

Alberto M. López Venegas

#723 Qtas de Santa María, Mayagüez, PR
(847) 217-3828 - alberto.lopez3@upr.edu

- RESEARCH INTERESTS** Dynamics of Plate Tectonics and crustal deformations at plate boundaries and related seismic and tsunami hazard mitigation. Slow earthquake physics and resulting tsunami genesis
- ACADEMIC BACKGROUND** *U.S. Geological Survey Mendenhall Postdoctoral Fellow* Oct 2006 - Oct 2008
Quantitative Evaluation of Tsunami Hazards to the Caribbean and Atlantic Basins
Advisor: Uri ten Brink
- Ph.D. in Geophysics* Sep 2000 - Sep 2006
Department of Geological Sciences
Northwestern University
Evanston, Illinois
Tectonic Studies of the Caribbean: Pure GPS Euler Vectors to Test for Rigidity and for the Existence of a Northern Lesser Antilles Forearc Block; Constraints for Tsunami Risk from Reassessment of the April 1, 1946 Alaska-Aleutians and August 4, 1946 Hispaniola Events.
Degree obtained in June 2006
Advisors: Seth Stein and Emile A. Okal
- M.S. in Geology* Aug 1997 - Jul 2000
Department of Geology
University of Puerto Rico - Mayagüez
Mayagüez, Puerto Rico
Microplate Behavior in the Northeastern Caribbean as Constrained by GPS Geodesy
Degree obtained in July 2000
Advisors: Pamela Jansma and Glen Mattioli
- B.S. in Geology* Aug 1991 - Dec 1996
Department of Geology, University of Puerto Rico - Mayagüez
Degree obtained in May 1997
- PROFESSIONAL EXPERIENCE** *Assistant Professor* Aug 2009 - Present
Department of Geology
University of Puerto Rico - Mayagüez Campus
Mayagüez, Puerto Rico
- Research Coordinator*
Puerto Rico Seismic Network
Department of Geology
University of Puerto Rico - Mayagüez Campus
Mayagüez, Puerto Rico
- Research Associate* Feb 2009 - Jul 2009
Puerto Rico Seismic Network
Department of Geology, University of Puerto Rico - Mayagüez Campus
Mayagüez, Puerto Rico
- Chief Data Analyst
 - Supervised computer equipment performing automatic determination of hypocenters
 - Supervised staff performing earthquake locations
 - Developed various earthquake alarm programs
 - In charge of developing research projects using PRSN seismic, geodetic and tide data
- Mendenhall Postdoctoral Fellow* Oct 2006 - Oct 2008
Woods Hole Science Center - U.S. Geological Survey

Woods Hole, MA

Research Advisor: Uri ten Brink

- Quantitative evaluation of tsunami hazards to the Caribbean and the Atlantic basins through analysis of seismic refraction data and highresolution multibeam bathymetry data
- Developed a model for the October 11, 1918 Mona Passage tsunami using COULWAVE tsunami modeling package
- Deployment, recovery, and data processing and analysis of five ocean bottom seismometers to monitor and study seismic swarms in Northeastern Puerto Rico Virgin Islands
- Installation, maintenance, and data analysis of continuous operating global positioning system (GPS) reference station in Anegada, BVI and St. Maarten, NA to study plate motions in the Northern Lesser Antilles
- Participated in the collection of 60 offshore multichannel seismic lines aboard LUMCON R/V Pelican around Puerto Rico Virgin Islands
- Identification of active faults in the Anegada Passage using multichannel seismic reflection/refraction profiles

Research Assistant

Sep 2000 - Aug 2006

Department of Geological Sciences

Northwestern University

Evanston, Illinois

Research Advisors: Seth Stein & Emile Okal

- Study dynamics of plate tectonics and crustal deformation in the Caribbean area
- Computed a new Caribbean Euler vectors using GPS geodesy to test for Caribbean plate rigidity
- Use of GPS geodesy to postulate the existence of a Northern Lesser Antilles forearc block
- Seismic re-assessment of the April 1, 1946 Alaska-Aleutians and August 4, 1946 Hispaniola earthquakes
- Seismic Moment corrections using the variable-period Mantle Magnitude
- Study of tsunami genesis by slow earthquakes
- Tsunami modeling of the August 4, 1946 Hispaniola earthquake, and other potential tsunamigenic sources in the Caribbean

Summer Intern

Summer 2005

EarthScope Education & Outreach Program

Washington D.C

Supervisor: Dr. John DeLaughter

- In charge of promoting EarthScope's objective of studying the North American Continent through seismic monitoring, GPS geodesy, and deep-drilling at the San Andreas Fault by working at the EarthScope's Education & Outreach division
- In charge of website development in English and Spanish
- Development of website visualizations
- Education & Outreach hand-outs and brochures Spanish translations.

Summer Intern

Summer 2004

IRIS/PASSCAL

Socorro, New Mexico

Supervisor: Dr. Noel Barstow

- Seismic instrumentation testing and deployment
- Software development for data collection and processing

Research Assistant

Jan 1998 - May 2000

Department of Geology, University of Puerto Rico - Mayagüez

Mayagüez, Puerto Rico

Research Advisors: Pamela Jansma and Glen Mattioli

Funded by NASA and NSF

- Analyzed microplate behavior in the Northeastern Caribbean using GPS geodesy
- GPS equipment deployment, data collection and analysis for the Caribbean-North America Plate Experiment (CANAPE)
- GPS equipment deployment, data collection and analysis of Montserrat Volcano dome growth and deformation
- GPS equipment deployment, data collection and analysis of volcano growth and deformation in Nicaragua

Summer Intern Summer 1995
Virginia Institute of Marine Sciences (VIMS)
Gloucester Point, Virginia
Research Advisor: Dr. S. Kuehl

- Use of ^7Be to determine the turbidity maximum migration in the Pamunkey River in Chesapeake Bay, VA

Seismic Data Analyst Aug 1992 - May 1993
Puerto Rico Seismic Network
Mayagüez, Puerto Rico

**ACADEMIC
EXPERIENCE**

Assistant Professor (tenure-track) Aug 2011 - Present
Department of Geology
University of Puerto Rico - Mayagüez Campus
Mayagüez, Puerto Rico

Assistant Professor (non-tenure track) Feb 2009 - May 2011
Department of Geology
University of Puerto Rico - Mayagüez Campus
Mayagüez, Puerto Rico

- Lecturing classes, preparation of homeworks and exams, grading, and held office hours for the course of Introduction to Physical Geology
- Advising and evaluation of students registered in the Advanced Undergraduate Seminar

Teaching Assistant Sep 2000 - Jun 2006
Department of Geological Sciences
Northwestern University
Evanston, Illinois

- Lead discussion sections, graded homeworks and held office hours for the courses of Physics of the Earth and Surface Processes

Teaching Assistant Jan 1998 - May 2000
Department of Geology
University of Puerto Rico - Mayagüez Campus
Mayagüez, Puerto Rico

- Lead discussion sections, graded homeworks and held office hours for the courses of Structural Geology and Petrology of Igneous and Metamorphic Rocks

Undergraduate Research Jan 1995 - May 1995
Department of Geology
University of Puerto Rico - Mayagüez Campus
Mayagüez, Puerto Rico Research Advisor: Dr. Lewis Abrams

- Use of gravity meter to trace a fault zone in Añasco, Puerto Rico

Undergraduate Research Dec 1994 - Jan 1995
Department of Geology
University of Puerto Rico - Mayagüez Campus
Mayagüez, Puerto Rico

- Conducted seismic refraction experiments

- Performed gravity and magnetic measurements at the Lajas Valley, Puerto Rico
- Project sponsored by LeHigh University and Guilford College

Undergraduate Research Aug 1994 - Dec 1994
 Department of Geology
 University of Puerto Rico - Mayagüez Campus
 Mayagüez, Puerto Rico
 Research Advisor: Dr. Lewis Abrams

- Application of Ground Penetrating Radar (GPR) in different settings of Southwest Puerto Rico

Undergraduate Research Summer 1994
 Department of Geology
 University of Puerto Rico - Mayagüez Campus
 Mayagüez, Puerto Rico

- Geologic mapping of Rincón and Sierra Bermeja, Cabo Rojo, Puerto Rico

Undergraduate Research Aug 1993 - Dec 1993
 Department of Geology
 University of Puerto Rico - Mayagüez Campus
 Mayagüez, Puerto Rico

- Analysis of sediments in the Guajataka River in San Sebastián, Puerto Rico

FELLOWSHIPS *USGS Mendenhall Postdoctoral Fellowship* 2006-2008
Alliances for Graduate Education and the Professoriate (AGEP) 2003-2004

SCHOLARSHIPS *American Geological Institute - Minority Geoscience student Scholarship* 2003-2005
Hispanic Scholarship Fund / Society of Hispanic Professional Engineers 2003-2004 *Illinois*
Minority Graduate Incentive Program (IMGIP) 2000-2003

PUBLICATIONS

- “Plate interactions in the NE Caribbean subduction zone from continuous GPS observations” (2012), ten Brink, U. S., **López-Venegas, A.M.**, *Geophys. Res. Lett.*, v.39, doi10.1029/2012GL051485, 2012
- “Geomorphic and stratigraphic evidence for an unusual tsunami or storm a few centuries ago at Anegada, British Virgin Islands” (2010), Atwater, B.F., ten Brink, U.S., Buckley, M., Halley, R.S., Jaffe, B.E., **López-Venegas, Alberto M.**, Reinhardt, E.G., Tuttle, M.P., Watt, S., and Wei, Y., *Natural Hazards*, doi:10.1007/s11069-010-9622-6.
- “Submarine landslide as the source for the October 11, 1918 Mona Passage tsunami: Observations and modeling” (2008), **López-Venegas, A. M.**, ten Brink, U.S., and Geist, E., *Marine Geology*, v.254, doi:10.1016/j.margeo.2008.05.001.
- “Is There a Northern Lesser Antilles Forearc Block?” (2006), **López, A.**, Stein, S., Dixon, T., Sella, G., Calais, E., Jansma, P., Weber, J., and LaFemina, P., *Geophys. Res. Lett.*, v.33, doi:10.1029/2005GL025293.
- “A Seismological Reassessment of the Source of the 1946 Aleutian ‘Tsunami’ Earthquake” (2006), **López, A.** and Okal, E.A., *Geophys. J. Int.*, v.165, pp. 835-850, doi:10.1111/j.1365-246X.2006.02899.x.
- “Neotectonics of Puerto Rico and the Virgin Islands, Northeastern Caribbean”, (2000), Jansma, P.E., Mattioli, G.S., **López, A.**, DeMets, C., Dixon, T., Mann, P., and Calais, E., *Tectonics*, v.19, no.6, pp. 1026-1037.

POSTER PRESENTATIONS

- Huérfano, V., López, A.M. “Multi-operational monitoring in the Caribbean”, 2012 IRIS Worskshop, Boise, Idaho, 12-15, June 2012.
- López, A.M., Jansma, P.E., Mattioli, G.S., James, S.A., Ihemedu, D., Quintana, S.M., and Salazar, J.S. (2011), “Constraining Puerto Rico - Virgin Islands microplate internal deformation with two decades of GPS observations”, Abstract T23D-2450 presented at 2011 Fall Meeting, AGU, San Francisco, Calif., 5-9 Dec.

- López, A., J. Pulliam, U. ten Brink, V. Huérfano, H. Mintz and G. Mattei (2010), “Accuracy and sensitivity of earthquake locations offshore Puerto Rico”. Abstract S21B-2032 Presented at 2010 Fall Meeting, AGU, San Francisco, Calif., 13-17 Dec.
- Zhang, Q., Lin, G., López, A. M., Huérfano, V., and L. Soto-Cordero (2010), “Earthquake relocations and location error estimates in the Puerto Rico Island”. Abstract S21B-2030 Presented at 2010 Fall Meeting, AGU, San Francisco, Calif., 13-17 Dec.
- Huérfano, V., López, A. M., L. Castillo, G. Báez-Sánchez, L. Soto-Cordero, G. Lin, and Q. Zhang (2010), “Improving three dimensional velocity model for Puerto Rico - Virgin Islands for rapid earthquake re-locations”. Abstract S21B-2031 Presented at 2010 Fall Meeting, AGU, San Francisco, Calif., 13-17 Dec.
- Mintz, H. E., J. Pulliam, López-Venegas, A., U. ten Brink, V. Huérfano, and C. von Hillebrandt -Andrade (2010), “SUBDUCTION ZONE CHARACTERIZATION OF THE NORTHEAST CARIBBEAN USING INCREASED CONSTRAINTS ON FOCAL MECHANISM SOLUTIONS FROM DATA COLLECTED WITH AN OCEAN BOTTOM SEISMOGRAPH DEPLOYMENT”. Abstract S21B-2038 Presented at 2010 Fall Meeting, AGU, San Francisco, Calif., 13-17 Dec.
- López, A., J. Pulliam, H. Mintz, U. ten Brink, and V. Huérfano (2010), “Understanding the Nature of Seismic Swarms Along Curved Subduction Zones: The Case of the Northeastern Caribbean”. Abstract Presented at the 2010 Chapman Conference: “Giant Earthquakes and Their Tsunamis”, AGU, Viña del Mar, Chile, 16-20 May.
- López, A., J. Pulliam, U. ten Brink, H. Mintz and C. von Hillebrandt (2009), “Deployment of Ocean Bottom Seismometers South of the Puerto Rico Trench yields new Insights into the Behavior of Seismic Swarms”, EOS Trans. AGU, 90 (52), Fall Meeting Suppl. Abstract T23B-1902
- 2008 Joint Assembly, Ft. Lauderdale, June 2008: “Toward a Deeper Understanding of Northeastern Caribbean Tectonics with Continuously Operated GPS Sites and Ocean Bottom Seismometers”. López, A., U. ten Brink, J. Pulliam, V. Hurfano, and C. von Hillebrandt-Andrade, EOS Trans. AGU, 89 (23), Joint Assem. Suppl., Abstract G31A-06.
- 18th Caribbean Geological Conference, Santo Domingo, Dominican Republic, March 2008: “Seismic Sequences in the Sombrero Seismic Zone”. Pulliam, J., A. López, U. ten Brink, V. Huérfano, and C. von Hillebrandt-Andrade.
- Fall AGU Meeting, San Francisco, Dec. 2007: “The October 11, 1918 Mona Passage Tsunami Modeled Using New Submarine Landslide Evidence”. López, A., U. ten Brink and E. Geist., EOS Trans. AGU, 88 (52), Fall Meeting Suppl., Abstract NS11D-0802.
- Fall AGU Meeting, San Francisco, Dec. 2007: “Seismicity and Tectonics of the Northeast Caribbean from a Passive Ocean Bottom Seismograph Study”. Pulliam, J., U. ten Brink, A. López, V. Huérfano, and C. von Hillebrandt- Andrade. EOS Trans. AGU, 88 (52), Fall Meeting Suppl., Abstract S13F-05.
- Seismological Society of America Annual Meeting, March 2007: “Assessment of Energy Release and Seismic Moment of the August 4, 1946 Hispaniola Earthquake”. López, A. and E. A. Okal.
- Fall AGU Meeting, San Francisco, Dec. 2005: “Effects of a Possible Northern Lesser Antilles Forearc Block on Northeastern Caribbean Kinematics and Hazards”. Lpez, A. and S. Stein.
- 2005 Joint Assembly, New Orleans, May 2005: “GPS Constraints on the Motion of the Lesser Antilles Forearc and the Rigidity of the Caribbean Plate”. López, A., S. Stein, G. Sella, T. Dixon, E. Calais and P. Jansma.
- Joint UNAVCO/IRIS Workshop and UNAVCO, Inc. Annual Meeting, Yosemite, June 2003: “Possible Forearc Sliver at the Northern Half of the Lesser Antilles Arc”. López, A. and S. Stein.
- SEIZE 2003 Theoretical Institute, Salt Lake City, March 2003: “Possible Forearc Sliver at the Lesser Antilles”. López, A. and S. Stein.
- AGU Fall Meeting, San Francisco, Dec. 2002: “Aftershock Relocation, Rupture Area, Mantle Magnitude and Energy Estimates of the 1946 Aleutian Tsunami Earthquake and Neighboring Events”. López A. and E. A. Okal.

- IMGIP/ICEOP 6th Joint Fellows Conference, Northbrook, IL, 2002: “Western and Eastern Caribbean Plate Tectonics: Plate Interactions at Oblique Subduction Zones”. López A. and S. Stein.
- Geological Society of America Penrose Conference, Puerto Plata, Dominican Republic, 1998: “GPS Preliminary Results on Northeastern Caribbean Plate Boundary Zone”. López A., P. Jansma, E. Calais, C. DeMets, P. Mann, T. Dixon and G. Mattioli.
- AGU Spring Meeting, Boston, 1999: “Microplate Behavior in the Northern Caribbean Plate Boundary Zone as Constrained by GPS Geodesy”. López A., P. Jansma, T. Dixon, C. DeMets and G. Mattioli.

ORAL PRESENTATIONS

- Invited lecture at Vertical Evacuation in Tsunami prone areas Workshop, June 18, 2012, “Tsunami Hazards in Puerto Rico”, López, A.
- Invited lecture at EERI Student Chapter UPRM - Mayagüez Campus, May 12, 2012, “Submarine landslide as the source for the October 11, 1918 Mona Passage tsunami: New geological evidence, observations and tsunami modeling results”. López, A.
- Caribbean Conferences 4 - Institute of Caribbean Studies, University of Puerto Rico Faculty of Social Sciences, January 2009: “Terremotos y maremotos en Puerto Rico e Islas Vírgenes: Un vistazo al pasado y preparándonos para el futuro”. López, A.
- International Year of Planet Earth Symposium at the University of Puerto Rico Río Piedras Campus, November 2008: “Un viaje al interior de la Tierra: De la corteza al núcleo. López, A.
- Caribbean Conferences 3 - Institute of Caribbean Studies, University of Puerto Rico Faculty of Social Sciences, November 2008: “Placas tectónicas y su contexto en el Caribe”. López, A.
- 18th Caribbean Geological Conference, Santo Domingo, Dominican Republic, March 2008: “Submarine landslide as the source for the October 11, 1918 Mona Passage tsunami: new geological observations, evidence and tsunami modeling results”. López, A., U. ten Brink, and E. L. Geist.
- Woods Hole Oceanographic Institution Marine Geology and Geophysics Seminar, October 2007: “New Perspectives on Tsunami for the Northeastern Caribbean”. López, A. and U. ten Brink.
- International Association of Seismology and Physics of the Earths Interior, General Assembly, Santiago, Chile, October 2005: “The Neotectonics of the Northern Lesser Antilles”. López, A. and S. Stein.
- Seismological Society of America Annual Meeting, May 2003: “The 1946 Alaska-Aleutian ‘Tsunami Earthquake’ Revisited”. López, A. and E. Okal.
- 19th Symposium on Caribbean Geology, UPRM, Mayagüez, February 2000: “PRVI Microplate Behavior in the Northern Caribbean Plate Boundary Zone”. López, A., P. Jansma and G. Mattioli.
- 35th ACS Junior Technical Meeting/20th Puerto Rico Interdisciplinary Scientific Meeting, UPR, March 2000: “Neotectonics of the Puerto Rico-Virgin Islands Microplate as Constrained by GPS Geodesy”. López, A. and P. Jansma.
- 18th Symposium on Caribbean Geology, UPRM, February 1999: “Evidence of Strain Accumulation and Partitioning in the Northeastern - Caribbean Plate Boundary Zone as Constrained by GPS Geodesy”. López, A. and P. Jansma.
- 30th ACS Junior Technical Meeting/15th Puerto Rico Interdisciplinary Scientific Meeting, UPR, Ponce, March 1995: “Use of Ground Penetrating Radar in Several Sites of Western Puerto Rico”. López, A. and L. Abrams

SKILLS

Computer Languages & Softwares:

- Tsunami modeling: COULWAVE, TSUNAMI3D, and TSU3D
- Geodetic: GIPSY/OASIS II, GAMIT, TRACK, TRACKrt, Trimble GPSurvey
- Seismology: BRTT Antelope, Seismic Analysis Code 2K, NonLinLoc, PQLX
- Crustal deformation modeling: DefNode
- System Administration: UNIX/Linux/Ubuntu-Linux/Darwin (Mac)
- ForTran, Perl, C-shell, MatLab, Octave, SciLab
- Website development: HTML, PHP, JavaScript, and Adobe Flash/Dreamweaver

- Design: Adobe Illustrator & Photoshop, GIMP, Inkscape
- Graphing and Maps: Generic Mapping Tools (GMT)
- GIS: ArcGIS, GRASS, Quantum
- Microsoft Office

Field & Research

- GPS equipment: Trimble, Topcon
- Seismic: Guralp, Nanometrics, Kinematics
- Logistics (Customs, Foreign Government protocols, maps, sites scouting, equipment deployment, etc.)
- Elementary electronics and light mechanics

Languages

- Spanish (Native)
- English Fluent
- Italian (Beginner)
- French (Beginner)

Miscellaneous

- Photography (B&W photo lab)
- Drawing and painting (technical & artistic)
- Lifesaving
- Boy Scout (Rank: Life)

PROFESSIONAL AFFILIATIONS

- American Geophysical Union
- Geological Society of America
- Seismological Society of America

SYNERGYSTIC ACTIVITIES

- Puerto Rico Seismic Network Education & Outreach
- Siting Committee COCONet (NSF-funded)
- UNAVCO Member Institution Representative for UPRM
- IRIS Member Institution Representative (Alternate) for UPRM

COLLABORATORS

- Dr. Victor Huérfano - Puerto Rico Seismic Network - UPRM
- Dr. Uri ten Brink - US Geological Survey
- Dr. Jay Pulliam - Baylor University
- Dr. Brian Atwater - US Geological Survey
- Mr. Aurelio Mercado - Marine Sciences UPRM
- Dr. José Martínez - PR Strong Motion Program - Civil Engineering Dept. - UPRM

CERTIFICATES

Geologist in training by the Puerto Rico Geology NASB Summer 2000

CONSULTING

Rock Description Analyst for archeologist Adalberto Maurás
Archaeological project at the Gurabo Valley, Puerto Rico

COMMUNITY SERVICE

Community Assistant Sep 2002 - Aug 2006
Northwestern University Graduate Residential Hall
Evanston, Illinois

- In charge of developing programs for community building and assistance to residents

G-SALSA Mar 2003 - May 2005
Founding member (Graduate Student Association for Latino and Spanish Activities)
Northwestern University
Evanston, Illinois

Explorer's Ship 802 1995-1996
Founding member and President
University of Puerto Rico - Mayagüez Campus
Mayagüez, Puerto Rico

Troop 99 1986 - 1991
Club Rotarios de San Juan
Boy Scouts of America