

# Guillermo Romero

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## EDUCATION

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**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

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**Languages**: Spanish, R (tidyverse, sf, terra), Python (Pandas, Rasterio, Sci-kit), Markdown, SQL, MATLAB

**Environments**: RStudio, Quarto, VSCode, ArcGIS Pro, QGIS, GitHub, Google Earth Engine, Jupyter Notebook

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

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

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**Client: Paraguay National Forest Institute; Dr. Robert Heilmayr | Role: Machine Learning Engineer**

- Assessed land use plan compliance and deforestation rates in the Paraguayan Chaco, determining that 78% of properties exhibited land use compliance utilizing geospatial overlays.
- Developed a law-based geospatial simulation tool in R to estimate protected forest area under different laws in the undeveloped Chaco region, observing a difference of 3,397,183 ha between the least and most stringent scenarios.
- Created a Random Forest model and Google Earth Engine workflow in Python for data acquisition and preprocessing, predicting future deforestation patterns and generating pixel-wise probabilities of near-future deforestation.
- Supplied an interactive Shiny dashboard for stakeholders to examine results, guiding informed decisions on forest conservation and land use policies.

## GEOSPATIAL & DATA SCIENCE PROJECTS

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

- Burn severity analysis of the August Complex Fire using Sentinel-2 Image Collection and MTBS Feature Collection.
- Utilized Google Earth Engine and Python to process and visualize the difference normalized burn ratio (DNBR) by severity class.
- Leveraged the GEE platform to process and analyze large-scale satellite data efficiently and effectively.

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

- Conducted data wrangling and exploratory data analysis (EDA) using tidy format in R.
- Conducted statistical analysis of NDVI data in redlined regions using Log-Log Ordinary Least Squares Regression and hypothesis testing to draw informed conclusions on non-linear relationships.
- Interpreted regression coefficients to understand the impact of individual variables on the overall outcome.

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

- Preprocess Landsat 8 OLI satellite data using RStudio to crop, mask, reclassify, and NDVI calculations.
- Conducted QGIS processing to calculate NDVI, zonal statistics, and write memory function.
- Integrated census median income, NDVI, and Redline data through QGIS and Excel.

## LOGISTICS EXPERIENCE

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

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