Eric Beaucé | Curriculum Vitae

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Academic Qualifications

Massachusetts Institute of Technology   **Cambridge - USA**
Research assistant/Teaching assistant   *2016 - 2021*

Topics of research: automated earthquake detection and location, collective properties of earthquakes, relationship between microseismicity and slow slip, deep learning for classification of seismic signals.
Study regions: Southwestern Alps, the North Anatolian Fault (between Izmit and Düzce).

Education

Massachusetts Institute of Technology   **Cambridge - USA**
Ph.D. in Geophysics   *2021*

Massachusetts Institute of Technology   **Cambridge - USA**
Master of Science, Geophysics   *2018*

Ecole Normale Supérieure de Lyon   **Lyon - France**
Master of Science, Physics   *2016*

Ecole Normale Supérieure de Lyon   **Lyon - France**
Bachelor of Science, Physics   *2014*

Pre-Ph.D. Research Experience

Institut des Sciences de la Terre   **Grenoble - France**
6-month internship supervised by Michel Campillo.   *2016*

Development of automated methods for earthquake detection, based on template matching. Application to the Southwestern Alps.

Departemento de Geofísica   **Santiago - Chile**
3-month internship co-supervised by Benoit Derode and Jaime Campos.   *2015*

Source characterization of intermediate-depth earthquakes: estimates of static stress drops and seismic moments from earthquake spectra.

Laboratoire de Géologie, Terre, Planète, Environnement   **Lyon - France**
2-month internship supervised by Vincent Langlois   *2014*

Development of a discrete element numerical model to simulate landslides.

Teaching Experience

○ **Massachusetts Institute of Technology**   **Cambridge - USA**
Robert D. van der Hilst's teaching assistant for Essentials of Geophysics.   *2019*

○ **Massachusetts Institute of Technology**   **Cambridge - USA**
Brent Minchew's teaching assistant for Remote Sensing.   *2018*

Field Experience

○ **San Jacinto Fault**   **California - USA**
Preliminary passive seismic experiment (FaultProbe project)   *July 2018*
Deployment of 400 one-component geophones on two sites apart from the San Jacinto Fault, in order to monitor the fault with seismic interferometry.

○ **Roseau Valley**   **Saint Lucia**
Groundwater flow imaging.   *January 2018*
Mixed SP/resistance and gravity survey to map groundwater flow and identify relevant locations for fresh water wells.

○ **New England**   **New England - USA**
Diverse subsurface exploration geophysical methods   *2016 - 2020*
Educational field trips with the SEG Student Chapter of MIT. Training to active source seismic acquisition (2x24 geophones and one sledge hammer), gravity measurements, SP/resistance and magnetometry.

Technical and Personal skills

○ **Programming Languages:** Proficient in: C, C++, CUDA, Python, Pytorch, TeX. Familiar with: Matlab, Fortran, Shell.

○ **Languages:** French (native), English, Spanish.

○ **Other:**
  - Developer of Fast Matched Filter, high performance computing software for earthquake detection with template matching. Github: https://github.com/beridel/fast_matched_filter.
  - Strong experience in super-computer environments (slurm).

Peer-reviewed Papers

2021..

○ René Steinmann, Léonard Seydoux, **Eric Beaucé**, Michel Campillo. Hierarchical Exploration of Continuous Seismograms with Unsupervised Learning. Journal of Geophysical Research: Solid Earth. DOI coming soon.

○ Hugo Sanchéz-Reyes, David Essing, **Eric Beaucé**, Piero Poli. The Imbricated Foreshock and Aftershock Activities of the Balsorano (Italy) Mw 4.4 Normal Fault Earthquake and Implications for

Earthquake Initiation. Seismological Research Letters. DOI: https://doi.org/10.1785/0220200253

2019 ....

o **Eric Beaucé**, William B. Frank, Anne Paul, Michel Campillo and Robert D. van der Hilst. Systematic Detection of Clustered Seismicity beneath the Southwestern Alps. Journal of Geophysical Research: Solid Earth. DOI: http://dx.doi.org/10.1029/2019JB018110.

o Florent Brenguier, Pierre Boué, Yehuda Ben-Zion, F. Vernon, C.W. Johnson, A. Mordret, O. Coutant, P-E. Share, **Eric Beaucé**, D. Hollis, T. Lecocq. Train Traffic as a Powerful Noise Source for Monitoring Active Faults with Seismic Interferometry. Geophysical Research Letters. DOI: http://dx.doi.org/10.1029/2019GL083438.

2017 ....

o **Eric Beaucé**, William B. Frank and Alexey Romanenko. Fast Matched Filter (FMF): An Efficient Seismic Matched-Filter Search for Both CPU and GPU Architectures. Seismological Research Letter. DOI: https://doi.org/10.1785/0220170181.

Papers in Preparation

o **Eric Beaucé**, Michel Campillo, Robert D. van der Hilst. Seismotectonic Study of the North Anatolian Fault Zone Thirteen Years After the 1999 M7.6 Izmit Earthquake. *In prep.*

o **Eric Beaucé**, Michel Campillo, Robert D. van der Hilst. An Iterative Method for Estimating the Stress Tensor from Earthquake Focal Mechanism Data: Method and Examples. *In prep.*

o **Eric Beaucé**, Léonard Seydoux, Glenn Cougoulat, Piero Poli, Michel Campillo. Towards Systematic Classification of Seismic Signals with Deep Neural Networks. *In prep.*