W. Maurice Ewing Endowed Chair of Earth Systems Science masiello@rice.edu

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**EDUCATION**

Earlham College, B.A. with Honors (Math & Physics), 1991

University of North Carolina, Chapel Hill, M.S. (Environmental Science), 1993

University of California, Irvine, M.S. (Physical Chemistry), 1996

University of California, Irvine, Ph.D. (Earth System Science), 1999

**research and professional EXPERIENCE**

Professor, Rice University, Houston, TX, July 2015-present.

Director, Environmental Sciences major, 2017-present.

Joint faculty, Chemistry department, Rice University, 2012-present.

Joint faculty, BioSciences department, Rice University, 2014-present.

Faculty Scholar, Baker Institute for Public Policy, Rice University, 2013-present.

Associate Professor, Rice University, Houston, TX June 2012-June 2015.

Assistant Professor, Rice University, Houston, TX Fall 2004-June 2012.

Postdoctoral Scholar, UC Santa Barbara Geography Department, 2002-2004

Postdoctoral Scholar, Center for Accelerator Mass Spectrometry, LLNL, 1999-2002

Visiting Scientist, CSIRO Land and Water, Adelaide, Australia, 2003

Visiting Scientist, CalTech Division of Geology and Planetary Sciences, 2001-2004

**AWARDS AND FELLOWSHIPS**

2022-2024 Hanse Wissenschaftskolleg Study Group, “Black Carbon in the Oceans”

2021 Finalist, Lone Star Prize

 Met challenge grant and received $1,000,000

2020 BioHouston Women in Science Excellence Honoree

2019 Gast Lecture (Plenary) Geochemical Society

2017 Fellow Geological Society of America

2006 Hamill Innovation Award, Rice University

2002-2003 American Fellow, AAUW

1998-1999; 1993-1994: NSF Graduate Research Traineeship, UC Irvine

1991-1992: School of Public Health Fellowship, UNC-Chapel Hill

**research INTERESTS**

•Development new tools to understand the cycling and fate of biogeochemically relevant elements in the Earth system with a focus on tools that allow scaling from microns to km;

•Application of these tools to both fundamental and applied problems related to water, energy, climate, and life on Earth.

•Development of new pedagogical approaches to grow the scientific community, including tiered and near-peer mentoring, freshman research initiatives, and inclusive curricula development.

**CAREER FUNDED RESEARCH SUPPORT: $10,337,382**

**CURRENT RESEARCH SUPPORT**

1. *Increasing diversity in Rice’s Earth, Environmental and Planetary Sciences classrooms immediately through expanded mentorship*. C.A. Masiello, J. Morgan, S. Dee, A. Dunham, J. Ajo-Franklin. $2,500. May 2021-June 2022. *Extended through 2023.*
2. *Antibiotic resistance gene propagation: in situ rates and networks of horizontal gene transfer in wastewater*. L.B. Stadler, J.J. Silberg, C.A. Masiello. $329,993. NSF CBET.
3. *REU Site: Planetary Habitability Over Space and Time*. C.A. Masiello, C.-T. A. Lee. $383,724. NSF REU.
4. *CH4 -> C0 +H2: Building the ideal C0 for soil amendment.* P.I. CA Masiello; co-I: PJJ Alvarez. Shell. $184,474.
5. *Estimating ecosystem services from CH4-derived solid carbon.* PI C.A. Masiello. Co-I D. Cohan. Shell-Rice Carbon Hub. $108,000.
6. *GP-IN: Inclusive Learning through Earth, Environmental and Planetary Sciences (ILEEPS).* PI Carolyn Nichol. Co-Is: Christina Crawford, Laurence Yeung, Rajdeep Dasgupta, Caroline Masiello. $349,953. NSF ICER.
7. Measuring the host range, dynamics, and impact of gene transfer mediated by genetically-engineered microbes in soil. PI: J. Chappell. Co-Is: JJ Silberg, L.B. Stadler, C.A. Masiello. $500,000. USDA Biotechnology Risk Assessment Program, 9/2021 – 8/2024.
8. *Texas dirt: the key to environment, economy, and resilience*. Co-Is: J. Blackburn, C.A. Masiello, K.B. Medlock. $100,000. Lone Star Prize.
9. *Developing biosensors for the SFA model soil community (MSC)*. PI: J.J. Silberg. Co-I: C.A. Masiello. $205,000. LBNL/DOE.
10. *Texas Carbon Market*. PI: K. Medlock. Co-Is: C.A. Masiello, J. Blackburn. $100,000. Wells Fargo.
11. *Biochar risk assessment: new assays.* PI: C.A. Masiello. Co-I: P.J.J. Alvarez. Shell. $219,482.
12. *Air, climate, and agricultural impacts of applying methane-derived carbon solids to to soils: assessing potential impacts to the N cycle.* PI: D. Cohan. Co-PIs: C.A. Masiello, P.J.J. Alvarez. Rice Shell Carbon Hub, $170,000.

**PENDING RESEARCH SUPPORT**

1. Achieving Microbial BioRemediatiOn with Synthetic biology In Annuals (AMBROSIA*)*. Lead PI: J.J. Silberg. PIs: J. Chappell, C. Masiello, L. Stadler, P.J.J. Alvarez $18,673,452. DARPA.

**COMPLETED RESEARCH SUPPORT**

1. *Developing Synthetic Biology Tools for Marine Microbial Studies*. P.I. C.A. Masiello. Co-Is: J.J. Silberg, G. Bennett. $708,400. Moore Foundation. May 2018-Dec 2021.
2. *The Environmental Impacts of COVID19 in Texas: Understanding Trade-Offs of Plausible Low-Carbon Futures*. P.I. S. Dee. Co-Is T. Loch-Temzelides, C.A. Masiello, M. Torres. $15,000. May 2020-April 2021.
3. *Subterranean surveillance of explosives and toxic chemicals in soils using indicator gases.* P.I. J.J. Silberg. Co-Is: C.A. Masiello, G. Bennett, S.L. Biswal, J. Tabor, A. Ellington. $2,077,014. DARPA, 2019-2021.
4. Impacts of Flood Damage on Airborne Fungi and Bacteria in Homes after Harvey. P.I. L. Stadler. Co-Is: Q. Li, J. Elliott, C.A. Masiello, N. Fierer. $50,000. Rice University HERE funds.
5. *Microbial PALS:* Sensing the chemical and magnetic signatures of underwater vehicles using natural and engineered bacteria. P.I. J.J. Silberg. Co-Is L. Tender, C.A. Masiello. $400,000 to Rice, DARPA.
6. *MRI: Acquisition of Time-of-Flight Secondary Ion Mass Spectrometer (TOF-SIMS) for high resolution 3-D materials analysis*. P.I.: R. Verduzco. Co-Is: C.-T. Lee, C.A. Masiello, J. Lou. $1,666,069. NSF MRI, 2016-2021.
7. *Synthetic Biology for Earth System Science.* P.I.s: C.A. Masiello, J.J. Silberg, G. Bennett, M. Bennett. $1 million. Keck Foundation.
8. *Pyrolytic Conversion of Soil Contaminated with Heavy Hydrocarbons into Biochar to Enhance Soil Fertility and Sequester CO2.* Lead P.I.s: Pedro Alvarez, Caroline Masiello, Kyriacos Zygourakis. Chevron. $75,000. 2014-2016.
9. *Biochar Amendment: A Sustainable Remediation Strategy for Shallow Soil Contamination by Heavy Hydrocarbons*, Lead P.I.s: Doug Mackay, Sanjai Parikh. Chevron. Masiello subcontract: $34,578.2014-2016.
10. *Effects of Characterized Biochars on Microbial Communication*. P.I.s: C.A. Masiello, J.J. Silberg. Shell P.I.: J. Wise. $75,000. 2014-2015.
11. *The effects of Charcoal on the Hydrologic Properties of Soils under Natural and Enhanced Conditions,* P.I.: C.A. Masiello, co-P.I. B. Dugan. NSF-HS, April 15, 2010 – June 31, 2015. $270,179.
12. *Rice Biochar: Expanding into Biology*. P.I. C.A. Masiello. Co-P.I.s: J.J. Silberg, K. Zygourakis, B. Dugan, H. Gonnerman, D. Wagner. Rice FIF. $50,000.
13. *Early Career: Acquisition of Shared, Basic Biogeochemistry Facilities at Rice University,* P.I.: C.A. Masiello, co-P.I.s John B. Anderson, Mason Tomson, Kenton Whitmire, Evan Siemann. NSF-EAR/IF, Jan. 1, 2010-Dec. 31, 2014, $100,000.
14. *Assessing the Impact of Developing-World Land Use on Riverine Organic Carbon Delivery to the Ocean.* P.I.: C.A. Masiello, co-P.I.s W.C. Hockaday and T.J. Perez. NSF-OCE 0928941, Jul. 1, 2009-Jun. 30, 2012. $389,261 ($349,261 to Rice).
15. *Effects of nitrogen management strategies on biofuel crop biochemistry and soil carbon stocks,* P.I.: C.A. Masiello. co-P.I. W.C. Hockaday. USDA AFRI, Jan. 1, 2011 - Dec. 31, 2013, $543,962 ($443,151 to Rice).
16. *Linking Climate Change to the Structure and Functioning of Native Communities*, P.I.: V. Rudolf. co-P.I.s A. Dunham, C.A. Masiello, R. Barnes. Rice Shell Center for Sustainability. $30,000.
17. *Stream Teams: Undergraduate-led Research on the Biogeochemistry of River Urbanization.* P.I.: R. Barnes. co-P.I.s C.A. Masiello, V. Colvin. $30,000.
18. *Investigating Biochar Impacts on Cell-Cell Communication.* P.I.: C.A. Masiello. Co-Is: J.J. Silberg, K. Zygourakis, J.A. Rudgers. Rice Institute of Biosciences and Bioengineering, $10,000, Oct 2011-Sept 2012.
19. *Enhancing the Quality of Marketable Products Derived from Mobile Fast Pyrolysis of Ligno-cellulosic Biomass*, Texas AgriLife Bioenergy Initiatives Program. P.I.: S. Capareda (TAMU); co-PIs: C.A. Masiello; T. Provin, D. Vietor, M. Palma (TAMU). Jan. 1, 2010 – Dec. 31, 2011, $330,000 ($10,000 to Rice).
20. *Optimizing the Logistics of a Mobile Fast Pyrolysis System for Sustainable Bio-crude Oil Production,* DOE SUN Grant program. P.I.: S. Capareda (TAMU); Co-PIs: C.A. Masiello; T. Provin, D. Vietor, M. Palma (TAMU). Jan. 1, 2009 – Dec. 31, 2011, $890,862 ($100,494 to Rice).
21. *The effects of land use change on the oxidative ratio of the terrestrial biosphere*, P.I.: C.A. Masiello. NSF DEB-0614524, Oct. 1, 2006 – Sept. 31, 2011, $400,000.
22. *The Rice International Visiting Fellows Program in Energy, the Environment, and Sustainability: Prototype Years 1&2*, Rice University Faculty Initiatives Fund, co-P.I.s: C.A. Masiello and J.J. Silberg, May 2007-April 2010, $80,000.
23. *Carbon Sequestration Through Soil Biochar Amendment,* Rice University, June 2008-May 2009*,* co-P.I.s: K. Zygorakis, C.A. Masiello, and W.C. Hockaday. $50,190.
24. *Monitoring Engineered Nanoparticles in the Environment,* co-P.I.s: W.C. Hockaday, Q. Li, and C.A. Masiello. Shell Center for Sustainability,Rice University, April 2008-March 2009, $39,110.
25. *Genetic and Environmental Impacts on Lignin Accumulation,* co-P.I.s: J. Braam, J.A. Rudgers, C.A. Masiello. Shell Center for Sustainability, December 2008-December 2009, $32,200.
26. *Carbon isotopic measurements of dissolved inorganic carbon: A new tool to assess groundwater-river exchange in the Brazos River Basin. P.I. F.-W. Zeng. Co-I: C.A. Masiello, $15,000. Texas Water Research Institute. 2007-2008.*
27. *Mechanisms of soil carbon sequestration: optimizing soil carbon interactions with minerals and fungi*, co-P.I.s: C.A. Masiello and J.A. Rudgers. Rice University Energy and Environmental Systems Institute, $8,500. Sept. 2007 – Aug. 2008.
28. *Isolating AM fungi as keystone regulators of carbon sequestration in dune ecosystems*, co-P.I.s: J.A. Rudgers, C.A. Masiello, and S. Emery. Hamill Innovation Grant, Rice University Institute of Biosciences and Bioengineering, $21,460.
29. *Measuring the oxidative ratio of the terrestrial biosphere,* NSF DEB-0445282, P.I.: C.A. Masiello. April 1 2005 – September 30, 2006, $100,000.
30. *The oxidation state of soil organic carbon: a new proxy for carbon storage mechanisms and land use change.* P.I.: Oliver Chadwick, co-I.: C.A Masiello. collaborators Jim Randerson, Jeff Baldock. Kearney Foundation, $70,000, 2003-2005.
31. *Carbon cycle in soils: role of organic matter/noncrystalline interactions.* P.I.s: Isabelle Basile, Ronald Amundson, co-I.s: C.A. Masiello, Armand Masion, Stefano Caldarelli, Daniel Borschneck, Jérome Balesdent, Cristina Castanha. source: France-Berkeley Fund, $10,000 2002-2003.
32. *Physical and chemical controls on carbon storage in U.S. soils,* P.I.: C.A. Masiello. American Association of University Women (AAUW) 2002-2003 American Fellowship, $30,000.
33. *Soil organo-mineral complexes as a predictor of soil carbon sequestration potential*, P.I.: C.A. Masiello, co-I.s: O.A. Chadwick and S.E. Trumbore, DOE CLE $71,554, 2001-2002.
34. *Stuffing carbon away: mechanisms of carbon sequestration in soils*. P.I.: C.A. Masiello. Co-I.s: John Southon, Margaret Torn, Oliver Chadwick, Jennifer Harden, Susan Trumbore. DOE LDRD $120,000, 2001-2002.
35. *Stuffing carbon away: how do mineralogy and precipitation control long-term carbon sequestration in soils?* P.I.: John Southon, co-I. C.A. Masiello, $163,000. Source: LLNL LDRD 2000-2001. collaborators: Oliver Chadwick, Julia Gaudinski, Jennifer Harden, Susan Trumbore, Margaret Torn, Stuart Wakeham.
36. *Isotope and genetic studies to assess microbial carbon storage in natural and human-altered environments.* Co-P.I.s: Kathleen Treseder, C.A. Masiello, Michael F. Allen. source: LLNL minigrant. $12,510, 2000-2001.
37. *Char and graphitic soot black carbon dynamics in marine sediments.* P.I.: John Hedges, Co-I: C.A. Masiello. collaborators: Yves Gelinas, Angela Dickens. source: LLNL minigrant. $19,105, 2000-2001.
38. *Radiocarbon constraints on organic matter turnover in the Amazon River Basin: Model conceptualization and validation*. P.I.: John Hedges, co-I.s: C.A. Masiello, T. Brown. collaborators: Anthony Aufdenkampe, Emilio Mayorga. source: LLNL minigrant. $3,654, 2000-2001.
39. *Isotope geochemistry of the Santa Clara River*,P.I.: C.A. Masiello. Sigma Xi GIA award, $1,000, 1999-2000.

**PEER REVIEWED PUBLICATIONS**

ResearcherID: A-2653-2011; ORCID: orcid.org/0000-0003-2102-6229 \*indicates mentored graduate student or postdoctoral researcher and ^indicates a K-12 teacher. Undergrad co-authors are underlined.

1. Masiello, C.A. E.R.M. Druffel, and J.E. Bauer (1998), Physical controls on dissolved inorganic radiocarbon variability in the California Current, *Deep-Sea Research Pt II: Topical Studies in Oceanography, 45*, 617-642.
2. Masiello, C.A.*,* and E.R.M. Druffel (1998), Black carbon in deep-sea sediments, *Science, 280,* 1911-1913.
3. Bauer, J.E., E.R.M. Druffel, D.M. Wolgast, S. Griffin, and C.A. Masiello (1998), Distributions of dissolved organic and inorganic radiocarbon in the eastern North Pacific continental margin, *Deep-Sea Research Pt II: Topical Studies in Oceanography, 45,* 689-671.
4. Masiello, C.A., and E.R.M. Druffel (2001), The isotope geochemistry of the Santa Clara River, *Global Biogeochemical Cycles*, *15*, 407-416.
5. Masiello, C.A., E.R.M. Druffel, and L.A. Currie (2002), Radiocarbon measurements of black carbon in aerosols and ocean sediments, *Geochimica Cosmochimica Acta*, *66*, 1025-1036.
6. Currie, L.A., B.A. Benner, J.D. Kessler, D.B. Klinedinst, G.A. Klouda, J.V. Marolf, J.F. Slater, S.A. Wise, H. Cachier, R. Cary, J.C. Chow, J. Watson, E.R.M. Druffel, C.A. Masiello, T.I. Eglinton, A. Pearson, C.M. Reddy, O. Gustafsson, J.G. Quinn, P.C. Hartmann, J.I. Hedges, K.M. Prentice, T.W. Kirchstetter, T. Novakov, H. Puxbaum, and H. Schmid (2002), A critical evaluation of interlaboratory data on total, elemental, and isotopic carbon in the carbonaceous particle reference material, NIST SRM 1649a, *Journal of Research of the National Institute of Standards and Technology*, *107*, 279-298.
7. Schmidt, M.W.I., C.A. Masiello, and J.O. Skjemstad (2003), Final recommendations for reference materials in black carbon analysis, *EOS Transactions of the American Geophysical Union*, *84*, 582-583. *note: this is a publication, not a journal abstract.*
8. Masiello, C.A., and E.R.M. Druffel (2003), Organic and black carbon 13C and 14C through the Santa Monica Basin oxic-anoxic transition, *Geophysical Research Letters*, *30*, doi 10.1029/2002GL015050.
9. Treseder, K.K., C.A. Masiello, J.L. Lansing, and M.F. Allen (2004), Species-specific measurements of ectomycorrhizal turnover under N-fertilization: combining isotopic and genetic approaches, *Oecologia*, *138*, 419-425.
10. Wakeham, S.G., J. Forrest, C.A. Masiello, Y. Gelinas, C.R. Alexander, and P. R. Leavitt (2004), Hydrocarbons in Lake Washington sediments. A 25-year retrospective in an urban lake, *Environmental Science & Technology*, *38*, 431-439.
11. Baldock, J.A., C.A. Masiello, Y. Gélinas, and J.I. Hedges (2004), Cycling and composition of organic matter in terrestrial and marine ecosystems, *Marine Chemistry*, *92*, 39-64, 10.1016/j.marchem.2004.06.016.
12. Dickens, A.F., Y. Gelinas, C.A. Masiello, S. Wakeham, and J.I. Hedges (2004), Reburial of fossil organic carbon in marine sediments, *Nature*, *427*, 336-339.
13. Masiello, C.A., O.A. Chadwick, J. Southon, M.T. Torn, and J.W. Harden (2004), Weathering Controls on Mechanisms of Carbon Storage in Grassland Soils, *Global Biogeochemical Cycles*, *18*, doi: 10.1029/2004GB002219.
14. Masiello, C.A. (2004), New directions in black carbon organic geochemistry, *Marine Chemistry*, *92*, 201-213.
15. Basile-Doelsch, I., R. Amundson, W.E.E. Stone, C. A. Masiello, J.Y. Bottero, F. Colin, F. Masin, D. Borschneck, and J.D. Meunier (2005), Mineralogical control of organic carbon dynamics in a volcanic ash soil on La Reunion, *European Journal of Soil Science*, *56*, 689-703.
16. Mayorga, E., A.K. Aufdenkampe, C.A. Masiello, A.V. Krusche, J.I. Hedges, P.D. Quay, J.E. Richey, and T.A. Brown (2005), Young organic matter as a source of carbon dioxide outgassing from Amazonian rivers, *Nature*, *436*, 538-541.
17. Treseder, K.K., M.S. Torn, and C.A. Masiello (2006), An ecosystem-scale radiocarbon tracer to test use of litter carbon by ectomycorrhizal fungi, *Soil Biology & Biochemistry*, *38*, 1077-1082.
18. Randerson, J.T., C.A. Masiello, C.J. Still, T. Rahn, H. Poorter, and C.B. Field (2006), Is carbon within the global terrestrial biosphere becoming more oxidized? Implications for trends in atmospheric O-2, *Global Change Biology*, *12*, 260-271.
19. Schmidt, M.W.I., and C.A. Masiello (2007), Interdisciplinary Intercomparison of Black Carbon Analysis in Soil and Sediment, *Eos Trans. AGU*, *88*, 344, doi:10.1029/2007EO350006.\**this is a peer-reviewed article, not an abstract.*
20. Czimczik, C.I., and C.A. Masiello (2007), Controls on black carbon storage in soils, *Global Biogeochemical Cycles*, *21.*
21. Hammes, K., M.W.I. Schmidt, R.J. Smernik, L.A. Currie, W.P. Ball, T.H. Nguyen, P. Louchouarn, S. Houel, O. Gustafsson, M. Elmquist, G. Cornelissen, J. O. Skjemstad, C.A. Masiello, J. Song, P. Peng, S. Mitra, J.C. Dunn, P.G. Hatcher, \*W.C. Hockaday, D. M. Smith, C. Hartkopf-Froeder, A. Boehmer, B. Luer, B. J. Huebert, W. Amelung, S. Brodowski, L. Huang, W. Zhang, P.M. Gschwend, D.X. Flores-Cervantes, C. Largeau, J.N. Rouzaud, C. Rumpel, G. Guggenberger, K. Kaiser, A. Rodionov, F.J. Gonzalez-Vila, J.A. Gonzalez-Perez, J.M. de la Rosa, D.A.C. Manning, E. Lopez-Capel, and L. Ding (2007), Comparison of quantification methods to measure fire-derived (black/elemental) carbon in soils and sediments using reference materials from soil, water, sediment and the atmosphere, *Global Biogeochemical Cycles*, vol *21; doi: 10.1029/2006GB002914.*
22. Masiello, C.A., \*M.E. Gallagher, J.T. Randerson, R.M. Deco, and O.A. Chadwick (2008), Evaluating two experimental approaches for measuring ecosystem carbon oxidation state and oxidative ratio, *Journal Of Geophysical Research-Biogeosciences*, *113,* G03010, doi: 10.1029/2007JG000534.
23. Schreiner, K.M., T.R. Filley, R.A. Blanchette, B.B. Bowen, R.D. Bolskar, \*W.C. Hockaday, C.A. Masiello, and J.W. Raebiger (2009) White-Rot Basidiomycete-mediated Decomposition of C60 Fullerol. *Environmental Science and Technology, 43(9)*, 3162-3168.
24. \*Hockaday, W.C., C.A. Masiello, J.T. Randerson, R.J. Smernik, J.A. Baldock, O.A. Chadwick, J.W. Harden (2009) The measurement of soil carbon oxidation state and oxidative ratio by nuclear magnetic resonance. *Journal of Geophysical Research-Biogeosciences,**114*, G02014, doi: 10.1029/2008JG000803.
25. \*Zeng, F.-W. and C.A. Masiello (*2010*) CO2 evasion from two subtropical rivers in North America. *Biogeochemistry.* doi: 10.1007/s10533-010-9417-6.
26. Kane, E.S., \*W.C. Hockaday, M.R. Turetsky, C.A. Masiello, D.W. Valentine, B.P. Finney, J.A. Baldock (*2010*) Topographic controls on black carbon accumulation in Alaskan black spruce forest soils: implications for organic matter dynamics. *Biogeochemistry, 100, 39-56.* doi: 10.1007/s10533-009-9403-z.
27. Nguyen, B.T., J. Lehmann, \*W.C. Hockaday, S. Joseph, C.A. Masiello (2010)Temperature sensitivity of black carbon decomposition and oxidation. *Environmental Science and Technology, 44(9)*, 3324-3331, doi: 10.1021/es903016y.
28. \*Gallagher, M.E., \*W.C. Hockaday, C.A. Masiello, S. Snapp, C.P. McSwiney, J.A. Baldock. (*2011*) Biochemical Suitability of Crop Residues for Cellulosic Ethanol: Disincentives to Nitrogen Fertilization in Corn Agriculture. *Environmental Science and Technolog*y, 45, 2013-2020, doi:10.1021/es103252s.
29. \*Zeng, F.-W., C.A. Masiello, and \*W.C. Hockaday (2011) Controls on the origin and cycling of riverine dissolved inorganic carbon in the Brazos River, Texas. *Biogeochemistry*, 104, 275-291, doi:10.1007/s10533-010-9501-y.
30. \*Dong, L., \*W.C. Hockaday, C.A. Masiello, P.J.J. Alvarez (2011) Earthworm avoidance of biochar can be mitigated by wetting. *Soil Biology and Biochemistry*, 43, 1732-1737, doi: 10.1016/j.soilbio.2011.04.019.
31. Lehmann, J., M. Rillig, J. Thies, C.A. Masiello, \*W.C. Hockaday, and D. Crowley (2011) Biochar effects on soil biota -- a review. *Soil Biology and Biochemistry*, 43, 1812-1836, doi: 10.1016/j.soilbio.2011.04.022*.*
32. Kinney, T.J., C.A. Masiello, B. Dugan, \*W.C. Hockaday, ^M.R. Dean, K. Zygourakis, and \*R.T. Barnes (2012). Hydrologic properties of biochars produced at different temperatures. *Biomass and Bioenergy*, 41, 34-43, doi: 10.1016/j.biombioe.2012.01.033.
33. \*Sun, H., W.C. \*Hockaday, C.A. Masiello, and K. Zygourakis. (2012) Multiple controls on the chemical and physical structure of biochars. *Industrial & Engineering Chemistry Research*, 51(9), 3587-3597, doi: 10.1021/ie201309r.
34. Koarashi, J., \*W.C. Hockaday, C.A. Masiello, and S.E. Trumbore (2012) Dynamics of decadally cycling carbon in subsurface soils. *JGR-Biogeosciences,* 117, G03033, doi:10.1029/2012JG002034.
35. LeCroy, C., C.A. Masiello, J.A. Rudgers, W.C. Hockaday, J.J. Silberg (2013) Nitrogen, biochar, and mycorrhizae: alteration of the symbiosis and oxidation of the char surface. *Soil Biol. Biochem.* 58, 248-254, doi: 10.1016/j.soilbio.2012.11.023.
36. Webber, J.B.W., Corbetter, P., Semple, K.T., Ogbonnaya, U., Teel, W.S., Masiello, C.A., Fisher, Q.J., Valenza J.J. II, Song, Y.-Q., Hu, Q. An NMR study of porous rock and biochar containing organic material (2013) *Microporous and Mesoporous Materials* 178, 94-98, doi: 10.1016/j.micromeso.2013.04.004.
37. Budai, A., A.R. Zimmerman, A.L. Cowie, J.B.W. Webber, B.P. Singh, B. Glaser, C.A. Masiello, D. Andersson, F. Shields, J. Lehmann, M. Camps Arbestain, M. Williams, S. Sohi, S. Joseph. [Biochar carbon stability test method: An assessment of methods to determine biochar carbon stability](http://www.biochar-international.org/sites/default/files/IBI_Report_Biochar_Stability_Test_Method_Final.pdf) (2013) International Biochar Initiative, Carbon Methodology Document. URL [www.biochar-international.org/sites/default/files/IBI\_Report\_Biochar\_Stability\_Test\_Method\_Final.pdf](http://www.biochar-international.org/sites/default/files/IBI_Report_Biochar_Stability_Test_Method_Final.pdf).
38. Worrall, F., G.D. Clay, C.A. Masiello, G. Mynheer (2013) Estimating the oxidative ratio of the global terrestrial biosphere carbon – the global terrestrial carbon sink has been underestimated. *Biogeochemistry* 115(1-3), 23-32, doi: 10.1007/s10533-013-987-6.
39. Masiello, C.A., Y. Chen, X. Gao, S. Liu, \*S. Cheng, M.R. Bennett, J.A. Rudgers, D.S. Wagner, K. Zygourakis, J.J. Silberg (2013) Pyrolysis temperature determines biochar effects on microbial communication. *ES&T*, 47, 11496-11503, doi: 10.1021/es401458s.
40. Schneider, M.P.W., L.A. Pyle, K. Clark, \*W.C. Hockaday, C.A. Masiello, M.W.I. Schmidt (2013) Towards a ‘Molecular Thermometer’ to estimate the charring temperature of wildfire charcoals. *ES&T*, 47, 11490-11495, doi: 10.1021/es401430f.
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74. \*Pourhashem, G. Hung, S.Y., Medlock, K., and Masiello, C.A. Policy support for biochar: Review and recommendations (2018) *Global Change Biology-Bioenergy* 1-14. DOI: 10.1111/gcbb.12582.
75. \*Suciu, L., Masiello, C.A., Griffin, R.J. (2019) Anhydrosugars as tracers in the Earth system. *Biogeochemistry* 146, 209-256, 10.1007/s10533-019-00622-0.
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77. Masiello, C.A., and Berhe, A.A. (2020) First interactions with the hydrologic cycle determine pyrogenic carbon’s fate in the Earth system. *Earth Surface Processes and Landforms*, 6(26), 1-5, doi.org/10.1002/esp.4925.
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80. Del Valle, I., Fulk, E.M., Kalvapalle, P., Silberg, J.J. Masiello, C.A., Stadler, L. (2020) Translating synthetic biology advances into the environmental sciences.  *Frontiers in Microbiology*, 11, 3513.
81. Suciu, L.G., Griffin, R.J., Masiello, C.A. (2021) A zero-dimensional view of atmospheric degradation of levoglucosan (LEVCHEM\_v1) using numerical chamber simulations. *Geoscientific Model Development*, 14(2), 907-921.
82. Lawrence, C.R., Schulz, M.S., Masiello, C.A., Chadwick, O.A., Harden, J.W. (2021) The interactive influence of climate and soil development on organic matter accumulation and turnover. *Geoderma*, 403, 115378.
83. Lehmann, J., Cowie, A., Masiello, C.A., Kammann, C., Woolf, D., Amonette, J.E., Cayuela, M.L., Camps-Arbestain, M., Whitman, T. (2021) Biochar in climate change mitigation. *Nature Geoscience*, 14(2), 883-892.
84. Xu, A., Adiole, C., Botton, N., Osborn, M., Lu, L., Zhou, J., Breaux, S., Loch –Temzelides., T., Dee, S., Masiello, C.A., Torres, M., and members of the Rice COVID-19 environmental project. (2022) Race, Local Pollution, and COVID-19 Deaths in Texas. *Scientific Reports*, 12(1), 1-9.
85. Hilman, B., Weiner, T., Haran, T., Masiello, C.A., Gao, X. and Angert, A. (2022) Variability of the apparent respiratory quotient of forest soils and tree stems. *JGR-Biogeociences*, 127(3), e2021JG006676.
86. Del Valle, I., Gao, X., Ghezzehei, T.A., Silberg, J.J., Masiello, C.A. (2022) Artificial soils reveal individual factor controls on microbial processes. *mSystems*, in press.
87. Fulk, E.M., Gao, X., Lu, L.C., Redeker, K.R., Masiello, C.A., Silberg, J.J. (2022) Non-destructive chemical sensing within bulk soil using 1000 biosensors per gram of matrix. *ACS Synthetic Biology*, 9(11), 3104-3113.
88. Sridhar, S., Ajo-Franklin, C.M., Masiello, C.A. (2022) A Framework for the systematic selection of biosensor chassis for environmental synthetic biology. *ACS Synthetic Biology*, 11(9), 2909-2916.
89. Chen, X., Gao, X., Yu, P., Spanu, L., Hinojosa, J., Zhang, S., Long, M., Alvarez, P.J.J., Masiello, C.A. (2022) Rapid simulation of decade-scale charcoal aging in soil: Changes in physicochemical properties and their environmental implications.  *Environmental Science & Technology*, 2023, 57, 128-138.
90. Gao, H., Li, H., Alvarez, P.J.J., Masiello, C.A., Zhu, D., Kong, A., Qu, X. (2022) Molecular signature of soil organic matter under different land uses in the Lake Chaohu Basin. *Eco-Environment & Health,* 1, 212-218.

**COMMENTARY ARTICLES**

* + - 1. Masiello, C.A. (2007), Perspective: Carbon cycle - Quick burial at sea, *Nature*, *450*, 360-361.
			2. Masiello, C.A and P. Louchouarn (2013), Perspective: Fire in the Ocean. *Science*, 340, 287-288.

**media citations & Commentaries**

* + - 1. [Schmidt M.W](http://www.ncbi.nlm.nih.gov/pubmed?term=%22Schmidt%20MW%22%5BAuthor%5D).I. “Biogeochemistry: carbon budget in the black” (2004) *Nature* 427:305-7.
			2. [Raymond, P.A.](http://www.ncbi.nlm.nih.gov/pubmed?term=%22Schmidt%20MW%22%5BAuthor%5D) “Carbon cycle: the age of the Amazon's breath” (2005) *Nature* 436:538-41.
			3. Boyd, J. “Amazon source of five-year-old river breath: Largest-ever river-carbon-dating survey pinpoints age of Amazonian CO2”, Rice News & Media relations(July 7, 2005).
			4. “Amazon River Cycles Carbon Faster than Thought” NSF Press Release 05-126 (July 27, 2005)

*Additional coverage:* KUHF, The Economist, Science Daily, SciDev.net

* + - 1. Berger, E. “ENVIRONMENT, SCIENCE & SPACE / GLOBAL WARMING / Experts field climate questions” Houston Chronicle (June 12, 2007)
			2. Kever, J. “At Rice, women are in demand: More female scientists sought there, across U.S. to fill university faculty positions” Houston Chronicle (July 28, 2008)
			3. Clemmons, M. “Visiting professors program seeks funding to continue” Rice Thresher (November 14, 2008).
			4. Boyd, J. “Rice team gets top prize in 'Recycle Ike' contest” Rice News & Media relations(December 11, 2008). *Additional coverage:* Houston Chronicle, Houston Business Journal, Waste Age Magazine
			5. Williams, M. “Buried shells in Houston are no treasure” Rice News & Media relations(April 2, 2010).*Additional coverage:* Futurity.
			6. Boyd, J. “A river flipped: humans trump nature on Texas river*”* Rice News & Media relations(August 13, 2010). *Additional coverage:* US News, Science Daily, Futurity, SolveClimate
			7. Williams, M. "Overfertilizing corn undermines ethanol" Rice News & Media relations (February 28, 2011). *Additional coverage:* C&E News, Futurity, US News and World Report.
			8. Boyd, J. “Cooking better biochar: Study improves recipe for soil additive,” Rice News & Media relations (March 22, 2012).

13. Nuwer, Rachel. “Years after slash-and-burn, Brazil haunted by black carbon,” Science Now. August 12, 2012. (<http://news.sciencemag.org/sciencenow/2012/08/years-after-slash-and-burn-brazi.html?ref=hp>.)

14. Boyd, J. “Biochar quiets microbes, including some plant pathogens” Rice News & Media relations (September 30, 2013).

16. Futurity, “Biochar in soil interrupts microbe chit-chat,” September 30, 2013.

17. Powell, K. “Kid-Friendly Digs,” *Nature*, 513, 575-577, 2014.

18. Boyd, J. “Biochar alters water flow to improve sand and clay,” http://news.rice.edu/2014/09/24/study-biochar-alters-water-flow-to-improve-sand-and-clay/ ,Rice News, 2014.

19. Futurity, “Biochar changes how water flows through soil”,http://www.futurity.org/biochar-soil-mystery-771462/, 2014.

20. Cernansky, R. “State of the Art Soil,” *Nature*, 571, 258-260, 2015.

21. Lewis, J. “The Coal that’s Good for the Planet,” PBS NovaNext, June 2015 (<http://www.pbs.org/wgbh/nova/next/earth/biochar/>).

22. Williams, M. “Biochar could clear the air in more ways than one,” http://news.rice.edu/2017/07/26/biochar-could-clear-the-air-in-more-ways-than-one-2/, Rice News, 2017.

23. Phys.org: “Biochar could clear the air in more ways than one,” <https://phys.org/news/2017-07-biochar-air-ways.html>, 2017.

24. Science Daily: “Biochar could clear the air in more ways than one,” <https://www.sciencedaily.com/releases/2017/07/170727102943.htm> , 2017.

25. Environmental News Network: “Biochar could clear the air in more ways than one,” <http://www.enn.com/agriculture/article/51980>, 2017.

26. Futurity: “Using biochar on farms may cut health costs,” <http://www.futurity.org/biochar-agriculture-pollution-1497332/>, 2017.

# 27. Bryce, E. “Farming with biochar reduces toxic gas that causes smog and acid rain,” *Anthropocene*, August 2017.

# 28. Guest on KUHF Houston Matters segment: “Scientists Issue ‘Second Notice’ On Looming Environmental Problems — What Role Can Houston Play In Solving Them?” November 30, 2017. <https://www.houstonpublicmedia.org/articles/news/2017/11/30/253508/scientists-issue-second-notice-on-looming-environmental-concerns-what-role-does-houston-play/>

29. Williams, Ruth. “Gene Expression Analysis Gets Gassy,” *The Scientist*, June 2018. <https://www.the-scientist.com/?articles.view/articleNo/54639/title/Gene-Expression-Analysis-Gets-Gassy/>

30. Tech Briefs: “Gas Biosensors “See” Through Soil to Analyze Microbial Interactions,” <https://www.techbriefs.com/component/content/article/1317-tb/techbriefs/environment/29713-gas-biosensors-see-through-soil-to-analyze-microbial-interactions>, July 1, 2018.

31. Bryce, E. “Loading soils with biochar allows farmers to cut way back on irrigation,” *Anthropocene*, October 23, 2020.

**POST-DOCTORAL SCHOLARS ADVISED**

1. Bill Hockaday (2006-2010)

*Current position*: Associate Professor, Baylor University

2. Rebecca Barnes (2010-2011)

*Current position*: AAAS Science and Technology Policy Fellow.

3. Morgan Gallagher (2011-2014) jointly advised with R. Jackson, Duke.

*Current position*: Professional development coordinator, Texas A&M University.

4. Catie Brewer (2012-2013) jointly advised with K. Zygourakis (Chemical Engineering, Rice).

*Current position*: Associate Professor, New Mexico State University

5. Valerie Huguet (2013-2014).

 *Current position*: President, Et Voilà Theatre

6. Ghasideh Pourhashem (2014-2017) jointly advised with Ken Medlock (Economics).

*Current position*: Senior Sustainability Lead, Genomatica

7. Jeanine Ash, (2018-2020). C-DEBI postdoctoral fellow.

*Current position*: Senior Manager, Capture6 (direct CO2 air capture company).

8. David Shis (2019), jointly advised with Jonathan Silberg

*Current position*: Scientist II, TeraPore Technologies.

9. Ana Giraldo-Silva (2020-present), Rice University Academy Postdoctoral Fellow

10. Xiao Chen, (2020-present).

11. Bezaye Tessema, (2022-present), jointly advised with Ken Medlock at the Baker Institute Center for Energy Studies.

12. Carolyn Cornell, (2022-present), jointly advised with Pedro Alvarez in Civil and Environmental Engineering.

13. Alexandria (Allie) Igwe, (starting August 2023), jointly advised with Joff Silberg and James Chappell (Biosciences)

**GRADUATE THESES ADVISED**

1. Morgan Gallagher (2004-2010)

*PhD Thesis*: "The Coupling of Carbon and Nitrogen Cycles in Agriculture: Crop Ecosystem Oxidative Ratio and the Effects of Fertilization on Biofuel Feedstock Quality," *defended November 2010*.

*Current position*: Professional development coordinator, Texas A&M University.

2. Fanwei Zeng (2005-2010)

*PhD Thesis*: "The Effects of Land Use and Human Activities on Carbon Cycling in Texas Rivers", *defended November 2010*

*Current position*: Senior operations research analyst, Nobilis.

3. Hao Sun (2006-2011)

*Coadvised w. Kyriacos Zygourakis in Chemical and Biomolecular Engineering)*

*Current position*: Petroleum engineer, Chevron.

4. Zuolin Liu (2011-2016)

*Coadvised w. Brandon Dugan*

*Current position*: Software developer, IBM.

5. Lacey Pyle (2012-2017)

*Current position*: Chief soil scientist, Arva Intelligence.

6. Giovambattista Sorrenti, (2013-2015), U. Bologna

 *Coadvised w. Moreno Toselli*

*Current position*: Export manager, Sicma srl.

7. Hsiao-Ying Cheng (2013-2018)

 *Coadvised w. Joff Silberg in Biochemistry & Cell Biology/Bioengineering*

*Current position*: Assay development scientist, Applied Materials

8. Loredana Suciu (2013-2020)

 *Coadvised w. Rob Griffin in Civil and Environmental Engineering*

*Current position*: Air Quality Scientist, AECOM (consulting firm).

9. Ilenne del Valle Kestra (2015-2021)

 *Coadvised w. Joff Silberg in Biochemistry & Cell Biology/Bioengineering*

 *Current position:* postdoctoral scholar, ORNL

10. Emily Fulk (2017- present)

 *Coadvised w. Joff Silberg in Biochemistry & Cell Biology/Bioengineering*

11. Li Chieh Lu (2019-present)

 *Coadvised w. Joff Silberg in Biochemistry & Cell Biology/Bioengineering*

12. Swetha Sridhar (2020-present)

 *Coadvised w. Caroline Ajo-Franklin in Biochemistry & Cell Biology/Bioengineering*

**STUDENT AWARDS**

*Undergraduate students*

1. *Nita Clark*: Morris K. Udall Fellowship, 2007.
2. *Jeremy Caves*: Morris K. Udall Fellowship, 2008; Outstanding Undergraduate Student in Earth Science, 2008; Houston Geological Society Outstanding Student award, 2008; Torkild Rieber Award in Geology, 2009; Wagoner Foreign Study Scholarship, 2009.
3. *Chase LeCroy*: Torkild Rieber Award in Geology, 2011.
4. *Victoria Chuang*: DAAD RISE Scholarship, summer 2011; Eugen Merten Memorial Prize in Geology & Geophysics, 2011; Torkild Rieber Award in Geology, 2012; Wagoner Foreign Study Scholarship, 2012.
5. *Frasier Liljestrand:* Torkild Rieber Award in Geology, 2011; HGS Award, 2013.
6. *Laura Rodriguez:* Chevron Minority Scholarship, 2011.
7. *Jared Nierenberg:* Eugene Merten Memorial Prize in Geology and Geophysics, 2018; DAAD RISE Scholarship, summer 2019; HGS Award, 2019.

*Graduate students*

1. *Morgan Gallagher*: AGU Outstanding Student Paper Award –Biogeosciences 2006; Edgar O’Rear Travel Grant, 2009; Douglas and Martha Lou Broussard Fellowship, 2009; Chevron Minority Scholarship, 2009; Department Service Award/Chairman’s Service Award, 2009.
2. *Fanwei Zeng*: Watt Fellowship, 2005; Mills Bennett Award 2008-9; BP America 2008 Summer Funding Award; Chevron Minority Fellowship, 2008.
3. *Kate Ziegelgruber*: Chevron Scholarship, 2011.
4. *Lacey Pyle*: Sam and Helen Worden fellowship, 2012-2013; Alliances for Graduate Education and the Professoriate Program Fellowship, 2012-2013; Houston Geological Society Calvert Scholarship; SIPES Foundation Earth Science Scholarship; Department service award, 2014; Graduate Education for Minorities Program Fellowship, 2015-2016; Carl Storm Fellowship (Gordon Conference travel award), 2016; Mills Bennett Hydrology Fellowship, 2016; Goldschmidt Conference Travel Grant, 2016; Douglas and Martha Lou Broussard Fellowship, 2017.
5. *Shelly Cheng*: Best student presentation, Synthetic Biology Gordon Research Conference 2017.
6. *Emily Fulk*: Rice Institute of Biosciences and Bioengineering student travel award, 2018.
7. *Ilenne del Valle*:Parkinson Travel Grant, Soil Ecology Society, June 2019.
8. *Ilenne del Valle*: Runner up best student presentation, Soil Ecology Society, June 2019.
9. *Emily Fulk*: Best student presentation, Soil Biology and Biochemistry Division, Soil Science Society of America, November 2019.
10. *Ilenne Del Valle*: Runner up best student presentation, Soil Biology and Biochemistry Division, Soil Science Society of America, November 2019.

**THESIS COMMITTEE PARTICIPATION**

1. Karen Hammes, U. Zurich: Ph.D. reader, 2007.
2. Lori Ziolkowski, U.C. Irvine: Ph.D. committee member, 2009.
3. Jianwen Zou, Rice U. Ecology and Evolutionary Biology PhD. committee member, 2006.
4. Somereet Nijjer, Rice U. Ecology and Evolutionary Biology PhD. committee member, 2006.
5. Brandi Boyd, Rice U. Earth Science, M.S. committee member, 2007.
6. Shagun Bhat, Rice U. Civil and Environ. Engineering, Ph.D. committee member, 2007.
7. Brad Michalchuk, Rice U. Earth Science, M.S. committee member, 2008.
8. Mark G. Little, Rice U. Earth Science, Ph.D. committee member, 2008.
9. Walter O'Hayer, Rice U. Earth Science, M.S. committee member, 2008.
10. Kristi Millikan, Rice U. Earth Science, Ph.D. committee member, 2009.
11. Davin Wallace, Rice U. Earth Science, Ph.D. committee member, 2010.
12. Yuling Jia, Rice U. Civil and Envrion. Engineering, Ph.D. commitee member, 2010.
13. Rebecca Minzoni, Rice U. Earth Science Ph.D. committee member, 2010-15.
14. Dong Li, Rice U. Civil and Environ. Engineering, Ph.D. committee member, 2011.
15. Kabindra Shakya, Rice U. Civil and Environ. Engineering, Ph.D. committee member, 2011.
16. Kerri Crawford, Rice U. Ecology and Evolutionary Biology, Ph.D. commitee member, 2011.
17. Wei Tang, Rice U. Civil & Environmental Engineering, Ph.D. commitee member, 2011.
18. Rosa Dominguez-Faus, Rice U. Civil & Environmental. Engineering, Ph.D. commitee member, 2011
19. Lizette Leon-Rodriguez, Rice U. Earth Science Ph.D. committee member, 2011.
20. Lukas Dereske, Rice U. Ecology and Evolutionary Biology PhD committee member, 2011.
21. Andrew Davitt, Rice U. Ecology and Evolutionary Biology PhD committee member, 2009.
22. Onja Razafindratsima, Rice U. Ecology & Evolutionary Biology, Ph.D. committee member, 2012-15.
23. Elizabeth K. Williams, Tulane, PhD committee member, 2012-14.
24. Li Chen, Rice U Civil and Environmental Engineering, committee member, 2013.
25. Inna Kurganskaya, Rice U. Earth Science Ph.D. committee member, 2013.
26. Benjamin Lash, Rice U. Civil and Environmental Engineering M.S. committee member, 2013.
27. Benjamin Slotnick, Rice U. Earth Science Ph.D. committee member, 2013-2015.
28. Matthew Norwood, TAMU Oceanography Ph.D. committee member, 2013-2015.
29. Danielle Goodspeed, Rice U. Biochemistry and Cell Biology Ph.D. committee member, 2014.
30. Agar Woda, Rice U. Earth Science M.S. committee member, 2014.
31. Basak Karakuk Cevik, Rice U. Civil and Environ. Engineering Ph.D. committee member, 2015-2016
32. Taminulosala Longjohn, Rice U. Earth Science M.S. committee member, 2016-2017
33. Heath Hopson, Rice U. Earth Science M.S. committee member, 2016-2018
34. Emily Schultz, Rice U. BioSciences Ph.D. committee member, 2015-2019.
35. Quazi Rasool, Rice U. Civil and Environmental Engineering Ph.D. committee member, 2015-2018.
36. Therese Lamperty, Rice U. BioSciences Ph.D. committee member, 2016-2020.
37. Benjamin Schulze, Rice U. Civil & Environmental Engineering M.S. committee member, 2017-2018
38. Tierra Moore, U. Penn Earth & Environmental Sciences Ph.D. committee member, 2017-2018.
39. Boda Li, Rice U. Earth, Environmental & Planetary Sciences Ph.D. committee member, 2017-present
40. Yanwan Dai, Rice U BioSciences Ph.D. committee member, 2019-present.
41. Katie Ulrich, Rice U Anthropology Ph.D. committee member, 2019-present.
42. David Valerio, Rice U Earth, Environ. Planetary Sciences Ph.D. committee member, 2019-2021.
43. Caleigh Roleck, Rice U SSPB Ph.D. committee member, 2020-present.
44. Will Larsen, Rice U Earth, Environmental & Planetary Sciences committee member, 2021-present.

**UNDERGRADUATE STUDENTS ADVISED**

1. Rachel Deco, Geology and Planetary Science major, CalTech (2002-2004)
2. Nita Clark, Coastal Studies Major, Louisiana State University (summer 2005)
3. LaQuanti Calligan, Chemistry Major, Texas Southern University (2006-2008)
4. Sarita Minor, Biochemistry major, Univ. Houston (summer 2007)
5. Krystle Hodge, Chemistry major, Univ. Houston (summer 2007)
6. Jeremy Caves, Earth Sciences major (2007-2009)
7. Lacey Pyle, Earth Science major (2007-2010)
8. Joshua Ozer, Century Scholar, Rice University (2007)
9. Lila Kerr, Century Scholar, Rice University (2008)
10. Timothy Kinney, Physics major, Rice University (2009-2010)
11. Victoria Solorzano, Chemical & Biomolecular Eng. major, Rice Univ. (summer 2009)
12. Chase LeCroy, Earth Science major, Rice University (2009-2011)
13. Felix Alberto Eyzaguirre, Chemical & Biomolecular Eng. Major, Rice Univ.(2010-2011)
14. Victoria Chuang, Earth Science major, Rice Univ., (2009-2012)
15. Nathaniel R. Adams Jr., Earth Science and Civil & Environ. Major, Rice Univ. (2010-2012)
16. John Nicholas Irza, Civil and Environmental Engineering major, Rice Univ. (summer 2011)
17. Frasier Liljestrand, Earth Science Major, Rice Univ. (2011-2013)
18. Rachael Startin, Chemical & Biomolecular Engineering major, Rice Univ. (summer 2011)
19. Agar Woda, Chemical & Biomolecular Engineering major, Rice Univ. (2011-2013)
20. Laura Rodriguez, Earth Science major, Rice Univ., (2011-2013)
21. Tierra Moore, Earth Science major, Rice Univ., (2011-2015)
22. Amy Hilton, Earth Science major, Rice Univ., (2012-2014)
23. Leila Wahab, Earth Science major, Rice Univ., (2015-2018)

Thesis DOI: https://doi.org/10.25611/t7d4-zj62

1. Larisa LaMere, Earth Science major, Rice Univ., (2014-2016)
2. Amy Kuritsky, Environmental Science and Anthropology major, Rice Univ. (2017-2019)
3. Sam Zapp, Earth, Environmental and Planetary Sciences major, Rice Univ., (2017-2018)
4. Jennifer Kroeger, Earth, Environmental and Planetary Sciences major, Rice Univ., (2017-2019)

 Thesis DOI: https://doi.org/10.25611/t7d4-zj62

1. Kendra Baldwin, Earth, Environmental and Planetary Sciences major, Rice Univ., (2017-2019)
2. Victoria Miller, Anthropology major, Rice Univ, (2018-2020)
3. Naod Araya, Earth, Environmental and Planetary Sciences major, Rice Univ. (2018-2019)
4. Abril Dominguez, undeclared major, Rice Univ., (2018-2019)
5. Jared Nirenberg, Environmental and Planetary Sciences major, Rice Univ. (2018-2020).

Thesis DOI: <https://doi.org/10.25611/5098-yx37>

1. Martina Faciane, Earth Science major, Rice Univ., (2018-2020).
2. Solana Buchanan, Earth, Environmental and Planetary Sciences major, Rice Univ. (2018-2019).
3. Ella Bartel Matsuda, Environmental Science and Eco/Evo Biology major, Rice Univ. (2018-2019).
4. Jackie Richards, Earth, Environmental and Planetary Sciences major, Rice Univ. (2018-2020).
5. Annelise Goldman, Biosciences major, Rice U., (2019-present).
6. Cassia Lewandowski, Civil and Environmental Engineering major, Rice U. (2019-2020).
7. Sara Swackhammer, Chemistry major, Rice U. (2019-2020).
8. Samantha Breaux, Environmental Science major, Rice U., (2019-2021).
9. Lingkun Guo, Environmental Science major, Rice U., (2020-present).
10. Tyler Sakakeeny, Environmental Science major, Rice U., (2020-2020.
11. Ling DeBellis, Biosciences major, Rice U., (2020-2021).
12. Danielle Keranen, Civil and Environmental Engineering Major, Rice U., (2021-present)
13. Janae Washington, Environmental Science, IUPUI, (summer REU 2021)
14. Diego De La Fuente, Economics Major, Rice U., (2021)
15. Anja Hartge, Environmental Science major, Rice U., (2021-present)
16. Trisha Gupta, Environmental Science major, Rice U., (2021)
17. Bikram Singh, Environmental Science major, Rice U., (2021-2022)
18. Kathryn Phung, Chemistry major, Rice U., (2022-present)
19. Daniela Najmias, undeclared major, Rice U., (2022-present).

**K-12 TEACHERS MENTORED**

1. Michelle R. Dean, Bellaire High School, Houston ISD, Summer 2009
2. Irene Fong, Pin Oak Middle School, Houston ISD, Summer 2013
3. Laura Driver, Cinco Ranch High School, Katy ISD, Summer 2013, 2014
4. Yokira Shorter, Liestman Elementary School, Alief ISD, Summer 2014
5. Isias Cerdas, Sam Houston Elementary School, Galena Park ISD, Summer 2015
6. Natalie Johnson, Beneke Elementary School, Spring ISD, Summer 2016.
7. Chetan Sawheny, Oates Elementary School, Houston ISD, Summer 2017.
8. Melanie Smith, Willow Creek Elementary School, Tomball ISD, Summer 2018.

**TEACHING EXPERIENCE**

|  |  |
| --- | --- |
| ESCI/BIOS/ENST 340: Global Biogeochemical Cycles | This junior/senior level course covers global-scale nutrient cycling, focusing on major nutrients (C, N, P). I also introduce enough oceanic, atmospheric, and soil chemistry and physics to understand the mechanisms controlling major light element cycling in the Earth. *3 credits; taught every fall from 2005-2012 and then 2016-2019.* |
| CHEM/ESCI/ENST 425: Organic Geochemistry | This senior undergrad/intro grad course uses the history of the Earth and the Earth’s future climate as frameworks to study the organic chemistry of the Earth. We explore topics such as what can be learned about the very early history of life through molecular fossils preserved in ancient rocks, and the impact of fossil fuel CO2 on the chemistries of forests and grasslands. This is a writing-intensive course involving the creation of a large portfolio of professional writing. *3 credits; taught every other year from 2006-2017.* |
| ESCI 580: Pitching Your Science | This public speaking class prepares senior graduate students to communicate their research effectively to multiple audiences: professional society meetings, potential employers, workplace supervisors, and the media. *2 credits: taught 2016-2017.* |
| ESCI/ENST 102: History of the Earth and Life | This is an introductory Earth history course filling a natural science distribution requirement. This class follows the themes of plate tectonics and the evolution of life, looking at how we use both theoretical frameworks to understand past and present Earth processes. *3 credits; co-taught every spring with Brandon Dugan from 2005-2012.* |
| ESCI 321: Earth Systems and Cycles | This is a required upper-division Earth Science major course covering biogeochemistry and sedimentary geology. *3 credits; co-taught 2010 with John Anderson.* |
| ESCI 555: Carbon and Climate | This course discusses feedbacks between the carbon cycle and Earth System climate. *3 credits taught in 2005.* |
| ENST 113: Global Climate Change | This freshman seminar uses two popular science texts, *Collapse*, by Jared Diamond, and *Plows, Plagues, and Petroleum*, by William F. Ruddiman, to introduce basic concepts of climate. *1 credit, co-taught with Brandon Dugan fall 2006.* |
| ENST 113: Water Crisis | This freshman seminar uses three popular science texts, *Fresh Water*, by E.C. Pielou, *Thirsty Planet*, by C.E. Hunt, and *Water*, by Marq de Villiers, to introduce the hydrologic cycle.*1 credit, co-taught with Brandon Dugan spring 2005.* |
| ESCI 530: CO2 Exchange Between the Atmosphere and Water Bodies | This seminar uses *Aquatic Chemistry* by Stumm and Morgan to begin discussion about the role of water in the carbon cycle. *1 credit, taught spring 2007.* |
| ESCI 530: Texas Prairies | This seminar covers C, N, and nutrient cycling in prairies, focusing especially on regional prairies. The course includes a field trip to the Katy Prairie Conservancy. *1 credit, taught spring 2006.* |
| ESCI 514: Advanced Topics in Biogeochemistry | This course is an introduction to biogeochemistry for graduate students with a strong background in the physical and biological sciences.*3 credits; taught fall 2013* |
| FWIS 187: History and Science of Houston’s Bayous | This freshman writing intensive seminar is a field-focused class on the complexities surrounding effective management of watersheds in cities.*3 credits; taught three times from 2014-2015.* |
| ESCI/EBIO 495: Environmental Science Major Capstone | This senior level undergraduate capstone course is composed of 4 modules on topics in environmental science, with the topics varying according to student interest. In each module students research the scientific and social dimensions of an environmental topic, interview an expert related to the topic, and write a synthetic review arguing their opinion on the topic, anchored in the literature.*3 credits, taught every spring from 2018-present.* |
| ESCI 103: Field Trips for the Earth and the Environment | Freshman-only field trips course designed to introduce students to the breadth of Earth and Environmental field scholarship going on at Rice University. *1 credit, Spring 2020.* |
| EEPS 110: The Earth System, Environment, and Society | 100-level introductory Earth Science class taught from an environmental lens. *3 credits, taught every fall 2020-present.* |
| EEPS 439/639 Geomicrobiology | Upper-level/grad course examining the relationship between life and the Earth system at a microbial level, exploring topics like microbial control over the cycling of light and heavy elements in the Earth system. *Taught every spring starting 2022.* |

**PROFESSIONAL SOCIETIES**

American Geophysical Union, European Geosciences Union, Geological Society of America, American Chemical Society, Soil Ecology Society, Geochemical Society, Ecological Society of America, International Society for Microbial Ecology, American Society for Microbiology, American Association of University Women.

**UNIVERSITY SERVICE**

*Sustainability Institute Development Steering Committee, Chair:* 2022-present.

*University-wide Promotion & Tenure committee:* 2020-present.

*University-wide Teaching Professor Promotion & Tenure committee:* 2021-2022.

*Environmental Institute Task Force:* Chair, 2019-2021; member, 2021-2022.

*School of Natural Sciences Earth, Environment, Ecosystems & Energy committee:* 2022-present.

*Environmental Science Major:*

*Director,* 2017-present. Manage all aspects of this multidepartment, interdisciplinary major.

*Major construction:* 2015-2016: orking with team of faculty from 2 schools and multiple departments to create a stand-alone Environmental Science major at Rice. Managed process through to Board of Trustees Approval in Spring 2016.

*Department committees*: Department ombuds (2006-2019), Diversity, Equity, & Inclusion Committee (2020-present); Field Trip Safety Committee (2018-present); Chair: seminar committee (2 years); member: senior search committee (1 year), junior search committee (9 years), graduate committee (3 years), Industry-Rice Earth Science Symposium (IRESS) committee (2 years), Wiess/Pan fellowship committee (2017-2019), assistant professor mentoring committee (2019-present). EEPS department External Review Committee, 2022. Sponsor, Rice Undergrad Geosciences Society, 2015-2022.

*Faculty Hiring Committees (14):* Regular service on search committees for Earth Science (9), Civil and Environmental Engineering (3), Ecology and Evolutionary Biology (1), Math (1).

*School of Natural Sciences committees (3)*: member: Rice Energy Program (2018), ADVANCE institutional transformation development committee (2005). Environment & Energy committee (2022-present).

*University committees (9)*: Dean of Architecture search committee (2021); steering committee, BRIDGE (Building Research on Inequality and Diversity to Grow Equity), 2020-present; steering committee, Center for Energy and Environmental Research in the Human Sciences (CEHNS, now CES, 2013-present); Shared Equipment Authority (SEA, 2007-2016) Advisory Committee; Energy and Environmental Systems Institute (EESI) Advisory Committee (2006-2009); Engineering Dean’s review committee (2016); Committee on Undergraduate Curriculum (2015-2017); Rice University Carbon Advisory Panel (2016-2019); Field Research Safety Committee (2017).

*Ad hoc committee service (4):* Rice-Shell Strategic Planning Committee (through VPR office, 2019), Presidential Ad Hoc Advisory Committee on the Status of Faculty Women (2005); Childcare Committee (2005), ADVANCE recruitment committee (2006-7).

*Faculty Development:* Mentor, Rice University faculty development program: 2016-17; 2018-19.

*Graduate Student Health Insurance Committee:* UCI Irvine, 1995-1997. Negotiated the university-wide graduate student health insurance policy.

##### **EXTERNAL SERVICE**

*Senior Advisor:* BCarbon nature-based carbon credit certifier, 2018-present.

*Advisory Board:* Coastal Prairie Conservancy (formerly Katy Prairie Conservancy), 2021-present.

*Roadmapping Climate and Sustainability:* Engineering Biology Research Consortium (EBRC), 2022.

*Editorial Review Board:*  Biogeochemistry, 2011-present.

*Ad hoc journal reviewing*: Science, Nature, Nature Communications, Proceedings of the National Academy of Sciences, Organic Geochemistry, Geophysical Research Letters, Biogeochemistry, Geochimica et Cosmochimica Acta, Radiocarbon, Global Biogeochemical Cycles, Environmental Science & Technology, Soil Biology and Biochemistry, Paleoceanography, Global and Planetary Change, JGR-Atmospheres, JGR-Biogeosciences.

*Ad hoc proposal reviewing*: National Science Foundation (EAR, DEB, OCE, ETBC, ATM, HS, OISE); Research Corporation for Science Advancement, Petroleum Research Foundation; Civilian Research and Defense Foundation; LLNL minigrant fund; National Institute for Climatic Change Research (DOE NICCR); Netherlands Innovational Research Incentive Scheme (NWO VIDI).

*Review panels*: NSF EAR and BIO panel service (2004, 2008, 2009, 2013, 2017, 2022), DOE Biological and Environmental Research Grand Challenge Workshop: strategic planning for DOE research for the next 20 years (2010), DOE Terrestrial Ecosystem Science Review Panel (2012), Gulf of Mexico Research Initiative Review Panel (2012).

*Board Memberships:*

Katy Prairie Conservancy, Advisory Board member: 2021-present.

 Baker Institute Soil Carbon Working Group (and predecessor, Texas Coastal Exchange)

 Greater board member, 2017-present

 Diversity, Equity, and Justice subcommittee, 2021-present.

PROGRESS (PROmoting Geoscience Research Education & SuccesS), advisory board member, 2016-present.

 EcoFAB Steering Committee: Model ecosystems to advance microbiome science. <http://eco-fab.org/> 2017-present.

 International Biochar Initiative Science Advisory Board: member, 2017-present.

*Conference session chair/convener:* AGU 2020 EGU 2019 Fire, carbon, climate and humans across space and time

*Steering Committees*: Co-Chair, Int’l Steering Committee for Black Carbon Reference Materials (1999-2007).

*Symposia*: Host and organizer of UC-wide symposium: *Mechanisms of Carbon Sequestration in Soils* (2001); Host and organizer of Rice-Texas A&M – Galveston joint symposium: *Charcoal and Nanocarbon: Shared Geochemistries of Rings in the Environment* (2006).

*BAHFest:* Judge, 2020 Festival of Bad Ad Hoc Hypotheses (bahfest.com); COVID-postponed.

*Baker Institute Soil Carbon Working Group, Metrics Subgroup:* Serve as expert soil scientist on working group to develop US national soil carbon storage standards.

**DIVERSITY, EQUITY, AND INCLUSION SERVICE**

*Inclusive Curricular Development:* 18 years’ experience building inclusive practices into all courses and research activities, focus on increasing accessibility to the geosciences for all.

*PI: Increasing Diversity in Rice’s Earth, Environmental and Planetary Sciences classrooms immediately through expanded mentorship.* Brown Teaching Award, Rice University, 2021.

*Diversity, Inclusion, Justice committee member*, EEPS department*,* 2020-present.

*BRIDGE (Building Research on Inequality and Diversity to Grow Equity),* steering committee member, 2020-present.

*REU director*: 2019-present. Direct REU program focused on recruiting from schools without undergrad majors in geosciences, including community colleges and HBCUs.

*Power Hour, Geobiology January 2020*:ran the Geobiology Power hour focused on peer-reviewed approaches to improving mentorship.

*PROGRESS (*PROmoting Geoscience Research Education & SuccesS), advisory board member, 2016-present.

*Department Ombuds:* Earth, Environmental and Planetary Sciences, Rice U., 2006-2019. Worked with students to address workplace challenges. Position required close understanding of legal interpretations of the federal Title IX statute, as it changed under 3 different US presidents, as well as FERPA and HIPPA restrictions.

*Presidential Committee on Faculty Women:* Rice University, 2005-2007.

 *Subcommittee:* Childcare/Work-life balance.

*ADVANCE Program:* Rice University, 2005-2012.

Program design committee: 2005-2006

 Director search committee: 2006

 Workshop selection committee: 2006-2007

 Advisory committee: 2007-2010

 Junior faculty success workshop: 2008, participant

 Triad mentoring program: 2009, junior participant

*Soil Carbon Storage Mechanisms meeting:* UCSB, 2001. Fundraised entire meeting, including support for underrepresented scholar travel and support for childcare for parent attendees.

*Women in Science Research Team:* Duke University Women’s Studies Dept, 1992-1993.

*Sexual Harassment Judicial Committee:* Earlham College, 1991.

**UNDERGRADUATE STUDENT DIVERSITY AND OUTCOMES**

**Mentoring model:**

Welcoming a diverse student body into the sciences means meeting them where their interests lie, so I develop projects with students that offer great flexibility in topic, scope, and timeline to ensure that students’ first research opportunities match their interests as closely as possible. I offer multiple entry points into research, welcoming students at all points in their academic career. There is no GPA requirement to join my group: instead, students must commit to a research contract developed collaboratively each semester. Because near-peer mentoring has been shown to improve career and psycho-social outcomes for both mentors and mentees, undergraduates in my group are offered as many near-peer mentors as possible (senior undergrads, grad students, and postdocs). Mentors receive guidance on effective mentoring.

Undergraduate alumni outcomes:

 68% have continued to earn graduate degrees after bachelors (82% for Black alumni)

|  |  |
| --- | --- |
| *total undergrads mentored: 49* | *women: 71%* |
| *Black: 27%* | *Latinx: 18%* |
| *Asian-American: 12%* | *International: 1%* |

 The overall Rice University undergrad population is 46% women, 10% Black, 15% Latinx, and 26% Asian-American.

**FIELD SITES AND CRUISE HISTORY**

4-river land use transect in Venezuela Nutrients, organic matter 13C NMR, C isotopes

Temple Prairie elevated CO2 site Organic matter 13C NMR, ecosystem OR

ORNL FACE Organic matter 13C NMR, ecosystem OR

Houston urban & rural bayous Nutrients, organic matter 13C NMR, C isotopes

Kellogg Biological Station Organic matter 13C NMR, ecosystem OR

Santa Cruz, CA soil marine terraces Soil/solution sampling for C & 14C analyses 2001-4

Mattole River, CA soil marine terraces Soil sampling for C and 14C analyses, May 2000

Santa Clara River (coastal CA) 1997-98 El Niño: river organic carbon sampling

BOREAS N. Manitoba site Soil sampling, August 1994.

*R/V Melville*  1996,1999 68 days (2 cruises) in Cent. Pacific, South. Ocean

*R/V Revelle* 1996 7 days in Santa Monica, Santa Barbara Basins

*R/V New Horizon* 1995, 96, 98 29 days (3 cruises) Station M (Northeastern Pacific)

**INVITED TALKS**

presenting authors underlined; Masiello *students/postdocs* in italics

1. C.A. Masiello. Black Carbon in Ocean Sediments and a Small River, Dissertation Symposium in Chemical Oceanography (DISCO XV) NSF/ONR/NOAA, Honolulu, Hawaii, May 1999.
2. C.A. Masiello. New Directions in Black Carbon Organic Geochemistry. Friday Harbor Symposium in honor of John Hedges: New Directions in Marine Biogeochemistry, August 2003.
3. M.W.I. Schmidt and 25 others, including C.A. Masiello, Comparative Analyses of Reference Materials for Organic Geochemical Studies of Black Carbon. European Geoscience Union, Vienna, Austria, April 25, 2005.
4. C.A. Masiello, Czimczik, C. Building a Black Soil. European Geoscience Union, Vienna, Austria, April 25, 2005.
5. C. Czimczik, C.A. Masiello. Why are There No Black Soils in the Boreal Regions? European Union Symposium: Charcoal to Black Carbon: Defining Common Issues in Quantification and Interpretation in Archaeological, Palaeoenvironmental and Carbon Cycle Research. University of St. Andrews, Edinburgh, Scotland, August 2005.
6. C.A. Masiello, Measuring the Carbon Oxidation State of the Earth System. Texas A&M Galveston, May 2, 2006.
7. C.A. Masiello, Measuring the Carbon Oxidation State of the Earth System (and KBS). Kellogg Biological Station, Michigan State University, April 29, 2006.
8. C.A. Masiello, C. Czimczik, How to Build a Black Soil. Rice U/TAMU-Galveston joint BC-nanocarbon symposium, 2006.
9. C.A. Masiello, Greenhouse Gases and the Carbon Cycle. MIT Enterprise Forum of Texas, Sept. 20, 2006.

10. C.A. Masiello. Fate of Fossil Fuel CO2 and Potential for Biospheric Sequestration. Rice University/Shell Internal Symposium, Oct 6, 2006.

11. C.A. Masiello, Tracking the Earth’s Carbon Cycle. Rice Board of Trustees, May 23, 2007.

12. E. Mayorga, A.K. Aufdenkampe, C.A. Masiello, A.V. Krusche, P.D. Quay, J.E. Richey, S. Seitzinger. Rejuvenation and Aging of Carbon in Rivers: Sources, Exports, and Interactions Among Fractions in the Amazon and Other Systems, Fall American Geophysical Union Meeting, San Francisco, Dec. 12-17, 2007.

13. C.A. Masiello. Towards Soil and Sediment Inventories of Black Carbon. Fall American Geophysical Union Meeting, San Francisco, Dec. 15-19, 2008.

14. C.A. Masiello. Biogeochemistry of Charcoal in the Environment: Carbon cycle roles and carbon sequestration options. University of Texas Bureau of Economic Geology, March 26, 2009.

15. C.A. Masiello. Biogeochemistry of Charcoal in the Environment: Carbon Cycle Roles and Carbon Sequestration Options. Arizona State University School of Earth and Space Exploration, March 26, 2009.

16. C.A. Masiello, *W.C. Hockaday, M. Dean*. Using NMR to Understand the Ecological Roles of Charcoal. Soil Ecological Society Meeting, Burlington, VT, July 2009.

17. C.A. Masiello, *W.C. Hockaday, M.E. Gallagher.* Basic Solid-State NMR Techniques in the Biogeosciences. Ecological Society of America Meeting, Albuquerque, NM, August 2009.

18. C.A. Masiello. The Role of Charcoal in Carbon Sequestration and Greenhouse Gas Management. International Briquetting and Agglomeration Society. San Antonio, TX, October 2009.

19. C.A. Masiello. Effects of Human Activity on the Sources and Cycling of Carbon in U.S. Subtropical Rivers. Invited seminar, University of Houston Department of Earth and Atmospheric Sciences, October 23, 2010.

20. C.A. Masiello. Effects of Human Activity on the Sources and Cycling of Carbon in U.S. Subtropical Rivers. Invited seminar, Texas A&M University Department of Oceanography, April 19, 2010.

21. C.A. Masiello, T.J. Pérez. Two Modes of Human River Pollution: Comparing U.S. and Latin American Watershed Nutrient Contamination. Rice University Symposium: the City and the Environment in Latin America: An Interdisciplinary Perspective. Houston, TX, January 2011.

22. C.A. Masiello. Connecting Aerosol Measurements to the Global Black Carbon Cycle. Invited speaker, Aerosol Metrology for Climate Workshop, NIST, Gaithersburg, MD, March 2011.

23. C.A. Masiello. Ecosystem Oxidative Ratios in the Global Carbon Cycle. Invited seminar, Texas A&M University Ecology and Evolutionary Biology Program, April 2011.

24. C.A. Masiello. Carbon Oxidation and Reduction in the Earth System. Yale University Symposium: Frontiers in Earth Surface System Interactions. New Haven, CT, May 2011.

25. C.A. Masiello. Carbon Oxidation and Reduction in the Earth System. St. Andrews University School of Geography and Geoscience, St. Andrews, Scotland, May 2011.

26. C.A. Masiello. Grand Challenges in Earth System Science for the 21st Century, UC Irvine Earth System Science 20th Anniversary Celebration, Irvine, California, Sept. 2011.

27. C.A. Masiello. Charcoal in the Earth System. Baylor University department of Geology, Oct. 2011.

28. C.A. Masiello. Charcoal in the Earth System. Michigan State University department of Geological Sciences, Oct. 2011.

29. C.A. Masiello, M.E. Gallagher, W.C. Hockaday. Biochemical Yields in Biofuels Measured Through NMR and NIR. USDA Sustainable Bioenergy and Bioproducts Principal Investigators Meeting, Oct 2011.

30. C.A. Masiello. Charcoal in the Earth System. Virginia Commonwealth University department of Biology, Nov. 2011.

31. C.A. Masiello. Charcoal in the Earth System. Tulane University department of Earth and Environmental Sciences, January 2012.

32. C.A. Masiello. Charcoal in the Earth System. Arizona State University School of Earth and Space Exploration, Spring semester 2012.

33. C.A. Masiello, Z. Liu, K. Ziegelgruber, B. Dugan, H. Gonnermann, V. Chuang, K. Zygourakis Density and porosity as controls on charcoal storage in soils. European Geosciences Union, Vienna, Austria, April 2012.

34. C.A. Masiello, B. Dugan, K. Zygourakis, H. Gonnermann, Z. Liu, K. Ziegelgruber, V. Chuang Physical controls on organic matter stability. *Keynote*, European Geosciences Union, Vienna, Austria, April 2012.

35. M. Schneider, W.C. Hockaday, C. Masiello, M. Schmidt. A ‘molecular thermometer’ to estimate the formation temperature of wildfire charcoals. Eurosoil, Bari, Italy, July 2012.

36. T. Pérez, A. Giuliante, R.J. Rasse, J.C. Hernandez, L. Donoso, C.A. Masiello. Dissolved Inorganic Nitrogen (DIN) exports from 4 Venezuelan rivers: Urbanization and agriculture impact on nitrogen delivery to the Cariaco Basin and Coastal areas. GEOTRACES Latin American Workshop, Rio de Janiero, Brazil, November 2012.

37. C.A. Masiello, C.E. Brewer, B. Dugan, H. Gonnermann, K. Zygourakis, X. Gao, C.A. Davies, P. Panzacchi. Charcoal Chemistry: Irrelevant to Environmental Residence Time? ACS National Meeting, Indianapolis, September 2013.

38. A. Giuliante, T. Perez, J.C. Hernandez, C.A. Masiello, R.T. Barnes, K. Ziegelgruber, W. C. Hockaday. Concentration and stable isotopes of dissolved and particulate organic carbon in four Venezuelan rivers: Identification of sources. 2012, Instituto Venezolano de Investigaciones Cientificas, Los Altos, Venezuela.

39. C.A. Masiello, The Carbon Oxidative Ratio of the Earth System: An Introduction to the Tracer. University of Alberta, Edmonton, Alberta, September 2013.

40. X.Gao, C. Masiello, M. Gallagher, W. Hockaday, Z. Valdez. Effect of Nitrogen Fertilization on Switchgrass Biochemistry and Soil Carbon Sequestration. American Chemical Society, Santa Clara, CA. October 2013.

41. C.A. Masiello, M.E. Gallagher, X. Gao, W.C. Hockaday. Measuring the Biochemical Inventory of Cropped Ecosystems Using NMR. American Association of Industrial Crops, Washington, DC, October 2013.

42. C.A. Masiello, P.J.J. Alvarez, A. Ballestero, M. Bennett, B. Dugan, H. Gonnermann, E. Siemann, J. Silberg, D. Wagner, K. Zygourakis, M. Gallagher, V. Huguet, S. Cheng, Z. Liu, L. Pyle, T. Moore. Charcoal in the Earth System: Biochar Applications in Carbon and Water Management. Texas A&M University, November 2013.

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44. C.A. Masiello. Real Possibilities and Tempered Expectations for Food, CO2, and Drought Management. Houston Arboretum and Nature Center/Bartlett Trees, Houston, TX. February 2014.

45. C.A. Masiello, C.E. Brewer, B. Dugan, H. Gonnermann, K. Zygourakis, X. Gao, C.A. Davies, P. Panzacchi. Charcoal physical properties are key to understanding environmental behavior. European Geosciences Union, Vienna, Austria, April 2014.

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47. C.A. Masiello, Biochar, water, and microbes: tracking the mechanisms behind biochar’s environmental effects. U.C. Merced, April 2015.

48. C.A. Masiello, Biochar, water, and microbes: tracking the mechanisms behind biochar’s environmental effects. U.Bologna, May 2015.

49. C.A. Masiello, Biochar: real possibilities and tempered expectations for water, food, and CO2 management. Baker Institute Water and Energy Workshop: Understanding the Impacts and Trade-Offs to Facilitate Transitions. Rice University, May 2015.

50. C.A. Masiello, Synthetic biology tools to understand microbial behavior in soils: a biogeochemistry perspective. Michigan State University, 2016.

51. C.A. Masiello, Charcoal as a nonlinear driver in soil C and N cycles. Kellogg Biological Station, Hickory Corners, MI, 2016.

52. C.A. Masiello, Charcoal as a nonlinear driver in soil C and N cycles. department of Earth and Atmospheric Science, Georgia Tech, 2016.

53. C.A. Masiello, The biochar design cycle. Gordon Organic Geochemistry Conference, Galveston, TX, 2016.

54. C.A. Masiello, H.-Y. Cheng, X. Gao, J.J. Silberg. Pyrogenic organic matter can alter microbial communication. University of Zurich, 2016.

55. C.A. Masiello, Spies and bloggers: bringing synthetic biology tools into Earth System Science. U.C. Irvine department of Earth System Science, 2017.

**ADDITIONAL TALKS:** presenting authors underlined; Masiello *students/postdocs* in italics

1. C. Masiello and N.W. Harrington. A feminist examination of women’s enrollment trends in the environmental sciences. National Women’s Studies Association annual meeting, Washington, D.C., 1993.
2. C.A. Masiello, E.R.M. Druffel, and S. Griffin, Black carbon 14C in the Santa Monica basin: riverine delivery and sedimentary accumulation*.*  Ninth Annual Goldschmidt conference, Harvard University, Cambridge, MA, 1999.
3. C.A. Masiello, M. Torn, J. Southon, O.A. Chadwick, Effects of Mineralogy on the Storage Rates of Organic Carbon Classes Across a Soil Chronosequence. 17th International Radiocarbon Conference, Jerusalem, Israel, 2000.
4. S. Wakeham, J. Forrest, A. Biersmith, Y. Gelinas, C. Alexander, and C. Masiello, Aliphatic and Aromatic Hydrocarbons in Lake Washington Sediments – A 25-year retrospective. 20th International Meeting on Organic Geochemistry, Nancy, France, 10-14 Sept. 2001.
5. Schmidt M.W.I., C.A. Masiello, Ball W.P., Currie, L.A., Czimczik C.I., Gelinas Y., Glaser B., Kuhlbusch T.A.J., Prentice K.M., Skjemstad J.O., Smith D.M. Reference Materials for Organic Geochemical Studies of Black Carbon. 20th International Meeting on Organic Geochemistry, Nancy, France, Vol 2, 97-98, 10-14 Sept. 2001.
6. K.K.Treseder, C.A. Masiello, Lansing, J., Allen M.F. Isotopic and Genetic Assessments of Ectomycorrhizal Turnover Under N-fertilization. Ecology Society of America Spring Meeting, 2001.
7. J.T. Randerson,, C.A. Masiello, Still, C.J., Rahn, T., Field, C.B. Is the Oxidative Ratio of the Terrestrial Biosphere Changing? Implications for Trends in Atmospheric O2. Ecological Society of America Spring Meeting, 2004.
8. C.A. Masiello, Baldock, J.A. Randerson, J.T., O.A. Chadwick, R.J. Smernik, *R.M. Deco*, J.W. Harden, M.C. Mack. The Natural Range in Oxidative Ratio of Environmental Organic Matter. American Chemical Society Meeting, San Diego, March 17, 2005.
9. C.A. Masiello, Czimczik, C. Resolving the Refractory-Labile Black Carbon Paradox: BC dynamics in soils. Fall American Geophysical Union Meeting, San Francisco, Dec 10-15, 2006.
10. C.A. Masiello, *Calligan, L.J., Gallagher, M.E. Hockaday, W.C.* Natural Variation in the Carbon Oxidation State and Oxidative Ratio of a Deciduous Forest, Fall American Geophysical Union Meeting, San Francisco, Dec. 12-17, 2007.
11. *M.E. Gallagher*, *W. C. Hockaday,* C.A. Masiello, C.P. McSwiney, G.P. Robertson, J.A. Baldock, Plant Biochemical Shifts Under Varying Nitrogen Conditions: Implications for the Carbon Cycle. 38th Biological Systems Simulation Meeting, Temple, TX. April 8-9, 2008.
12. *F.W. Zeng* and C.A. Masiello, Impacts of Urbanization on the Amount and Sources of CO2 Evaded from Subtropical Rivers, Texas Bays and Estuaries Meeting, Port Aransas, TX, April 16-17, 2008.
13. *M.E. Gallagher*, *W.C. Hockaday*, C.A. Masiello, C.P. McSwiney, G.P. Robertson, J.A. Baldock Nitrogen Fertilization of Corn: Plant Biochemistry Effects and Carbon Cycle Implications, Spring American Geophysical Union Meeting, Fort Lauderdale, May 27-30, 2008.
14. *H. Sun, W.C. Hockaday,* C.A. Masiello, K. Zygourakis. Physical and Chemical Structure Analysis of Biochars Produced from Different Feedstocks and Under a Variety of Pyrolysis Conditions. American Institute of Chemical Engineers Annual Meeting (AIChE), Salt Lake City, Nov 7-12, 2010.
15. M.P.W. Schneider, C.A. Masiello, M.W.I. Schmidt. Can Molecular Markers for Pyrogenic Carbon Help to Reconstruct Wildfire Temperatures? European Geosciences Union Meeting 2011, Vienna, Austria, April 2011.
16. C.A. Masiello, B. Dugan, K.Zygourakis, *W.C. Hockaday, T.J. Kinney, M.R. Dean, R.T. Barnes*. Assessing Controls on the Hydrologic Behavior of Biochars. 3rd Annual Biochar conference, UK Biochar Centre, Edinburgh, UK. May 2011.
17. C.A. Masiello, *M.E. Gallagher*, W.C. Hockaday. Making and Interpreting High Precision Ecosystem Oxidative Ratio Measurements. Ecological Society of America Meeting, August 2011, San Antonio, TX.
18. *M.E. Gallagher,* C.A. Masiello, *W.C. Hockaday*, S. Snapp, C.P. McSwiney, and J.A. Baldock. Estimating Oxidative Ratio in U.S. Agricultural Ecosystems. Ecological Society of America Meeting, August 2011, San Antonio, TX.
19. W.C. Hockaday, *M.E. Gallagher*, C.A. Masiello, *L.A. Pyle*, W.H. Polley, J.A. Baldock. Biochemical inventories as a tool to assay ecosystem carbon dynamics. Ecological Society of America Meeting, August 2011, San Antonio, TX.
20. *M.E. Gallagher, W.C. Hockaday*, C.A. Masiello, J.A. Baldock, S. Snapp, C.P. McSwiney. Using 13C Nuclear Magnetic Resonance Spectroscopy to Estimate Biochemical Stocks and Biofuel Feedstock Quality. ASA-CSSA-SSSA Annual International Meeting: San Antonio, TX, October 2011.
21. *H. Sun, W.C. Hockaday,* C.A. Masiello, K. Zygourakis. Soil Amendment by Biochar: Theoretical and Experimental Studies on the Dynamic Adsorption of Ammonium Nitrate in Soil/Biochar Mixtures. AIChE Annual Meeting, Minneapolis, MN. October 16-21, 2011.
22. J.J. Silberg, C.A. Masiello, S. Liu, J.A. Rudgers, M. Bennett, K. Zygourakis. Biochar effects on microbial cell-cell communication. US Bichar Conference, Sonoma State University, Rohnert Park, CA. July 2012
23. *H. Sun,* C.A. Masiello, K. Zygourakis. Characterizing the Pore Structure of Biochars: An New Approach Based on Multiscale Pore Structure Models and Reactivity Measurements. AIChE Annual Meeting, Minneapolis, MN. October 16-21, 2011.
24. T. Pérez, C.A. Masiello, *A. Giuliante*, R. Rasse, W.C. Hockaday, J.C. Hernandez, *R.T. Barnes*, L. Donoso. River nitrogen and carbon content and export from four rivers across different land uses and intensity in Venezuela: characterizing developing world anthropogenic watersheds fingerprints. Planet Under Pressure, London, UK, 2012.
25. M.E. Gallagher, W.C. Hockaday, C.A. Masiello, Z.P. Valdez, and X. Gao. The Effects of N Fertilization and Harvest Frequency on Switchgrass Feedstock Quality for Cellulosic Ethanol, USDA Biofuels PI annual Meeting, ASA-CSSA-SSSA Annual International Meeting: Cincinnati, OH, October 2012.
26. H. Sun, C.A. Masiello, K. Zygourakis. Transient multicomponent models for simulating water and nutrient flow through soils amended with biochar. Pittsburgh, PA, November 2012
27. X. Gao, C.A. Masiello, M.E. Gallagher, W.C. Hockaday, Z. Valdez. Effect of Nitrogen Fertilizer on Biofuel Crop Biochemistry and Soil Carbon Sequestration. ACS National Meeting, New Orleans, April 2013.
28. J.J. Silberg, C.A. Masiello, Y. Chen, X. Gao, S. Liu, H.-Y. Cheng, M.R. Bennett, J.A. Rudgers, D.S. Wagner, K. Zygourakis. Pyrolysis Temperature Determines Biochar Effects on Microbial Communication on the Timescale of Growth and Signaling. North American Biochar Symposium, Amherst, MA, October 2013.
29. C.E. Brewer, A. Woda, L.A. Driver, J. Burger, H. Gonnermann, C.A. Masiello. Biochar from Wastewater Biosolids – A Comparison to Biochars from Lignocellulose. AIChE Annual Meeting, November 2013.
30. C. Santin, S. Doerr, A. Merino, L. Driver, H. Gonnermann, C. Masiello. What is the difference between pyrogenic carbon from natural and artificial sources? A case study form the boreal forest. ESF-Exploratory Workshop. Seville, Spain. November 2013.
31. G. Clay, C.A. Masiello, F. Worrall. Controls on the formation, transport and fate of charcoal following moorland wildfires. EGU General Assembly. Vienna, Austria. April 2014.
32. C.A. Masiello, *C.E. Brewer*, B. Dugan, H. Gonnermann, K. Zygourakis, X. Gao, C.A. Davies, P. Panzacchi. Charcoal physical properties are key to understanding environmental behavior. European Geosciences Union, Vienna, Austria, April 2014.
33. W.C. Hockaday, *M. Gallagher*, C. Masiello, W. Polley, C. Iversen, R. Norby. Molecular (proxy) estimates of changes in soil organic matter stability with changes in atmospheric CO2 concentrations. Goldschmidt, Sacramento, CA, June 2014.
34. P.J. Hatton, K. Dastmalchi, S. Chatterjee, T. Filley, A. Plante, X. Gao, C.A. Masiello, K. Nadelhoffer, R. Stark, J.A. Bird. Linking charring temperature and wood source to PyOM structure. The Sixth International Workshopon Soil and Sedimentary Organic Matter Stabilization and Destabilization (SOM6), Kiawah Island, SC, September, 2014.
35. *L.A. Pyle*, W.C. Hockaday, T. Boutton, K. Zygourakis, *T.J. Kinney*, C.A. Masiello. Chemical and isotopic Thresholds in charring: implications for the interpretation of charcoal mass and isotopic data. Fall AGU, San Francisco, CA. December 2014.
36. J.J. Silberg, H.-Y. Cheng, C.A. Masiello. Gas biosensors for biogeochemistry: beyond GFP in E. coli. European Geosciences Union, April 2016, Vienna, Austria.
37. C.A. Masiello, H.-Y. Cheng, X. Gao, J.J. Silberg. Pyrogenic organic matter can alter microbial communication. European Geosciences Union, April 2016, Vienna, Austria.
38. L.A. Pyle, C.A. Masiello, K.L. Clark. Increased fire frequency optimization of black carbon mixing and storage. European Geosciences Union, April 2016, Vienna, Austria.
39. Cheng, H.Y., Masiello, C.A, Bennett, G.N., and Silberg, J.J. (2016) Using a methyl halide transferase to report on microbial conjugation in a hard-to-image matrix (72nd Annual ACS Southwest Regional Meeting, Galveston, TX)

**CONFERENCE PROCEEDINGS (POSTERS)**

presenting authors underlined; Masiello *students/postdocs* in italics

1. L.A. Currie, B.A. Benner, Jr., R. Cary, E.R.M. Druffel, T.I. Eglinton, P.C. Hartmann, J.D. Kessler, D.B. Klinedinst, G.A. Klouda, J.V. Marolf, C.A. Masiello, A. Pearson, J.G. Quinn, C.M. Reddy, J.F. Slater, and S.A. Wise, Interlaboratory Data on Elemental and Isotopic Carbon in the Carbonaceous Particle Reference Material, NIST SRM 1649a. Gordon Research Conference on Organic Geochemistry, Plymouth, New Hampshire, 2000.

2. C.A. Masiello., M.W.I. Schmidt, W.P. Ball, L.A. Currie, J.O. Skjemstad, D.M. Smith Development of standards for organic geochemical studies of black carbon. Gordon Research Conference on Organic Geochemistry, Plymouth, New Hampshire, 2000.

3. C.A. Masiello, M. Torn, J. Southon, O.A. Chadwick, T. Pease, and S. Wakeham, Mineralogy and Carbon Storage Across a Soil Chronosequence. Fall AGU, San Francisco, Dec. 2000.

4. K.K. Treseder, Masiello, C.A., Lansing, J., and M.F. Allen The Use of Radiocarbon to Examine Turnover Under N Fertilization in a Major Microbial Group. Spring AGU, 2001.

5. C.A. Masiello, Chadwick, O.A., Torn, M. Soil Organic Radiocarbon and Mineralogy at Two Coastal California Sites. Fall AGU, December 2001.

6. A.F. Dickens, Y. Gélinas, C.A. Masiello, J.I. Hedges, Recycled Graphitic Carbon: Presence and Distribution off the Washington Coast. Fall AGU, December 2002, San Francisco.

7. C.A. Masiello, P.J. Reimer, J.W. Harden, J. Munster, S.P. Anderson, A.F. White, M.S. Schulz, Radiocarbon in an Integrated Approach to Understanding Controls on Soil Carbon Sequestration. Fall AGU, December 2002, San Francisco.

6. E. Mayorga, Aufdenkampe, A.K., Masiello, C.A., Quay, P.D., Hedges, J.I., Richey, J.E., Krusche, A.V., Llerena, C.A., Forsberg, B.R., Quintanilla, J., DIC Cycling From 14C And 13C Isotopes in Mountain and Lowland Rivers in the Amazon Basin. ASLO, Victoria, Canada, 2002.

7. A.F. Dickens, Yves Gélinas, C.A. Masiello and John I. Hedges. Recycled Graphitic Carbon: Presence and Distribution off the Washington Coast. INQUA, Nevada, July 2003.

8. C.A. Masiello, *Deco, R.M*., Randerson, J.T., Baldock, J.A., and Chadwick, O.A. Organic Carbon Oxidative State (Cox) and Oxidative Ratio (OR): Two New Parameters for Carbon Cycle Studies. Kearney Foundation Soil Carbon Storage Workshop, Davis, CA Sept. 2003.

9. J.A. Baldock, Masiello, C.A., *Deco, R.M*., Randerson, J.T., Chadwick, O.A., Estimating Elemental Composition and Oxidation State of Natural Organic Matter Using 13C NMR. Australian Organic Geochemistry/International Humic Substances Society joint meeting, Sydney, Australia, February 2004.

10. C.A. Masiello, Baldock, J.A., Smernik, R., Chadwick, O.A., Randerson, J.T. Oxidation State of Natural Organic Materials as an Organic Geochemical Tracer: Prospects for Measurement via 13C NMR. ACS National Meeting, Anaheim, CA March 2004.

11. C.A. Masiello, P.J. Reimer, O.A. Chadwick, J.W. Harden, J.S. Southon, M.S. Torn. Climate Drivers of Soil Carbon Storage Across the West Coast of California. 2nd International Conference on Mechanisms of Organic Matter Stabilization in Soils, Asilomar, California, Oct 9-13, 2005.

12. *M.E. Gallagher*, C.A. Masiello, J.T. Randerson, O.A. Chadwick, R.M. Deco. Accuracy and Precision in Measurements of Biomass Oxidative Ratios. 2005 Fall AGU, San Francisco.

12. *M.E. Gallagher.* C.A. Masiello, *N. Clark*, J.T. Randerson, G.P. Robertson. The Effects of Decomposition on the Oxidative Ratio and Carbon Oxidation State of Organic Matter. Fall American Geophysical Union Meeting, San Francisco, Dec 10-15, 2006.

13. *W.C. Hockaday*, C.A. Masiello, J.A. Baldock, R.J. Smernik, O.A. Chadwick. Progress in the Measurement of Organic Carbon Oxidation State (Cox) via 13C NMR. 3rd European Symposium on NMR Spectroscopy in Soil, Geo, and Environmental Sciences. Freising, Germany, 2006.

14. C.A. Masiello, *W.C. Hockaday, M.E. Gallagher,* J.T. Randerson, O.A. Chadwick, J.A. Baldock, R.J. Smernik, Tracking the Carbon Oxidation State and Oxidative Ratio of the Terrestrial Bioshere. North American Carbon Meeting, Colorado Springs, CO, January 2007.

15. *F.W. Zeng.*, C.A. Masiello. Effects of Urbanization on River CO2 Emissions, Fall American Geophysical Union Meeting, San Francisco, Dec. 12-17, 2007.

16. *W.C. Hockaday*, C.A. Masiello, J.A. Baldock, C.M. Iverson, R.J. Norby. Analysis of Changes in Biochemical Composition Under Free-Air CO2 Enrichment by 13C Nuclear Magnetic Resonance: Leaf Litter, Roots, and Soils from Oak Ridge, Fall American Geophysical Union Meeting, San Francisco, Dec. 12-17, 2007.

17. *M.E. Gallagher*, C.A. Masiello, J.T. Randerson, O.A. Chadwick, G.P. Robertson. Accuracy and Precision in Measurements of Biomass Oxidative Ratio and Carbon Oxidation State, Fall American Geophysical Union Meeting, San Francisco, Dec. 12-17, 2007.

18. *M.E. Gallagher*, C.A. Masiello, *W.C. Hockaday*, C.P. McSwiney, G.P. Robertson, J.A. Baldock Changes in Plant Biochemistry Under Varying Nitrogen Fertilization: Implications for the Soil Carbon Pools. Joint Meeting: Geological Society of America, Soil Science Society of America, American Society of Agronomy, Crop Sciences Society of America, Houston, October 5-9, 2008.

19. *M.L. Keller,* C.A. Masiello, B. Dugan, J.A. Rudgers, S.C. Capareda. Phytotoxicity and Plant Productivity Analysis of Tar-Enriched Biochars. Fall American Geophysical Union Meeting, San Francisco, Dec. 15-19, 2008.

20. *F. Zeng*, C.A. Masiello, *W.C. Hockaday*. Controls on the Origin and Cycling of Riverine Dissolved Inorganic Carbon in the Brazos River, Texas. Fall American Geophysical Union Meeting, San Francisco, Dec. 15-19, 2008.

21. *M.E. Gallagher,* C.A. Masiello, *W.C. Hockaday*, C.P. McSwiney, G.P. Robertson. The Effects of Nitrogen Fertilization of a Corn Ecosystem's Oxidative Ratio and Its Carbon Cycle Implications. Fall American Geophysical Union Meeting, San Francisco, Dec. 15-19, 2008.

22. *T.J. Kinney,* *W.C. Hockaday*, C.A. Masiello, B. Dugan, *M. Dean*. Engineering Biochar Hydrophobicity to Mitigate Risk of Top-soil Erosion. Fall American Geophysical Union Meeting, San Francisco, Dec, 14-18, 2009.

23. *F.-W. Zeng*, C.A. Masiello. Effects of Land Use and Lithology on the Origin and Cycling of Dissolved Inorganic Carbon in the Brazos River, Texas. Fall American Geophysical Union Meeting, San Francisco, Dec, 14-18, 2009.

24. C.A. Masiello, Interannual Variations in Ecosystem Oxidative Ratio in Croplands, Deciduous Forest, Coniferous Forest, and Early Successional Forest Ecosystems. Fall American Geophysical Union Meeting, San Francisco, Dec, 14-18, 2009.

25. *W.C. Hockaday*, C.A. Masiello, *M.E. Gallagher, L.J. Calligan*. The Effects of Land-Use Change on Ecosystem Oxidative Ratio. Fall American Geophysical Union Meeting, San Francisco, Dec, 14-18, 2009.

26. *M.E. Gallagher*, *W.C. Hockaday,* C.A. Masiello, S. Snapp, W, Polley, C.P. McSwiney, J. Baldock. The Potential Impacts of Nutrient and CO2 variations on Ecosystem Oxidative Ratio. Fall American Geophysical Union Meeting, San Francisco, Dec, 14-18, 2009.

27. *W.C. Hockaday*, Y.-S. Hwang, Q. Li, C.A. Masiello. Mass Spectrometric Evidence of Non-Colloidal Fullerenes in Waters Containing Natural Organic Matter. American Chemical Society National Meeting, San Francisco, March 21-25, 2010.

28. *W.C. Hockaday,* S. Kim, P.G. Hatcher, C.A. Masiello. Comparing the Molecular Structures of Black Carbon in Soil and Water to Constrain Processes of Formation and Decomposition. American Chemical Society National Meeting, San Francisco, March 21-25, 2010.

29. C.A. Masiello, *W.C. Hockaday,* K. Zygourakis, B. Dugan, J.A. Rudgers, P.J.J. Alvarez, T.W. Boutton, *L.A. Pyle, T.J. Kinney, H. Sun,* D. Li. Biochar Research at Rice University: An Overivew. Geological Society of America, Denver, CO, 2010.

30. C.A. Masiello, *M.E. Gallagher, W.C. Hockaday*. Global Carbon Reservoir Oxidative Ratios. Fall American Geophysical Union Meeting, San Francisco, Dec. 13-18, 2010.

31. *M.E. Gallagher, W.C. Hockaday,* C.A. Masiello, S. Snapp, C. McSwiney, J.A. Baldock. Biochemical Disincentives to Fertilizing Cellulosic Ethanol Crops. Fall American Geophysical Union Meeting, San Francisco, Dec. 13-18, 2010.

32. *L.A. Pyle, W.C. Hockaday, C.A. Masiello,* T.W. Boutton, *C. LeCroy.* Production and Isotopic Composition of Black Nitrogen Following Experimental Charring of Plant Materials. Fall American Geophysical Union Meeting, San Francisco, Dec. 13-18, 2010.

33. *W.C. Hockaday, M.E. Gallagher,* C.A. Masiello, *L.A. Pyle,* W.H. Polley, J.A. Baldock. The Response of Soil Carbon Stocks to Changing Atmospheric Carbon Dioxide Concentrations are Soil-Type-Dependent. Fall American Geophysical Union Meeting, San Francisco, Dec. 13-18, 2010.

34. *H. Sun, W.C. Hockaday,* C.A. Masiello, K. Zygourakis. Physical and Chemical Structure Analysis of Biochars Produced from Different Feedstocks and Under a Variety of Pyrolysis Conditions. American Institute of Chemical Engineers Annual Meeting (AiChE), Salt Lake City, Nov 7-12, 2010.

35. C.A. Masiello, *M.E. Gallagher*, W.C. Hockaday. Making and Interpreting High Precision Ecosystem Oxidative Ratio Measurements. North American Carbon Program (NACP) All-Investigators Meeting, New Orleans, LA, February 2011.

36. *M.E. Gallagher*, C.A. Masiello, W.C. Hockaday, S. Snapp, C.P. McSwiney, and J.A. Baldock. Variation in the Oxidative Ratio of US Agricultural Ecosystems from 1930 to 2010. North American Carbon Program (NACP) All-Investigators Meeting, New Orleans, LA, February 2011.

37. T.J. Pérez, C.A. Masiello, A. Giuliante, R. Rasse, W.C. Hockaday, J.C. Hernandez, R.T. Barnes, L. Donoso, A. Rojas. Two Modes of Carbon and Sediment Transport: Developed vs Developing World. 2011 Catchment Science Gordon Research Conference, July 9-15, 2011.

38. M. Schulz, C. Lawrence, D. Stonestrom, J.W. Harden, T. Bullen, A. White, J. Fitzpatrick, C.A. Masiello. Marine Terrace Soils Along the West Coast of North America: an Archive of Climate Control? 2011 Catchment Science Gordon Research Conference, July 9-15, 2011.

39. *F.-W. Zeng*, C.A. Masiello, *W.C. Hockaday*, J.A. Baldock. Sources and Cycling of Riverine Particulate Organic Matter Revealed by C Isotope, C/N, and NMR Analyses. 2011 Catchment Science Gordon Research Conference, July 9-15, 2011.

40. *R.T. Barnes*, *M.E. Gallagher*, C.A. Masiello, B. Dugan, *Z. Liu*, J.A. Rudgers. Changes in water, carbon, and nitrogen fluxes with the addition of biochar to soils:  lessons learned from laboratory and greenhouse experiments. AGU, San Francisco, CA. December 2011.

41. M. Schulz, C. Lawrence, D. Stonestrom, T. Bullen, J. Harden, A. White, J. Fitzpatrick, C.A. Masiello. Marine terrace soils along the west coast of North America: a weathering archive? Goldschmidt Conference, Montreal, Canada, June 2012.

42. Z.P. Valdez, W.C. Hockaday, *M.E. Gallgher*, C.A. Masiello, X. Gao. Effects of Nitrogen Fertilizer On Soil Organic Matter Pools Under Switchgrass Agricullture. Soil Society of America, San Diego, CA. April 2012.

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44. C.A. Masiello, T. Perez, *A. Giuliante*, R.J. Rasse, W.C. Hockaday*, R.T. Barnes*, J. C. Hernandez, L. Donoso. Dissolved and particulate organic carbon exports from 4 Venezuelan rivers: Effects of developing world urbanization on coastal carbon delivery. AGU, San Francisco, CA. December 2012.

45. *A. Giuliante*, T.J. Pérez, J.C. Hernandez, C.A. Masiello, *R.T. Barnes,* W.C. Hockaday. Lignin Oxidation Products from Suspended Sediments of Four Venezuelan Tropical Rivers: Identification of Organic Matter Sources. Gordon Catchement Science Research Conference, May 2013.

46. C.A. Masiello, *C. Brewer*, B. Dugan, *Z. Liu*, H. Gonnermann, K. Zygourakis, C.A. Davies, P. Panzacchi, X. Gao, *L.A. Pyle*. Biochar Physical Properties are Key to Understanding Environmental Performance. Geological Society of America National Meeting, Denver, CO, October 2013.

47. J.J. Silberg, *H.-Y. Cheng*, C.A. Masiello. Using synthetic biology to examine biochar effects on microbial communication and carbon sequestration in soils. Synbio Conference, Manhattan Beach, CA. July 2014.

48. C.A. Masiello, *H.-Y. Cheng*, J.J. Silberg. Spies and Bloggers: new biosensors for soil microbiology. The Sixth International Workshopon Soil and Sedimentary Organic Matter Stabilization and Destabilization (SOM6), Kiawah Island, SC, September, 2014.

49. *Z. Liu*, B. Dugan, C.A. Masiello, H. Gonnermann. Grain-Size Effects on Field Capacity of Soil-Biochar Mixtures. Fall AGU, San Francisco, CA. December 2014.

50. J.J. Silberg, *H.-Y. Cheng*, C.A. Masiello. Improved Biosensors for Soils. Fall AGU, San Francisco, CA. December 2014.

51. C.A. Masiello, J.J. Silberg, X.Gao, H.-S. Cheng, M. Bennett, G. Bennett, S. Liu. Charcoal effects on soil microbial cell-cell communication: lab observations and potential ecosystem consequences. Biannual Soil Ecological Society Meeting, Colorado Springs, Colorado, June 2015.

52. J.J. Silberg, C.A. Masiello, H.-Y. Cheng, G. Bennett, M. Bennett. Using gas replacements for GFP to track microbial dynamics in hard-to-image soils and sediments. Gordon Geobiology Conference, 2016.

53. H.-Y. Cheng, J.J. Silberg, C.A. Masiello, G.N. Bennett. Dynamic monitoring of horizontal gene transfer in soil. Gordon Geobiology Conference, 2016.

**OUTREACH PRESENTATIONS:**

1. Greenhouse Gases and the Carbon Cycle. MIT Enterprise Forum of Texas, September 20, 2006.
2. Tracking the Earth’s Carbon Cycle. Houston Chronicle climate experts event, June 6, 2007.
3. Managing Greenhouse Gases: Beyond Underground CO2 Injection. A Taste of IRESS, outreach talk for alumni and local business leaders, Rice University. November 7, 2014.
4. Biochar: Real Possibilities and Tempered Expectations for CO2 Management. Houston Arboretum and Nature Center joint event with Bartlett Tree Experts, February 13, 2014.
5. Carbon Cycle and Greenhouse Gas Management: Creative Options. Houston ISD Teachers RSTEM group, June 21, 2015.
6. Biochar: Real Possibilities and Tempered Expectations for CO2 Management. Baker Institute, Rice University. May 14, 2015.
7. Climate Change. Baker Salon, Baker College, Rice University. Sept 30, 2019.
8. Climate Change and Hope, Guest speaker to Disciples of Christ high school students participating in a week of mission work post-Harvey through Reach Beyond Mission. First Christian Church, Texas City, TX, July 17, 2018.
9. Teaching Microbes to Blog about their Environment. Rice Science Café, March 6, 2018 (with J.J. Silberg).
10. Introduction to the Carbon Cycle. Guest speaker, MGMT 609 Energy Transitions, Jones Business School, Rice University. March 19, 2019.
11. Soil Solutions to Climate Change. Guest speaker, Pumps and Pipes (Texas Medical Center/Houston Energy Industry seminar series), September 21, 2020. <https://www.youtube.com/watch?v=bPs4ZOh8qdw>