

# Anjali P S (Anjali Parekattuvalappil Shaju)

Graduate Student, Water Resources Engineer

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## EDUCATION

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- Aug 2025 – Present     **Indian Institute of Science (IISc)**, Bengaluru — PhD, Civil Engineering  
Relevant coursework: Remote Sensing and GIS in WRE, A practical introduction to data analysis
- Aug 2023 – Jul 2025     **Indian Institute of Science (IISc)**, Bengaluru — M.Tech., Civil Engineering  
*Major: Water Resources Engineering; Minor: Geotechnical Engineering*  
(CGPA: 9.3/10)  
Relevant coursework: Watershed Modeling; Remote Sensing in Ecohydrology; Microwave RS; Data Analysis; ML & AI; Surface Water Hydrology; Groundwater Hydrology; Rock Mechanics; Systems Techniques; Stochastic Hydrology.
- Aug 2016 – Oct 2020     **Thejus Engineering College**, Thrissur — B.Tech., Civil Engineering  
(CGPA: 9.12/10)

## M.TECH THESIS

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### **Comprehensive Evaluation of Soil Moisture Dynamics and Product Validation at 25 Stations under REWARD Across Karnataka's Agricultural Landscapes**

*Advisor: Prof. Sekhar Muddu, Indian Institute of Science Bengaluru*

Analyzes soil moisture dynamics at 5 cm & 50 cm across monsoon/non-monsoon using Pearson correlation and recovery times. Validates SMAP (9 km, 1 km, 400 m) and EOS-04 (500 m) with SWI filtering. Uses HBV to simulate dynamics with meteorological inputs and optimized soil parameters; assimilation integrates satellite observations to refine predictions.

## PUBLICATIONS & INTERNATIONAL CONFERENCES

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Anjali P. S., V. Gupta, B. Fang, S. Muddu, V. Lakshmi (Manuscript submitted). *Evaluation of High-Resolution Soil Moisture Products Over Heterogeneous Agricultural Watersheds in Semi-Arid Karnataka, India*. Manuscript in preparation to **Vadose Zone Journal**.

Nikhil Anand, P.S. Anjali, G.L. Sivakumar Babu (2025). *Approach to Climate Resilient and Sustainable Design of Pavement*. Accepted in **Indian Geotechnical Journal**.

P.S. Anjali, V. Gupta, B. Fang, V.V. Lakshmi, S. Muddu (2025). *Evaluating SMAP 400 m Soil Moisture Accuracy Across Diverse South Indian Micro-Watersheds: Insights from the REWARD Program*. **AGU Fall Meeting 2025**, USA.

P.S. Anjali, V. Gupta, S. Muddu (2025). *Validation of SMAP and EOS-04 Soil Moisture Products Over Karnataka's Heterogeneous Agricultural Landscapes Using Ground Measurements*. **EGU General Assembly 2025**, Vienna, Austria.

## PROJECTS

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**Soil Moisture at 50 cm via Particle Filters + Seasonal/Single Linear Regression**

*Course: Watershed Modeling (Dr. Rajarshi D. B.), IISc Bengaluru*

Developed seasonal regression equations (monsoon, non-monsoon, cool) for Beechanahalli (Mar 2021–Aug 2024) and embedded them in a Particle Filter framework to assimilate observations and quantify uncertainty for soil-moisture prediction at 50 cm depth.

### **Deforestation in Nagaland (2005–2022)**

*Course: Remote Sensing in Ecohydrology (Dr. Debsundar Dutta), IISc*

Analyzed shifting cultivation impacts; evaluated rainfall using SCS-CN; tools: QGIS, MATLAB, MS Office.

### **Optimization of Kerala Sholayar Dam by Linear Programming**

*Course: Systems Techniques in Water Resources Engineering (Prof. D. Nagesh Kumar), IISc*

Formulated reservoir operation on a 20-year flow series; solved with LINGO to maximize objectives under constraints.

### **Planning & Designing of an Aqueduct at Peechi Dam**

*Under Asst. Prof. Aswathy J. S., Thejus Engineering College, Thrissur*

Designed a 50 m LBMC breached section (2018 event): trough/footing/abutment design, 3D renderings, CPWD-based costs, and rehabilitation recommendations.

### **Design & Analysis of Wastewater Treatment Plant**

*Thejus Engineering College, Thrissur*

## **EXPERIENCE**

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### **Intern, SATYUKT Analytics (Sat2Farm)**

May 2024 – Jun 2024

- Performed NDVI analyses for crops/farms; analyzed IMD and satellite-based rainfall.
- Extracted Sentinel-1 soil moisture; contributed to the State Specific Action Plan (SSAP) for Uttarakhand.
- Assisted IDF curve preparation and integrated environmental/agricultural insights.

### **Teaching Professional, Ignite Academy & Freelance**

Jul 2020 – Jul 2023

- Conducted problem-solving sessions and taught RCC & Hydrology; improved pedagogy and communication.

### **Civil Drafter, G4 Construction & Freelance**

Jul 2020 – Jul 2023

- Designed houses (incl. 2BHK), commercial buildings, boundary walls, and amenities.
- Experience with *Sanketham* (Government platform for plan approvals).

## **SKILLS**

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|-------------------|--|
| Programming       | Python, MATLAB   |
| Software          | ArcMap, QGIS, AutoCAD, Revit (Architecture), Primavera P6, MS Office |
| Hydrologic Models | SWAT, ABCD, IHACRES, HYMOD   |
| Data Analysis     | Rainfall, flux tower, earthquake, satellite soil moisture            |

## **ACHIEVEMENTS, WORKSHOPS & COORDINATION**

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- Agnirva Space Internship Program (AICTE-recognized; ISRO: 12 Mar 2025).
- Attended ICRR 2025 (International Conference on River Resilience), 27 Feb–1 Mar 2025, NIT Calicut.

- Assisted a geotechnical peer with downscaling and extracting IDF curves.
- Workshop: *Urban Flood Management in a Changing Climate*, IIT Bombay (2 days).
- Internship coordinator (IISc); organized Kerala flood relief (2018) and COVID-19 relief.
- Qualified GATE twice; Gold medal in B.Tech Civil; top scorer in multiple semesters.
- Coordinated and conducted department-level events.

## REFERENCES

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**Dr. Debsunder Dutta (PhD Supervisor)**

[ddutta@iisc.ac.in](mailto:ddutta@iisc.ac.in)

Dept. of Civil Engg. IISc Bengaluru

**Prof. Muddu Sekhar (M.Tech Supervisor)**

[muddu@iisc.ac.in](mailto:muddu@iisc.ac.in)

Dept. of Civil Engg. & Indo-French Cell for Water Sciences, IISc Bengaluru

**Dr. Rajarshi Das Bhowmik**

[rajarshidb@iisc.ac.in](mailto:rajarshidb@iisc.ac.in)

Assistant Professor (with ICWaR), IISc Bengaluru

**Prof. D. Nagesh Kumar**

[nagesh@iisc.ac.in](mailto:nagesh@iisc.ac.in)

Professor, Dept. of Civil Engg., IISc Bengaluru