Camilla Cattania

camcat@mit.edu, (650)-391-3385
Department of Earth, Atmospheric and Planetary Sciences
77 Massachusetts Avenue, 54-918, Cambridge, MA 02139

Education

2015 PhD in Geophysics
GFZ German Research Center for Geosciences/University of Potsdam, Potsdam, Germany
Thesis: *Improvement of seismicity models based on Coulomb stress interactions and rate-state dependent friction.*

2011 B.A. - M.Sci. Natural Sciences – Experimental and Theoretical Physics
University of Cambridge, Cambridge, UK (Grade: First Class)

Professional experience

2020- Assistant Professor, Massachusetts Institute of Technology (MA), USA
2017-20 Research Scientist, Stanford University (CA), USA
2016-17 Postdoctoral Fellow, Stanford University (CA), USA and GFZ Potsdam, Germany
2015 Guest Investigator**,** Woods Hole Oceanographic Institution, Woods Hole (MA), USA
2015 Guest Scientist, GFZ Potsdam, Germany

Publications

2020 Erickson, B., J. Jiang, M. Barall, N. Lapusta, E. M. Dunham, R. Harris, L. S. Abrahams, K. L. Allison, J.P. Ampuero, S. Barbot, C. **Cattania**, A. Elbanna, Y. Fialko, B. Idini, J. E. Kozdon, V. Lambert, Y. Liu, Y. Luo, X. Ma, M. Best McKay, P. Segall, P. Shi, M. van den Ende, and M. Wei, *The Community Code Verification Exercise for Simulating Sequences of Earthquakes and Aseismic Slip (SEAS)*, Seismological Research Letters ; 91 (2A): 874–890. doi:10.1785/0220190248

2019 **Cattania**, C., *Complex earthquake behavior on simple faults*, Geophys. Res. Lett., 46. doi:10.1029/2019GL083628

Mancini, S., Segou, M., Werner, M. J., and C. **Cattania**, *Improving physics‐based aftershock forecasts during the 2016–2017 Central Italy Earthquake Cascade*. J. Geophys. Res. Solid Earth, 124. doi:10.1029/2019JB017874

2018 **Cattania**, C. and P. Segall, *Crack models of repeating earthquakes predict observed moment-recurrence scaling*, J. Geophys. Res. Solid Earth, 123. doi:10.1029/2018JB016056

Cattania, C., M. Werner, W. Marzocchi, S. Hainzl, M. Gerstenberger, Rhoades, M. Liukis, D., A. Christophersen, A. Helmstetter, A. Jimenez, S. Steacy and T. Jordan, *The forecasting skill of Coulomb-based seismicity forecasting models during the 2010-2012 Canterbury, New Zealand, earthquake sequence,* Seism. Res. Lett., 89 (4): 1238-1250. doi:10.1785/0220180033

2017 Pollitz, F. and C. **Cattania**, *Connecting crustal seismicity and earthquake-driven stress evolution in Southern California*, J. Geophys. Res. Solid Earth, 122, 6473–6490, doi:10.1002/2017JB014200

Cattania, C., E. Rivalta, S. Hainzl, L. Passarelli, and Y. Aochi*, A slow rupture episode during the 2000 Miyakejima dike intrusion*, J. Geophys. Res. Solid Earth, 122. doi:10.1002/2016JB013722

2016 **Cattania**, C., J. McGuire, and J. A. Collins, *Dynamic Triggering in the East Pacific Rise*, Geophys. Res. Lett., 43, doi:10.1002/2016GL070857

Cattania, C. and F. Khalid, *A parallel code to calculate seismicity evolution induced by time dependent, heterogeneous Coulomb stress changes,* Computers & Geosciences, 94, 48–55. doi: 10.1016/j.cageo.2016.06.007

2015 **Cattania**, C., S. Hainzl, L. Wang, F. Roth, and B. Enescu, *Aftershock triggering by postseismic stresses: a study based on Coulomb-Rate-and-State models*, J. Geophys. Res. Solid Earth, 120, 2388–2407. doi: 10.1002/2014JB011500

2014 **Cattania**, C., S. Hainzl, L. Wang, F. Roth, and B. Enescu, *Propagation of Coulomb stress uncertainties in physics-based aftershock models*, J. Geophys. Res. Solid Earth, 119, 7846-7864. doi:10.1002/2014JB011183

2013 Hainzl, S., Y. Ben-Zion, C. **Cattania**, and J. Wassermann, *Testing atmospheric and tidal earthquake triggering at Mt. Hochstaufen, Germany*, J. Geophys. Res. Solid Earth, 118, 5442-5452. doi:10.1002/jgrb.50387

Awards and Fellowships

2016 Friedrich-Robert-Helmert-Preis for excellent PhD thesis (GFZ Potsdam)
2013 AGU Outstanding Student Paper Award in seismology, AGU Fall Meeting
2009 AGU Outstanding Student Paper Award in seismology, AGU Fall Meeting

Funded Projects

2018 NEHRP award, *Investigating the seismic signature of earthquake nucleation with dynamic simulations of microearthquakes*, $87,774 (I was involved as Co-PI. Principal Investigator: P. Segall)

2018 SCEC award, *Simulation of earthquake cycles on faults with heterogeneous strength and rate-state friction*, $23,000 (I was involved as Co-PI. Principal Investigator: P. Segall)

2017 SCEC award, *Investigating seismic cycles with thermal pressurization using physical models and numerical simulations*. $28,000 (I was involved as Co-PI. Principal Investigator: P. Segall)

2016 DAAD fellowship, *"Studying the precursory phase of large earthquakes with physical and statistical methods"*. ~$105,000 (I was Principal Investigator). Acceptance rate ~10%.

2014 Computing time at the FutureSOC-Lab of the Hasso Plattner Institute, Potsdam, *Massively Parallel Simulation of Seismic Events following Earthquakes*. ~300 CPU hours (I was Co-PI. PI: F. Khalid)

Invited Talks

2020 USGS Earthquake Seminar
University of California, Santa Cruz
2019 Megathrust Modeling Workshop, Eugene, OR, USA
Annual Meeting of the Southern California Earthquake Center, Palm Springs, CA, USA
MIT Special Seminar

	CalTech, Seismolab Seminar
	Berkeley, Seismolab Seminar
2018	University of Michigan
	ETH Zurich
2017	CSEP Workshop: Informing Earthquake Debates with CSEP Results, Palm Springs, CA, USA
2015	Yale University
	International summer school on Earthquake Science, Lake Yamanakako, Japan
2014	Training School Earthquakes: nucleation, triggering, and aseismic processes, Cargèse, France
	CSEP/USGS/GEM Workshop: Next Steps for Testing Operational Earthquake Forecasts and Seismic Hazard Models, Palm Springs, CA, USA

Teaching and Outreach

2018	Introductory Geophysics (undergraduate, I taught 1 lecture),
	Earthquake Seismology (graduate, 1 lecture)
	Earthquake Seismology, Deformation, and Stress (graduate, entire course)
	Mentoring of PhD student Simone Mancini (University of Bristol, UK)
2017	Participation in TV documentary on seismicity in the Eastern Alps (TV channel: ARTE)
2013	Supervision of a summer intern (Vic-Fabienne Schumann)

Professional Service

- Reviewer for *Journal of Geophysical Research; Tectonophysics, Pure and Applied Geophysics; Geophysical Research Letters; Earth, Planets and Space; Nature Scientific Reports; Nature*

2019 Session convener at the annual meeting of the Seismological Society of America, (April 23-26, Seattle)

2018 Invited contributor to the white paper "*Modeling earthquake source processes: from tectonics to dynamic rupture*" submitted to the National Academies

2017 Field work: site survey and testing of seismic stations for the European project AlpArray

2013 Organization committee member of the GeoSim seminars series, Potsdam, Germany

2013 Co-author of the article *Modellierung als Werkzeug:Erdbebeninteraktion verstehen und Seismizität vorhersagen (Modeling as a tool: understanding earthquake interaction and forecasting seismicity)*, *System Erde. GFZ-Journal (2013) 3-1* (report on GFZ activities aimed at the general public)

Computational Skills

Operating Systems: proficient knowledge of Linux, standard knowledge of Windows
Programming Languages and scientific software: proficient knowledge of bash scripting, C, Matlab; working knowledge of Fortran, C++, Python, GMT; basic knowledge of Java, ML, Paraview, Gnuplot
Parallel programming: familiarity with OpenMP, basic knowledge of MPI
Others: working knowledge of standard profiling and version control tools (gprof, git, valgrind)

Language Skills

Italian (native), English (fluent), German (good working knowledge), French (basic)

Professional Memberships

American Geophysical Union, Seismological Society of America, European Geosciences Union