

# Einat Lev

A postdoctoral fellow  
Lamont-Doherty Earth Observatory  
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## **Education:**

- 2003-2009 Massachusetts Institute of Technology, Cambridge, MA.  
PhD in geophysics. Thesis advisor: Bradford H. Hager  
Thesis title: *Seismic and Viscous Anisotropy in the Earth's Mantle: Observations and Implications*
- 1998-2001 Tel-Aviv University, Tel-aviv, Israel. Bachelor of Science, cum laude.  
Double Major in Geophysics and Computer Science.

## **Research Interests:**

- Physical volcanology
- Numerical modeling of geodynamical processes
- Rheology of geologic materials
- Global, regional and local geodynamics
- Tectonics of plate boundaries
- Seismic and viscous anisotropy
- Glaciology and ice flow

## **Positions held:**

- Fall 2009 – present Postdoctoral Research Fellow, LDEO, Columbia University  
Fall 2003 – 2009 Graduate research assistant, EAPS, MIT  
2005, Fall 2006 Teaching Assistant for Geodynamics (MIT 12.520) - Graduate level  
Spring 2005, Spring 2006 Teaching Assistant for Application of Continuum Mechanics in Earth Sciences (MIT 12.005) - Undergraduate level

## **Publications - journal articles:**

- Edwards, B., Karson, J., Wysocki, R. and **Lev, E.**, *Experimental Observations on Lava-Ice/Snow Interactions*, in preparation for Nature Geoscience
- **Lev, E.** and Spiegelman, *Constraining lava rheology using Monte Carlo / Markov Chain inversion*, in prep.
- Tarlow, S., Zappa, C. and **Lev, E.**, *Constraining lava thermal properties and cooling behavior using infrared thermometry on man-made lava flows*, in prep.
- **Lev, E.** and M. Spiegelman, *Investigating lava flow rheology using video analysis and numerical flow models*, submitted to the Journal of Volcanology and Geothermal Research
- **Lev, E.** and B.H. Hager, *Anisotropic viscosity changes the thermal structure of subduction zone wedges*, *Geochem. Geophys. Geosys.*, v. 12 (2011), Q04009, doi:10.1029/2010GC003382
- Grove, T. L., C. B. Till, **E. Lev**, N. Chatterjee and E. Médard, *Kinematic variables and water transport control the formation and location of arc volcanoes*, *Nature*, v. 459 (2009), doi:10.1038/nature08044.
- **Lev, E.** and B.H. Hager, *Prediction of anisotropy from flow models – a comparison of three methods*, *Geochem. Geophys. Geosys.*, v. 9 (2008), Q07014, doi:10.1029/2008GC002032
- **Lev, E.** and B.H. Hager, *Rayleigh-Taylor Instabilities with anisotropy lithospheric viscosity*, *Geophys. Jour. Int.*, v. 173 (2008), p. 806-814

- Sol, S., Meltzer, A., Burgmann, R., van der Hilst, R.D., King, R., Chen, Z., Koons, P.O., **Lev, E.**, Liu, Y.P., Zeitler, P.K., Zhang, X., Zhang, J., Zurek, B., *Geodynamics of the southeastern Tibetan Plateau from seismic anisotropy and geodesy*, *Geology*, v. 35 (2007), p. 563-566.
- **Lev, E.**, M. D. Long and R.D. van der Hilst, *Seismic anisotropy in eastern Tibet from shear wave splitting reveals changes in lithospheric deformation*, *Earth. Planet. Sci. Lett.*, v. 251 (2006), p. 293-304.

#### **Awards and Honors:**

- 2012 “Connecting Lava Rheology and Flow Dynamics Using Novel Field and Modeling Techniques” – NSF grant EAR-1118943 (\$150,000)
- 2012 Brinson Foundation funding for extending postdoctoral fellowship at LDEO (\$40,000)
- 2010 LDEO Advisory Board Innovation Award – lava rheology field experiment (\$20,000)
- 2009 Lamont-Doherty postdoctoral fellowship
- 2006 EAPS award for excellence in teaching
- 2005 Best student presentation award, AGU Fall meeting, December 2005, San Francisco
- 2003-2004 MIT Presidential Fellow
- 2000 Best Programming Project Award, Tel-Aviv University
- 1999 The Rafi Katzman Award for Excellence in Freshmen Year Studies, Tel-Aviv University

#### **Presentations and Posters:**

- ◆ Physical Volcanology:
  - American Museum of Natural History weekly seminar
  - **E. Lev**, Investigating Lava Rheology Using Man-Made Lava Flows, Computer Vision, and Flow Models, AGU Fall Meeting, 2011
  - **E. Lev**, Investigating Lava Rheology Using Video Analysis and Flow Models, IUGG, Australia, 2011
  - **E. Lev**, Modeling Lava Flows, PASI Open Vent volcanoes workshop, Costa Rica, 2011
  - **E. Lev**, Extracting Lava Velocity and Rheology from Computer-Vision Analysis of Lava Flow Videos, IUGG/CMG meeting, Italy, 2010
- ◆ Anisotropic viscosity in geodynamical models:
  - Gordon Research Conference on Earth Interior, 2011
  - SUNY-Stony Brook Geology Colloquium, 2010
  - Fall AGU Meeting, San Francisco, CA, 2009
  - LDEO geodynamics seminar, Lamont-Doherty Earth Observatory, 2009
  - Physics Department Colloquium, Colorado University-Boulder, 2009
  - Gordon Research Conference in Rock Deformation, 2008
  - CIG Mantle convection and lithospheric dynamics, 2008
  - Geophysics seminar, Princeton University, 2008
  - Geology and Geophysics seminar, Brown University, Providence, RI, 2007
  - Geology and Geophysics seminar, WHOI, Woods Hole, MA, 2006
- ◆ Seismic Anisotropy in Eastern Tibet from Shear-Wave Splitting:
  - **E. Lev**, M. D. Long and R.D. van der Hilst, International workshop on seismic anisotropy, Trest, Czech Republic, 2006
  - **E. Lev**, M. D. Long and R.D. van der Hilst, Fall AGU Meeting, San Francisco, CA, 2005
- ◆ Mixing of Differentiated Oceanic Crust in a Mantle with Depth and Temperature Dependent Properties:
  - **E. Lev** and B. H. Hager, 9<sup>th</sup> *International Workshop on Numerical Modeling of Mantle Convection and Lithospheric Dynamics*, Erice, Italy, September 2005

#### **Conferences and workshops:**

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| October 2011 | GeoPrisms/Earthscope in Eastern North America planning workshop, Lehigh University, PA |
| June 2011    | IUGG General Assembly, incl. IAVCEI Assembly, Melbourne, Australia                     |
| June 2011    | Gordon Research Conference on Earth Interior, Mt. Holyoke, MA                          |
| January 2011 | PASI Open Vent Volcanoes workshop, San Jose, Costa Rica                                |
| June 2010    | IUGG Computational and Mathematical Geophysics, Pisa, Italy                            |
| August 2008  | Gordon Research Conference on Rock Deformation, Tilton, NH (invited speaker)           |

July 2008	CIG meeting "numerical modeling of mantle convection", Davis, CA (Invited speaker)
May 2008	ExxonMobile field workshop, Annandale, NJ
March 2008	Microtexture analysis, Workshop with R. Heilbronner, MIT
September 2007	Numerical modeling of mantle convection and lithospheric dynamics, Carry La-Rouet, France
August 2007	The Cutting Edge "Preparation for an academic career in geosciences" workshop, Madison, WI
June 2007	Gordon conference "Interior of the Earth", Mt. Holyoke, MA
July 2006	MYRES II, Verbana, Italy
June 2006	International workshop on seismic anisotropy, Trest, Czech Republic
October 2005	NSF-supported F2P (Forward To Professorship) workshop, Cambridge, MA
June 2005	CIG meeting "Numerical modeling of mantle convection", Boulder, CO
June 2005	Gordon conference "Interior of the Earth", Mt. Holyoke, MA
September 2005	International school of Geophysics meeting, Erice, Italy
Decembers since 2003	Fall AGU Meeting, San-Francisco, CA

### **Professional service:**

2007-present Peer-reviewed articles for: Geology, Tectonophysics, EPSL, G-cubed, and GJI

September 2011	Geoscience Congressional Visit Day, Participant (NY state)
2007 AGU Fall meeting	Organizer of a special session focused on "Rheological Anisotropy"
2006, 2007, 2009 AGU Fall meetings	Session chair for Tectonophysics/Seismology

### **University Service:**

2011	Member of the LDEO special task force on diversity
2009-2011	Head of the Cookies and Well-Being committee for SGT
2010-2011	Organizer of LDEO's Geophysics seminar (joint SGT and MG&G)
2006-2007	Secretary of EAPS graduate students advisory council (EGSAC) (member 2003 - present)
2005-2006	Organizer of the Geology and Geophysics weekly students seminar
2005-present	Coordinator of Graduate Student Mentoring program in EAPS
2004	Organizing Committee of Geophysics monthly seminar

### **Community outreach programs:**

October 2010, 2011	"Dynamics of Lava Flows" at the LDEO Open House event
Summer 2011	Assisted in mentoring an undergraduate summer intern at LDEO
November 2009-2010	Assisting a high-school student on a science research project about volcanoes
July-August 2007	Teacher of "Introduction to geology" class, MIT's High-School Summer Program (HSSP)
2005 - 2008	Mentor in KEYs (Keys to Empowering Youth) project at MIT

### **Computer skills:**

Programming Languages:	Matlab (fluent), C (fluent), C++ (some), Fortran (some)
Numerical modeling codes:	Elmer, Underworld/Gale, Citcom, Conman, Adina, GeoFest
Seismology codes:	SAC, Seismic Handler, IRIS SeismoQuery tool
Mapping tools:	ArcGIS
Crystallography tools:	D-Rex, ImageSXM

### **Field Experience:**

February 2011 – Present	Controlled lava flow experiments at Syracuse University (P.I.: Jeff Karson)
August 2009	Mapping lava channels on Mauna Loa, Hawai'i using LiDAR (P.I.s: Kathy Cashman and Adam Soule)
June 2008	WHOI Geodynamics field trip, Costa Rica
July 2006	Deployment of a PASSCAL-Earthscope seismic network in the Cascades, WA (P.I.s: Ken Creager, Geoff Abers, Stephane Rondenay)
January 2006	Geologic Mapping Field Camp, Southern Arizona
September 2004	Geology field trip to Sichuan province (Eastern Tibet), China (P.I.: Leigh Royden)
January 2004, January 2008	Geophysics Field Camp, Riverside Mountains, Southern California

### **Languages:**

Hebrew (native), English (fluent), some Spanish and Arabic

A member of the American Geophysical Union (AGU) since 2003 and IAVCEI since 2012.