JERÓNIMO RODRÍGUEZ-ESCOBAR

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PhD candidate and teaching assistant at the Department of Geography and Urban Studies in Temple University. In my research, I integrate earth observation, GIS and Machine Learning spatial modeling methods with quantitative and qualitative methods from the social and environmental sciences to study agricultural transformation processes in frontier regions. I apply a Land Systems Science approach to analyze the drivers, consequences, and future scenarios of land transformation, support the development of land cover monitoring solutions aimed to improve decision-making processes focused on sustainable development and biodiversity conservation.

I have advanced skills on data gathering, labeling, analysis and visualization methods, digital image recognition and mapping, web mapping and query applications, Linux server administration and cartographic production.

EDUCATION

PhD Temple University, Geography and Urban Studies — May 2023
Dissertation: "Agricultural commodity investment and land use change in a frontier region"
Committee: Victor Hugo Gutiérrez-Vélez (chair), Kim Thomas, Sanjoy Chakravorty

MSc Humboldt Universität zu Berlin — April 2012
Thesis: *"*Groundwater Management in the Doñana Region,Andalusia-Spain*"*
Advisor: Andreas Thiel, PhD

BSc Universidad Nacional de Colombia, Economics — August 2006

WORK EXPERIENCE

RSENSUS - Remote Sensing for Sustainability Lab
Department of Geography and Urban Studies
Temple University — 2018 to 2022

Student Researcher. **National Aeronautics and Space Administration (NASA)**
Integration of Earth observations for decision making on biodiversity management and conservation in Colombia: Consolidation of the Colombian Biodiversity Observation Network.

- Developed and implemented supervised land cover classification methods to map agricultural transformation dynamics in the Colombian Eastern Plains between 2003 and 2021. It included two main stages: the collection and refining of training data, obtention, normalization and fusion of multi spectral (MS), Synthetic Aperture Radar (SAR) and other EO derived data products and the accuracy assessment. In a second stage, a hybrid object-based, spatial and temporal filtering approach was applied to further improve the mapping accuracy and area estimation.
- Led the development and implementation of a method to compare global and national forest cover maps and produce gap free, harmonized forest cover maps. Using functionalities developed in the lab, I identified the canopy coverage threshold that produces the highest level of agreement for 379 different spatial units covering the continental surface of the country (1.114.000km^2) and used these optimized values to build yearly forest cover maps for the period 2000 and 2021. The maps have been made available to partner institutions and researchers and incorporated into the backend structure developed to derive biodiversity indicators.
- I took part in the elaboration and validation of a benchmark national land cover reference map. This work included the identification and characterization of classification conflicts between different products and the identification and correction of information gaps.
- I provided support for the implementation of the *Biotablero* web-based biodiversity indicator monitoring application, including frontend and backend deployment and maintenance and data update.
- Supported the requirement of the PI for data products, visualizations and cartography for different research and presentation purposes.
- I supervised and provided advise to other members of the lab, including undergrad and grad students.

Instituto Alexander von Humboldt, Bogota 2012 to 2016
Associate Researcher, Scientific Deputy Direction

- Member of the laboratory of socio-ecological processes and the scientific deputy direction of the Institute included the establishment of the observatory of early warnings and emerging processes, scanning the political, social and economic environments and detect potential threats and challenges to biodiversity, propose research priorities, including the formulation of research projects in different regions of the country. I led a territorial biodiversity research management programme for the Orinoco region and a project formulation unit have been set up aiming to improve and coordinate the regional research and sustainable development projects and improve the capacity of the Institute to leverage funds.
- Achievement: Successfully wrote and submitted the proposal for the research project "*Bita, Rio Protegido*" funded by *Colciencias.*

TEACHING EXPERIENCE

Temple University, Philadelphia Aug 2022 to Dec 2022
Instructor, Geography and Urban Studies

- Taught Development and Globalization, an undergraduate General Education course with 64 students, with an online asynchronous and a hybrid in-person section covering following topics: economic and human development, economic history, economic geography, capitalist development, international trade, poverty reduction and sustainability from a land systems science perspective.
- Developed quizzes, exams, and homework
- Graded written and online posted participations
- Revised the syllabus to meet accreditation standards

Temple University, Philadelphia Aug 2019 to Dec 2019
Instructor, Geography and Urban Studies

- Taught Development and Globalization, an undergraduate General Education Course with and in-person section and graded an additional section totaling 64 students,
- Developed quizzes, exams, and homework
- Graded written and online posted participations
- Revised the syllabus to meet accreditation standards

Temple University, Philadelphia Aug 2016 to May 2019
Teaching Assistant, Geography and Urban Studies

- Graded Quizzes and exams, provided management support, including proctoring, and lab section teaching for the General Education Class *Digital Mapping* for multiple sections averaging 40 students. Including office hours, and grading.
- Graded Quizzes and written assignments the General Education Class Sustainable Environments, averaging 120 students. Included office hours, and grading

Temple University, Philadelphia Since May 2019

Guest Lecturer, Geography and Urban Studies

- Taught spatial training data labeling and collection techniques for the Remote Sensing class at GUS during different semesters.

PUBLICATIONS

Journal Publications

Gutierrez-Velez, V. H., Rodriguez-Escobar, J., Lara, W., & Sarmiento-Giraldo, V. (2021).

Probabilistic approximation to change and no change in multispectral remote sensing.

International Journal of Remote Sensing, *42*(19), 7428–7453.

https://doi.org/10.1080/01431161.2021.1958391

Wiese, D., Rodriguez-Escobar, J., Hsu, Y., Kulathinal, R. J., & Hayes-Conroy, A. (2018). The fluidity of biosocial identity and the effects of place, space, and time. *Social Science & Medicine (1982)*, *198*, 46–52. https://doi.org/10.1016/j.socscimed.2017.12.023

Book Chapters:

Rodríguez, J., & Stefano, L. D. (2012). *Intensively irrigated agriculture in the north-west of Doñana*. https://doi.org/10.1201/b13078-27

Rodríguez Escobar, J. (n.d.). *Agricultura, gobernanza y biodiversidad | Biodiversidad 2014*. Retrieved September 13, 2022, from http://reporte.humboldt.org.co/biodiversidad/2014/cap3/303/

Other Publications

Pulido Mojica, D. E., Rodríguez-Escobar, J., & Andrade-Pérez, G. I. (2016). Revisión bibliográfica a la gestión integral de los recursos hídricos y las iniciativas de protección de ríos a nivel. *reponame: Repositorio Institucional de Documentación Científica Humboldt*. http://repository.humboldt.org.co/handle/20.500.11761/9895

PRESENTATIONS

Rodriguez Escobar, J., Gutierrez-Velez, V. H., & Lara, W. (2021, December 13). *Harmonizing Global Forest Cover Products with National Forest Assessments*. Fall Meeting American Geophysical Union, New Orleans.

Gutierrez-Velez, V. H., Lara, W., Londoño, M. C., González, I., López, D., Suárez, E., & Rodriguez Escobar, J. (2020, November 12). *Integrated cloud infrastructure for biodiversity*

monitoring and decision making at the national and regional levels. Fall Meeting American Geophysical Union.

Gutierrez-Velez, V. H., Lara, W., Rodriguez Escobar, J., Marcus, M., & Topete, C. (2019, December 9). *Automated time-series mapping of ecosystem extent via optimized relative radiometric normalization*. Fall Meeting American Geophysical Union, San Francisco, CA.

Rodriguez Escobar, J., & Gutierrez-Velez, V. H. (2019, October 12). *Multi temporal assessment of agriculture-driven land cover change in tropical savannas; the Colombian Altillanura.* Fall Meeting American Geophysical Union, San Francisco, CA.

Rodriguez Escobar, J. (2018, April 13). *Protected Landscapes. Biodiversity management beyond the protected areas approach.* Annual Meeting, American Association of Geographers, New Orleans, PA.

Rodriguez Escobar, J. (2018, February 28). *Farmland acquisition in the plains of eastern Colombia as a form of capital accumulation*. DOPE-Dimensions of Political Ecology, Kensington, KY.

SOFTWARE DEVELOPMENT AND IMPLEMENTATIONS

1. **Land Cover Change model for the Colombian Orinoquia**

   Development of functions and implementation of a workflow that includes data gathering, data fusion, supervised classification, spatial and temporal filtering, area estimation, trajectory identification. Available at: https://github.com/Cumaribo/LC_orinoquia

2. **Forest Cover Harmonization.**

   Development of functions and implementation of a workflow that includes: obtention of testing data, generation of bi-temporal change maps, map comparisons, optimal threshold

identification, optimized forest cover data obtention, harmonized data assembling and masking and validation. Available at https://github.com/Cumaribo/Forest_homologation.git

3. **Biotablero implementation**

   Testing, maintenance and deployment and documentation of Biotablero, a Shiny web application that returns queries on selected biodiversity indicators for specified polygons. It includes the integration of the most recent version of the ecochange package, updating the Graphic User Interface (GUI), and the API. Available here:

   https://github.com/Cumaribo/biotablero_api

PROFESSIONAL TRAINING

Graduate Student Workshop on Socio-Environmental Synthesis
SESYNC, Annapolis, MD, Jan 23-26, 2018

Regional Development by Sustainable use of Biodiversity, JICA-Japanese International Cooperation Agency. June 2014
Nagoya, Japan. Course focused on different initiatives and methodologies to improve livelihoods through the development of sustainable value chains (producers, retailers, consumers and even public utilities) while promoting the conservation of natural values and cultural heritage.

PROFESSIONAL AFFILIATIONS

American Geophysical Union, 2019-Present

American Association of Geographers, 2016-2018

LANGUAGES

Spanish: Native Language

English: Fluent in Writing and Speaking

German: Fluent in Writing and Speaking

French: Fluent in Writing and Speaking

COMPUTER SKILLS

Programming: bash, R base, Tidyverse, ggplot2, javascript, sql, git, Perl

Applications: QGIS, Arcgis, SNAP, ENVI.

Platforms: GitHub, AWS, Google Earth Engine.