

EINAT LEV

Lamont-Doherty Earth Observatory, Columbia University
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EDUCATION

| | | | |
|------|-------|---|------------------------------------|
| 2009 | Ph.D. | Massachusetts Institute of Technology, Cambridge MA | Geophysics |
| | | Title: Seismic and Viscous Anisotropy in the Earth's Mantle: Observations and Implications. | |
| | | Adviser: Bradford H. Hager | |
| 2001 | B.Sc. | Tel-Aviv University, Tel-Aviv, Israel | Geophysics and Computer science |

APPOINTMENTS

| | | |
|--------------|---|---|
| 7/22-present | – | Lamont Associate Research Professor (senior), Columbia University, New York |
| 7/18-6/2022 | – | Lamont Associate Research Professor (junior), Columbia University, New York (included a second maternity leave in 2020-2021 and a reduced activity period in 2020-2021 during COVID-19 due to parental roles) |
| 9/13-6/18 | – | Lamont Assistant Research Professor, Columbia University, New York, NY (included a maternity leave in 2014) |
| 9/14-11/14 | – | Visiting professor, Earth Research Institute, University of Tokyo, Japan |
| 10/09-08/13 | – | Lamont-Doherty Postdoctoral Fellow, Columbia University, New York, NY |
| 7/09-9/09 | – | Postdoctoral researcher, Massachusetts Institute of Technology, Cambridge, MA |
| 9/03-6/09 | – | Graduate Research Assistant, Massachusetts Institute of Technology, Cambridge, MA |
| 6/00-6/03 | – | Software engineer, Gilat Satellite Networks, Israel |

GRANTS AND AWARDS (AT LDEO)

- 2021 “Collaborative Research: EarthCube Data Capabilities: Volcanology hub for Interdisciplinary Collaboration, Tools and Resources (VICTOR)”, NSF EarthCube award EAR-2126435 (lead, \$500,000)
- 2021 “Collaborative Research: Laboratory and theoretical study of geyser dynamics”, NSF award EAR-2050488 (lead, \$207,000).
- 2020 “RISE: Take a Look Inside: Magnetic Resonance Imaging of Magma Analogues to Study Volcanic Eruptions”, Columbia University (co-lead, \$160,000)
- 2019 “Anticipating Volcanic Eruption in Real-Time (AVERT)” Moore Foundation (co-lead, \$2,450,000)
- 2019 “NSF/GEO-NERC: Collaborative Research: Multi-scale investigation of rheology and emplacement of multi-phase lava” NSF award EAR-1929008 (lead, \$374,000)
- 2017 “CAREER: Investigating the Impact of Temporal and Spatial Variations on Lava Emplacement Through Numerical and Physical Models” NSF award EAR-1654588 (lead, \$540,000)
- 2017 “RISE: Investigating magma dynamics and volcanic eruptions using real-time 4D microscopy of bubble interactions with a flowing solid-liquid mush”, Columbia University (lead, \$160,000)
- 2016 “NSF INCLUDES Early Engagement in Research: key to STEM retention”, NSF award 1649310 (\$300,000)
- 2015 “Lunar Impact Melt Flows: Geological Mapping, Experimental Simulation, and Numerical Modeling”, NASA award 14-SSW14-2-0067 (\$106,000)
- 2014 “Active Lava Lakes as a Window into Magma and Volcano Dynamics” NSF award EAR-1348022 (lead, \$310,000)

- 2013 “Collaborative Proposal: Evolution of Lava Channel Networks: Implications for Lava Flow Hazards and Mitigation”, Lead PI: Katherine Cashman. NSF award EAR-1250554 (LDEO only: \$40,000)
- 2014 Visiting professorship exchange program, Earthquake Research Institute (ERI), University of Tokyo (est. worth \$25,000)
- 2011 “Connecting Lava Rheology and Flow Dynamics Using Novel Field and Modeling Techniques”, NSF award EAR-1118943 (lead, \$150,000).
- 2010 Brinson Foundation funding for extension of postdoctoral fellowship at LDEO (\$40,000)
LDEO Advisory Board Innovation Award – Lava rheology field experiment (\$20,000, 2010)

REFEREED ARTICLES

(†=student/postdoc)

2022

35. Crozier, J., Tramontano, S., Forte, P., Oliva, S., Gonnermann, H., **Lev, E.**, Manga, M., Myers, M., Rader, E., Ruprecht, P., *Outgassing through magmatic fractures enables effusive eruption of silicic magma*, Journal of Volcanology and Geothermal Research, 430, 107617
Role: Guided initial activity during the CIDER 2019 workshop, oversaw video analysis activity, participated in discussions, writing and revisions
34. Namiki, A., Lev, E., †Birnbbaum, J., †Baur, J., *An experimental model of unconfined bubbly lava flows: Importance of localized bubble distribution*, Journal of Geophysical Research: Solid Earth, 127, e2022JB024139.
Role: Established collaboration with lead author, oversaw use of lab for experiments, guided discussions and writing
33. Wadsworth, F. Llewellyn, E., Farquharson, J., Gillies, J., Loisel, A., Frey, L., Ilyinskaya, E., Thordarson, T., Tramontano, S., **Lev, E.**, *Crowd-sourcing observations of volcanic eruptions during the 2021 Fagradalsfjall and Cumbre Vieja events*, Nature communications, 13, 1.
Role: Participated in the discussion and writing
32. †Carr, B., **Lev, E.**, Vanderkluysen, L., Moyer, D., Marliyani, G., Clarke, A., *The Stability and Collapse of Lava Domes: Insight From Photogrammetry and Slope Stability Models Applied to Sinabung Volcano (Indonesia)*, Frontiers in Earth Science, 10, 813813.
Role: Initiated the project, provided mentorship and guidance to postdoc lead author, guided the numerical modeling activity.
31. Dai, C., Howat, I., Freymueller, J., Lu, Z., Vijay, S., Liljedahl, A., Ward Jones, M., Bergstredt, H. and **Lev, E.**, *Quantifying mass flows at Mt. Cleveland, Alaska between 2001 and 2020 using satellite photogrammetry*, Journal of Volcanology and Geothermal Research, 429, 107614.
Role: Suggested the project and provided volcanological perspectives; reviewed and revised the manuscript.

2021

30. †Birnbbaum, J., **Lev, E.** and Llewellyn, E., *Rheology of three-phase suspensions determined via dam-break experiments*, Proceedings of the Royal Society A, v. 477(2254), 10.1098/rspa.2021.0394
Role: Initiated the project, supervised graduate student first author, participated in experiments and writing.
29. †Carr, B., **Lev, E.**, Bennett, K., Edwards, C., Soule, A., Vallejo Vargas, S., and Marliyani, G., *Mapping and classification of volcanic deposits using multi-sensor Unoccupied Aerial Systems*, Remote Sensing of the Environment, 264, 112581
Role: Lead collaboration with co-authors; guided data collection in the field; mentored post-doctoral scientist (lead author); reviewed and provided feedback on entire manuscript

28. **Lev, E.**, Hamilton, C., Stadermann, A. and Neish, C., *Emplacement conditions of lunar impact melt flows*, Icarus, 114578.
Role: Co-PI on funding grant, lead modeling and writing efforts
27. **Lev, E.**, *UAVs for volcanology studies*, in UAVs in Environmental Sciences, ed. A. Eltner and A. Rovere (WBG Publishers), in press
Role: Invited; Sole author
26. †Oppenheimer, J., Patel, K., Lindoo, A., Hillman, E.M.C. and **Lev, E.**. *High-Speed 3D Imaging of Multiphase Systems: Applying SCAPE Microscopy to Analogue Experiments in Volcanology and Earth Sciences*, Geochemistry, Geophysics, Geosystems (2021), e2020GC009410
Role: Initiated project and secured funding; guided experiments; mentored postdoctoral scientist (lead author); coordinated writing of the manuscript; reviewed and provided feedback on entire manuscript.
25. †Conroy, C., and **Lev, E.** (2020), *A discontinuous Galerkin finite element model for “high” speed channelized lava flows*, Geoscientific Model Development – Discussions (2021) 1-27
Role: Initiated the project; Provided field observations and performed velocimetry analysis; Supervised postdoc lead author.

2020

24. **Lev, E.** and Boyce, C. *Opportunities for Characterizing Geological Flows Using Magnetic Resonance Imaging*. iScience (2020), 101534.
Role: Initiated the project; lead writing of section about geological applications; produced figures; reviewed and provided feedback on entire manuscript.
23. Dundas, C. M., Keszthelyi, L., **Lev, E.**, Rumpf, M. E., Hamilton, C. W., Höskuldsson, Á. and Thordarson, T. *Lava-water interaction and hydrothermal activity within the 2014-2015 Holuhraun Lava Flow Field, Iceland*. Journal of Volcanology and Geothermal Research (2020) 408, 107100.
Role: Performed video velocimetry analysis for river flow rates; Participated in field work and manuscript writing.
22. Le Moigne, Y., Zuerk, J., Williams-Jones, G., **Lev, E.**, Calahorrano-Di Patre, A. and Anzieta, J. *Standing Waves in High Speed Lava Channels: A Tool for Constraining Lava Flow Dynamics and Eruptive Parameters*, Journal of Volcanology and Geothermal Research (2020) 401. doi: 10.1016/j.jvolgeores.2020.106944
Role: Performed video velocimetry analysis; Provided input on flow dynamics and rheology; Participated in writing of the manuscript.
21. James, M. R., Carr, B., DâĂŽArcy, F., Diefenbach, A., Dietterich, H., Fornaciai, A., **Lev, E.**, Liu, E., Pieri, D., Rodgers, M., Smets, B., Terada, A., von Aulock, F., Walter, T., Wood, K. and Zorn, E. *Volcanological applications of unoccupied aircraft systems (UAS): Developments, strategies, and future challenges*, Volcanica, (2020) 3(1), pp. 67-114. doi: 10.30909/vol.03.01.67114
Role: Led and wrote section on effusive eruptions; Provided feedback on entire article

2019

20. †Birnbaum, J., Keller, T., Suckale, J. and **Lev, E.**, *Periodic outgassing as a result of unsteady convection in Ray Lava Lake, Mount Erebus, Antarctica*, Earth and Planetary Science Letters (2019) 530, 115903.
Role: Initiated collaboration between the teams; Provided field observations of lake dynamics; Mentored graduate student lead author during writing.
19. **Lev, E.**, Ruprecht, P., Oppenheimer, C., Peters, N., Patrick, M., Hernandez, P., Spampinato,

L., Marlow, J., *A global synthesis of lava lake dynamics*, Journal of Volcanology and Geothermal Research (2019) 381, 16-31

Role: Initiated the project; Gathered data from collaborators; Lead all the data analysis; Wrote the manuscript

18. **Lev, E.**, †Rumpf, M.E. and Dietterich, H., *Analog experiments of lava flow emplacement*, Annals of Geophysics, 61 (2019), 53.

Role: Wrote the manuscript; Participated in and guided the laboratory experiments included in it; Mentored student participants

17. Rudolph, M., Sohn, R. and **Lev, E.**, *Fluid oscillations in a laboratory geyser with a bubble trap*, Journal of Volcanology and Geothermal Research, 368, 100-110

Role: Designed and participated in laboratory experiments; Analysed video recordings of experiments;

16. Morrison, A., Zanetti, M., Hamilton, C., **Lev, E.**, Neish C., and Whittington, A., *Rheological investigation of lunar highland and mare impact melt simulants*, Icarus, v. 317 (2019), 307-323.

Role: Co-PI on the grant funding the project; Participated in discussions of rheology and impact melt flow dynamics and in writing the manuscript

2018

15. †Rumpf, M.E., **Lev, E.** and Wysocki, R., *The influence of small-scale topography on lava flow advance*, Bulletin of Volcanology (2018), 80(7), 63.

Role: Initiated the project; Directed the lead author in laboratory work; Coordinated lava lab experiments; Guided writing of manuscript; Mentored the postdoc first author

2017

14. Dietterich, H., **Lev, E.**, Chen, J., Richardson, J. and Cashman, K., *Benchmarking computational fluid dynamics models of lava flow simulation for hazard assessment, forecasting, and risk management*, Journal of Applied Volcanology (2017) 6:9

Role: Initiated the benchmarking effort; Conducted experiments using one of the tools; Participated in writing of the manuscript; Mentored postdoc first author

2016

13. Patrick, M., Orr, T., Swanson, D.A. and **Lev, E.**, *Shallow and deep controls on lava lake surface motion at Kīlauea Volcano*, Journal of Volcanology and Geothermal Research (2016), doi: 10.1016/j.jvolgeores.2016.11.010.

Role: Conducted velocimetry analysis of lava lake footage; Participated in discussions and writing of the manuscript.

12. Patrick, M., Orr T., Sutton, A.J., **Lev, E.**, Thelen, W. and Fee, D., *Gas pistonning and episodic outgassing in the lava lake at Halema'ūma'u Crater, Kīlauea Volcano, during 2010–2014*, Earth and Planetary Science Letters, v. 433, p. 326-338 (2015) doi:10.1016/j.epsl.2015.10.052

Role: Conducted velocimetry analysis of lava lake footage; Participated in discussions and writing of the manuscript.

2015

11. Dietterich, H., Cashman, K., Rust, A. and **Lev, E.** *Diverting lava flows in the laboratory*, Nature Geoscience, v. 8, no. 7, (2015), doi: 10.1038/ngeo2470

Role: Co-PI on the funding grant; Participated in and guided lava lab experiments; Participated in discussions and writing of the manuscript

10. Cordonnier, B., **Lev, E.** and Garel, F., *Benchmarking volcanic mass flow models*. In: Detecting, Modeling and Responding to Effusive Eruptions, Geological Society, London, Special Publications, V. 426 (2015), doi: 10.1144/SP426.7
Role: Initiated the benchmarking effort; Lead discussions of which benchmarks to select and what codes to include; Reached out to benchmark participants to obtain results; Participated in writing of the manuscript

2014

9. **Lev, E.** and James, M. R., *The Influence of Cross-sectional Channel Geometry on Rheology and Flux Estimates for Active Lava Flows*, Bull. Volcanol., v. 76 (2014), doi: 10.1007/s00445-014-0829-3
Role: Conducted the research and the entire modeling activity; Designed and ran all models and post-analysis. Wrote the manuscript.

2013

8. Edwards, B., J. Karson, R. Wysocki, **E. Lev**, U. Keuppens, *Experimental Insights on Natural Lava-Ice/Snow Interactions*, Geology, v. 41, p. 851-854 (2013) doi: 10.1130/G34305.1
Role: Participated in lava lab experiments and data collection; Provided velocimetry and thermal data analysis; Participated in writing of the manuscript.

2012

7. **Lev, E.**, M. Spiegelman, J. Karson and R. Wysocki, *Investigating lava flow rheology using video analysis and numerical flow models*, Journal of Volcanology and Geothermal Research, v. 247-248, p. 62-73 (2012) doi:10.1016/j.jvolgeores.2012.08.002
Role: Initiated the project and secured funding; Lead lava lab experiments; Conducted all data analysis; Designed and ran numerical models; Wrote the manuscript.

2011 and earlier (results of PhD thesis)

6. **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
5. 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.
4. **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
3. **Lev, E.** and B.H. Hager, *Rayleigh-Taylor Instabilities with anisotropy lithospheric viscosity*, Geophys. Jour. Int., v. 173 (2008), p. 806-814
2. 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.
1. **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) 293-304.

ARTICLES NEARING SUBMISSION

(†=student/postdoc; Drafts available upon request)

1. †Birnbaum, J., Zia, W., Bordbar, A., Lev, E. and Boyce, C., *Magnetic resonance imaging of analog lava flows: Velocity and rheology*, to be submitted to Journal of Geophysical Research: Solid Earth

2. Jasper Baur, Janine Birnbaum, Einat Lev, Brenna Halverson, Hannah Dietterich, Julia Hammer, Alan Whittington, Edward Llewellyn, *Evolution and Dynamics of the K  lauea Lower East Rift Zone Ahu'ail  'au Lava Flow*, to be submitted to *Bulletting of Volcanology*
3. Lin, Y., Lev, E., Mukerji, R., Fischer, T., Connor, C., Stovall, W., Poland, M., Iezzi, A., Wauthier, C., Gonzalez Santana, J., Wolf, S., Kasali, T., *Lessons Learned from the 2022 CONVERSE Monogenetic Volcanism Response Scenario Exercise*, to be submitted to *Volcanica*

INVITED PRESENTATIONS

Lava flows, magma rheology, and volcanology:

20. *Review of Lava Flow Research*, CIDER conference, Berkeley, Summer 2019
19. *Academia's role during the response to the 2018 Kilauea eruption*, CONVERSE workshop, November 2018
18. *Field observations as constraints for numerical models of lava flows and lakes*, Cities on Volcanoes 10, Naples, Italy, September 2018
17. Geology and Environmental Science department seminar, Ben-Gurion University, Be'er-Sheva, Israel, April 2017
16. School of Earth and Planetary Science, Tel-Aviv University, Israel, April 2017
15. Geology department seminar, City College, the City University of New York, November 2016
14. Department of Earth and Planetary Science, American Museum of Natural History, March 2016
13. Penn State geology department seminar, April 2015
12. Department of Geological Sciences, University of Oregon, February 2015
11. The Levich Institute for Physico-chemical Hydrodynamics, City University of New York, February 2015
10. Department of Geophysics, Stanford University, February 2015
9. Earthquake Research Institute, Tokyo University, November 2014
8. National Institute of Earth Science and Disasters (NIED), Japan, October 2014
7. Geological Sciences department, Tokyo University, September 2014
6. Geology department, Yale University, April 2014
5. *Investigating lava flow rheology using video analysis and numerical flow models*, IAVCEI meeting, Japan 2013
4. Division of Geological and Planetary Sciences, California Institute of Technology, January 2013
3. Dept. of Geology and Planetary Science, University of Pittsburgh, November 2012
2. Department of Environmental Sciences and Energy Resources, Weizmann Institute of Science, Israel, May 2012
1. Department of Earth and Planetary Science, American Museum of Natural History, March 2012

Anisotropic viscosity in geodynamical flow models:

8. SUNY-Stony Brook Geology Colloquium, 2010
7. Lamont-Doherty Earth Observatory, LDEO, April 2009
6. Physics Department, Colorado University-Boulder, March 2009
5. *Anisotropic viscosity in geodynamical flow models*, CIG Mantle convection and lithospheric dynamics, UC-Davis, July 2008
4. *Anisotropic viscosity in geodynamical flow models*, Gordon Research Conference on Rock Deformation, NH, August 2008
3. Department of Geosciences, Princeton University, April 2008
2. Department of Earth, Environmental and Planetary Sciences, Brown University, 2007
1. Geology and Geophysics department, Woods Hole Oceanic Institute, 2006

CONFERENCE TALKS AND POSTERS

59. Halverston, B., Whittington, A., Hammer, J., Degraffenried, R. **Lev, E.**, Dietterich, H., [†]Birnbaum, J., Patrick, M., Parcheta, C., [†]Carr, C., Zoeller, M., Trusdell, F., Llewellyn, E., *V002-0016 - Vesicularity, crystallinity, and implications for rheology of the Kīlauea 2018 Lava Flows* , AGU Fall meeting, December 2020
58. Namiki, A., **Lev, E.**, [†]Birnbaum, J., *An Experimental Model of Unconfined Bubbly Lava Flows*, AGU Fall meeting, December 2020
57. Halverston, B., Whittington, A., Hammer, J., Degraffenried, R. **Lev, E.**, Dietterich, H., [†]Birnbaum, J., Patrick, M., Parcheta, C., [†]Carr, C., Zoeller, M., Trusdell, F., Llewellyn, E., *Vesicularity and Rheology of the Kīlauea 2018 Lava Flows* , Goldschmidt conference, June 2020
56. **E. Lev**, J. Birnbaum[†], C. Conroy[†], A. Whittington, B. Halverson, J. Hammer, E. Llewellyn, *The rheology of three-phase lavas and magmas*, Goldschmidt conference, June 2020
55. [†]Birnbaum, J. and **Lev, E.**, *Investigating the rheology of particle- and bubble-bearing lava using analogue flows and numerical simulations*, GSA annual meeting, September 2019
54. [†]Carr, B., **Lev, E.**, Bennett, K., Edwards, C., Soule, A., Vallejo Vargas, S., *Mapping and classification of volcanic deposits using multi-sensor Unoccupied Aerial Vehicles*, New York Data Science Forum, June 2019
53. [†]Carr, B., **Lev, E.**, Bennett, K. and Edwards, C., *Utilization of an sUAS-Based Thermal Camera to Determine Relative Thermal Inertia of Volcanic Deposits*, 50th Lunar and Planetary Science Conference, Houston, TX, March 2019
52. [†]Carr, B., **Lev, E.**, *Activity and hazards of the ongoing eruption of Sinabung Volcano, Indonesia, evaluated using UAS-derived datasets*, AGU Fall meeting, Washington DC, December 2018
51. [†]Conroy, C. and **Lev, E.**, *Towards modeling lava breakouts*, AGU Fall meeting, Washington DC, December 2018
50. **Lev, E.**, Oppenheimer, J., Carr, B., Perroy, R., Dietterich, H. and Diefenbach, A. *Assessing lava flow dynamics and rheology using sUAS data*, AGU Fall Meeting, Washington DC, December 2018
49. **Lev, E.**, Ruprecht P., Lloyd, A. and Moon, R., *Investigating the Quizapu lava flows from the air and on the ground*, AGU Fall Meeting, New Orleans, LA, December 2017
48. **Lev, E.**, Ruprecht P., Lloyd, A. and Moon, R., *A tale of two flows – A field study at Quizapu Volcano, Chile*, IAVCEI Scientific Assembly, Portland, OR, August 2017
47. **Lev, E.**, Ford, C., Patrick, M. and Unglert, K., *Cooling and degassing of lava lakes – global and local perspectives*, IAVCEI Scientific Assembly, Portland, OR, August 2017
46. Morrison, A., Zanetti, M., Hamilton, C., Neish, C., **Lev, E.** and Whittington, A., *Rheology of lunar highland and mare impact melt simulants: JSC-1a, Stillwater anorthosite, and Stillwater norite*, IAVCEI Scientific Assembly, Portland, OR, August 2017
45. Plank, T., Rasmussen, D., Buff, L., **Lev, E.**, Roman, D., Hauri, E., Nicolaysen, K., and Izbekov, P., *The role of slab depth in the magma input to volcanic arcs*, IAVCEI meeting, Portland, OR, August 2017
44. [†]Rumpf, E. and **Lev, E.**, *Experimental Investigation of the Influence of Small-Scale Topography on Lava Flow Advance*, IAVCEI Scientific Assembly, Portland, OR, August 2017
43. Dundas C. M., Keszthelyi L., Hamilton C. W., Bonnefoy L. E., Scheidt S. P. et al. *The Hydrothermal System of the 2014–2015 lava Flows at Holuhraun, Iceland: An Analog for Martian Lava-Water Interactions* , Lunar and Planetary Science Conference, March 2017

42. Suckale, J., Qin, Z., Culha, C. and **Lev, E.**, *Towards an avatar for deciphering the modes of three-phase interactions in lava lakes*, AGU Fall Meeting, 2016
41. **Lev, E.**, Dietterich, H. and Rumpf, M.E., *The influence of rheology on the interaction of lava flows with obstacles*, 9th Cities on Volcanoes meeting, Puerto Varas, Chile, November 2016
40. **Lev, E.**, Rumpf, M.E., Hamilton, C. and Scheidt, S., *Mapping Lava Flow Morphology and Structure With Unmanned Aerial Vehicles*, 2nd Virtual Geoscience Conference, Bergen, September 2016
39. Dietterich, H., **Lev, E.** and Chen, J., *Benchmarking computational fluid dynamics models for lava flow simulation*, EGU meeting, 2016
38. **Lev, E.**, Oppenheimer, C., Spampinato, L., Hernandez, P. and Unglert, K., *A comparative Study of Circulation Patterns at Active Lava Lakes*, EGU meeting, 2016.
37. Dietterich, H. **Lev, E.**, Jiangzhi, C., Cashman, K. and Honor, C., *Benchmarking Computational Fluid Dynamics Models for Application to Lava Flow Simulations and Hazard Assessment*, AGU Fall Meeting, 2015
36. †Rumpf, E.M. and **Lev, E.**, *Investigating lava-substrate interactions through flow experiments with syrup, wax, and molten basalt*, AGU Fall Meeting, 2015
35. Patrick, M., Orr, T., Swanson, D. and **Lev, E.**, *Shallow outgassing changes disrupt steady lava lake activity, Kīlauea Volcano*, AGU Fall Meeting, 2015
34. **Lev, E.** and James, M.R., *The influence of cross-sectional channel geometry on rheology and flux estimates for active lava flows*, AGU Fall Meeting, 2013
33. **Lev, E.**, M. Spiegelman, J. Karson and R. Wysocki, *Investigating lava flow rheology using video analysis and numerical flow models*, IAVCEI meeting, Japan 2013 (INVITED)
32. **Lev, E.**, M. Spiegelman, J. Karson and R. Wysocki, *Investigating Lava Rheology Using Video Analysis and Flow Models*, IUGG/IAVCEI meeting, Australia, 2011
31. **Lev, E.**, *Numerical modeling of lava flows*, PASI Open Vent volcanoes workshop, Costa Rica, 2011
30. **E. Lev** and B.H. Hager, *Anisotropic viscosity in geodynamical flow models*, Gordon Research Conference on Rock Deformation, NH, August 2008 (INVITED)
29. **E. Lev** and B.H. Hager, *Anisotropic viscosity in geodynamical flow models*, CIG Mantle convection and lithospheric dynamics, UC-Davis, July 2008 (INVITED)
28. **E. Lev** and B.H. Hager, *Anisotropic viscosity in geodynamical flow models*, AGU Fall meeting, 2007. (Part of a special session dealing with rheological anisotropy in earth sciences, held jointly by the tectonophysics, seismology, cryosphere and mineral physics sections).
27. **E. Lev**, M.D. Long and R.D. van der Hilst, *Seismic anisotropy in Eastern Tibet from shear-wave splitting*, AGU Fall meeting, 2005)(Received Best Student Presentation Award)
26. **Lev, E.**, Oppenheimer, J., Carr, B., Perroy, R., Dietterich, H. and Diefenbach, A., *Assessing lava flow dynamics and rheology using sUAS data*, AGU Fall Meeting, Washington DC, 2018
25. Wegleitner, K. and **Lev, E.**, *Investigating the Effect of Viscosity and Pulsating Effusion Rates on Lava Dome Morphology Through Physical Models*, AGU Fall Meeting, Washington DC, 2018
24. Carr, B. and **Lev, E.**, *Activity and hazards of the ongoing eruption of Sinabung Volcano, Indonesia, evaluated using UAS-derived datasets*, AGU Fall Meeting, Washington DC, 2018
23. Oppenheimer, J., Patel, K., **Lev, E.** and Hillman, E., *A New 4D Imaging Method for Three-Phase Analogue Experiments in Volcanology and Other Three-Phase Systems*, AGU Fall Meeting, Washington DC, 2018

22. Dietterich, H., and others, *Lava flow hazard modeling and the assessment of effusion rates and topographic change with UAS and lidar during the 2018 Kilauea lower East Rift Zone eruption*, AGU Fall Meeting, Washington DC, 2018
21. †Rasmussen, D., and others, *How Slab Depth is Reflected in Aleutian Arc Magmas*, AGU Fall Meeting, Washington DC, 2018
20. Turrin, M., **Lev, E.**, Xu, C. and Newton, R. '*INCLUDING*' partnerships to build authentic research into K-12 science education', AGU Fall Meeting, New Orleans, LA, 2017.
19. Morrison, A.A., Zanetti, M., Hamilton, C.W., **Lev, E.**, Neish, C.D. and Whittington, A. *Liquid viscosity measurements of lunar highland and mare impact melt simulants: JSC-1A, Stillwater anorthosite, and Stillwater norite*, GSA Annual Meeting, 2016
18. **Lev, E.**, Dietterich, H., Rumpf, M.E. and Mossel, C.N., *Experimental investigation of the impact of cooling and solidification on lava flow interaction with obstacles*, AGU Fall Meeting, 2016
17. †Rumpf, M.E., **Lev, E.**, Hamilton, C., and Scheidt, S., *The Influence of Bed Roughness on Lava Flow Emplacement and Morphology: A Laboratory and Field Study*, 9th Cities on Volcanoes meeting, Puerto Varas, Chile, November 2016
16. **Lev, E.**, Ruprecht, P., Patrick, M., Oppenheimer, C., Peters, N., Spampinato, L., Hernandez, P., Unglert, K. and Barreyre, T., *A Rare Window Into Magmatic Conduit Processes: Time Series Observations From Active Lava Lakes*, AGU Fall Meeting 2015
15. Ford, C. and **Lev, E.**, *Red Hot: Determining the Physical Properties of Lava Lake Skin*, AGU Fall Meeting, 2015
14. **Lev, E.** *Circulation patterns in active lava lakes*, Gordon Research Conference, 2015
13. **Lev, E.** and Redmond, T.C., *Circulation patterns in active lava lakes*, AGU Fall Meeting 2014
12. Edwards, B.R., J. Karson, R. Wysocki, **E. Lev**, I.N. Bindeman, and U. Kueppers. *Experimental Insights on Natural Lava-Ice/Snow Interactions and Their Implications for Glaciovolcanic and Submarine Eruptions*, AGU Fall Meeting, 2012
11. **Lev, E.**, M. Spiegelman, J. Karson, R. Wysocki, *Investigating Lava Properties using Experiments, Video Analysis, Infrared Thermometry and Numerical Flow Models*, AGU Fall Meeting, 2012
10. **Lev, E.**, M. Spiegelman, J. Karson, R. Wysocki, *Investigating Lava Rheology Using Man-Made Lava Flows, Computer Vision, and Flow Models*, Chapman Conference on Hawaiian Volcanism, 2012
9. **Lev, E.**, M. Spiegelman, J. Karson, R. Wysocki, *Investigating Lava Rheology Using Man-Made Lava Flows, Computer Vision, and Flow Models*, AGU Fall Meeting, 2011
8. Tarlow, S., **E. Lev**, C.J. Zappa, J. Karson, R. Wysocki, *Investigating Cooling Rates of a Controlled Lava Flow using Infrared Imaging and Three Heat Diffusion Models*, AGU Fall Meeting, 2011
7. **Lev, E.**, *Extracting Lava Velocity and Rheology from Computer-Vision Analysis of Lava Flow Videos*, IUGG/CMG meeting, Pisa, Italy, 2010
6. **Lev, E.** and B.H. Hager, *Anisotropic viscosity in geodynamical flow models – Rayleigh-Taylor instabilities as a test example*, The Cutting Edge "Preparation for an academic career in geosciences" workshop, Madison, WI
5. **Lev, E.** and B.H. Hager, *Anisotropic viscosity in geodynamical flow models – Rayleigh-Taylor instabilities as a test example*, International school of geophysics, 2007, Carry-Le-Rouet, France
4. **Lev, E.** and B.H. Hager, *Anisotropic viscosity in geodynamical flow models – Rayleigh-Taylor instabilities as a test example*, Gordon Research Conference on Interior of the Earth, June 2007

3. **Lev, E.**, M.D. Long and R.D. van der Hilst, *Seismic anisotropy in Eastern Tibet from shear-wave splitting*, International workshop on seismic anisotropy, Trest, Czech Republic, 2006
2. **Lev, E.**, M.D. Long and R.D. van der Hilst, *Seismic anisotropy in Eastern Tibet from shear-wave splitting*, MYRES II, Verbana, Italy, July 2006
1. **Lev, E.** and B.H. Hager, *Mixing of Differentiated Oceanic Crust in a Convecting Mantle with Depth and Temperature Dependent Properties*, International Workshop on Numerical Modeling of Mantle Convection and Lithospheric Dynamics, Erice, Italy 2005

TEACHING EXPERIENCE (AS INSTRUCTOR)

Sustainability in the Face of Natural Disaster

Columbia University School of Professional Studies, Sustainability Science Masters program
Co-instructor of class, 2019-present

Volcanic systems: from the magma chamber to post-eruption

Lamont-Doherty Earth Observatory
Co-organizer of seminar series, 2011

Earth's System: Solid Earth (EES2200)

Columbia University, Department of Earth and Environmental Science
Co-instructor of class, 2010

Earth Science, Energy, and the Environment (MIT 12.021)

Massachusetts Institute of Technology
Course developer, 2009

Geodynamics (MIT 12.520, graduate level) / Application of Continuum Mechanics in Earth Sciences (MIT 12.005, undergraduate level)

Massachusetts Institute of Technology
Teaching assistant, 2004-2008

“Introduction to geology”

Massachusetts Institute of Technology, High-School Summer Program (HSSP)
Co-instructor of class, 2007

ADVISING AND MENTORING

(★ = a person from an underrepresented minority or a non-traditional student)

Postdocs

2019-2020 Dr. Colton Conroy

LDEO Postdoctoral Researcher

Two and three dimensional models of lava flows using Discontinuous Galerkin Methods

– 2018-2020 Dr. Brett Carr

NSF Postdoctoral Fellow

The Stability of Viscous Lavas: Understanding the Driving Processes and Greatest Hazards

2017-2019 Dr. Julie Oppenheimer

LDEO Postdoctoral Researcher

Investigating magma dynamics and volcanic eruptions using real-time 4D microscopy of bubble interactions with a flowing solid-liquid mush

2015-2017 Dr. M. Elise Rumpf
NSF Postdoctoral Fellow
Laboratory investigation of lava flows on variable substrates

2015 Dr. Xiaoliang Li (Chinese Academy of Science)
Visiting postdoctoral researcher
Emplacement of lava flows and domes on rough surfaces

Graduate students

2020-present Jasper Baur (LDEO),
PhD student, primary advisor

Spring 2020 Elisa Biagioli (U. Genoa),
Visiting student

2018-present Janine Birnbaum (LDEO),
PhD student, primary advisor

2015-2021 Anna Barth (LDEO),
PhD student, thesis committee member

2014-2020 Daniel Rasmussen (LDEO),
PhD 2019, thesis committee member

Undergraduate students

2019 ★Mariam Diakite (CUNY)
SSFRP team leader
Three-phase lava rheology and flow dynamics

2018-2019 ★Rya Inman (Columbia University)
Work-Study, Senior thesis)
Impact of slurry particle concentration and effusion rate changes on experimental lava dome emplacement

2018 Kate Anne Wegleitner (Columbia University)
Summer undergraduate intern
Experimental study on the impact of effusion rate variations on lava dome emplacement

2017 ★Robert S. Moon (Columbia University)
Summer undergraduate intern
Construction and analysis of high-resolution topography models of Quizapu lava flows

2017 Christy Jenkins (Barnard College)
Senior thesis
Using Landsat's visible bands to constrain the temperature of erupting lavas (with Chris Small

2016 Jeras Dieleman (U. Delft)
Senior thesis
Estimating lava flow roughness from elevation data

2016 Elizabeth Eiden (Caltech)
Summer undergraduate intern
Influence of a break in slope on lava flow morphology

2016 Carolien Mossel (SUNY-Geneseo)
Summer undergraduate intern
Influence of a solidification and crust formation on the interaction of lava flows with topography

- 2016 Hanna Jane Cohen (Columbia University)
Senior thesis
Identifying lava flow morphology from aerial photographs
- 2015 ★Mark Cooper (Columbia University)
Work-Study Intern
Modifying laboratory pump setup to accommodate a range of fluids
- 2015-2016 ★Camera Ford (Brown University)
LDEO undergraduate summer intern, Senior thesis
Cooling of vesicular lava in a lake
- 2014 ★Alanna Williams (Columbia University)
Earth Institute Intern
Image analysis of lake patterns
- 2014 Taylor Redmond (George Washington University) LDEO undergraduate summer intern
Lava lake circulation patterns; Experimental lava flow velocity measurements
- 2013 ★José Mendez (Columbia University)
Earth Institute Intern
Analysis of Lava Lake Footage to Detect Circulation Patterns
- 2012 Caitlin Meadows (U. of Michigan)
LDEO undergraduate summer intern, Lead mentor: Dr. Tim Creyts
Experimental study of subglacial drainage systems using gelatin
- 2011 Scott Tarlow (Wheaton College)
LDEO undergraduate summer intern, Lead Mentor: Dr. Chris Zappa
Cooling Rates of a Controlled Lava Flow using Infrared Imaging and Heat Diffusion Models

High-school students

- 2019 ★Ryan Burgos, The Urban Assembly New York Harbor School
- 2019 ★Lexylee Lyons, Northern Valley Old Tappan
- 2017 Cassandra Cooper, Ethical Culture High School
- 2017 Victor Stevens and Matthieu André, Lycée Français
- 2017 Julia Grandury, Lycée Français
- 2015, 2016 Asha Grossberndt, Bedford Central School District

PROFESSIONAL SERVICE

1. Community Organization and Leadership

- Co-PI on NSF Research Coordination Network (RCN) titled "Community Network for Volcanic Eruption Response (CONVERSE)" (Lead PI: Tobias Fischer. Role: Lead on Modelling, co-lead on UAVs)
- Co-PI on Global Volcano Observatory (GloVo) Mid-scale Infrastructure proposal (Lead PI: Diana Roman)

2. Conference Service

- Host and organizer, Computational Infrastructure for Volcanology – a planning workshop, LDEO (Virtual), February 2021
- Co-organizer and moderator, Novel instrumentation for volcano monitoring, LDEO (Virtual), February 2021

- Disciplinary lead (Modeling), CONVERSE Volcanic Eruption Simulation, UNM (Virtual), November 2020
- Moderator, GeoPrisms workshop on Tectonics and Volcanism in the Aleutians, LDEO, August 2019
- Co-proposer and Organizer of the Community Volcano Experiment Workshop, Albuquerque NM, 2018
- Co-organizer of VolcaNYC, an annual meeting and field trips for volcanologists in the New York City area (Once a year since 2017)
- Organizer of pre-conference workshop on UAVs in Volcanology, IAVCEI meeting, 2017
- Organizer of post-conference workshop on Numerical Modeling using OpenFOAM, IAVCEI meeting, 2017
- Organizer of GeoPRISMS mini-workshop about volcanoes at AGU Fall meeting 2016
- Member of steering committee for the 3rd Virtual Geoscience meeting in 2018
- Member of the scientific programming committee for the 2017 IAVCEI Scientific Assembly
- Organizer of session: “Styles of Volcanism: Forecasting, pattern recognition and monitoring developing eruptions” at AGU 2015 Fall Meeting
- Organizer of session: ‘Lava Flows: Integrating Field and Remote Sensing Observations, Laboratory Experiments, and Modeling’, AGU Fall Meeting 2014
- Organized a workshop about magma and lava rheology at the 2013 IAVCEI meeting, Kagoshima, Japan
- Organizer of special session: “Volcanic Flow and Magma Properties: Field, Laboratory and Hazard Assessment”, AGU Fall Meeting, 2013 (cosponsored by EGU-GMPV and MSA)
- AGU Fall meetings Outstanding Student Paper Award Judge , 2009-present
- AGU Fall meetings Session chair for Tectonophysics/Seismology, 2006-2009
- Organizer of special session: “Rheological Anisotropy in the Earth Sciences”, AGU Fall Meeting, 2007

3. University Service

- LDEO IT Vision Committee (2021-present)
- LDEO Executive Committee (2019-present)
- LDEO Vision Committee (2020)
- Earth Institute Research Facilitation task force
- LDEO Code of Conduct committee
- LDEO Fluid Mechanics laboratory (a community facility), designer and facilitator (2016-present)
- LDEO postdoctoral fellowship, selection committee (2016, 2017, 2018)
- Search committee, Marine Geology postdoc researcher (2016)
- 50 years to Plate Tectonics, organizing committee (2015)
- Division representative at the LDEO Campus Life Committee (2013-2015)
- LDEO special task force on diversity (2011)
- Co-organizer of LDEO Geodynamics seminar (2009-present)
- Organizer of LDEO’s Geophysics seminar (joint SGT and MG&G) (2010-2012)
- Graduate students representative for the EAPS Visiting Committee (2007-2009)
- Secretary of EAPS graduate students advisory council (EGSAC) (2006-2007)
- Organizer of the MIT Geology and Geophysics weekly students seminar (2005-2006)
- Coordinator of EAPS Graduate Student Mentoring program (2005-2009)
- Organizing Committee of Geophysics monthly seminar (2004)

4. Peer reviewer for:

- *Bulletin of Volcanology*
- *Earth and Planetary Science Letters*
- *USGS Special Publication on Kilauea*

- *G-Cubed*
- *Geology*
- *Annals of Geophysics*
- *Geophysical and Astrophysical Fluid Dynamics*
- *Geophysical Journal International*
- *Journal of Geophysical Research – Solid Earth*
- *Journal of Geophysical Research – Planets*
- *NSF (mail-in and panels)*
- *NASA (mail-in and panels)*
- *Physics of Earth and Planetary Interiors*
- *Tectonophysics*

FIELDWORK EXPERIENCE

- 05/2021 UAV-based survey of the active eruption at Fagradalsfjall volcano, Iceland
- 10/2018 UAV-based survey of the 2018 eruption of Sierra Negra, Galapagos
- 07/2018 Large-scale explosion experiment, University of Buffalo, UAV survey
- 05/2018 UAV-based response to the 2018 eruption of Kilauea's Lower East Rift Zone
- 08/2017 UAV aerial photography of lava domes in Oregon and California
- 08/2016 Infrared and visible video recording of lava lake at Masaya, Nicaragua
(by PhD students Anna Barth and Yonatan Goldsmith)
- 02/2015 Aerial photography and sampling of lava flows at Quizapu volcano, Chile
- 08/2015 Aerial photography using unmanned aerial vehicles (UAVs) of the
2014-2015 Holuhraun lava flow, Iceland
- 03/2015 Thermal imaging and mapping of recent lava flow and lava lake activity, Hawaii
- 11/2014 UAV aerial survey of the 1986 lava flows on Izu Oshima island, Japan
- 09/2014 UAV aerial survey of the Shinmoedake lava dome of Kirishima volcano, Japan
- 08/2012 Infrared and visible video recording of lava flows in Hawai'i
- 01/2010 PASI Field Course on Open Vent Volcanoes, Costa Rica
- 08/2009 Mapping lava channels on Mauna Loa, Hawai'i using LiDAR
(P.I.s: Kathy Cashman and Adam Soule)
- 06/2008 WHOI Geodynamics field trip, Costa Rica
- 07/2006 Deployment of a PASSCAL-Earthscope seismic network in the Cascades, WA
(P.I.s: Ken Creager, Geoff Abers, Stephane Rondenay)
- 01/2006 Geologic Mapping Field Camp, Southern Arizona
- 09/2004 Geology field trip to Sichuan province (Eastern Tibet), China [(P.I.: Leigh Royden)]
- 2004-2008 Geophysics Field Camp, Riverside Mountains, Southern California

MEDIA AND PUBLIC OUTREACH

- 2021 Interviewed for "Chasing the Lava Flow in Iceland" by Heidi Julavits (The New Yorker magazine, 08/16/2021) about the Fagradalsfjall eruption
- 2021 Opinion column on CNN about the Fagradalsfjall eruption (3/25/2021)
- 2020 TED-style talk at the LDEO Virtual Open House and an Earth Institute Q&A follow-up
- 2020 Panelist on *The Volcano Alarm*, part of The Earth Institute virtual lecture series (6/16/2020)
- 2020 Scientific advisor to a children's book about volcanoes by Gail Gibbons

2019 Judge and keynote speaker at CryptoBot Cyber camp, Pace University

2019 Panelist, Diversity in STEM panel, New York Academy of Sciences

2019 Instructor, How to read a scientific paper?, The River Project summer program

2019 Podcast and live on-stage guest at *Person, Place, Thing, with Randy Cohen*

2018 Multiple interviews at national and international media outlets (i.e., BBC, NPR, Nova), including a May 2018 article about the Kilauea 2018 eruption that won CNN's "most popular op-ed of 2018"

2018 Lecture to National Park staff about using UAS to map lava flows in Sierra Negra, Galapagos

2018 Lecture about the 2018 Kilauea eruption and response, LDEO Open House public event

2018 Earth2Class workshop to educators about volcanology, September

2018 Lecture about lava flows, the Bruce Museum, Greenwich CT, January 2018

2015 Lectures about plate tectonics and geophysics at the Lycée High-school, NY, 2015 and 2016

2014 Interviewed for Science regarding the Bárðarbunga eruption

2013 Academic Minute program about lava flows, NPR

2014 Scientific Consultant to LEGO First League (Natural Hazards) team from Dobbs Ferry, NY

2013 Interviewed to Discovery Channel Canada regarding lava experiments

2013 Interviewed to New Scientist regarding lava experiments

2011 Geoscience Congressional Visit Day, NY state team, September 2011

Cont. Lava flow demonstrations at World Science Festival and LDEO Open House events (both annually)

Cont. NYC Science and Engineering Fair, Earth and Planetary Science, Head judge (annually)

Cont. Multiple blog posts on the Earth Institute blog "State of the Planet" about volcanology field work

2007 Teacher of "Introduction to geology" class, MIT's High-School Summer Program (HSSP), Summer 2007

2005 Mentor in KEYs (Keys to Empowering Youth) project at MIT, 2005-2008