

## PATRICK F. DOBSON

Telephone: O – (510) 486-5373; M – (415) 971-0713

Email: pfdobson@lbl.gov

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### EDUCATION

#### **Stanford University, Stanford, CA**

Ph.D. Geology (1986)

Dissertation: *The petrogenesis of boninite: A field, petrologic and geochemical study of the volcanic rocks of Chichi-jima, Bonin Islands, Japan*

MS Geology (1984)

Thesis: *Volcanic stratigraphy and geochemistry of the Los Azufres geothermal center, Mexico*

#### **Williams College, Williamstown, MA**

BA Geology (*magna cum laude*) (1981)

### WORK HISTORY

**Energy Geosciences Division, Lawrence Berkeley National Laboratory, Berkeley CA**

2016-Present **Program Lead, Geothermal Systems Program**

2010-Present **Career Earth Staff Scientist**

2003-2010 **Career Geological Research Scientist**

2000-2003 **Geological Scientist**

**Office of Basic Energy Sciences, US Department of Energy, Germantown MD**

2007-2009 **Deputy Program Manager, Geosciences Program (on detail from LBNL)**

1999-2001 **Consultant, Empresa Nacional del Petroleo (ENAP), Santiago Chile**

**Unocal Geothermal & Power Operations, Unocal Corporation, Santa Rosa CA**

1998-1999 **Advising Geologist**

1994-1998 **Senior Geologist**

**Unocal Science & Technology Division, Unocal Corporation, Brea CA**

1989-1994 **Research Geologist**

**Department of Geological Sciences, University of California, Santa Barbara CA**

1989 **Postdoctoral Research Fellow**

**Division of Geological & Planetary Sciences, California Institute of Technology, Pasadena CA**

1986-1989 **Postdoctoral Research Fellow**

## AREAS OF SCIENTIFIC INVESTIGATION

Water-rock interaction related to geothermal systems and high-level radioactive waste repositories; Development of conceptual models for geothermal systems through integration of geologic, geochemical and geophysical data; Application of natural analogues to evaluate radionuclide transport for nuclear waste repositories; Igneous petrology; Geologic evaluation of petroleum systems; Stable isotope geochemistry; Fracture stimulation for Enhanced Geothermal Systems; Geothermal play fairway analysis

## TECHNICAL EXPERTISE

Field: Geological field mapping, sampling of rocks, waters, and gases associated with exploration for geothermal systems, rigsite geology and core logging.

Computational: Coupled process modeling of hydrothermal systems using TOUGHREACT.

Laboratory: Isotope exchange reaction experiments, geochemical and isotopic analysis of geologic samples (rocks, minerals, fluids, gases) using electron microprobe, XRD, XRF, mass spectrometry, petrographic analysis and interpretation of thin sections.

Project Management: Planning and managing budgets and staff, assuring projects meet milestones, and overcoming technical and logistical challenges to meet project objectives in a timely and cost-effective manner.

## SOME RECENT SYNERGISTIC ACTIVITIES AND PROFESSIONAL SERVICE

- Keynote speaker, *New Zealand Geothermal Workshop* (2016)
- Panelist, *Technical Workshop on Clean Energy Across the Borders*, organized by the California Energy Commission (2016)
- Panelist, *Geothermal Best Practices for Risk Reduction Workshop*, organized by U.S. Department of State and Geothermal Energy Association (2014)
- Speaker, *Geothermal Energy Transformations: Nationwide Resources and Value Chains*, Energy from the Earth Briefing Series, Washington, D.C. (2014)
- Member, Editorial Board, *Geothermics* (2009-present)
- Member, DOE Geothermal Technologies Program Technical Monitoring Teams, *Enhanced Geothermal Systems and Innovative Exploration Technologies* (2009-present)
- Leader, Field trip to The Geysers geothermal field, AAPG Hedberg Conference on Enhanced Geothermal Systems (2011)
- Reviewer: *Geothermics*, *Nature Geoscience*, *Environmental Earth Sciences*, *Geophysical Research Letters*, *Geothermal Energy Science*, *Journal of Asian Earth Sciences*, *Energies*, *Scientific Drilling*, *Geothermal Resources Council Transactions*, DOE Geothermal Technologies Program Peer Review, Comisión Nacional de Investigación Científica y Tecnológica (Chile), World Geothermal Congress, New Zealand Geothermal Workshop

- Invited visit to Santiago, Chile, Energy and Climate Partnership of the Americas initiative (US-Chile), with six lectures to government, industry, and academic audiences (2011)
- Participant, DOE Geothermal Technologies Program, *Innovative Exploration Technologies Needs Assessment Workshop* (2010)
- Student advisor, Berkeley Lab Internship for Precollegiate Scholars (2010)
- Organized 3 DOE Basic Energy Sciences workshops: *Computational and numerical geosciences*, *Basic research relevant to geological CO<sub>2</sub> sequestration*, and *Experimental and theoretical geochemistry* (2007-2009)

## AWARDS

Best Oral Presentation, EGS Collab Session, Geothermal Resources Council Annual Meeting 2017	
Fulbright Specialist Grant in Environmental Science, Centro de Investigación Científica y de Educación Superior de Ensenada (CISESE)	2017
SPOT Awards (7), Lawrence Berkeley National Laboratory	2002, 2006, 2014, 2015, 2018
Geothermal Special Achievement Award, Geothermal Resources Council	2012
Fulbright Specialist Grant in Environmental Science, University of Chile	2012
Outstanding Contributions in Geosciences Research Award, DOE Basic Energy Sciences	2009
Special Recognition Awards (3), Unocal Corporation	1995, 1998
Fred L. Hartley Research Center Creativity Award, Unocal Corporation	1992
Harold T. Stearns Fellowship, Geological Society of America	1984
Exxon Teaching Fellowship, School of Earth Sciences, Stanford University	1982-1985
Horace F. Clark Prize, Williams College	1981
Phi Beta Kappa, Williams College Chapter	1980

## CURRENT PROFESSIONAL MEMBERSHIPS

American Geophysical Union, Geological Society of America, Geothermal Resources Council, Geological Society of Washington

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## PUBLICATIONS

### JOURNAL ARTICLES

1. Dobson, P., Gasperikova, E., Spycher, N., Lindsey, N.J., Guo, T.R., Chen, W.S., Liu, C.H., Wang, C.-J., Chen, S.-N., and Fowler, A.P.G. (2018) Conceptual model of the Tatun geothermal system, Taiwan. *Geothermics* **74**, 273–297.
2. Fowler, A.P.G., Ferguson, C., Cantwell, C.A., Zierenberg, R.A., McClain, J., Spycher, N., and Dobson, P. (2018) A conceptual geochemical model of the geothermal system at Surprise Valley, CA. *Journal of Volcanology and Geothermal Research* **353**, 132–148.
3. Lindsey, C.R., Neupane, G., Spycher, N., Fairley, J.P., Dobson, P., Wood, T., McLing, T., and Conrad, M. (2018) Cluster analysis as a tool for evaluating the exploration potential of Known Geothermal Resource Areas. *Geothermics* **72**, 358–370.

4. Reinsch, T., Dobson, P., Asanuma, H., Huenges, E., Poletto, F., and Sanjuan, B. (2017) Utilizing supercritical geothermal systems: a review of past ventures and ongoing research activities. *Geothermal Energy* **5**, DOI 10.1186/s40517-017-0075-y.
5. Jeanne, P., Rutqvist, J., and Dobson, P.F. (2017) Influence of injection-induced cooling on deviatoric stress and shear reactivation of preexisting fractures in Enhanced Geothermal Systems. *Geothermics* **70**, 367–375.
6. Siler, D.L., Zhang, Y., Spycher, N.F., Dobson, P.F., McClain, J.S., Gasperikova, E., Zierenberg, R.A., Schiffman, P., Ferguson, C., Fowler, A., and Cantwell, C. (2017) Play-fairway analysis for geothermal resources and exploration risk in the Modoc Plateau region. *Geothermics* **69**, 15–33.
7. Doughty, C., Tsang, C.F., Rosberg, J.E., Juhlin, C., Dobson, P.F., and Birkholzer, J.T. (2017) Flowing fluid electrical conductivity logging of a deep borehole during and following drilling: estimation of transmissivity, water salinity and hydraulic head of conductive zones. *Hydrogeology Journal* **25**, 501–517.
8. Garcia, J., Hartline, C., Walters, M., Wright, M., Rutqvist, J., Dobson, P.F., and Jeanne, P. (2016) The Northwest Geysers EGS Demonstration Project, California. Part 1: Characterization and reservoir response to injection. *Geothermics* **63**, 97–119.
9. Rutqvist, J., Jeanne, P., Dobson, P.F., Garcia, J., Hartline, C., Hutchings, L., Singh, A., Vasco, D.W., and Walters, M. (2016) The Northwest Geysers EGS Demonstration Project, California – Part 2: Modeling and interpretation. *Geothermics* **63**, 120–138.
10. Aravena, D., Muñoz, M., Morata, D., Lahsen, A., Parada, M.A., and Dobson, P. (2016) Assessment of high enthalpy geothermal resources and promising areas of Chile. *Geothermics* **59**, 1–13.
11. Jeanne, P., Rutqvist, J., Dobson, P.F., Garcia, J., Walters, M., Hartline, C., and Borgia, A. (2015) Geomechanical simulation of the stress tensor rotation caused by injection of cold water in a deep geothermal reservoir. *Journal of Geophysical Research Solid Earth* **120**, doi: 10.1002/2015JB012414
12. Jeanne, P., Rutqvist, J., Rinaldi, A.P., Dobson, P.F., Walters, M., Hartline, C., and Garcia, J. (2015) Seismic and aseismic deformations and impact on reservoir permeability: The case of EGS stimulation at The Geysers, California, USA. *Journal of Geophysical Research Solid Earth* **120**, doi: 10.1002/2015JB012142
13. Sanchez-Alfaro, P., Sielfeld, G., van Campen, B., Dobson, P., Fuentes, V., Reed, A., Palma-Behnke, R., and Morata, D. (2015) Geothermal barriers, policies and economics in Chile – Lessons for the Andes. *Renewable & Sustainable Energy Reviews* **51**, 1390–1401.
14. Jeanne, P., Rutqvist, J., Hutchings, L., Singh, A., Dobson, P.F., Walters, M., Hartline, C., and Garcia, J. (2015) Degradation of the mechanical properties imaged by seismic tomography during an EGS creation at The Geysers (California) and geomechanical modeling. *Physics of the Earth and Planetary Interiors* **240**, 82–94.
15. Rutqvist, J., Dobson, P.F., Garcia, J., Hartline, C., Jeanne, P., Oldenburg, C.M., Vasco, D.W., and Walters, M. (2015) The Northwest Geysers EGS demonstration project, California: Pre-stimulation modeling and interpretation of the stimulation. *Mathematical Geosciences* **47**, 3–29.
16. Jeanne, P., Rutqvist, J., Dobson, P.F., Walters, M., Hartline, C., and Garcia, J. (2014) The impacts of mechanical stress transfers caused by hydromechanical and thermal processes on fault stability during hydraulic stimulation in a deep geothermal reservoir. *International Journal of Rock Mechanics and Mining Sciences* **72**, 149–163.
17. Jeanne P., Rutqvist J., Hartline, C., Garcia J., Dobson P.F., and Walters M. (2014) Reservoir structure and properties from geomechanical modeling and microseismicity analyses associated with an enhanced geothermal system at The Geysers, California. *Geothermics* **51**, 460–469.
18. Jeanne P., Rutqvist J., Vasco, D., Garcia J., Dobson P.F., Walters M., Hartline, C., and Borgia, A. (2014) A 3D hydrogeological and geomechanical model of an Enhanced Geothermal System at The Geysers, California. *Geothermics* **51**, 240–252.
19. Vasco, D.W., Rutqvist, J., Ferretti, A., Rucci, A., Bellotti, F., Dobson, P., Oldenburg, C., Garcia, J., Walters, M., and Hartline, C. (2013) Monitoring deformation at the Geysers Geothermal Field, California using C-band and X-band interferometric synthetic aperture radar. *Geophys. Res. Lett.* **40**, 1–6, doi:10.1002/grl.50314.

20. Finsterle, S., Zhang, Y., Pan, L., Dobson, P., and Oglesby, K. (2013) Microhole arrays for improving heat mining from enhanced geothermal systems. *Geothermics* **47**, 104–115.
21. Oldenburg, C.M., Doughty, C., Peters, C.A., and Dobson, P.F. (2012) Simulations of long-column flow experiments related to geologic carbon sequestration: Effects of outer wall boundary condition on upward flow and formation of liquid CO<sub>2</sub>. *Greenhouse Gases Sci. Technol.* **2**, 279–303.
22. Dobson, P.F., Ghezzehei, T.A., Cook, P.J., Rodriguez-Pineda, J.A., Villalba, L., and de la Garza, R. (2012) Heterogeneous seepage at the Nopal I natural analogue site, Chihuahua, Mexico. *Hydrogeol. J.* **20**, 155–166.
23. Goldstein, S.J., Abdel-Fattah, A.I., Murrell, M.T., Dobson, P.F., Norman, D.E., Amato, R.S., and Nunn, A.J. (2010) Uranium-series constraints on radionuclide transport and groundwater flow at the Nopal I uranium deposit, Sierra Peña Blanca, Mexico. *Environ. Sci. Tech.* **44**, 1579–1586.
24. Ku, T.L., Luo, S., Goldstein, S.J., Murrell, M.T., Chu, W.L., and Dobson, P.F. (2009) Modeling non-steady state radioisotope transport in the vadose zone – A case study using uranium isotopes at Peña Blanca, Mexico. *Geochim. Cosmochim. Acta* **73**, 6052–6064.
25. Blank, J.G., Green, S.J., Blake, D., Valley, J.W., Kita, N.T., Treiman, A., and Dobson, P.F. (2009) An alkaline spring system within the Del Puerto Ophiolite (California, USA): A Mars analog site. *Planet. Space Sci.* **57**, 533–540.
26. Dobson, P.F., Fayek, M., Goodell, P., Ghezzehei, T.A., Melchor, F., Murrell, M.T., Oliver, R., Reyes-Cortés, I., de la Garza, R., and Simmons, A. (2008) Stratigraphy of the PB-1 well, Nopal I uranium deposit, Sierra Peña Blanca, Chihuahua, Mexico, *Internat. Geol. Rev.* **50**, 959–974.
27. Dobson, P.F., Blank, J.G., Maruyama, S., and Liou, J.G. (2006) Petrology and geochemistry of boninite series volcanic rocks, Chichi-jima, Bonin Islands, Japan, *Internat. Geol. Rev.* **48**, 669–701.
28. Verma, S.P., Torres-Alvarado, I.S., Satir, M., and Dobson, P.F. (2005) Hydrothermal alteration effects in geochemistry and Sr, Nd, Pb, and O isotopes of magmas from the Los Azufres geothermal field (Mexico): A statistical approach. *Geochem. Jour.* **39**, 141–163.
29. Dobson, P.F., Salah, S., Spycher, N., and Sonnenthal, E. (2004) Simulation of water-rock interaction in the Yellowstone geothermal system using TOUGHREACT. *Geothermics* **33**, 493–502.
30. Hickman, R.G., Dobson, P.F., van Gerven, M., Sagala, B., and Gunderson, R.P. (2004) Tectonic and stratigraphic evolution of the Sarulla Graben region, North Sumatra, Indonesia. *J. Asian Earth Sci.* **23**, 435–448.
31. Dobson, P.F., Kneafsey, T.J., Hulen, J., and Simmons, A. (2003) Porosity, permeability, and fluid flow in the Yellowstone geothermal system, Wyoming. *J. Volcanol. Geotherm. Res.* **123**, 313–324.
32. Dobson, P.F., Kneafsey, T.J., Sonnenthal, E.L., Spycher, N., and Apps, J.A. (2003) Experimental and numerical simulation of dissolution and precipitation: Implications for fracture sealing at Yucca Mountain, Nevada. *J. Contam. Hydrol.* **62-63**, 459–476.
33. Moore, D.E., Hickman, S., Lockner, D.A., and Dobson, P.F. (2001) Hydrothermal minerals and microstructures in the Silangkitang geothermal field along the Great Sumatran fault zone, Sumatra, Indonesia. *Geol. Soc. Amer. Bull.* **113**, 1179–1192.
34. Dobson, P.F., Skogby, H., and Rossman, G.R. (1995) Water in boninite glass and coexisting orthopyroxene: concentration and partitioning. *Contrib. Mineral. Petrol.* **118**, 414–419.
35. Cousens, B.L., Spera, F.J., and Dobson, P.F. (1993) Post-eruptive alteration of silicic ignimbrites and lavas, Gran Canaria, Canary Islands: Strontium, neodymium, lead, and oxygen isotopic evidence. *Geochim. Cosmochim. Acta* **57**, 631–640.
36. Dobson, P.F., Epstein, S., and Stolper, E.M. (1989) Hydrogen isotope fractionation between coexisting vapor and silicate glasses and melts at low pressure. *Geochim. Cosmochim. Acta* **53**, 2723–2730.
37. Banner, J.L., Wasserburg, G.J., Dobson, P.F., Carpenter, A.B., and Moore, C.H. (1989) Isotopic and trace element constraints on the origin and evolution of saline groundwaters from central Missouri. *Geochim. Cosmochim. Acta* **53**, 383–398.
38. Dobson, P.F., and O'Neil, J.R. (1987) Stable isotope compositions and water contents of boninite series volcanic rocks from Chichi-jima, Bonin Islands, Japan. *Earth Planet. Sci. Lett.* **82**, 75–86.

39. Dobson, P.F., and Mahood, G.A. (1985) Volcanic stratigraphy of the Los Azufres geothermal area, Mexico. *J. Volcanol. Geotherm. Res.* **25**, 273–287.

### BOOK CHAPTERS

1. Dobson, P.F., and Tilton, G. (1989) Th, U and Pb systematics of boninite series volcanic rocks from Chichi-jima, Bonin Islands, Japan. In: *Boninites*, A.J. Crawford, ed., Unwin Hyman Ltd, London, 396–415.

### OTHER PUBLICATIONS

1. Dobson, P., Kneafsey, T., Morris, J., Singh, A., Zoback, M., Roggenthen, W., Doe, T., Neupane, G., Podgorney, R., Wang, H., Knox, H., Schwering, P., Blankenship, D., Ulrich, C., Johnson, T., White, M., and the EGS Collab team (2018) The EGS Collab hydroshear experiment at the Sanford Underground Research Facility – Siting criteria and evaluation of candidate sites. *Geothermal Resources Council Transactions* **42**, 708–723.
2. Glen, J.M.G., Liberty, L., Peacock, J., Gasperikova, E., Earney, T., Schermerhorn, W., Siler, D., Shervais, J., and Dobson, P. (2018) A geophysical characterization of the structural framework of the Camas Prairie geothermal system, southcentral Idaho. *Geothermal Resources Council Transactions* **42**, 466–481.
3. Shervais, J.W., Glen, J.M., Siler, D., Liberty, L.M., Nielson, D.L., Garg, S., Dobson, P., Gasperikova, E., Sonnenthal, E., Newell, D.L., Neupane, G., DeAngelo, J., Ritzinger, B., Peacock, J., Snyder, N., and Mink, L.L. (2018) Geothermal play fairway analysis, Phase 3: A provisional conceptual model of the Camas Prairie, Snake River Plain, Idaho. *Geothermal Resources Council Transactions* **42**, 553–563.
4. Kneafsey, T.J., Blankenship, D., Dobson, P.F., Knox, H.A., Johnson, T.C., Ajo-Franklin, J.B., Schwering, P.C., Morris, J.P., White, M.D., Podgorney, R., Roggenthen, W., Doe, T., Mattson, E., Valladao, C., and the EGS Collab team (2018) EGS Collab Experiment 1 overview and progress. *Geothermal Resources Council Transactions* **42**, 735–755.
5. Sonnenthal, E., Pettitt, W., Smith, T., Riahi, A., Siler, D., Kennedy, M., Majer, E., Dobson, P., Ayling, B., Damjanac, B., and Blankenship, D. (2018) Continuum thermal-hydrological-mechanical modeling of the Fallon FORGE site. *Geothermal Resources Council Transactions* **42**, 1184–1193.
6. Kneafsey, T.J., Dobson, P.F., Ajo-Franklin, J.B., Valladao, C., Blankenship, D.A., Knox, H.A., Schwering, P., Morris, J.P., Smith, M., White, M.D., Johnson, T., Podgorney, R., Mattson, E., Neupane, G., Roggenthen, W., Doe, T., and the EGS Collab team (2018) The EGS Collab project: Stimulation and simulation. Proceedings, 52<sup>nd</sup> US Rock Mechanics / Geomechanics Symposium, American Rock Mechanics Association, ARMA 18-1345, 10 p.
7. Morris, J.P., Fu, P., Dobson, P., Ajo-Franklin, J., Kneafsey, T.J., Knox, H., Blankenship, D., White, M.D., Burghardt, J., Doe, T.W., and the EGS Collab team (2018) Experimental design for hydrofracturing and fluid flow at the DOE EGS Collab testbed. Proceedings, 52<sup>nd</sup> US Rock Mechanics / Geomechanics Symposium, American Rock Mechanics Association, ARMA 18-007, 11 p.
8. Ulrich, C., Dobson, P.F., Kneafsey, T.J., Roggenthen, W.M., Uzunlar, N., Doe, T.W., Neupane, G., Podgorney, R., Schwering, P., Frash, L., Singh, A., and the EGS Collab team (2018) The distribution, orientation, and characteristics of natural fractures for Experiment 1 of the EGS Collab project, Sanford Underground Research Facility. Proceedings, 52<sup>nd</sup> US Rock Mechanics / Geomechanics Symposium, American Rock Mechanics Association, ARMA 18-1252, 8 p.
9. Rutqvist, J., Pan, L., Hu, M., Zhou, Q., and Dobson, P. (2018) Modeling of coupled flow, heat and mechanical well integrity during variable geothermal production. *Proceedings, 43<sup>rd</sup> Workshop on Geothermal Reservoir Engineering*, Stanford University, Feb. 12-14, 2018, 13 p.
10. Ayling, B., Blankenship, D., Sullivan, P., Kennedy, M., Majer, E.L., Villavert, M., Sonnenthal, E., Tang, J., Dobson, P., Hinz, N., Faulds, J., Hammond, W., Mlawsky, E., Blake, K., Tiedeman, A., Sabin, A., Lazaro, M., Akerley, J., Nordquist, J., Siler, D.L., Kaven, J.O., Phelps, G., Hickman, S., Glen, J., Williams, C., Robertson-Tait, A., Hackett, L., Pettitt, W., Riahi, A., Blanksma, D., Damjanac, B., Hazzard, J., Eneva, M., Witter, J.B., Queen, J., and Fortuna, M. (2018) Phase 2 update for the Fallon FORGE site. *Proceedings, 43<sup>rd</sup> Workshop on Geothermal Reservoir Engineering*, Stanford University, Feb. 12-14, 2018, 13 p.

11. Spycher, N., Zehner, R.E., Zusa, A., Bill, M., Ayling, B., Hammack, R., Veloski, G., McKoy, M., Cameron, E., Creason, C.G., DiGiulio, J., Dobson, P., Justman, D., Miller, R., Mark-Moser, M., Rose, K., Siler, D., Rackley, I., Supp, J., and Bosshardt, K. (2018) Geothermal exploration in the vicinity of Wells, Nevada. *Proceedings, 43<sup>rd</sup> Workshop on Geothermal Reservoir Engineering*, Stanford University, Feb. 12-14, 2018, 12 p.
12. Kneafsey, T.J., Dobson, P., Blankenship, D., Morris, J., Knox, H., Schwering, P., White, M., Doe, T., Roggenthen, W., Mattson, E., Podgorney, R., Johnson, T., Ajo-Franklin, J., Valladao, C., and the EGS Collab team (2018) An overview of the EGS Collab project: Field validation of coupled process modeling of fracturing and fluid flow at the Sanford Underground Research Facility, Lead, SD. *Proceedings, 43<sup>rd</sup> Workshop on Geothermal Reservoir Engineering*, Stanford University, Feb. 12-14, 2018, 10 p.
13. Morris, J.P., Dobson, P., Knox, H., Ajo-Franklin, J., White, M.D., Fu, P., Burghardt, J., Kneafsey, T.J., Blankenship, D., and the EGS Collab Team (2018) Experimental design for hydrofracturing and fluid flow at the DOE Collab testbed. *Proceedings, 43<sup>rd</sup> Workshop on Geothermal Reservoir Engineering*, Stanford University, Feb. 12-14, 2018, 11 p.
14. Shervais, J.W., Glen, J.M., Siler, D., DeAngelo, J., Liberty, L.M., Nielson, D., Garg, S., Neupane, G., Dobson, P., Gasperikova, E., Sonnenthal, E., Newell, D.L., Evans, J.P., Snyder, N., and Mink, L.L. (2018) Provisional conceptual model of the Camas Prairie (ID) geothermal system from play fairway analysis. *Proceedings, 43<sup>rd</sup> Workshop on Geothermal Reservoir Engineering*, Stanford University, Feb. 12-14, 2018, 8 p.
15. Dobson, P., Kneafsey, T.J., Blankenship, D., Valladao, C., Morris, J., Knox, H., Schwering, P., White, M., Doe, T., Roggenthen, W., Mattson, E., Podgorney, R., Johnson, T., Ajo-Franklin, J., and the EGS Collab team (2017) An introduction to the EGS Collab project. *Geothermal Resources Council Transactions* **41**, 837–849.
16. Wall, A.M., Dobson, P.F., and Thomas, H. (2017) Geothermal costs of capital: Relating market valuation to project risk and technology. *Geothermal Resources Council Transactions* **41**, 45–61.
17. Stimac, J., Wilmarth, M., Madeno, P.E., Dobson, P., and Winick, J. (2017) Review of exploitable supercritical geothermal resources to 5 km at Geysers-Clear Lake, Salton Sea, and Coso. *Geothermal Resources Council Transactions* **41**, 806–835.
18. Shervais, J.W., Glen, J.M.G., Nielson, D.L., Garg, S., Liberty, L.M., Siler, D., Dobson, P., Gasperikova, E., Sonnenthal, E., Neupane, G., DeAngelo, J., Newell, D.L., Evans, J.P., and Snyder, N. (2017) Geothermal play fairway analysis of the Snake River Plain: Phase 2. *Geothermal Resources Council Transactions* **41**, 2328–2345.
19. Oldenburg, C.M., Dobson, P.F., Wu, Y., Cook, P.J., Kneafsey, T.J., Nakagawa, S., Ulrich, C., Siler, D.L., Guglielmi, Y., Ajo-Franklin, J., Rutqvist, J., Daley, T.M., Birkholzer, J.T., Wang, H.F., Lord, N.E., Haimson, B.C., Sone, H., Vigilante, P., Roggenthen, W.M., Doe, T.W., Lee, M.Y., Ingraham, M., Huang, H., Mattson, E.D., Zhou, J., Johnson, T.J., Zoback, M.D., Morris, J.P., White, J.A., Johnson, P.A., Coblenz, D.D., and Heise, J. (2017) Overview of the KISMET project on intermediate-scale hydraulic fracturing in a deep mine. *Proceedings, 51<sup>st</sup> US Rock Mechanics / Geomechanics Symposium*, American Rock Mechanics Association, ARMA 17-000651, 7 p.
20. Zhou, J., Huang, H., Mattson, E., Doe, T.W., Oldenburg, C.M., Dobson, P.F., and Wang, H.F. (2017) Post-fracturing experiment simulation of hydraulic fracture propagation in a deep mine using a fully coupled 3D network-flow and quasi-static discrete element model. *Proceedings, 51<sup>st</sup> US Rock Mechanics / Geomechanics Symposium*, American Rock Mechanics Association, ARMA 17-000651, 9 p.
21. Wang, H.F., Lee, M.Y., Doe, T.W., Haimson, B.C., Oldenburg, C.M., and Dobson, P.F. (2017) In-situ stress measurement at 1550-meters depth at the KISMET test site in Lead, S.D. *Proceedings, 51<sup>st</sup> US Rock Mechanics / Geomechanics Symposium*, American Rock Mechanics Association, ARMA 17-000651, 7 p.
22. Kneafsey, T.J., Nakagawa, S., Sonnenthal, E.L., Voltolini, M., Dobson, P.F., Smith, J.T., and Borglin, S.E. (2017) Comparison of experimental and modeling results of fracture sustainability in EGS systems. *Proceedings, 42<sup>nd</sup> Workshop on Geothermal Reservoir Engineering*, Stanford University, Feb. 13-15, 2017, 20 p.
23. Dobson, P., Asanuma, H., Huenges, E., Poletto, F., Reinsch, T., and Sanjuan, B. (2017) Supercritical geothermal systems – A review of past studies and ongoing research activities. *Proceedings, 42<sup>nd</sup> Workshop on Geothermal Reservoir Engineering*, Stanford University, Feb. 13-15, 2017, 13 p.
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