**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](https://romero61.github.io/posts/field_report/Romero_125_Field_Report.pdf)

[**Master’s Capstone Project - Informing Forest Conservation Regulations in Paraguay**](https://github.com/cp-PYFOREST/PYFOREST-ML)(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**](https://romero61.github.io/posts/SentinelNBR/) | 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**](https://romero61.github.io/posts/stats_project/) | 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**](https://romero61.github.io/posts/redlining_NDVI/) | 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)