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[Edgar Joao Manrique Valverde](#)

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ABOUT ME

I am a Peruvian Environmental Engineer passionate about research on Landscape Ecology and Remote Sensing of the Environment. I am also interested to investigate the relationship between the environment and infectious diseases with innovative tools that lead us to improve life quality. I have trained in the use of remote sensing tools to gather spatially explicit environmental information. As a young researcher, I have experience in Remote Sensing projects using a variety of GIS and programming software such as QGIS, Google Earth Engine (GEE), R, and Python. I have been working as a Research Assistant at the Entomology team of the Amazonia Center of Excellence for Malaria Research (Amazonia ICEMR) performing data management and analysis routines (mainly using R) with an emphasis on Geographical data and the environmental determinants affecting Malaria vectors in the Peruvian Amazon. During this time I have been working on the identification of the main malaria vector breeding sites using drone multispectral imagery and Machine Learning algorithms; here is a GEE app to visualize the results: <https://edgarmanrique30.users.earthengine.app/view/tdrclassification>. The assessment of Geographical accessibility to health facilities in Peru: <https://edgarmanrique30.users.earthengine.app/view/country-wide-map-of-travel-time-to-health-facilities-for-2018>. And the use of time series analysis to predict dengue cases in the Peruvian Amazon using Environmental predictors derived from the ECMWF reanalysis, among other things.

EDUCATION AND TRAINING

Bachelor in Environmental Engineering

Universidad Nacional Federico Villarreal [01/03/2011 – 12/12/2015]

Address: Av. Oscar R. Benavides 450, Cercado de Lima 15082, Lima, Peru, 15082 Lima (Peru)

<http://web2.unfv.edu.pe/sitio/>

Introduction to machine learning

Stanford University in Coursera [01/09/2020 – 30/11/2020]

Diploma in Integrated Management System (ISO 9001, ISO 14001, OHSAS 18001)

SSMA Peru [01/03/2016 – 30/08/2016]

Address: Lima (Peru)

Imagery, Automation, and Applications

University of California, Davis in Coursera [01/08/2016 – 21/08/2016]

<https://www.coursera.org/learn/gis-applications/home/welcome>

Geospatial and Environmental Analysis

University of California, Davis in Coursera [01/07/2016 – 07/07/2016]

<https://www.coursera.org/learn/spatial-analysis/home/welcome>

GIS Data Formats, Design and Quality

University of California, Davis in Coursera [01/05/2016 – 13/05/2016]

<https://www.coursera.org/learn/gis-data/home/welcome>

Fundamentals of GIS

University of California, Davis in Coursera [01/04/2016 – 26/04/2016]

<https://www.coursera.org/learn/gis/home/welcome>

Using Python to Access Web Data

University of Michigan in Coursera [01/08/2015 – 05/09/2015]

<https://www.coursera.org/learn/python-network-data/home/welcome>

Programming for Everybody (Getting Started with Python)

University of Michigan in Coursera [23/05/2015 – 20/06/2015]

<https://www.coursera.org/learn/python/home/welcome>

Human Health and Global Environmental Change

HarvardX in EdX [01/08/2013 – 20/08/2013]

https://courses.edx.org/courses/HarvardX/PH278x/2013_Spring/course/

WORK EXPERIENCE

Research assistant

Amazonia ICEMR Laboratory, Universidad Peruana Cayetano Heredia [02/01/2018 – Current]

City: Lima

Country: Peru

Data management and spatial analysis of projects in the Amazon International Center for Excellence in Malaria Research (ICEMR). Design and validate data collection tools. Participate in the elaboration of manuscripts.

Manuscripts in preparation as first author:

- Insectary Information Systems: Building blocks for reproducible science in vector biology.
- Spatio-temporal comparison of vector biology indices and micro-environments in communities along Napo and Mazan river systems in the Mazan District, northeast of Iquitos, Peru.
- Spatial distribution and dispersion of malaria vectors across local micro-habitats in the Peruvian Amazon.

Research assistant

Health Innovation Laboratory, Universidad Peruana Cayetano Heredia [27/12/2018 – Current]

City: Lima

Country: Peru

Geospatial scientist, data collection and processing of remote sensing and geospatial data.

Environmental engineering consultant

Hidrosat y medio ambiente S.A.C [31/08/2016 – 29/09/2017]

City: Lima

Country: Peru

Monitoring, control, and compliance of environmental monitoring programs. Preparation of Environmental Management guidelines. Preparation of Environmental Monitoring Reports. Elaboration of thematic maps and Geographic Information Systems support.

Environmental engineering consultant

Environmental Suppliers Ingenieros Consultores S.A.C [31/12/2013 – 29/09/2015]

City: Lima

Country: Peru

Participation in Environmental Impact Assesments, Pre - Feasibility Studies and Oceanography Studies.

LANGUAGE SKILLS

Mother tongue(s):

Spanish

English

LISTENING: C2 **READING:** C2 **WRITING:** C2

SPOKEN PRODUCTION: C1

SPOKEN INTERACTION: C1

DIGITAL SKILLS

GIS software ArcGIS QGIS / **Microsoft Office** / **Adobe Illustrator** / **GitHub**

Programming languages

R / Python

PUBLICATIONS

Malaria vector species in Amazonian Peru co-occur in larval habitats but have distinct larval microbial communities

[2019]

<https://journals.plos.org/plosntds/article?id=10.1371/journal.pntd.0007412>

We found that, consistent with previous studies in Amazonian Peru and in Brazil, the presence of *Ny. darlingi* was significantly associated with water bodies in landscapes with more recent deforestation and lower light intensity. *Ny. darlingi* presence was also significantly associated with a lower vegetation index, other Anophelinae species, and emergent vegetation. The identification of the key determinants of vectors distribution is of great importance for the development of predictive models to ultimately be used in preventive control programs in endemic villages.

High-accuracy detection of malaria vector larval habitats using drone-based multispectral imagery

[2019]

<https://journals.plos.org/plosntds/article?id=10.1371/journal.pntd.0007105>

This research provided data demonstrating the use of drones in some landscape types to focus intervention efforts. Here, with the use of high-resolution images captured by drones we were able to detect *Ny. darlingi* breeding sites. The use of the Multispectral profile of the breeding sites could be crucial for Larval Source Management (LSM) interventions.

Open-Source 3D Printable GPS Tracker to Characterize the Role of Human Population Movement on Malaria Epidemiology in River Networks: A Proof-of-Concept Study in the Peruvian Amazon

[2020]

<https://www.frontiersin.org/articles/10.3389/fpubh.2020.526468/full>

We developed an open-source low-cost 3D printable GPS-tracker and used this technology in a cohort study to characterize the role of human population movement in malaria epidemiology in a rural riverine village in the Peruvian Amazon. Applying two analytical animal movement ecology methods, utilization distributions (UDs) and integrated step selection functions (iSSF), we showed contrasting environmental selection and space use patterns according to infection status. These data suggested an important role of human movement in the epidemiology of malaria in the Peruvian Amazon due to high connectivity between villages of the same riverine network, suggesting limitations of current community-based control strategies.

Travel Time to Health Facilities as a Marker of Geographical Accessibility Across Heterogeneous Land Coverage in Peru

[2020]

<https://www.frontiersin.org/articles/10.3389/fpubh.2020.00498/full>

This study estimated important variations in travel time to Health Care Facilities (HCF) between urban and rural settings and major land coverage types in Peru. This study provides a new methodology to estimate the travel time to HCFs as a tool to enhance the understanding and characterization of the profiles of accessibility to HCFs in low- and middle-income countries.

HONOURS AND AWARDS

Young Investigator Award

American Society of Tropical Medicine and Hygiene [15/11/2020]

I won the Young Investigator Award at the American Society of Tropical Medicine and Hygiene (ASTMH) 2020 annual meeting in the Entomology and Vector Biology module. I presented our work titled "Spatial distribution and dispersion of malaria vectors across local micro-habitats in the Peruvian Amazon", this project involves the use of landscape stratification to investigate precisely where outside houses, malaria transmission occurs in Amazonian landscapes. I competed with other young researchers who are currently doctoral candidates and postdoctoral fellows.

CONFERENCES AND SEMINARS

American Society of Tropical Medicine and Hygiene (ASTMH)

[Virtual, 15/11/2020 – 19/11/2020]

<https://www.astmh.org/annual-meeting/2020-annual-meeting>

VectorBase Hands-On Workshop

[Iquitos, Loreto, Peru, 29/04/2019 – 29/04/2019]

Simposio por los 250 años de Alexander von Humboldt: "Humboldt, Cambio Climático y Salud"

[28/10/2019 – 28/10/2019]

ASTMH Peru 2019

[Lima, Lima, Peru, 25/02/2019 – 25/02/2019]

VOLUNTEERING

Volunteer Forest Ranger

[Cutervo National Park, Cajamarca, Peru, 01/01/2013 – 31/03/2013]

Topographical survey of the limits of the Cutervo National Park and its Buffer Zone.

HOBBIES AND INTERESTS

Data visualization

The main tool I use for my data-related work is R programming language. One of my favorite parts of that is to create data visualizations that are appealing to look at, but also that contains meaning and purpose, are informative and easy to read. For this I use the ggplot2 package in R, and Adobe Illustrator to perform some of the tasks that are tedious to do in R.

Reading

I like to read different genres of literature but I have a special taste for non-fiction books. I try to read one book per week when possible, and also participate in the book of the month club in the /r books forum in reddit. I'm currently reading "The sea around us" by Rachel Carson, and "Play winning chess", by Yaser Seirawan.

Traveling & Landscape photography

I have been traveling around Peru's beautiful locations since I started my studies in Environmental Engineering and I'm always amazed by the beauty of its landscapes. Having been born in Lima, in the pacific desert, made me feel water is always scarce; an environmental problem that human societies will have to face in the near future. One of my favorite pictures I took is attached here, I took it in the Mazan river, around 6 hours from the city of Iquitos by boat, in the Peruvian Amazon. I'm looking forward to visiting more outstanding places, in and out of Peru, and get to know the people who live there and how they live in a commune with nature.