ESD Hydrogeology Department Publications 2007–2011

The following lists include those documents (journal articles, books, book chapters, conference papers, reports) associated with the Hydrogeology Department of the Earth Sciences Division that changed their publication status from "submitted/in review" to "accepted" or ""in press," or that were published (and have a completed citation), during the period from January 1, 2007, through December 31, 2011.

2011

ESD Hydrogeology Department Peer-Reviewed Journal Articles and Book Chapters for 2011

1. Birkholzer, J.T., J.-P. Nicot, C.M. Oldenburg, Q. Zhou, S. Kraemer, and K.W. Bandilla (2011), Brine flow up a borehole caused by pressure perturbation from CO_2 storage: Static and dynamic evaluations. International Journal of Greenhouse Gas Control, 5 (4), 850–861; DOI: 10.1016/j.ijggc.2011.01.003. LBNL-4864E.
2. Cappa, F., and J. Rutqvist (2011), Impact of CO_2 geological sequestration on the nucleation of earthquakes. Geophysical Research Letters, 38, L17313; DOI: 10.1029/2011GL048487. LBNL-5121E.
3. Cappa, F. and J. Rutqvist (2011), Modeling of coupled deformation and permeability evolution during fault reactivation induced by deep underground injection of CO_2. International Journal of Greenhouse Gas Control, DOI:10.1016/j.ijggc.2010.08.005. LBNL-3855E.
4. Daley, T.M., J. Ajo-Franklin, and C.A. Doughty (2011), Constraining the reservoir model of an injected CO_2 plume with crosswell CASSM at the Frio-II Brine Plot. International Journal of Greenhouse Gas Control, 5 (4), 1022–1030; DOI: 10.1016/j.ijggc.2011.03.002. LBNL-4543E.
5. Danko, G., D. Bahrami, and J.T. Birkholzer (2011), A turbulent transport network model in MULTIFLUX coupled with TOUGH2. Journal of Nuclear Technology, 174(3), 327–341. LBNL-4856E.
6. Dobson, P.F. T.A. Ghezzehei, P.J. Cook, J.A. Rodriguez, L. Villalba, and R. de la Garza (2011), Heterogeneous seepage at the Nopal I natural analogue site, Chihuahua, Mexico. Hydrogeology Journal, DOI: 10.1007/s10040-011-0783-5. LBNL-1127E-2011.
7. Elliott, S.M., M. Maltrud, M.T. Reagan, G.J. Moridis, and P.J. Cameron-Smith (2011), Marine methane cycle simulations for the period of early global warming. Journal of Geophysical Research–Biogeosciences, 116, G01010; DOI: 10.1029/2010JG001300. LBNL-4239E.
8. Finsterle, S.A., and M.B. Kowalsky (2011), A truncated Levenberg-Marquardt algorithm for the calibration of highly parameterized nonlinear models. Computers and Geosciences, 37 (6), 731–738; DOI:10.1016/j.cageo.2010.11.005. LBNL-4256E.
9. Finsterle, S.A., and Y. Zhang (2011), Error handling strategies in multiphase inverse modeling. Computers and Geosciences, 37 (6); DOI:10.1016/j.cageo.2010.11.009. LBNL-4255E.

10. Finsterle, S., and Y. Zhang (2011), Solving iTOUGH simulation-optimization problems using the PEST protocol. Environmental Modelling and Software, 26, 959-968. LBNL-4410E.
11. Halecky, N., J.T. Birkholzer, and P. Peterson (2011), Natural convection in tunnels at Yucca Mountain and impact on drift seepage. Journal of Nuclear Technology, 174 (3), 327–341. LBNL-3489E.
12. Houseworth, J. (2011), Matched boundary extrapolation solutions for CO_2 well injection into a saline aquifer. Transport in Porous Media, DOI: 10.1007/s11242-011-9874-y. LBNL-5068E.
13. Jordan, P.D., C.M. Oldenburg, and J.-P. Nicot (2011), Estimating the probability of carbon dioxide plumes encountering faults. Greenhouse Gases: Science and Technology, 1 (2), 160–174; DOI: 10.1002/ghg.17. LBNL-5284E.
14. Kim, H.-M., J. Rutqvist, D.-W. Ryu, B.-H. Choi, C. Sunwoo, and W.-K. Song (2011), Exploring the concept of compressed air energy storage (CAES) in lined rock caverns at shallow depth: A modeling study of air tightness and energy balance. Applied Energy, DOI: 10.1016/j.apenergy.2011.07.013. LBNL-5138E.
15. Kneafsey, T.J., H. Liu, W. Winters, R. Boswell, R. Hunter, and T.S. Collett, (2011), Examination of core samples from the Mount Elbert Gas Hydrate Stratigraphic Test Well, Alaska North Slope: Effects of retrieval and preservation. Marine and Petroleum Geology, 28(2), 381-393; DOI: 10.1016/j.marpetgeo.2009.10.009. LBNL-5134E.
16. Kowalsky, M.B., E. Gasperikova, S. Finsterle, D. Watson, G. Baker, and S.S. Hubbard (2011), Coupled modeling of hydrogeochemical and electrical resistivity data for exploring the impact of recharge on subsurface contamination. Water Resources Research, 47, W02509; DOI:10.1029/2009WR008947. LBNL-4748E.
17. Li, L., N. Gawande, M.B. Kowalsky, C. Steefel, and S.S. Hubbard (2011), Physicochemical heterogeneity controls on uranium bioreduction rates at the field scale. Environmental Science and Technology, 45 (23), 9959–9966; DOI: 10.1021/es201111y.
18. Liu, H.H., S. Mukhopadhyay, N. Spycher, and B. Kennedy (2011), Analytic solutions of tracer transport in fractured rock associated with precipitation-dissolution reactions. Hydrogeology Journal, 19 (6), 1151–1160; DOI: 10.1007/s10040-011-0749-7. LBNL-4859E.
19. Liu, H.H., J. Rutqvist, and J.T. Birkholzer (2011), Constitutive relationships for elastic deformation of clay rock: Data analysis. Journal of Rock Mechanics and Rock Engineering, 44 (4), 463–468. LBNL-4903E.
20. Moridis, G. J., S. Silpngarmlert, M. T. Reagan, T.S. Collett, and K. Zhang (2011), Gas production from a cold, stratigraphically bounded gas hydrate deposit at the Mount Elbert Gas Hydrate Statigraphic Test Well, Alaska North Slope: Implications of uncertainties. Marine and Petroleum Geology, 28 (2), 517–534; DOI:10.1016/j.marpetgeo.2010.01.005. LBNL-3005E.
21. Moridis, G., and M.T. Reagan (2011), Estimating the upper limit of gas production from Class 2 hydrate accumulations in the permafrost: 1. Concepts, system description, and the production base case. Journal of Petroleum Science and Engineering, 76 (3), 194–204; DOI:10.1016/j.petrol.2010.11.023. LBNL-1615E.

22. Moridis, G., and M.T. Reagan (2011), Estimating the upper limit of gas production from Class 2 hydrate accumulations in the permafrost: 2. Alternative well designs and sensitivity analysis. Journal of Petroleum Science and Engineering, 76 (4), 124–137; DOI: 10.1016/j.petrol.2010.12.001.LBNL-4272E.
23. Moridis, G.J., T.S. Collett, M. Pooladi-Darvish, S. Hancock, C. Santamarina, R. Boswell, T. Kneafsey, J. Rutqvist, M. Kowalsky, M.T. Reagan, E.D. Sloan, A.K. Sum and C. Koh (2011), Challenges, uncertainties and issues facing gas production from gas hydrate deposits. SPE Reservoir Evaluation and Engineering, Paper SPE-131792. LBNL-4254E.
24. Mukhopadhyay, S., S.-Y. Yang, and H.-D. Yeh (2011), Pressure buildup during supercritical carbon dioxide injection from a partially penetrating borehole into gas reservoirs. Transport in Porous Media, DOI: 10.1007/s11242-011-9879-6.
25. Oldenburg, C.M., B.M. Freifeld, K. Pruess, L. Pan, S.A. Finsterle, and G.J. Moridis (2011), Numerical simulations of the Macondo well blowout reveal strong control of oil flow by reservoir permeability and exsolution of gas. Proc. National Acad. Sci., DOI: 10.1073/pnas.1105165108. LBNL-5302E.
26. Oldenburg, C.M. (2011), Health, safety, and environmental risks from energy production: A year-long reality check. Greenhouse Gases: Science and Technology, 1 (2), 102–104; DOI: 10.1002/ghg.22. LBNL-5132E.
27. Oldenburg, C.M. (2011), On carbon footprints and growing energy use. Greenhouse Gases: Science and Technology, 1 (1), 5–7; DOI: 10.1002/ghg3.8. LBNL-5130E.
28. Oldenburg, C.M. (2011), Improved understanding of geologic CO_2 storage processes requires risk-driven field experiments. Greenhouse Gases: Science and Technology, 1(3), 191–193; DOI: 10.1002/ghg.32. LBNL-5131E.
29. Oldenburg, C.M., and J.T. Birkholzer (2011) Comparative assessment of status and opportunities for geologic carbon sequestration and nuclear waste disposal in North America. In: Geologic Disposal of CO_2 and Radioactive Waste: A Comparative Assessment, Advances in Global Change Research, F. Toth (ed.), IAEA, Vienna, Austria, 44 (2), pp. 367–393. LBNL-3492E-2011.
30. Oldenburg, C.M., and A. Rinaldi (2011), Buoyancy effects on upward brine displacement caused by CO_2 injection. Transport in Porous Media, 87 (2), 525–540; DOI: 10.1007/s11242-010-9699-0. LBNL-4116E.
31. Oldenburg, C.M. (2011), Geologic carbon sequestration as a global strategy to mitigate CO_2 emissions: Sustainability and environmental risk. In: Encyclopedia of Sustainability Science and Technology, J. LaMoreaux (ed.), Springer. LBNL-4893E.
32. Oldenburg, C.M., and M.M. Maroto-Valer (2011), Welcome to *Greenhouse Gases: Science and Technology*: Editorial. Greenhouse Gases: Science and Technology, 1 (1); DOI: 10.1002/ghg3.12. LBNL-5287E.
33. Pan, L., S.W. Webb, and C.M. Oldenburg (2011), Analytical solution for two-phase flow in a wellbore using the drift-flux model. Advances in Water Resources, 34 (12), 1656–1665; DOI: 10.1016/j.advwatres.2011.08.009. LBNL-5326E.
34. Pan, L., C.M. Oldenburg, Y.-S. Wu, and K. Pruess (2011), Transient CO_2 leakage and injection in wellbore-reservoir systems for geologic carbon sequestration. Greenhouse Gases: Science and Technology, 1 (4), 335–350; DOI: 10.1002/ghg.41. LBNL-5248E.

35. Pruess, K., and J. Nordbotten (2011), Numerical simulation studies of the long-term evolution of a CO_2 plume in a saline aquifer with a sloping caprock. Transport in Porous Media, 90, 135–151; DOI: 10.1007/s11242-011-9729-6. LBNL-4246E.
36. Pruess, K. (2011), Integrated modeling of CO_2 storage and leakage scenarios including transitions between super- and sub-critical conditions, and phase change between liquid and gaseous CO_2. Greenhouse Gases: Science and Technology, 1 (3), 237–247; DOI: DOI: 10.1002/ghg.24. LBNL-4938E.
37. Reagan, M., G. Moridis, S. Elliott, and M. Maltrud (2011), Contribution of oceanic gas hydrate dissociation to the formation of Arctic Ocean methane plumes. Journal of Geophysical Research—Oceans, 116, C09014; DOI: 10.1029/2011JC007189. LBNL-5145E.
38. Rees, E.V.L., T.J. Kneafsey, and Y. Seol (2011), Methane hydrate distribution from prolonged and repeated formation in natural and compacted sand samples: X-ray CT observations. Journal of Geological Research, 2011, ID791815; DOI: 10.1155/2011/791815. LBNL-5029E.
39. Salve, R., and M. Torn (2011), Precipitation and soil impacts on partitioning of subsurface moisture in *Avena barbata*: Observations from a greenhouse experiment. Vadose Zone Journal, 10 (1), 437–449; DOI: 10.2136/vzj2010.0055. LBNL-4542E.
40. Takeda, M., T. Hiratsuka, K. Ito, and S. Finsterle (2011), An asixymmetric diffusion experiment for the determination of diffusion and sorption coefficients of rock samples. Journal of Contaminant Hydrology, 123 (3-4), 114–129; DOI:10.1016/j.jconhyd.2010.12.012. LBNL-4347E.
41. Tokunaga, T. (2011), Physicochemical controls on absorbed water film thickness in unsaturated geological media. Water Resources Research, 47, W08514; DOI: 10.1029/2011WR010676. LBNL-4943E.
42. Wan, J., W. Dong, and T. Tokunaga (2011), Method to attenuate U(VI) mobility in acidic waste plumes using humic acids. Environmental Science & Technology, 45 (6), 2332–2337. LBNL-4623E.
43. Williamson, M. J. Meza, D. Moulton, I. Gorton, M. Feshley, P. Dixon, R. Seitz, C. Steefel, S. Finsterle, S. Hubbard, M. Zhu, K. Gerdes, R. Patterson, and Y.T. Collazo (2011), Advanced simulation capability for environmental management (ASCEM): An overview of initial results. Technology and Innovation, 13, 175–199; DOI: 10.3727/194982411X13085939956625. LBNL-5084E.
44. Xu, T., N. Spycher, E. Sonnenthal, G. Zhang , L. Zheng, and K. Pruess (2011), TOUGHREACT Version 2.0: A simulator for subsurface reactive transport under non-isothermal multiphase flow conditions. Computers & Geosciences, 37 (6), 763–774; DOI: 10.1016/j.cageo.2010.10.007. LBNL-4033E.
45. Xu, T., R. Senger, and S. Finsterle (2011), Bentonite alteration due to thermal-hydro-chemical processes during the early thermal period in a nuclear waste repository. Nuclear Technology, 174 (3), 438–451. LBNL-4544E.
46. Zhang, K., G. Moridis, and K. Pruess (2011), TOUGH+CO2: A multiphase fluid-flow simulator for CO_2 geologic sequestration in saline aquifers. Computers & Geosciences, 37 (6), 714–723; DOI: 10.1016/j.cageo.2010.09.011.
47. Zhang, W., T. Xu, and Y. Li (2011), Modeling of fate and transport of co-injection of H_2S with CO_2 in deep saline formations. Journal of Geophysical Research, 116, B02202; DOI: 10.1029/2010JB007652. LBNL-4275E.

48. Zhang, Y., B. Freifeld, S. Finsterle, M. Leahy, J. Ennis-King, L. Paterson, and T. Dance (2011), Single-well experimental design for studying residual trapping of supercritical carbon dioxide. International Journal of Greenhouse Gas Control, 5 (1), 88–98; DOI:10.1016/ j.ijggc.2010.06.011. LBNL-3723E.
49. Zhang, Y., (2011), Using the Choquet integral for screening geological CO_2 storage sites. Greenhouse Gases: Science and Technology, 1 (2), 175–179; DOI: 10.1002/ghg.15. LBNL-4914E.
50. Zhang, Y., S.S. Hubbard, and S. Finsterle (2011), Factors governing sustainable groundwater pumping near a river. Ground Water, 49 (3), 432–444; DOI: 10.1111/ j.17456584.2010.00743.x. LBNL-4292E.
51. Zheng, L., J. Samper, and L. Montenegro (2011), A coupled THC model of the FEBEX *in situ* test with bentonite swelling and chemical and thermal osmosis. Journal of Contaminant Hydrology, 126 (1–2), 45–60; DOI:10.1016/j.jconhyd.2011.06.003. LBNL-4846E.
52. Zhou, Q., and J. T. Birkholzer (2011), On scale and magnitude of pressure build-up induced by large-scale geologic storage of CO_2. Greenhouse Gases: Science and Technology, 1, 11–20; DOI: 10.1002/ghg3.001. LBNL-4898E.
53. Zhou, Q., J. T. Birkholzer, and C.-F. Tsang (2011), Reply to comments by Veling on "A Semi-Analytical Solution for Large-Scale Injection-Induced Pressure Perturbation and Leakage in a Laterally Bounded Aquifer-Aquitard System" by Zhou, Birkholzer, and Tsang. Transport in Porous Media, 86, 357–358. LBNL-4896E.

ESD Hydrogeology Department Conference Papers 2011

1. Kneafsey, T.J., and G.J. Moridis (2011), Methane hydrate dissociation by depressurization in a Mount Elbert sandstone sample: Experimental observations and numerical simulations. Paper 22150-MS, OTC Arctic Technology Conference, Houston, Texas, Feb. 7-9, 2011. LBNL-4936E.
2. Peters, C.A., P.F. Dobson, C.M. Oldenburg, J. S. Y. Wang, T.C. Onstott, G.W. Scherer, B.M. Freifeld, T.S. Ramakrishnan, E.L. Stabinski, K. Liang, and S. Verma (2010), LUCI: A facility at DUSEL for large-scale experimental study of geologic carbon sequestration. Paper presented at the Greenhouse Gas Technology International Meeting, GHGT10, Amsterdam, The Netherlands, September 19-23, 2010; Energy Procedia, 2 (in press), Elsevier. LBNL-3983E.
3. Reagan, M., G. Moridis, S. Elliott, M. Maltrud, and P. Cameron-Smith (2011), Basin scale assessment of gas hydrate dissociation in response to climate change. Proceedings of the 7th International Conf. on Gas Hydrates (ICGH 2011), Edinburgh, U.K., July 17–21, 2011. LBNL-5144E.
4. Rutqvist, J. (2011), Modeling coupled thermal-hydro-mechanical-chemical processes associated with geological sequestration of CO_2. Invited Keynote Presentation at the 8th International Conference on Calibration and Reliability in Groundwater Modeling MODELCARE2011, Leipzig, Germany, September 18–22, 2011.
5. Rutqvist, J. (2011), Geomechanical aspects and modeling associated with geological sequestration of CO_2. Invited Presentation at the University of Uppsala, Department of Earth Sciences, Uppsala, Sweden, September 23, 2011.
6. Simulation and Risk Assessment Working Group (including C. Doughty) of the Regional Carbon Sequestration Partnership Initiative (2011), Best practices for risk analysis and

simulation for geologic storage of CO_2. DOE/NETL-2011/1459, National Energy Technology Lab., Pittsburgh, PA, March 2011.

ESD Hydrogeology Department Reports 2011

1. Freifeld, B., and S. Finsterle (2011), Imaging Fluid Flow in Geothermal Wells Using Distributed Thermal Perturbation Sensing. LBNL Report, Berkeley, California. LBNL-4588E.
2. Houseworth, J.E., C.M. Oldenburg, A. Mazzoldi, A.K. Gupta, J.-P. Nicot, and S.L. Bryant (2011), Leakage Risk Assessment for a Potential CO_2 Storage Project in Saskatchewan, Canada. LBNL Report, Berkeley, California. LBNL-4915E.
1. Jordan, P.D., C.M. Oldenburg, and J.-P. Nicot (2011), Measuring and modeling fault density for plume-fault encounter probability estimation. LBNL Report, Berkeley, California. LBNL-4538E.
2. Kneafsey, T.J., and E.V.L. Rees (2011), X-ray CT Observations of Methane Hydrate Distribution Changes over Time in a Natural Sediment Core from the BPX-DOE-USGS Mount Elbert Gas Hydrate Stratigraphic Test Well. LBNL Report, Berkeley, California. LBNL-4852E.
3. Liu, H.-H., L. Li, L. Zheng, J.E. Houseworth, and J. Rutqvist (2011), Investigations of Near-Field Thermal-Hydrologic-Mechanical-Chemical Models for Radioactive Waste Disposal in Clay/Shale Rock. LBNL Report. Berkeley, California. LBNL-4872E.
4. Nakagawa, S., and T.J. Kneafsey (2011), Application of the Split Hopkinson Resonant Bar Test for Seismic Property Characterization of Hydrate-bearing Sand Undergoing Water Saturation. LBNL Report, Berkeley, California. LBNL-5235E.
5. Pan, L. C.M. Oldenburg, Y.-S. Wu, and K. Pruess (2011), T2Well/ECO2N Version 1.0: Multiphase and Non-Isothermal Model for Coupled Wellbore-Reservoir Flow of Carbon Dioxide and Variable Salinity Water. LBNL Report, Berkeley, California. LBNL-4291E.
6. Pruess, K. (2011), ECO2M: A TOUGH2 Fluid Property Module for Mixtures of Water, NaCl, and CO_2, Including Super- and Sub-Critical Conditions, and Phase Change Between Liquid and Gaseous CO_2. LBNL Report, Berkeley, California. LBNL-4590E.
7. Schvidler, M., and K. Karasaki (2011), Averaged Description of Flow (Steady and Transient) and Nonreactive Solute Transport in Random Porous Media. LBNL Report, Berkeley, California. LBNL-4863E.
8. Zhang, Y., and C. M. Oldenburg (2011), A Simplified 1-D Model for Calculating CO_2 Leakage through Conduits. LBNL Report, Berkeley, California. LBNL-4266E.

2010

ESD Hydrogeology Department Peer-Reviewed Journal Articles and Book Chapters for 2010

1. Apps, J., L. Zheng, Y. Zhang, T. Xu, and J.T. Birkholzer (2010), Evaluation of potential changes in groundwater quality in response to CO_2 leakage from deep geological

storage. LBNL-2931E. Transport in Porous Media, 82(1), 215–246; DOI 10.1007/s11242-009-9509-8; Special Issue on Geologic Carbon Storage, Springer.

2. Audigane, P., J. Lions, I. Gaus, C. Robelin, P. Durst, B. van der Meer, K. Geel, C.M. Oldenburg, and T. Xu (2010), Geochemical modeling of CO_2 injection into a methane gas reservoir at the K12-B Field, North Sea. In: Carbon Dioxide Sequestration in Geological Media—State of the Science, M. Grobe, J.C. Pashin, and R.L. Dodge, eds., AAPG Studies in Geology, 59, 499–519.
3. Cappa, F. and J. Rutqvist (2010), Modeling of coupled deformation and permeability evolution during fault reactivation induced by deep underground injection of CO_2. LBNL-3855E. International Journal of Greenhouse Gas Control, DOI: 10.1016/j.ijggc.2010.08.005.
4. Cortis, A, C.E. Puente, and B. Sivakumar (2010), Encoding hydrologic information via a fractal geometric approach and its extensions. Stochastic Environmental Research and Risk Assessment, 24(5), 625–632.
5. Cortis, A., and J.G. Berryman (2010), Frequency-dependent viscous flow in channels with fractal rough surfaces. LBNL-3602E. Physics of Fluids, 22, 053603.
6. Danko, G., J.T. Birkholzer, D. Bahrami, and N. Halecky (2010), Temperature, humidity and air flow in the emplacement drifts using convection and dispersion transport models. LBNL-3060E. Journal of Nuclear Science Technology, 171 (1), 74–87.
7. Doughty, C. (2010), Investigation of CO_2 plume behavior for a large-scale pilot test of geologic carbon storage in a saline formation. LBNL-2243E. Transport in Porous Media (Special Issue on Geologic Carbon Storage), 82, 49–76; DOI 10.1007/s11242-009-9396-z.
8. Elliott, S.M., M.T. Reagan, G.J. Moridis, P.J. Cameron-Smith (2010), Geochemistry of clathrate-derived methane in Arctic Ocean waters. LBNL-3389E. Geophysical Research Letters, 37, L12607; DOI:10.1029/2010GL043369.
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10. Fransson, Å., C.-F. Tsang, J. Rutqvist, and G. Gustafson (2010), Estimation of deformation and stiffness of fractures close to tunnels using data from single-hole hydraulic testing and grouting. LBNL-3590E. International Journal of Rock Mechanics and Mining Sciences, 47 (6), 887–893.
11. Geiger, S.A., A. Cortis, and J.T. Birkholzer (2010), Upscaling solute transport in naturally fractured porous media with the continuous time random walk method. Water Resources Research, 46, W12530. LBNL-4907E.
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2008 injection of CO_2 at the ZERT field site, Bozeman, MT. Earth and Environmental Sciences, 60 (2), 273-284; DOI: 10.1007/s12665-009-0401-1. LBNL-3066E.

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17. Kneafsey, T.J., Y. Seol, A. Gupta, L. Tomutsa (2010), Permeability of laboratory-formed methane-hydrate-bearing sand: Measurements and observations using x-ray computed tomography. LBNL-3997E. SPE Journal, SPE-139525-PA; DOI: 10.2118/139525-PA.
18. Kowalsky, M.B., S. Nakagawa, and G.J. Moridis (2010), Feasibility of monitoring gas hydrate production with time-lapse VSP. LBNL-3091E. SPE Journal, 15 (3), 634–645, SPE-132508-PA; DOI: 10.2118/132508-PA.
19. Lehikoinen, A., J.M.J. Huttunen, S. Finsterle, M.B. Kowalsky, and J.P. Kaipio (2010), Dynamic inversion for hydrological process monitoring under model uncertainty. LBNL-2712E. Water Resources Research, 46, W04513; DOI: 10.1029/2009WR008470.
20. Li, L., C.I. Steefel, M.B. Kowalsky, A. Englert, and S.S. Hubbard (2010), Effects of physical and geochemical heterogeneities on mineral transformation and biomass accumulation during uranium bioremediation at Rifle, Colorado. LBNL-2488E. Journal of Contaminant Hydrology, 112, 45–63.
21. Liu, H.H., and J. Rutqvist (2010), A new coal permeability model: Internal swelling stress and fracture-matrix interaction. LBNL-3061E. Transport in Porous Media: Special Issue on Geologic Carbon Storage, 82 (1), 157–171; DOI 10.1007/s11242-009-9442-x2010.
22. Liu, H.H., and R.D. Zhang (2010), A macroscopic relationship for preferential flow in the vadose zone: Theory and validation. LBNL-3688E. Science in China Series E: Technological Sciences, 52 (11), 3264–3269.
23. Liu, H.H. (2010), Comment on "Sensitivity of the active fracture model parameter to fracture network orientation and injection scenarios" by Basağaoğlu et al. (2009). LBNL-3710E. Hydrogeology Journal, 18 (2), 535–537.
24. Male, E.J., W.L. Pickles, E.A. Silver, G.D. Hoffmann, J. Lewicki, M. Apple, K. Repasky, and E.A. Burton (2010), Using hyperspectral plant signatures for CO_2 leak detection during the 2008 ZERT CO_2 sequestration field experiment in Bozeman, Montana. LBNL-3084E. Environmental Earth Sciences, 60 (2), 251–261; DOI: 10.1007/s12665-009-0372-2.
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