

# Lucas C. R. Silva

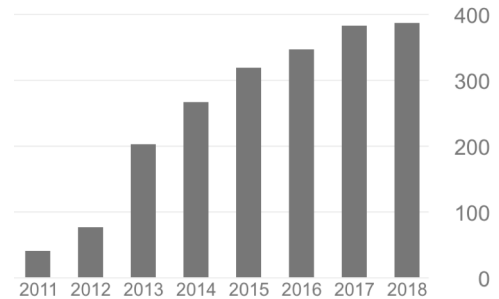
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**SUMMARY:** My work bridges multiple scientific disciplines to improve basic knowledge of ecological and biogeochemical processes at the soil-plant-atmosphere interface. I am primarily interested in understanding how terrestrial ecosystems function as a critical step towards building a more sustainable future. My research and teaching address emerging challenges for environmental sustainability focusing on solutions for land degradation and climatic or atmospheric alterations, which affect all terrestrial ecosystems. My students are trained to conduct data-intensive research fusing theory, experimentation, and modeling tools to learn from nature and to test new ways to optimize the use of land, air, and water resources.

## EDUCATION

<b>PhD</b>	2007-2011	Environmental Biology University of Guelph. Canada	Citations	2117	1926
			h-index	24	23
			i10-index	47	42
<b>MS</b>	2005-2007	Ecosystem Ecology & Biogeochemistry University of Brasilia / University of Miami			
<b>BS</b>	2001-2005	Forestry University of Brasilia. Brazil			



Google Scholar (Nov 27 2018)  
<https://scholar.google.com/citations?hl=en&user=fzVTu2UAAAAJ>

## PROFESSIONAL RESEARCH EXPERIENCE

<b>Assistant Professor</b>	2016-	University of Oregon
<b>Research Faculty</b>	2013-2016	University of California Davis
<b>Postdoctoral Fellow</b>	2011-2013	University of California Davis

## PROFESSIONAL TEACHING EXPERIENCE

### University of Oregon (Assistant Professor)

- Soil Science (ENVS 477/577)
- Soil-Plant-Atmosphere Interactions (GEO 607)
- Interdisciplinary Research Develop (ENVS 607)
- Forest & Society (GEO 310)

### University of California Davis (Lecturer)

- Global Carbon Cycle (SSC 222)
- Stable Isotope Ecology (SSC 290)
- Ag and Env Chemistry Seminar (AGC 290)

## MANUSCRIPTS UNDER CONSIDERATION

Linking remote sensing and dendrochronology to quantify climate-induced shifts in high-elevation forests over space and time A. Correa-Díaz, **Silva LCR** \*, et al

Beyond total carbon costs: land use change alters soil carbon cycling in the Amazon region. Adimir Durrer, Andrew J Margenot, **Silva LCR**\*, Brendan JM Bohannon, Sanjai J Parikh, Jorge L Mazza Rodrigues

Two decades of experimental manipulation reveal mechanisms for enhanced growth potential of Pine plantations across climate gradients in Northern California. Liles GC, Maxwell T, **Silva LCR**\*, et al

Exposure to Light Elicits a Spectrum of Chemical Changes in Soil. T Doane, **Silva LCR**, Horwath W

## PUBLICATIONS

81- JERSZURKI D, SOUZA J, **SILVA LCR** (In Press) Sensitivity of ASCE-Penman-Monteith Reference Evapotranspiration under Different Climate Types in Brazil. *Climate Dynamics*

80- GIGUÈRE-CROTEAU, É BOUCHER, Y BERGERON, **SILVA LCR**, et al (accepted pending revisions) A seven-hundred-year tree-ring record shows a recent unprecedented increase in water-use efficiency but not growth due to rising atmospheric [CO<sub>2</sub>]. *Proceedings of the National Academy of Science*

- 79- LIANG Y, KRAUS T; DOANE TA; **SILVA LCR**, BACHAND SM, BACHAND PAM, HORWATH WR (2019) Effects of ferric sulfate and polyaluminum chloride coagulation enhanced treatment wetlands on Typha growth, soil and water chemistry. *Science of the Total Environment* <https://doi.org/10.1016/j.scitotenv.2018.07.341>
- 78- BOMFIM B, **SILVA LCR\***, DOANE T, HORWATH W (2019) Interactive effects of land-use change and topography on asymbiotic nitrogen fixation in the Brazilian Atlantic Forest. *Biogeochemistry* <https://link.springer.com/article/10.1007/s10533-018-0525-z>
- 77- MAXWELL T, **SILVA LCR\***, HORWATH W (2018) Predictable oxygen isotope exchange between plant lipids and environmental water: implications for ecosystem water balance reconstruction. *J of Geophysical Research Biogeosciences* <https://agupubs.onlinelibrary.wiley.com/doi/abs/10.1029/2018JG004553>
- 76- DUARTE-GUARDIA S, PERI PL, AMELUNG W, SHEIL D, LAFFAN SW, BORCHARD N, **SILVA LCR** et al (2018) Better estimates of soil carbon from geographical data: a revised global approach. *Mitigation Adaptation Strategies Global Change* <https://doi.org/10.1007/s11027-018-9815-y>
- 75- CASTRUITA-ESPARZA, **SILVA LCR**, GÓMEZ-GUERRERO, ET AL. (Accepted with revisions) Coping with extreme events: growth and water use efficiency of dominant trees in western Mexico during the driest and wettest periods of the last century. *Journal of Geophysical Research Biogeosciences*
- 74- MAXWELL T, **SILVA LCR\***, HORWATH W (2018) Integrating effects of species composition and soil properties to predict shifts in montane forest carbon-water relations. *Proceedings of the National Academy of Science*. <https://doi.org/10.1073/pnas.1718864115>
- 73- CORREA-DÍAZ A, **SILVA LCR**, GÓMEZ-GUERRERO A, DÍAZ JV, ET AL (2018) Physiological response of "Taxodium mucronatum" Ten. To the increases of atmospheric CO<sub>2</sub> and temperature in the last century. *Agrociencia*, 1405-3195, Vol. 52(1) 129-149 <https://jmie.pure.elsevier.com/en/publications/physiological-response-of-taxodium-mucronatum-ten-to-the-increase>
- 72- **SILVA LCR\***, LAMBERS H (2018) Soil-plant-atmosphere interactions: ecological and biogeographical considerations for climate-change research. In: *Climate Change Impacts on Soil Processes and Ecosystem Properties*. 625 pp. <https://www.sciencedirect.com/science/article/pii/B9780444638656000028>
- 71- JERSZURKI D, COUVREUR V, MAXWELL T, **SILVA LCR**, MATSUMOTO N, SHACKEL N, SOUZA JLM, HOPMANS J (2017) Impact of root growth and hydraulic conductance on canopy carbon-water relations of young walnut trees (*Juglans regia* L.) under drought. *Scientia Horticulturae* 226, 342-352 <https://www.sciencedirect.com/science/article/pii/S0304423817305216>
- 70- SPERLING O, **SILVA LCR\***, TIXIER A, THÉROUX-RANCOURT G, ZWIENIECKI M (2017) Temperature gradients assist carbohydrate allocation within trees *Nature Scientific Reports*: 3265 <https://www.nature.com/articles/s41598-017-03608-w>
- 69- JERSZURKI D, SOUZA JLM, **SILVA LCR** (2017) Expanding the geography of evapotranspiration: An improved method to quantify land-to-air water fluxes in tropical and subtropical regions. 12(6) e0180055 *PLOS One* <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0180055>
- 68- DEVEREL S, OIKAWA P, DORE S, MACK S, **SILVA LCR** (2017) Restoration of California deltaic and coastal wetlands: A tool for climate change mitigation. *American Carbon Registry*, 186 pp. <http://americancarbonregistry.org/carbon-accounting/standards-methodologies/restoration-of-california-deltaic-and-coastal-wetlands>
- 67- **SILVA LCR** (2017) Carbon sequestration beyond tree longevity. *Science* 355 (6330), 1141 <http://science.sciencemag.org/content/355/6330/1141>

- 66- MORRIS J, YE R, **SILVA LCR**, HORWATH WR (2017) Nitrogen fertilization had no effect on CH<sub>4</sub> and N<sub>2</sub>O emissions or productivity in rice planted in rewetted peat lands. *Soil Science Society of America Journal*. 81:224–232 <https://dl.sciencesocieties.org/publications/sssaj/abstracts/81/1/224>
- 65- WORTHAM BE, WONG CI, **SILVA LCR**, MCGEE D, RASBURY ET, MONTAÑEZ IP (2017) Assessing response of local moisture conditions in central Brazil to variability in regional monsoon intensity using speleothem <sup>87</sup>Sr/<sup>86</sup>Sr values. *Earth and Planetary Science Letters* <http://dx.doi.org/10.1016/j.epsl.2017.01.034>
- 64- DIETRICH R, BELL FW, **SILVA LCR**, CECILE A, HORWARTH WR, ANAND M (2017) Climatic sensitivity, water-use efficiency and growth decline in boreal jack pine (*Pinus banksiana*) forests in Northern Ontario. *Journal of Geophysical Research Biogeosciences* <http://onlinelibrary.wiley.com/doi/10.1002/2016JG003440/abstract>
- 63- WINSOME T, **SILVA LCR\***, SCOW KM, DOANE TA, HORWATH WR (2017) Plant-microbe interactions regulate carbon and nitrogen accumulation in forest soils. *Forest Ecology & Management* 15 415-423 <http://dx.doi.org/10.1016/j.foreco.2016.10.036>
- 62- **SILVA LCR\***, SUN G., ZHU X., LIANG Q., WU N., HORWATH W. (2016) Tree growth acceleration and expansion of alpine forests: The synergistic effects of atmospheric and edaphic change. *Science Advances* 2(8) e1501302 <http://advances.sciencemag.org/content/2/8/e1501302>

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**Joined UO as Assist Prof**

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- 61- FARIAS J., MARIMON B., **SILVA LCR\***, PETTER F., ANDRADE F., MORANDI P., MARIMON B. (2016) Survival and growth of native *Tachigali vulgaris* and exotic *Eucalyptus urophylla* × *E. grandis* trees in degraded soils with biochar amendment in southern Amazonia. *Forest Ecology & Management* doi:10.1016/j.foreco.2016.03.022
- 60- SHEIL D., LADD B., **SILVA L.C.R.**, LAFFAN S.W., VAN HEIST M. (2016). How are soil carbon and tropical biodiversity related? *Environmental Conservation*. DOI: 10.1017/S0376892916000011
- 59- EARLES J., SPERLING O., MCELDRONE, A., **SILVA L.C.R.**, NORTH M., ZWIENIECKI M. (2016) Bark water uptake promotes localized hydraulic recovery in coastal redwood crown. *Plant, Cell & Environment* DOI: 10.1111/pce.12612
- 58- **SILVA L.C.R.\***, SALAMANCA-JIMENEZ A., DOANE T.A., HORWATH W.R. (2015) Carbon dioxide level and form of soil nitrogen regulate assimilation of atmospheric ammonia in young trees. *Nature Scientific Reports* 5:13141 <http://www.nature.com/articles/srep13141>
- 57- BUELOW M., STEENWERTH K., **SILVA L.C.R.**, PARIKH S. (2015) A California Winery Wastewater Survey: Can wastewater be reused to irrigate vineyards? *American Journal of Enology and Viticulture* DOI: 10.5344/ajev.2015.14110
- 56- **SILVA L.C.R.** (2015) From air to land: Understanding water resources through plant-based multidisciplinary research. *Trends in Plant Sciences* 20(7) 399–401
- 55- **SILVA L.C.R.\***, GOMEZ-GUERRERO A., DOANE T.A., HORWATH, W. (2015) Isotopic and nutritional evidence for species- and site-specific responses to N deposition and elevated CO<sub>2</sub> in temperate forests. *Journal of Geophysical Research Biogeosciences* 120(6) 1110–1123
- 54- **SILVA L.C.R.\***, PEDROSO G, DOANE TA, HORWATH W (2015) Beyond the cellulose: Oxygen isotope composition of plant lipids as a proxy for terrestrial water balance. *Geochemical Perspective Letters* 1, 33-42

- 53- PAIVA A.O., **SILVA L.C.R.\***, HARIDASAN M. (2015) Productivity-efficiency tradeoffs in tropical forest-savanna transitions: linking plant and soil processes through litter input and composition. *Plant Ecology* 216, 775-787
- 52- **SILVA L.C.R.\***, DOANE T.A., CORRÊA R.S., VALVERDE V., PEREIRA E.I.P., HORWATH W.R. (2015) Iron-mediated stabilization of soil carbon amplifies the benefits of ecological restoration in degraded lands. *Ecological Applications* 25(5), 2015, pp. 1226–1234
- 51-WANG Z., **SILVA L.C.R.**, SUN G., LUO P., MOU C., HORWATH W.R. (2015) Quantifying the impact of drought on soil-plant interactions: A seasonal analysis of biotic and abiotic controls of carbon and nutrient dynamics in high-altitudinal grasslands. *Plant & Soil* 389, 59-71
- 50-**SILVA L.C.R.** (2014) Seasonal variation in groundwater depth does not explain structure and diversity of tropical savannas. *Journal of Vegetation Science*. 26(2), 404–406
- 49-MAXWELL T., **SILVA L.C.R.\***, HORWATH W. (2014) Using multi-element isotopic analysis to decipher drought impacts and adaptive management in ancient agricultural systems. *Proceedings of the National Academy of Sciences* 111(45): E4807–E4808
- 48-**SILVA L.C.R.** (2014) The importance of climate-driven forest-savanna biome shifts in anthropological and ecological research. *Proceedings of the National Academy of Sciences* 111 (37) E3831-E3832
- 47-SHI C., **SILVA L.C.R.**, ZHANG H., ZHENG Q., XIAO B., WU N., SUN G. (2014) Climate warming alters nitrogen dynamics and total non-structural carbohydrate accumulations of perennial herbs of distinctive functional groups during the plant senescence in an alpine meadow of the Tibetan Plateau, China. *Agricultural and Forest Meteorology* 200: 21-29
- 46-**SILVA L.C.R.** (2014) Natural history and evolution of the Kwongan – a global biodiversity hotspot. Invited Book Review. *Trends in Plant Sciences* 19: p686
- 45-LADD B., PERI P.L., PEPPER D.A., **SILVA L.C.R.**, SHEIL D., BONSER S.P., LAFFAN S.W., AMELUNG W., EKBLAD A., ELIASSON P., BAHAMONDE H., DUARTE-GUARDIA, BIRD M. (2014) Carbon isotopic signatures of soil organic matter correlates with leaf area index across woody biomes. *Journal of Ecology* 102: 1606–1611
- 44-QIAO Y., MIAO S., **SILVA L.C.R.\***, HORWATH W.R. (2014) Understory species regulate litter decomposition and accumulation of C and N in forest soils: A long-term dual-isotope experiment. *Forest Ecology & Management* 12(2): 873-878
- 43-FRANCO A.C., ROSSATTO D.R., **SILVA L.C.R.**, FERREIRA C.S. (2014) Cerrado vegetation and global change: The role of functional types, resource availability and disturbance in regulating plant community responses to rising CO<sub>2</sub> levels and climate warming. *Theoretical and Experimental Plant Physiology* 26 (1): 19-38
- 42-ROSSATTO D.R., **SILVA L.C.R.**, STERNBERG L.S.L., FRANCO A.C. (2014) Do woody and herbaceous species compete for soil water across topographic gradients? Evidence for niche partitioning in a Neotropical Savanna. *South African Journal of Botany* 91(4): 14-18
- 41-QIAO Y., HAN X., **SILVA L.C.R.**, MIAO S. (2014) Changes in soil respiration due to long-term application of organic and mineral fertilizers. *Journal of Food, Agriculture & Environment* 12 (2): 873-878
- 40-MUKOME F.N.D., DOANE T.A., **SILVA L.C.R.**, HORWATH W.R., PARIKH S.J. (2013) Testing protocol ensures the authenticity of organic fertilizers. *California Agriculture* 67(4): 210-216.
- 39-**SILVA L.C.R.\***, ANAND M. (2013) Historical links and new frontiers in the study of forest-atmosphere

- interactions. *Community Ecology* 14(2): 208-218.
- 38-ANAND M., LEITHEAD M., **SILVA L.C.R.**, WAGNER C., ASHIQ M.W., DROBYSHEV I., BERGERON Y., DAS A., BULGER C. (2013) The Scientific Value of the Largest Remaining Old-Growth Red Pine Forests in North America. *Biodiversity and Conservation*. 22: 1847–1861.
- 37-BORGHETTI F., LIMA E.C., **SILVA L.C.R.** (2013) A simple procedure for the purification of active fractions in aqueous extracts of plants with allelopathic properties. *Acta Botanica Brasilica* 27(1): 50-53.
- 36-ZHU X., **SILVA L.C.R.**, DOANE T.A., WU N., HORWATH W.R. (2013) Quantifying the effects of compost application, water content, and nitrogen fertilization on N<sub>2</sub>O emissions in ten agricultural soils. *Journal of Environmental Quality* 42(3): 912-918.
- 35-HAIDAR R.F., PINTO R.R., DIAS R.R., VALE G.D., **SILVA L.C.R.**, FAGG C. (2013) Seasonal forests and ecotones (seasonal/ombrophilous forest) in the state of Tocantins, Brazil: structure, classification and guidelines for conservation. *Acta Amazonica* 43(3): 261-290.
- 34-**SILVA L.C.R.\***, HOFFMANN W.A., ROSSATTO D.R., HARIDASAN M., FRANCO A.C., HORWATH W.R. (2013) Can savannas become forests? A coupled analysis of disturbance thresholds and nutrient stocks in central Brazil. *Plant & Soil* 373(1-2) 829-842.
- 33-ZHU X., **SILVA L.C.R.**, DOANE T.A., HORWATH W.R. (2013) Iron: The forgotten driver of N<sub>2</sub>O emissions from soils. *PLoS One* 8(3): e60146.
- 32-MUKOME F.N.D., ZHANG X., **SILVA L.C.R.**, SIX J., PARIKH S.J. (2013) Use of chemical and physical characteristics to investigate trends in biochar feedstocks. *Journal of Agricultural and Food Chemistry*. 61: 2196-2204.
- 31-ROSSATTO D.R., HOFFMANN W.A., **SILVA L.C.R.**, HARIDASAN M., STERNBERG L.S.L., FRANCO A.C. (2013) Seasonal variation in leaf traits between congeneric savanna and forest trees in Central Brazil: implications for forest expansion into savanna. *Trees*. 27: 1139-1150.
- 30-CECILE J., **SILVA L.C.R.**, ANAND M. (2013) Large or not: The decline of trees across biomes. *Science*. 339: 904-905.
- 29-**SILVA L.C.R.\***, CORRÊA R.S., DOANE T., PEREIRA E., HORWATH W.R. (2013) Unprecedented carbon accumulation in mined soils: the synergistic effect of resource input and plant species invasion. *Ecological Applications*. 23: 1345–1356
- 28-GÓMEZ-GUERRERO A., **SILVA L.C.R.\***, HORWATH W.R., BARRERA-REYES M., KISHCHUK B., VELÁZQUEZ-MARTÍNEZ A., TRINIDAD-HERNÁNDEZ T., PLASCENCIA-ESCALANTE O. (2013) Growth decline and divergent tree-ring isotopic composition ( $\delta^{13}\text{C}$  and  $\delta^{18}\text{O}$ ) contradict predictions of CO<sub>2</sub> stimulation in high altitudinal forests. *Global Change Biology*. 19: 1748–1758
- 27-**SILVA L.C.R.\***, HORWATH W.R. (2013) Explaining global changes in water use efficiency: Why have we overestimated forest responses to rising atmospheric CO<sub>2</sub>? *PLoS One* 8(1): e53089
- 26-**SILVA L.C.R.\***, ANAND M. (2013) Probing for the influence of atmospheric CO<sub>2</sub> and climate change on forest ecosystems across biomes. *Global Ecology and Biogeography*. 22: 83–92
- 25-LADD B., LAFFAN S., AMELUNG W., PERI P., SHEIL D., **SILVA L.C.R.**, GERVASSI P., BONSER S., NAVELL M. (2013) Estimating soil carbon in temperate and tropical forest and woodland ecosystems from existing GIS data on three continents. *Global Ecology and Biogeography* 22: 461–469

- 24-HOFFMANN W.A., GEIGER E.G., GOTSCH S.G., ROSSATTO D.R., **SILVA L.C.R.**, LAU O.L., HARIDASAN M., FRANCO A.C. (2012) Ecological thresholds at the savanna-forest boundary: How plant traits, resources and fire govern the distribution of tropical biomes. *Ecology Letters* 15: 759–768.
- 23-LEITHEAD M., **SILVA L.C.R.**, ANAND M. (2012) Recruitment patterns and northward tree migration through canopy gap dynamics in an old-growth white pine forest in northern Ontario. *Plant Ecology* 213: 1699-1714.
- 22-ROSSATTO D.R., **SILVA L.C.R.**, FRANCO A.C., STERNBERG L.S.L. (2012) Depth of water uptake during the wet season is correlated with vegetation structure along a topographic gradient in a Central Brazilian Savanna. *Environmental and Experimental Botany* 77: 259-266
- 21-QIAO Y., **SILVA L.C.R.**, HAN X., MIAO S., YAN C., HORWATH W.R. (2012) Fate of photosynthetically-fixed carbon in soybean crops measured using <sup>13</sup>C labeling after long-term fertilization of Phaeozem soils in Northeast China. *Zemdirbyste agriculture* 99: 419–424
- 20-**SILVA L.C.R.\***, ANAND M. (2011) Mechanisms of Araucaria (Atlantic) forest expansion into southern Brazilian grasslands. *Ecosystems* 14: 1354-1371
- 19-**SILVA L.C.R.\***, GIORGIS M., ANAND M., ENRICO L., PÉREZ-HARGUINDEGUY N., FALCZUK V., TIESZEN L.L., CABIDO M. (2011) Evidence of shift in C<sub>4</sub> species range in central Argentina during the Late Holocene. *Plant & Soil* 349: 261-279
- 18-LINDOSO G.S., **SILVA L.C.R.**, FELFILI J.M. (2011) Environmental variations and floristic relationship in cerrado sensu stricto on Entisols (Quartzarenic Neosols) at Sete Cidades National Park, Piauí. *Revista de Biologia Neotropical* 8(2): 1-12

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**Joined UCD as Postdoctoral Fellow**

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- 17-**SILVA L.C.R.\***, STERNBERG L. da S.L., HAIDAR R.F., VALE G.D. (2010) Deciphering earth mound origins in central Brazil. *Plant & Soil* 336: 3–14
- 16-**SILVA L.C.R.\***, ANAND M., LEITHEAD M. (2010) Recent widespread tree growth decline despite increasing atmospheric CO<sub>2</sub>. *PLoS One* 5(7): e11543. doi:10.1371/journal.pone.0011543
- 15-**SILVA L.C.R.\***, HARIDASAN M., STERNBERG L.S.L., FRANCO A.C., HOFFMANN W.A. (2010) Not all forests are expanding into central Brazilian savannas. *Plant & Soil* 333: 431-443.
- 14-**SILVA L.C.R.**, CORRÊA R.S. (2010) Evolution of substrate quality of a mined area in the Brazilian Savanna after revegetation with *Stylosanthes* spp. *Revista Brasileira de Engenharia Agrícola e Ambiental* 14(8): 835-841.
- 13-CORRÊA R.S., **SILVA L.C.R.**, Baptista G.M.M., Santos P.F. (2010) Chemical fertility of substrate treated with domestic sewage sludge and municipal composted waste. *Revista Brasileira de Engenharia Agrícola e Ambiental* 14(5): 538–544
- 12-LEITHEAD M., ANAND M., **SILVA L.C.R.** (2010) Northward migrating tree species establish in large, old treefall gaps in the temperate – boreal forest ecotone of northern Ontario, Canada. *Oecologia* 164(4): 1095-1106
- 11-ROSSATTO D.R., TAKAHASHI F.S.C., **SILVA L.C.R.**, FRANCO A.C. (2010) Functional traits of shade and sun leaves in 10 gallery forest tree species, Federal District, Brazil. *Acta Botanica Brasilica* 24(3): 640-647
- 10-**SILVA L.C.R.\***, ANAND M., OLIVEIRA J.M., PILLAR V.D. (2009) Past century changes in *Araucaria angustifolia* (Bertol.) Kuntze water use efficiency and growth in forest and grassland ecosystems of

southern Brazil: implications for forest expansion. *Global Change Biology* 15: 2387–2396

9-SILVA L.C.R., STERNBERG L.S.L., HARIDASAN M., HOFFMANN W.A., MIRALLES-WILHELM F., FRANCO A.C. (2008) Expansion of gallery forests into central Brazilian savannas. *Global Change Biology* 14(9): 2108–2118

8-SILVA L.C.R. & CORRÊA R.S. (2008) Survival and growth of six tree species under four treatments on a mined area in the Brazilian savanna. *Revista Árvore* 32: 731-740

7-CORRÊA R.S., BAPTISTA G.M.M., BALDUINO A.P.C., SILVA L.C.R. (2008) Agronomic efficiency of two organic residues on the revegetation of a red Oxisol C-horizon. *Revista Ciência Agrônômica* 39: 503-510

6-FARIA P.J., ALMEIDA F., SILVA L.C.R., VIEIRA R.F., AGOSTINI-COSTA T.S. (2008) Chemical characterization of pulp of *Butia capitata* var *capitata*. *Revista Brasileira de Fruticultura* 30, 3, 820-822

5-FARIA P.J., ARELLANO D.B., GRIMALDI R., SILVA, L.C.R., VIEIRA R.F., SILVA D.B., AGOSTINI-COSTA T.S. (2008) Chemical characterization of nut of *Butia capitata* var *capitata*. *Revista Brasileira de Fruticultura* 30: 1-4

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**Joined UoG as PhD student**

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4-RESENDE A.V., MACHADO C.T.T., MARTINS E.S., NASCIMENTO M.T., SENA M.C., SILVA L.C.R., LINHARES N.W. (2006) Rocks as a source of potassium and other nutrients in annual crops. *Espaço e Geografia* 9: 135-161

3-RESENDE A.V., MACHADO C.T.T., MARTINS E.S., NASCIMENTO M.T., SENA M.C., SILVA L.C.R., LINHARES N.W. (2006) Rocks as a source of potassium in corn crops in Brazilian savannas (Cerrado). *Boletim de Pesquisa e Desenvolvimento* 162: 1-20

2-BORGHETTI F., SILVA L.C.R., PINHEIRO J.D., VARELLA B.B., FERREIRA A.G. (2005) Aqueous leaf extract properties of Cerrado species in Central Brazil. *Proceedings of the World Congress on Allelopathy* Wagga Wagga, Australia: 388-390

1-PINHEIRO C.Q., SILVA L.C.R., CORREA R. S. (2005) Survival and growth of Baru (*Dipterix alata* Vog.) treated with sewage sludge, composted garbage or cattle manure in mined spoils in the Brazilian Cerrado. *Sociedade & Natureza* 5: 789-795

## RESEARCH GRANTS

### **CURRENT**

NSF (PBI) 1758947 | Duration: 07/01/18 – 07/30/20 | **Role:** PI **Title:** Harnessing biological complexity to improve food security: How do mycorrhizal networks control resource transfer and plant productivity in inter- and mono-crop model systems? **Total:** \$299,705 **Published articles** #72. [https://www.nsf.gov/awardsearch/showAward?AWD\\_ID=1758947](https://www.nsf.gov/awardsearch/showAward?AWD_ID=1758947)

NSF (AGS) 1602958 | Duration: 08/01/16 – 03/30/19 **Role:** P.I. **Title:** Collaborative Research: Delineating Holocene climate-biosphere links from climate and vegetation reconstructions from the Amazon region **Total:** \$476,217 (\$92,395.00 transferred to Silva at UO). **Published articles** #65, 69, 77. [https://www.nsf.gov/awardsearch/showAward?AWD\\_ID=1602958](https://www.nsf.gov/awardsearch/showAward?AWD_ID=1602958)

NIFA | Duration: 07/01/14 – 07/30/18 | Grant #: 2014-67003-22077 | **Role:** Co-PI **Title:** *Agricultural sensitivity to climate change and water resources interactions in the San Joaquin Valley California and system resilience offered by adaptation strategies* **Total:** \$1,874,997 **Published articles** #44, 49, 56, 66, 74, 77, 79. <https://app.dimensions.ai/details/grant/grant.3942599>

Save-the-Redwoods League FY14 | Duration: 07/01/16 – 07/30/18 | Grant #: 089 | **Role:** Co-PI **Title:** *Understanding*

*the influence of an apex predator on the forest carbon cycle: mapping trophic pathways and identifying microbial players with stable isotope and community DNA analyses to uncover poorly known but significant trophic relationships with implications for global climate change* **Total:** \$25,000 **Published articles** #59, 67.

National Geographic | Duration: 07/01/18 – 07/30/19 | **Role:** Co-PI **Title:** The climate paradox: mapping resilience and vulnerability of montane forests **Total:** \$5,000 **Published articles** #80.

### **RECENTLY COMPLETED**

California Department of Food and Agriculture | Duration: 10/01/14 – 04/30/17 | Grant #: 26491 | **Role:** P.I. **Title:** *Measuring evapotranspiration, water balance and depth of water uptake to improve efficiency of California's tree crops* **Total:** \$370,359 **Published articles** #66, 69, 70, 71, 74, 77, 80.

University of California Academic Federation Innovative Development Award (2015-2017) | **Role:** PI **Title:** Retracing drought impacts in California: A new approach to measure changes in food quality and productivity as caused by fluctuations in rainfall **Total:** \$12,924 **Published articles** #54, 58, 64.

UC MEXUS-CONACYT (Awarded 2014-2016). CN 13-546 | **Role:** Co-PI P.I. **Title:** Effects of soil-plant feedbacks on the response of forest ecosystems to climate variability and nitrogen deposition **Total:** \$25,000. **Published articles** #28, 55, 73, 75, 76.

Chinese Academy of Science, Grant for International Researchers (Awarded 2012-2014) Role: Principal Investigator. Sept 2012-14. Title: **Climate-driven vegetation and soil nutrient dynamics across altitudinal gradients in the Qinghai-Tibetan Plateau, China.** Host institution: Chengdu Institute of Biology \$50,000. **Published articles** #47, 51, 62.

National Council for Scientific and Technological Development Brazil (2014-2016). Role: Co-PI. **Ecological implications of large scale restoration of degraded land in the Cerrado-Amazon transition** \$100,000. **Published articles** #52, 53, 60, 71, 78.

USAID / UC RIFA (Research and Innovation Fellowships) | Duration: 01/07/16 – 07/30/18 | **Role:** Collaborator **Title:** *Investigating links between plant diversity and soil properties to promote sustainable agriculture in tropical regions.* **Total:** \$122,089 **Published articles** #60, 61, 71, 73, 78.

### **PENDING**

NSF (Career) The strength of weak ties in ecology: scaling soil-plant-atmosphere interactions to quantify resilience and predict alterations of terrestrial carbon and water cycles. Amount: \$1,455,532 Award Period Covered: 9/1/2019 – 8/31/2023

NASA Bridging Earth Systems with InSAR: from characterization of geohazards to contribution of CO2 estimates due to peat oxidation across southeast Asia. Ammount \$399,532. Period Covered: 6/1/2019 – 5/31/2021

USDA NIFA The role of mycorrhizal fungi and microbial decomposers in sustainable vineyard management in California and Oregon \$749,591 Period Covered: 1/1/2019 – 12/31/2022

### AWARDS

- **Early Career Faculty Award for Excellence in Research** – University of Oregon 2018
- **Best paper of the year award** – American Society for Enology & Viticulture 2016
- **National Academy of Sciences Travel Award** – Coupled Human & Env Systems 2016
- **Innovative Research Development Award** – UC Davis Academic Federation 2015
- **J Stan Rowe Award for best paper in Ecology** – Canadian Botanical Association 2013
- **Canadian Society for Ecology and Evolution** – Travel Award 2010
- **Ontario Agricultural College Graduate Award** – U Guelph 2009
- **Arthur D. Latonnell Graduate Scholarship** – U Guelph 2008
- **NSF Biocomplexity Graduate Fellowship** – U Miami 2006/2007

### MEDIA HIGHLIGHTS

- [Excellence in Research Award](#)
- [Solving interdisciplinary puzzles at the SPA Lab](#)



- [Climate change impact on forest carbon and water](#)
- [Looking at climate stress on West Coast rangelands](#)
- [Restoration of California Deltaic and Coastal Wetlands](#)
- [UO researcher finds surprise growth in Tibetan forest](#)
- [Soil carbon – key to protecting biodiversity and climate](#)
- [Winery wastewater a viable water source for vineyards](#)
- [Plants use nitrogen from the atmosphere in unexpected ways](#)

## OUTREACH

**UC MEXUS / USAID / UC RIFA International Research Mentoring:** Co-advisor of students investigating links between plant diversity and soil properties to promote sustainable forestry and agriculture in Mexico and Brazil (2015-2017) providing innovation fellowships awards to support graduate student research and professional development.

**High School education (AggieMentors Program):** Supervised high school students from underserved communities in California working on tree identification and ecophysiological measurements. An award-winning project at Woodland high-school involved student training in field sampling techniques and lab work at the UC Davis Stable Isotope Facility. Similar activities are planned for pending grant proposals - NSF Career and USDA NIFA grants in collaboration with UO SPUR Program (2014-2018).

**Science training in underserved communities:** Organizer and instructor of NSF-funded field ecology and stable isotope courses for undergraduate students in public universities serving underserved communities across the Cerrado-Amazon region in central Brazil (2017-2019). Organizer and instructor of field and lab research projects at the University of Oregon Summer Program for Undergraduate Research in Life Sciences (SPUR) to provides research opportunities for low-income first-generation undergraduate students and NSF GRFP training workshops.

**Land managers and farmers:** Lead PI in California Department of Food and Agriculture grants focusing on sustainability under climatic stress in collaboration with UC cooperative extension specialists to improve wastewater management and drought resilience across California; Lead PI in projects spanning several years of outreach activities funded by the National Science Foundation PBI, USDA NIFA in California, Oregon and Washington states focusing on agricultural sustainability and rangeland resilience in connection with plant-fungal network behavior under drought.

## SERVICE

*Interdisciplinary Research Development Curriculum University of Oregon.*

*Interim Director of Graduate Studies Environmental Studies Program University of Oregon 2017.*

*Several TTF search committees University of Oregon Dep of Geography. Institute of Ecology & Evolution (2016-2019).*

### **Editorial role**

- Nature Publishing Group. Environmental Sciences Editor (Sept 2016 – Present)  
<https://www.nature.com/srep/about/editorial-board>
- PLoS ONE. Ecology Academic Editor (July 2014-Present)  
<http://journals.plos.org/plosone/static/editorial-board>
- Plant & Soil. Section Editor (Oct 2014-Present)  
<https://www.springer.com/life+sciences/plant+sciences/journal/11104?detailsPage=editorialBoard>
- Soil Science Society of America. Communications editor (Mar 2014 – Aug 2017)  
<https://www.soils.org/about-society/committees/s302/members/>

**Memberships** – American Association of Geographers; American Geophysical Union; Ecological Society of America; Soil Science Society of America.

**Research grant selection panels** - California Department of Fish and Wildlife; National Science Foundation: Division of Environmental Biology / Ecosystem studies; National Science Center Poland: Division of Plant Biology / Environmental Sciences; Flanders Research Foundation Flanders (Fonds Wetenschappelijk Onderzoek - FWO) Belgium.

**Reviewer** - Agricultural & Forest Meteorology; Atmosphere; Biogeoscience; Biology Letters; Ecohydrology; Ecology; Ecological Complexity; Ecosystems; Funct Plant Biology; Global Change Biology; Global Ecology & Biogeography; Nature Climate Change; Nature Sci Reports; Oecologia; Palaeogeography, Palaeoclimatology, Palaeoecology; Plant &

Soil; Plant Cell & Envir; PLoS ONE; Restoration Ecology; Soil Biology & Biogeochemistry; Soil Science Society of America; Trees

## MENTORING

<b>Undergraduate students</b>	<b>Institution</b>	<b>Project</b>	<b>Advisory role</b>	<b>Year completed</b>
Aaron LeFore	UO	Honors thesis	Main advisor	2018
Braden Prillwitz	UO	Honors thesis	Main advisor	2018
Alexia Gee	UO	NSF SPUR	Main advisor	2017
Robert Kubacki	UC Davis	Honors thesis	Main advisor	2017
Cecilia Gonzales	UC Davis	AggieMentors	Main advisor	2016

<b>MS students</b>	<b>Institution</b>	<b>Advisory role</b>	<b>Year completed</b>	<b>Present Employment</b>
Oriana Chafe	UO (ESSP)	Main advisor	Current	
Weicheng Wang	UO (Geo)	Main advisor	Current	
Mike Farinacci	UO (Geo)	Main advisor	Current	
Laura Emberson	UC Davis	Main advisor	2017	Environmental analyst NRCS DC
Tara Seely	UC Davis	Main advisor	2017	NSF GRFP PhD student
Jennifer Morris	UC Davis	Co-Advisor	2015	Research scientist / consultant MLJ CA

<b>PhD students</b>	<b>Institution</b>	<b>Advisory role</b>	<b>Year completed</b>	<b>Present Employment</b>
Schyler Reis	UO (ESSP/Geo)	Main advisor	Current	
Adriana Uscanga Castillo	UO (Geo)	Main advisor	Current	
Jamie Wright	UO (ESSP/Bio)	Main advisor	Current	
Paulo Quadri	UCSC	Co-Advisor	Current	
Barbara Bomfim	UC Davis	Main advisor	2018	Postdoctoral fellow UO
Toby Maxwell	UC Davis	Main advisor	2018	Postdoctoral fellow UO
Daniela Jerszurki	UC Davis	Co-Advisor	2016	Postdoctoral fellow U Negev Israel
Josenilton de Farias	UC Davis	Co-Advisor	2016	Assist professor U Mato Grosso Brazil
Julie Bower	UC Davis	Co-Advisor	2015	Postdoctoral fellow UC Davis CA
Alveiro Salamanca-Jimenez	UC Davis	Co-Advisor	2015	Research faculty NCCR Colombia
Mason Earles	UC Davis	Co-Advisor	2015	Postdoctoral fellow Yale University

### *Student awards*

**Adriana Uscanga Castillo** (2018) Best Poster American Association of Geographers Conference, "Examining causes and consequences of regime shifts in human-environment systems of the Mexican cloud forest"

**Ori Chafe** (2018) NSF Graduate Research Fellowships Program (GRFP) Award.

**Schyler Reis** (2017) Best presentation award on Disturbance and Resilience. Joint Campus Conference 2017. University of Oregon. Oregon State University. Portland State University.

**Alexia Gee** (2016) University of Oregon Summer Program for Undergraduate Research in Life Sciences (SPUR).

**Tara Seely** (2016) NSF Graduate Research Fellowships Program (GRFP) Award.

**Laura Emberson** (2016) Best poster award. *Wheat response to climate change*. Interdisciplinary Graduate and Professional Student Symposium (IGPS).

**Cecilia Gonzales** (2016) Best poster. *Are Your Trees More Stressed than You Are?* UCD AggieMentors Symposium.

**Cecilia Gonzales** (2016). Emerging Env Leader Scholarship. National Council for Science and the Environment.

**LANGUAGE SKILLS** **Native or bilingual proficiency:** *English, Portuguese, and Spanish*. **Limited working proficiency:** *Italian, French, and German*.