JAGRATI VERMA

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Date of Birth: 31 October 2003
Nationality: Indian
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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

Nationwide: University Grants Commission–National Eligibility Test **(NET)** – 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/EPSA)

- 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_2 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_2 removal.
- Prepared basalt samples under controlled pH conditions and incubated them with CO_2 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
MSc. Minor Project at Central University of Rajasthan Mar-May 2025
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
BSc. Final year Project at Central University of Rajasthan Feb-May 2024
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).

CONFERENCES & PRESENTATIONS

Climatic Variability and Warming Trends over the Beas Basin during the Last Four Decades
Poster Presentation at India International Science Festival (IISF) — Panchkula, Haryana 2025
Organized by Ministry of Earth Sciences and DST, Govt. of India

- Evaluated 43 years of climatic trends using IMD & TerraClimate data, revealing a significant 0.02°C/year rise in maximum temperature, particularly in Winter and Pre-monsoon seasons.
- Applied statistical tests (Mann-Kendall, Sen's Slope, Pettitt Test) to a 43-year dataset to detect monotonic trends and abrupt change points in regional hydro-climatology.

TECHNICAL & SOFTWARE SKILLS

- **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

- **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

- 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 (Sustainable Development Goals)** in collaboration with the ***Soka Gakkai*** organization. 2024
- Volunteered in a workshop on **Career Counselling for Homemakers** organized with ***National Commission for Women, New Delhi***. 2022

ACHIEVEMENTS & EXTRACURRICULARS

- Represented State **Rajasthan** at **National Environmental Youth Parliament (NEYP) Vidhan Sabha, Jaipur**, among top 0.3% students in India. 2025
- 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

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