

Hazzard, J. “Future Plans for Itasca Software,” in *Applied Numerical Modeling in Geomechanics 2020 (Proceedings, 5th International Itasca Symposium, February 2020)*, Paper 18-01. Minneapolis, Minnesota: Itasca, 2020.

Moghadam, S. N., N. Deisman, G. Zambrano-Narvaez, J. Hazzard and R. Chalaturnyk. “Fluid Flow Model in Fractured Rock by Finite Volume Black Oil Simulator (FVBOS) and 3DEC,” in *Applied Numerical Modeling in Geomechanics 2020 (Proceedings, 5th International Itasca Symposium, February 2020)*, Paper 06-01. Minneapolis, Minnesota: Itasca, 2020.

Pulatsu, B., E. Erdogmus, P. B. Lourenco, J. V. Lemos and J. Hazzard. “Discontinuum Analysis of the Fracture Mechanism in Masonry Prisms and Wallettes via Discrete Element Method,” *Meccanica*, doi.org/10.1007/s11012-020-01133-1. 2020.

Monsalve, J. J., J. G. Baggett, A. Soni, N. Ripepi and J. Hazzard. “Stability Analysis of an Underground Limestone Mine Using Terrestrial Laser Scanning with Stochastic Discrete Element Modeling,” in *Proceedings, 53rd U.S. Rock Mechanics/Geomechanics Symposium (ARMA, New York City, June 2019)*, ARMA 19-484. Alexandria, Virginia: ARMA, 2019.

Pettitt, W., A. Riahi, J. Hazzard, B. Damjanac, D. Blanksma, Varun, J. Furtney, D. Blankenship, E. Sonnenthal, and M. Kennedy. “Conceptual Reservoir Design at Fallon FORGE Using Geomechanical Models with Natural and Induced Fractures,” *GRC Transactions (Proceedings, Geothermal Resources Council Annual Meeting & Expo, Reno, Nevada, October 2018)*, Vol. 42, GRC, 2018.

Pettitt, W., J. Hazzard, A. Riahi, S. Maxwell, and D. Blankenship. “Simulated Microseismicity in Geomechanical Models with Natural and Induced Fractures,” in *SEG18 (Proceedings, International Exposition 88th Meeting Technical Program Expanded Abstracts, Anaheim, California, October 2018)*.

Ayling, B., D. Blankenship, P. Sullivan, M. Kennedy, E. L. Majer, M. Villavert, E. Sonnenthal, J. Tang, P. Dobson, N. Hinz, J. Faulds, W. Hammond, E. Mlawsky, K. Blake, A. Tiedeman, A. Sabin, M. Lazaro, J. Akerley, J. Nordquist, M. Sophy, D. L. Siler, J. O. Kaven, G. Phelps, S. Hickman, J. Glen, C. Williams, A. Robertson-Tait, L. Hackett, W. Pettitt, A. Riahi, D. Blanksma, B. Damjanac, J. Hazzard, M. Eneva, J. B. Witter, J. Queen, M. Fortuna. “Phase 2 Update for the Fallon FORGE Site, Nevada, USA,” in *Proceedings, 43rd Workshop on Geothermal Reservoir Engineering (Stanford University, Stanford, California, February 2018)*, SGP-TR-213. 2018.

Maxwell, S. C., J. Hazzard and W. Pettitt. “Benchmark Modeling of Hydraulic Fracture Interaction with Pre-Existing Fractures: Impact on Fracture Geometry, Proppant Distribution and Microseismic Response,” in *Proceedings, SPE Hydraulic Fracturing Technology Conference (The Woodlands, Texas, January 2018)*, SPE-189874-MS. Richardson, Texas: Society of Petroleum Engineers, 2018.

Parastatidis, E., M. W. Hildyard and J. Hazzard. “Seismic Waves as a Tool to Interpret Complex Fractures,” in *DFNE 2018 (Proceedings, 2nd International Discrete Fracture Network Engineering Conference, Seattle, Washington, June 2018)*, 18–0990. ARMA, 2018.

Bouzeran, L., J. Furtney, M. Pierce, J. Hazzard, J. V. Lemos. “Simulation of Ground Support Performance in Highly Fractured and Bulked Rock Mases with Advanced 3DEC Bolt Model,” in *Deep Mining 2017 (Proceedings, Eighth International Conference on Deep and High Stress Mining, Perth, Australia, March 2017)*, pp. 667–680. Perth: Australian Centre for Geomechanics, 2017.

Hazzard, J., J. V. Lemos and M. Pierce. “Advanced 3DEC Bolt Model for Simulation of Ground Support Performance in Highly Fractured and Bulked Rock Masses,” in *Ground Support 2016 (Proceedings, 8th International Symposium on Ground Support in Mining and Underground Construction, Luleå, Sweden, September 2016)*, E. Nordlund, T. H. Jones, and A. Eitzenberger, Eds. Luleå: Luleå University of Technology, 2016.

Khazaei, C., J. Hazzard, and R. Chalaturnyk. “Discrete Element Modeling of Stick-Slip Instability and Induced Microseismicity,” *Pure and Appl. Geophys.*, **173**(3), 775-794. 2016.

Azocar, K., and J. Hazzard. “The Influence of Curvature on the Stability of Rock Slopes,” in *Proceedings, 13th ISRM International Congress of Rock Mechanics (Montreal, Canada, May 2015)*, ISRM-13CONGRESS-2015-336. ISRM, 2015.

Fry, M. F. et al. “Discrete Element Modelling of Microseismic Energy Associated with Hydraulic Fracturing in Natural Fractures Reservoirs,” in *Proceedings, 49th US Rock Mechanics/Geomechanics Symposium (ARMA, San Francisco, June 2015)*, ARMA 15-0806. Alexandria, Virginia: ARMA, 2015

Damjanac, B., W. Pettitt and J. Hazzard. “Fracture Network Engineering for Hydraulic Fracturing,” in *Proceedings, 1st International Symposium on Energy Challenges and Mechanics (Aberdeen, Scotland, UK, July 2014)*. Journal of Energy Challenges & Mechanics, 2014.

Khazaei, C., J. Hazzard, and R. Chalaturnyk. “Damage Quantification of Intact Rocks Using Acoustic Emission Energies Recorded During Uniaxial Compression Test and Discrete Element Modeling,” *Computers and Geotechnics*, **67**, 94-102. 2015.

Khazaei, C., J. Hazzard, and R. Chalaturnyk. “A Hybrid *FLAC3D-PFC3D* Model to Study the Microseismic Response of Caprock,” in *Proceedings, 13th ISRM International Congress of Rock Mechanics (Montreal, May 2015)*. Paper No. ISRM-13CONGRESS-2015-319, 2015.

Hazzard, J. F., and B. Damjanac. “Further Investigations of Microseismicity in Bonded Particle Models,” in *Continuum and Distinct Element Numerical Modeling in Geomechanics - 2013 (Proceedings, 3rd International FLAC/DEM Symposium, Hangzhou, China, October 2013)*. Paper: 06-01, H. Zhu, C. Detournay, R. Hart, and M. Nelson, Eds. Minneapolis: Itasca International, Inc., 2013.

Hazzard, J. H., and W. S. Pettitt. “Advances in Numerical Modeling of Microseismicity,” in *Proceedings, 47th US Rock Mechanics / Geomechanics Symposium*. Paper No. ARMA13-224. San Francisco, California: ARMA, 2013.

Hazzard, J., B. Damjanac, C. Detournay and L. Lorig. “Numerical Investigation of Flow Regimes in Fractured Rock Slopes,” in *21st Canadian Rock Mechanics Symposium: RockEng12 — Rock Engineering for Natural Resources (Proceedings, CARMA, Edmonton, Canada, May 2012)*, pp. 161-168, C. Hawkes, Ed. Westmount, Quebec: CARMA, CIMICM, 2012.

Pettitt, W. S., J. F. Hazzard, B. Damjanac, Y. H. Han, M. Pierce, T. Katsaga and P. A. Cundall. “Microseismic Imaging and Hydrofracture Numerical Simulations,” in *21st Canadian Rock Mechanics Symposium: RockEng12 — Rock Engineering for Natural Resources (Proceedings, CARMA, Edmonton, Canada, May 2012)*, pp. 549-560, C. Hawkes, Ed. Westmount, Quebec: CARMA, CIMICM, 2012.

Pettitt, W. S., M. Pierce, B. Damjanac, J. Hazzard, J. Lorig, C. Fairhurst, M. Sanchez-Nagel, N. Nagel, J. M. Reyes-Montes, J. Andrew and R. P. Young. “Fracture Network Engineering: Combining Microseismic Imaging and Hydrofracture Numerical Simulations,” in *46th US Rock Mechanics / Geomechanics Symposium (Proceedings, ARMA, Chicago, June 2012)*. Paper No. 12-554. Alexandria, Virginia: ARMA, 2012.

Riahi, A., J. Hazzard and L. Lorig. "Effect of Anisotropy of Permeability in Slope Stability of Large Open Pit Mines," in *21st Canadian Rock Mechanics Symposium: RockEng12 — Rock Engineering for Natural Resources (Proceedings, CARMA, Edmonton, Canada, May 2012)*, pp. 119-126, C. Hawkes, Ed. Westmount, Quebec: CARMA, CIMICM, 2012.

Riahi, A., J. Hazzard and L. Lorig. "Heterogeneous Distribution of the Coefficient of Permeability and an Equivalent Homogeneous Approach," in *46th U.S. Rock Mechanics / Geomechanics Symposium (Proceedings, ARMA, Chicago, June 2012)*. Paper No. 360. Alexandria, Virginia: ARMA, 2012.

Hazzard, J., B. Damjanac, L. Lorig and C. Detournay. "Guidelines for Groundwater Modelling in Large Open Pit Mine Design," in *Slope Stability 2011 (Proceedings, Int. Symp. on Rock Slope in Open Pit Mining and Civil Engineering, Vancouver, September 2011)*, Paper No. 114. E. Eberhardt and D. Stead, Eds. Vancouver: Canada Rock Mechanics Association, 2011.

Hazzard, J., B. Damjanac, C. Detournay and L. Lorig. "Developing Rules of Thumb for Groundwater Modelling in Large Open Pit Mine Design," in *2011 Pan-Am CGS Geotechnical Conference (Proceedings, Geo-Innovation Addressing Global Challenges, Toronto, Ontario, Canada, October 2011)*. Canada: Canadian Geotechnical Society, 2011.

Pettitt, W., M. Pierce, B. Damjanac, J. Hazzard, L. Lorig, C. Fairhurst, I. Gil, M. Sanchez, N. Nagel, J. Reyes-Montes and R. P. Young. "Fracture Network Engineering for Hydraulic Fracturing," *The Leading Edge*, **30**(8), 844-853, doi: 10.1190/1.3626490. 2011.

Hazzard, J. F., Hammah, R. and J. Curran. "Advances in Probabilistic Slope Stability Analysis Using the Finite Element Method," in *Geo2010 (Proceedings, 63rd Canadian Geotechnical Conference and 6th Canadian Permafrost Conference, Calgary, Alberta, September 2010)*, pp. 840-847. CGC/CPC, 2010.

Hazzard, J. F., T. E. Yacoub, S. Vijayakumar and J. Curran. "Calculating Settlement for Irregularly Shaped Rigid Foundations," in *GeoHalifax 2009 (Proceedings, 62nd Canadian Geotechnical Conference / 10th Joint CGS / IAH-CNC Groundwater Conference, Halifax, Nova Scotia, September 2009)*, pp. 276-282. Richmond, B.C., Canada: BiTech Publishers, 2009.

Hazzard, J. F., T. E. Yacoub and J. Curran. "Consolidation in Multi-Layered Soils: A Hybrid Computation Scheme," in *GeoEdmonton '08: A Heritage of Innovation (Proceedings, 61st Canadian Geotechnical Conference, Edmonton, September 2008)*, pp. 182-189. Edmonton: GeoEdmonton'08 Organizing Committee, 2008.

Hazzard, J. F., T. E. Yacoub, S. Vijayakumar and J. Curran. "Stresses Under Footings in Multi-Layered Soils: A Comparative Study," in *Proceedings, 60th Canadian Geotechnical Conference and 8th Joint CGS / IAH-CNC Groundwater Specialty Conference (Ottawa, Canada, 2007)*, pp. 1566-1570. Richmond: Canadian Geotechnical Society, 2007.

Mair, K., and J. F. Hazzard. "Nature of Stress Accommodation in Sheared Granular Material: Insights from 3D Numerical Modelling," *Earth Planet Sc. Lett.*, **259**(3-4), 469-485. 2007.

AL-Busaidi, A., J. F. Hazzard and R. P. Young. "Distinct Element Modeling of Hydraulically Fractured Lac du Bonnet Granite," *J. Geophys. Res.*, **110**, B06302, doi: 10.1029/2004JB003297. 2005.

Hazzard, J. F., and R. P. Young. "Dynamic Modelling of Induced Seismicity," *Int. J. Rock Mech.*, **41**(8), 1365-1376. 2004.

Hazzard, J. F., and R. P. Young. "Numerical Investigation of Induced Cracking and Seismic Velocity Changes in Brittle Rock," *Geophys. Res. Lett.*, **31**(1), doi: 10.1029/2003GL019190. 2004.

Vinciguerra, S., Meredith, P. G. and J. F. Hazzard. "Experimental and Modelling Study of Fluid Pressure-Driven Fractures in Darely Dale Sandstone" *Geophys. Res. Lett.*, **31**(9), doi: 10.1029/2004GL019638. 2004.

Hazzard, J. F., and K. Mair. "The Importance of the Third Dimension in Granular Shear," *Geophys. Res. Lett.*, **30**(13), doi: 10.1029/2003GL017534. 2003.

Hazzard, J. F., and R. P. Young. "Moment Tensors and Micromechanical Models," *Tectonophysics*, **356**, 181-197. 2002.

Hazzard, J. F., R. P. Young and S. J. Oates. "Numerical Modeling of Seismicity Induced by Fluid Injection in a Fractured Reservoir," in *NARMS-TAC 2002: Mining and Tunnelling Innovation and Opportunity*, Vol. 2, pp. 1023-1030. R. Hammah et al., Eds. Toronto: University of Toronto Press, 2002.

Hazzard, J. F., D. S. Collins, W. S. Pettitt and R. P. Young. "Simulation of Unstable Fault Slip in Granite Using a Bonded-Particle Model," *Pure Appl. Geophys.*, **159**, pp. 221-245. 2002.

Hazzard, J. F., and R. P. Young. "Seismic Validation of Micromechanical Models," in *Rock Mechanics in the National Interest (Proceedings, 38th U.S. Rock Mechanics Symposium, Washington, D.C., July 2001)*, Vol. 2, pp. 1029-1034. Rotterdam: Balkema, 2001.

Hazzard, J. F., and R. P. Young. "Simulating Acoustic Emissions in Bonded Particle Models of Rock," *Int. J. Rock Mech. Min. Sci.*, **37**, 867-872. 2000.

Hazzard, J. F., R. P. Young and S.C. Maxwell. "Micromechanical Modeling of Cracking and Failure in Brittle Rocks," *J. Geophys. Res.*, **105**(B7), 683-697. 2000.

Young, R. P., J. F. Hazzard and W. S. Pettitt. "Seismic and Micromechanical Studies of Rock Fracture," *Geophys. Res. Lett.*, **27**(12), 1667-1670. 2000.

Hazzard, J. F. *Numerical Modelling of Acoustic Emissions and Dynamic Rock Behaviour*. Ph.D. Thesis, Keele University, 1998.

Hazzard, J. F., S. C. Maxwell and R. P. Young. "Micromechanical Modelling of Acoustic Emissions," in *Eurock '98 (Proceedings, ISRM / SPE Rock Mechanics in Petroleum Engineering, Trondheim, Norway, July 1998)*, Paper No. SPE 47320, pp. 519-526. Richardson, Texas: SPE, 1998.