

CURRICULUM VITAE

RICARDO GARZA-GIRÓN

PhD

Seismology / Volcanology / Polar Geophysics

CONTACT

Earth and Planetary Sciences Department
UC Santa Cruz
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LANGUAGES

Spanish (Native)
English (Fluent)
French (written and spoken, intermediate)

EDUCATION

Bachelor's Degree: Geophysics Engineering (Minor: Seismology) Honors

Universidad Nacional Autónoma de México (UNAM), Facultad de Ingeniería (2014)
(National Autonomous University of Mexico, Faculty of Engineering)

Thesis dissertation: Spatial variation of the b value under the Popocatepetl volcano and its relation with the structure of the magma chamber.

PhD: Geophysics

University of California, Santa Cruz, Earth and Planetary Sciences Department (2021)

Thesis dissertation: A geophysical study of active volcanic regions and subduction zones.

Advisor: Emily Brodsky, brodsky@ucsc.edu

INTERNSHIP

Centro Nacional de Prevención de Desastres (CENAPRED), Mexico (2013)

National Center for Disaster Prevention of Mexico at the "Special Program for Prevention and Risk Mitigation of Disasters"

FIELD WORK

Urban geophysics (2011-2012). Electrical resistivity surveys and GPR with the Geophysics Institute of UNAM to determine the structures under archaeological sites, volcanic lava tubes, city malls and others. Mexico City, Mexico.

Reference: Gerardo Cifuentes Nava, gercifue@geofisica.unam.mx

Popocatepetl volcano and the northern Mexican desert (2014). Transient ElectroMagnetics (TEM) and Magnetotellurics (MT). Estado de Mexico, Mexico; Nuevo Leon, Mexico.

Reference: Claudia Arango Galván, claudiar@geofisica.unam.mx

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Geothermal exploration field campaign, Michoacan, Mexico (2015). Field leader for the project "Geoscientific study for the geothermal development of the San Bartolome de los Banos, Guanajuato, Mexico and San Agustin del Maiz, Michoacan, Mexico areas". Activities included the design, deployment and maintenance of a seismic network consisting of 12 broadband instruments as well as executing a regional electromagnetic survey with 85 sites using the TEM (Transient Electro-Magnetic) and MT (Magnetotelluric) methods.

Reference: Prof. Vala Hjorleifsdottir, vala@geofisica.unam.mx

IRIS Wavefield Communal Experiment (2016). Deployment of nodal arrays and broadband seismic stations. Enid, Oklahoma, USA.

Pacific Ocean, R/V Roger Revelle (2017). Surveying the Mendocino Fracture Zone. Deployment of ocean bottom magnetotelluric instruments, CHIRP/multibeam bathymetric data collection.

Reference: Prof. Eli Silver, esilver@ucsc.edu; Prof. David Sandwell, dsandwell@ucsd.edu

Cook Inlet, Alaska Volcano Observatory (2018). Service of existing seismic/GPS stations as well as analog-to-digital conversion of stations. Mount Spurr, Alaska; Mount Redoubt, Alaska.

Reference: Max Kaufman, amkaufman@alaska.edu

Antarctica (2018). Geophysical surveying using airborne TEM and Nuclear Magnetic Resonance (NMR). Assistance with field work for microbiologists drilling through ice and collecting samples.

Reference: Slawek Tulaczyk, stulaczy@ucsc.edu; Jill Mikucki, jmikicki@utk.edu

Aleutian Islands, Alaska Volcano Observatory (2019). Analog-to-digital conversion campaign. Korovin, Cleveland and Okmok volcanoes, Alaska.

Reference: Max Kaufman, amkaufman@alaska.edu

TEACHING

Teaching Assistant: EART110C- The Dynamic Earth (Geophysics), UC Santa Cruz (Spring 2017)

Teaching Assistant: EART110C- The Dynamic Earth (Geophysics), UC Santa Cruz (Spring 2018)

Teaching Assistant: EART110C- The Dynamic Earth (Geophysics), UC Santa Cruz (Spring 2019) (*Honorable mention as best TA voted by students*)

Teaching Assistant: EART191C-Applied Geophysics, UC Santa Cruz (Fall 2019)

GEOPATHS Facilitator: EART110C-The Dynamic Earth (Geophysics), UC Santa Cruz (Spring 2020)

AWARDS/MENTIONS

Honorable Mention for bachelor thesis defense, Universidad Nacional Autónoma de México, Facultad de Ingeniería (2014)

UC MEXUS-CONACYT Doctoral Fellowship for Mexican Students (2015)

Graduate Students Association (GSA) Research and Travel Grant, UC Santa Cruz (2018)

Zhen and Ren Wu Memorial Award Fund in Geophysics, UC Santa Cruz (2018)

GEOPRISMS AGU Student Prize, Honorable Mention (2019)

PUBLICATIONS

Garza Girón, Ricardo. (2014). "Distribución espacial del valor b debajo del Volcán Popocatepetl y su relación con la estructura de la cámara magmática". (Tesis de Licenciatura). Universidad Nacional

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Autónoma de México, México. <https://repositorio.unam.mx/contenidos/428928>

Garza-Giron, R., Brodsky, E. E., & Prejean, S. G. (2018). Mainshock-aftershock clustering in volcanic regions. *Geophysical Research Letters*, 45, 1370–1378. <https://doi.org/10.1002/2017GL075738>

Cruz-Atienza, V., Tago, J., Villafuerte, C., Wei, M., **Garza-Girón, R.**, Dominguez, L.,... & Kazachkina, E. (2021). **Short-Term Interaction between Silent and Devastating Earthquakes in Mexico**. *Nature Communications*. <https://doi.org/10.1038/s41467-021-22326-6>.

Villafuerte, C., Cruz-Atienza, V., Tago, J., Solano-Rojas, D., **Garza-Giron, R.**, Franco, S., Dominguez, L.A., Kostoglodov, V. (2020). Slow slip events and megathrust coupling changes reveal the earthquake potential before the 2020 Mw 7.4 Huatulco, Mexico, event. *Earth and Planetary Science Letters*. *In Review*.

Grombacher, D., Auken, E., Foged, N., Bording, T., Foley, N., Doran, P.T., Mikucki, J., Dugan, H.A., **Garza-Giron, R.**, Myers, K. and Virginia, R.A., 2021. Induced polarization effects in airborne transient electromagnetic data collected in the McMurdo Dry Valleys, Antarctica. *Geophysical Journal International*, 226(3), pp.1574-1583. <https://doi.org/10.1093/gji/ggab148>

ABSTRACTS/MEETINGS/WORKSHOPS

Garza-Giron, R. and Zuniga, R.R., Spatial distribution of the b-value under Popocatepetl volcano and its relation with the structure of the magma chamber, AGU Fall Meeting, San Francisco, CA, 2014.

Garza-Giron, R., Brodsky, E.E. and Prejean, S.G., Aftershock productivity as a potential indicator of the style of stress accumulation on volcanoes of Alaska and the Aleutian Islands, AGU Fall Meeting, San Francisco, CA, 2016.

Hjörleifsdóttir, Vala, Shri Krishna Singh, Liliana Martínez-Peláez, **Ricardo Garza-Girón**, Björn Lund, and Chen Ji., Observations of large earthquakes in the Mexican subduction zone over 110 years, EGU General Assembly Conference, Vienna, Austria, 2016.

Workshop for the Advanced School on Physics of Volcanoes, ICTP, Trieste, Italy, 2016.

Ricardo Garza-Giron, Emily E. Brodsky, Stephanie G. Prejean, Aftershock productivity on volcanoes: What can it tell us about interpreting aftershocks?, 10th International Workshop on Statistical Seismology, Wellington, New Zealand, 2017.

Garza-Giron, R., Brodsky, E.E. and Prejean, S.G., Mainshock-aftershocks clustering detection in volcanic regions, AGU Fall Meeting, New Orleans, LA, 2017.

Garza-Giron, R., Brodsky, E.E. and Prejean, S.G., Mainshock-aftershocks clustering in volcanic regions, Workshop on Japan-Kamchatka-Alaska Subduction Processes (JKASP), Petropavlovsk-Kamchatsky, Russia, 2018.

Garza-Giron, R., Brodsky, E.E. and Haney M.M., When does the rock break?: Finding earthquakes during the 2008 Okmok eruption, AGU Fall Meeting, Washington, D.C., 2018.

Auken, Esben, Thue Sylvester Bording, Peter T. Doran, Hilary A. Dugan, Nikolaj Foged, Neil Foley, **Ricardo Garza Giron**, Denys Grombacher, Jill Mikucki, Lars Jensen, Krista Myers, T.J. Rogers, Slawek Tulaczyk, Ross Virginia, An airborne EM survey of the McMurdo Dry Valleys in Antarctica, AGU-SEG Airborne Geophysics Workshop, Davie, Florida, 2019.

Slawek M Tulaczyk, Jill Mikucki, Esben Auken, Denys Grombacher, Hilary A Dugan, Nikolaj Foged, Neil Foley, Ross A Virginia, Peter T Doran, **Ricardo Garza-Giron** and Krista F Myers, Deep subsurface brines in the polar desert of McMurdo Dry Valleys, Antarctica, revealed by a regional AEM (Airborne ElectroMagnetic) survey, AGU Fall Meeting, San Francisco, CA, 2019.

Garza-Giron, R., Brodsky, E.E. , Spica, Z.J. and Haney M.M., Hidden earthquakes as a tool to conduit evolution during an explosive eruption, AGU Fall Meeting, San Francisco, CA, 2019.

SEMINARS/COLLOQUIUMS

Instituto de Geofísica, Universidad Nacional Autónoma de México (2019)

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Stanford University, Seismology group (2020)

Humboldt State University, Department of Geology (2020)

Columbia University, Volcanology group (2020)