

LEONCIO EZEQUIEL CABRERA CASTRO

Geomatic engineer (geodesy)
MSC. In geophysics (seismology)
PHD student earth sciences (seismology)

177 Avenue Ambroise Croizat, St. Martin D'Herès, France
lcabrera@128hz.cl – Leoncio.cabrera@univ-grenoble-alpes.fr
+33 6 47 78 25 62 | (+56)(9) 6309-7398



Education

2019-Today

PhD Earth Sciences (Seismology). Université Grenoble Alpes, France.

2017 - 2019

Master of Science, Geophysics (Seismology). University of Chile, Chile. (Highest Distinction). Thesis title: "Intermediate-Depth Intraplate Earthquakes in the Double Seismic Zone in the Northern of Chile". Thesis Director: Dr. Sergio Ruiz.

2011 - 2015

Geomatic Engineering (Geodesy). University of Concepción, Chile. (Highest Distinction). Thesis Title: "Estimation of Vertical Deformations in the Chilean Coast from Satellite Altimetry and Tide Gauge Records". Thesis Director: Dr. Henry Montecino.

Mobility Activities

March-April 2019

Internship at the Institut des Sciences de la Terre (ISTERRE) of Université Grenoble Alpes, France. I worked with Dr. Piero Poli implementing "Template Matching" to detect earthquakes (aftershocks and foreshocks) in the north of Chile, and I also showed my MSc. Thesis results to the Waves and Structures team. I chose ISTERRE in the UGA for its prestige and variety of researchers.

December 2018

American Geophysical Union (AGU) Fall Meeting, Washington D.C., USA. I chose AGU because it's the most important geophysics event in the world. I showed some results about Intermediate depth intraplate earthquakes with the article "Dynamic Rupture Analysis of Two Northern Chile Earthquakes Mw 6.3 Located in the Double Seismic Zone in the North of Chile".

Publications

Cabrera, L., Ruiz, S., Poli, P. and Frank, W. B. (2021). Tracking the spatio-temporal evolution of foreshocks preceding the Mw 6.3 2009 L'Aquila Earthquake. *Journal of Geophysical Research: Solid Earth*, Under Review.

Cabrera, L., Ruiz, S., Poli, P., Contreras-Reyes, E., Osses, A., & Mancini, R. (2021). Northern Chile intermediate-depth earthquakes controlled by plate hydration. *Geophysical Journal International*, 226(1), 78-90.

Ruiz, S., Ammirati, J. B., Leyton, F., **Cabrera, L.**, Potin, B., & Madariaga, R. (2019). The January 2019 (M w 6.7) Coquimbo Earthquake: Insights from a Seismic Sequence within the Nazca Plate. *Seismological Research Letters*, 90(5), 1836-1843.

Montecino, H. D., Ferreira, V. G., Cuevas, A., **Cabrera, L. C.**, Báez, J. C. S., & De Freitas, S. R. (2017). Vertical deformation and sea level changes in the coast of Chile by satellite altimetry and tide gauges. *International Journal of Remote Sensing*, 38(24), 7551-7565.

Professional Experience in Research Projects

August 2019 - Today

Researcher: "Estimation of kinematic and dynamic parameters of intraplate earthquakes in northern Chile". Seismic Risk Program (PRS), Universidad de Chile.

June, August 2019

Field Geophysicist: "Atacama Region Seismic Project", University of Chile. Deployment of broadband seismic stations along Atacama Region, north of Chile.

June 2018 - Today

Researcher: "GNSS/LPS vertical deflection approach as alternative to evaluate Global Geopotential Models". Research project between Institute DuocUC and University of Concepción. Deployment and processing of GNSS and Local Positioning System observations.

January 2018

Technical Assistant: "Relation among Small, Large and Mega-earthquakes in Central Chile", University of Chile, FONDECYT 1170430. Research about different earthquakes occurred during the last years in the north of Chile.

July - December 2017

Principal Investigator: "Generation of early warning and planning tools for green areas through the use of multi-spectral images and opensource software". Project awarded in the First Applied Research Contest of the Department of Innovation and Applied Research (DIIA) of Institute DuocUC. Applied research project where we developed a new methodology and product to use in hazard mitigation.

December 2014/
January 2015

Research Assistant. Project: "Determination of straight and normal baseline points in the Chilean Antarctic Zone". Universidad de Concepción. Digital image processing (optical and radar) and Digital Elevation Models (DEMs) analysis used to delimit the border of Chile.

Professional Experience with Industry



August 2016 /
February 2017

Geomatic Engineer. Project: "Latitud Sur: Cartography 1:25.000 for National Defense". Instituto Geográfico Militar (IGM).
Processing of cartographic data using digital images, geographic information system (GIS) and geodetic observations.

January 2016 /
June 2016,

Geomatic Engineer. Project: "Road building, Cruce J-830 (Puente Llico) – Cruce J-820 (Las Juntas), Sector Merhueves". Padecasa Agency in Chile S.A.
GNSS data processing, geodetic networks deployment, land surveying and Design.

Professional Experience Teaching

2018 - 2019

Auxiliary Professor. University of Chile:
Courses for Department of Geophysics: Seismology (GF4001), Theoretical Seismology I (GF731) and Mathematics Applied to Geosciences (GF4005).

2016 - 2018

Assistant Professor. Institute DuocUC:
Courses for Civil Engineering School: Geodesy, GNSS, Land Surveying, Computer Science and Civil Engineering. I also worked as Practice Supervisor for Civil Engineers and as Adviser for Applied Mathematical School.

2012-2015

Auxiliary Professor. University of Concepción.
Courses for Departments of Geomatic and Geodesy and Basic Sciences: Geodesy I and II, Calculus I and II.

Professional Experience Teaching

Mancini, R., Contreras-Reyes, E., Osses, A., **Cabrera, L.**, and Ruiz, S. (2019). 2-D Thermal Model of the Chilean Subduction Zone, using Finite Elements Method. In Inverse Problems Methods, Applications and Synergies 2019, Santiago, Chile.

Cabrera, L., Ruiz, S., Otarola, C., and Madariaga, R. (2018). Dynamic Rupture Analysis of Two Northern Chile Earthquakes Mw 6.3 Located in the Double Seismic Zone in the North of Chile. In American Geophysical Union, Fall Meeting Abstracts, Washington D.C., U.S.A.

Cabrera, L., Ruiz, S., Otarola, C., Mancini, R., Contreras-Resyes, E. (2018). Análisis de la ruptura sísmica de terremotos de profundidad intermedia Mw ~6.3 en el norte de Chile. En XV Congreso Geológico Chileno, Concepción, Chile, 15.

Cabrera, L., Vargas, C., Alarcón, L. (2018). Generation of early warning and planning tools for green areas through the use of multispectral images and opensource software. In IV Foro Nacional de Percepción Remota y SIG, Santiago, Chile, 4.

Montecino, H., **Cabrera, L.,** Baez, J.C., de Freitas, S., Staub, G. (2016, Mayo). Vertical Deformation of the Coast of Chile by Satellite Altimetry and Tide Gauge Observations. In European Space Agency Living Planet Symposium, Prague, Czech Republic, 5.

Montecino, H., **Cabrera, L.,** Baez, J.C., de Freitas, S., Staub, G. (2015, Octubre). Deformación vertical de la costa Chilena por altimetría satelital y registros mareográficos. In III Foro Nacional de Percepción Remota y SIG, Concepción, Chile, 3.

Honors and Awards

- 2019 | Scholarship Universidad de Chile for international short internships.
- 2018 | CONICYT (National Research Council) Scholarship for National Master of Science.
- 2017 | "Valores DuocUC" award, in category Teaching Quality.
- 2016 | Best Innovation Project award in course "New Geospatial Leaderships", GEOCOM, Santiago, Chile.
- 2015 | University of Concepción Award (highest distinction for undergraduate students).

Scientific Divuligation

- September 2019 | Evaluator of school scientific research projects. EXPLORA Program (CONICYT divulgation), Santiago Metropolitan Region.
- April 2019 | Talks for Primary Schools about Earthquakes, Seismology and Hazard Mitigation.
- November 2018 | Monitor for Expo-Earthquakes. EXPLORA Program (CONICYT divulgation) during "Engineer and Sciences Festival" at Universidad de Chile.3



- Matlab, Python, C, Bash, PHP, HTML, MySQL, LATEX.
- SAC, SEISAN, Generic Mapping Tools.