

Alberto M. López Venegas

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Woods Hole, MA 02543

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RESEARCH INTERESTS:

Dynamics of Plate Tectonics and crustal deformations at plate boundaries.
Tsunami generation by slow earthquakes.

ACADEMIC BACKGROUND:

October 2006 -

U.S. Geological Survey Mendenhall Postdoctoral Fellow

Present

Quantitative Evaluation of Tsunami Hazards to the Caribbean and Atlantic Basins.

Advisor: Uri ten Brink

September 2000 -

Ph.D. in Geophysics

September 2006

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 2007

Advisors: Seth Stein and Emile A. Okal

August 1997 -

M.S. in Geology

July 2000

University of Puerto Rico – Mayagüez Campus

Microplate Behavior in the Northeastern Caribbean as Constrained by Global Positioning System (GPS) Geodesy.

Degree obtained in July 2000

Advisors: Pamela Jansma and Glen Mattioli

August 1991 -

B.S. in Geology - Cum Laude

December 1996

University of Puerto Rico, Mayagüez Campus

Degree obtained in May 1997

FELLOWSHIPS:

2006 - Present

Mendenhall Postdoctoral Fellowship

2003 - 2004

Alliances for Graduate Education and the Professoriate (AGEP)

SCHOLARSHIPS:

2003 - 2005

American Geological Institute – Minority Geoscience Student Scholarship

2003 - 2004

Hispanic Scholarship Fund/ Society of Hispanic Professional Engineers

2000 - 2003

Illinois Minority Graduate Incentive Program (IMGIP)

CERTIFICATIONS:

Summer 2000 Geologist in training by the National Association of State Boards of Geology.

PROFESSIONAL EXPERIENCE:

October 2006 -
Present

Mendenhall Postdoctoral Fellow, U.S. Geological Survey
Woods Hole, MA

- Quantitative evaluation of tsunami hazards to the Caribbean and the Atlantic basins through analysis of seismic refraction data and high-resolution 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 Advisor: Uri ten Brink

September 2000 -
August 2006

Research Assistant, Department of Geological Sciences
Northwestern University, Evanston, IL

- 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.

Research Advisors: Seth Stein and Emile A. Okal

Summer 2005

Summer Intern, EarthScope Education & Outreach Program
Washington D.C.

- 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.

Advisor: Dr. John DeLaughter

Summer 2004

Summer Intern, IRIS/PASSCAL
Socorro, New Mexico

- Seismic instrumentation testing and deployment.
 - Software development for data collection and processing.
- Advisor: Noel Barstow

January 1998 -
May 2000

Research Assistant, Department of Geological Sciences
University of Puerto Rico, Mayagüez, Puerto Rico

- Analyzed microplate behavior in the Northeastern Caribbean as constrained by 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.

Research Advisors: Dr. Pamela Jansma and Dr. Glen Mattioli
Funded by NASA and NSF

Summer 1995

Summer Intern, Virginia Institute of Marine Sciences (VIMS)
Gloucester Point, Virginia

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

Research Advisor: Dr. S. Kuehl

August 1992 -
May 1993

Seismic Data Analyst, Puerto Rico Seismic Network
Mayagüez, Puerto Rico

ACADEMIC EXPERIENCE:

September 2000 -
June 2006

Teaching Assistant, Department of Geological Sciences
Northwestern University, Evanston, IL

- Held office hours, graded homeworks and lead discussion sessions for the courses of Physics of the Earth and Surface Processes.

January 1998 -
May 2000

Teaching Assistant, Department of Geological Sciences
University of Puerto Rico, Mayagüez, Puerto Rico

- Held office hours, graded homeworks and lead discussion sessions for the courses of Structural Geology and Petrology of Igneous and Metamorphic Rocks.

January 1995 -
May 1995

Undergraduate Research, Department of Geological Sciences
University of Puerto Rico, Mayagüez, Puerto Rico

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

Research Advisor: Dr. Lewis Abrams

December 1994 -
January 1995

Undergraduate Research, Department of Geological Sciences
University of Puerto Rico, 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.

August 1994 -

Undergraduate Research, Department of Geological Sciences

- December 1994 University of Puerto Rico, Mayagüez, Puerto Rico
- Application of Ground Penetrating Radar (GPR) in different settings of Southwest Puerto Rico.
- Advisor: Dr. Lewis Abrams
- Summer 1994 **Undergraduate Research**, Department of Geological Sciences
University of Puerto Rico, Mayagüez, Puerto Rico
- Geologic mapping of Rincón and Sierra Bermeja, Cabo Rojo, Puerto Rico.
- August 1993 - **Undergraduate Research**, Department of Geological Sciences
December 1993 University of Puerto Rico, Mayagüez, Puerto Rico
- Analysis of sediments in the Guajataka River in San Sebastián, Puerto Rico.

CONSULTING:

- January 1997 - **Rock Description Analyst** for archeologist Adalberto Maurás.
May 1997 Archeological project at the Gurabo Valley, Puerto Rico

TECHNICAL and SPECIALIZED SKILLS:

COMPUTER SKILLS:

- COULWAVE and TSU3D tsunami modeling packages
- GIPSY/OASIS II and Trimble GPSurvey softwares for GPS data analysis under UNIX/Linux and PC, respectively
- BRTT Antelope and Seismic Analysis Code 2000
- UNIX/Linux/ULTRA-Linux system administration
- Fortran, C++ and Perl programming and scripting
- Website development:HTML, PHP, JavaScript, and Macromedia Flash, Dreamweaver and Director
- Adobe: Illustrator, Photoshop and PageMaker
- Generic Mapping Tools (GMT)
- ESRI, GRASS and Quantum Geographic Information System Softwares
- Matlab
- Microsoft: Excel, Power Point, Word

FIELD RESEARCH SKILLS:

- Trimble GPS equipment (receivers, antennae, ancillary equipment)
- Seismic sensors (Guralp, Streckeisen, Episensor)
- Quanterra Q330 Seismic data digitizer and logger
- Logistics (Customs forms, Foreign Government protocols, maps, site scouting, equipment deployment, etc.)
- Elementary electronics and light mechanic

LANGUAGES:

- Spanish (Native)
- English: Fluent

MISCELANEOUS:

Photography, B/W photo laboratory, drawing, painting.
Lifesaving, Life Boy Scout

PROFESSIONAL AFFILIATIONS:

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

PUBLICATIONS:

“Submarine landslide as the source for the October 11, 1918 Mona Passage tsunami: Observations and modeling”. **López-Venegas, A. M.**, U ten Brink and E. Geist, *Marine Geology*, 254, August 2008, doi:10.1016/j.margeo.2008.05.001.

“Is There a Northern Lesser Antilles Forearc Block?” **López, A.**, S. Stein, T. Dixon, G. Sella, E. Calais, P. Jansma, J. Weber, and P. LaFemina, *Geophys. Res. Lett.*, 33, doi:10.1029/2005GL025293.

“A Seismological Reassessment of the Source of the 1946 Aleutian 'Tsunami' Earthquake”. **López, A.** and E. A. Okal. *Geophys. J. Int.*, 165, 835-850, doi:10.1111/j.1365-246X.2006.02899.x.

“Neotectonics of Puerto Rico and the Virgin Islands, Northeastern Caribbean, from GPS Geodesy”. Jansma P.E., **A. López**, G. Mattioli, C. DeMets, T. Dixon, P. Mann and E. Calais. *Tectonics*, 19, no. 6, 1026-1037

POSTER PRESENTATIONS:

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. Huérfano, 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”. **López, 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:

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 Earth's 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.

COMMUNITY INVOLVEMENT:

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|---------------------------------|---|
| September 2002 -
August 2006 | Community Assistant , Northwestern University Graduate Residential Hall, Evanston, IL <ul style="list-style-type: none">In charge of developing programs for community building and assistance to residents. |
| March 2003 -
May 2005 | Founder and President , Northwestern University's Graduate Student Association for Latino and Spanish Activities (G-SALSA) |
| August 1995 | Founder , Explorers' Ship 802 (now 1802), University of Puerto Rico, Mayagüez, Puerto Rico. |
| 1986 - 1991 | Troop 99, Club Rotarios de San Juan, Boy Scouts of America. |