



### Publications from the Princeton Subsurface Hydrology Research Group (2014-2019):

1. Huang, X., K.W. Bandilla, M.A. Celia, and S. Bachu, "[Basin-scale Modeling of CO<sub>2</sub> Storage using Models of Varying Complexity](#)", *International Journal for Greenhouse Gas Control*, 20, 73-86, 2014.
2. Kang, M., J.M. Nordbotten, F. Doster, and M.A. Celia, "[Analytical Solutions for Two-phase Subsurface Flow to a Leaky Fault considering Vertical Flow Effects and Fault Properties](#)", *Water Resources Research*, 50(4), 3536-3552, 2014.
3. Guo, B., K.W. Bandilla, F. Doster, E. Keilegavlen, and M.A. Celia, "[A Vertically-integrated Model with Vertical Dynamics for CO<sub>2</sub> Storage](#)", *Water Resources Research*, 50(8), 6269-6284, 2014.
4. Kang, M., C. Kanno, M. Reid, X. Zhang, D.L. Mauzerall, M.A. Celia, Y. Chen, and T.C. Onstott, "[Direct Measurements of Methane Emissions from Abandoned Oil and Gas Wells in Pennsylvania](#)", *Proceedings of the National Academy of Sciences*, 111 (51), 18173-18177, doi:10.1073/pnas.1408315111, 2014.
5. Bandilla, K.W., M.A. Celia, and E. Leister, "[Impact of Model Complexity on CO<sub>2</sub> Plume Modeling at Sleipner](#)", *Energy Procedia*, 63, 3405-3415, 2014.
6. Guo, B., K.W. Bandilla, E. Keilegavlen, F. Doster, and M.A. Celia, "[Application of Vertically-integrated Models with Subscale Vertical Dynamics to Field Sites for CO<sub>2</sub> Sequestration](#)", *Energy Procedia*, 63, 3523-3531, 2014.
7. Bandilla, K., M.A. Celia, J.T. Birkholzer, A. Cihan, and E.C. Leister, "[Multi-phase Modeling of Geologic Carbon Sequestration in Saline Aquifers](#)", *Ground Water*, 53(3), 362-277, 2015.
8. Zheng, Z., B. Guo, I. Christov, M. Celia, and H. Stone, "[Flow Regimes for Fluid Injection into a Confined Porous Medium](#)", *Journal of Fluid Mechanics*, 767, 881-909, 2015.
9. Kang, M., E. Baik, A.R. Miller, K.W. Bandilla, and M.A. Celia, "[Effective Permeabilities of Abandoned Oil and Gas Wells: Analysis of Data from Pennsylvania](#)", *Environmental Science and Technology*, 49, 4757-4764, 2015.
10. Wang, H., Y. Ren, J. Jia, and M.A. Celia, "[A Probabilistic Collocation Eulerian-Lagrangian Localized Adjoint Method on Sparse Grids for Assessing CO<sub>2</sub> Leakage through Wells in Randomly Heterogeneous Porous Media](#)", *Computer Methods in Applied Mechanics and Engineering*, 292, 35-53, 2015.
11. Edwards, R.E.J., M.A. Celia, K.W. Bandilla, F. Doster, and C.M. Kanno, "[A Model to Estimate Carbon Dioxide Injectivity and Storage Capacity for Geological Sequestration in Shale Gas Wells](#)," *Environmental Science and Technology*, 49, 9222-9229, 2015.

12. Celia, M.A., S. Bachu, J.M. Nordbotten, and K.W. Bandilla, "[Status of CO<sub>2</sub> Storage in Deep Saline Aquifers with Emphasis on Modeling Approached and Practical Simulations](#)", *Special 50<sup>th</sup> Anniversary Issue of Water Resources Research*, DOI 10.1002/2015WR017609, 2015.
13. Huang, X., K.W. Bandilla, and M.A. Celia, "[Multi-physics Pore-network Modeling of Two-phase Shale Matrix Flows](#)", *Transport in Porous Media*, 111, 123-141, DOI 10.1007/s11242-015-0584-8, 2016.
14. Guo, B., Z. Zhong, M.A. Celia, and H.A. Stone, "[Axisymmetric Flows from Fluid Injection into a Confined Porous Medium](#)", *Physics of Fluids*, 28(2), 2016.
15. Guo, B., Z. Zheng, K.W. Bandilla, M.A. Celia, and H.A. Stone, "[Flow Regime Analysis for Geological CO<sub>2</sub> Sequestration and Other Subsurface Fluid Injections](#)", *Int. J. of Greenhouse Gas Control*, 53, 284-291, 2016.
16. Guo, B., K.W. Bamdilla, J.M. Nordbotten, M.A. Celia, E. Keilegavlen, and F. Doster, "[A Multiscale Multilayer Vertically Integrated Model with Vertical Dynamics for CO<sub>2</sub> Sequestration in Layered Geological Formations](#)", *Water Resources Research*, 52, doi:10.1002/2016WR018714, 2016.
17. Kang, M., S. Christian, M.A. Celia, D.L. Mauzerall, M. Bill, A.R. Miller, Y. Chen, M.E. Conrad, T.H. Darrah, and R.B. Jackson, "[Identification and Characterization of High Methane-emitting Abandoned Oil and Gas Wells](#)", *Proc. Of the National Academy of Sciences*, 113(48), 13636-13641, 2016.
18. Celia, M.A., "[Geological Storage of Captured Carbon Dioxide as a Large-scale Carbon Mitigation Option](#)", *Water Resources Research*, 53, 3527-3533, doi:10.1002/2017WR020841, 2017.
19. Bandilla, K. and M.A. Celia, "[Active Pressure Management through Brine Production for Basin-wide Deployment of Geologic Carbon Sequestration](#)", *International Journal of Greenhouse Gas Control*, 61, 155-167, 2017.
20. Celia, M. and D.H. Feng, "[How China and Asia Can Lead the Fight Against Global Warming along the Belt and Road](#)", Opinion Piece published in the *South China Morning Post*, 8 September 2017.
21. Bandilla, K.W., B. Guo, and M.A. Celia, "[Applicability of Vertically Integrated Models for Carbon Storage in Structured Heterogeneous Domains](#)", *Energy Procedia*, 114, 3312-3321, 2017.
22. Guo, B., Y. Tao, K. Bandilla, and M. Celia, "[Vertically Integrated Dual-porosity and Dual-permeability Models for CO<sub>2</sub> Sequestration in Fractured Geological Formations](#)", *Energy Procedia*, 114, 3343-3352, 2017.
23. Edwards, R.W.J., F. Doster, M.A. Celia, and K.W. Bandilla, "[Numerical Modeling of Gas and Water Flow in Shale Gas Formations with a Focus on the Fate of Hydraulic Fracturing Fluids](#)", *Env. Sci. and Tech.*, 51, 13779-13787, 2017.
24. Becker, B., B. Guo, K. Bandilla, M.A. Celia, B. Flemisch, and R. Helmig, "[A Pseudo Vertical Equilibrium Model for Slow Gravity Drainage Dynamics](#)", *Water Resources Research*, 53 (12), 10491-10507, <https://doi.org/10.1002/2017WR021644>, 2017.
25. Duguid, A., R. Butsch, J.W. Carey, M. Celia, N. Chugunov, S. Gasda, T.S. Ramakrishnan, V. Stamp, and J. Wang, "[Baseline Integrity Property Measurement of Legacy Oil and Gas Wells for Carbon Storage Projects](#)", *Greenhouse Gas Science and Technology*, 7, 866-890, 2017.

26. Edwards, R.W.J. and M. A. Celia, "[Shale Gas, Hydraulic Fracturing, and Formation Data to Support Modeling of Gas and Water Flow in Shale Formations](#)", *Water Resources Research*, 54, 3196-3206, 2018.
27. Becker, B., B. Guo, K. Bandilla, M.A. Celia, B. Flemisch, and R. Helmig, "[An Adaptive Multiphysics Model Coupling Vertical Equilibrium and Full Multidimensions for Multiphase Flow in Porous Media](#)", *Water Resources Research*, 54, 4347-4360, <https://doi.org/10.1029/2017/WR022303>, 2018.
28. Edwards, R.W.J. and M.A. Celia, "[Infrastructure to Enable Deployment of Carbon Capture, Utilization, and Storage in the United States](#)", *Proc. of the National Academy of Science*, 115(38), E8815-E8824, 2018.
29. Celia, M. and R. Edwards, "Carbon Sequestration", in *Groundwater: State of the Science and Practice*, W..M. Alley (Ed.), National Ground Water Association, 2018.
30. Riddick, S.N., D.L. Mauzerall, M.A. Celia, M. Kang, K. Bressler, C. Chu, and C.D. Gun, "[Measuring Methane Emissions from Abandoned and Active Oil and Gas Wells in West Virginia](#)", *Science of the Total Environment*, 651, 1849-1856, 2019.
31. Bandilla, K. and M.A. Celia, "Numerical Modeling of Fluid Flow during Geologic Carbon Storage", Ch. 8 in *Science of Carbon Storage in Deep Saline Formations: Process Coupling across Time and Spatial Scales*, Newell, P. and A.G. Ilgen (Eds.), Elsevier (Amsterdam), 2019.
32. Aslannejad, H., S.M. Hassanizadeh, and M.A. Celia, "[Characterization of the Interface between Coating and Fibrous Layers of Paper](#)", *Transport in Porous Media*, 127, 143-155, 2019.
33. Tao, Y., B. Guo, K. Bandilla, and M.A. Celia, "[Vertically-integrated Dual-continuum Models for CO<sub>2</sub> Injection in Fractured Geological Formations](#)", *Computational Geosciences*, 23(2), 273-284, 2019.
34. Postma, T.J.W., K.W. Bandilla, and M.A. Celia, "[Estimates of CO<sub>2</sub> Leakage along Abandoned Wells Constrained by New Data](#)", *International Journal for Greenhouse Gas Technologies*, 84, 164-179, 2019.