

Melodie French

Department of Earth, Environmental and Planetary Sciences
Rice University, Houston, TX, 77005
(713) 348-5088
mefrench@rice.edu

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

2017 – present	Assistant Professor, Rice University
2015 – 2017	NSF Earth Sciences Postdoctoral Fellow, University of Maryland, College Park
10/2014–1/2015	Postdoctoral Scientist, University of Maryland, College Park

AWARDS AND HONORS

- 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

FUNDING

- NSF EARPF (# 1452339), *An Experimental Study on the Role of Pore Fluid Pressure During Slow Slip in Subduction Zones*, 2/2015 - 12/2016 (\$174,000)
- Geological Society of America, Graduate Student Research Grant, 2013 (\$2500)
- American Association of Petroleum Geologists, Michel T. Halbouty Grants-in-Aid, 2013 (\$2467)

PUBLICATIONS

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., 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, 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., 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.

SEMINAR PRESENTATIONS

Cooperative Institute for Dynamic Earth Research (CIDER), Berkeley, CA, 18, July, 2017
University of Pennsylvania: Dept of Earth and Environmental Sciences Seminar, 15 Apr., 2016
Brown University: Geophysics Lunch Bunch Seminar, 22 Mar., 2016
University of Minnesota: Dept of Earth Sciences Seminar, 10 Mar., 2016
West Virginia University: Dept of Geology and Geography Seminar, 8 Mar., 2016
Rice University: Dept of Earth Science Seminar, 11 Feb., 2016
University of Colorado: Dept of Geological Sciences Seminar, 3 Feb., 2016
University of Michigan: Dept of Earth and Environmental Sciences Seminar, 20 Nov., 2015
Oberlin College: Dept of Geology Seminar, 6 Oct., 2015
Marshall University: Dept of Geology Seminar, 12 Nov., 2015
Marshall University: General Audience Seminar, 12 Nov., 2015
University of Maryland: Dept of Geology Seminar, 11 Sept., 2015
Institut de Physique du Globe de Paris: Geophysics Seminar, 3 June, 2014
University of Wisconsin: Department of Geoscience Seminar, 26 Nov., 2013
University of Wisconsin: Department of Civil Engineering Seminar, 25 Nov. 2013

CONFERENCE TALKS

invited **French, M. E.**, W. Zhu, and G. Hirth (2017). Pore fluid pressure and the seismic cycle, to be presented at 2017 Fall Meeting, AGU, New Orleans, LA, 11-15 Dec.

invited **French, M. E.** and W. Zhu (2016). Slow fault propagation under conditions of high pore fluid pressure, MR32A-02 presented at 2016 Fall Meeting, AGU, San Francisco, CA, 12-16 Dec.

invited **French, M. E.** (2016). Rheology and dynamics of the plate boundary, presented at the Subduction Zone Observatory Planning Workshop, Boise, ID, 29 Sept. - 1 Oct.

invited **French, M. E.** and W. Zhu (2016). Slow fault rupture propagation in serpentinite, 201-4 presented at The Geological Society of America Annual Meeting, Denver, CO, 25-28 Sept.

French, M. E. and W. Zhu (2016). Dilatancy-induced slow rupture propagation in serpentinite, presented at Gordon Conference on Rock Deformation, Andover, NH. 21-26 Aug.

French, M. E., F. M. Chester, and J. S. Chester (2015). The stress-dependent structure and permeability of fractured arkosic sandstone, 202-8 presented at The Geological Society of America Annual Meeting, Baltimore, MD, 1-4 Nov.

invited **French, M. E.**, F. M. Chester, and J. S. Chester (2015). Strength and deformation processes of SAFOD gouge deformed at creep to co-seismic rates, presented at 2015 EarthScope National Meeting, Stowe, VT, 14-17 June.

French, M. E., F. M. Chester, and J. S. Chester (2013). Constitutive behavior of gouge from the Central Deforming Zone of the San Andreas Fault approaching in-situ strain-rates. presented at 2013 Fall Meeting, AGU, San Francisco, CA, 9-13 Dec.

French, M. E., H. Kitajima, J. S. Chester, F. M. Chester, and T. Hirose (2013). Microstructural development during displacement and dynamic weakening of smectite-rich fault gouge. 216-6 presented at The Geological Society of America Annual Meeting, Denver, CO, 26-10 Oct.

French, M. E., L. B. Goodwin, and D. F. Boutt (2010). Sample dilation and fracture formation in quartz-rich sandstones and siltstones under undrained experimental conditions. presented at Gordon Conference on Rock Deformation, Tilton, NH. 8-13 Aug.

PROFESSIONAL SERVICE

- Associate Editor, Geophysical Research Letters (2017 to present)
- Co-organizer of NSF funded workshop on Experimental Studies of Subduction Zone Processes (to be held June 2018)
- Coordinating committee member for SZ4D (Subduction zones in 4-D) community initiative (2017-current)
- Panelist for United States Geological Survey Earthquake Hazards and Physics funding program
- 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)
- Panelist for co-sponsored Early Career Networking Event at the American Geophysical Union fall meeting (2015)
- Session convener at American Geophysical Union fall meeting (2015)
- Reviewer for Geophysical Research Letters, Journal of Geophysical Research-Solid Earth, Earth and Planetary Science Letters, Journal of Seismology, Terra Nova, NSF-Geophysics, NSF-Marine Geology and Geophysics, NSF- EarthScope, Petroleum Research Fund