Dr. Bushra Ghaffar

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International Islamic University, Islamabad, PK

Lecturer, Department of Environmental Science

I have done my Ph.D. degree and M.Phil. degree in Environmental Sciences along with a bachelor's degree in forestry, Range Management & Wildlife, following extensive practical experience preparing proposals, serving as a Lecturer, supervising the postgraduate and undergraduate student projects and publishing scientific research for well-renowned international journals. Adept at teaching GIS & Remote Sensing related to water and climate, including GIS & RS-based practical work. Strategic leader; instrumental in partnering with department's staff in acquiring external funds while leading and managing students of diverse backgrounds.

Areas of Expertise

- Ecotoxicology
- Hydrogeology
- Groundwater contamination
- Arsenic & Fluoride contamination in drinking water

- GIS and Remote Sensing
- Climate scenarios-based data modeling
- Machine learning and Artificial Intelligence

- Human Health Risk Assessment
- Biodiversity conservation

Professional Experience

International Islamic University, Islamabad   **2010 – Present**
Lecturer (BPS-18)
Department of Environmental Science
Faculty of Basic & Applied Sciences

Educate students regarding science, policy, and management of environmental issues affecting aquatic ecosystems from freshwaters to open ocean while emphasizing significantly improving the protection of natural resources and the health of people across the world. Provide a comprehensive introduction to remote sensing theory as well as instructor and student-led case studies on applications of remote sensing in specific areas of interest.

Key Achievements/Contributions:

- Successfully served as Research Supervisor for 1MS (completed), 3 MS (in progress), and 32 BS students; in the Department of Environmental Science, resulting in receiving outstanding recognition by students and senior management at all levels.
- Fostered positive relationships with students by addressing student concerns and queries politely and efficiently.
- Published multiple research projects and served as a Lecturer while conducting in-depth analysis and running different possible hypotheses throughout the role.

Education

Postgraduate program in AIML – In progress (September 2022-August 2023)
Purdue University, USA in collaboration with IBM

Doctor of Philosophy (Ph.D. in Environmental Sciences)
International Islamic University, Islamabad

Master of Philosophy (M.Phil in Environmental Sciences)
Quaid-e-Azam University, Islamabad

Bachelor of Science in Forestry, Range Management & Wildlife
University of Arid Agriculture, Rawalpindi

Technical Proficiencies

Arc GIS| ERDAS imagine| Statistica| ENVI| R| SPI |Garmin GPS II| III plus| Map 76 |MS Hydrolab for water analysis| Microwave digester| Atomic Absorption Spectrophotometer

BUSHRA GHAFFAR, Ph.D. Environmental Science

List of International Research Publications, memberships, awards, training, and workshops

1. **International Journal** - Environmental Science and Pollution Research

Title - "Trace metals in Ganges soft-shell turtle (Aspideretes gangeticus) from two Barrage: Baloki and Rasul

2. **International Journal:** International Journal of Fauna and Biological Studies

Title - "Estimating the potential habitat of coral reefs along the coastline of Pakistan using GIS and RS techniques"

3. **International Journal:** International Journal of Ecotoxicology and Environmental Safety

Title - "Human Arsenic Exposure via dust across the different ecological zones of Pakistan".

4. **International Journal:** Fluoride-Quarterly Reports

Title - "Global scientific production on fluoride contamination research: Bibliometric analysis from 2011 to 2020".

5. **International Journal:** Water-MDPI

Title - "Flash Flood Susceptibility Assessment and Zonation by Integrating Analytic Hierarchy Process and Frequency Ratio Model with Diverse Spatial Data."

6. **Chapter published in a book published by Springer Nature, the book entitled** "Microbial and Biotechnological Interventions in Bioremediation and Phytoremediation"

Chapter title: Microbial Bioremediation of Polythene and Plastics

7. **International Journal:** Atmosphere

Title - "Rainfall in the Urban Area and Its Impact on Climatology and Population Growth."

8. **International Journal:** Frontiers in Environmental Science

Title - "Landslide susceptibility mapping (LSM) of Swat District, Hindu Kush Himalayan region of Pakistan, using GIS-based bivariate modeling."

9. **International Journal:** Sustainability

Title - "Atmospheric Anomalies Associated with the 2021 Mw 7.2 Haiti Earthquake Using Machine Learning from Multiple Satellites."

10. **International Journal:** Frontiers in Astronomy and Space Science

Title - "Possible seismo-ionospheric anomalies associated with the 2016 M w 6.5 Indonesia earthquake from GPS TEC and Swarm satellites."

11. **International Journal:** Atmosphere

Title - "Integrated Analysis of Lithosphere-Atmosphere-Ionospheric Coupling Associated with the 2021 Mw 7.2 Haiti Earthquake."

12. **International Journal:** Atmosphere

Title - "Seismo Ionospheric Anomalies around and over the Epicenters of Pakistan Earthquakes."

International Memberships & Awards

Member of Remote Sensing & Photogrammetry Society (RSPSoc) U.K.
Member of Society of Environmental Toxicology and Chemistry (SETAC), USA

Member of International Society for Fluoride Research (ISFR), New Zealand

Awarded with DAAD scholarship in September 2014 for Summer Academy course on "Spatial Ecotoxicology and Ecotoxicological Risk Assessment" in Universität Koblenz Landau, Germany

Professional Trainings

Monitoring and Modeling Floods using Earth Observations
NASA, USA

Evaluating Ecosystem Services with Remote Sensing
NASA, USA

Advanced Webinar: Satellite Remote Sensing for Measuring Urban Heat Islands and Constructing Heat Vulnerability Indices
NASA, USA

Monitoring Aquatic Vegetation with Remote Sensing
NASA, USA

Remote sensing and field-based glacier and snow monitoring in Pakistan
ICIMOD, Nepal

Principles of species conservation planning and remote conservation during a pandemic situation
PMAS Arid Agriculture University, Rawalpindi

Spatial Ecotoxicology & Ecotoxicological Risk Assessment: an open community approach
Universitate Koblenz Landau, Germany. Department of Environmental Sciences.

Short training course in Remote Sensing and GIS"
International Islamic University, Islamabad. Department of Environmental Sciences, Faculty of Basic & Applied Sciences.

Advanced Training in Remote Sensing and GIS"
National Centre for Remote Sensing and Geo-Informatics (NCRG) - SUPARCO Headquarters, Karachi

"Principles and Applications of Conservation GIS"
GIS Laboratory, National Council for Conservation of Wildlife, Islamabad. Ministry of Environment's Pakistan Wetlands Programme (PWP)

"Application of GIS & Remote Sensing Techniques for Natural Resource Management"
Pakistan Forest Institute (PFI), Peshawar

Other Activities
- Organized seminar on "GIS, Remote sensing and Climate change" on 22nd April, 2015 in the Department of Environmental Science, Faculty of Basic & Applied Sciences, International Islamic University, Islamabad.
- Organized biodiversity day and world water day activity in the department at IIUI
- Organized the short training course on Remote sensing and GIS for beginners at IIUI