

STACY LAROCHELLE

Postdoctoral Research Scientist in Polar Geophysics
Lamont-Doherty Earth Observatory, Columbia University

EDUCATION

Ph.D. in Geophysics, California Institute of Technology Thesis: <i>Mechanical interactions between water and the solid Earth: From quasi-static geodetic deformation to dynamic fault slip</i>	2022
M.S. in Geophysics, California Institute of Technology	2018
B.Eng. in Civil Engineering, McGill University	2016

RESEARCH APPOINTMENTS

Postdoctoral Research Scientist in Polar Geophysics Lamont-Doherty Earth Observatory, Columbia University, NY, USA Mentors: Jonny Kingslake, Meredith Nettles, and Laura Stevens (Oxford)	2022-Present
Graduate Researcher in Geophysics Seismological Laboratory, California Institute of Technology, CA, USA Thesis Advisors: Jean-Philippe Avouac and Nadia Lapusta	2016-22
Visiting Graduate Researcher in Geophysics Institut National de Géographie (IGN) and École Normale Supérieure (ENS) Paris, France Mentors: Kristel Chanard, Luce Fleitout, and Jérôme Fortin	2019
Visiting Graduate Researcher in Geophysics Géoazur, Université Côte d'Azur, France Mentors: Jean-Paul Ampuero and Frédéric Cappa	2019
Undergraduate Researcher in Geophysics Department of Earth and Planetary Sciences, McGill University, QC, Canada Advisor: Yajing Liu	2015
Summer Undergraduate Researcher in Environmental Geomechanics Department of Civil Engineering, McGill University, QC, Canada Advisor: Patrick Selvadurai	2015
Summer Undergraduate Researcher in Structural Engineering Department of Civil Engineering, McGill University, QC, Canada Advisor: Denis Mitchell	2014

AWARDS & FELLOWSHIPS

Caltech Demetriades - Tsafka - Kokkalis PhD thesis award in Seismo-engineering	2022
Seismological Society of America (SSA) Student Presentation Award	2021
Embassy of France in the United States Chateaubriand Fellowship	2020

Caltech Richard H. Jahns Teaching Award	2019
American Geophysical Union (AGU) Outstanding Student Presentation Award	2018
NSERC Postgraduate Scholarship - Doctoral	2018-21
Caltech Seismological Laboratory Gutenberg Fellowship	2017
McGill British Association Medal	2016
McGill Gordon Hunt Engineering Scholarship	2015-16
McGill Summer Undergraduate Research in Engineering Poster Award	2015
NSERC Undergraduate Student Research Award (x2)	2014-15
McGill Dean's Honor List	2012-16
McGill Hydro-Québec Admission Scholarship	2012-15

TEACHING EXPERIENCE

Student for:

Caltech E110: Principles of University Teaching and Learning in STEM	Winter 2021
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Teaching Assistant for:

Caltech ME/Ge/Ae 102a/160: Continuum Mechanics	Fall 2020
Caltech ME/Ge/Ae 266: Dynamic Fracture & Frictional Faulting	Spring 2020
Caltech Ge 162: Introduction to Seismology	Winter 2019
Caltech Ge 118: Introduction to Data Analysis	Fall 2018
Caltech Ge 1: Introduction to Earth Sciences	Spring 2018
McGill CIVE 210: Surveying (field class)	Summer 2016
McGill FACC 300: Engineering Economy	Winter 2015-16 & Fall 2016

SYNERGISTIC ACTIVITIES

Early career representative of the AGU Geodesy Section Executive Committee	2022-
Student representative of the AGU Geodesy Section Executive Committee	2021-22
Caltech SeismoLab Seminars Organizing Committee	2018-19
NSF Workshop on Modeling Earthquake Source Processes Organizing Committee	2018
Reviewer for:	2018-
<i>Earth and Planetary Sciences Letters, Geophysical Journal International, Journal of Geophysical Research: Solid Earth, Pure and Applied Geophysics, Remote Sensing, Remote Sensing of Environment, and Tectonics</i>	

COMMUNITY INVOLVEMENT

Graphic designer for Pasadena Tenant Union's rent control campaign	2022
Caltech Y tutoring for Pasadena high schools	2021
GPS FUTURE Ignited mentoring program	2020
Caltech HerStories Organizing Committee [cancelled due to COVID-19]	2019-20
GPS Local Student Committee	2019-20
WinGs (Women in GPS) Treasurer	2018-20
Caltech Graduate Student Council Board of Directors	2017-19
Caltech Graduate Student Council Social Committee	2016-19

INVITED PRESENTATIONS

- Larochele, S.** (2022), Crustal deformation and fault slip due to water injections and extraction. *MGG/SGT Seminar, Lamont-Doherty Earth Observatory, Columbia University*
- Larochele, S.** (2022), Crustal deformation and fault slip due to water injections and extraction. *UCLA Geophysics Seminar, University of California Los Angeles*
- Larochele, S.** (2022), Crustal deformation and fault slip due to water injections and extraction. *Institute for Geophysics and Planetary Physics (IGPP) Seminar, University of California Santa Cruz.*
- Larochele, S.,** Chanard, K., Fleitout, L., Fortin, J., Longuevergne, L., Argus, D. and Avouac, J.-P. (2021), Extracting and separating different sources of hydrology-induced deformation in geodetic datasets. *AGU Fall Meeting [Session G51A: Hydrogeodesy: Space Geodetic Applications for Hydrology].*
- Larochele, S.** (2021), Fluid-induced slip and earthquake nucleation on a rate-and-state fault. *SCEC Workshop on Advancing Simulations of Sequences of Earthquakes and Aseismic Slip.*
- Larochele, S.,** Lapusta, N., Ampuero, J.-P., and Cappa, F. (2021), Constraining the stability of a rate-and-state fault subjected to fluid injection. *SSA Annual Meeting [Session 6452: Mechanisms of Induced Seismicity: Pressure Diffusion, Elastic Stressing and Aseismic Slip].*
- Larochele, S.** and Avouac, J.-P. (2021), Monitoring of continental water storage from GNSS and GRACE observations. *Saudi Water Forum, Riyadh, Saudi Arabia.*
- Larochele, S.** (2020), Numerical modeling of fluid-induced slip on a rate-and-state fault motivated by a field experiment. *11th James K. Knowles Lectures & Caltech Solid Mechanics Symposium.*
- Larochele, S.,** Gualandi, A., Chanard, K., and Avouac, J.-P. (2019), Spatiotemporal characterization of seasonal crustal deformation due to hydrological processes. *AGU Fall Meeting [Session U12C: Outstanding Student Presentation Award Winners from Fall Meeting 2018].*
- Larochele, S.** (2019), Spatiotemporal Characterization of seasonal crustal deformation due to hydrological processes. *Café des Géosciences Seminar, ENS Paris.*

CONFERENCE PRESENTATIONS

- Larochele, S.,** Chanard, K., Fleitout, L., Gualandi, A., Fortin, J., Rebischung, P., Violette, S., and Avouac, J.-P. (2020), Understanding the geodetic signature of large aquifer systems: Example of the Ozark Plateaus in Central United States. Talk presented at *AGU Fall Meeting.*
- Larochele, S.,** Lapusta, N., Ampuero, J.-P., and Cappa, F. (2020), What can fluid-injection field experiments tell us about fault stability? Poster presented at *AGU Fall Meeting.*
- Michel, S., Jolivet, R., Lengliné, O., Gualandi, A., **Larochele, S.,** and Gardonio, B. (2020), Twelve years of seismic and aseismic slip along the San Andreas Fault near Parkfield. Talk presented at *AGU Fall Meeting.*
- Larochele, S.,** Lapusta, N., Ampuero, J.-P., and Cappa, F. (2020), Slip response to fluid depressurization constrains fault friction. Poster presented at *SCEC Annual Meeting.*

- Larochele, S.**, Lapusta, N., Ampuero, J.-P., and Cappa, F. (2019), Numerical Modeling of Fluid-Induced Slip on Rate-and-State Faults Motivated by a Field Experiment. Poster presented at *AGU Fall Meeting*.
- Larochele, S.**, Chanard, K., Gualandi, A., and Avouac, J.-P. (2019), Regional fluctuations in hydrological mass inferred from GNSS and GRACE observations. Talk presented at *AGU Fall Meeting*.
- Larochele, S.**, Lapusta, N., Ampuero, J.-P., and Cappa, F. (2019), Numerical modeling of fluid-induced slip on a rate-and-state fault motivated by a field experiment. Talk presented at *GeoProc2019, Utrecht, Netherlands*.
- Larochele, S.**, Lapusta, N., Ampuero, J.-P., and Cappa, F. (2019), Numerical modeling of fluid-induced slip on a rate-and-state fault motivated by a field experiment. Poster presented at *Symposium on The Applications of Mechanics to Geophysics, University of California San Diego*.
- Larochele, S.**, Gualandi, A., Chanard, K., and Avouac, J.-P. (2018), Identification and extraction of seasonal geodetic signals due to surface load variations. Poster presented at *AGU Fall Meeting*.
- Larochele, S.**, Lapusta, N., Ampuero, J.-P., and Cappa, F. (2018), Numerical modeling of a fluid-induced aseismic-seismic slip sequence on a rate-and-state fault. Poster presented at *SCEC Annual Meeting*.
- Larochele, S.**, Lapusta, N., Ampuero, J.-P., and Cappa, F. (2018), Numerical modeling of a fluid-induced aseismic-seismic slip sequence on a rate-and-state fault. Poster presented at *NSF Workshop on Modeling Earthquake Source Processes, Pasadena, California*.
- Larochele, S.**, Chanard, K., Gualandi, A., and Avouac, J.-P. (2017), Seasonal geodetic strain in the Himalaya: Extraction, modeling & correlation with seismicity. Poster presented at *AGU Fall Meeting*.
- Larochele, S.**, Lapusta, N., and Ampuero J.-P. (2017), Numerical modeling of fluid-induced seismic and aseismic fault slip. Poster presented at *Cargèse Earthquakes School, Corsica, France*.
- Liu, Y., Harrington, R., Deng, K. and **Larochele, S.** (2015), Modeling aseismic and seismic slip induced by fluid injection on pre-existing faults governed by rate-and-state friction. Talk presented at *AGU Fall Meeting*.
- Larochele, S.**, Selvadurai, A.P.S., and Cao, C. (2015), Fluid flow through a fracture in a Cobourg limestone sample. Poster presented at *McGill SURE Poster Presentation*.
- Larochele, S.**, Pietkowicz, R., and Mitchell, D. (2014), Simulated earthquake testing of concrete frame structures. Poster presented at *McGill SURE Poster Presentation*.