

Melodie French

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EDUCATION

Texas A&M University	Geophysics	PhD	2014
University of Wisconsin, Madison	Geology	MS	2009
Oberlin College	Physics with honors in Geology	BA	2006

APPOINTMENTS

1/2017 – present Assistant Professor, Rice University
1/2015 – 1/2017 NSF Earth Sciences Postdoctoral Fellow, University of Maryland, College Park

PUBLICATIONS

[†] Rice Lab Student, [‡] Rice Lab Postdoc, [^]Rice Lab Visiting Student/Data

in review or revision

[‡]Condit, C., V. E. Guevara, J. R. Delph, and **M. E. French**, Slab dehydration in warm subduction zones at depths of episodic slip and tremor, *in revision*.

[^]Phillips, N., [†]B. Belzer, **M. E. French**, C. Rowe, and K. Ujiie, Frictional strengths of subduction thrust rocks in the region of shallow slow earthquakes, *in revision*.

[‡]Condit, C., **M. E. French**, J. A. Hayles, L. Y. Yeung, and C. A. Lee, Fluid and stress state at the base of the subduction seismogenic zone, *in revision*.

published

French, M. E. and [‡]C. Condit (2019), Slip partitioning along an idealized subduction plate boundary at deep slow slip conditions, *Earth Planet. Sci. Lett.*, 528, doi: 10.1016/j.epsl.2019.115828.

Xing, T., W. Zhu, **M. E. French**, and [†]B. Belzer (2019), Stabilizing Effect of High Pore Fluid Pressure on Slip Behaviors of Gouge-Bearing Faults, *J. Geophys. Res. Solid Earth*, 124, doi: 10.1029/2019JB018002.

French, M. E., G. Hirth, and K. Okazaki, Fracture-induced pore fluid pressure weakening and dehydration in serpentinite, *Tectonophysics*, doi: 10.1016/j.tecto.2019.228168.

French, M. E. and J. S. Chester (2018), Localized slip and associated fluidized structures record seismic slip in clay-rich fault gouge, *J. Geophys. Res. Solid Earth*, 123, doi.org/10.1029/2018JB016053.

French, M. E. and W. Zhu (2017), Slow fault propagation in serpentinite under conditions of high pore fluid pressure, *Earth Planet. Sci. Lett.*, 473, (131–140), doi: 10.1016/j.epsl.2017.06.009.

French, M. E., F. M. Chester, J. S. Chester, and J. E. Wilson (2016), Stress-dependent transport properties of fractured arkosic sandstone, 16(3), *Geofluids*, doi:0.1111/gfl.12174.

French, M. E., W. Zhu, and J. Banker (2016), Fault slip controlled by stress path and fluid pressurization rate, *Geophys. Res. Lett.*, 43, (43304339), doi:10.1002/2016GL068893.

French, M. E., F. M. Chester, and J. S. Chester (2015), Micromechanisms of creep in clay-rich gouge from the Central Deforming Zone of the San Andreas Fault, *J. Geophys. Res. Solid Earth*, 120(827-849), doi:10.1002/2014JB011496.

Coble, C. G, **M. E. French**, F. M. Chester, J. S. Chester, and H. Kitajima (2014), In situ frictional properties of San Andreas Fault gouge at SAFOD, *Geophys. J. Int.*, 199(2), doi: 10.1093/gji/ggu306.

French, M. E., H. Kitajima, J. S. Chester, F. M. Chester, and T. Hirose (2014), Displacement and dynamic weakening processes in smectite-rich gouge from the Central Deforming Zone of the San Andreas Fault, *J. Geophys. Res. Solid Earth*, 119, doi:10.1002/2013JB010757.

French, M. E., D. F. Boutt, and L. B. Goodwin (2012), Sample dilation and fracture in response to high pore fluid pressure and strain rate in quartz-rich sandstone and siltstone, *J. Geophys. Res.*, 117, B03215, doi:10.1029/2011JB008707.

FUNDING

NSF Geophysics (#1945264), CAREER: Path Dependent Slip of the Shallow Subduction Megathrust, 2020-2025 (recommended for funding)

NSF EAR-IF (#1921517), Upgrade of a Triaxial Rock Deformation Apparatus to Measure the Rheology of Subduction Megathrusts, 2019-2020, \$102,379.

NSF Geophysics (# 1759127), Controls of Pore Fluid Pressure on Fault Slip Weakening and Fracture Energy, 2018-2021, PI, \$264,839.

American Chemical Society PRF-DNI (# 59440), Frequency-Dependent Attenuation of Elastic Waves in Fault Zones, 2018-2020, PI, \$110,000.

NSF EAR-PF (# 1452339), *An Experimental Study on the Role of Pore Fluid Pressure During Slow Slip in Subduction Zones*, 2/2015 - 12/2016, PI, \$174,000.

AWARDS AND HONORS

- Editors Citation for Excellence in Refereeing, JGR – Solid Earth, 2018
- EarthScope Distinguished Speaker Series 2015–2016
- NSF EAR Postdoctoral Fellowship 2015-2017
- John and Frances Handin Fellowship, Center for Tectonophysics, Texas A&M University, 2014
- Bailey Outstanding Student Paper Award, Department of Geoscience, University of Wisconsin, Madison, 2012
- Chevron Fellow, The Berg-Hughes Center for Petroleum Research, Texas A&M University, 2010–2012
- Outstanding Student Paper Award, Rock and Mineral Physics Focus Group, AGU fall meeting, 2008

PROFESSIONAL SERVICE

- Associate Editor, Geophysical Research Letters (2017 – present)
- Steering Committee member for *SZ4D* (Subduction zones in 4-D) community initiative (2017–present) (funding for RCN support through NSF)
- Steering committee member, Physical Properties of Earth Materials (2018–present)
- Co-organizer of NSF funded workshop on Experimental Studies of Subduction Zone Processes (June 4-6 2018)
- Contributor to the Future of Tectonics whitepaper submitted to NSF (2017)
- Writing committee member for NSF report on the Subduction Zone Observatory (now SZ4D) Workshop (2016-2017)
- Funding agency panelist: NSF (2018,2019) and USGS (2015, 2016, 2017)
- Reviewer for Geophysical Research Letters, Journal of Geophysical Research-Solid Earth, Earth and Planetary Science Letters, Journal of Structural Geology, Science Advances, Journal of Seismology, Terra Nova, NSF-Geophysics, NSF-Marine Geology and Geophysics, NSF-EarthScope, ACS-Petroleum Research Fund

- Discussion Leader, Gorgon Research Conference on Rock Deformation (2018)
- Session convener at American Geophysical Union fall meeting (2015, 2018, 2019)

ADVISING

Postdoctoral

Cailey Condit, Rice University Wiess Postdoctoral Fellow, 2017-2018
now faculty at The University of Washington

PhD

Celine Fliedner, 2017-present

Benjamin Belzer, 2017-present

Stewart Williams, 2019-present

Undergraduate

Christina Stoner, 2019-present

VISITING STUDENTS

Noah Phillips, PhD candidate, McGill University, 2018

Peter Lindquist, undergraduate, Carleton College, 2017 & 2018

Kate Nootenboom, undergraduate, Carleton College, 2018

Lena Nyblade, undergraduate, Carleton College, 2019