

Curriculum Vitae

STEPHEN W. PACALA

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EDUCATION

PH.D. Biology, Stanford University, 1982

B.A. Biology, Dartmouth College, 1978

PROFESSIONAL APPOINTMENTS

2006-2014 Director of Princeton Environmental Institute, Princeton University
2009-2010 Chair of "Monitoring and Verification of Greenhouse Gas Emissions," NAS
2005-2006 Acting Director of Princeton Environmental Institute
2002- Associated Faculty, Program in AOS, Princeton University
1995-2003 Co-Director, NOAA Carbon Modeling Center, Princeton University
1994- Associated Faculty, Princeton Environmental Institute, Princeton University
1993-2006 Director of Graduate Studies, Department of Ecology and Evolutionary Biology, Princeton University
1992- Professor, Department of Ecology and Evolutionary Biology, Princeton University
1987-1992 Associate Professor, Department of Ecology and Evolutionary Biology, University of Connecticut
1982-1987 Assistant Professor, Ecology Section, Biological Sciences Group, University of Connecticut
1979-1981 Teaching Assistant, Stanford University
1977-1978 Teaching Assistant, Dartmouth College
1975-1978 Research Assistant, Dartmouth College

VISITING POSITION

2007 Visiting Professor, Division of Biology, Imperial College, London, UK

HONORS AND DISTINCTIONS

2018 Honorary Doctorate from Radboud University, Netherlands
2014 Awarded Honorary Membership of the British Ecological Society
2013 Presidential Award of the American Society of Naturalists
2012 Ecological Society of America Best Theory Paper
2012 Appointed Lifetime Fellow of the Ecological Society of America
2010 Robert H. MacArthur Award of the Ecological Society of America
2007 Elected to the National Academy of Sciences
2005 Elected Fellow, American Association for the Advancement of Science
2003 Elected Member, American Academy of Arts and Sciences
2002 Witherspoon Distinguished Lecturer, Lawrence Berkeley National Laboratory
2000 Frederick D. Petrie Professor of Ecology and Evolutionary Biology
1999 Tansley Lecturer, British Ecological Society, UK
1997 George Mercer Award of the Ecological Society of America
1995 David Starr Jordan Prize
1993-1996 Fellowship from the Seaver Institute, 1993-1996
1980-1982 NIH Predoctoral Training Fellowship

PROFESSIONAL SOCIETIES AND ORGANIZATIONS

National Academy of Sciences (NAS)
American Association for the Advancement of Science
American Academy of Arts and Sciences
The Ecological Society of America
American Society of Naturalists
Sigma Xi

FIELDS OF SPECIALIZATION

Plant Ecology
Global Interactions of the Biosphere, Atmosphere and Hydrosphere
Mathematical Modeling
Community Ecology

BOARDS

Chair of NAS Committee: Accelerating Decarbonization in the United States: Technology, Policy, and Societal Dimensions (2020-current)
Chair of NAS Committee: Developing a Research Agenda for Carbon Dioxide Removal and Reliable Sequestration (2017-2018)
Member, Board of Directors, Hamilton Insurance Group (2013-)
Member, Board on Atmospheric Sciences and Climate (BASC), NAS (2012 - 2016)
Member, Advisory Council, Stanford University's Precourt Institute for Energy (2010-)
Chairman of The Board of Directors, Climate Central (2008-)
Member, Advisory Board, Global Climate & Energy Program (GCEP) (2008 -)
Member, Board of Trustees, Environmental Defense Fund (2006-)
Chair, Environmental Defense Fund Science Advisory Board (2005-)
Member, Academic Advisory Board to Intelligence Community, MEDEA (2010-2014)
Member, BP ESC Advisory Board (2010-2012)
Member, The Microsoft Research Cambridge Scientific Advisory Board (2007-2011)

PUBLICATIONS

2020

Anderegg, W.R.L., A.T. Trugman, G. Badgley, C.M. Anderson, A. Bartuska, P. Ciais, D. Cullenward, C.B. Field, J. Freeman, S.J. Goetz, J.A. Hicke, D. Huntzinger, R.B. Jackson, J. Nickerson, **S.W. Pacala**, & J.T. Randerson (2020). Climate-driven risks to the climate mitigation potential of forests. *Science*, 36 (6497), doi: 10.1126/science.aaz7005.

Cano, I.M., E. Shevliakova, S. Malyshev, S. Wright, M. Detto, **S.W. Pacala**, & H. Muller-Landau (2020). Allometric constraints and competition enable the simulation of size structure and carbon fluxes in a dynamic vegetation model of tropical forests (LM3PPA-TV). *Global Change Biology*, 26 (8), 4478-4494, doi: 10.1111/gcb.15188.

Muller-Landau, H. C. & **S.W. Pacala** (2020). What determines the abundance of lianas and vines? In A. Dobson, R. Holt, and D. Tilman, Eds., for the volume *Unsolved Problems in Ecology* (pp. 239-264). Princeton, NJ: Princeton University Press.

Pacala, S.W. (2019). The importance of Durrett and Levin (1994): The importance of being discrete (and spatial). *Theoretical Population Biology* 133:33-34, doi: 10.1016/j.tpb.2019.09.002.

2019

Anderson, C.M., R.S. Defries, R. Litterman, P.A. Matson, D.C. Nepstad, **S.W. Pacala**, W.H. Schlesinger, M.R. Shaw, P. Smith, C. Weber, & C.B. Field (2019). Maximize natural climate solutions—and decarbonize the economy. *Science*, 363(6430), 933-934, doi: 10.1126/science.aaw2741.

Detto, M., Visser, M.D., Wright, S.J., & **S.W. Pacala** (2019). Bias in the detection of negative density dependence in plant communities. *Ecology Letters*, doi: 10.1111/ele.13372.

Martinez Cano, I., H.C. Muller-Landau, S.J. Wright, S.A. Bohlman, & **S.W. Pacala** (2019). Tropical tree height and crown allometries for the Barro Colorado Natural Monument, Panama: a comparison of alternative hierarchical models incorporating interspecific variation in relation to life history traits. *Biogeosciences*, doi: 10.5194/bg-16-847-2019.

Pacala, S.W. (2019). The importance of Durrett and Levin (1994): The importance of being discrete (and spatial). *Theoretical Population Biology*, 33: 33-34, doi: 10.1016/j.tpb.2019.09.002.

Weng, E., R. Dybzinski, C.E. Farrior, & **S.W. Pacala** (2019). Competition alters predicted forest carbon cycle responses to nitrogen availability and elevated CO₂: simulations using an explicitly competitive, game-theoretic vegetation demographic model. *Biogeosciences*, 16, 4577–4599, doi: 10.5194/bg-16-4577-2019.

Zeppel, M., W.R.L. Anderegg, H. Adams, P. Hudson, A. Cook, R. Rumman, D. Eamus, D. Tissue, & **S.W. Pacala** (2019). Embolism recovery strategies among species influenced by biogeographic origin and nocturnal stomatal conductance. *Ecology and Evolution*, doi: 10.1002/ece3.5126.

2018

Alvarez, R.A., D. Zavala-Araiza, D.R. Lyon, ... **S.W. Pacala**, J. Peischl, A.L. Robinson, P.B. Shepson, C. Sweeney, A. Townsend-Small, S. C. Wofsy, & S.P. Hamburg (2018). Assessment of methane emissions from the U.S. oil and gas supply chain. *Science*, 361(6398), 186–188, doi: 10.1126/science.aar7204.

Anderegg, W.R.L., A.G. Konings, A.T. Trugman, K. Yu, D.R. Bowling, R. Gabbitas, D. S. Karp, **S.W. Pacala**, J.S. Sperry, B.N. Sulman, & N. Zenes (2018). Hydraulic diversity of forests regulates ecosystem resilience during drought. *Nature*, 561, 538–541 doi: 10.1038/s41586-018-0539-7.

Anderegg, W.R.L., A. Wolf, A. Arango-Velez, B. Choat, D.J. Chmura, S. Jansen, T. Kolb, S. Li, F. Meinzer, P. Pita, V. Resco de Dios, J.S. Sperry, B.T. Wolfe, & **S.W. Pacala** (2018). Woody plants optimize stomatal behavior relative to hydraulic risk. *Ecology Letters*, 21(7), 968–977, doi: 10.1111/ele.12962.

Bartlett, M.K., M. Detto, & **S.W. Pacala** (2018). Predicting shifts in the functional composition of tropical forests under increased drought and CO₂ from trade-offs among plant hydraulic traits. *Ecology Letters*, doi: 10.1111/ele.13168 .

Hèbert-Dufresne, L., A.F.A. Pellegrini, U. Bhat, S. Redner, **S.W. Pacala**, & A. Berdahl (2018). Edge fires drive the shape and stability of tropical forests. *Ecology Letters*, 21, 794–803, doi: 10.1111/ele.12942.

Osnas, J.L.D., M. Katabuchi, K. Kitajima, S.J. Wright, P.B. Reich, S.A. Van Bael, N.J.B. Kraft, M.J. Samaniego, **S.W. Pacala**, & J.W. Lichstein (2018). Divergent drivers of leaf trait variation within species, among species, and among functional groups. *PNAS*, 15(21), 5480–5485, doi: 10.1073/pnas.1803989115.

Pacala, S.W., M. Al-Kaisi, M. Barteau, E. Belmont, ..& J. Wilcox (2018). Negative emissions technologies and reliable sequestration: A research agenda. *Committee on Developing a Research Agenda for Carbon Dioxide Removal and Reliable Sequestration, The National Academy of Sciences*, p. 1–356.

Rabin, S., S. Malyshev, B. Magi, E. Shevliakova, & **S.W. Pacala** (2018). A fire model with distinct crop, pasture, and non-agricultural burning: Use of new data and a model-fitting algorithm for FINALv1, *Geoscientific Model Development*, 11, 815–842, doi: 10.5194/gmd-11-815-2018.

Trugman, A., M. Detto, M.K. Bartlett, D. Medvigy, W.R.L. Anderegg, C. Schwalm, B. Schaffer, & **S.W. Pacala** (2018). Tree carbon allocation explains forest drought-kill and recovery patterns. *Ecology Letters*, 21(10), 1552–1560, doi: 10.1111/ele.13136.

Trugman, A.T., D. Medvigy, W.R.L. Anderegg, & **S.W. Pacala** (2018). Differential declines in Alaskan boreal forest vitality related to climate and competition. *Global Change Biology*, 24(3), 1097–1107, doi: 10.1111/gcb.13952.

Uyehara, I.K.U & **S.W. Pacala** (2018). The role of succession in the evolution of flammability. *Theoretical Ecology*, 11(3), 291–303, doi: 10.1007/s12080-018-0366-3.

2017

Anderegg, W.R.L., A. Wolf, A. Arango-Velez, B. Choat, D.J. Chmura, S. Jansen, T. Kolb, S. Li, F. Meinzer, P. Pita, V. Resco de Dios, J.S. Sperry, B.T. Wolfe, & **S.W. Pacala** (2017). Plant water potential improves prediction of stomatal models. *PLOS One*, 12(10), e0185481, doi: 10.1371/journal.pone.0185481.

- Chou, C., L.O. Hedin, & **S.W. Pacala** (2017). Functional groups, species, and light interact with nutrient limitation during tropical rainforest sapling bottleneck. *Journal of Ecology*, 106(1), 157-167, doi: 10.1111/1365-2745.12823.
- Menge, D., S. Batterman, L. Hedin, W. Liao, **S.W. Pacala**, & B. Taylor (2017). Why are nitrogen-fixing trees rare at higher compared to lower latitudes? *Ecology*, 98(12), 3127-3140, doi: 10.1002/ecy.2034.
- Ocko, I.B., S.P. Hamburg, D.J. Jacob, D.W. Keith, N.O. Keohane, M. Oppenheimer, J.D. Roy-Mayhew, D.P. Schrag, & **S.W. Pacala** (2017). Unmask temporal trade-offs in climate policy debates. *Science*, 356(6337), 492-493, doi: 10.1126/science.aaj2350.
- Pellegrini, A.F.A., W.R.L. Anderegg, C.E.T. Paine, W.A. Hoffmann, T. Kartzinel, S. Rabin, D. Sheil, A.C. Franco, & **S.W. Pacala** (2017). Convergence of bark investment according to fire and climate structures ecosystem vulnerability to future change. *Ecology Letters* 20: 307–316, doi: 10.1111/ele.12725.
- Rabin, S., S. Malyshev, B. Magi, E. Shevliakova, & **S.W. Pacala** (2017). A fire model with distinct crop, pasture, and non-agricultural burning: Use of new data and a model-fitting algorithm for FINALv1, *Geoscientific Model Development Discussions*, doi: 10.5194/gmd-2017-77.
- Xu, X., D. Medvigy, S.J. Wright, K. Kitajima, J. Wu, L. Albert, G. Martins, S. Saleska, & **S.W. Pacala** (2017). Variations of leaf longevity in tropical moist forests predicted by a trait-driven carbon optimality model. *Ecology Letters*, 20, 1097-1106, doi: 10.1111/ele.12804.

2016

- Farrior, C.E., S.A. Bohlman, S. Hubbell, & **S.W. Pacala** (2016). Dominance of the suppressed: Power-law size structure in tropical forests. *Science*, 351(6269), 155-157, doi: 10.1126/science.aad0592.
- Weng, E. S., C.E. Farrior, R. Dybzinski, & **S.W. Pacala** (2016). Predicting vegetation type through physiological and environmental interactions with leaf traits: evergreen and deciduous forests in an earth system modeling framework. *Global Change Biology*, 23(6), 2482-2498, doi:10.1111/gcb.13542.
- Wolf, A., W.R.L. Anderegg, & **S.W. Pacala** (2016). Optimal stomatal behavior with competition for water and risk of hydraulic impairment. *PNAS*, 113(46), E7222-E7230, doi: 10.1111/pce.12852.

2015

- Anderegg, W.R.L., A.P. Ballantyne, W.K. Smith... & S.W. Pacala (2015). Tropical nighttime warming as a dominant driver of variability in the terrestrial carbon sink. *Proceedings of the National Academy of Sciences*, 112(51), 15591-15596, doi: 10.1073/pnas.1521479112.
- Anderegg, W.R.L., C. Schwalm, F. Biondi, J.J. Camarero, G. Koch, M. Litvak, ... & **S.W. Pacala** (2015). Pervasive drought legacies in forest ecosystems and their implications for carbon cycle models. *Science*, 349(6247), 528-532, doi: 10.1126/science.aab1833.
- Dybzinski, R., C.E. Farrior, & **S.W. Pacala** (2015). Increased forest carbon storage with increased atmospheric CO₂ despite nitrogen limitation: a game-theoretic allocation model for trees in competition for nitrogen and light. *Global Change Biology*, 21(3), 1182-96, doi: 10.1111/gcb.12783.
- Farrior CE, I. Rodriguez-Iturbe, R. Dybzinski, S.A. Levin, & **S.W. Pacala**. 2015. Decreased water limitation under elevated CO₂ amplifies potential for forest carbon sinks. *Proceedings of the National Academy of Sciences*, 112(23), 7213-7218, doi: 10.1073/pnas.1506262112.
- Malyshev, S., E. Shevliakova, R.J. Stouffer, & **S.W. Pacala** (2015). Contrasting local vs. regional effects of land-use-change induced heterogeneity on historical climate: analysis with the GFDL earth system model. *Journal of Climate*, 28, 5448–5469, doi: 10.1175/JCLI-D-14-00586.1.
- Rabin, S.S., B.I. Magi, E. Shevliakova, & **S.W. Pacala** (2015). Quantifying regional, time-varying effects of cropland and pasture on vegetation fire. *Biogeosciences* 12(13), 6591-6604, doi: 10.5194/bg-12-6591-2015.
- Wang, S., A. Chen, **S.W. Pacala**, & J. Fang (2015). Density-dependent speciation alters the structure and dynamics of neutral communities. *Journal of Theoretical Biology*, 372, 128-134, doi: 10.1016/j.jtbi.2015.02.007.

- Weng, E. S., S. Malyshev, J.W. Lichstein, C.E. Farrior, R. Dybzinski, T. Zhang, E. Shevliakova, & **S.W. Pacala** (2015). Scaling from individual trees to forests in an Earth system modeling framework using a mathematically tractable model of height-structured competition. *Biogeosciences*, 12(9), 2655-2694, doi:10.5194/bg-12-2655-2015.
- Zavala-Araiza, D., D.R. Lyon, R.A. Alvarez...**S.W. Pacala**, A.L. Robinson, P.B. shepson, C. Sweeney, R. Talbot, A. Townsend-Small, T.I Yacovitch, D. Zimmerle, & S.P. Hamburg (2015). Reconciling divergent estimates of oil and gas methane emissions. *Proceedings of the National Academy of Sciences*, 112(51), 15597-15602, doi: 10.1073/pnas.1522126112.

2014

- Chen, A., J.W. Lichstein, J.L. Osnas, & **S.W. Pacala** (2014). Species-independent down-regulation of leaf photosynthesis and respiration in response to shading: evidence from six temperate tree species. *PloS One*, 9(4), e91798, doi: 10.1371/journal.pone.0091798.
- Lichstein, J. W., N.Z. Golaz, S. Malyshev, E. Shevliakova, T. Zhang, J. Sheffield ... & **S.W. Pacala** (2014). Confronting terrestrial biosphere models with forest inventory data. *Ecological Applications*, 24(4), 699-715, doi: 10.1890/13-0600.1.
- Ogle, K., S. Pathikonda, K. Sartor, J.W. Lichstein, J.L. Osnas, & **S.W. Pacala** (2014). A model-based meta-analysis for estimating species-specific wood density and identifying potential sources of variation. *Journal of Ecology*, 102(1), 194-208, doi: 10.1111/1365-2745.12178.
- Sulman, B. N., R.P. Phillips, A.C. Oishi, E. Shevliakova, & **S.W. Pacala** (2014). Microbe-driven turnover offsets mineral-mediated storage of soil carbon under elevated CO₂. *Nature Climate Change*, 4(12), 1099-1102, doi:10.1038/nclimate2436.
- Violle, C., P.B. Reich, **S.W. Pacala**, B.J. Enquist, & J. Kattge (2014). The emergence and promise of functional biogeography. *Proceedings of the National Academy of Sciences*, 111(38), 13690-13696, doi: 10.1073/pnas.1415442111.

2013

- Dybzinski, R., C.E. Farrior, S. Ollinger, & **S.W. Pacala** (2013). Interspecific vs intraspecific patterns in leaf nitrogen of forest trees across nitrogen availability gradients. *New Phytologist*, 200(1), 112-121, doi: 10.1111/nph.12353.
- Farrior, C. E., R. Dybzinski, S.A. Levin, & **S.W. Pacala** (2013). Competition for water and light in closed-canopy forests: a tractable model of carbon allocation with implications for carbon sinks. *The American Naturalist*, 181(3), 314-330, doi: 10.1086/669153.
- Farrior, C. E., D. Tilman, R. Dybzinski, P.B. Reich, S.A. Levin, & **S.W. Pacala** (2013). Resource limitation in a competitive context determines complex plant responses to experimental resource additions. *Ecology*, 94(11), 2505-2517, doi: 10.1890/12-1548.1.
- Gerber, S., L.O.Hedin, S.G. Keel, **S.W. Pacala**, & E. Shevliakova (2013). Land use change and nitrogen feedbacks constrain the trajectory of the land carbon sink. *Geophysical Research Letters*, 40(19), 5218-5222, doi: 10.1002/grl.50957.
- Osnas, J. L., J.W. Lichstein, P.B. Reich, & **S.W. Pacala** (2013). Global leaf trait relationships: mass, area, and the leaf economics spectrum. *Science*, 340(6133), 741-744, doi: 10.1126/science.1231574.
- Shevliakova, E., R.J. Stouffer, S. Malyshev, J.P. Krasting, G.C. Hurtt, & **S.W. Pacala** (2013). Historical warming reduced due to enhanced land carbon uptake. *Proceedings of the National Academy of Sciences*, 110(42), 16730-16735, doi: 10.1073/pnas.1314047110.
- Wang, S., A. Chen, J. Fang, & **S.W. Pacala** (2013). Speciation rates decline through time in individual-based models of speciation and extinction. *The American Naturalist*, 182(3), E83-E93, doi: 10.1086/671184.
- Wang, S., A. Chen, J. Fang, & **S.W. Pacala** (2013). Why abundant tropical tree species are phylogenetically old. *Proceedings of the National Academy of Sciences*, 110(40), 16039-16043, doi:10.1073/pnas.1314992110.

2012

- Alvarez, R., **S.W. Pacala**, J. J. Winebrake, W. L. Chameides & S. P. Hamburg (2012). Greater focus needed on methane leakage from natural gas infrastructure. *Proceedings of the National Academy of Sciences*, 109(17), 6435-6440, doi: 10.1073/pnas.1202407109.
- Alvarez, R. A., S.W. Pacala, J.J. Winebrake, W.L. Chameides, & S.P. Hamburg, (2012). Reply to Caldeira and Myhrvold: Radiative forcing is a useful, accepted metric to compare climate influence of alternative energy choices. *Proceedings of the National Academy of Sciences*, 109(27), E1814, doi: 10.1073/pnas.1206927109.
- Bohman, S. A. & **S.W. Pacala** (2012). A forest structure model that determines crown layers and partitions growth and mortality rates for landscape-scale applications of tropical forests. *Journal of Ecology*, 100(2), 508-518, doi: 10.1111/j.1365-2745.2011.01935.x.
- Chen, A., S. Wang, & **S. W. Pacala** (2012). Comment on “Global correlations in tropical tree species richness and abundance reject neutrality”. *Science*, 336(6089), 1639, doi: 10.1126/science.1222534.
- Magi, B. I., S. Rabin, E. Shevliakova, & **S.W. Pacala** (2012). Separating agricultural and non-agricultural fire seasonality at regional scales. *Biogeosciences*, 9(8), 3003-3012, doi: 10.5194/bg-9-3003-2012.
- Menge, D. N., L.O. Hedin, & **S.W. Pacala** (2012). Nitrogen and phosphorus limitation over long-term ecosystem development in terrestrial ecosystems. *PLOS One*, 7(8), e42045, doi: 10.1371/journal.pone.0042045.

2011

- Chisholm, R. A. & **S. W. Pacala** (2011). Independent species in independent niches behave neutrally: a response. *Oikos*, 120(7), 964-965, doi: 10.1111/j.1600-0706.2011.19880.x.
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- Dybzinski, R., C. Farrior, A. Wolf, P.B. Reich, & **S.W. Pacala** (2011). Evolutionarily stable strategy carbon allocation to foliage, wood, and fine roots in trees competing for light and nitrogen: an analytically tractable, individual-based model and quantitative comparisons to data. *The American Naturalist*, 177(2), 153-166, doi: 10.1086/657992.
- Lichstein, J.W. & **S.W. Pacala** (2011). Local diversity in heterogeneous landscapes: quantitative assessment with a height-structured forest metacommunity model. *Theoretical Ecology*, 4(2), 269-281, doi: 10.1007/s12080-011-0121-5.
- Pan, Y., R. Birdsey, J. Fang, R. Houghton, P. Kauppi, W. Kurz, O. Phillips, A. Shvidenko, S. Lewis, J. Canadell, P. Ciais, R. Jackson, **S. W. Pacala**, A.D. McGuire, S. Piao, A. Rautianinen, S. Sitch, & D. Hayes (2011). A large and persistent carbon sink in the world's forests. *Science*, 333(6045), 988-993, doi:10.1126/science.1201609.

2010

- Chisholm R. A. & **S.W. Pacala** (2010). Niche and neutral models predict asymptotically equivalent species abundance distributions in high-diversity ecological communities. *Proceedings of the National Academy of Sciences*, 107(36), 15821-15825, doi: 10.1073/pnas.1009387107.
- Gerber, S., L.O. Hedin, M. Oppenheimer, **S.W. Pacala**, & E. Shevliakova (2010). Nitrogen cycling and feedbacks in a global dynamic land model. *Global Biogeochemical Cycles*, 24(1), doi:10.1029/2008GB003336.
- Lichstein, J.W., J. Dushoff, K. Ogle, A. Chen, D.W. Purves, J.P. Caspersen & **S.W. Pacala** (2010). Unlocking the forest inventory data: relating individual tree performance to unmeasured environmental factors. *Ecological Applications*, 20(3), 684-699, doi: 10.1890/08-2334.1.
- Pacala, S.W.**, C. Breidenich, P.G. Brewer, I.Y. Fung, M.R. Gunson, G. Heddle, ... & S.C. Wofsy (2010). Verifying greenhouse gas emissions: methods to support international climate agreements. *Committee on Methods for Estimating Greenhouse Gas Emissions, The National Academy of Sciences*, p. 1-110.
- Sarmiento, J. L., M. Gloor, N. Gruber, C. Beaulieu, A. R. Jacobson, S. M. Fletcher, **S.W. Pacala**, & K. Rodgers (2010). Trends and regional distributions of land and ocean carbon sinks. *Biogeosciences*, 7(8), 2351-2367, doi:10.5194/bg-7-2351-2010.

2009

- Chakravarty, S., A. Chikkatur, H. de Coninck, **S.W. Pacala**, R. Socolow, & M. Tavoni (2009). Reply to Grubler and Pachauri: Developing national obligations from individual emissions. *Proceedings of the National Academy of Sciences*, 106(43), E124, doi: 10.1073/pnas.0911102106.
- Chakravarty, S., A. Chikkatur, H. de Coninck, **S.W. Pacala**, R. Socolow, & M. Tavoni (2009). Sharing global CO₂ emission reductions among one billion high emitters, *Proceedings of the National Academy of Sciences*, 106(29), 11884-11888, doi: 10.1073/pnas.0905232106.
- Lichstein, J.W., C. Wirth, H.S. Horn, & **S.W. Pacala** (2009). Biomass chronosequences of United States forests: implications for carbon storage and forest management. In C. Wirth, G. Gleixner, & M. Heimann, Eds., *Old-growth forests: Function, fate and value* (pp. 301-341). Berlin, Heidelberg: Springer-Verlag, chapter doi: 10.1007/978-3-540-92706-8_14.
- Menge, D.N.L., **S.W. Pacala**, & L. O. Hedin (2009). Emergence and maintenance of nutrient limitation over multiple timescales in terrestrial ecosystems. *The American Naturalist*, 173(2), 164-175, doi: 10.1086/595749.
- Ogle, K. & **S.W. Pacala** (2009). A modeling framework for inferring tree growth and allocation from physiological, starvation, and allometric traits. *Tree Physiology*, 29(4), 587-605, doi:10.1093/treephys/tpn051.
- Sarmiento, J. L., M. Gloor, N. Gruber, C. Beaulieu, A. R. Jacobson, S. M. Fletcher, **S.W. Pacala**, & K. Rodgers (2009). Trends and regional distributions of land and ocean carbon sinks. *Biogeosciences*, 7(8), 2351-2367, doi:10.5194/bgd-6-10583-2009.
- Shevliakova, E., **S. W. Pacala**, S. Malyshev, G. C. Hurtt, P. C. D. Milly, J. P. Caspersen, ... & C. Crevoisier (2009). Carbon cycling under 300 years of land use change: Importance of the secondary vegetation sink. *Global Biogeochemical Cycles*, 23(2), doi:10.1029/2007GB003176.
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