**Asid Ur Rehman**

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**Introduction**

Asid has an academic background in geospatial and earth observation science. He holds an undergraduate degree in Space Science and a master’s degree in Remote Sensing & Geo-information Science. During his professional tenure, he worked with organisations like World Wide Fund for Nature (WWF), UN-Habitat, and Hagler Bailly Pakistan. His blended work on sustainable urbanisation and climate change impact convinced him to proliferate his academic career in climate change and water-related modelling. As a first step, in his [master’s dissertation](https://www.mdpi.com/2072-4292/10/12/2040/htm), he evaluated satellite-based rainfall datasets to assess their efficacy for early urban flood warnings. Later, in 2021, he secured a PhD position at Newcastle University under ONE Planet Doctoral Training Partnership (DTP). His PhD research is well-connected to his earlier endeavours, and he is developing a new automated framework for efficient urban flood risk management.

**PhD @ ONE Planet DTP**

**Project title:** Optimising Flood Risk Management Interventions in Catchments and Cities

Detailed flood models are used to assess increased future flood risk in cities and catchments, and to design flood attenuation features including green infrastructure (GI) or natural flood management (NFM). It is important that the limited funding available for flood management is spent wisely, locating GI or NFM features optimally so they maximally reduce flows and storm sewer spills. The advanced flood model CityCAT is used to simulate surface and sewer flows and can represent GI and NFM features. Design using CityCAT and other models has to date followed “expert” ad hoc methods, and only a limited number of the very large range of options is followed due to computational expense. This project aims to develop a new automated framework for the optimal design of flood risk management options using a range of NFM or GI in catchments and cities under future climate scenarios. The framework will provide the capability to optimise the location, type, size and number of NFM features, achieved by a machine learning optimisation algorithm to minimise risk to life and property for a given investment for a range of climate scenarios. Multiple simulations of the impact of different “populations” of NFM features will be made, controlled by an optimisation algorithm, and iterated until an optimal solution is obtained. This process provides a new level of understanding of catchment dynamics under different flood scenarios, resulting in a robust design solution for use by the lead flood authority.

**Supervisors**

* Vassilis Glenis

Water Group, School of Engineering, Newcastle University, UK‬‬‬‬‬‬‬‬

**Peer-reviewed Journal Publications**

Rehman, A. U., Chishtie, F., Qazi, W. A., Ghuffar, S., Shahid, I., & Fatima, K. (2018). Evaluation of three-hourly TMPA rainfall products using telemetric rain gauge observations at Lai Nullah basin in Islamabad, Pakistan. *Remote Sensing*, *10*(12), 2040.

Rehman, A. U., Chishtie, F., Qazi, W. A., Ghuffar, S., & Shahid, I. (2018). Validation of TRMM 3B42 Rainfall Product at Lai Nullah Basin, Islamabad, Pakistan. *Journal of Space Technology*, *18*(1).

Naeem, S., Cao, C., Qazi, W. A., Zamani, M., Wei, C., Acharya, B. K., & Rehman, A. U. (2018). Studying the association between green space characteristics and land surface temperature for sustainable urban environments: An analysis of Beijing and Islamabad. *ISPRS International Journal of Geo-Information*, *7*(2), 38.

Fatima, K., Khattak, M. U. K., Kausar, A. B., Toqeer, M., Haider, N., & Rehman, A. U. (2017). Minerals identification and mapping using ASTER satellite image. *Journal of Applied Remote Sensing*, *11*(4), 046006.