Roberto H. Tellez Vizcaino

PhD Candidate (Applied Geosciences) | Volcanic petrology & geochemistry | Ocean-island & monogenetic volcanism

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RESEARCH PROFILE

Volcanologist specializing in volcanic petrology and geochemistry of young ocean-island systems. My dissertation reconstructs the eruptive and magmatic evolution of the 1952–53 Bárcena monogenetic cone (Isla San Benedicto, Revillagigedo Archipelago, Mexico) by integrating stratigraphy, pyroclast textures, whole-rock chemistry, mineral chemistry (EPMA), radiogenic isotopes (TIMS) and SEM textures.

EDUCATION

PhD, Applied Geosciences — IPICYT, Mexico | 2022–present
Expected defense: summer 2026.

MSc, Applied Geosciences — IPICYT, Mexico | 2016–2018 (degree: May 25, 2020)
Thesis: Stratigraphy and volcanology of the Xoxoctic Tuff (Upper Pleistocene), Los Humeros Caldera, Puebla.

BSc, Environmental Sciences & Risk Management — University of Colima, Mexico | 2012–2016
Peña Colorada Award (2016) — best student of the cohort.

RESEARCH EXPERIENCE

Bárcena cone & Isla San Benedicto (Revillagigedo), Mexico — PhD research | 2022–present

- Field: 15-day expedition; updated mapping and stratigraphy with systematic sampling of pyroclastic units and lava.
- Whole-rock geochemistry: XRF majors (n=26 analyses) + ICP-MS trace/REE (n=12); full data integration, QA/QC and interpretation.
- Petrology/textures: petrography (20 thin sections across 16 samples); XRD (n=10); granulometry and componentry; SEM imaging (10 juvenile pumice samples; multi-scale).
- Mineral chemistry (EPMA): 12 samples; plagioclase n=30 crystals with core–mid–rim transects (90 spots), pyroxene n=20 spots, oxides n=10 spots; mounting/polishing and session execution (calibration by staff), post-processing.
- Radiogenic isotopes (TIMS): 6 samples (Sr–Nd–Sm on whole rock; Pb from leached feldspar concentrates); hands-on clean-lab preparation and measurement sessions; data QC and interpretation.

Los Humeros Caldera, Mexico — MSc research | 2016–2020

- Three field campaigns (≈15 days total): stratigraphy and volcanology of the Xoxoctic Pumice (Tuff); eruption reconstruction and magma mixing. CeMIEGeo-P05 funded project.

OUTPUTS

- Peer-reviewed indexed article: Téllez Vizcaíno, R. H., Dávila Harris, P., & Carrasco Núñez, G. (2026). Estratigrafía e historia eruptiva de la erupción pliniana que originó la Pómez Xoxoctic, Caldera Los Humeros, México. Geofísica Internacional, 65(1), 1863–1892. https://doi.org/10.22201/igeof.2954436xe.2026.65.1.1851
- RAUGM 2025: oral (VUL-17) and poster (VUL-35) presentations (see full citations in Academic CV).
- Cities on Volcanoes 12: Antigua, Guatemala poster session #443.
- Ongoing manuscripts: Bárcena eruptive evolution (in prep); mineral chemistry + radiogenic isotopes (planned).

SKILLS

- Analytical: EPMA, SEM, XRD, TIMS; whole-rock workflows (XRF, ICP-MS) including QA/QC.
- Sample preparation: crushing/sieving; mineral separation (magnetic, heavy liquids, hand-picking); XRF briquettes; thin-section & polished mount preparation.

- Data: Python workflows (VS Code) for QC, PCA and hierarchical clustering; scientific figures (Adobe Illustrator).
- Field/GIS: stratigraphic logging, pyroclastic description; ArcGIS/QGIS (advanced).

LANGUAGES

- Spanish (native).
- English (advanced) — TOEFL iBT 99 (2023).