Nicole D. McMahon

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Education

Ph.D. Geophysics, Seismology
In progress
Colorado State University
Advisor: Dr. Richard C. Aster

M.S. Geophysics, Seismology
April 2011
Michigan Tech University
Advisor: Dr. Gregory P. Waite

B.S. Geophysics, Exploration
August 2009
University of Oklahoma
Advisor: Dr. G. Randy Keller

Experience

- U.S. Geological Survey, National Earthquake Information Center, Golden, CO (2014-Present)
  Research/Work: Operationalizing subspace detection to enhance earthquake catalogs

- Colorado State University, Fort Collins, CO (2014-Present)
  Research: Subspace detection utilized to build earthquake catalogs in induced seismicity and aftershock sequences in Oklahoma.

- New Mexico Tech, Socorro, NM (2011-2013)
  Research: Structural studies of Erebus volcano, Antarctica utilizing Green's functions synthesized from icequake coda, iceberg harmonic tremor detection and automation, and background pre-eruption signal exploration; Correlating volcanic ash and lightning data during 2010 eruption of Eyjafjallajökull volcano, Iceland

- Michigan Technological University (2010-2011)
  Thesis: Automation of shear-wave splitting parameter determination of local earthquakes at Yellowstone: Application as indicator of crustal stress and temporal variation

- Michigan Technological University (2011)
  Teaching Assistant: Introduction to Sedimentary, Igneous, and Metamorphic Petrology

- PASSCAL Instrument Center, New Mexico Tech, Socorro, NM (Summer 2010)
  Intern
  Research: Compared background seismic noise levels in co-located Transportable Array, Flexible Array, and Direct Burial vaults; installed the Ruby Mountain Core Complex seismic array

- Summer of Applied Geophysical Experience, Santa Fe, NM (Summer 2008)
  REU Student
  Research: Gathered and interpreted data utilizing several geophysical techniques including: reflection and refraction seismology, gravity, magnetics, magnetotellurics, GPS, GPR, and electrical resistivity

- Department of Energy, Pacific Northwest National Laboratory, Richland, WA (Summer 2008)
  Intern
  Research: Developed seismic velocity models in shallow sediments for aid in nuclear remediation

- Hunt Petroleum Corporation, Houston, TX (Summer 2007)
  Intern
  Work: Analyzed 3-D seismic in offshore Gulf of Mexico

Publications

McNamara, D.E., G.P. Hayes, H.M. Benz, R.A. Williams, N.D. McMahon, R.C. Aster, A. Holland, T. Sickbert, R. Hermann, R. Briggs, G. Smoczyk, E. Bergman, P. Earle (2015). Reactivated faulting near Cushing, Oklahoma: increased potential for a triggered earthquake in an area of United States strategic infrastructure. *Geophysical Research Letters*, 42, doi:10.1002/2015GL064669.

Benz, H.M., N.D. McMahon, R. Aster, D.E. McNamara, D.B. Harris (2015). Hundreds of Earthquakes per Day: The 2014 Guthrie, Oklahoma Earthquake Sequence. *Seismological Research Letters*, 86 (5), doi: 10.1785/0220150019.

McNamara, D.E., J. L. Rubinstein, E. Myers, G. Smoczyk, H.M. Benz, R.A. Williams, G. Hayes, D. Wilson, R. Hermann, N.D. McMahon, R.C. Aster, E. Bergman, A. Holland, and P. Earle (2015). Efforts to monitor and characterize the recent increasing seismicity in central Oklahoma. *The Leading Edge*, 34 (6), doi: 10.1190/tle34060628.1.

McMahon, N.D . (2011). *Automation of shear-wave splitting paramter determination of local earthquakes at Yellowstone: Application as indicator of crustal stress and temporal variation.* M.S. thesis, Dept. of Geol. Mining and Eng. Sci., Michigan Tech., Houghton, MI.

McMahon, N.D. and G.V. Last. (2008). *Velocity models along 12th St of the 200 East area, Hanford Site, Washington.* Journal of Undergraduate Research, Department of Energy.

Conference Presentations/Posters

McMahon, N.D., H.M. Benz, C.E. Johnson, R.C. Aster, D.E. McNamara (2015). *Application of subspace detection to the November 2011 M5.6 Prague, OK aftershock sequence.* Oral. AGU Fall Meeting, San Francisco, CA.

Aster, R.C., N.D. McMahon, E.K. Myers, A.C. Lough (2015). Deep long-period seismicity beneath the Executive Committee Range, Marie Byrd Land, Antarctica, studied using subspace detection. Oral, AGU Fall Meeting, San Francisco, CA.

Benz, H.M., C.E. Johnson, J.M. Patton, N.D. McMahon, P.S. Earle (2015). *GLASS 2.0: An operational, multimodal, Bayesian earthquake data association engine.* Poster, AGU Fall Meeting, San Francisco, CA.

McMahon, N.D., H.M. Benz, R.C. Aster, D.E. McNamara (2015). *Characterizing earthquake clusters in Oklahoma using subspace detection.* Poster, SSA Annual Meeting, Pasadena, CA.

McMahon, N.D., H.M. Benz, R.C. Aster, D.E. McNamara, E.K. Myers (2014). *Characterizing earthquake clusters in Oklahoma using subspace detectors.* Poster, AGU Fall Meeting, San Francisco, CA.

Myers, E.K., R.C. Aster, H.M. Benz, N.D. McMahon, D.E. McNamara, A.K. Lough, D.A. Weins, T. Wilson (2014). *Applications of subspace seismicity detection in Antarctica.* Poster, AGU Fall Meeting, San Francisco, CA.

McMahon, N.D., J.A. Chaput, H.A. Knox, R.C. Aster, P.R. Kyle (2014). *Recovering seismic Green's functions using icequake coda interferometry at Erebus volcano, Antarctica.* Poster, SSA Annual Meeting, Anchorage, AK.

Conference Presentations/Posters [cont'd]

McMahon, N.D., J.A. Chaput, H.A. Knox., R.C. Aster, P.R. Kyle (2013). *Recovering seismic Green's functions using icequake coda interferometry at Erebus volcano, Antarctica*. Poster, AGU Fall Meeting, San Francisco, CA.

McMahon, N.D., R.J. Thomas, M.J. Pavolonis, J. Sieglaff, R.C. Aster (2012). *Correlating ground-based lightning measurements with ash cloud satellite data from the 2010 eruption of Eyjafjallajökull volcano, Iceland.* Poster, AGU Fall Meeting, San Francisco, CA.

Dotson, E.A., N.D. McMahon, B. Beaudoin, N. Barstow (2010). *Comparison of background seismic noise levels in Transportable Array, Flexible Array, direct burial vaults*. Poster, Meeting of the Americas, Foz do Iguassu, Brazil.

Beachly, M., N. Tucker, N.D. McMahon, S. Finn, M. Bannister, N. Garcia, D.K. McPhee (2009). *Year 2008 of an ongoing investigation of the San Marcos Pueblo, New Mexico*. Poster, SAGEEP, Fort Worth, TX.

Professional Associations

United States Geological Survey, National Earthquake Information Center
Seismological Society of America
American Geophysical Union
Society of Exploration Geophysicists

Service

2015 – Chair AGU Fall Meeting Session "General Contributions to Seismology I"
2015 – Microseismicity researcher in collaboration with Expedition Water Solutions
2015 – Present – Geoscience mentor for undergraduate students Colorado State University
2014/2015 – Seismic technician for Little Shop of Physics' Weather and Science Day, Coors Field, Denver, CO
2014 – IRIS Intern Mentor at Colorado State University
2011 – 2013 – Department liaison for K-12 outreach New Mexico Tech
2012 – 2013 – Vice president Volcano Lunch Club New Mexico Tech
2011 – Instrument technician/field hand for installation of Passive Seismic Imaging of the Ruby Mountain Core Complex

Computer Skills

Software
- MATLAB
- Generic Mapping Tools (GMT)
- Seismic Analysis Code (SAC)
- Oasis Montaj
- SMT Kingdom
- ArcGIS
- Adobe Creative Suite
- Microsoft Office
- PC/Mac

Languages
- MATLAB
- Unix
- Java
- C++
- IDL
- Python

Additional Skills

Seismic equipment installation and maintenance
Teaching
Spanish Language
CPR/AED + First Aid