

Fernanda Santos

Staff Scientist, Oak Ridge National Laboratory

E-mail: santosf@ornl.gov
Website: www.fsantosresearch.com

Research areas: ecological disturbances, belowground processes, soil biogeochemical cycles

EDUCATION

- Ph.D., Earth and Environmental Sciences**, The Graduate Center, City University of NY 2014
Dissertation title: Carbon and nitrogen dynamics from slow pools of soil organic matter in a temperate forest: pyrogenic organic matter and root litter. Advisor: Dr. Jeffrey A. Bird
- MA, Physical Geography**, Hunter College, City University of NY 2007
Thesis title: Quantifying the scales of the land surface heterogeneity.
Advisor: Dr. Haydee Salmun
- BS, Geography**, State University of Rio de Janeiro, Brazil 2004
Independent research title: The effect of two distinct land cover types on the characteristics and properties of a soil to assess its degradation conditions: Estrangina microbasin, Petrópolis, Rio de Janeiro. (*Estudo comparativo entre o efeito de duas coberturas vegetais distintas sobre as características e propriedades de um solo, para fins de avaliação das condições de degradação do mesmo: microbia da Estrangina, Petrópolis, RJ.*)
Advisor: Dr. Neusa Maria Costa Mafra; Co-advisor: Dr. Beata Eموke Madari
- Teaching certificate (*Licenciatura*), **Geography**, State University of Rio de Janeiro, Brazil 2004

RESEARCH EXPERIENCE

- Staff Scientist**, *Oak Ridge National Laboratory, Oak Ridge, TN* 2022-present
- Adjunct Assistant Professor**, *University of Tennessee Knoxville, TN* 2021-present
- Postdoctoral Research Associate**, *Oak Ridge National Laboratory, TN* 2020-2022
- UC Chancellor's Postdoctoral Fellow**, *University of California-Merced, CA* 2017-2019
PIs.: Dr. Asmeret Asefaw Berhe (UC Merced) and Dr. Sanjai Parikh (UC-Davis)
- Postdoctoral Scholar**, *University of California-Merced, CA* 2015-2017
PI.: Dr. Asmeret Asefaw Berhe
- Visiting Scientist**, *Florida International University, FL* March, 2015
- Postdoctoral Research Associate**, *Michigan State University, MI* February 2014-April 2015
PI.: Dr. Jessica Miesel
- Graduate Research Assistant**, *School of Earth and Environmental Sciences* 2012, 2011, 2008

Research Fellow , <i>Univ. of Michigan Biological Station, Pellston, MI</i>	2012-2009
Visiting Graduate Student , <i>Global Institute of Sustainability, Arizona State U., AZ</i>	2011
Visiting Graduate Student , <i>Department of Geography, U. of Zurich, Switzerland</i>	2010
Graduate Research Assistant , <i>Department of Geography, Hunter College, CUNY, NY</i>	2007-2005
Undergraduate Research Assistant , <i>Soil Research Institute of the Brazilian Agricultural Research Corporation, Rio de Janeiro, Brazil</i>	2004-2001
Undergraduate Research Assistant , <i>State U. of Rio de Janeiro, Rio de Janeiro, Brazil</i>	2002-2001

AWARDS AND HONORS

2021. Virtual fire database workshop (Sep 1-2, 2021) funded by ORNL Biological and Environmental Systems Science Directorate and supported by the Consortium of Appalachian Fire Managers & Scientists (\$50k)
2020. ESA Strategies for Ecology Education, Diversity and Sustainability (SEEDS) Interdisciplinary Power of Data Research Travel Award
2019. Nominated and selected by the Soil Science Society of America/Range & Wildland Soils Divisions for the S.A. Wilde Early Career Achievement Award
2018. Interdisciplinary Small Grants Program, UC Merced (\$3,000)
2017. Recipient of the University of California Chancellor's Postdoctoral Fellowship (\$120k)
2016. NSF ASSIST Travel Grant to attend the Society of Hispanic Professional Engineers Faculty Development Institute organized by the Society of Hispanic Professional Engineers.
2015. Finalist - U. of California President's Postdoctoral Fellowship Program
2015. Novus Research Coordination Network Scientist Exchange Program (\$1,500)
2015. Michigan State University/Committee on Institutional Cooperation (CIC, \$500) 2015. CIC/Alliances for Graduate Education and the Professoriate (\$250)
2014. Fulbright Scholar travel award proposal recommended for funding in the first phase of a rigorous review process.
2013. Office of the Dean of the Division of Mathematics and Natural Sciences, QC, CUNY (\$250)
2012. Paul Roux Scholarship Fund, School of Earth and Environmental Sciences, QC, CUNY (\$1,000)
2012. U. of Michigan Biological Station Mort Neff Graduate Student Research Fund (\$1,020)
2011. U. of Michigan Biological Station Henry Allan Gleason Fellowship (\$2,080)
- 2011-2009. NSF-IGERT Biosphere-Atmosphere Research and Training Fellowship (\$60,000) 2009-2007. CUNY The Graduate Center Science Fellowship (\$24,000)

2009. Research Grant for CUNY Doctoral Students (\$1,000)

2008. CUNY Alliances for Graduate Education and the Professoriate Summer Grant (\$5,000) 2008. Sue Rosenberg Zalk Travel & Research Fund Award (\$300)

2008-2007. NSF/CUNY Alliances for Graduate Education and the Professoriate Grant (\$2,550) 2008. Geological Society of America Joint Annual Meeting Student Travel Fund Award (\$75)

2006. Gamma, Theta, Upsilon International Geographical Honor Society 2006. Society of Woman Geographers Graduate Fellowship Award (\$5,000)

GRANTS

2021 Collaborator in a CITRIS Seed Grant, Challenge 1: Climate Resilience/Built Environment. Title: “Developing Resilient Materials and Sensors for Improved Building Performance” led by Lilian Davila (UC-Merced). Co-PIs: Jeannette Cobian-Iñiguez (UC Merced) and Scott Moura (UC Berkeley). \$60,000

2020 Co-authored proposals to synchrotron user facilities (NSLS, APS and CLS) and was awarded 33 shifts across four beamlines. Authors: Li, H., Santos, F., Butler, K., and Herndon, E. Title: “Interactions between manganese and organic matter in forest ecosystems”

WORKS IN PROGRESS

Santos, F., Herndon E. Plant-soil relationships influence observed trends between Mn and C across biomes. *Global Biogeochemical Cycles*. In review

PAPERS PUBLISHED OR IN PRESS

Shuman, J. K., Balch, J. K., Barnes, R. T., Higuera, P. E., Roos, C. I., Schwilk, D. W., **Santos, F.**,... & Zhang, X. (2022). Reimagine fire science for the anthropocene. *Proceedings of the National Academy of Sciences (PNAS) Nexus*, 1(3), pgac115.

Santos, F., Bird, J. A., & Berhe, A. A. (2022). Dissolved pyrogenic carbon leaching in soil: Effects of soil depth and pyrolysis temperature. *Geoderma*, 424, 116011.

Li, H., **Santos, F.**, Butler, K., Herndon E. (2021). A critical review on the multiple roles of Mn in stabilizing and destabilizing soil organic matter. *Environmental Science & Technology*, 55, 18, 12136–12152

Santos, F., Rice, D. M., Bird, J. A., & Berhe, A. A. (2021). Pyrolysis temperature and soil depth interactions determine PyC turnover and induced soil organic carbon priming. *Biogeochemistry*, 153(1), 47-65.

Delgado-Baquerizo, Manuel; Reich, Peter; Bardgett, Richard; Eldridge, David; Lambers, Hans; Wardle, David; Reed, Sasha; Plaza, Cesar ; Png, G. Kenny ; Neuhauser, Sigrid; Berhe, Asmeret ; Hart, Stephen; Hu, Hang-Wei; He, Ji-Zheng ; Bastida, Felipe; Abades, Sebastián; Alfaro, Fernando ; Cutler, Nick; Gallardo, Antonio; García-Velázquez, Laura; Hayes, Patrick; Hseu, Zeng-Yei ; Pérez, Cecilia; **Santos, Fernanda**; Siebe, Christina; Trivedi, Pankaj; Sullivan, Benjamin; Weber-Grullon, Luis; Williams, Mark;

Fierer, Noah. The influence of soil age on ecosystem structure and function across biomes. (2020) *Nature communications* 11(1), pp.1-14.

Future of Fire Consortium (it includes **Fernanda Santos** as a co-author) Fire as a fundamental ecological process: Research advances and frontiers. (2020) *Journal of Ecology*; 108: 2047-2069.

Delgado-Baquerizo, Manuel; Richard Bardgett , Peter Vitousek , Fernando Maestre , Mark Williams , David Eldridge , Hans Lambers , Antonio Gallardo , Osvaldo Sala , Sebastián Abades , Fernando Alfaro , Asmeret Asefaw Berhe , Matthew Bowker , Courtney Currier , Nick Cutler , Laura García-Velázquez , Stephen Hart , Patrick Hayes , Zeng-Yei Hseu , Martin Kirchmair , Sigrid Neuhauser , Victor Peña , Cecilia Pérez , Sasha Reed, **Fernanda Santos**, Christina Siebe , Benjamin Sullivan , Luis Weber-Grullon , Noah Fierer. Multiple elements of soil biodiversity drive ecosystem functions across biomes. (2020) *Nature Ecology & Evolution*, 210–220.

Bastida, F, Eldridge, DJ, Abades, S, Fernando D. Alfaro Antonio Gallardo Laura García-Velázquez Carlos García Stephen C. Hart Cecilia A. Pérez Fernanda Santos Pankaj Trivedi Mark A. Williams Manuel Delgado-Baquerizo. (2019) Climatic vulnerabilities and ecological preferences of soil invertebrates across biomes. *Molecular Ecology*; 00: 1– 10.

Stutz, Kenton P.; Kaiser, Klaus; Wambsganß, Janna; **Santos, Fernanda**; Berhe, Asmeret Asefaw; Lang, Friederike. (2019) Lignin from white-rotted European beech deadwood and soil physicochemical processes. *Biogeochemistry* 145(1-2), 81-105.

Bastida, Felipe; Carlos García, Noah Fierer, David J. Eldridge, Matthew A. Bowker, Sebastián Abades, Fernando D. Alfaro, Asmeret Asefaw Berhe, Nick A. Cutler, Antonio Gallardo, Laura García-Velázquez, Stephen C. Hart, Patrick E., Hayes, Teresa Hernández, Zeng-Yei Hseu, Nico Jehmlich, Martin Kirchmair, Hans Lambers, Sigrid Neuhauser, Víctor M. Peña-Ramírez, Cecilia A. Pérez, Sasha C. Reed, **Fernanda Santos**, Christina Siebe, Benjamin W. Sullivan, Pankaj Trivedi, Alfonso Vera, Mark A. Williams, José Luis Moreno, Manuel Delgado-Baquerizo (2019). Global ecological predictors of the soil priming effect. *Nature Communications*.

Santos, F., Abney, R., Barnes, M., Bogie, N., Ghezzehei, T. A., Jin, L., Moreland, K., Sulman, B. N., Berhe, A. A. (2019). The role of the physical properties of soil in determining biogeochemical responses to soil warming. In *Ecosystem Consequences of Soil Warming* (pp. 209-244). Academic Press.

Santos, F., Wymore, A. S., Jackson, B. K., Sullivan, S. M. P., McDowell, W. H., & Berhe, A. A. (2019). Fire severity, time since fire, and site-level characteristics influence streamwater chemistry at baseflow conditions in catchments of the Sierra Nevada, California, USA. *Fire Ecology*, 15(1), 3.

James, J. N., Gross, C. D., Dwivedi, P., Myers, T., **Santos, F.**, Bernardi, R., Marianne Fidalgo de Faria, Iraê Amaral Guerrini, Rob Harrison, & Butman, D. (2019). Land use change alters the radiocarbon age and composition of soil and water-soluble organic matter in the Brazilian Cerrado. *Geoderma*, 345, 38-50.

Delgado-Baquerizo, Manuel, Bardgett, Richard D., Vitousek, Peter M., Maestre, Fernando T., Williams, Mark A., Eldridge, David J., Lambers, Hans, Neuhauser, Sigrid, Gallardo, Antonio, García-Velázquez, Laura, Sala, Osvaldo E., Abades, Sebastián R., Alfaro, Fernando D., Berhe, Asmeret A., Bowker, Matthew A., Currier, Courtney M., Cutler, Nick A., Hart, Stephen C., Hayes, Patrick E., Hseu, Zeng-Yei, Kirchmair, Martin, Peña-Ramírez, Victor M., Pérez, Cecilia A., Reed, Sasha C., **Santos, Fernanda**,

Siebe, Christina, Sullivan, Benjamin W., Weber-Grullon, Luis, Fierer, Noah. (2019). Changes in belowground biodiversity during ecosystem development. *Proceedings of the National Academy of Sciences*, 201818400.

Santos, F., Wagner, S., Rothstein, D., Miesel, J. R., Jaffe, R. 2017 Impact of a historical fire event on pyrogenic carbon stocks and dissolved pyrogenic carbon in spodosols in Northern Michigan. *Frontiers in Earth Science: Biogeoscience. Research topic: From Fires to Oceans: Dynamics of Fire-Derived Organic Matter in Terrestrial and Aquatic Ecosystems*.

Santos, F., Russell, D., Berhe, A. A. 2016. Thermal alteration of water extractable organic matter in climosequence soils from the Sierra Nevada, California. *Journal of Geophysical Research: Biogeosciences* 121, 2877–2885.

Santos, F., Nadelhoffer, K., & Bird, J. A. 2016. Rapid fine root C and N mineralization in a northern temperate forest soil. *Biogeochemistry*, 128(1-2), 187-200.

Santos, F., Fraser, M. P., Bird, J. A. 2014. Atmospheric black carbon deposition and characterization of biomass burning tracers in a northern temperate forest in MI, USA. *Atmospheric Environment* 95, 383-390.

Santos, F., Torn, M.S., Bird, J.A., 2012. Biological degradation of pyrogenic organic matter in temperate forest soils. *Soil Biology & Biochemistry* 51, 115-124.

Chatterjee, S., **Santos, F.**, Abiven, S., Itin, B., Stark, R. E., Bird, J. A., 2012. Elucidating the chemical structure of pyrogenic organic matter by combining magnetic resonance, mid-infrared spectroscopy and mass spectrometry, *Organic Geochemistry* 51, 35-44.

Yarnes, C., **Santos, F.**, Singh, N., Abiven, S., Schmidt, M.W.I., Bird, J.A., 2011. Stable isotopic analysis of pyrogenic organic matter in soils by liquid chromatography–isotope-ratio mass spectrometry of benzene polycarboxylic acids. *Rapid Communications in Mass Spectrometry* 25, 3723-3731.

Salmun, H., Molod, A., Albrecht, J., **Santos, F.**, 2009. Scales of variability of surface vegetation: Calculation and implications for climate models. *Journal of Geophysical Research: Biogeosciences*, 114, G02007.

Andrade, A. G.; Mendes, C. A. R.; Mahler, C. F.; Lumbreiras, J. F.; **Santos, F. A.**; Portocarrero, Hugo; Carvalho, G. F., 2004. Aspectos da Perda de Solos: A Agricultura Migratória e a Convencional. [*Soil losses: shifting cultivation versus conventional farming*] In: Resende, A. S. de; Campello, E. F. C. (Org.). Seminário Sobre Agricultura Migratória na Região Serrana do Rio de Janeiro.: Embrapa Agrobiologia, p. 40-52.

Mafra, N. M. C.; Lopes, M. R. S.; Sathler, R.; Lisboa, A.; Mendes, L. D.; Portocarrero, H.; **Santos, F.**; Ull, F. V., 2002. Inventário das condições do meio físico para avaliação do potencial das terras com fins de planificação de uso: Aplicação às bacias hidrográficas nos distritos de Posse e Pedro do Rio, município de Petrópolis, RJ. [*Inventory of landscape's physical characteristics to assess land-use potential and planning: the case of watersheds in Posse and Pedro do Rio districts, municipality of Petropolis, RJ*]. In: G. J. Marafon; M. F. Ribeiro. (Org.). Estudos de Geografia Fluminense. Rio de Janeiro: Livraria e editora Infobook Ltda, p. 1-208.

PRESS RELEASE

University of California, Merced (2019, April 23). UC Merced Researchers Help Uncover Soil Biodiversity. Retrieved from: <https://snri.ucmerced.edu/news/2019/uc-merced-researchers-help-uncover-soil-biodiversity>

New Hampshire Agricultural Experiment Station, University of New Hampshire (2019, April 15). Wildfires Alter Stream Chemistry for Years. Retrieved from: <https://nifa.usda.gov/blog/wildfires-alter-stream-chemistry-years>

TEACHING EXPERIENCE

Guest Lecturer , Chemical properties of soils, <i>UC-Merced</i>	2018
Guest Lecturer , Nitrogen cycle, <i>UC-Merced</i>	2017
Guest Lecturer , Critical Zone Science, <i>UC-Merced</i>	2016
Guest Lecturer , “What is soil, and what do we investigate?” <i>UC-Merced</i>	2015
Guest Lecturer , “Energy, radiation and greenhouse effects”, Physical Geography, <i>Department of Earth, Environmental, and Geographic Sciences, Northern Michigan University</i>	2015
Guest Lecturer , “Physical and chemical properties of soils”, Forest Ecology, <i>Department of Forestry, Michigan State University</i>	2014
Guest Lecturer , “Soils”, Earth System Sciences, <i>School of Earth and Environmental Sciences, Queens College, CUNY</i>	2013
Adjunct Instructor , Introduction to the Environment, <i>School of Earth and Environmental Sciences, Queens College, CUNY</i>	2007, 2008, 2012, 2013
Adjunct Instructor , Weather and Climate, <i>Department of Geography, Hunter College, CUNY</i>	2007
Language Instructor , Portuguese, <i>Inlingua Language Center, New York</i>	2006-2007
Teaching intern , Geography, <i>Centro Supletivo de Ensino Fundamental e de Ensino Médio (Adult Education) – InvestUERJ, State University of Rio de Janeiro</i>	2002

STUDENTS MENTORED

Sophie McDuffee, Science Undergraduate Laboratory Internship (SULI) program, ORNL Trained Sophie in environmental data analysis using R packages	2021
Naivy Morales, undergraduate student, UCM. Trained Naivy in UV-VIS spectroscopy in the lab.	2018
Lesly Lopez, graduate student. Mentorship support as part of the UC-Merced Women in STEM mentoring program.	2018

Angel Kongsomboonvech, graduate student. Mentorship support as part of the UC-Merced Women in STEM mentoring program.

2017

Morgan Barnes, graduate student. Mentorship support as part of the UC-Merced Women in STEM mentoring program. 2015-2017

Diana Lu, Grade 11, Detroit Country Day School, MI. Co-mentored Diana over a seven-week period as part of the Michigan State University High School Honors Science/ Mathematics/Engineering Program. 2014

TECHNICAL SKILLS

- Molecular characterization of organic compounds: liquid-state ^1H Nuclear Magnetic Resonance Fourier transform infrared (FTIR) spectroscopy Diffuse Reflectance (DRIFT), and UV-VIS
- Pyrogenic C in soil, air, and water: benzene polycarboxylic acids approach; chemical-oxidation method; thermo/optical approach; molecular markers approach
- Microbial community: phospholipid fatty acids (PLFAs)
- Carbon and nitrogen stable isotopes: ^{13}C in soils, CO_2 , dissolved organic C, and PLFAs; ^{15}N in soils, and total inorganic nitrogen
- Stable isotope (^{13}C and ^{15}N) labeling of plants
- High performance liquid and gas chromatography; isotope ratio mass spectrometry (^{13}C , liquid and gas), and spectrophotometry (UV-VIS), C and N elemental analyzer for solid samples (dry combustion, and Walkley-Black method for soil C)
- Scanning electron microscope
- Batch sorption experiment
- Iron and aluminum oxides and dissolved organic matter extraction techniques
- Soil organic matter density fractionation method
- Water-stable aggregates in soils

SHORT COURSES

- Radiocarbon Short Course, U. of California-Irvine, July 21-26, 2014
- Stable Isotope Biogeochemistry & Ecology (Iso-Camp), U. of Utah, June 9-20, 2008

PROFESSIONAL DEVELOPMENT AND ASSOCIATIONS

- NSF-Wildfire and the Biosphere initiative (virtual workshop; May 17, 18, 19, 21, and 26, 2021)
- Future of Fire Workshop, Chautauqua National Historic Landmark, Boulder, CO, November 6-7, 2017
- Faculty Development Institute, Society of Hispanic Professional Engineers, Seattle, November 3rd, 2016
- Wildland Fire Science Workshop, Nature Bridge Crane Flat Campus, Yosemite National

Park, August 15 & 16, 2016

- Student Engagement in (Large-Enrollment) Classrooms – Special Topic, UC Merced Center for Engaged Teaching & Learning, June 17th, 2016
- Climate & Water Tools & Resources for Informed Agricultural Decisions. Center for Climate Communication Workshop Series. UC Merced, May 12th, 2016
- Cross-Critical Zone Observatory Biogeochemistry Workshop. UC Riverside, September 28-29, 2015
- Mastering the classroom with 1st generation college students, UC Merced Center for Engaged Teaching & Learning, May 6th, 2015
- Developing Communication and Conflict Management Skills for Successful Collaborations Workshop, Michigan State University, February 6, 2015
- How to be a successful professional workshop, Michigan State University, January 31, 2015
- Write winning grant proposals workshop, Michigan State University, January 8, 2015
- MSU NSF-AGEP Alliance for Graduate Education and the Professoriate, Fall 2014
- Networking and communication, Earth Science Women’s Network, U. of Wisconsin-Madison, June 4-6, 2012
- Ecological Society of America; Soil Science Society of America; American Geophysical Union; Society of Woman Geographers; Sociedade Brasileira de Ciência do Solo

COLLABORATORS (Past 48 months)

Abney, R. (UGA); Bailey, J. (UTK); Baquerizo, D. M. (U. of Colorado-Boulder); Berhe, A. A. (UC Merced); Bird, J. A. (CUNY); Cregger, M. (ORNL); Davila, L. (UC Merced); Ghezzehei, A.T. (UC Merced); Herndon, E (ORNL); Hui, Li (ORNL); Jaffe, R. (Florida International U.); Lang, F. (Albert Ludwig U. of Freiburg, Germany); Mao, J. (ORNL); McDowell, W. (U. of New Hampshire), Midgley, M. (The Morton Arboretum); Miesel, J. (Michigan State U.); Nadelhoffer, N. (U. of Michigan); Nave, L. (U. of Michigan); Parikh, S. (UC-Davis); Rice, D. (UC Merced); Rhoades, C. (U.S. Forest Service); Rothstein, D. (Michigan State U.); Schweitzer, J. (UTK); Sulman, B. (Oak Ridge National Lab); Wagner, S. (Skidaway Institute of Oceanography); Wymore, A. (U. of New Hampshire)

SERVICES

Leadership Recognition and Committees

- Member of advisor committee for Niriele Bruno Rodrigues’s Master thesis, *Federal Rural University of Rio de Janeiro, Rio de Janeiro, Brazil* 2020
- SSSA Chair of the Golden Opportunity Scholars Institute Selection Committee 2020
- SSSA Golden Opportunity Scholars Institute and Mentor Selection Committee 2019
- SSSA Soil Chemistry and Mineralogy Award Committee 2020
- NEON Terrestrial Biogeochemistry Technical Working Group 2020-2021
- Outstanding Women Leadership Subcommittee 2018
- AGU Biogeosciences Early Career Committee 2017
- Recipient of the Outstanding Womxn’s Award at the Womxn’s 2017

Empowerment Conference, UC Merced

- Chair of The Union for Postdocs (UAW5810) at UC-Merced 2016 to 2018
- Treasurer - Woman in Science, Technology, Engineering, and Math, UC-Merced 2015 to 2017
- Executive and Admissions Committee, Earth and Environmental Sciences
Ph.D. program, The Graduate Center, CUNY 2008-2010

Symposium co-organizer and/or moderator

- Symposium and Topical Session – Impacts of minerals and micronutrients
in the biogeochemical cycling of soil organic carbon, SSSA 2021
- Symposium: New Insights on Biogeochemical Processes in Forest Ecosystems
as Revealed by Isotopic and Biomarker Approaches, SSSA 2017
- Graduate Students Research Symposium, MSU 2015

Seminar and conferences co-organizer/-leader

- Co-organizer of the Enviro-Lunch Seminar, UC-Merced 2015-2017
- Co-leader of the W-STEM Grant Writing Workshop Event, UC-Merced 2016
- Co-leader of the W-STEM Mentoring Program Kick-Off Event, UC-Merced 2015
- Co-organizer of GeoSeminar Series, CUNY 2006-2007
- Volunteer of the 3rd International Conference on Land Degradation
and Meeting of the IUSS Subcommittee C-ICLD3 2001

Outreach

- 2021 Invited to be a panelist in an event organized for undergraduate members of the Society of Women Engineers at UC-Merced. October 18th (virtual)
- 2021 Takeover for 500 Women Scientists' Gage Account on Twitter, July 31st, 2021, to discuss my day and research with their followers.
- 2018 Fernanda Santos and Benjamin Sulman. "Soil Science at UC Merced". 1st Earth Science Sustainability Festival (K-12), April 28, Patterson, CA
- 2018 Fernanda Santos and Michelle Gilmore. "The Science of Fire". Edison Science Days event (6th-grade), April 26. Shaver Lake, CA.

Manuscript reviewer

Research journals: Nature, Global Change Biology, Biogeochemistry, Ecological Indicators, Soil Biology and Biochemistry, European Journal of Soil Science, Soil Research, Geoderma, Environmental Chemistry, Journal of Geophysical Research - Earth Surface, Water, Journal of Visualized Experiments, Environmental Science and Pollution Research, Elementa: Science of the Anthropocene - Ecology and Earth Systems.

Proposal reviewer

- UK's Natural Environmental Research Council
- NSF Research Traineeship program
- Cal Poly's McIntire-Stennis program

LANGUAGE PROFICIENCY

Portuguese (native speaker); English (fluent); Spanish (read well)

INVITED TALKS

Santos, F. & Herndon, E. Responses of CO₂ fluxes to manganese availability and warming during decomposition. Department of Agricultural and Environmental Sciences, *Tennessee State University*, October 14, 2021

Santos, F. & Herndon, E. Interactive effects of manganese availability and warming on CO₂ fluxes from soils during decomposition. *ORPA's virtual Research Symposium*, July 28, 2021

Santos, F. The effects of fire, soil warming, and micronutrient availability on C dynamics. Virtual seminar in Ecology. *College of the Holy Cross*, 03/09/21

Santos, F. & Herndon, E. (2020). Climatic and edaphic influences of manganese and carbon interactions in plants and soils across biomes in the US. Session B104: Soils in the Anthropocene: Mechanisms of Stabilization and Change (Big-Data Syntheses) II. *American Geophysical Union Virtual Fall Meeting*, 1-17Dec, USA

Santos, F. (2020). The influence of fire on soil carbon dynamics in temperate forests. Seminar of the Department of Ecology & Evolutionary Biology on January 24th, *University of Tennessee, Knoxville, USA*

Santos, F. (2019). The Influence of fire on carbon loss pathways in temperate forest soils. Sergei A. Wilde Early Career Achievement Award Lectureship, November 13th. *Soil Science Society of America Annual Meeting, San Antonio, TX, USA*

Santos, F. (2019). The Influence of fire on carbon loss pathways in temperate forest soils. Environmental Sciences Division and Earth Sciences Group, August 30, *Oak Ridge National Laboratory, Oak Ridge, TN, USA*

Santos, F. (2019). The effects of fire on soil carbon mobility and transport. *Department of Environmental Science and Policy, University of California, Davis* (March); *Department of Earth and Planetary Sciences, University of California, Santa Cruz* (February); *Department of Environmental Sciences, University of California, Riverside* (January)

Santos, F. (2019) Invited symposium presenter. Soils of Wildfire-affected Landscapes: Linking Belowground Ecology & Watershed Processes. *Soil Science Society of America Annual Meeting, San Diego, California*.

Santos, F. (2018) The effects of fire on soil carbon dynamics. Seminar Series. *Department of Earth and Environmental Sciences (October), University of California, Irvine*.

Santos, F. (2018) Dynamics of fire-transformed organic carbon in soils. *UC Merced Environmental Systems Seminar (September), University of California, Merced*

Santos, F. (2018) O fogo que arde sem se ver: Biogeociências e os efeitos dos incêndios na matéria orgânica do solo e da água. *Multidisciplinary Institute of Federal Rural University of Rio de Janeiro, Nova Iguaçu, Brazil*.

Santos, F. (2018) Ecosystem perturbations and soil organic matter dynamics: soil responses and implications for freshwater systems. *Ecology and Evolutionary Biology Seminar (March), University*

of California, Irvine

Santos, F. (2018) Postdoctoral panelist speaker of the W-STEM organization at the University of California, Merced. *February 22.*

Santos, F. (2017) Impacts of fire on soils and rivers. *UC Merced Environmental Systems Seminar (September), University of California, Merced*

Santos, F. (2016) Heat-induced changes in water- extractable soil organic matter. *Enviro-LunchSeminar (February), University of California, Merced*

Santos, F. (2015) Tracing the fate of slow cycling soil C pools in temperate forests. *Department of Forestry (January) Hanover Seminar, Michigan State University*

POSTER AND ORAL PRESENTATIONS

2019

Santos, F.; Jing Yan, Teamrat Ghezzehei, Francois Blanchette, Jeffrey A. Bird, Asmeret Asefaw Berhe. Mobility of Pyrogenic Organic Matter in Sorption Experiments. *Soil Science Society of America annual meeting. San Diego, California.*

Santos, F.; Jeffrey A. Bird, Asmeret Asefaw Berhe. From Soils to Streams: Post-Fire Changes in Dissolved Organic Carbon Concentration and Composition. *Soil Science Society of America annual meeting. San Diego, California.*

2017

Santos, F.; Bird, J.A.; Berhe, A.A. Responses of soil carbon turnover rates to pyrogenic carbon additions to a forest soil of Sierra Nevada, California: effects of pyrolysis temperature and soil depth. *American Geophysical Union Annual Meeting, New Orleans, LA*

Santos, F.; Bird, J.A.; Berhe, A.A. Effects of pyrolysis temperature and soil depth on pyrogenic carbon dynamics from a forest soil of Sierra Nevada, California. *Soil Science Society of America annual meeting. Tampa, FL*

2016

Santos, F., Wymore, A., Berhe A. A. Thermal alteration of dissolved organic matter: observations from a lab heating experiment and fire-impacted watersheds of the Sierra Nevada, California. *American Geophysical Union Annual Meeting, San Francisco, CA*

Santos, F., Russell, D., Berhe A. A. Chemical structure of WEOC from thermally-altered soils of Sierra Nevada, California. *2016 ASA, CSSA, and SSSA Annual Meeting in Phoenix, AZ*

2015

Santos, F., Wagner, S., Rothstein, D., Miesel, J., Jaffe, R. Evaluating the influence of fire history on dissolved pyrogenic C exported from coniferous and deciduous forest soils in the northern Great Lakes Region. *American Geophysical Union Fall Meeting (December), San Francisco, CA*

Santos, F. Transformations and fate of fire-derived (pyrogenic) C in soils. *School of Natural Sciences, Spotlight Social for Postdocs (December), University of California, Merced*

Santos, F. Carbon goes on: transformations and fate of fire-derived C in soils. *Enviro-Lunch Seminar (September), University of California, Merced*

2013

Santos, F. C and N dynamics of slow turnover soil organic matter in temperate forests: pyrogenic organic matter and fine roots. *School of Earth and Environmental Sciences Fall 2013 Colloquium, Queens College, CUNY*

Santos, F.; Nadelhoffer, K., Bird, J. A. (November). Environmental controls of fine-roots decomposition dynamics in a northern temperate forest soil. In *Soil Science Society of America meeting, Tampa, FL*

Bird*, J. A.; **Santos, F.;** Winner, A.; Singh, N.; Maestrini, B.; Abiven, S.; Schmidt, M. W. I.; Torn, M. S. (September). Turnover and microbial utilization of pyrogenic organic matter in forest soils. In *246th American Chemical Society National Meeting and Exposition. *Presenter*

2010

Santos, F.; Torn, M.; Bird, J. A. (December). An incubation study on black carbon degradation in temperate forest soils. In *University of California Stable Isotope Facility Symposium, Davis, CA.*

Santos, F.; Fraser, M.; Bird, J. A. (December). Measurements of black carbon aerosols in a rural temperate forest in Northern Michigan. In *American Geophysical Union Fall Annual Meeting.*

Santos, F.; Torn, M.S. and Bird*, J. (March). Microbial utilization of black carbon in temperate forest soils. In *Stable isotopes and biogeochemical cycles in terrestrial ecosystems. *Presenter*

Santos, F. A study of black carbon biological degradation, export pathways and atmospheric deposition in a temperate forest soil (Michigan, USA). (February). *Department of Geography Seminar, University of Zurich, Switzerland.*

2009

Santos, F. Quantifying black carbon dynamics in a temperate forest ecosystem. *School of Earth and Environmental Sciences Fall 2009 Colloquium, Queens College, CUNY*

2008

Santos, F.; Bird, J. A., & Torn, M. S. (2008, December). Biological Degradation of Black Carbon in Temperate Forest Soils: Effects of Clay Mineralogy and Nitrogen Availability. In *AGU Fall Meeting Abstracts (Vol. 1, p. 0369).*

2003

Santos, F. A.; Mafra, N. M. C., Madari, B. E. Identificação de mudanças nas características e propriedades de um solo sob cobertura vegetal distinta na microbacia da Estrangina, Petrópolis, RJ. Rio de Janeiro: X Simpósio Brasileiro de Geografia Física Aplicada. In: Revista do Departamento de Geografia - GEOUERJ (Edição Especial). Rio de Janeiro: UERJ, Departamento de Geografia, 2003. [ISSN 1415-7543]

Santos, F. A. Estudo comparativo entre o efeito de duas coberturas vegetais distintas sobre as características e propriedades de um mesmo tipo de solo: Microbacia da Estrangina, Petrópolis, RJ. In: XII Semana de Iniciação Científica da UERJ, Rio de Janeiro: UERJ, Department of Support to Human Sources, 2003, p. 160.

2002

Souza, L. F. de L., **Santos, F. A.**, Mafra, N. M. C. Inventário das condições pedogeomorfológicas da bacia do córrego do Paiolzinho (Petrópolis, RJ) para fins de avaliação da capacidade de uso agrário. In: IV Simpósio Nacional de Geomorfologia. UFMA, vol. 1, 2002.

Santos, F. A., Souza, L. F. de L., Carvalho, G. F., Portocarrero, H., Andrade, A. G., Tavares, S. R. L. Desenvolvimento de *Acacia mangium*, *Albizia guachapelle*, *Mimosa bimucronata* e *Mimosa caesalpiniiifolia* em taludes de corte e aterro, Aeroporto Internacional do Rio de Janeiro - Galeão/Antonio Carlos Jobim. In: V Simpósio Nacional sobre Recuperação de Áreas Degradadas. Belo Horizonte: SOBRADE, 2002, p. 356-357.

Santos, F. A., Souza, L. F. de L., Mafra, N. M. C. Influência das diferentes coberturas vegetais nas características e propriedades dos solos em áreas de microbacia, Bacia do Rio bonito, Petrópolis, RJ. In: IV Simpósio Nacional de Geomorfologia. UFMA, vol.1, 2002.

Santos, F. A., Souza, L. F. de L. Considerações sobre o estudo da relação solo-planta e o estado de conservação dos solos em área serrana: microbacia da Estrangina, Petrópolis, RJ. XI Semana de Iniciação Científica, Rio de Janeiro: UERJ, Department of Support to Human Sources, 2002, p. 244. Orientação: Neusa Maria Costa Mafra.

Mendes, L. D., Mafra, N. M. C., Ull, F. V., **Santos, F. A.**, Souza, L. F. de L., Silva, J. R., Rodrigues, E., Aguiar, M. H., Miranda, M. Ocorrência de solos com epípedons húmicos em área serrana no Rio de Janeiro e sua relação com o uso agrícola. In: XIV Reunião Brasileira de Manejo e Conservação do Solo e da Água, Cuiabá: UFMT, 2002.

2001

Andrade, A. G., **Santos, F. A.**, Tavares, S. R. L., Franco, A. A., Menezes, C. E. G., Silva, M. S., Oliveira, J. A. Degradation of the Atlantic Forest in Paraíba do Sul River Valley (RJ, Brazil) and proposals for its rehabilitation. In: 3rd International Conference on Land Degradation and Meeting of the IUSS subcommission C – Soil and Water conservation (Conference guide, program and book of abstracts). Rio de Janeiro: Embrapa solos, 2001, p. 155.

Santos, F. A., Mendes, L. D. Ocorrência de solos com horizontes superficiais húmicos e sua relação com o uso agrícolas: município de Petrópolis, RJ. X Semana de Iniciação Científica, Rio de Janeiro: UERJ, Departamento de Capacitação e Apoio à formação de Recursos Humanos, 2001, p. 299. Orientação: Neusa Maria Costa Mafra.

Santos, F. A., Lisboa, A. Considerações sobre o estudo da relação solo-planta na bacia do Rio Bonito (Petrópolis, RJ). In: IX Semana de Iniciação Científica, Rio de Janeiro: UERJ, Departamento de

Capacitação e Apoio à formação de Recursos Humanos, 2000, p. 535. Orientação: Neusa Maria Costa Mafra.

Santos, F. O estudo dos solos no maciço alcalino de Tinguá: formação e os processos atuantes. In: XII Encontro Nacional de Geógrafos, UFSC: Rio de Janeiro, 2000, p. 516.