Guillermo Romero

(310) 619-4017 | romero61@bren.ucsb.edu | romero61.github.io | GitHub | LinkedIn | Santa Barbara, CA

EDUCATION

Master of Data Science in Environmental Data Science, 3.81 GPA (June 2023)
Bren School of Environmental Science & Management – University of California, Santa Barbara (UCSB)
Highlighted Coursework: Machine Learning in Environmental Science, Databases and Data Management, Modeling Environmental Systems, Statistics for Environmental Data Science

Bachelor of Arts in Geography & **Bachelor of Science in Earth Science**, 3.52 GPA (June 2022) **(UCSB)**
Honors/Awards: UCSB Scholarship, Outstanding Achievement in the Geography Major
Highlighted Coursework: Advanced Remote Sensing, Ocean Remote Sensing, Technical GIS, Field Studies in Geological Methods, Field Hydrology, Introduction to Climate Modeling

SKILLS

Languages: Python (GeoPandas, Rasterio, Sci-kit), Spanish, R (Tidyverse, SF, Terra), Markdown, SQL, MATLAB
Environments: VSCode, Jupyter Notebook, Google Earth Engine, GitHub, RStudio, Quarto, ArcGIS Pro, QGIS

Master's Capstone Project - Informing Forest Conservation Regulations in Paraguay (1/23 – 6/23)

Client: Paraguay — National Forestry Institute; UCSB — Dr. Robert Heilmayr | Role: Machine Learning Engineer

- Led development and deployment of machine learning Random Forest model in Python to predict future deforestation patterns and generate pixel-wise probabilities of imminent deforestation.
- Developed a data acquisition and preprocessing pipeline with Google Earth Engine and Python, supporting large-scale geospatial data analysis and enhancing the accuracy of deforestation predictions.
- Created an estimate of protected forest area under different regulations by developing a law-based geospatial simulation tool in R. This tool facilitated a comparison between the most and least stringent regulations, revealing a difference of 3,397,183 ha in the undeveloped Chaco region.
- Utilized geospatial overlays for a comprehensive assessment of land use plan compliance and deforestation rates in the Paraguayan Chaco, discovering 44% of the deforestation occurred in protected areas and was considered unauthorized, totaling 21,321 ha of illegal deforestation.
- Enhanced stakeholder engagement & decision-making by providing an interactive Shiny dashboard for examining results, serving as a crucial tool for informed policy making on forest conservation and land use.

Internship - Air Quality/ Google Earth Engine (8/23 – Present)

Universities Space Research Association (USRA)

- Developed an Earth Engine application using Google Cloud Services, integrating machine learning with MERRA2 geo-spatial datasets for advanced air quality monitoring and prediction.
- Faced and overcame integration challenges, bridging Earth Engine data with a custom machine learning model, ensuring accurate and real-time air quality predictions.
- Pioneered the translation of model outputs for a JavaScript frontend, despite limited familiarity with the language, by converting Python-based analyses and visualizations, ensuring a seamless user experience.

Geospatial & Data Science Projects

Burn Severity with Sentinel-2 data using Google Earth Engine | Working with Environmental Data (12/22)

- Conducted burn severity analysis of the August Complex Fire, utilizing Sentinel-2 Image Collection and MTBS Feature Collection.
- Developed a processing and visualization pipeline for the difference normalized burn ratio (DNBR) by severity class using Google Earth Engine and Python.

Statistical Analysis of NDVI in Redlined Regions | Statistics for Environmental Data Science (11/22)

- Applied Log-Log Ordinary Least Squares Regression & hypothesis testing for a comprehensive statistical analysis of NDVI data in redlined regions, highlighting non-linear relationships and informing urban planning policies.
- Interpreted regression coefficients to provide insights on the impact of individual variables, which can influence decisions or policies.

Analyzing Greenness through NDVI in Redlined Areas in Philadelphia, PA | Undergrad Thesis (4/22–6/22)

- Conducted R and QGIS processing for NDVI and zonal statistics calculation, supporting the development of environmental improvement strategies.
- Integrated census median income, NDVI, and Redline data through R, QGIS, and Excel, providing a multifaceted view of socio-economic and environmental factors in redlined areas.

LOGISTICS EXPERIENCE

General Warehouse Worker (9/18 -9/21), **SWAT Inventory Specialist – Best Buy**, Los Angeles, CA (5/10 – 11/15)