

# Josephine M. Cardelle

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## EDUCATION

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**Master of Environmental Data Science** (expected June 2025)

**Bren School of Environmental Science & Management – University of California, Santa Barbara (UCSB)**

Highlighted Coursework: Geospatial Analysis and Remote Sensing, Machine Learning in Environmental Science, Environmental Policy Evaluation, Data Visualization and Communication, Modeling Environmental Systems, Ethics and Bias in Environmental Data Science, Python for Environmental Data Science

Involvement: Environmental Justice Club, Mentor for Bren-Environmental Studies Fellows Program

**Bachelor of Engineering in Civil Engineering** (May 2021)

**McGill University**, Montreal, QC

Honors/Awards: National Merit Hispanic Scholar

Involvement: Engineers Without Borders, Sustainability in Engineering at McGill, Bridge Building Team

## TECHNICAL SKILLS

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**Programming**: R, Python, SQL, Bash, Git/GitHub, ArcGIS, QGIS

**Computer**: AutoCAD, Microsoft Excel, Microsoft Suite, Canva, Affinity

## MASTER'S CAPSTONE DATA SCIENCE PROJECT

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**Identifying Disadvantage Communities Based on Cumulative Environmental Burdens**

**Client**: Dr. Jayajit Chakraborty **Deliverables**: Interactive Dashboard, Relational Database, Analytical Report

- Build a data model analyzing environmental burdens across US census tracts, using spatial analysis to map disadvantaged community clusters for the Climate and Economic Justice Screening Tool (CEJST)
- Create Python scripts to pull data from federal APIs into a relational database, automating the generation of burden indices and hotspot identification
- Design and build an interactive web dashboard displaying cumulative environmental impact data, allowing users to explore burden metrics across different US regions
- Lead analysis comparing current vs. proposed CEJST approaches, delivering recommendations for more effective environmental justice fund allocation based on cumulative burden assessment

## EXPERIENCE

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**GIS Graduate Researcher** (11/24-Present)

**UCSB – Earth Research Institute**, Santa Barbara, CA

- Digitize and georeference hand-drawn 1950s agricultural maps from Kern County using scikit-learn's machine learning tools to automate feature detection and classification
- Create GIS workflows in Python to process historical Department of Water Resources maps for identifying long-term retired farmland
- Manage and analyze spatial datasets related to land use/land cover, climate, and agriculture to identify long-term trends in land retirement and its ecological impacts
- Conduct comprehensive literature reviews on land use, agriculture, and biodiversity to support spatial data analyses and ensure data-driven research

**Civil/Agricultural Engineer (GS 9)** (1/22-4/24)

**USDA – Natural Resources Conservation Service (NRCS)**, Commonwealth of the Northern Mariana Islands (CNMI)

- Coordinated the planning, design, and construction of conservation practices needing engineering assistance such as water management, animal waste management, erosion control, irrigation systems, and more
- Directed site investigations, feasibility studies, and field construction checks.

- Provided technical guidance for all engineering practices and the use of engineering equipment including leading topographic site surveys
- Lead pre-construction meetings between contractor and client to define construction schedule and ensure compliance

#### **AmeriCorps Member (7/21-10/21)**

##### **American Conservation Experience, Hurricane, UT**

- Implemented conservation projects in public lands such as Zion National Park, Bryce Canyon National Park, and Leavenworth National Fish Hatchery
- Participated in projects such as forest fire fuels reduction, invasive species removal, trail maintenance and construction, and cattle exclusion fencing construction
- Collaborated with federal employees such as the Zion NP Fire Management Crew and Vegetation Crew

#### **Engineering Undergraduate Researcher (5/19-8/19)**

##### **McGill University – Environmental Geomechanics Laboratory, Montreal, QC**

- Analyzed the suitability of Lac du Bonnet Granite to serve as a deep geological repository for nuclear by product under the supervision of Dr. A.P.S. Selvadurai
- Mastered the use of an X-ray diffraction machine to determine mineralogical composition and taught the proper use of the machine to the other researchers in the laboratory
- Provided research support for the paper *Estimate for the Effective Permeability of Intact Granite Obtained from the Eastern and Western Flanks of the Canadian Shield* (Selvadurai et al., 2020)
- Presented a research poster at the Summer Undergraduate Research in Engineering (SURE) Design Day

#### **Conservationist (5/18-7/18)**

##### **Operation Groundswell, Tanzania & Rwanda**

- Collaborated on conservation and community centered projects with local NGOs including The Jane Goodall Institute, Rau ECO, Rwanda Environmental Conservation Organization, and the Association pour la Conservation de Nature au Rwanda.
- Built and improved various necessary structures in local communities.
- Contributed to restoration efforts of local forests.

### **COMMITTEES/VOLUNTEER EXPERIENCE**

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#### **Watershed Working Group Member (1/22-4/24)**

##### **Department of Coastal Resources Management, Commonwealth of the Northern Mariana Islands (CNMI)**

- Collaborated with federal and local agencies to review watershed management plans and provide feedback on restoration projects, including rain gardens, mangrove nurseries, and erosion control measures
- Served as USDA representative providing agricultural expertise and perspectives on watershed protection strategies, ensuring farming community interests were considered in conservation planning
- Engaged in cross-agency discussions on watershed health indicators, water quality monitoring, and implementation of best management practices to reduce land-based sources of pollution
- Participated in bi-monthly multi-agency Watershed Working Group meetings to coordinate watershed management initiatives and provide input on conservation strategies across Saipan, Tinian, and Rota's priority watersheds

#### **Environmental Studies Fellows Program Mentor (9/24-Present)**

##### **University of California, Santa Barbara**

- Mentor undergraduate Environmental Science Fellows in professional development, academic planning, and navigating research and internship opportunities
- Support first-generation and underrepresented students in building connections within the environmental science field and accessing academic resources

- Meet monthly with assigned student mentees to discuss career pathways in environmental science and share insights from personal research and work experience

**Volunteer (4/24-Present)**

**Worms Waste Not, LLC, Oneonta, NY**

- Manage social media presence for local organic waste hauling business, creating content to educate community about composting and waste reduction practices
- Support weekly farmers market operations through customer education and subscription sign-ups, helping expand the composting service within the local community
- Assist with residential food waste collection and drop-off logistics, ensuring smooth operation of community composting program

**CERTIFICATIONS & LANGUAGES**

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**Certifications/Trainings:** NRCS Level I Certified Conservation Planner, Certified Comprehensive Nutrient Management Planner, California Polytechnic State University Designer/Manager School of Irrigation Training, PADI Open Water Diver

**Languages:** Proficient Spanish