

# Jorge A. Castillo Castellanos

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## Education

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<b>California Institute of Technology</b>	California, United States
Ph.D. in Geophysics	2015-Present
M.S. in Geophysics	2015-2018
<b>Universidad Nacional Autonoma de Mexico</b>	Mexico City, Mexico
M.S. in Geophysics with Honors	2013-2015
<b>Universidad Autonoma de Nuevo Leon</b>	Nuevo Leon, Mexico
B.S. in Geophysics	2008-2013

## Research Interests

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**Earth structure and mantle dynamics:** Elastic wavefield imaging, tomographic reconstructions, seismic interferometry, full-waveform inversion, dense array seismology, seismic monitoring and tectonics.

**Computational geophysics:** Numerical modeling of wave propagation in complicated media and ground motion prediction.

## Honors and Awards

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<i>Francisco Medina</i> Award (outstanding master's thesis), Mexican Geophysical Union	2015
<i>Alfonso Caso</i> Medal (most distinguished master's student), Universidad Nacional Autonoma de Mexico	2016
Outstanding Student Presentation Award, American Geophysical Union	2017
<i>Richard H. Jahns</i> Teaching Award (outstanding teaching assistant), California Institute of Technology	2019

## Fellowships

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Merit-Based Scholarship: Universidad Autonoma de Nuevo Leon	2009-2013
Fulbright Scholarship: California Institute of Technology	2015-2018

## Experience

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### Teaching

Observation, Processing and Interpretation of Seismic Signals. Teaching assistant at UNAM	2014
Continuum Mechanics. Teaching assistant at UNAM	2014
Introduction to Geophysics. Teaching assistant at Caltech	2016
Signal Processing and Seismic Imaging. Teaching assistant at Caltech	2017
Data Analysis. Teaching assistant at Caltech	2018
Introduction to Seismology. Teaching assistant at Caltech	2019

### Internships

PEMEX Exploracion y Produccion. Theory and practice in seismic acquisition and data interpretation	2010
CGG, Villahermosa Seismic Data Processing Center. Theory and practice in PreSDM velocity models	2011
PGS, Villahermosa Seismic Data Processing Center. Theory and practice in seismic data interpretation	2011

### Field Work

Seismometer deployment for the National Seismological Service broadband network  
Urban geophone deployment for Los Angeles basin experiment  
Seismometer retrieval for the Wallowa seismic array

### Mentoring

Mackenzie Wooten, Caltech SURF (Physics). Poster presentation at 2018 SCEC Annual Meeting

## Technical Skills

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**Programming languages:** Python, Matlab and UNIX shell scripting.

**Other tools:** Generic Mapping Tools (GMT), Seismic Analysis Code (SAC), LaTeX, Adobe Illustrator, Photoshop, Indesign and AfterEffects, MS Office.

## Presentations

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1. **Castellanos, J.**, and Pérez-Campos, X. An anisotropy characterization scheme using receiver functions (talk), UGM Annual Meeting 2013, Puerto Vallarta, JA.
2. **Castellanos, J.**, and Pérez-Campos, X. Crust and mantle anisotropy variations along the MASE profile using receiver functions (poster), UGM Annual Meeting 2014, Puerto Vallarta, JA.
3. **Castellanos, J.**, Pérez-Campos, X., Husker, A., and Valenzuela, R. Crust and mantle anisotropy variations from the coast to inland in central and southern Mexico (poster), AGU Fall Meeting 2014, San Francisco, CA.
4. **Castellanos, J.**, Clayton, R., Spica, Z., Pérez-Campos, and Rodriguez M. Transition of the slab geometry at the eastern end of the Trans-Mexican Volcanic Belt from ambient seismic Noise (poster), AGU Fall Meeting 2016, San Francisco, CA.
5. **Castellanos, J.**, Kohler, M., Massari, A., and Clayton, R. Complex Rayleigh wave effects on the seismic demands of mid-rise buildings (poster), SCEC Annual Meeting 2017, Palm Springs, CA.
6. **Castellanos, J.**, Clayton, R., and Pérez-Campos. Imaging the eastern Trans-Mexican Volcanic Belt and the Veracruz basin with ambient seismic noise (poster), AGU Fall Meeting 2017, San Francisco, CA.
7. **Castellanos, J.**, Zhan, Z., Wu, W. Localizing submarine earthquakes by listening to the water reverberations (e-lightning talk), AGU Fall Meeting 2017, San Francisco, CA.
8. **Castellanos, J.**, Clayton, R., and Pérez-Campos. Imaging the eastern Trans-Mexican Volcanic Belt and the Veracruz basin with ambient seismic noise: Evidence for a slab tear (talk), UGM Annual Meeting 2018, Puerto Vallarta, JA.
9. **Castellanos, J.**, and Clayton, R. First-arrival traveltimes tomography at Long Beach California using ambient seismic noise and the adjoint-state method (poster), SCEC Annual Meeting 2018, Palm Springs, CA.
10. **Castellanos, J.**, Clayton, R., Juarez, A. First-arrival traveltimes tomography at Long Beach California using ambient seismic noise and the adjoint-state method (talk), AGU Fall Meeting 2018, San Francisco, CA.
11. (presenter) Zhan, Z., **Castellanos, J.**, Wu, W. Absolute location of ridge transform fault earthquakes from waveform modeling of water reverberations (talk), AGU Fall Meeting 2018, San Francisco, CA.
12. (invited) **Castellanos, J.**, Clayton, R., Kim, Y., and Humphreys, E. Imaging the crust and upper mantle beneath Columbia River Flood Basalts with ambient seismic noise, regional and teleseismic events and converted phases (talk), SSA Annual Meeting 2019, Seattle, WA.
13. **Castellanos, J.**, and Clayton, R. Seismic imaging of southern California with scattered waves (poster), SCEC Annual meeting 2019, Palm Springs, CA.
14. **Castellanos, J.**, Perry-Houts, J., Clayton, R., and Humphreys, E. Crustal anisotropy as a window to mantle dynamics: A case study on the western United States (talk), AGU Fall Meeting 2019, San Francisco, CA.

## Publications

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1. **Castellanos, J.**, Pérez-Campos, X., Valenzuela, R., Husker, A., and Ferrari, L. (2017). Crust and upper-mantle seismic anisotropy variations from the coast to inland in central and southern Mexico. *Geophysical Journal International*, 210(1), 360-374.
2. Yue, H., **Castellanos, J.**, Yu, C., Meng, L., and Zhan, Z. (2017). Localized water reverberation phases and its impact on back-projection images. *Geophysical Research Letters*. 44(19), 9573-9580.
3. **Castellanos, J.**, Clayton, R., and Pérez-Campos, X. (2018). Imaging the eastern Trans-Mexican Volcanic Belt with ambient seismic noise: evidence for a slab tear. *Journal of Geophysical Research*. 123, 77417759.
4. Carciumaru, D., Ortega, R., **Castellanos, J.**, and Huesca-Perez, E. (2020). Crustal characteristics in the Subduction zone of Mexico: implication of the tectonostratigraphic terranes on slab tearing. *Seismological Research Letters*
5. **Castellanos, J.**, Zhan, Z., and Wu W. (2020). Absolute centroid location of submarine earthquakes from 3D waveform modeling of water reverberations. *Journal of Geophysical Research*.
6. **Castellanos, J.**, Clayton, R., and Juarez, A. (2020). Using a Time-based Subarray Method to Extract and Invert Noise-derived Body Waves at Long Beach, California. *Journal of Geophysical Research*.
7. Husker, A., **Castellanos, J.**, Pérez-Campos, X., and Frank, W. (in review). Anisotropy in the subducted oceanic crust and the overlying continental crust coincides with a double tectonic tremor zone in the flat portion of the Mexican subduction zone. *Journal of Geophysical Research*.
8. **Castellanos, J.**, Perry-Houts, J., Clayton, R., Kim, Y., Stanciu C. A., Niday, B., and Humphreys, E. (in review). Seismic anisotropy reveals crustal flow driven by mantle vertical loading in the Pacific NW. *Science Advances*.

## Languages

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Spanish: Native language

English: Fluent

## References

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**Xyoli Perez-Campos** (M.S. Thesis advisor)

Professor of Geophysics at the Universidad Nacional Autonoma de Mexico, xyoli@geofisica.unam.mx

**Robert W. Clayton** (Ph.D. Thesis advisor)

Professor of Geophysics at the California Institute of Technology, clay@gps.caltech.edu

**Zhongwen Zhan** (Ph.D. Thesis co-advisor)

Assistant Professor of Geophysics at the California Institute of Technology, zwzhan@gps.caltech.edu