

Curriculum Vitae

1. Personal Information:

Name: EFRAIN EDUARDO VIZUETE JARAMILLO
Date of birth: March/13/1989
Place of birth: Salcedo, Cotopaxi, Ecuador
Current Address: San Gabriel 2809, Montecarlo, Ciudad Obregon,
Sonora, Mexico. Zip Code 85134
e-mail: efrain.vizuete161869@potros.itson.edu.mx
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2. Current employment and past positions:

Research associate, Technological Institute of Sonora (ITSON). Department of Water and Environmental Science. Obregon, Mexico. **10/2022-Current.**

Responsibilities:

Technical responsibilities

- Wrote research papers, reports, reviews, and summaries regarding the exposition of potentially toxic elements.
- Collaborated with leadership team to identify relevant questions and determine best methods of collection.
- Performed research into study topics to increase knowledge and to provide valuable contributions.
- Synthesized data and wrote detailed reports to present research findings to stakeholders.
- Interpreted data analysis results to draw inferences and conclusions.
- Proposed innovative methods for capturing and analyzing environmental data.
- Developed data collection strategies and monitored data quality for optimal research results.
- Moderator in discussion tables associated with water problems and pollution of the Sonora River among government agencies, non-governmental organizations, universities and residents of communities of the Sonora River.
- Data analysis.
- Database organization.
- Writing technical reports.
- Writing scientific articles.
- Research design.

Laboratory manager

- Acquisition of materials for field work.
- Inventory and supply management.
- Acquisition of laboratory chemical equipment and reagents.
- Handling and disposal of dangerous chemicals.
- Equipment and chemical inventory.
- Set up equipment, organized inventory and maintained facilities.
- Requested or acquired equipment or supplies necessary for projects.

Laboratory analysis

- Preparation of chemical reagents for sample analysis.
- Analysis of physical-chemical parameters of samples in the laboratory.
- Operation of analytical equipment for measuring heavy metals in aqueous solutions.

Field deployments

- Soil and dust sampling.
- Processing of soil and dust samples for the analysis of potentially toxic elements.
- Supervision of students and researchers in field work.

Instruments maintenance and upkeep

- Performed complex mechanical alignments and equipment calibration to meet quality standards.
- Observed equipment operation to diagnose and troubleshoot reported issues.
- Inspected equipment to identify areas of wear or causes of malfunctions.
- Performed troubleshooting and diagnosis on malfunctioning equipment.
- Addressed routine equipment maintenance according to established schedule.
- Maintained compliance with regulatory standards and safety requirements.
- Tended to machines, troubleshoot malfunctions and completed basic repairs to keep equipment fully functional and well-maintained.
- Checked, repaired and repacked survival equipment to meet specifications.
- Wrote and revised maintenance procedures.

Software and SIG analysis support

- Gathered, arranged, and corrected research data to create representative graphs, maps and charts highlighting results for presentations.
- Conducted spatial analyses of potentially toxic elements.
- Creation of story maps for the dissemination of information regarding air quality in the city of Hermosillo and the effects of mining in Sonora, Mexico.
- Utilized statistical packages to analyze data and create visualizations.
- Sorted data into well-organized formats and transformed into figures.

Name of employer:

Dra. Diana Meza Figueroa (University of Sonora)

Dr. Agustin Robles Morua (Sonora Technological Institute)

Academic technician, Technological Institute of Sonora (ITSON). Department of Water and Environmental Science. Obregon, Mexico. 08/2017-07/2018.

Responsibilities:

Technical responsibilities

- Writing technical reports.
- Writing scientific articles.
- Research design
- Data collection and analysis.
- Database organization.

Laboratory manager

- Laboratory management and operation.
- Acquisition of materials for field work.
- Inventory and supply management.
- Acquisition of laboratory chemical equipment and reagents.
- Handling and disposal of dangerous chemicals.
- Equipment and chemical inventory.

Laboratory analysis

- Preparation of chemical reagents for sample analysis.
- Preparation of reagents for field work.
- Analysis of physical-chemical parameters of samples in the laboratory.
- Operation of analytical equipment for measuring nutrients in water.

Field deployments

- Planning and preparation of field trips (logistics, budgets and equipment).
- Preparation of equipment for field work.
- Soil, surface water and groundwater sampling.
- Supervision of students and researchers in field work.
- Installation of weather stations in the field.

Instruments maintenance and upkeep

- Performed complex mechanical alignments and equipment calibration to meet quality standards.
- Observed equipment operation to diagnose and troubleshoot reported issues.
- Inspected equipment to identify areas of wear or causes of malfunctions.
- Performed troubleshooting and diagnosis on malfunctioning equipment.
- Addressed routine equipment maintenance according to established schedule.
- Maintained compliance with regulatory standards and safety requirements.
- Tended to machines, troubleshot malfunctions and completed basic repairs to keep equipment fully functional and well-maintained.
- Managed maintenance activities, supervised staff and inspected equipment.
- Checked, repaired and repacked survival equipment to meet specifications.
- Wrote and revised maintenance procedures.
- Mentored junior technicians in maintenance, repair and reporting duties.
- Demonstrated to students and academic technicians proper methods for operating equipment after it had been installed.
- Researched and implemented new technologies and equipment.

Software and SIG analysis support

- Gathered, arranged, and corrected research data to create representative graphs, maps and charts highlighting results for presentations.

Name of employer:

Dr. Agustin Robles Morua (Sonora Technological Institute)

Environmental technician, VERYGLOBE CIA LTDA. Quito, Pichincha, Ecuador. 03/2013 - 03/2014.

Responsibilities:

Technical responsibilities

- Preparation of environmental impact studies.
- Environmental audits.

Field deployments

- Coordination of field trips (logistics, budget and equipment).
- Supervision of personnel in the field.
- Transportation of personnel to the field.
- Soil and water sampling.
- Macroinvertebrate sampling in rivers and coastal areas.

Software and SIG analysis support

- Cartography.
- Acquisition of aerial photographs.
- Responsible for training technicians in geographic information systems.

Name of employer:

Msc. Martín Gavilanez

3. Degrees:

Ph.D., Engineering Sciences, Department of Engineering, Technological Institute of Sonora (ITSON), 08/2018 – 07/2022.

M.S., Natural Resources, Department of Water and Environmental Science, Technological Institute of Sonora (ITSON), 09/2015 – 07/2017.

B.S., Environmental engineering, Department of Engineering Sciences, Technological Equinoctial University of Ecuador (UTE), 09/2009 – 03/2014.

4. Scholarly Areas:

Use of ion exchange resins to quantify nutrients in natural areas.

Quantification of heavy metals in soil and rainwater through the use of ion exchange resins in urban areas.

Analysis of the efficiency of green infrastructure and urban infrastructure in the retention and removal of pollutants.

Field sampling of soil and water samples for physical-chemical analysis.

Use and application of geographic information systems (GIS) to solve environmental, social and public health problems.

Clustering techniques (Hot spot analysis)

Watershed hydrology & Rainfall-runoff modeling.

5. Web resources and databases:

ORCID: <https://orcid.org/0000-0001-8786-3885>

Google scholar: <https://scholar.google.com.mx/citations?user=TXmciXIAAAAA&hl=es>

LinkedIn: <https://www.linkedin.com/in/efravzt/>

6. Honors and Awards:

CONACYT Fellow, Mexican National Council for Science and Technology. Scholarship awarded to pursue Ph.D. in Engineering Sciences at Technological Institute of Sonora, 2018-2022.

Awarded with the first place as a poster exhibitor with the theme "Evaluation of the Availability of Nutrients through the Use of Ion Exchange Resins in a Seasonal Period in the Cuchujaqui River Basin". UNIVERSIDAD ESTATAL DE SONORA, Hermosillo, Mexico, 2017.

CONACYT Fellow, Mexican National Council for Science and Technology. Scholarship awarded to pursue M.S. in Natural Resources at Technological Institute of Sonora, 2015-2017.

7. Other professional activities:

Environmental consultant, Obregon, Mexico. **03/2023-Current.**

Projects:

1. Ecohydrological Diagnostic and Management Proposal for the Basin of Irrigation District 38, Río Mayo, Sonora-Chihuahua. (**Institution:** Conselva, Costas y Comunidades)
2. Design of the Water and Land Use Guide for Border Cities - US-MX Border Growing Water Smart" (BGWS). (**Institution:** Sonoran Institute)

Responsibilities:

Technical responsibilities

- Technician in charge of writing the management plan proposal for conservation or restoration.
- Data collection and analysis.
- Database organization.
- Technical report writing.
- Synthesized data and wrote detailed reports to present research findings to government agencies and non-governmental organizations.
- Technician in charge of presenting information with government agencies and non-governmental organizations.

Field deployments

- Responsible for organizing and directing field trips.
- Supervision of technicians in field work.
- Soil sampling in the field.

Software and SIG analysis support

- Cartography.
- Development of hydrological studies for the Mayo River Basin in the south of the state of Sonora.
- Implementation of the SWAT model for the generation of water and sediments in the Mayo River Basin.

- Calibration of SWAT model.
- Analysis of NDVI, suitability and degradation of soils within the Mayo River Basin.

8. Teaching:

Assistant professor, Fundamentals of Environmental Engineering, undergraduate level, ITSON-ICA, 01/2017 – 12/2022.

Responsibilities:

- Design and creation of the Fundamentals of Environmental Engineering class for the Environmental Sciences Engineering degree at the Instituto Tecnológico de Sonora.
- Teaching the Fundamentals of Environmental Engineering class for undergraduate students.
- Supervision and assistance of students.
- Class planning.
- Creation of tasks and exams.
- Advising students on bachelor's thesis.

Name of employer:

Msc. David Encinas Yepiz (Sonora Technological Institute)

9. Workshops:

1. Staff of the FUTURE SCENARIOS workshop held in 2016 in Hermosillo, Sonora as part of the National Science Foundation (SES-1444755) project: "Urban Resilience to Extreme Events Sustainability Research Network (UREx-SRN).
2. Organizer and presenter of the Geochemistry, multivariate statistics, spatial analysis and GIS Workshop for the technicians of the Mexican Geological Survey Federal Agency (Servicio Geológico Mexicano). 2022. Held from October 17 to 20 at the facilities of the State University of Sonora, Hermosillo Unit, Mexico.

10. Peer-reviewed publications:

1. **Vizueté-Jaramillo, E.**; Robles-Morua, A. Meza-Figueroa, D.; Schiavo, B.; Gonzalez-Grijalva, B. Seasonal quantification of Zn²⁺, Pb²⁺ and Cu²⁺ in urban dusts in a semiarid city in northwest Mexico, Atmospheric Pollution Research, Volume 15, Issue 5, 2024, 102074, ISSN 1309-1042, <https://doi.org/10.1016/j.apr.2024.102074>.
2. Schiavo, B., Meza-Figueroa, D., Morton-Bermea, O., **Vizueté-Jaramillo, E.**, Robles-Morua, A. Seasonal variation of mercury in settled dust from brick kiln pollution in Sonora, Mexico: Ecological risk and human health implication (2023). Atmospheric Pollution Research. <https://doi.org/10.1016/j.apr.2023.101787>
3. Schiavo, B., Meza-Figueroa, D., **Vizueté-Jaramillo, E.** et al. Oxidative potential of metal-polluted urban dust as a potential environmental stressor for chronic diseases. Environ Geochem Health (2022). <https://doi.org/10.1007/s10653-022-01403-9>
4. **Vizueté-Jaramillo, E.**; Meza-Figueroa, D.; Reyes-Castro, P.A.; Robles-Morua, A. Using a Sensitivity Analysis and Spatial Clustering to Determine Vulnerability to Potentially Toxic Elements in a Semiarid City in Northwest Mexico. Sustainability 2022, 14, 10461. <https://doi.org/10.3390/su141710461>
5. **Vizueté-Jaramillo, E.**, Grahmann, K., Mora Palomino, L. et al. Using ion-exchange resins to monitor nitrate fluxes in remote semiarid stream beds. Environ Monit Assess 194, 376 (2022). <https://doi.org/10.1007/s10661-022-10041-8>

11. Books and book chapters:

1. Robles-Morúa, A., Hinojosa-Robles, Eduardo., Navarro-Estupiñán, Javier., Meza-Figueroa, D., **Vizuite-Jaramillo, E.**, Peñúñuri, M.G. Operational guidelines for the identification of green infrastructure in a semiarid city. Collaborating for Climate Equity, 67-84 (2022). ISBN: 9781003208723

12. Graduate Thesis supervision and advising:

Undergraduate Students:

Alondra Encinas Arballo (B.S. Environmental Engineering, 2014-2018, Co-Chair). Graduated.

13. Summer research programs:

1. Short stay research at Arizona State University (ASU). 08/2019 – 12/2019. School of Life Sciences – SOLS. Tempe Campus, Arizona. Monitoring of heavy metals in urban and semi-arid ecosystems.
2. Short stay research at New Mexico Technological University (NMT). 08/2016 – 10/2016. Contaminant and Fluid Transport Laboratory. Research on modeling and movement of nutrients in semiarid ecosystems.

14. Technical skills:

Windows.

MATLAB.

Distributed (tRIBS), SWAT and HEC-HMS Hydrological modeling.

Operation of Segmented Flow Autoanalyzer (SEAL) (Certified by SEAL Analytical)

Operation of 797 VA Computrace (Metrohm) (Certified by Metrohm)

Geographic Information Systems (ESRI ArcMap, ArcGIS Online, ArcGIS Pro, Story Maps).

Creation of professional maps for publication of scientific articles

Google Earth Engine

Remote sensing (Sentinel, Landsat, NLDAS, Alos Palsar, SRTM)

Processing and analysis of remote sensing data

Adobe Illustrator, Adobe Photoshop, Adobe After Effects, Adobe Premiere Pro, Microsoft office.

HTML, web design

15. Certifications

- Use and operation of the Segmented Flow Analyzer (Seal Analytical)
- Use and operation of 797 VA Computrace (Metrohm)

16. Languages:

Fluent in Spanish and English. TOEFL IBT 520-548 points. Last tested in May 2018.

17. Conference presentations:

1. **Vizuite-Jaramillo, E.** 2024. Urban Dust and the Impact on Public Health. University of Groningen, Netherlands.
2. **Vizuite-Jaramillo, E;** Meza-Figueroa, D., Gonzalez-Grijalva, B., y Robles-Morúa, A. 2023. Distribución espacial y análisis de vulnerabilidad ante la exposición de agentes tóxicos

- prioritarios en comunidades del Río Sonora. XXXIII Congreso Nacional de Geoquímica, Universidad de Sonora, Hermosillo, Mexico.
3. **Vizúete-Jaramillo, E.** 2023. Conferencia Muestreo en campo y análisis espacial de datos para el monitoreo de la contaminación atmosférica. Caso de estudio del derrame en el Río Sonora. Instituto Tecnológico de Sonora.
 4. **Vizúete-Jaramillo, E.** 2022. Conferencia magistral “Retos y Estrategias para el Monitoreo Ambiental Urbano en el Antropoceno”. Universidad Tecnológica Equinoccial del Ecuador.
 5. **Vizúete-Jaramillo, E.** 2021. Retos del monitoreo Ambiental Urbano en la actualidad. Universidad Tecnológica Equinoccial del Ecuador. Quito, Pichincha, Ecuador.
 6. **Vizúete-Jaramillo, E.** 2021. Taller “Aplicación de SIG a las Ciencias Ambientales”. Instituto Tecnológico de Sonora. Obregon, Sonora, Mexico.
 7. **Vizúete-Jaramillo, E.** 2020. Conferencia magistral “Impacto en los suelos y en la infraestructura verde en mitigar y retener la contaminación por metales pesados en las ciudades”. Universidad Tecnológica Equinoccial del Ecuador.
 8. **Vizúete-Jaramillo, E;** Grahmann, K; Mora-Palomino, L; Méndez-Barroso, L y Robles-Morúa, A. 2018. Disponibilidad de nutrientes en un área natural con distintos grados de conservación durante un periodo estacional en un bosque tropical seco en el Noroeste de México. Unión Geofísica Mexicana. Reunión Anual 2018. Puerto Vallarta, Jalisco, Mexico.
 9. **Vizúete-Jaramillo, E;** Grahmann, K; Mora-Palomino, L y Robles-Morúa, A. 2018. Evaluación de la metodología de resinas de intercambio iónico para la cuantificación de flujos de nutrientes en ecosistemas naturales. IX Simposio Internacional del Carbono en México. Alamos, Sonora, Mexico.
 10. Grahmann, K. **Vizúete-Jaramillo, E** y Robles Morúa A. 2016. Evaluación de disponibilidad de nutrientes en el suelo en la cuenca del Cuchujaqui con cajas acumuladoras de iones. Congreso Internacional de Ingeniería Ambiental. Guaymas, Sonora, Mexico.
 11. **Vizúete-Jaramillo, E.** 2015. Impacto de la contaminación visual en la competitividad de la ciudad latinoamericana. Congreso Internacional de Ingeniería Ambiental. Universidad Estatal de Sonora. Hermosillo, Sonora, Mexico.
 12. **Vizúete-Jaramillo, E.** 2015. Impacto de la contaminación visual en la competitividad de la ciudad latinoamericana. Congreso Internacional de Ingeniería Ambiental. Universidad Tecnológica Equinoccial. Santo Domingo de los Colorados, Ecuador.