

Scientific statement

My research aims to understand the physical processes underlying patterns of micro-seismicity. I use simple, physically motivated models and statistical methods to describe the interactions between parts of geologic systems and try to understand the emergence of catastrophic events. Specifically, I want to understand the emergence of system-spanning ruptures on faults and the emergence of unsteady fluid flow on faults and volcanoes. I strive to make my research accessible to all, through open access practices and entertaining communication. I am committed to making our labs inclusive to all, to foster a collective in which we all can play a part and flourish professionally.

Education

- 2019–2022 **Institut de Physique du Globe de Paris (IPGP), Université Paris Cité (UPC) — PhD in Geophysics**
> *Sounds of geological plumbing systems — How transient fluid circulation processes in faults and volcanoes shape sources and patterns of microseismicity*
With *Claude Jaupart & Nikolai Shapiro*
- 2014–2019 **École Normale Supérieure (ENS), Paris — ENS Graduate Degree (M.Sc. eq.)**
Earth Sciences and elective classes in History, Physics, Linguistics...
- 2018 **Columbia University, New York, NY — Graduate exchange scholar**
Graduate School of Arts & Sciences. Graduate classes in Data Sonification, Sociology and History.
- 2015–2017 **ENS & IPGP — M.Sc. in Geophysics**
- 2014–2015 **ENS & Université Pierre et Marie Curie, Paris — B.Sc. in Geophysics**

Research Positions

- 2023–2025 **Postdoctoral Researcher — University of California Santa Cruz, Seismological Laboratory**
> *Studies of the interactions between slow and fast earthquakes*
With *Emily Brodsky*
- 2021–2022 **Fulbright Visiting Fellow — Massachusetts Institute of Technology, EAPS, Earthquake Science group**
> *Development of statistical measures of temporal clustering and periodicity in seismicity catalogs*
With *William Frank*
- 2018–2022 **PhD Research — Institut de physique du globe de Paris, Geological Fluid Dynamics group**
> *Sounds of geological plumbing systems — How transient fluid circulation processes in faults and volcanoes shape sources and patterns of microseismicity*
With *Claude Jaupart & Nikolai Shapiro*
- 2017 **Graduate Research Assistant — Institut de Physique du Globe de Paris, Seismology group**
> *Study of the source of low-frequency earthquakes in Guerrero, Mexico*
With *Nikolai Shapiro & William Frank*
- 2016 **Graduate Research Assistant — University of California Berkeley, Seismological Laboratory**
> *Study of the surface deformation at the junction of the Calaveras and Hayward faults*
With *Roland Bürgmann*
- 2015 **Undergraduate Research Assistant — École Normale Supérieure, Laboratoire de Géologie**
> *Study of intermediate and deep-focus seismicity: occurrence, thermo-kinetic control and seasonality*
With *Alexandre Schubnel*

Publications

- Farge G.**, Brodsky E. (2025, *accepted in Science Advances*) *The Big Impact of Small Quakes on Tectonic Tremor Synchronization.*
- Farge, G.**, Jaupart, C., Frank, W. B., & Shapiro, N. M. (2023). *Along-strike segmentation of seismic tremor and its relationship with the hydraulic structure of the subduction fault zone.* *Journal of Geophysical Research: Solid Earth*, 128, e2023JB027584. <https://doi.org/10.1029/2023JB027584>
- Journeau, C., Shapiro, N. M., Seydoux, L., Soubestre, J., Koulakov, I. Y., Jakovlev, A. V., Abkadyrov, I., Gordeev, E. I., Chebrov, D. V., Droznin, D. V., Sens-Schönfelder, C., Luehr, B. G., Tong, F., **Farge, G.**, & Jaupart, C. (2022). *Seismic tremor reveals active trans-crustal magmatic system beneath Kamchatka volcanoes.* *Science Advances*, 8(5), eabj1571. <https://doi.org/10.1126/sciadv.abj1571>
- Farge, G.**, Jaupart, C., & Shapiro, N. M. (2021). *Episodicity and Migration of Low Frequency Earthquakes Modeled With Fast Fluid Pressure Transients in the Permeable Subduction Interface.* *Journal of Geophysical Research: Solid Earth*, 126(9). <https://doi.org/10.1029/2021JB021894>
- Paté, A., **Farge, G.**, Holtzman, B. K., Barth, A. C., Poli, P., Boschi, L., & Karlstrom, L. (2021). *Combining audio and visual displays to highlight temporal and spatial seismic patterns.* *Journal on Multimodal User Interfaces*. <https://doi.org/10.1007/s12193-021-00378-8>
- Farge, G.**, Shapiro, N. M., & Frank, W. B. (2020). *Moment-Duration Scaling of Low-Frequency Earthquakes in Guerrero, Mexico.* *Journal of Geophysical Research: Solid Earth*, 125(8). <https://doi.org/10.1029/2019JB019099>

Participation in peer-review: AGU Advances, Physics of the Earth and Planetary Interiors, Acta Geophysica, Seismic

Invited talks and seminars

April 2025	USGS Earthquake Science Center Seminar (Moffett Field, CA).
March 2025	Université de Strasbourg, Institut Terre et Environnement de Strasbourg seminar
March 2025	École Normale Supérieure, Geology Laboratory seminar
September 2024	SCEC 2024 annual meeting, Collaboratory for the Study of Earthquake Predictability workshop
May 2024	University of Oregon, Small Earthquakes group seminar
March 2024	Université Côte d'Azur, Géoazur, Fault Cycles group seminar
October 2023	UC Berkeley Seismological Laboratory seminar
September 2023	Columbia University, Lamont Doherty Earth Observatory, Geophysics seminar
April 2023	UC Santa Cruz, Institute for Geophysics and Planetary Physics seminar
February 2023	Université Grenoble Alpes, Institut des Sciences de la Terre, Tectonic group seminar
September 2022	PhD defense, Institut de Physique du Globe de Paris
December 2021	Massachusetts Institute of Technology, Earth Resources Laboratory seminar
June 2021	École Normale Supérieure, Geology Laboratory seminar
June 2021	Institut de Physique du Globe de Paris, Geological Fluid Dynamics seminar
May 2021	Université Grenoble Alpes, Institut des Sciences de la Terre, Waves and Structure group seminar
January 2020	Université Grenoble Alpes, Institut des Sciences de la Terre, ERC SEISMAZE annual meeting
October 2019	Université Grenoble Alpes, Institut des Sciences de la Terre, ERC SEISMAZE kickoff meeting

Conference Communications

September 2024	SCEC Annual Meeting, CSEP workshop (Palm Springs)
May 2024	SSA Annual Meeting (Anchorage)
December 2023	AGU Fall Meeting (San Francisco)
September 2023	International joint Workshop on Slow-to-Fast Earthquakes (Tokyo)
July 2021	Doctoral Congress of Institut de Physique du Globe de Paris
March 2021	EGU General Assembly (virtual)
December 2020	AGU Fall Meeting (virtual)
October 2019	14th International Symposium on Computer Music Multidisciplinary Research (Marseille, FR)
September 2019	Institut de Physique du Globe de Paris—Earthquake Research Institute joint workshop (Paris)
December 2017	AGU Fall Meeting (New Orleans)

Grants and Awards

2023	Outstanding PhD Thesis award — Chancellery of Paris Universities (\$10,000)
2021–2022	Fulbright Fellowship grant — French-American Fulbright Commission (6-month funding, \$13,000)
2019	Best “demo” prize for <i>Spatialized seismic soundscapes: Exploring seismic data in virtual reality</i> , at the 14th International Symposium on Computer Music Multidisciplinary Research
2019–2022	Doctoral Scholarship — Ministry of higher education and research (France) & École Normale Supérieure (3-year funding)
2018	Graduate Exchange Scholarship — École Normale Supérieure & Columbia University (1-semester funding)

Teaching positions

2020–2021	Teaching assistant: Thermodynamics — <u>Earth Sci. BSc</u> , IPGP & Université Paris Cité (UPC)
2019–2021	Teaching assistant: Calculus — <u>Earth Sci. BSc</u> , IPGP & UPC
2019–2021	Teaching assistant: Data Analysis in Python for Earth Sci. — <u>Earth Sci. BSc</u> , IPGP & UPC
2019–2020	Teaching assistant: Inverse Problems* — <u>Earth Sci. MSc</u> , IPGP & UPC (<i>taught in English</i>)

Student Advising

Aug 2024–now	Sirena Motter , UC Santa Cruz Undergraduate > <i>Global study of the regularity of tectonic tremor recurrence</i>
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Community involvement and outreach

2023–now	UC Santa Cruz Institute for Geophysics and Planetary Sciences — Seminar Committee
2021	Doctoral Congress of Institut de Physique du Globe de Paris — Head of Organizing committee
2020	Doctoral Congress of Institut de Physique du Globe de Paris — Organizing committee (<i>cancelled</i>)