MARCOS EDUARDO PÉREZ MORÁN

AIR QUALITY AND CLIMATE SCIENCE RESEARCHING · IAG, TU DARMSTADT
Darmstadt, Germany

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Summary

As an environmental engineer, I am passionate about researching and understanding the physical, chemical, and social dynamics that influence air pollution and climate change. I have experience in analyzing and managing large air quality databases and climate datasets. Additionally, I possess strong analytical, abstract, and critical thinking skills. I am capable of breaking down complex problems into manageable components, identifying underlying patterns, and evaluating solutions from multiple perspectives. I aspire to significantly advance scientific knowledge in air pollution dynamics and climate science by developing innovative research in emerging areas, integrating experimental methods with numerical modelling.

Education

Technische Universität Darmstadt, Darmstadt, Germany

PhD, DUST Doctoral Network   **June 2028 (expected)**
Affiliation: Institute for Applied Geosciences
Thesis: Variability of dust composition, shape and size distribution across the Mediterranean, based on single-particle analysis

Scholarships and Recognitions: Recipient of the Marie Skłodowska-Curie Actions Doctoral Fellowship under the EU Framework Programme for Research and Innovation Horizon Europe (2021–2027).

University of Aveiro, Aveiro, Portugal

M.Sc. Environmental Engineering (Final grade: 17/20)   **April 2025**
Affiliation: Department of Environment and Planning
Dissertation Topic: Modelling air quality impacts of open burning agricultural residues

Scholarships and Recognitions: Incentive scholarships for attracting international students of recognized academic merit (2023), Top tenth of the students.

Austral University of Chile, Valdivia, Chile

Diploma in Environmental Acoustic (Final grade: 6.15/7)   **November 2022**
Affiliation: Faculty of Engineering Sciences

Pontifical Catholic University of Peru, Lima, Peru

Specialization in the Evaluation of Environmental Impact Studies (Final grade: 18/20)   **June 2021**
Affiliation: Institute of Natural Sciences, Territory, and Renewable Energies

Private University of the North (UPN), Trujillo, Peru

B.Sc. Environmental Engineering (Final grade: 16.37/20)   **November 2020**
Affiliation: School of Engineering
Dissertation Title: Analysis of the relationship between soil erosion and vegetation cover in the upper basin of the Moche River in Peru between 2016 and 2020

<u>Scholarships and Awards</u>: Ranked first among Environmental Engineering graduates (2020); Fellow of the Pacific Alliance and the Chilean Ministry of Foreign Affairs, selected to complete an exchange semester at Andrés Bello University in Santiago, Chile (2019); First Place in the Research category at the Innovation and Technology Fair, UPN (2018); Fellow in studies on the impact of solar energy for the national future, Science Clubs Peru (2017) .

<u>Study Case Competitions</u>: Fellow of the International Social Innovation Seminar 2030, Pontificia Universidad Católica de Chile (2019); Participant as OAS delegate of the United Nations Model, Universidad del Pacifico (2019). Participant in the Climate Change Adaptation Hackathon in Peru, German Cooperation GIZ (2017).

<u>Selected Leadership Roles:</u> Leader Student Monitor, UPN (2017-2018); Young representative in plenary discussions on citizen environmental engagements, Congress of the Republic of Peru (2018).

Professional & Research Experience

Centre for Environmental and Marine Studies, Aveiro, Portugal

First Stage Researcher   **March 2024 – February 2025**
Research Group on Emissions, Modelling and Climate Change (GEMAC)
- My research was conducted within the framework of the project PRUNING - Mapping Open Burning of Agricultural Residues from Earth Observations and Modelling of Air Quality Impacts, funded by the Portuguese Foundation for Science and Technology (FCT).
- As part of this project, my work involved modelling the air quality impacts resulting from open burning agricultural residues emissions. My contributions included the comparison of European CAMS air quality reanalysis data over Portugal with QUALAR observations over a 5-year period. Additionally, I was responsible for compiling input data for the CHIMERE chemical transport model to analyze specific case studies, evaluating the model's performance using CAMS air quality reanalysis and QUALAR observations, and preparing scientific articles and reports to disseminate the findings.

Knight Piesold, Lima, Peru

Engineer I   **January 2021 – December 2023**
Environmental Division
- In this role, I was responsible for developing and implementing Environmental Impact Assessment Studies for large-scale mining and transport projects, including Barrick Pueblo Viejo in the Dominican Republic, as well as Panamerican Silver Shahuindo, Lima Airport Partners, and Anglo American Quellaveco in Peru.
- As part of these activities, I conducted baseline studies on air quality and noise, and performed impact analysis through environmental modelling. I utilized software such as INoise for noise modelling and AERMOD for air quality modelling, ensuring reliable predictions of environmental impacts and effective mitigation strategies.

Environmental Engineer Intern   **January 2020 – December 2020**
Environmental Division
- I provided support in the development and design of Environmental Management Instruments for key extractive mining projects in Peru. My responsibilities included assisting in data collection, organizing documentation, and contributing to the preparation of environmental reports.
- Additionally, I coordinated fieldwork activities by organizing logistics for site visits, ensuring equipment availability, and facilitating communication between field and office teams to ensure accurate reporting of findings.

Ceniteg Solutions Consultancy, Trujillo, Peru

Environmental Engineer Intern   **July 2019 – December 2019**
Engineering Division
- I contributed to the formulation and implementation of environmental management instruments through the design and creation of thematic maps. By developing programming tools in ArcGIS, I automated map generation processes, reducing build times by 50% with the use of Python scripts.

Provincial Municipality of Trujillo, Trujillo, Peru

Intern   **January 2018 – March 2019**
Metropolitan Technical Information Directorate
- I conducted fieldwork to identify and inventory areas of land affected by erosion due to extreme rainfall and river overflows caused by the El Niño Costero phenomenon in the province of Trujillo. Additionally, I developed thematic maps to support the identification of these impacted areas and to aid municipal decision-making processes.

Publications, Presentations & Work in Progress

Scientific Articles

- <u>Morán, M.</u>, Ascenso, A., Luís, D., Monteiro, A., Gama, C. (in preparation). Influence of extreme temperature events on air quality in Portugal.
- Gama, C., Ascenso, A., Miranda, A., Serpa, D., Lopes, D., <u>Morán, M.</u>, Silva, B., Rossi, S., Oliveira, E., Luís, D., Monteiro, A. (in preparation). Assessment of the impact of agricultural residue burning on air quality using satellite observations and atmospheric modelling.

Social Publications

- <u>Morán, M.</u> (2019). Desarrollo de comunidades sostenibles, una mirada hacía la participación ciudadana frente al cambio climático en el Perú. Voices of Youth – UNICEF.
- <u>Morán, M.</u> (2019). ¿Vale la vida menos que una matriz energética convencional? Voices of Youth – UNICEF.

Presentations

11th International Symposium on Atmospheric Sciences
- Reference: <u>Morán, M.</u>, Ascenso, A., Luís, D., Monteiro, A., Gama, C., 2024. Assessing the impact of extreme temperature events on air quality in Portugal. October, 23-25, 2024, İstanbul, Türkiye.
- Role: Speaker in oral presentation.

SINAPSIS Conference
- Reference: <u>Morán, M.</u>, Ascenso, A., Luís, D., Monteiro, A., Gama, C., 2024. Assessing the impact of extreme temperature events on PM10 and PM2.5 concentrations in Portugal and Peru. July, 18-20, 2024, Düsseldorf, Germany.
- Role: Speaker in oral presentation.

Fire in the Earth System (FES) Conference
- Reference: Gama, C., Silva, B., Oliveira, E., Silva, H., <u>Morán, M.</u>, Rossi, S., Ascenso, A., Serpa, D., Monteiro, A., Miranda, A.I., Lopes, D., 2024. Mapping open burning of agricultural residues from Earth Observations and modelling of air quality impacts. 3 rd International Congress on Fire in the Earth System: Humans and Nature, June 3-6, 2024, Cáceres, Spain.
- Role: Co-author.

Skills

Languages: English (fluent), Spanish (native), Portuguese (fluent)

Programming: Python (Libraries: PyGDAL, Cartopy, GeoPandas, Shapely, NetCDF4, NumPy, Xarray, Folium, Plotly, Matplotlib, Pandas, among others); R (sf, raster, sp, rgdal, ggplot2, leaflet, ncdf4, tidyverse, rgeos, RNetCDF, plotly, tmap, openair, among others) and MATLAB.

Software: QGIS, ArcGIS, AutoCAD, Inoise, Aermod and Vensim PLE.

Text and graphics: LaTeX, Overleaf and Microsoft Office.

Driving License: Category B (EU).

Communication: Presented original research at international conferences and collaboration meetings, tailoring style and content to the audience's level of knowledge. Experienced in coordinating with interdisciplinary technical groups. Worked with native communities in the Peruvian Andes to explain environmental issues and gather concerns.

Learning: Quickly absorbs and applies complex concepts and techniques. Actively seeks intense learning opportunities in emerging fields. Comfortable with transdisciplinary work, autonomous learning, and proactive skill development.

Community Service

PeruChamps, Lima, Peru

Mentor   **March 2020 - June 2020**

- I mentored the fellows of the program, with whom I developed the value of service by implementing a project in their environment under a sustainability approach, which reduced social gaps.

Ministry of the Environment of Peru, Lima, Peru

Environmental Promoter   **October 2017 - December 2018**

- Led climate change adaptation and mitigation campaigns during traditional festivals in Trujillo city.
- Trained temporary volunteers on topics including climate change, circular economy, and solid waste management to support ministry initiatives.

Provincial Municipality of Trujillo, Trujillo, Peru

Environmental Volunteer   **January 2017 - December 2017**

- Assisted in organizing environmental awareness activities for the citizens of Trujillo, focusing on promoting eco-friendly practices and sustainability within the community.

University Action Center at the University of Lima, Lima, Peru

Volunteer   **June 2015 – August 2016**

- I participated in two humanitarian aid campaigns, delivering supplies and food to the most vulnerable communities in the Peruvian Andes.
- I developed communication campaigns to share the gospel with Quechua-speaking native communities.

Complementary Education

- Environmental Impact Assessment Workshop Course, National Agrarian University La Molina (2020).
- Specialization course in Atmospheric Pollutant Dispersion Modelling, College of Engineers of Peru - Cenesam (2020).
- Specialization course in Environmental Impact Assessment, College of Engineers of Peru – Innova Peru (2018).
- Diploma in Integral and Sustainable Management of Water Resources, National University of San Marcos - National Water Authority - Celaep (2018).
- Workshop on Constitution of Participatory Environmental Monitoring and Supervision Committees, Ministry of Energy and Mining (2018).
- Ferreycorp Association Fellow of the Professional Development and Ethics Program (2018).
- ArcGIS - Geoprocess Modelling, College of Engineers of Peru - La Libertad (2018).
- Participant in the Technical Meeting on Guidelines for the Elaboration and Processing of the Classification Application through the Preliminary Evaluation of Transport and Agriculture Projects, SENACE (2018).