Leila Mizrahi

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Education

Postdoctoral Researcher — *Dec 2022-present*
- ETH Zurich (Switzerland), Swiss Seismological Service
- Group head of Statistical Seismology (since Apr 2024)
- PhD student advisor (Marta Han, Aron Mirwald)
- Lecturer in Machine Learning for Earth and Planetary Sciences

PhD in Statistical Seismology — *Jul 2019-Nov 2022*
- ETH Zurich (Switzerland), Swiss Seismological Service
- Visiting scholar at University of Southern California (Sep 2021-Jan 2022)
- PhD Thesis: "Towards Next Generation Time-Dependent Earthquake Forecasting"
- *Receiver of the ETH Medal for outstanding doctoral theses*

MSc in Mathematics — *Feb 2014-Sep 2015*
- University of Zurich (Switzerland)
- Master's Thesis: "Thoroughly Formalizing an Uncommon Construction of the Real Numbers"

BSc in Mathematics — *Sep 2010-Feb 2014*
- University of Zurich (Switzerland)

Professional Experience

Actuary Methods & Processes (Assistant Vice President) — *Mar 2019-Jun 2019*
- Swiss Re Ltd., Underwriting Strategy department, Zurich, Switzerland

Underwriting Strategy Graduate (graduates@swissre program) — *Sep 2017-Feb 2019*
- Swiss Re Ltd., Underwriting Strategy department, Zurich, Switzerland

Modelling Intern — *Feb 2016-Jan 2017*
- Swiss Re Ltd., Underwriting Strategy department, Zurich, Switzerland

Other Relevant Experience

Lecturer — *May-Jun 2022*
- Department of Earth Science, ETH Zurich (Switzerland)
- Integrated Practical Course on Seismic Networks and Data

Co-Convener — *Apr 2022 and 2023*
- SSA Annual Meeting
- Session: New Methods and Models for More Informative Earthquake Forecasting (2023)
- Session: New Developments in Physics- and Statistics-based Earthquake Forecasting (2022)

Reviewer — *Jun 2021-present*
- Seismological Research Letters
- Earth and Planetary Science Letters
- Nature Communications Earth & Environment
- Geophysical Journal International
- IEEE Transactions on Geoscience and Remote Sensing
- Frontiers in Applied Mathematics and Statistics

On-call Duty Seismologist — *Jun 2020-present*
- Swiss Seismological Service, ETH Zurich (Switzerland)
- Communicate with Swiss authorities and with the public in case earthquakes in Switzerland or abroad.

Teaching Assistant *Sep 2019-present*
Department of Earth Science, ETH Zurich (Switzerland)
Statistical Data Analysis with Matlab, Geophysical Field Course on Seismic Refraction

Fieldwork *Jun 2021*
Hengill geothermal area (Iceland), Swiss Seismological Service & Reykjavik Energy
Assisted with the installation of a 500 node seismic array.

Fieldwork *Aug 2020*
Hengill geothermal area (Iceland), Swiss Seismological Service & ISOR Icelandic Geosurvey
Assisted with the installation and dismantling of broadband seismic stations, including wind turbines and solar panels.

Teaching Assistant *Sep 2013-Sep 2015*
Institute of Mathematics, University of Zurich (Switzerland)
Analysis I&II, Number Theory, Logic and Set Theory

Publications

Articles

1. **Mizrahi, L.,** and Jozinović, D., 2024. Modeling the Asymptotic Behavior of Higher-Order Aftershocks with Deep Learning. *arXiv preprint.*
doi.org/0.48550/arXiv.2401.06075

2. Han, M., **Mizrahi, L.,** and Wiemer, S., 2024. Towards a Harmonized Operational Earthquake Forecasting Model for Europe. *EGUsphere preprint. [student supervision of Marta Han]*
doi.org/10.5194/egusphere-2023-3153

3. Ritz, V.A., **Mizrahi, L.,** Clasen Repollés, V., Rinaldi, A.P., Hjörleifsdóttir, V. and Wiemer, S., 2024. Pseudo-prospective forecasting of induced and natural seismicity in the Hengill geothermal field. *Journal of Geophysical Research: Solid Earth.*
doi.org/10.1029/2023JB028402

4. **Mizrahi, L.,** Nandan, S., Savran, W., Wiemer, S. and Ben-Zion, Y., 2023. Question-Driven Ensembles of Flexible ETAS Models. *Seismological Research Letters.*
doi.org/10.1785/0220220230

5. **Mizrahi, L.,** Nandan, S. and Wiemer, S., 2021. Embracing Data Incompleteness for Better Earthquake Forecasting. *Journal of Geophysical Research: Solid Earth.*
doi.org/10.1029/2021JB022379

6. **Mizrahi, L.,** Nandan, S. and Wiemer, S., 2021. The Effect of Declustering on the Size Distribution of Mainshocks. *Seismological Research Letters.*
doi.org/10.1785/0220200231

Code Repositories

1. **Mizrahi, L.** and Schmid, N. and Han, M., 2023. lmizrahi/etas (3.2). *Zenodo.*
doi.org/10.5281/zenodo.6583992

Selected Conference Presentations

1. **Mizrahi, L.,** Dallo, I. and Wiemer, S., 2024. Developing, Testing, and Communicating Earthquake Forecasts: Current Practices and an Elicitation of Expert Recommendations. *Invited Talk,* Statistical Seismology International Conference, March 16-20 2024, Shenzhen, China

2. **Mizrahi, L.,** Dallo, I. and Kuratle, L.D., 2023. Developing, testing and communicating earthquake forecasts: an expert elicitation. *Invited Talk,* IUGG Berlin General Assembly, July 12-19 2023, Berlin, Germany

3. **Mizrahi, L.,** Nandan, S., Danciu, L. and Wiemer, S., 2022. Calibration of ETAS-based operational earthquake forecasting models: A simple recipe applied to Switzerland. *Talk,* 3^{rd} European Conference for Earthquake Engineering and Seismology, September 5-9 2022, Bucharest, Romania

4. **Mizrahi, L.,** Nandan, S. Savran, W., Wiemer, S. and Ben-Zion, Y., 2022. Relaxing ETAS's Assumptions to Better Capture the Real Behavior of Seismicity. *Talk,* EGU General Assembly, May 23-27 2022, Vienna, Austria

5. **Mizrahi, L.,** Nandan, S. and Wiemer, S., 2021. Joint resolving of the fault plane ambiguity and anisotropic earthquake triggering in Southern California. *Poster,* AGU Fall Meeting, December 13-17 2021, New Orleans, LA

6. **Mizrahi, L.,** Nandan, S. and Wiemer, S., 2021. The Role of HPC in the Search of Next-Generation Earthquake Forecasting Models. *Talk,* Platform for Advanced Scientific Computing (PASC) Conference, July 5-9 2021, Geneva (Switzerland)

7. **Mizrahi, L.,** Nandan, S. and Wiemer, S., 2021. Embracing Data Incompleteness for Better Earthquake Forecasting. *Talk,* SSA Annual Meeting, April 19-23 2021, online
   Receiver of 2021 Student Presentation Award

8. **Mizrahi, L.,** Nandan, S. and Wiemer, S., 2020. The Effect of Declustering on the Size Distribution of Mainshocks. *Talk,* Swiss Geoscience Meeting, November 6-7 2020, online

Technical Skills

Sorted from most to least recently used

Python (pandas, numpy, matplotlib, scikit-learn, pytorch, keras, PySpark, etc.), **Git** (GitLab, GitHub: lmizrahi), **COMP Superscalar** (pycompss), **distributed high performance computing** (using LSF workload management platform), **UNIX shell**, **LaTeX** (Overleaf), **Microsoft Excel**, **Matlab**, **JavaScript** (Observable, D3, AngularJS), **SQL**, **MongoDB**

Languages

German (native), **English** (fluent), **French** (advanced), **Spanish** (basic), **Hebrew** (beginner)