

JULIET G. CRIDER

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PROFESSIONAL PREPARATION

- 1993-1998 **Stanford University**, Stanford, California
Ph.D., Structural Geology, Active Tectonics and Geomechanics
Dissertation: *Mechanical Interaction Among Normal Faults: A Numerical, Field and Seismological Investigation*
- 1991-1993 **University of Washington**, Seattle, Washington
M.S., Structural Geology
Master's Thesis: *Kinematic and Geometric Analysis of Meso-scale and Macro-scale Brittle Structures: Evolution of the Northern Sawtooth Range, Montana*
- 1985-1989 **Amherst College**, Amherst, Massachusetts
B.A. *summa cum laude*, Geology
Honors Thesis: *Brittle Deformation in Granites of the Coast Plutonic Complex near White Pass, British Columbia*

PROFESSIONAL APPOINTMENTS

- 2005-... **Associate Professor**, Structural Geology and Neotectonics
Western Washington University, Bellingham, Washington
- 2001-2005 **Assistant Professor**, Western Washington University
- 1998-2000 **Assistant Professor**, Structural Geology and Geophysics
Bryn Mawr College, Bryn Mawr, Pennsylvania
- 1999-2003 **Consulting Geologist**
Center for Nuclear Waste Regulatory Analyses, San Antonio, Texas
- 1998 **Consulting Geologist**
Advanced Resources International, Arlington, Virginia

RESEARCH FUNDING (external)

- pending National Science Foundation, Major Research Instrumentation: *Acquisition of geophysical instrumentation for surficial investigations in Northwest Washington*, with J. Caplan-Auerbach and B. Housen (WVU)
- 2006-2007 National Science Foundation, Geophysics Program: *Linking geodetic observations with gas emissions to characterize magmatic activity at a subduction zone volcano (Mt. Baker, Washington)*, with M. Poland (USGS) and G. Williams-Jones (Simon Fraser Univ.)
- 2006-2007 National Science Foundation, Tectonics Program: *Constraining the influence of tectonics versus climate on orogenesis in the North Cascades (Washington and British Columbia)*
- 2004-2005 National Science Foundation, Tectonics Program: *SGER: Lake-sediment cores and surface-exposure dates near the epicenter of the 1872 Washington earthquake*
- 2002-2004 American Chemical Society, Petroleum Research Fund
Fault-propagation folding by extensional faults: field and numerical investigations
- 2000-2005 National Science Foundation, Tectonics Program *Collaborative Research: Active Extension at Canyonlands National Park, Utah*, with S. Owen (USC)

RESEARCH FUNDING (internal)

- 2006 Western Washington University Foundation, *Mentoring undergraduates grant: A gravity survey to determine the subsurface structure of the Sumas and Vedder Mountain Faults, northwest Washington and southwest British Columbia*
- 2004 Western Washington University Research Advisory Committee: *Summer research: Active tectonics investigations in Cascadia.*
- 2002 Western Washington University Bureau for Faculty Research: *Project development: Integrated geological and geophysical investigations of the 1872 North Cascades earthquake*
- 2001 Western Washington University College of Arts & Sciences: *Summer research: Fault-related folding in the Hat Creek and Medicine Lake volcanic rocks of northern California*

COURSES TAUGHT

Six courses each year in a rotating repertoire. Contact with ~ **300 undergraduate students annually.**

Introductory: Introduction to Geology; Physical Geology (lecture and laboratory)

Intermediate: Structural Geology; Tectonic Geomorphology; Intro to Geophysics; Engineering Geology

Advanced/graduate: Active Tectonics; Geomechanics; Landslides and Slope Stability

MENTORING ACTIVITIES

Graduate students supervised: Angela Diefenbach (2005-...), Brendan Hodge (2005-...), Kelsay Davis (2004-...), Owen Callahan (2004-...), Kristin Hill (2004-...), Justin Brooks (2002-...), Ian White (2001-03)

Undergraduate research supervised: Laura Hutchinson (2006), Kurt Parker (2004-05), Travis Montgomery (2001), Jessica Ball (2000), Jennifer Wu (2000), Nicole Dory (2000), Ji-Sun Yi (2000), Alan Seideman (1999), Jennifer Giordano (1999)

Undergraduate field assistants 2000-2005: Abram Role, Trisha Wilkie, Gabe Henshold, Jennifer Deming, Joel Cornwall, Timothy Hall, Rebecca DeWald, Hannah Hernandez, Sara Tourscher

ADDITIONAL SYNERGISTIC and SERVICE ACTIVITIES

internal

Priorities, Planning & Budget Council, WWU College of Arts & Sciences (2006-2008)

Geophysics Search Committee (2004-2005)

Chapter Secretary, Sigma Xi Scientific Research Honors Society (2004-2008)

Geology Graduate Admissions Committee (2003-2005)

Ad-hoc Committee for Geology 101 Reform (2002-2005)

Freshman Interest Group faculty participant (2002)

external

Technical Program Co-Chair, GSA Cordilleran Section Spring 2007 Meeting

Convener and co-convener of theme sessions at national GSA, AGU meetings

Participant in NSF Cutting Edge Workshop on Teaching Structural Geology (2004)

Review Panelist, NSF Division of Undergraduate Education: CCLI Program (2000)

Frequent reviewer for international geoscience journals and NSF-EAR programs

Speaker on earthquake hazards to community organizations and local media

PEER-REVIEWED PUBLICATIONS

- *White I R, & **J G Crider**, *in press*, "Extensional fault-propagation folds: mechanical models and observations from the Modoc Plateau, northeastern California," *Journal of Structural Geology*.
- Crider, J G** & D C P Peacock, 2004, "Initiation of brittle faults in the upper crust: a review of field observations." *Journal of Structural Geology* 26(4), p. 691-707.
- Dunne, W M, D A Ferrill, **J G Crider**, B Hill, P La Femina, D Waiting & A P Morris, 2003, "Orthogonal jointing during coeval igneous degassing and normal faulting, Yucca Mountain, Nevada." *Geological Society of America Bulletin* 115(12), p. 1492-1509.
- Crider, J G**, D P Schaff, D D Pollard & G C Beroza, 2001, "Considering the third dimension in stress-triggering of aftershocks: 1993 Klamath Falls, Oregon, earthquake sequence." *Geophysical Research Letters*, v. 28, p. 2739-2742.
- Crider, J G**, 2001, "Oblique extension and the geometry of normal fault linkage: mechanics and a case study from the Basin & Range in Oregon." *Journal of Structural Geology*, v. 23, p. 1997-2009.
- Crider, J G** & D D Pollard, 1998 "Fault linkage: 3D mechanical interaction between overlapping normal faults." *Journal of Geophysical Research* (Special Section on Stress Triggers, Stress Shadows, and Implications for Seismic Hazard) v. 103, p. 24,373-24,391.
- Anderson, K S, T A Hickson, **J G Crider** & S A Graham, 1999, "Integrating Teaching With Field Research In The Wagon Rock Project." *Journal of Geoscience Education*, v. 47, p. 227-235.
- Crider, J G**, M L Cooke, E M J Willemse, & J R Arrowsmith, 1996, "Basic mechanics of jointing and faulting through interactive linear-elastic crack models." in: D De Paor, ed. *Microcomputers in Structural Geology*, New York: Elsevier, p. 359-388.

*indicates student author (M.S. candidate)

TECHNICAL REPORTS and ELECTRONIC PUBLICATIONS

- Crider, J G**, 2004, "Joints in a cornstarch analogue: Laboratory assignment and instructor's notes." Teaching Structural Geology in the 21st Century Resource Collection (National Association of Geoscience Teachers) URL: <http://serc.carleton.edu/NAGTWorkshops/structure04/activities/3858.html>.
- Crider, J G**, 2003, "Modeled faulting induced stresses at Yucca Mountain." *Geological Society of America Data Repository* no. 2003167 (for Dunne *et al.*, 2003). URL: <ftp://rock.geosociety.org/pub/reposit/2003/2003167.pdf>
- Waiting, D J, R Chen, **J G Crider**, W M Dunne, R W Fedors, D A Ferrill, M B Gray, B E Hill, P C La Femina, H L McKague, A P Morris, D W Sims & J A Stamatakos, 2001, "Technical Assessment of Structural Deformation and Seismicity at Yucca Mountain, Nevada" Center for Nuclear Waste Regulatory Analyses, San Antonio, TX. NRC-09-97-009.
- Crider, J G**, 1998, "Custom tools for the visualization of stress and displacement fields from three-dimensional numerical models." in D. Pollard & A. Aydin, *eds.*, Proceedings of the Stanford Rock Fracture Project IX, pp. PB1-PB7.
- Crider, J G**, 1997, "Oblique extension and the geometry of normal fault linkage" in D. Pollard & A. Aydin, *eds.*, Proceedings of the Stanford Rock Fracture Project, pp.F1-F17.
- Crider, J G**, 1996, "The distribution of stress around a normal fault: three-dimensional visualization." in D. Pollard & A. Aydin, *eds.*, Proceedings of the Stanford Rock Fracture Project, pp. C1-C8.
- Crider, J G**, 1994, "Fault-zone microstructures: effect on porosity and use as kinematic indicators." in D. Pollard & A. Aydin, *eds.*, Proceedings of the Stanford Rock Fracture Project, pp. J1-J5.

CONFERENCE ABSTRACTS (past 8 years)

- *Callahan, O A, **J G Crider** & P Reiners, 2006, Exhumation and topographic development of the Okanogan Range, NE North Cascades, *GSA Abstracts with Programs*, v. 38, p. 17.
- *Davis, K M & **J G Crider**, 2006, Degradation of normal fault scarps in basalt, Central Oregon and Northern California, *GSA Abstracts with Programs*, v. 38, p. 97.
- *Hill, K S, **J G Crider**, G Williams-Jones, 2006, Significant gravity change observed at Mt. Baker volcano, Washington, 1975-2005, *GSA Abstracts with Programs*, v. 38, p. 76.
- *Brooks, J M & **J G Crider**, 2006, Cosmogenic age constraints of moraine formation and outburst floods associated with the Okanogan lobe of the Cordilleran ice sheet, Chelan, Washington, *GSA Abstracts with Programs*, v. 38, p. 29.
- **Parker, K W, **J G Crider**, and M P Poland, 2005, Mount Baker volcano: Revisiting the 20-year-old trilateration network in Mount Baker Wilderness, Washington: *GSA Abstracts with Programs*, v. 37, p. 48.
- Crider, J G**, M L Cooke, D Jiang, P Resor, J P Stimac, B Tikoff, 2004, "Using analog and mathematical models to address multiple learning styles in undergraduate structural geology courses," *GSA Abstracts with Programs*, v. 36, p. 347.
- *Brooks, J M & **J G Crider**, 2004, "A new geomorphic map along the Columbia River corridor between Pateros and Entiat, central Washington" *GSA Abstracts with Programs*, v. 36, p. 14.
- *Marsic, S D, S E Owen, **J G Crider**, 2003, "Distribution of Displacement Across Canyonlands Grabens Using GPS and InSAR," *Eos Trans. AGU*, 84(46), Fall Meet. Suppl., Abstract G21D-0289.
- Crider, J G**, R S Crosson, J *Brooks, 2003, "The Chelan Seismic Zone, The Great Terrace, and the December 1872 Washington State Earthquake," *GSA Abstracts with Programs*, v. 35, n. 6, p. 645.
- *White, I & **J G Crider**, 2003, "Development of extensional fault-propagation folds in the Modoc Plateau, Northeastern California," *GSA Abstracts with Programs*, v. 35, n. 4.
- Crider, J G**, S E Owen & S D Marsic, 2002, "Monitoring active deformation in the Grabens of Canyonlands National Park" (for the special session on Geology in the National Parks), *GSA Abstracts with Programs*, v. 34.
- *Marsic, S D, S E Owen, **J G Crider**, 2002, "Active deformation at Canyonlands National Park: Distribution of displacement across grabens using InSAR," *Eos Trans. AGU*, 83(47), Fall Meet. Suppl., Abstract G61B-0988.
- Crider, J G**, E R Schermer & R A Haugerud, 2001, "Liquefaction of the Issaquah Creek delta during the Nisqually Earthquake," Seismological Society of America Annual Meeting, San Francisco. SSA Program, p. 54.
- Booth, D B, R E Wells, R Givler, C DuRoss, R J Blakely, E Meeks, K Ebel, J Fryer, K Troost, R Booth, **J Crider**, & P **Gregoire, 2001, "Chimney damage patterns in the Greater Seattle Area from the Nisqually Earthquake of February 28, 2001," Seismological Society of America Annual Meeting, San Francisco. SSA Program, p. 53.
- Crider, J G**, S E Owen, D A Schmidt, E J Price & R Bürgmann, 2000, "Active Deformation at Canyonlands National Park: Initial Results from InSAR," EOS Transactions: American Geophysical Union Fall Meeting Suppl., p. 327.
- **Ball, J L & **J G Crider**, 2000, "The deformation of the Jacksonwald Syncline, Pennsylvania." *GSA Abstracts with Programs*, Northeast Section Meeting.
- **Wu, J J & **J G Crider**, 2000, "Fault-related folds in extensional environments, Lava Beds National Monument, California." *GSA Abstracts with Programs*, Northeast Section Meeting.
- Crider, J G**, 1999, "Fault-propagation folding and fissuring at a surface-breaking normal fault, north flank of Medicine Lake Volcano," American Geophysical Union, Fall Meeting
- Campagna, D J & **J G Crider**, 1999, "Predicting the local occurrence of enhanced reservoir permeability due to fault-related natural fractures." AAPG Annual Meeting Official Program, v.8, p.A20.
- Crider, J G**, W J Bosl & D P Schaff, 1998, "Modeled stress changes, fluid diffusion, and the triggering of aftershocks: 1993 Klamath Falls, Oregon, earthquake sequence." EOS Transactions, AGU Fall Meeting.
- Crider, J G**, S A Kattenhorn & D D Pollard, 1998, "Fault-related deformation around surface-breaking normal faults: how folding and fissuring depend upon boundary conditions." *GSA Abstracts with Programs*, Annual Meeting, p. A-63.

* denotes graduate student author (M.S. candidate)

** denotes undergraduate student author