



UNIVERSIDAD NACIONAL DE COLOMBIA

SEDE BOGOTÁ
FACULTAD DE CIENCIAS
DEPARTAMENTO DE GEOCIENCIAS

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Universidad Nacional de Colombia

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EDUCATION

- 2002 - 2007 University of California San Diego.
Ph.D. in Earth Sciences
- 2002 - 2004 University of California San Diego.
M.S. in Earth Sciences
- 1997 - 2002 Universidad Nacional (Bogotá, Colombia)
B.S. in Geology

WORK EXPERIENCE

- 2017-Present *Associate Professor of Geophysics*
Departamento de Geociencias
Universidad Nacional de Colombia
- 2016-2017 *Associate Professor of Geophysics*
Facultad de Ciencias Naturales y Matematicas Universidad del Rosario
- 2013-2016 *Cecil & Ida Green Career Development Assistant Professor*
Earth, Atmospheric, and Planetary Sciences, MIT.
- 2009-2013 *Assistant Professor of Geophysics, Physics Department*
Universidad de los Andes
- 2007-2009 *Postdoctoral Scholar, Department of Geophysics, Stanford University*
- Visiting Appointments*
- 2016-2018 *Guest Investigator, Woods Hole Oceanographic Institution, WHOI.*
- 2016-2018 *Visiting Professor, Earth, Atmospheric, and Planetary Sciences, MIT.*
- 2012 *Visiting Professor, IPG, Paris, Univ. Paris 7 - Diderot*

HONORS AND AWARDS

- 2014-2016 Cecil & Ida Green Career Development Chair, MIT
2011 Editors Citation for Excellence in Refereeing, JGR-Solid Earth, AGU.
2010 Keiiti Aki Young Scientist Award, AGU - Seismology Section
2007-2008 Thompson Postdoctoral Fellowship, Stanford University

PUBLICATIONS

* for advised students, † for advised postdoctoral scholars

56. Bishop, B., S. Cho, L. Warren, L. Soto-Cordero, P. Pedraza, **G.A. Prieto** and V. Dionicio (2022). Oceanic intraplate faulting as a pathway for deep lithosphere hydration: Perspectives from the Caribbean. In preparation for *Geosphere*.
55. Moyano, I.* , **G.A. Prieto**, M. Ibañez-Mejía (2022). Tectonic domains in the NW Amazonian Craton from geophysical and geological data. In preparation for *Pre-cambrian Research*.
54. Gu, C., S. Mighani,, **G.A. Prieto**, Y. M. Marzouk, C.F. Meng, U. Mok, J. B. Evans, B. H. Hager (2022). Repeating *earthquakes* during a laboratory Stick-slip experiment. In preparation for *J. Geophys. Res.*
53. Cubillos, S.* , **G.A. Prieto** (2022). Repeating earthquakes occur on patches of constant area. In preparation for *Geophys. Res. Lett.*
52. **Prieto, G. A.** (2022). The multitaper spectrum analysis package in Python. *Seism. Res. Lett.*, in Press.
51. Jaimes, N.* , **Prieto, G. A.**, Rodriguez, C. (2022). Detection of Building Response Changes Using Deconvolution Interferometry: A Case Study in Bogota, Colombia. *Seism. Res. Lett.* , 93(2A), 931-942.
50. Sun, M., M Bezada, J. Cornhwaite, **G.A. Prieto**, F. Niu, A. Levander (2022). Overlapping slabs: Untangling subduction in NW South America through finite-frequency teleseismic tomography, *EPSL*, 577, 117253.
49. Dannemann, F., S. van der Lee, **G.A. Prieto**, S. Dybing, L. Toney, H. Cole (2021). ROSES: Remote Online Sessions for Emerging Seismologists. *Seism. Res. Lett.* 92(4), 2657-2667.

48. Cornthwaite, J., M. Bezada, W. Mao, M. Schmitz, **G.A. Prieto**, V. Dionicio, F. Niu, A. Levander (2021). Caribbean slab segmentation beneath northwest South America revealed by 3-D finite frequency teleseismic P-wave tomography. *G³* 22 (4). e2020GC009431.
47. Moyano, I.* , **G.A. Prieto** (2021). Structural signatures of the Amazonian Craton in eastern Colombia from gravity and magnetometric data interpretation. *Tectonophysics* 800. 228705
46. Gu, Chen, U. Mok, Y.M. Marzouk, **G.A. Prieto** , F. Sheibani, J.B. Evans, B.H. Hager, (2020). Bayesian waveform-based calibration of high-pressure acoustic emission system with ball drop measurements. *Geophys. J. Int.*. 221(1), 20-36.
45. Chao, K., Peng, Z., Frank, W. B., **G.A. Prieto**, Obara, K. (2019). Isolated Triggered Tremor Spots in South America and Implications for Global Tremor Activity. *Seism. Res. Lett.*, 90(5), 1726-1739.
44. Florez, M.A.* , **G.A. Prieto** (2019) Controlling Factors of Seismicity and Geometry in Double Seismic Zones. *Geophys. Res. Lett.* 46 (8) 4174-4181.
43. Chang, Y., L.M. Warren, L. Zhu, **G.A. Prieto** (2019). Earthquake focal mechanisms and stress field for the intermediate-depth Cauca cluster, Colombia. *J. Geophys. Res. Solid Earth*, 124. (1) 822-836.
42. Inzunza, D.A., G.A. Montalva, F. Leyton, **G.A. Prieto**, S. Ruiz (2019), Shallow Ambient-Noise 3D Tomography in the Concepción Basin, Chile: Implications for Low-Frequency Ground Motions. *Bull. Seism. Soc. Am.* 109(1), 75-86.
41. Chen, G.[†], **G.A. Prieto**, A. Al-Enezi, F. Al-Jeri, J. Al-Qazweeni, H. Kamal, S. Kuleli, A. Mordret, O. Büyüköztürk, M.N. Toksöz (2018). Ground motion in Kuwait from regional and local earthquakes: Potential effects on tall buildings. *Pure App. Geophys.* 175. 4183-4195
40. A. Mordret[†], H. Sun, **G.A. Prieto**, M.N. Toksöz O. Büyüköztürk, (2017). Continuous Monitoring of High-Rise Buildings Using Seismic Interferometry. *Bull. Seism. Soc. Am.*, 107(6), 2759-2773.
39. Chang, Y., Warren, L. M., **G.A. Prieto** (2017). Precise Locations for Intermediate-Depth Earthquakes in the Cauca Cluster, Colombia. *Bull. Seism. Soc. Am.*, 107(6), 2649-2663.

38. Florez, M.* , **G. A. Prieto** (2017), Precise Relative Earthquake Depth Determination Using Array Processing Techniques, *J. Geophys. Res: Solid Earth*. Vol. 122, 4559-4571, doi:10.1002/2017JB014132.
37. **Prieto, G.A.**, Froment, B. C. Yu, Poli, P.†, R. Abercrombie (2017), Earthquake rupture below the brittle-ductile transition in continental lithospheric mantle. *Science Advances* 3, e1602642.
36. H. Agurto-Detzel†, M. Bianchi, **G.A. Prieto**, M. Assumpção. (2017) Earthquake source properties of a shallow induced seismic sequence in SE Brazil. *J. Geophys. Res. Solid Earth*. 122, 2784-2797 doi:10.1002/2016JB013623.
35. Sun, H. A. Mordret†, **G.A. Prieto**, N. Toksöz O. Büyüköztürk (2017) Bayesian characterization of buildings using seismic interferometry on ambient vibrations. *Mechanical Systems and Signal Processing*. v85, 468-486.
34. Poli, P.†, **G.A. Prieto** (2016), Global rupture parameters for deep and intermediate-depth earthquakes, *J. Geophys. Res. Solid Earth*. 121. 8871-8887.
33. Mordret, A†, D. Mikesell, C. Harig, B. P. Lipovsky, **G. A. Prieto**.(2016) Monitoring South-West Greenland's ice sheet melt with ambient seismic noise. *Science Advances*. v2. n5. e1501538
32. Poli, P†, **G. A. Prieto**, C. Yu, Florez, M.* , Chen, G., Mykesell, D., H.A. Denzel (2016), Complex rupture of the M6.3 March 10, 2015 Bucaramanga earthquake: evidence of strong weakening process, Published Online *Geophys. J. Int.*: ggw065.
31. P. Poli†, **G.A. Prieto**, E. Rivera, S. Ruiz (2016) Earthquake nucleation and thermal shear instability in the Hindu-Kush intermediate-depth nest. *Geophys. Res. Lett.* v43.
30. Syracuse, E. M., Maceira, M., **Prieto, G. A.**, Zhang, H., Ammon, C. J. (2016). Multiple plates subducting beneath Colombia, as illuminated by seismicity and velocity from the joint inversion of seismic and gravity data. *Earth and Planetary Science Letters*, 444, 139-149.
29. Chiarabba, C, P. De Gori, C. Faccenna, F. Speranza, D. Seccia, V. Dionicio, **G. A. Prieto**, (2015), Subduction system and flat slab beneath the Eastern Cordillera of Colombia, *Geochemistry, Geophysics, Geosystems*. v16

28. Poli, P.[†], **G. A. Prieto** (2014). Global and along-strike variations of source duration and scaling for intermediate-depth and deep focus earthquakes. *Geophys. Res. Lett.* 41.
27. Denolle, M.A., E.M. Dunham, **G. A. Prieto**, G.C. Beroza. (2014). Strong Ground Motion Prediction Using Virtual Earthquakes. *Science*. 343, 399-403.
26. **Prieto, G.A.**, M. Florez*, S.A. Barrett, G.C. Beroza, et al. (2013) Seismic evidence for thermal runaway during intermediate-depth earthquake rupture. *Geophys. Res. Lett.*, 40. 1-5.
25. Frank, W., N. Shapiro, V. Kostoglodov, A. Husker, J. Payero, M. Campillo, **G. A. Prieto** (2013). Low-frequency earthquakes in the Mexican Sweet Spot. *Geophys. Res. Lett.* 40(11), 2661-2666.
24. Lawrence, J.F., M.A. Denolle, K.J. Seats, **G. A. Prieto**. (2013). A numeric evaluation of attenuation from ambient noise correlation functions. *J. Geophys. Res.* 118 (12), 6134-6145.
23. Denolle, M. A., E. M. Dunham, **G. A. Prieto**, and G. C. Beroza (2013), Ground motion prediction of realistic earthquake sources using the ambient seismic field, *J. Geophys. Res. Solid Earth*, 118.
22. **Prieto, G. A.** (2012), Imaging the Deep Earth. *Science*. 338(6110), 1037-1038.
21. **Prieto, G. A.** G.C. Beroza, S.A. Barrett, G.A. Lopez*, M. Florez* (2012), Earthquake nests as natural laboratories for the study of intermediate-depth earthquake mechanics. *Tectonophysics* 570-571, 42Ð56. doi: 10.1016/j.tecto.2012.07.019
20. K. Seats, J. F. Lawrence, **G. A. Prieto** (2012) Improved Ambient Noise Correlation Functions using Welch's Method. *Geophys. J. Int.* 188, 513Ð523. doi: 10.1111/ j.1365- 246X.2011.05263.x
19. **Prieto, G. A.** M. Denolle, J. F. Lawrence, G. C. Beroza. (2011), On amplitude information carried by the ambient seismic field. In Press *Comptes rendus geoscience. Thematic Issue: Imaging and Monitoring with Seismic Noise*. 343, 600-614.
18. Lawrence, J. F., **G. A. Prieto**. (2011), Attenuation tomography of the western United States from Ambient Seismic Noise. *J. Geophys. Res.* 116, B06302.

17. Kane, D. L., **G. A. Prieto**, F. L. Vernon, P. M. Shearer (2011) Quantifying Seismic Source Parameter Uncertainties. *Bull. Seism. Soc. Am.* 101 (2), pp. 535-543.
16. Baltay, A., S. Ide, **G. A. Prieto**, G. C. Beroza (2011) Variability in Earthquake Stress Drop and Apparent Stress. *Geophys. Res. Lett.* 38, L06303.
15. **Prieto, G. A.**, , J. F. Lawrence, A. I. Chung, M. D. Kohler. (2010), *Impulse Response of Civil Structures from Ambient Noise Analysis*. *Bull. Seism. Soc. Am.*, 100 (5A), pp. 2322-2328.
14. Elipot, S., R. Lumpkin, **G. A. Prieto**, *Inertial Oscillation modification by mesoscale vorticity*, (2010), *J. Geophys. Res.*, 115, C09010.
13. Baltay, A., **G. A. Prieto**, G. C. Beroza. (2010), *Radiated Seismic Energy from coda measurements indicates no scaling in apparent stress with seismic moment*. *J. Geophys. Res.*, 15, B08314.
12. **Prieto, G. A.**, , J. F. Lawrence, G. C. Beroza. (2009) *Anelastic Earth Structure from the Coherency of the Ambient Seismic Field*. *J. Geophys. Res.*. 114. B07303.
11. **Prieto, G. A.**, , R. L. Parker, F. L. Vernon., (2009) *A Fortran 90 library for multitaper spectrum analysis*, *Computers and Geosciences*, 35, pp. 1701-1710.
10. **Prieto, G. A.**, G. C. Beroza. (2008), *Earthquake Ground Motion Prediction Using the Ambient Seismic Field*. *Geophys. Res. Lett.*. 35. L14304.
9. Ma, S., **G. A. Prieto**, and G. C. Beroza, (2008), *Testing community velocity models of southern California using ambient seismic noise*, *Bull. Seismol. Soc. Am.*, 98, (6), pp. 2694-2714.
8. **Prieto, G. A.**, R. L. Parker, D. J. Thomson, F. L. Vernon. R. L. Graham. (2007), *Reducing the bias of multitaper spectrum estimates*. *Geophys. J. Int.*, 171, 1269-1281.
7. **Prieto, G. A.**, D. J. Thomson, F. L. Vernon, P. M. Shearer and R. L. Parker. (2007), *Confidence intervals of earthquake source parameters*. *Geophys. J. Int.*, 168, 1227-1234.
6. **Prieto, G. A.**, R. L. Parker, F. L. Vernon, P. M. Shearer and D.J. Thomson. (2006), *Uncertainties in earthquake source spectrum estimation using empirical*

Green functions. *Earthquakes: Radiated Energy and the Physics of Faulting*. Abercrombie, McGarr, Kanamori, and di Toro eds. *AGU Geophys. Monograph* 170. pp 69-74.

5. Shearer, P. M., **G. A. Prieto**, E. Hauksson. (2006), *Comprehensive Analysis of Earthquake Source Spectra in Southern California*. *J. Geophys. Res.* 111, B06303.
4. **Prieto, G. A.**, P. M. Shearer, F. L. Vernon, and D. Kilb. (2004), *Earthquake source scaling and self-similarity estimation from stacking P and S spectra*. *J. Geophys. Res.*, 109, B08310.

Conference Papers

3. Chao, K., **G.A. Prieto**, J. Du (2016), Source parameters of repeating microseismic events during hydraulic fracturing operations, Annual Meeting of the Society of Petroleum Engineers (SPE), Dubai, UAE, 26-28, Sept.
2. Fincke, J.R., M. Feigin, **G.A. Prieto**, X. Zhang, B. Anthony (2016), Towards ultrasound travel time tomography for quantifying human limb geometry and material properties. In *Medical Imaging 2016: Ultrasonic Imaging and Tomography* Ed. Neb Duric, Brecht Heyde, Proceedings of SPIE Vol. 9790 (SPIE, Bellingham, WA, 2016). 90901S.
1. **Prieto, G. A.**, F. L. Vernon, T. G. Masters, and D. J. Thomson. (2005), *Multitaper Wigner-Ville Spectrum for Detecting Dispersive Signals from Earthquake Records*. Proceedings of the Thirty-Ninth Asilomar Conference on Signals, Systems, and Computers, pp 938-941, Pacific Grove, CA.

RESEARCH INTERESTS

Earthquake source physics. Regional seismic tomography and Q-tomography based on the ambient seismic field. Wave propagation and Scattering. Structure of subduction zones and intermediate-depth earthquakes. Continuous monitoring of Earth and engineering structures. Observational seismology based on large data sets. Time series analysis and advanced signal processing tools. Inverse theory.

TEACHING EXPERIENCE

At Universidad Nacional de Colombia

2018910	Graduate Seminar, 2019-2020
2015499	Fundamentals of Geophysics, 2017-2021
2015522	Geoinformatics, 2017-2020
2018991	Research Seminar II, 2017-2021
2018995	Special Topics of Geology, 2017
2018905	Seismology 2018
<i>Previous Teaching</i>	
2016	Mechanics of Faulting and Earthquakes (MIT)
2014	Essentials of Geophysics (MIT)
2015-2016	Introduction to Seismology (MIT)
2013	Geophysics, <i>Universidad de los Andes</i>
2011	Seismology, <i>Universidad de los Andes</i>
2009-2010	Computational Physics, <i>Universidad de los Andes</i>
2009-2011	Natural Disasters, <i>Universidad de los Andes</i>
2010-2011	Physics for Future Presidents, <i>Universidad de los Andes</i>
2008	Inverse Theory, Guest Lecturer, <i>Stanford University</i>
2005-2006	Natural Disasters, Teaching Assistant, <i>UC San Diego</i>

FUNDING

2021-2023	ECOS-Nord , <i>Proyecto de colaboración franco-colombiana para la evaluación del riesgo sísmico.</i>
2019-2021	Colciencias - ANH , <i>MEGIA - Modelo multiEscala de Gestión Integral del Agua.</i>
2017-2019	NSF-PLR 1643761 , <i>Collaborative Research: Monitoring Antarctic Ice Sheet Changes with Ambient Seismic Noise Methods.</i>
2016-2017	Colciencias 51658 , <i>Estudio de la física de los terremotos profundos en el territorio Colombiano y los procesos que los generan.</i>
2014-2017	TOTAL-MIT , <i>Multi-scale Shale Gas Collaboratory MSGC.</i> PI Brad Hager; Co-PI: Prieto
2015-2017	NSF-EAR 1521534 , <i>Robust earthquake source scaling and seismic efficiency for intermediate-depth and deep earthquakes at global and regional scales.</i>
2014-2016	NSF-EAR 1415907 , <i>High-resolution attenuation structure from the ambient seismic field.</i>
2013-2014	MITs Charles E. Reed Faculty Initiatives Fund , <i>Constraining the Mechanics of Earthquake Rupture Deep inside the Earth using a Natural Laboratory.</i>

INVITED VISITS/TALKS

-
- 2021/11 National Institute for Earth Physics (NIEP), Rumania + Kyoto University Seminar
- 2021/10 Geophysics Seminar - Georgia tech
- 2021/10 EAS Departmental Seminar - Georgia Tech
- 2020/11 GPS Division Seminar - Caltech
- 2020/09 Geotopics - Marine Geosciences Department - RSMAS - University of Miami
- 2020/07 What seismology can tell us (or maybe not) about the tectonics in the Southern Caribbean, AAPG Virtual Research Symposium
- 2020/07 Restricciones sismológicas sobre los posibles mecanismos de terremotos de profundidad intermedia, GeoCharlaT3
- 2020/05 Subduction zones and seismology, Virtual Seminar, Sociedad Colombiana de Geología
- 2020/04 Environmental Seismology, Virtual Seminar, Sociedad Colombiana de Geología
- 2019/11 Geology Seminar, Universidad Area Andina, Colombia
- 2019/11 Capítulo Eje Cafetero, SCG, Manizales, Colombia
- 2019/06 Carnegie Institution for Science, Washington, D.C.
- 2019/04 UPTC Seminar, Sogamoso, Colombia
- 2018/11 Workshop: Intermediate and Deep Earthquakes: Observation and modeling. *Coolege de France Seismological constraints on the mechanism(s) responsible for intermediate-depth earthquakes*
- 2017/12 AGU. *Methods and recent results on earthquake source parameters scaling, diversity and physical interpretations*
- 2017/11 Workshop: Frontiers in studies of earthquakes and faults. *Diversity in Earthquake Sources: Methods and Characterization of Temporal and Spatial behavior in diverse tectonic settings*
- 2017/07 Total E&P Research and Technology, Houston, TX, USA
- 2017/03 Geology Seminar, Universidad EAFIT, Colombia
- 2017/02 Faculty Seminar, Universidad del Rosario, Colombia
- 2015/09 Earth Science Seminar, Rice University
- 2014/12 AGU. *Regional and Teleseismic Constraints on Intermediate-Depth and Deep focus Earthquake Mechanisms.*
- 2014/12 Earth, Environmental and Planetary Science Colloquia, Brown University

STUDENT ADVICING

POSTDOCTORAL SCHOLARS

Chen Gu	2017 - 2019
William Frank	2015 - 2017
Aurélien Mordret	2014 - 2018
Kevin Chao	2014 - 2016
Piero Poli	2013 - 2017

GRADUATE STUDENTS

2018 -	Ismael Moyano PhD.; Expected 2021
2019 -	Emmanuel Castillo M. Sc. Geophysics; Expected 2022
2018 -	Jully Vargas M. Sc. Geophysics; Expected 2021
2021 -	Nathalia Jaimes M. Sc. Geophysics; Continuous monitoring of a civil structure: Crisanto Luque Building case, in Bogota, Colombia
2020 -	Daniel Martinez M. Sc. Geology; Implementación del método de relocalización SSST para Colombia: Aplicación para el occidente colombiano
2019	Manuel Flórez. PhD.; A global study of double seismic zones and its implications for the mechanism of intermediate-depth earthquakes
2012	Manuel Flórez. M. Sc.; Precise location of intermediate-depth earthquakes.
2011	Gabriel López. M. Sc.; Seismic source scaling in the Bucaramanga Nest

UNDERGRADUATE STUDENTS

2020	Sofia Cubillos. B. Sc. Geology Expected 2021
2019	Albert Aguilar. B.S. Geology
2011	María del Mar Yepes. B.S.; Temporal behavior of intermediate depth earthquakes in the Bucaramanga Nest.
2011	Sergio Rodríguez. B.S.; Optimizing time-frequency spectra using bayesian methods.
2009	Gabriel López. B.s.; Non-stationary spectral estimation for improving the resolution of surface wave dispersion curves (in Spanish).

PROFESSIONAL SOCIETIES

American Geophysical Union (AGU)
European Geosciences Union (EGU)
Seismological Society of America (SSA)
European Association of Geoscientists and Engineers (EAGE)

ACADEMIC SERVICE

SERVICE AT UNAL

Academic Coordinator - Department of Geosciences 2019 - 2020

Coordinator MSc. Geophysics 2018 - 2019

Department Advising Committee, 2017- today

Graduate Admissions Committee, 2017

SERVICE AT MIT

EAPS Solid Earth Search Committee, 2013-2014, 2014-2015, 2015-2016

EXTERNAL SERVICE

IRIS Education Public Outreach Standing Committee 2022-2023

Editor *Geophysical Research Letters* 2020-Present

Canvassing Committee *AGU Seismology Section* 2020-2022

Fall Meeting Program Committee *American Geophysical Union - Fall Meeting 2019-2020*

Colombian Geological Society SCG President 2019-2020

Colombian Geological Society SCG Vice-President 2017-2018

Editor *Earth Sciences Research Journal* 2017-2019

Associate Editor *J. Geophysical Research* (Solid Earth) 2013-2020

Kei Aki Award Committee Member *AGU Seismology Section* 2016-2017

Scientific Committee *Joint SEG/AGU Summer Research Workshop 2014: Advances in Active+Passive Full Wavefield Seismic Imaging*

Scientific Committee *ECGS Workshop '12: Earthquake Source Physics on various scales*

Peer Reviewer: *Science*, *Science Advances*, *Nature*, *Nature Geoscience*, *National Science Foundation*, *J. Geophysical Research*, *Bull. Seism. Soc. Am.*, *Geophys. J. Int.*, *Seismological Res. Let.*



GERMÁN A. PRIETO

POSTERS AND PRESENTATIONS

More than 120 posters and talks at AGU, SSA, EGU and other international meetings.