends in Disaster Management**” ,Department of Geography and Disaster Management ,NIDM New Delhi 27-29 Jan 2021.
- One DAY Training Programme on “**Webinar on Environmental Education and Awareness among Children and Youth**” organised by Centre for Environment Education and NIDM- 12 August 2021.
- Online Training on “**Geohazards and Disaster Resilience Infrastructure in the Himalayan Region**” organised by University Institute of Technology Himachal Pradesh University, NIDM-28th Nov 2021.
- Online Training on ‘**CLIMATIC HAZARDS AND FINANCIAL RESILIENCE - A Special Focus on Lightning**’ organised by South Asian Institute for Advanced Research and Development ,NIDM- 06 October 2021.
- Webinar on “**Climate Crisis and Children-A Media and Communication Perspective**” organised by JIMS, NIDM, 11 October 2021.
- Online training on “**Climate Change and Disasters - Innovative Geospatial Solutions**” Organised by Union of Geographic Information Technologists and, Bangalore University Karnataka,27 December 2021.
- Online Training on “**Making Indian Cities Disaster and Climate Change Resilient Towards Responsive and Actionable Urban Planning, Policy and Development**” organised by IMPRI Impact and Policy Research Institute,India,23rd May 2022
- Webinar on “**Psychosocial Impacts of Public Health Emergencies in Context of COVID-19**” by National Centre for Disease Control, U.S. Centers for Disease Control and Prevention (CDC) Country Office India, May 27,2022.
- Two Days National workshop on **Impact of Climate Change on Water Resources of Upper Indus Basin, India** May 01 - 02, 2023 organised by Department of Earth Sciences, University of Kashmir

➤ Invited Lectures

- Delivered a lecture on “**COVID-19 Pandemic-Lessons From the Past and Future Risk Reduction Strategies in India**” at Department of Geography, Govt College for Women ,Sopore(193201), Jammu and Kashmir, India on 21st November,2021

➤ Online Courses

- 8 Weeks course on “**Remote sensing and GIS**” from IIT Guwahati.
- 8 Weeks course on “**Introduction to Urban Planning**” from IIT Roorke.
- 4 Weeks course on “**Water, Society and Sustainability**” from IIT Kharagpur.
- 12 weeks course on “**Ecology and Society**” from IIT Guwahati.
- 12 weeks course on “**Environmental Impact Assessment for Environmental Health**” from IGNOU.
- 08 weeks course on “**Natural Hazards**” from IIT Kanpur
- 16 weeks course on “**Machine Learning in Weather and Climate**” by European Centre for Medium-Range Weather Forecasts (ECMWF), United Kingdom, (Jan-April, 2023).



University of Kashmir

کشمیر یونیورسٹی

NAAC Accredited Grade A+

on the recommendation of the Academic Council



Sajad Ahmad Mir

is admitted to the

**Degree of Doctor of Philosophy
(Ph.D)**

on the topic "Groundwater quality assessment and its impact
on human health in North Kashmir"

in the Subject of **Geography**, School of Earth & Environmental Sciences

on Thirty First of March in the Year Two Thousand Twenty-Three.


Controller of Examinations




Vice Chancellor

CURRICULAM VITAE

Dr. ABDUL QAYOOM DAR

Professor

Department of Civil Engineering

National Institute of Technology Srinagar

-190006, Jammu & Kashmir, India.

E mail: aqayoom@nitsri.ac.in

aqayoon@nitsri.net

aqayoom2001@yahoo.com

Mobile No: 0-9419001914



Areas of Interest

Water Resources Engineering, Hydraulics Structures, Hydrological Modeling, Water Quality Modeling, Soft Computing in Water Resources Engineering.

Education Qualification

Examination Passed	Board/university /Institution	Division/class/grade	Branch/subject	Year	% Marks
Matriculation	J&K Board of School Education	2 nd .	General	1981	59.00
11 th .Class (PUC)	J&K Board of School Education	2 nd .	Faculty of Science	1982	57.83
Qualifying Exam.	J&K Board of School Education	Ist	Faculty of Science	1983	64.54
B.E.	University of Kashmir	Ist	Civil Engg.	1988	74.83
M.E.	University of Kashmir	Ist (Distinction)	Water Resources Engg.	1997	81.41
Ph.D	University of Kashmir	-	Civil Engg.	2007	-

Teaching Experience

S.No	Position	Length of service Years/Months	Period	
			From	To
1.	Lecture	06 Years	16-12-1989	15-12-1995
2.	Sr. Lecturer	05 Years	16-12-1995	15-12-2000
3.	S.G.Lecturer	05 Years /0.5 Months	16-12-2000	31-12-2005
4.	Associate Professor	7 Years / 8 months	01-01-2006	18-09-2013
5.	Professor	7 Years	18-09-2013	Till date

Subjects Taught

Course Name	Level (UG/PG)
Fluid Mechanics-I	UG
Fluid Mechanics-II	UG
Hydraulics and Hydraulic Machines	UG
Engineering Mechanics	UG
Environmental Engineering	UG
Applied Hydrology	UG
Hydrological Elements & Analysis	PG
Open Channel Flow	PG
Embankment Dams	PG
Fluid Mechanics	PG
GIS & Remote Sensing Application in Water Resources	PG
Hydraulic Structures	PG
Fluid Mechanics Lab-I	UG
Fluid Mechanics Lab.-II	UG
Fluid Mechanics Laboratory	AMIE (IE India)

Administrative Responsibilities

1. Head Civil Engineering Department (From 15-15-2021 till date)
2. Dean Planning and Development (From 01-08-2018 to 31-07-2020).
3. Chairman minor works committee/Contract committee, (From 10-09-2018 to 31-07-2020).
4. Chairman House/ Space allotment committee, (From 10-09-2018 to 31-07-2020)
5. Chairman Cafeteria / Canteen Committee, (From 10-09-2018 to 31-07-2020)
6. Member of the Central Research Facilities Centre (CRFC) of the Institute, (From 11-02-2016 to till date).
7. Chairman Purchase committee for Central Research Facilities Centre (CRFC) of the Institute, (From 11-02-2016 to till date).
8. Member for NIT Review Committee.
9. Advisory committee member for the Incubation Centre of the Institute.
10. Member of Annual Report preparation committee of the Institute, (From 2010 to 2011).
11. Member of Load Assessment Committee of the Institute, (From 2015 to 2018).
12. Member DPGC electronics and communication Engineering

Departmental Responsibilities

1. Officer In charge Water Resources Engineering Section.
2. Coordinator of M.Tech. Programme in Water Resources Engineering.
3. O/C Hydraulics and Environmental Section. (From 2016 to 2018).
4. Member of Departmental Board of studies Committee (From 2010 to 2016).
5. Coordinators of departmental time table (From 2006 to 2011).
6. Departmental O/C of examinations (From 2006 to 2010).
7. Coordinators of B.Tech. Projects and seminars (From 2007 to 2010).

Short Term Courses Organized

S. No	Details of Course	Organized at	Sponsored by/ Self Sponsored
1	Coordinator, 5 day Training Course on Disaster management (Earthquake Resistant Construction and Flood Management) from 10-09-2012 to 10-09-2012	Department of Civil Engineering NIT Srinagar	Self Sponsored
2	Coordinator, 5 day Training workshop on Computer Applications in Civil Engineering from 29-06-2017 to 03-07-2017	Department of Civil Engineering NIT Srinagar	Self Sponsored
3	Coordinator, 5 day Short Term Training Course on Machine Learning and its Applications in Civil Engineering from 02-11-2020 to 06-11-2020	Department of Civil Engineering NIT Srinagar	TEQIP-III Sponsored
4	Coordinator, 5 day Short Term Training Course on Remote sensing Applications in Groundwater Extraction Measurements from 11-01-2021 to 15-01-2021	Department of Civil Engineering NIT Srinagar	TEQIP-III Sponsored

Research Projects Executed

S.No.	Title	Sponsoring Agency	Funds Sanctioned in Rs.	Duration Years
1.	Master Plan in Flood Control for Kashmir Valley	MHRD , New Delhi	Rs.5.00 Lakhs	2002-2005

Major Consultancy Projects Completed

S. No.	Details (Cumulative Amount more than 5 Lakhs)	Period	Organization	Amount (in Lakhs)
1	Performance Evaluation of Flood Split Channel Srinagar, Design of Sewerage Disposal System for NIT Srinagar & Testing of Precast concrete pipe testing.	2010	I&FC Kashmir, NIT Srinagar	6.45
2	Water testing of various Govt. and semi Govt. agencies	2005 to 2015	Various Government, Semi Government, and Private agencies.	6
3	Technical evaluation of DPR for relocation of House Boats in Dal Lake, Design of Settling Basin for Telbal Nallah, Design of cut and cover channel and Intake structures for Brari	2015	J & K Lakes and Waterways Development Authority	5.6

	Numbal Lagoon , River Jhelum			
4	Evaluation of designs for Solid Waste Management in various clusters of Kashmir Valley	2016-2017	Directorate of Urban Local Bodies Kashmir	21.02
5	Hydrological Analysis and Design of Weir at Manchar Nallah Lolab Kupwara	2017	Irrigation and Flood Control, Kashmir	11
6	Waste and water Characterization at of Garbage Dumping site Achan , Srinagar	2022	Srinagar Municipal Corporation	5.074

Research Publications

Journal

1. MohdAyoub Malik, **AbdulQayoom Dar**, Manoj K. Jain, Modelling the influence of changing climate on the hydrology of high elevation catchments in NW Himalaya's Journal of "Modeling Earth Systems and Environment" 1 April 2022. <https://doi.org/10.1007/s40808-022-014075-5>.
2. Junaid Dar, **Abdul Qayoom Dar** Junaid Dar , Dominant Pattern of seasonal precipitation variability in association with hydrological extremes over the North-west Himalayas Journal of "Environmental Science and Pollution Research" Accepted: 12 May, 2022. <https://doi.org/10.1007/s11356-022-20877-9>.
3. SakibaNabi, Manzoor Ahmad Ahanger & **Abdul Qayoom Dar**, Employing sensitivity analysis to catchments having scanty data Journal of "Environmental Science and Pollution Research". Accepted: 25 April, 2022., <https://doi.org/10.1007/s11356-022-20514-5>.
4. JasirMushtaq, **Abdul Qayoom Dar** and NavedAhsan, Characterization investigation on organic compost of municipal solid waste using physio-chemical, spectroscopic and thermal methods at different stages, "Int. J.Environmentl and Waste Management January 2022."
5. Sakiba Nabi, **Abdul Qayoom Dar** & Manzoor Ahmad Ahanger, The anatomy of extreme precipitation events over Srinagar, Kashmir, India, over the past 50 years, Arabian Journal of Geosciences (2021) 14:1412 <https://doi.org/10.1007/s12517-021-07820-x>.
6. Sakiba Nabi, Manzoor Ahmad Ahanger & **Abdul Qayoom Dar**, Investigating the potential of Morris algorithm for improving the computational constraints of global sensitivity analysis, Environmental Science and Pollution Research <https://doi.org/10.1007/s11356-021-14994-0>
7. Junaid dar & **Abdul Qayoom dar**, "Spatio-temporal variability of meteorological drought over India with footprints on agricultural production" Environmental Science and Pollution Research <https://doi.org/10.1007/s11356-021-14866-7>. (accepted June -2021).

8. Junaid Dar & [Abdul Qayoom Dar](#), " The agro-metrolological perspective of drought over northwest Himalayas: Kashmir valley from 1979 to 2014 Journal of Earth System Science. (accepted March -2021).
9. Ruhhee Tabbusum and [Abdul Qayoom Dar](#), "Modelling Hybrid and Back Propagation Adaptive Neuro Fuzzy Inference Systems for flood forecasting", Natural Hazards, Springer, DOI: <https://doi.org/10.1007/s11069-021-04694-w> (accepted March -2021)
10. Tabasum Rasool, [A. Q. Dar](#) & M. A. Wani, Development of Predictive Equation for Modelling the Infiltration Process Using Gene Expression Programming, Water Resources Management <https://doi.org/10.1007/S11269-021-02816-4> (accepted March -2021)
11. Syeedah Raazia and [Abdul Qayoom Dar](#), Insights into the hydrogeological framework of the NW Himalayan Karewas (India), Environmental Challenges. (accepted)
12. Syeedah Raazia and [Abdul Qayoom Dar](#), A numerical model of groundwater flow in karewa-Alluvium aquifers of NW Indian Himalayan Region, Earth Systems and Environment <http://link.springer.com/article/10.1007/s40808-021-01126-3> (accepted Feb -2021)
13. Mohd Ayoub Malik, [Abdul Qayoom Dar](#) and Manoj K. Jain Modelling streamflow using the SWAT model and multi-site calibration utilizing SUFI-2 of SWAT-CUP model for high altitude catchments, NW Himalayas, Modelling Earth Systems and Environment <https://doi.org/10.1007/S40808-021-01145-0> (accepted March -2021)
14. [Abdul Qayoom](#) and Aqleema Shah, Using Two-Dimensional Numerical Model for Hydrodynamic Modeling of a Western Himalayan Alluvial River Reach Hydrology Science and Technology, Int. J. Hydrology Science and Technology, Vol. 11, No. 2, 182-208, 2021.
15. Ruhhee Tabbusum and [Abdul Qayoom Dar](#), "Comparison of fuzzy inference algorithms for streamflow prediction", Neural Computing and Applications, Springer, Article in Press, June 2020. DOI: <https://doi.org/10.1007/s00521-020-05098-w>
16. Ruhhee Tabbusum and [Abdul Qayoom Dar](#), "Performance evaluation of Artificial Intelligence paradigms- Artificial Neural Networks, Fuzzy Logic, and Adaptive Neuro-Fuzzy Inference System for streamflow simulation", Environmental Science and Pollution Research, Springer, January 2021. DOI: <https://doi.org/10.1007/s11356-021-12410-1>
17. Ruhhee Tabbusum and [Abdul Qayoom Dar](#), "Comparative analysis of Neural Network Training Algorithms for the flood forecast modelling of an alluvial Himalayan river", Journal of Flood Risk Management, Wiley, Volume 13, Issue 4, December 2020. DOI: <https://doi.org/10.1111/jfr3.12656>.
18. Ishtiyaq Ahmad Rather and [Abdul Qayoom Dar](#), Estimating long-term physio-chemical parameter changes of lake water quality using multiplicative decomposition model for Dal Lake, Kashmir, India, Solid State Technology Volume: 63 Issue: 5 Publication Year: 2020 .
19. Ishtiyaq Ahmad Rather and [Abdul Qayoom Dar](#) , Spatio-temporal variation in physio-chemical parameters over a 20-year period, potential future strategies for management: A case study of Dal Lake, NW Himalaya India. Environmental Technology & Innovation (2020), doi: <https://doi.org/10.1016/j.eti.2020.101102>. Vol. 20 (2020) (Elsevier).

20. Ishtiyaq Ahmad Rather and [Abdul Qayoom Dar](#). Assessing the impact of land use and land cover dynamics on water quality of Dal Lake, NW Himalaya, India. *Appl Water Sci* 10, 219 (2020) (Springer). <https://doi.org/10.1007/s13201-020-01300-5>.
21. Ishtiyaq Ahmad Rather and [Abdul Qayoom Dar](#), Assessment of hydrochemistry dynamics of Dal Lake, NW Himalaya, *Research Journal of Chemistry and Environment* Vol. 24 (7)-112-119, July (2020).
22. Ishtiyaq Ahmad Rather and [Abdul Qayoom Dar](#), Assessment of hydrochemistry dynamics of Dal Lake, NW Himalaya, *Research Journal of Chemistry and Environment* Vol. 24 (7)-112-119, July (2020).
23. Ishtiyaq Ahmad Rather and [Abdul Qayoom Dar](#), Forecasting Past and Future Trend of Physio-Chemical Parameters in Dal Lake, Srinagar Kashmir, India using Statistical Analysis and Modelling, *International Journal of Engineering and Advanced Technology (IJEAT)*, ISSN: 2249 – 8958, Volume-9 Issue-2.1044-1051, (2019) DOI: 10.35940/ijeat.B3435.129219.
24. Rasool T., [Dar A. Q.](#) & Wani M. A., Quantification of Spatial Variability of Soil Physical Properties in a Lesser Himalayan Sub-Basin of India, *Eurasian Soil Science*. 53, 362–376 (2020). <https://doi.org/10.1134/S1064229320030060>
25. Rasool T., [Dar A. Q.](#) & Wani M. A., Comparative evaluation of infiltration models under different land covers. *Water Resources*, Pleiades Publishing, Ltd. (Accepted, July, 2020).
26. Rasool T., [Dar A. Q.](#) & Wani M. A., Comparison of infiltration model parameter estimation techniques under different land covers. *International Journal of Hydrology Science and Technology*, Inderscience publishers. (Accepted, June, 2020). DOI: 10.1504/IJHST.2020.10032020, (2020).
27. Jasir Mushtaq, [Abdul Qayoom Dar](#) and Naved Ahsan (2020) "Spatial-temporal variations and forecasting analysis of municipal solid waste in the mountainous city of north-western Himalayas", *SN Applied Sciences*, Springer, Vol.2, pp. 1-18. <https://doi.org/10.1007/s42452-020-2975-x>.
28. Jasir Mushtaq, [Abdul Qayoom Dar](#) and Naved Ahsan (2020) "Geospatial mapping and SWOT analysis of municipal solid waste management: A case study of Srinagar city". *Journal of Solid-state Technology*.
29. [A Q Dar](#), and Umer Bashir Dar, Viability of Vermicomposting for Solid Waste Management in Ganderbal Town International Journal of Engineering Research and Technology (IJERT) ISS:22780181, Vol. 2 Issue 10, October-2018.
30. Ruhee Tabbussum, and [A Q.Dar](#), An overlook on Watershed management with a case study of Ganderbal Watershed, Kashmir, India, International Journal of Engineering Research and Technology (IJERT) ISS:2319-8354, Vol. 07, Issue 04, March, -2018.
31. Jasir Mushtaq, [Abdul Qayoom Dar](#) and Naved Ahsan (2020) "Physio-chemical characterization and quantification of municipal solid waste in high altitude Srinagar city of North-Western Himalayas". *International Journal of Environment and Waste Management*, Inderscience.
32. Jasir Mushtaq, [Abdul Qayoom Dar](#) and Naved Ahsan (2020) "Physio-chemical characterization of municipal solid waste and its management in high-altitude urban areas of North-Western Himalayas", *Waste Disposal & Sustainable Energy*, Springer, 2(151-160).

33. Nasir Ahmad Rather, Mohd Akbar Lone [Abdul Qayoom Dar](#), and Bintul Huda Mir, Design Procedure of Elongated Shape Filters for Cohesionless Soils Iranian Journal of Science and Technology, Transactions of Civil Engineering (2020) 44 (Suppl 1):S491-S496.
34. Nasir Ahmad Rather, Mohd Akbar Lone, [Abdul Qayoom Dar](#), and Bintul Huda Mir, The influence of particle shape and gradation parameters on the permeability of filter media, *Int. J. Hydrology Science and Technology*, Vol. 10, No. 3, 2020, 267-285
35. Nasir Ahmad Rather, Mohd Akbar Lone and [Abdul Qayoom Dar](#), Design criteria of protective filters based on particle shape and gradation parameters International Journal of Hydrology Science and Technology, Inderscience Publication *Int. J. Hydrology Science and Technology*, Vol. 10, No. 1, 2020, 102-122.
36. Nasir Ahmad Rather, Mohd Akbar Lone , [Abdul Qayoom Dar](#) and Bintul Huda Mir Laboratory investigations for development of design criteria for varying shapes of protective filters International Journal of Geotechnical Engineering, Taylor & Francis Publication 2018, ISSN: 1938-6362 (Print) 1939-7879 (Online).
37. Nasir Ahmad Rather, Mohd Akbar Lone and [Abdul Qayoom Dar](#), Design criteria of blade shape filter material for graded cohesion less bases, International Journal of Geotechnical Engineering 2017 ISSN: 1938-6362.
38. Nasir Ahmad Rather, Mohd Akbar Lone and [Abdul Qayoom Dar](#), Design criteria of round shape filters for cohesion-less bases, International Journal of Advanced Structures and Geotechnical Engineering (IJASGE), Basha Research Corporation.ISSN-2319-5347, Vol 6, No.4 Oct.2017.
39. [A.Q.Dar](#), Ruhhee Tabassum and Shahzad Faisar, Using Artificial Neural Network for Real Time Flood Prediction in River Jhelum, J&K (India), Elixir International Journal of Civil Engg Elixir Civil Engg. 82 (2015) 32710-32713.
40. Adil Mushtaq, [A.Q.Dar](#), Nasir A Rather and S AzharUd Din, Morphometric Analysis of Micro-Watersheds of Dal Lake Catchment (J&K) using Geospatial Techniques, Elixir International Journal of Civil Engg Elixir Civil Engg. 83 (2015) 33255-33261.
41. [A.Q.Dar](#), M.A.Lone and B Hussain, Effective utilization of sand as an additive for the validity of filter design criteria for cohesive soils based on controlling pore size of filters, International Journal of Geotechnical Engineering VOL.8, NO.2, 2014, 205-212.
42. [A.Q.Dar](#), Saima Showkat and Saqib Gulzar, Trend Analysis an Spatial Assessment of various Water Quality Parameters of river Jhelum, J & K for an Intensive Water Quality Monitoring Program, IORS journal of Mechanical and Civil Engineering (IOSR) e-ISSN-2278-1684,p-ISSN:2320-334X,PP 51-58 (2014).
43. Saima Showkat, A.Q.Dar and Mir Faizan Ul Haq, Temporal Assessment of Water Quality of River Jhelum, J & K India using Parametric and Non-Parametric Methods, IORS journal of Mechanical and Civil Engineering (IOSR) e-ISSN-2278-1684,p-ISSN:2320-334X,PP 06-12(2014).
44. [A.Q.Dar](#), M.A.Lone and B Hussain, Design criteria of cohesive soils based on controlling constriction size of filters, Indian Geotechnical Journal Vol43. No.1(2013) 39-46
45. [A.Q.Dar](#), M.A.Lone and B Hussain, Filter design criteria for base soils with a significant cohesive content, Indian Geotechnical Journal Vol41.NO.4,Oct.2011,177-185.

46. M.A.Lone, [A.Q.Dar](#) and B Hussian, Filter design criteria for non- cohesive soils with a limited cohesive content Indian Geotechnical Journal Vol33. No.2(2003) 80-95,

Conferences

47. Dar Junaid and [Abdul Qayoom](#), Dar, Hydro-Climatic Variability over Northern India: Implications for Water Resource Management , 26th International Conference on Hydraulics, Water Resources and Coastal Engineering, Hydro 2021, at SVNIT, Surat, Gujarat India, December 23-25, 2021
48. Raazia, Syeedah and [Abdul Qayoom](#), Subsurface hydrological Realm of PirPanjal watersheds in Jhelum Basin, India." In: Proceedings of Fourth IndianNational Groundwater Conference (INGWC-2021) on Groundwater Management in Arid and Semi-Arid Regions of Hard Rock Terrains. March 22- 24, 2021. JNTUH Hyderabad, India. pp 107-114
49. Syeedah Raazia and [Abdul Qayoom Dar](#), Geospatial Interpolation of Hydraulic Head Distribution in Karewa Aquifers of North-western Himalayas, India " Soil Conservation Society of India (SCSI) , National Web-Conference Sustainable Soil and Water Management for Bio-diversity Conservation, Food Security and Climate Resilience 29-30 December, 2020.
50. Tabasum Rasool, [Abdul Qayoom Dar](#), Firoz Alam, Shaziya Ramzan, Sajad Ahmad, Liyaqat Ali, Junaid Ahmed, Spatial variability analysis and mapping of infiltration rate in Nit Srinagar campus using GIS. Proceedings in International conference on Hydraulics, Water resources and Coastal Engineering (HYDRO 2019),18-20 December, 2019 Usmania University Hyderabad.
51. Ishtiyaq Ahmad Rather and [Abdul Qayoom Dar](#), Variation in physio-chemical parameters of Dal Lake, Jammu and Kashmir, International Conference on Contemporary Issues in Engineering Agriculture, Applied Science and Humanities, NIT Srinagar-22-23 June, 2019. Ishtiyaq Ahmad Rather and [Abdul Qayoom Dar](#), Chemical quality of Dal lake. Seminar on Dal Lake, *The Institution of Engineers (India) Srinagar J&K*, (2019).
52. Ruhhee Tabbusum and [Abdul Qayoom Dar](#), Analysis of Bayesian Regularization and Levenberg–Marquardt Training Algorithms of the Feed forward Neural Network Model for the Flow Prediction in an Alluvial Himalayan River" presented at International Conference on Cybernetics, Cognition and Machine Learning Applications (ICCCMLA-2019), Springer, Goa, August 16-17, 2019.
53. Tabasum Rasool, Sajad Ahmad, [Abdul Qayoom Dar](#), Mushtaq A. wani, Comparison of soil infiltration models under varying land cover condition in a micro watershed of Western Himalayan Region International conference on Hydraulics, Water resources and Coastal Engineering (HYDRO 2018),19-21 December, 2018 National Institute of Technology Patna,
54. [Abdul Qayoom Dar](#), Lateef Ahmad Dar and Syeedah Razia, Applying artificial neural networks algorithms to rainfall-runoff modeling -(case study Jhelum river Basin) , The second International Symposium on Hydraulic Modeling and Measuring Technology, ISHMMT 2018, May 30-June 01,2018, Nanjing, China
55. Rather, N. A.; Lone, [M. A.](#); [Dar, A. Q.](#) and Mir, B. H., Experimental Determination of Permeability of Filter Material Based on Controlling

- Constriction Size. 7th World Conference on Applied Sciences, Engineering and Management. 26-27 October 2018, The American Business School of Paris, France.
56. [A.Q.Dar](#), Syedah Razia and Lateef Ahmed, Data driven runoff modeling using different sets of predictors-A case study, 22nd. International Conference on Hydraulics, Water Resources and Coastal Engineering Hydro -2017 L.D College of Engineering Ahmedabad-21-23 Dec-2017
57. [A.Q.Dar](#), Humaira Maqbool and Syeedah Raazia, Rainfall intensity-duration-frequency relationships for different regions of Kashmir valley- J &K(India), 3rd International Conference on Science, Technology and Management (ICSTM-16) India International Centre, New Delhi 17 January 2016 ([Best oral Presentation Award](#)).
58. [A.Q.Dar](#), Humaira Maqbool and Syeedah Raazia, An empirical formula to estimate rainfall intensity in Kupwara region of Kashmir Valley J & K , India 4th International conference on advancements in engineering & technology (ICAET-2016) (ICAET) Bhai Gurdas Institute of Engineering & Technology (Punjab), India ISBN No. 978-81-924893-1-5.
59. [A.Q.Dar](#), Saima Showkat and and Saqib Gulzar Trend Analysis an Spatial Assessment of various Water Quality Parameters of river Jhelum, J & K for an Intensive Water Quality Monitoring Program, International Conference on Modeling Tools for Sustainable Water Resources Management, MTSWRM-2014 Anjuman college of Engineering and Technology, Nagpur (M.S), ([Best Paper award](#))
60. Saima Showkat, [A.Q.Dar](#) and Mir Faizan Ul Haq, Temporal Assessment of Water Quality of River Jhelum, J & K India using Parametric and Non-Parametric Methods, International Conference on Modeling Tools for Sustainable Water Resources Management, MTSWRM-2014 Anjuman college of Engineering and Technology, Nagpur (M.S),
61. Saqib Gulzar and [A.Q.Dar](#), Study of Rainfall Variation in Kashmir Valley, India, International Conference on Modeling Tools for Sustainable Water Resources Management, MTSWRM-2014 IIT Hyderabad (India)
62. [A.Q.Dar](#) and Ruhee Tabassum, Flood Prediction in River Jhelum, J&K (India) using Artificial Neural Network and Multiple Linear Regression Technologies, International Conference on Modeling Tools for Sustainable Water Recourses Management, MTSWRM-2014 IIT Hyderabad (India).
63. Adil Mushtaq, [A.Q.Dar](#) and Shakeel Ahmad, Watershed management of Dal Lake Catchment (J & K) based on erosion intensity hazard using geospatial technique International conference on Geospatial Technologies and Applications"Geomatrix-12, February 26-29,2012 CSRE, IIT Bombay.
64. Niyaz Ahmad Bhat, Sajid Mushtaq Pandith and [A.Q.Dar](#), Impact of Direct Disposal of Sewage into River Jhelum, International Conference on Sustainable Water Resources Management and Treatment Jan.19-20,2011 NEERI Nagpur.
65. Saqib Gulzar, A.R. Da, [A.Q.Dar](#) and Ovais Gulzar, Flood Resilient Construction in Jammu & Kashmir, National Inter-disciplinary Science Conference-2015 Sri Pratap College Srinagar, Jammu & Kashmir ([Best Paper award](#)).
66. Saqib Gulzar, A.R Dar and [A.Q.Dar](#), Improving the flood performance of building infrastructure in Jammu & Kashmir, 11th J & K Science Congress 2015 University of Kashmir J& K India.
67. Faizan U.I Haq, Saqib Gulzar, [A.Q.Dar](#), Irfan U.L Haq and Ovais Gulzar, Srinagar City: Expansion trends and need for vertical expansion, National

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69. Saqib Gulzar, Faizan U.I Haq and [Dar A.Q](#), Applicability and Suitability of a Multiplicative Seasonal Model for Forecasting Water Quality Parameters for Dal Lake of Kashmir, 9th. J & K Science Congress & Regional Science Congress (ISCA)1-3 Oct.2013 University of Kashmir J& K India.
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71. Adil Mushtaq, [A.Q.Dar](#), Nasir A Rather and S AzharUd Din, Morphometric analysis of micro- watersheds of Dal lake catchment (J&K) using geospatial technique, National Conference on Hydraulics and Water Resources, Hydro- 2011, 29-30 Dec.2011 SVNIT, Surat.
72. Niyaz Ahmad Bhat, Sajid Mushtaq Pandit and [A.Q.Dar](#), Solid waste generation of Srinagar city (J&K) -present and future perspectives, National Conference on Sustainable Development of Urban Infrastructure 18-19 June 2010.Visvsesvaraya National Institute of Technology Nagpur.
73. Niyaz Ahmad Bhat, Sajid Mushtaq Pandit and [A.Q.Dar](#), Utilization of waste from construction Industry- recycling of concrete, National Conference on Sustainable Development of Urban Infrastructure 18-19 June 2010.Visvsesvaraya National Institute of Technology Nagpur.
74. [A.Q.Dar](#), Mohammad Ather ,Abid Ali and Niyaz Ahmad, Viability of vermicomposting for solid waste management in Srinagar city (J& K), National Seminar on Cleaner Production Technologies 17-18 Nov.2009NITTTR, Chandigarh.
75. [A.Q.Dar](#), and Arif Banday, Watershed Prioritization of Ramibiara Catchments of Jhelum basin using Geoinformatics, National symposium on Climate change and water resources in India CCWRI,18-19Nov.2009, IIT Roorkee.
76. [A.Q.Dar](#), and Arif Banday, Morphometric analysis of micro-watersheds of Jhelum basin using GIS Technique, National Seminar conference on sustainable water resources development and management SWADAM,13-14 June 2008 ,Govt College of Engineering Aurangabad

Book Chapters

1. Ruhhee Tabbusum and [Abdul Qayoom Dar](#), "Analysis of Bayesian Regularization and Levenberg-Marquardt Training Algorithms of the Feedforward Neural Network Model for the Flow Prediction in an Alluvial Himalayan River", Algorithms for Intelligent Systems in Cybernetics, Cognition and Machine Learning Applications, page 43-50, Springer, Singapore, April 2020.
2. Tabasum Rasool, Sajad Ahmad, [Abdul Qayoom Dar](#), Mushtaq A. wani, Comparison of soil infiltration models under varying land cover condition

in a micro watershed of Western Himalayan Region, Hydrological Modelling Springer, (In Press)

Ph.D Supervision

1. Nasir Ahmed Rather, Protective filter design criteria based on the particle shape and gradation parameters, (Co-Supervisor) (Awarded, 2017).
2. Ms. Ruhhee Tabassum, Modeling Flood Prognosis Using Machine Learning Techniques, (Awarded, June 2021).
3. Ms. Tabasum Rasool, Modeling Vadose Zone Infiltration in the Himalayan Lake Catchment, (Awarded, June 2021).
4. Mr. Ishtiyaq Ahmad Rather, Water quality modeling of Dal Lake in North West Himalayan Region, (Awarded, July 2021).
5. Mr. Jasir Mushtaq Kaloo, Gis-based approach and characterization analysis of municipal solid waste in western Himalayan region (Awarded July, 2021).
6. Ms. Syeedah Raazia, Groundwater modeling of Karewa watersheds in a Western Himalayan basin (Completed, May, 2022).
7. Mr. Mohd Ayoub Malik ,Modeling impact of climate change on runoff and sediment yield of a high altitude catchment (In Progress).
8. Ms. Sakiba Nabi, Refining regional flood frequency analysis through flood profiling (In Progress).
9. Mr Junaid Ahmad, Spatial-temporal structure of precipitation extremes associated with tropical moisture export over India (In Progress).

P.G Dissertation Supervision

1. Seerat ul Mehraj, Flood Forecasting for Jhelum Basin using Unit Hydrograph Methodology (2005).
2. Nazia Nazir Zuhaid, Modeling of Water Quality Parameters of Dal Lake (J & K) (2006).
3. Rais Ahmad, Hydraulic Conductivity of Porous Material- Influence of Pore Channel and Nature of Gradation (2007)
4. Ishtiyaq Ahmad Rather, Forecasting Water Quality Parameters for Dal Lake of Kashmir, (2008)
5. Arif Ahmad Banday, Geomorphological Analysis of Upper Watersheds of Rambira Catchment Using Geoinformatics (2009)
6. Adil Mushtaq , Watershed Management of Dal lake Catchment Using Geospatial Technique (2011).
7. Hakim Muzamil, Effect of Land Use/Land Cover on Runoff-A Case Study of Dal Lake Catchment (J&K), (2012).
8. Saima Showkat, Spatial and Temporal Assessment of Water quality of River Jhelum (J&K), (2013).
9. Ruhee Hamid, Flood Prediction in River Jhelum-J&K, India Using Artificial Neural Network and Multiple Linear Regression Techniques, (2004).
10. Daniyal Rasool, Soil Erosion Estimation using WEPP model in a Dal Micro watershed J & K -A case study, (2004).
11. Humaira Maqbool, Intensity -frequency-duration Studies of Kashmir Valley, (2015).
12. Lateef Ah.Dar, Rainfall -Runoff Modeling for River Jhelum (J& K) India, (2015).
13. Aqleem Shah, Flood plain mapping of River Jhelum using two dimensional Numerical model Telmac-2D, (2016).

14. Ishtiyaq Nabi, Assessment of water quality parameters of Dal Lake in Kashmir valley J & K India, (2016).
15. Sofi Aamir Majeed, Effect of Nature of Fluid on Hydraulic Conductivity of Soils, (2017).
16. Sajad Ahmed, Infiltration modeling in a micro water shed of Dal Lake catchment, (2018).
17. Mohd. Arbin Bilal, Modeling of stage discharge relationship for major gauging sites of Jhelum Basin, Jammu & Kashmir, India, (2019).
18. Danish Jeelani, Modeling of hydrologic response of Puhroo and Lidder River Catchment using ARCSAWAT, (2019).
19. Pebika Bania, Flood prediction in Pandu situated in Guwahati (Assam), India of the Brahmaputra River using Artificial Neural Networks, (2020).
20. Syed Mohammad Shariq Qadri, Multivariate Statistical Analysis of Physico-Chemical Water Quality Parameters of Wular Lake, (2020).
21. Aamir Mubarik, Rainfall runoff simulation and flood prediction using fuzzy logic based modeling, (2021).
22. Ajaz Ahmad Mir, Quantitative Analysis of Methane Gas Emissions from Municipal Solid Waste in Srinagar City, (2021).

AMIE Thesis Supervision

1. Evapotranspiration Studies of River Jhelum Basin (J & K) ST: 380527-7 (2010-2011).
2. Identification and remedies of the problems of Sugam canal Shopian J & K ST-468333-7. (2010-2011).

U.G Project Supervision +37

Awards

1. Best Paper award titled "Trend Analysis an Spatial Assessment of various Water Quality Parameters of river Jhelum, J & K for an Intensive Water Quality Monitoring Program" in International Conference on Modeling Tools for Sustainable Water Recourses Management, MTSWRM-2014 Anjuman college of Engineering and Technology, Nagpur (M.S).
2. Best oral Presentation Award "Rainfall intensity-duration-frequency relationships for different regions of Kashmir valley- J & K(India), 3rd International Conference on Science, Technology and Management (ICSTM-16) India International Centre, New Delhi 17 January 2016.
3. Best Paper award titled "Applicability and Suitability of a Multiplicative Seasonal Model for Forecasting Water Quality Parameters for Dal Lake of Kashmir Proc. of 9th. J & K Science Congress & Regional Science Congress (ISCA)1-3 Oct.2013 University of Kashmir J& K India.

Expert Lectures Delivered

1. Overview of Computer Application in Water Resources Engineering with Special Reference to ArcGIS, Participants of 5 day Training workshop on Computer Applications in Civil Engineering.
2. Design Flood Estimation Participants of for 5 day Training Course on Disaster management(Earthquake Resistant Construction and Flood Management

Membership

1. Fellow of Institution of Engineers India.
2. Life member of Indian Society of Technical Education.
3. Life member of Indian Society for Hydraulics.
4. Member of International Association of Hydraulic and Environmental Research.

Significant outreach Institute activities

1. Expert member of Inspection Team constituted by Hon'ble national Green Tribunal New Delhi for Solid Waste Management of Srinagar city (From Jan. 2017 to July 2017).
2. Member of Departmental Board of studies Committee for SSM College of Engineering and Technology. (From 2016 to 2018)
3. AICTE team member for the inspection of various institutions
4. Expert member of Inspection committee constituted by University of Kashmir
5. Evaluation of Ph.D and M.Tech thesis's of various Institutes.

Conferences/ Workshops/Seminars attended

S.No	Organization	Title	Period		
			From	To	Weeks/ Days
1.	Dept of Civil Engg NITTTR, Chandigarh	National Seminar on Cleaner Production Technologies	17-11-2009	18-11-2009	2 days
2.	Dept of Civil Engg. Govt. College of Engineering Aurangabad	National Conference on Sustainable Water Resources Development and Management SWRDAM-2008	13-06-2008	14-06-2008	2 days
3.	NEERI Nagpur	International conference on Sustainable Water Resources Management and Treatment	19-01-2011	21-11-2011	3 days
4.	SVNIT, Surat	National Conference on Hydraulics and Water Resources, Hydro-2011,	29-12-2011	30-12-2011	2 days
5.	CSRE,IIT Bombay	International conference on Geospatial Technologies Applications "geomatrix-12	26-02-2012 &	29-02-2012	4 days
6.	IMT Nagpur	Workshop on "Statistical data	16-01-2013	18-01-2013	3 days

		analysis".			
7.	NI T Srinagar	Workshop on "National Mission on Education through Information Communication Technology	18-06-2013	18-06-2013	1 day
8	Esri India	ArcGISi: Introduction to GIS	17-07-2017	21-07-2017	5 day
9.	Esri India	ArcGIS3: Training Programme on Performing Analysis	17-07-2017	21-07-2017	5 day
10.	Jamia Millia Islamia New Delhi	GIAN Course on Managing Floods and droughts in a changing Climate	15-01-2018	20-01-2018	5 day

Summer/Winter/Short term courses attended

S.N o	Organization	Title	Period		
			From	To	Weeks /Days
1.	Elect. & Comm. Dept. R.E.C.Srinagar	ISTE course on Programming and Programming Methodology	Nov.5,1991	Dec.28,1991	8weeks
2.	Dept. of Civil Engg., College of Engg. Goa.	ISTE course on Eco-Management of coastal areas	Feb.26,1996	Mar.10,1996	2weeks
3.	Dept of earthquake engineering University Roorkee	AICTE course on Computational Modeling for Geo-Dynamic Problems	Feb.18,1997	Mar. 1, 1997	2 weeks
4.	CSRE, I.I.T.Bombay	NNRMS course on Remote Sensing Application to Water Resources	July,21,1997.	Aug. 14, 1997	4 weeks
5.	Civil Engg.Dept. VRCE,Nagpur	AICTE/ISTE course on Environmental Engg. Systems Optimization	June,11,2001	Jun, 22, 2001	2weeks
6.	WRDTC & NIH, IIT Roorkee	System Analysis Techniques and Computer applications in Water Resources Management	Jan.05,2004	Jan.20,2004	4weeks
7.	Dept. of Civil Engg. IIT Roorkee	Analytical Procedures for Water and Waste Water Quality	Dec.15,2006	Dec.19,2006	1week

8.	NIH Roorkee & CSMRS New Delhi	Water Quality and its Management	July 16, 2007	July 20, 2007	1 week
9.	Dept.of Hydrology & Dept.of WRDM IIT Roorkee	Advanced Techniques and Tools for Hydrological Analysis and Design	Oct.26, 2009	Oct. 31, 2009	1 week

Undertaking by the Fellow

I, Dr. Sagad Ahmad, Son/Daughter/Wife of Shri. Gh Rassel Mie, resident of -
Rawalpindi, Bani Gala agree to undertake the following, If I am offered the SERB
N-PDF

1. I shall abide by the rules and regulations of SERB during the entire tenure of the fellowship.
2. I shall also abide by the rules, discipline of the institution where I will be implementing my fellowship
3. I shall devote full time to research work during the tenure of the fellowship
4. I shall prepare the progress report at the end of each year and communicate the same to SERB through the mentor
5. I shall send two copies of the consolidated progress report at the end of the fellowship period.
6. I further state that I shall have no claim whatsoever for regular/permanent absorption on expiry of the fellowship.

Date:

09/08/23.

Signature



Endorsement Certificate from the Mentor & Host Institute

This is to certify that:

- I. The applicant, Dr. Syed Ahmad Ali, will assume full responsibility for implementing the project.
- II. The fellowship will start from the date on which the fellow joins University/Institute where he/she implements the fellowship. The mentor will send the joining report to the SERB. SERB will release the funds on receipt of the joining report.
- III. The applicant, if selected as SERB-N PDF, will be governed by the rules and regulations of the University/ Institute and will be under administrative control of the University/ Institute for the duration of the Fellowship.
- IV. The grant-in-aid by the Science & Engineering Research Board (SERB) will be used to meet the expenditure on the project and for the period for which the project has been sanctioned as indicated in the sanction letter/ order.
- V. No administrative or other liability will be attached to the Science & Engineering Research Board (SERB) at the end of the Fellowship.
- VI. The University/ Institute will provide basic infrastructure and other required facilities to the fellow for undertaking the research objectives.
- VII. The University/ Institute will take into its books all assets received under this sanction and its disposal would be at the discretion of Science & Engineering Research Board (SERB).
- VIII. University/ Institute assume to undertake the financial and other management responsibilities of the project.
- IX. The University/ Institute shall settle the financial accounts to the SERB as per the prescribed guidelines within three months from the date of termination of the Fellowship.

Dated:


विभागाध्यक्ष अन्यायालय
प्रोफेसर श्रीनगर
हजरतबल-१९००६, जम्मू और कश्मीर, भारत
21/7/23

Signature of the Mentor

हजरतबल-१९००६, जम्मू और कश्मीर, भारत
HOD Civil Engineering
National Institute of Technology Srinagar
Hazratbal-190006, J&K, India

Dated:


कुलसाचव
21/7/23

Signature of the Registrar of University/Head of Institute

Seal of the Institution
राष्ट्रीय प्रौद्योगिकी संस्थान श्रीनगर
हजरतबल-१९००६, जम्मू और कश्मीर, भारत

REGISTRAR

National Institute of Technology Srinagar
Hazratbal-190006, J&K, India

Undertaking by the Principal Investigator

To

The Secretary
SERB, New Delhi

Sir

I Dr. Sargal Ahmad Mst.

herby certify that the research proposal titled Deconstructing Embodied
Intersectionalities of Climate Crisis, Space and
Gender in India. submitted for possible

funding by SERB, New Delhi is my original idea and has not been copied/taken verbatim from anyone or from any other sources. I further certify that this proposal has been checked for plagiarism through a plagiarism detection tool i.e. Turfti

approved by the Institute and the contents are original and not copied/taken from any one or many other sources. I am aware of the UGCs Regulations on prevention of Plagiarism i.e. University Grant Commission (Promotion of Academic Integrity and Prevention of Plagiarism in Higher Educational Institutions) Regulation, 2018. I also declare that there are no plagiarism charges established or pending against me in the last five years. If the funding agency notices any plagiarism or any other discrepancies in the above proposal of mine, I would abide by whatsoever action taken against me by SERB, as deemed necessary.

Signature of PI with date

Name / designation _____
National Institute of Technology Srinagar
Hazratbal-190006, J&K, India



Original Research Paper

Groundwater Potential Zonation using Integration of Remote Sensing and AHP/ANP Approach in North Kashmir, Western Himalaya, India



Sajad Ahmad Mir*, M. S. Bhat , G. M. Rather, Durdanah Mattoo

Department of Geography and Regional Development, University of Kashmir, Dargah Hazratbal, Srinagar-190006, Jammu and Kashmir, India.

Abstract

The demand for groundwater resource estimation has increased radically attributed to the growing population and rapid urbanization. To analyze the groundwater scenario the present study aims to delineate the groundwater potential zones (GWPZ's) using the integrated remote sensing (RS) and Geographic Information System (GIS) based approach and AHP/ANP model in Western Himalaya. For the groundwater potentiality analysis, the thematic layers that were selected for the preparation of GWPZ map include lithology, Topographic Wetness Index (TWI), Topographic Position Index (TPI), slope, drainage density, lineament density, land use/land cover and rainfall. The final output GWPZ map can be categorized as high (39.57%), moderate (16.23%), low (31.91%), and very low (12.29%). In light of the growing demand for groundwater, the estimated area under good groundwater capacity appears to be inadequate. As a result, the state government in general, as well as the water resources and planning departments, must develop appropriate strategies to combat the impending water scarcity. To relieve pressure on groundwater resources, the study recommends increasing the use of surface water from the sub-regional basin. With the applicability of remote sensing and GIS technology coupled the integration of AHP/ANP model the comprehensive groundwater prospecting is achieved and groundwater as quintessential resource can be harnessed and utilized as anthropogenic stresses and changing climate has accentuated the demands for water consumption.

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 Vijay Bhagat

1 INTRODUCTION

In the current times with the burgeoning need for groundwater is augmenting in drinking, domestic and agricultural activities has amplified significance of groundwater as sustainable water resource radically with its low pollution imprints and also acting as climate change buffer. Globally groundwater use has influenced 'environmentally critical stream flow' in more than 15% of streams, and could affect most of them by 2050 (de Graaf *et al.*, 2019). Groundwater contributing around 34% of the total annual water supply is a vital and dynamic natural fresh water resource (Shekhar and Pandey, 2015) supporting bio-physical, ecological and human health environments. Significant population of India relies on groundwater sources for consumption (drinking and domestic purposes), with 90% of rural

population and nearly 30% of urban populace resulting in over exploitation in some regions (Parthasarathy and Deka, 2019). India's annual groundwater withdrawal rate is estimated to be 251 km³ (Gun, 2012). Groundwater caters to nearly 85% of rural, 65% of irrigation and 50% of urban drinking water/industrial needs in the India (India Water Portal, 2019). Water scarcity affects approximately 0.6 billion people in the country having high water stress caused by a lack of freshwater, with almost three-quarters of households lacking access to potable water (NITI Aayog, 2018). India will become a water-stress zone by 2025, and then a water-scarce zone by 2050, unless stringent steps are taken (World Bank, 2005). However, its availability is limited because groundwater is mostly an

* Author address for correspondence

Department of Geography and Regional Development, University of Kashmir, Dargah Hazratbal Srinagar-190006, Jammu and Kashmir, India.

Tel.: +91 6005709846

Emails: mirsajad1731@gmail.com (S. A. Mir -Corresponding author); mattoodurdanah@gmail.com (D. Mattoo); msbhatgeog@yahoo.com (M.

S. Bhat); gmrather@rediffmail.com (G. M. Rather).

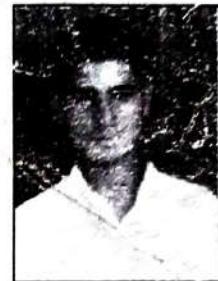
<https://doi.org/10.21523/gcj1.2021050104>

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Registration No. 05NKM311070

Serial No. 3410029

The Jammu & Kashmir State Board of School Education



Secondary School Examination ANNUAL (REGULAR-2006)

This is to certify that **SAJAD AHMAD MIR**

Roll No. **354270** *Son/Daughter of Smt./Mtr.* **HAMEEDA BEGUM**

& Shri/Mr. **GH RASOOL MIR**

Born on **17/11/1990**

(Seventeenth November, Nineteen Hundred Ninety)

Passed the Secondary School Examination of the Board held in **October/November :- 2006**

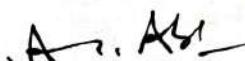
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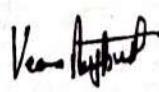
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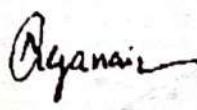
Jammu/Kashmir

Date : **February 10, 2007**




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Modelling the Impact of Climate Variability and LULC Changes on the Hydrological Processes in the Upper Jhelum Basin Catchment, Western-Himalayas

[Durdanah Mattoo](#) , [Sajad Ahmad Mir](#), [Mohammad Sultan Bhat](#), [Akhtar Alam](#) & [Nusrat Rafique](#)

[Water Resources](#) **50**, 215–230 (2023) | [Cite this article](#)

180 Accesses | [Metrics](#)

Abstract

Climate variability and Land use practices significantly alter the hydrological processes at local and regional levels. The Upper Jhelum catchment is an important Himalayan catchment which is the head-water region of the river Jhelum. The focus of this study is to examine the impact of climate variability and land use land cover dynamics on the hydrological regime in the study area. This study used the physically based distributed hydrological model, Soil and Water Assessment Tool (SWAT) to assess the individual and combined contribution of climate variability and Land use/Land cover changes on the hydrological processes operating on multiple sub-watersheds of the region. The model was calibrated and validated for multi-site monthly stream flow. The R^2 , E_{NS} and PBIAS values ranged from, 0.71–0.81, 0.56–0.88, and 0.74–0.94 respectively for calibration and 0.69–0.8, 0.51–0.87, and –2.3–10.2 respectively for validation. To study the separate and combined effects of climate variability and land-use, we set up the model for four scenarios of different combinations of land use maps and climate data. The results reveal the change in land use has led to increase in the evapotranspiration rates. While all other hydrological processes (Groundwater Flow, Surface Flow and Water yield) were more sensitive to climate variability and it has led to an overall decrease in the water resources of the region. A peculiar trend of the left bank watersheds being more sensitive to the landuse change in addition to climate variability was also strongly depicted in the results.



Original Research Paper

Groundwater Potential Zonation using Integration of Remote Sensing and AHP/ANP Approach in North Kashmir, Western Himalaya, India

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1 INTRODUCTION

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