

Guillermo Romero

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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, 3.52 GPA (June 2022)

Bachelor of Science in Earth Science, 3.52 GPA (June 2022)

University of California, Santa Barbara (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

Technical: Machine Learning, Data Visualization, [Technical Writing of Environmental Field Work](#)

[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

- Applied machine learning techniques by creating a 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.
- Estimated 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.

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.
- Leveraged the GEE platform to efficiently process and analyze large-scale satellite data.

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

- Managed data wrangling and exploratory data analysis (EDA) in R, leading to a cleaner, more organized dataset for analysis.
- 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)

- Preprocessed Landsat 8 OLI satellite data using RStudio for NDVI calculations, resulting in a comprehensive understanding of greenness levels in redlined area.
- Conducted QGIS processing for NDVI and zonal statistics calculation, supporting the development of environmental improvement strategies.
- Integrated census median income, NDVI, and Redline data through QGIS and Excel, providing a multifaceted view of socio-economic and environmental factors in redlined areas.

LOGISTICS EXPERIENCE

General Warehouse Worker – Best Buy, Los Angeles, CA (9/18/-9/21)

SWAT Inventory Specialist – Best Buy, Los Angeles, CA (5/2010 – 11/2015)