

Anthony J. Parolari, PhD, EIT

(616) 780-1592
aparolari@gmail.com
porporato.cee.duke.edu/ajp

Education

Ph.D.	Civil and Environmental Engineering : Hydrology <i>Massachusetts Institute of Technology</i>	2012
M.S.E.	Environmental Engineering <i>University of Michigan</i>	2005
B.S.E.	Civil Engineering <i>University of Michigan</i>	2004

Research and Professional Experience

Postdoctoral Research Associate <i>Duke University</i>	2012–
Graduate Student Research Assistant <i>Massachusetts Institute of Technology</i>	2007–12
Staff Engineer <i>CH₂M HILL, Inc.</i>	2005–2009

Peer-reviewed Publications

11. Bartlett, M.S., **A.J. Parolari**, J.J. McDonnell, and A. Porporato (accepted) Beyond the SCS-CN method: A theoretical framework for spatially lumped rainfall-runoff response. Forthcoming in *Water Resources Research*.
10. **Parolari, A.J.** and A. Porporato (2016) Forest soil carbon and nitrogen cycles under biomass harvest: stability, transient response, and feedback. *Ecological Modelling*, 329, 64-76, doi:10.1016/j.ecolmodel.2016.03.003.
9. Pelak, N.F., **A.J. Parolari**, and A. Porporato (2016) Bistable plant-soil dynamics and biogenic controls on the soil production function. *Earth Surface Processes and Landforms*, doi:10.1002/esp.3878.
8. Bartlett, M.S., E. Daly, J.J. McDonnell, **A.J. Parolari**, and A. Porporato (2015) Stochastic rainfall-runoff model with explicit soil moisture dynamics. *Proceedings of the Royal Society A*, 471, 20150389, doi:10.1098/rspa.2015.0389.
7. Porporato, A., X. Feng, S. Manzoni, Y. Mau, **A.J. Parolari**, and G. Vico (2015) Ecohydrological modeling in agroecosystems: examples and challenges. *Water Resources Research*, 51(7), 5081-5099, doi:10.1002/2015WR017289.
6. **Parolari, A.J.**, G.G. Katul, and A. Porporato (2015) The Doomsday Equation and 50 years beyond: new perspectives on the human-water system. *WIREs Water*, 2(4), 407-414, doi:10.1002/wat2.1080.
5. **Parolari, A.J.**, M.L. Goulden, and R.L. Bras (2015) Ecohydrological controls on grass and shrub above-ground net primary productivity in a seasonally dry climate. *Ecohydrology*, 8(8), 1572-1583, doi:10.1002/eco.1605.

4. **Parolari, A.J.**, G.G. Katul, and A. Porporato (2014) An ecohydrological perspective on drought-induced forest mortality. *Journal of Geophysical Research Biogeosciences*, 119, 965–981, doi:10.1002/2013JG002592.
3. **Parolari, A.J.**, M.L. Goulden, and R.L. Bras (2012) Fertilization effects on the ecohydrology of a southern California annual grassland. *Geophysical Research Letters*, 39, L08405, doi:10.1029/2012GL051411.
2. Bain, D.J., M.B. Green, J.L. Campbell, et al. (2012) Legacies in material flux: structural catchment changes pre-date long-term studies. *BioScience*, 62, 575–584, doi:10.1525/bio.2012.62.6.8 (product of an NSF LTER workshop with 22 co-authors, including A.J. Parolari).
1. Pastore, C.L., M.B. Green, D.J. Bain, et al. (2010) Tapping environmental history to recreate America’s colonial hydrology. *Environmental Science and Technology*, 44, 8793–9242, doi:10.1021/es102672c (product of an NSF sponsored summer school with 17 co-authors, including A.J. Parolari).

Manuscripts in review (preprints available upon request)

3. **Parolari, A.J.**, M.L. Mobley, A.R. Bacon, G.G. Katul, D.deB. Richter, and A. Porporato. Boom and bust carbon-nitrogen dynamics during reforestation. Manuscript in first review at Biogeochemistry, submitted May 2016.
2. Huang, C.W., J.C. Domec, T. Duman, G. Manoli, **A.J. Parolari**, G.G. Katul. The role of plant water storage on water fluxes within the coupled soil-plant system. Manuscript in second review at New Phytologist, submitted May 2016.
1. Bartlett, M.S., **A.J. Parolari**, J.J. McDonnell, and A. Porporato. A probabilistic storage framework for semi-distributed modeling that unifies the SCS-CN method, VIC, PDM, and TOPMODEL. Manuscript in first review at Water Resources Research, submitted April 2016.

Other Publications

2. **Parolari, A.J.** The nitrogen cycle and ecohydrology of seasonally dry grasslands. Ph.D. thesis, Massachusetts Institute of Technology, 2012.
1. Hasit, Y.J., J. Anderson, T. Rockaway, **A. Parolari**, and M. French. Distribution Water Quality Issues Related to New Development or Low Usage. American Water Works Association, Denver CO, 2007.

Presentations

9. **Parolari, A.J.**, J. Yin, and A. Porporato. Impact of cloud timing on surface temperature and related hydroclimatic dynamics. Presentation given at the American Geophysical Union Fall Meeting, December 2015, San Francisco CA.
8. **Parolari, A.J.** and A. Porporato. A lumped, macroscopic approach to modeling soil moisture, CO₂ transport, and weathering in the critical zone. Presentation given at the American Geophysical Union Fall Meeting, December 2015, San Francisco CA.
7. **Parolari, A.J.**, G.G. Katul, and A. Porporato. Soil N as a buffer of critical zone carbon and nitrogen cycles in harvested ecosystems. Presentation given at the American Geophysical Union Fall Meeting, December 2014, San Francisco CA.
6. **Parolari, A.J.** Hydrologic controls on ecosystem dynamics. Wayne State University Civil and Environmental Engineering Seminar, December 2013, Detroit MI.

5. **Parolari, A.J.**, M.L. Goulden, and R.L. Bras. Interactions between vegetation, hydrology, and soil biogeochemistry in a Southern California annual grassland. Presentation given at the American Geophysical Union Fall Meeting, December 2011, San Francisco CA.
4. **Parolari, A.J.** Fertilization effects on the ecohydrology of a southern California annual grassland. Columbia University International Research Institute for Climate and Society, June 2011, Palisades NY, **Invited.**
3. **Parolari, A.J.** Rooting strategies for water and nitrogen uptake. Tufts University Water Systems, Science, and Society Seminar, March 2011, Somerville MA, **Invited.**
2. **Parolari, A.**, C. Hewitson, T. Coleman, J. Wilson, and B. Ernst. Optimizing the Decision Making Process for Collection System Utilities. Presentation given at the Water Environment Federation Collection Systems Specialty Conference, May 2007, Portland OR.
1. **Parolari, A.**, Y. Hasit, J. Anderson, T. Rockaway, and M. French. Best Management Practices for Optimizing Water Age Management. Presentation given at the American Water Works Association Distribution System Symposium, September 2006, Phoenix AZ.

Conference Posters

7. **Parolari, A.J.**, A. Porporato, and G.G. Katul. Power-law growth and punctuated equilibrium dynamics in water resources systems. Poster presented at the American Geophysical Union Fall Meeting, December 2015, San Francisco CA.
6. **Parolari, A.J.**, N. Pelak, G.G. Katul, D. deB. Richter, and A. Porporato. Non-linear dynamics in plant-soil interactions and implications for critical zone processes. Poster presented at the Critical Zone Observatory All Hands Meeting, September 2014, Fish Camp CA.
5. **Parolari, A.J.**, A. Porporato, and G.G. Katul. Modeling complex ecosystem carbon-nitrogen cycle dynamics after disturbance. Poster presented at the Department of Energy TES/SBR joint investigators meeting, May 2014, Potomac MD.
4. **Parolari, A.J.**, A. Porporato, and G.G. Katul. An ecohydrological model to quantify the risk of drought-induced forest mortality events across climate regimes. Poster presented at the American Geophysical Union Fall Meeting, December 2013, San Francisco CA.
3. **Parolari, A.J.**, A. Porporato, and G.G. Katul. The role of stomatal signaling on plant water and carbon balance. Poster presented at the Department of Energy TES/SBR joint investigators meeting, May 2013, Potomac MD.
2. **Parolari, A.J.**, M.L. Goulden, and R.L. Bras. Fertilization effects on the ecohydrology of a southern California annual grassland. Poster presented at the Gordon Research Conference, Catchment Science, June 2011, Lewiston ME.
1. **Parolari, A.J.**, F. Greco, M. Green, C. Hermans, and M. Lally. Humans in Biogeophysical Models: Colonial Period Human-Environment Interactions in the Northeastern United States. Poster presented at the American Geophysical Union Fall Meeting, December 2008, San Francisco CA.

Teaching and Mentorship Experience

2015	Instructor, Optimal Environmental Sensing (Duke)
2014–16	Instructor, DRIVE Field Course (Duke)
2011	Teaching Assistant, TREX Field Course (MIT)
2010	Teaching Assistant, Introduction to Hydrology (MIT)
2010	Graduate Student Mentor, Hydrologic Synthesis Summer Institute (CUNY)

Student projects:

– Mark Bartlett	Ph.D. Student	Rainfall-runoff modeling
– Norman Pelak	Ph.D. Student	Coupled plant-soil dynamics
– Amanda Schwantes	Ph.D. Student	Remote sensing of tree mortality in Texas
– Henry Quach	Undergraduate	Hydrologic controls on soil chemistry

Awards and Honors

2015	Nicholas School of the Environment Seed Grant Initiative, <i>The role of plant water storage on forest water stress and drought resilience: A comparison of continuum and network approaches to model plant hydraulic pathways</i> (\$9,800, 2 mo)
2015	Duke Postdoctoral Professional Development Award (\$1,000)
2015	Lord Foundation of North Carolina grant for undergraduate research (\$10,000, 1 yr)
2014	Lord Foundation of North Carolina grant for undergraduate research (\$16,000, 1 yr)
2011	Nomination, Maseeh Annual Award for Excellence as a Teaching Assistant, MIT
2008	Northeast Consortium for Hydrologic Synthesis Fellow
2007–10	National Defense Science and Engineering Graduate Fellow
2003	UM Frank Lemper Memorial Scholarship
2003	Chi Epsilon (served as secretary, vice president, and president)
2002	UM James B. Angell Scholar
2002	Tau Beta Pi

Professional Service and Activities

- 2015 Dillard Drive Middle School Science Explorers
- 2015 Scientific Research and Education Network (K-12 lesson plan contributor)
- 2015 Duke Postdoc Peer Mentorship Program coordinator
- 2015 Duke University Postdoctoral Association Policy Chair
- 2013 North Carolina Science and Engineering Fair judge
- 2012 Stockholm Junior Water Prize planning cmte.
- 2011 Cambridge Science Festival volunteer
- 2010 Northeast Consortium for Hydrologic Synthesis Science Advisory Team member
- 2010 AGU Fall Mtg. session co-chair: Detecting and Predicting Change in Coupled Human-Water Systems
- 2005–09 New England Water Environment Assoc. (member & web cmte. chair)
- 2005–09 Boston Harbor Islands National Park cmte. on Renewable Energy and Sustainable Design
- 2005–07 FloodSafe Honduras Flood Early Warning System (hydrologic modeler)
- 2004 UM Undergraduate Student Advisory Board

Referee: Advances in Water Resources, Agricultural and Forest Meteorology, American Society for Engineering Education Graduate Fellowship Programs, Biogeosciences, Ecohydrology, Geophysical Research Letters, Hydrological Processes, New Phytologist, Proceedings of the National Academy of Sciences, Scandinavian Journal of Forest Research, Water Resources Research

Membership: American Geophysical Union

Last updated: May 24, 2016