

# JAGRATI VERMA

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## EDUCATION

Central University of Rajasthan, India  
M.Sc. Environmental Science; CGPA: 9.43/10 2024–Present  
B.Sc. Environmental Science; CGPA: 8.00/10 2021–2024

## EXAMINATIONS & ACCREDITATIONS

UGC NET (Environmental Science) – Percentile: 97.9; AIR 211

## RESEARCH EXPERIENCE (ISRO, CU RAJ, IIT BOMBAY)

Characterizing Glacier Features in the Himalayan Region Using High Resolution Optical And Synthetic Aperture Radar (SAR) Data Jun–Aug 2025  
Internship at Space Applications Centre, ISRO (Indian Space Research Organisation)  
Supervisor: Dr. Sushil Kumar (Senior Scientist (SG) and Head (CSD/CHSG/EPISA)

- Mapped glaciers and lakes using high-resolution LISS-III/IV optical and DEM data.
- Analyzed seasonal glacier dynamics using multi-temporal RISAT-1A SAR backscatter.
- Classified glacier snow–ice facies using Random Forest model. Optimized SAR preprocessing by testing multiple speckle filters and selecting the Frost filter for best edge preservation.
- Linked facies changes to ERA5 reanalysis temperature and snowfall trends.

CO<sub>2</sub> Sequestration using Basalt May–Jun 2022  
Internship at IIT-Bombay  
Supervisors: Prof. Vikram Vishal (Dept. of Earth Sciences), Prof. Arnab Dutta (Chemistry Department)

- Studied and understood literature of carbon dioxide sequestration potential of basalt via enhanced rock weathering for long-term CO<sub>2</sub> removal.
- Prepared basalt samples under controlled pH conditions and incubated them with CO<sub>2</sub> to promote carbonate mineral formation.
- Performed mineral phase identification using XRD (Powder X-Ray Diffraction) to detect formation of calcium and magnesium carbonates.

Glacier & Lake Dynamics in Sikkim: Identification, Climatic Analysis, & GLOF Prediction Mar-May 2025  
MSc. Minor Project at Central University of Rajasthan  
Supervisor: Prof. Rajesh Kumar (Dept. of Environmental Science)

- Studied climate variability in Sikkim using long-term ERA5 reanalysis datasets (1980–2024).
- Analyzed terrain characteristics (elevation, slope, aspect) and glacier distribution.
- Assessed Zemu Glacier changes (2013–2023) using Landsat imagery and NDSI to map retreat trends..
- Evaluated GLOF susceptibility based on lake dynamics and climatic triggers.

Assessing Climate Change Variability in the Beas Basin using LULC & ERA-5 Dataset Feb-May 2024  
BSc. Final year Project at Central University of Rajasthan  
Supervisor: Prof. Rajesh Kumar (Dept. of Environmental Science)

- Analyzed long-term temperature & precipitation trends in the Beas Basin using ERA5 datasets. Examined inter-seasonal & inter-annual variability using heatmaps & regression trend analysis.
- Performed spatial analysis of the basin with DEM data (slope, aspect, contour, and elevation maps).

- Classified and quantified Land use and land cover (LULC) changes from Sentinel-2 imagery for 2017-2022. Correlated temperature-precipitation variability ( $r = -0.55$ ).

## TECHNICAL & SOFTWARE SKILLS

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- **GIS & Remote Sensing:** ArcGIS Pro, QGIS, ERDAS Imagine, ENVI, SNAP
- **Programming & Data Analysis:** Python, R, Machine Learning (TensorFlow)
- **Other Tools:** Data visualization, spatial modeling, statistical analysis

## LEADERSHIP POSITIONS

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- **Elected Member**, Student Council (top-1%); Central University of Rajasthan 2024-2025
- **Head Coordinator**, 'Abhivyakti' Literary Club; Central University of Rajasthan 2023-2025
- **Coordinator**, 'Kalakriti' Art Club; Central University of Rajasthan 2021-2025

## COMMUNITY ENGAGEMENT & OUTREACH

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- Led awareness sessions on single-use plastics as part of the **Tide Turners Plastic Challenge (TTPC)** organized by **WWF-India**. Conducted interactive workshops at **Kendriya Vidyalaya, Bandarsindhari** and **Government School, Mundoti**, including quizzes and poster-making activities to inspire sustainable practices among school students.
- Conducted an **Environmental Impact Assessment (EIA)** exercise around the university campus and nearby villages (Bandarsindhari & Mundoti). Initiated and co-established a **local library** by collecting books from students, professors, and their families to support rural education access.
- **SOHA - "Seeds of Hope"** exhibition on **SDGs** 2024  
(**Sustainable Development Goals**) in collaboration with the *Soka Gakkai* organization.
- Volunteered in a workshop on **Career Counselling for Homemakers** organized with 2022  
*National Commission for Women, New Delhi*.

## ACHIEVEMENTS & EXTRACURRICULARS

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- Represented State **Rajasthan** at **National Environmental Youth Parliament (NEYP)** 2025  
**Vidhan Sabha, Jaipur**, among top 0.3% students in India.
- Winner in **Extempore Competition** on **National Space Day, CU Rajasthan** 2024
- Secured **2nd place** in **WIDS (Women in Data Science) Datathon, CU Rajasthan**  
Topic: *Adapting to Climate Change by Improving Extreme Weather Forecasts*. 2023
- Winner in **Idea Presentation - Science Day, CU Rajasthan**  
Proposed a *Climate Change Modelling framework for South Asia* 2023
- Winner in **SRIJAN - Inter School Volleyball, CU Rajasthan** 2022

## HOBBIES

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**Creative:** Painting, baking, doodling, free-style writing and dramatics. **Performing Arts:** Singing  
**Visual Arts:** Photography.