

Sara Catalina Grisales Vargas

Medellín, Colombia

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Academic background

MSc Environmental Engineering. University of Antioquia. September 2020. GPA: 3.69 (CO: 4.23)

Thesis: *“Land use regression models for PM_{2.5} in the city of Medellin - Colombia, 2018”*

BEng Environmental Engineering. University of Antioquia. March 2015. GPA: 3.60 (CO: 4.01)

Thesis: *“Evaluation of transport and destination of pesticide particles generated in aerial spraying. Case: Banana crops: Urabá-Antioquia”*

Research experience

Co-investigator and coordinator of the environmental component in the CODI project: "Influence of fires on PM_{2.5} and black carbon levels in the Aburrá Valley and its effects on public health.", with the support of Politécnico Jaime Isaza Cadavid (Colombia) and Temple University (USA).

Facultad Nacional de Salud Pública – Universidad de Antioquia (Colombia). April 2021 – Present.

Research assistant to prepare and analyze the spatial distribution of PM_{2.5} through land use regression models in the Municipality of Girardota and support the georeferencing of health events and the analysis of environmental and health information.

Project: *“Implementation PIGECA- INV 723-22 CC 21030005- CV70200208”*

Facultad Nacional de Salud Pública – Universidad de Antioquia (Colombia). October 2022 to Present.

Research assistant to coordinate the environmental component of the design and implementation of the proposal for the analysis of health effects associated with air pollution in the municipality of Girardota.

Project: *“Implementation of the Comprehensive Air Quality Management Plan (PIGECA)- INV 712-21.”*

Facultad Nacional de Salud Pública – Universidad de Antioquia (Colombia). April 2022 to June 2022.

Research assistant with experience in the development of estimation models for pollutants in cities through the land use regression method (LUR) to support the estimation of the spatial variability for PM_{2.5} and NO₂ concentrations in five Colombian cities.

Project: *“Environmental Health Research Program for Colombia. Project 1: Air quality and urban environmental health in 5 Colombian cities”.*

Universidad Industrial de Santander (Colombia). October 2021 to November 2022.

Research assistant to coordinate the data management and analysis of criterion pollutants and meteorological data available for the municipalities of the Aburrá Valley, develop the imputation process of missing data from the environmental data and their subsequent processing to be used in health association analysis.

Project: *“Implementation of the Comprehensive Air Quality Management Plan (PIGECA)- INV 712-21.”*

Facultad Nacional de Salud Pública – Universidad de Antioquia (Colombia). June 2021 to December 2021.

Research assistant to manage environmental databases, develop monthly and annual LUR modeling for 2019 and a training course about the LUR methodology.

Project: "Exposure to air pollution (PM2.5, PM10 and O3) and cardiovascular and respiratory events in Medellín, 2018-2020".

Facultad Nacional de Salud Pública – Universidad de Antioquia (Colombia). August 2020 to December 2020 and January 2021 to March 2021.

Research internship: Master's student to support for the development of an approach to reduce urban air pollution by optimizing the deliveries of online shopping.

Project: *"The Urban Air Quality Challenge"*- An Alliance for Collaborative Education (ACE).

Eindhoven University of Technology (The Netherlands). January to July 2018.

Master's student to develop technical activities related to modeling, georeferencing, developing R codes and writing partial and final reports.

Project: *"Attributable burden disease associated with urban air pollution and its economic costs, in the population of the city of Medellín, between 2010 and 2015"*.

Facultad Nacional de Salud Pública – Universidad de Antioquia (Colombia). January 2018 to September 2019.

Research assistant to support for the implementation, documentation, development and testing of computational intelligence methods in R language for the analysis of environmental information.

Project: *"Air pollution and its effects on the health of the inhabitants of the Aburrá Valley (Colombia), 2008-2016"*.

Facultad Nacional de Salud Pública – Universidad de Antioquia (Colombia). January 2017 to January 2018.

Engineering assistant to support literature search related to natural gas and vehicle emissions.

Project: *"Development of technical instruments for the prevention and contamination of air"*

Facultad de Ingeniería – Universidad de Antioquia (Colombia). August to December 2013.

Teaching experience

Adjunct instructor of the undergraduate course: "Autocad". Duration: 44 hours.

Facultad Nacional de Salud Pública, Seccional Oriente- Universidad de Antioquia (Colombia).

January 2022 to present.

Adjunct instructor to advise undergraduate thesis. Duration: 40 hours.

Facultad Nacional de Salud Pública- Universidad de Antioquia (Colombia).

December 2022 to present.

Adjunct instructor of the virtual training course: " Introduction to data analysis and data modeling in the statistical program R". Duration: 53 hours.

Facultad Nacional de Salud Pública- Universidad de Antioquia (Colombia).

November 2022 to December 2022.

Adjunct instructor of the undergraduate course: "Operational Mathematics". Duration: 80 hours.

Facultad Nacional de Salud Pública, Seccional Urabá- Universidad de Antioquia (Colombia).

September 2022 to October 2022.

Advisory and consultancy for activities of the contract ENV-17-31-0874-22 Public tourism policy of Envigado- second academic period of 2022. Duration: 201 hours.

August 2022 to December 2022.

Adjunct instructor of the undergraduate course: "Geographic Information Systems (ArcGIS and Autocad)". Duration: 40 hours.
Facultad Nacional de Salud Pública, Seccional Bajo Cauca- Universidad de Antioquia (Colombia).
August 2022.

Adjunct instructor of the undergraduate course: "Differential Equations". Duration: 88 hours.
Escuela Ambiental, Seccional Urabá- Facultad de Ingeniería- Universidad de Antioquia (Colombia).
May 2022 to September 2022.

Teacher of the training virtual course: "Let's build a LUR model". Duration: 12 hours.
Project: "Exposure to air pollution (PM2.5, PM10 and O3) and cardiovascular and respiratory events in Medellín, 2018-2020".
Facultad Nacional de Salud Pública – Universidad de Antioquia (Colombia).
August to September 2021.

Teacher of the blended workshop: "Introduction to data analysis in the statistical program R". Duration: 16 hours.
Facultad Nacional de Salud Pública – Universidad de Antioquia (Colombia).
February to May 2020.

Professional experience

Environmental consultant to strengthen planification and educational processes related to air quality within the communes of Medellín.
Project: "PP-inter-administrative contract for the development of environmental planning, management and educational actions in the different communes and councils of the Municipality of Medellín for the consolidation of an environmental culture."
Secretaría de Medio Ambiente de Medellín and Facultad de Educación- Universidad de Antioquia (Colombia).
September 2022 – Present.

Technical consultant in Short-Lived Climate Pollutants (SLCP) to support the coordination of the implementation of the National Strategy for Short-Lived Climate Pollutants of Colombia and the inclusion of SLCPs in relevant planning processes, such as the Nationally Determined Contribution for the Paris Agreement and the National Air Quality Strategy of Colombia.
Climate and Clean Air Coalition- United Nations Environment Program (UNEP). September 2020 to November 2021.

Environmental consultant to develop a dispersion model for particulate matter (PM10) using AERMOD software.
Laboratorio de Higiene Ambiental- Facultad Nacional de Salud Pública – Universidad de Antioquia (Colombia).
August to October 2021.

Environmental consultant to manage and process meteorological and air pollutants data.
Project: "Implementation of the Comprehensive Air Quality Management Plan- PIGECA".
National Faculty of Public Health- University of Antioquia. August to October 2019.

Environmental consultant to support in the analysis of time series of environmental variables and estimation of atmospheric stability regimes in the study area, to model the transport of particulate matter in a coal mine using a Computational Fluid Dynamics (CFD) Simulation.
Project: "Development of a computational model of fluid dynamics to estimate the behavior of the dispersion of particulate matter in the coal yards at the El Cerrejón mine and to evaluate the effect of control alternatives."

Isaeng S.A.S. August to September 2019.

Environmental consultant to support in the analysis of time series of environmental variables to model the transport of particulate matter in a coal mine using a Computational Fluid Dynamics (CFD) Simulation.

Project: "Development of a wind tunnel model to determine the most effective configuration of windbreak barriers and trapezoidal physical barriers to control particulate matter emissions in coal piles at El Cerrejón-Puerto Bolívar".

Isaeng S.A.S. March 2017 to April 2017.

Environmental consultant to develop the consolidation of basic cartographic information required for the modeling of water currents in procedures for channel occupation of aqueduct and sewerage projects in execution, formulation and/or feasibility.

Project: Water for Prosperity Program- Antioquia Departmental Water Plan (PAP-PDA).

Facultad de Ingeniería – Universidad de Antioquia (Colombia). November 2015 to March 2016.

Languages

English: 135 Duolingo English Test (January 2023)

French: B1 level (December 2013)

Awards and scholarships

Best abstract in exposure science in the conference "Artificial Neural Networks to Mix Datasets from Particulate Matters and O₃ in Medellín, Colombia". ISES-ISEE 2018 Joint Annual Meeting. Ottawa, Canada.

Masters scholarship for the highest scores in the university admission exams. Universidad de Antioquia (Colombia). August 2017.

Publications and conferences

Piñeros-Jiménez JG, Franco-Piedrahíta MC, Montealegre-Hernández NA, Grisales-Vargas SC, Gutiérrez-Cano YA, Grisales-Romero H. "Distribución espacial de la morbimortalidad atribuible a la contaminación del aire por pm_{2.5} en Medellín (Colombia), 2010-2016". Rev. Fac. Nac. Salud Pública [Internet]. March 2nd 2022;40(2):e346589. Available in: <https://revistas.udea.edu.co/index.php/fnsp/article/view/346589>

Grisales S., Agudelo R. & Londoño L. (2020). "Development of a land use regression model for characterizing intra-urban spatial variation of fine particles in an Andean valley". Oral conference (Abstract). 32nd Annual Conference of the International Society of Exposure Science (ISES) and International Society for Environmental Epidemiology (ISEE)- Virtual. Available in: https://isee2020virtual.org/wp-content/uploads/sites/122/2020/08/ISEE2020Virtual_Abstract_Book_Session_Abstracts.pdf

Grisales S., et al. (2019). "Imputación de datos perdidos en series de mediciones de contaminantes atmosféricos insumo para la vigilancia en salud ambiental". Oral conference. Memoirs of the Colombian congress and international conference on air quality and public health- Congreso de Calidad del Aire y Salud Pública (CASAP). Barranquilla, Colombia. August 2019. [10.1109/CASAP.2019.8916686](https://doi.org/10.1109/CASAP.2019.8916686)

Grisales S., Agudelo R. & Londoño L. (2019). "Metodología para construir un modelo especial de PM_{2.5} en Medellín". Poster- Congreso de Calidad del Aire y Salud Pública (CASAP). Barranquilla, Colombia. August 2019.

Villa F., et al. (2018). *“Artificial Neural Networks to mix datasets from particulate matter and O₃ in Medellin, Colombia”*. Ponencia oral (Abstract). 30 Annual Conference of the International Society of Exposure Science (ISES) and International Society for Environmental Epidemiology (ISEE). Ottawa, Canadá.

<https://ehp.niehs.nih.gov/doi/abs/10.1289/isesisee.2018.003.03.06>

Grisales S., Puerto E., Correa M. (2015). *“Evaluación de transporte y destino de partículas de plaguicidas generadas en la aspersión aérea. Caso: Cultivos de Banano, Urabá-Antioquia”*. Oral Conference. VII Congreso de Gestión Ambiental en la X Convención Internacional sobre Medio Ambiente y Desarrollo. La Habana, Cuba. July 2015.

<https://drive.google.com/file/d/0B1biY1FzrBrQeU1GRUs4Q2JBV3M/view>

Courses and workshops

“Diploma of data analysis and machine learning in Python”. August 2019 to present. Intensity of 90 hours. Faculty of Exact and Natural Sciences. University of Antioquia – Medellin.

“Fundamentals and Measurement of Environmental Noise”. From October 24 to November 25, 2016. Intensity of 40 hours. Center of Continuous and Permanent Education. National University of Colombia- Medellin.

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