Pranav Dhawan

📍 **Home** :   in **LinkedIn:** www.linkedin.com/in/p-dhawan

WORK EXPERIENCE

[11/2022 – Current]   ### Doctoral Student

Free university of Bolzano-Bozen, Italy

City: Bolzano | **Country:** Italy

Topic - Incorporating Renewable Energy for Pumped Hydro Storage for Trentino Alto Adige region of Italy

My research involves three topics:

- Hydrological modelling of pumped storage systems in a cascade configuration under different climate change scenarios.
- Integrating floating photovoltaic systems (on reservoirs) with pumped storage systems
- Optimization of hydropower systems for water-energy nexus.

[04/2021 – 10/2022]   ### Assistant Researcher

Free University of Bolzano-Bozen, Italy

City: Bolzano | **Country:** Italy

Seasonal Hydrological Econometric forecasting for hydropower production optimization – SHE

- The aim of this project is the development of a model strategy for seasonal evolution of electricity prices by integrating the seasonal weather forecasting models by incorporating a hydrological framework which takes into account the human-water interaction, weather variables and streamflow. A framework will also be developed to optimize hydropower production.
- As part of this project, a new gridded dataset has been developed for the Trentino-Alto Adige region for temperature and precipitation at an hourly time scale at 250m resolution.

Bias correction of Climate Variables

- Datasets generated from Global Climate Models and Regional Climate Models are generally biased and needs to be validated with observed data.
- As part of this, different univariate and multivariate methods were explored and applied to weather variables for two case studies to remove biases.

[08/2020 – 02/2021]   ### Consultant (Remote Sensing and GIS Expert)

National Institute of Disaster Management, Ministry of Home Affairs, Government of India

City: New Delhi | **Country:** India

Flood Monitoring Cell

- India is prone to not only riverine and coastal flooding but also to urban flooding. Instances of flooding have been increasing in the country due to reduced river capacity, riverbank erosion, reduced natural drainage in flood prone areas, encroachment and other meteorological aspects among other factors. Even though a robust flood forecasting and early warning system is in place, however, parts of India are affected by repeated cases of flooding which causes heavy loss of life,

property and affects infrastructure greatly. The existing approach of flood management is not sufficient to deal with flooding and requires a paradigm shift. This project understands the existing policies and advocacy framework for flood management and understand the gaps in the existing flood forecasting systems.
- My role in this project was to understand the flooding extent of different flooding events by using satellite imageries. In addition to that, I was responsible of finding gaps in the policies for flood management as well as forecasting systems which are established within the country and to suggest possible changes in the policies.

[01/2018 – 11/2019] **Water Resources Engineer**

DHI (India) Water and Environment Pvt. Ltd.

City: New Delhi | **Country:** India

Design of Flood Protection works along Sukhbhadar River in Dholera Special Investment Region, Gujarat

- The objective of this project is to prepare detailed engineering design for river training works along the Sukhbhadar river as a basis of long- term mitigation strategy with sustainable solutions
- **Project Manager**: I was responsible for the overall running of the project including work plans, schedules, budgets and resource allocation for the entire project. I was also responsible for the setting up of meetings with the clients and timely delivery of the reports
- Apart from the management of the project, I was also responsible for modelling of the river and suggesting mitigation strategies for effective flood protection works

Climate Change Decision Support System (DSS) for Samrat Ashok Sagar Dam, Bhopal

- This project on DSS aims at enhancing the decision making capabilities of the Madhya Pradesh Water Resource Department (MPWRD) and other related by assessing the impacts of climate change on the reservoir system with the view of optimizing the reservoir water balance and managing water releases for competing demands in the command area downstream of the dam. It will further help MPWRD to prepare for and adapt to drought and flood situations through simulation of scenarios and adaptation measures
- **Deputy Project Manager** – I was responsible for the downscaling of the climate change models to reservoir level and to predict the climate vulnerability for the future based on those models. I was also responsible for the overall running of the project by coordinating between the teams in Bhopal and New Delhi and the client - UNDP

Quantification of losses suffered by Jammu and Kashmir (J&K) on account of Indus Water Treaty (IWT)

- The aim was to study how has IWT, which has been in effect for around 60 years, impacted the state of J&K by studying the effects of IWT on the hydro power potential, irrigation potential and flood risk assessment and to quantify the losses by comparing the scenario with and without the treaty
- **Hydrologist**: Responsible for the overall assessment of Hydro Power Potential with and without the Treaty and the losses suffered by the state due to the Treaty

Strengthening Smart Water Management and Urban Climate Change Resilience in Tamil Nadu, India

- The aim of this project is to conduct an advanced basin-wide study of water related disaster risks considering climate change in selected vulnerable coastal towns in Tamil Nadu resulting in strategic and actionable recommendations to strengthen water related infrastructure and management (drinking water supply, sewage collection, wastewater treatment, storm water drainage, flood management, early warning systems) to increase climate resilience
- **Modeler**: Run the baseline scenario as well as scenario with Climate Change for the entire basin. To incorporate MIKE HYDRO RIVER, MIKE 21C and MIKE URBAN to

understand the overland flooding of the catchment areas, suggest mitigation measures for the same

[09/2017 – 12/2017]   ### Research Assistant

Indian Institute of Technology (I.I.T), Roorkee

City: Roorkee | **Country:** India

Real Time Inflow Forecasting System for Tehri Dam by IIT Roorkee and Tehri Hydro Development Corporation (THDC) India Ltd.

- Usage of Mike 11, HEC-HMS, Arc GIS, HEC-GeoHMS for the flood forecasting of the Tehri Dam with special emphasis of snow melt in the catchment

[04/2016 – 09/2017]   ### Research Analyst

International Commission on Irrigation and Drainage

City: New Delhi | **Country:** India

- Responsible for managing side events during the Second World Irrigation Forum which was held in Chiang Mai, Thailand in 2016.
- Worked on projects directly involving Government of India.
- Compilation of database and ICID Weekly E-Bulletin which is sent to more than 35 countries related to agriculture, irrigation, floods and droughts
- Writing of minutes and post conference publications for ICID Foundation day as well as India Water Week 2016
- Procurement of T&P items for ICID Central Office

[06/2015 – 09/2015]   ### Graduate Intern

World Meteorological Organization, Geneva

City: Geneva | **Country:** Switzerland

- Worked in the Hydrological Forecasting and Water Resource Department on Associated Programme on Flood Management (APFM) (www.apfm.info)
- Worked on updating of tools (short technical series by WMO on focused topics) which were published by APFM.
- Support staff for the Advisory Committee and Management Committee meeting in Geneva.
- Creation of database for the all publication and archives.

EDUCATION AND TRAINING

[10/2014 – 09/2016]   ### Master of Science in Hydroinformatics and Water Management – Erasmus Mundus Euroaquae

University of Nice-Sophia Antipolis

City: Nice | **Country:** France | **Thesis:** Flood Management under Changing Climate

Consortium of Universities: Brandenburg University of Technology, Cottbus (Germany); University of Newcastle upon Tyne (U.K.); University of Nice-Sophia Antipolis(France), Technical University of Catalonia (Spain); Budapest University of Technology and Economics (Hungary)

[07/2009 – 06/2013]   ### Bachelor of Technology in Mechanical and Automation Engineering

Amity University Uttar Pradesh

City: Noida | **Country:** India |

LANGUAGE SKILLS

Mother tongue(s): Hindi

Other language(s):

English: IELTS Band 7.5 (3rd July 2020)

LISTENING C1   **READING** C1   **WRITING** C1

SPOKEN PRODUCTION C1   **SPOKEN INTERACTION** C1

German: Goethe certificate C1 from Goethe Institute, New Delhi (29th December 2010)

LISTENING C1 **READING** C1 **WRITING** C1

SPOKEN PRODUCTION C1 **SPOKEN INTERACTION** C1

Italian

LISTENING A2 **READING** A2 **WRITING** A2

SPOKEN PRODUCTION A2 **SPOKEN INTERACTION** A2

Levels: A1 and A2: Basic user - B1 and B2: Independent user - C1 and C2: Proficient user

DIGITAL SKILLS

My Digital Skills

Microsoft Office | Text processing (Word, LaTeX)

Programming

R/Rstudio

Modeling

HEC-HMS and HEC-RAS | MIKE HYDRO | MIKE FLOOD

Mapping Tools

ArcGIS

OTHERS

Trainings Conducted

- MIKE HYDRO training at IIT Roorkee for masters as well as PhD students
- MIKE FLOOD 3-way coupling (MIKE HYDRO RIVER, MIKE 21 FM, MIKE URBAN) in Karnataka State Natural Disaster Monitoring Centre for State Government officials
- MIKE FLOOD 2- way coupling (MIKE HYDRO RIVER & MIKE 21 FM) in Sardar Vallabhbhai National Institute of Technology SVNIT (Surat, Gujarat) for masters and PhD students and lecturers
- MIKE FLOOD 2- way coupling (MIKE HYDRO RIVER & MIKE 21 FM) Assam Engineering College AEC (Guwahati, Assam) for students and lecturers
- MIKE FLOOD 2- way coupling (MIKE HYDRO RIVER & MIKE 21 FM) National Institute of Technology (NIT) Kurukshetra for master students

PUBLICATIONS

Published

- **Dhawan, P.**; Dalla Torre, D.; Niazkar, M.; Kaffas, K.; Larcher, M.; Righetti M.; Menapace, A. (2023) A comprehensive comparison of bias correction methods in climate model simulations: application on ERA5-Land across different temporal resolutions
- **Dhawan, P.**; Dalla Torre, D.; Zanfei, A.; Menapace, A.; Larcher, M.; Righetti, M. Assessment of ERA5-Land Data in Medium-Term Drinking Water Demand Modelling with Deep Learning. Water 2023, 15, 1495. https://doi.org/10.3390/w15081495

Submitted

- Menapace, A.; **Dhawan, P.**; Kaffas, K.; Crespi, A.; Larcher, M.; Righetti M.; Cannon, Alex J. (2023). Bias correction of climate model outputs for hydrology: a critical review"

In process of submission

- **Dhawan, P.**; Dalla Torre, D.; Menapace, A., Uttarwar, SB; Avesani, D., Majone, B; Larcher, M., Righetti M. (2023). A high spatial and temporal resolution gridded dataset for precipitation and temperature (1991-2021) for Trentino-Alto Adige

Conferences

- **Dhawan, P.**; Dalla Torre, D.; Menapace, A.; Majone, B.; Righetti, M. (2023) High-resolution gridded dataset of precipitation and temperature for Trentino-Alto Adige, European Geosciences Conference, Vienna, Austria, https://doi.org/10.5194/egusphere-egu23-11499
- **Dhawan, P.**; Dalla Torre, D.; Menapace, A.; Righetti, M.(2024) Floating solar power potential for the Alto Adige region of Italy, European Geosciences Conference, Vienna, Austria, https://doi.org/10.5194/egusphere-egu24-6199