# Personal & contact information

Citizenships: USA (birth), Peru (descent)

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##### Appointments

2024-present: Research Director, Morven Sustainability Lab, university of Virginia.

2007-present: Professor, Environmental Sciences and (by courtesy) Biology, University of Virginia, Charlottesville

2011-2012: Senior International Scientist, Chinese Academy of Sciences

2007-2009: Director, Blandy Experimental Farm of the University of Virginia and State Arboretum of Virginia

2002: Hrdy Visiting Professor, Harvard University, Cambridge, MA

2001: Bullard Fellow, Harvard University, Cambridge, MA

1999-2004: Graduate Director, Ecology & Evolution Dept., State University of New York, Stony Brook, NY

1994-2011: Member, Graduate Program in Ecology and Evolution, State University of New York, Stony Brook, NY

1994-2007: Assistant, Associate (1999), and Full (2003) Professor, Ecology & Evolution Dept. and (by courtesy) Marine Sciences, State University of New York, Stony Brook, NY

# Education

Post-Doctoral Fellow, Analytical Chemistry, NRC - NASA Ames, Moffett Field, CA, 1994

Ph. D., Biological Sciences, Stanford University. January, 1994.

A.B. with Honors, Biology, Harvard College. January, 1987.

#### Current Funded Projects

NSF Macrosystems-NEON. MRA: Canopy structure traits: whole plant properties bridging leaves to ecosystems. X. Yang PI. M. Lerdau co-PI.

Nelson Fund for Southeast Asian Studies. Seed Grant Proposal for Ecosystem Conservation at Tuanan Biological Station, Central Kalimantan, Indonesia. 10/21-9/24.

NSF-DISES: RCN-SWISLR - Saltwater Intrusion and Sea Level Rise in rural landscapes: Assessing Risk and Identifying Mitigation and Adaptation Options for Rural Coastal Plain Communities. 10/21-9/26

NSF-IOS: Mechanics and physiology in plant responses to drought. Funding for 6/20-5/24.

#### Previous Proposals Supported

NSF-ENG: EAGER: Supported Hydroponics for a Resilient Fresh Food Supply in SIDS. Funding for 5/20-4/23

NASA Terrestrial Ecology. Dynamic Modeling of Ecosystem Processes and Services in North American Boreal Forests across the ABOVE Study Region: Using an Individual-based Model to Integrate Complex Feedbacks among Disturbances, Climate, and Biota for Optimal Land Management. Funding for 5/19-10/23.

NSF Atmospheric Chemistry. Collaborative Research: Understanding ozone-ecosystem controls and feedbacks across landscapes through leaf- and canopy-scale measurements. Funded for 11/18-09/23

NASA Goddard Seed Program. STELLA: System for Technology Education and Land Life Assessment. Funding for 11/19-10/21

Virginia Appalachian Prosperity Project (Commonwealth of Virginia). Collaborative Efforts in Economic Botany: Capitalizing on Rich Botanical Resources and Heritage in Appalachia. Funding for 5/19-12/20.

Virginia 4-VA (Commonwealth of Virginia). Forest resilience in a warmer world: using novel technologies to advance interdisciplinary understanding of thermal controls over ecosystem functions at the Virginia Forest Laboratory. Funding for 5/19-4/20

UVA CGI (Commonwealth of Virginia). Climate Resilience through Social Enterprise. Submitted 15 October 2018. Funding for 11/18-10/19.

Commonwealth of Virginia ETF. Equipment Proposal for an Integrated Biosphere Atmosphere Exchange System for Research and Teaching. PI with 3 Co-I’s. Funding for 11/18-10/19.

3-Cavs, University of Virginia. Climate Resilience in Small Island Developing States – Case Study in Dominica. 10/18-9/19.

USDA BARC. Regulation of Photosynthesis and Growth in Rice. Funded 2018-2020 (ended in 2019 with the resignation of L. Ziska from USDA).

Surdna Foundation. Designing a Community-Engaged Approach to Pre-Development Social Impact Analysis. 2017-2018. Co-Pi (Barbara Brown Wilson, PI).

UVA-East Asia Center Nelson Faculty Award. 2017-2018. Biodiversity, ecosystem function, and resilience in Southeast Asian forests.

UVA/FAPESP - SPRINT. 2017-2018. Isoprene emission and stress responses of tropical trees. funded February, 2017-2018

UVA Hart Family Undergraduate (Eryn Campbell, undergraduate; Sally Pusede, faculty co-Advisor). Nitrous Oxide (N2O) Emissions from Soybean Plants: Quantifying and Distinguishing Emissions from Three Distinct Pathways.

Miller Fund Proposal, Soil amendments and plant growth at Morven Farm. funded, June 2015.

UVA- Resilience Research Initiative Proposal. Engendering Local Stewardship through Citizen Science at Friendship Court. Team: Barbara Brown Wilson (PI- Planning), Teresa Culver (Environmental Engineering), Andrew Mondschein (Planning), Brian Park (Civil Engineering), Manuel Lerdau (Environmental Sciences [joined team in March, 2016]).

Young African Leaders Initiative (US. Dept. of State) 2014-2018 Co-I responsible for Environmental Component (S. Gamage, Project PI)

Chinese Academy of Sciences. Senior International Scientist Award. Stress physiology and the ecology of tropical trees. 2011-2013.

NEON, Inc. “Relocatable Design Strategy – NEON Mid-Atlantic Domain” M. Lerdau and N. Bourg, co-PI’s. 2009-present

NSF-DEB .Effects of kudzu (*Pueraria montana*) on nitrogen oxide fluxes. Lerdau, PI; J Hickman, co-PI. 2007-2009

NSF-DEB Effects of carbon dioxide and ozone on mercury cycling in forest ecosystems. Lerdau. PI 2007-2009

NSF-HYD. An optimality principle of evaporation over the land surface (with R. Bras [PI]). 2003-2006

DOE-BNL. Air Pollution Effects on Plant Function. 2003-2005

NSF-IBN (Dissertation Improvement Grant). Carbon sources of isoprene (with J. Funk). 2002-2003.

SUNY-SB, Presidential Mini-Grant for Education. Developing an ecology and human affairs education module in SUNY-SB Greenhouse Facility. 2003

Andrew Mellon Foundation. Organismal aspects of ecosystem processes in tropical forests. 2001-2006.

EPA-STAR. Ecosystem aspects of biological invasions (with Dr. J. Gurevitch) 2001-2004.

DOE-BNL. Combined use of Radiotracers and Positron Emission Imaging in Understanding the Integrated Response of Plants to Environmental Stress (with Drs. R. Ferrieri and D. Schyler,). 2001-2003.

NSF-DEB Development of a Functional Ecology Research and Training Lab (with D. Padilla) 1999-2002.

DOE-BNL, Seed grant for research on N-deposition impacts on terrestrial ecology, 1999-2001.

Department of Education Graduate Award in Area of National Need (GAANN) Graduate Training Grant, 1998-2001.

NASA, Stony Brook as a center for excellence in remote sensing analysis (co-PI with M. Geller, K. Louiza, M. Zhao, D. Waliser), 1998-1999.

Nature Conservancy/Mellon Foundation, Biological invasions in eastern New York (co-PI with J. Gurevitch), 1998-2000.

NSF DEB, Effects of defoliation on isoprene emission (co-PI with C. Jones), 1997-2001.

NASA, Development and validation of a tropical isoprene emission model, 1996-2001.

NSF ATM, Acquisition of an isotope ratio mass spectrometer (co-PI with J. Mak), 1996.

NASA, Monoterpene emissions from boreal forests (co-PI with R. Monson), 1993-1996.

**Manuscripts in preparation**

**Lerdau, M**. (in preparation) Plant genetics and scientific racism.  A research paper on the development of plant genetics during the early and mid 20th century and its relationship to scientific racism and eugenics.  Research, analysis, and writing were conducted during 2022.  A first draft was sent to expert reviewers, and revisions are in progress.

**Manuscripts in review/revision**

Singh, J., Lombardozzi, D., Walmsley, E., Xia, L., Lerdau, M., Robock, A. (in review) Improved Global Understanding of Ozone Damage to Crops and Trees. In review at *Global Change Biology*.

Panji, N., McGlynn, D., Barry, L., Scanlon, T., Lerdau, M., Pusede, S., Isaacman-VanWertz, G. (in review) Constraining Light Dependency in Modeled Emissions Through Comparison to Observed BVOC Concentrations in a Southeastern US Forest. In review at *Atmospheric Chemistry and Physics*.

Li, Y., Zhang, X., Liu, M., Wang, C., Lerdau, M. (in review) Precipitation–induced changes in soil properties mediated root resource acquisition strategies in an alpine meadow, Qinghai–Tibetan Plateau, China. In review at *Journal of Plant Ecology* (Oxford)

Kim, J., Root, A., Benson, M., Beverly, D., Johnson, J., Lerdau, M., Phillips, R., Novick, K., Yang, X. (in review) Leaf angle changes enhance the relationship between quantum yield and fluorescence in sugar maple and white oak seedlings exposed to drought stress. In review at *New Phytologist*.

Jablonski, A., Li, R., Kim, J., **Lerdau, M**., Petras, C., Yang, X. (in review) Spatiotemporal variation in canopy fluorescence yield is related to leaf angle distribution and pigment content in a mixed temperate system. In review at *Remote Sensing of the Environment*.

**Publications**

Yi, K., Li, R., Scanlon, T., **Lerdau, M**., Berry, J., Yang, X. (accepted) Impact of light availability and atmospheric dryness on solar-induced chlorophyll fluorescence: from tower-based observation at a temperate forest. *Remote Sensing of the Environment*.Accepted 5 March, 2024.

O’Donnell, K., Bernhardt, E., Emanuel, R., Ardón, M., **Lerdau, M**., Manda, A., and 12 authors alphabetical (in press). Saltwater Intrusion and Sea Level Rise threatens U.S. rural coastal landscapes and communities. *Anthropocene*. Accepted 8 January, 2024.

**Lerdau, M**., (2023) Extraterrestrial life: back story for the control experiment. *Nature*. **623**, 916. doi: https://doi.org/10.1038/d41586-023-03742-8

**Lerdau, M**., Monson, R., and Ehleringer, J. (2023) The carbon balance of plants: economics, optimization, and trait spectra in a historical perspective. *Oecologia*. https://doi.org/10.1007/s00442-023-05458-y.

Cannon, C. and Lerdau, M. (2023) Conservation should not make ‘perfect’ an enemy of ‘good’. *Trends in Plant Science*. <https://doi.org/10.1016/j.tplants.2023.06.010>

Yang, X., Li, R., Jablonski, A., Stovall, A., Yi, K., Ma, Y., Beverly, D., Phillips, R., Novick, K., Xu, X., and **Lerdau, M.** (2023) Leaf angle as a leaf and canopy trait: Rejuvenating its role in ecology with new technology. *Ecology Letters*.  <https://doi.org/10.1111/ele.14215>

McGlynn, DF., Frazier, G., Barry, LE., **Lerdau, M.**, Pusede,SE., Isaacman-VanWertz, G. (2023). Minor contributions of daytime monoterpenes are major contributors to atmospheric reactivity. *Biogeosciences*. 20:45-55. <https://doi.org/10.5194/bg-20-45-2023>.

**Lerdau, M**. (2022) *Science* 378:256. The challenge of open access incentives. <https://www.science.org/doi/10.1126/science.ade7288>

**Lerdau, M**. (2022) Studying Ecology. Non-Peer-reviewed letter in *The Nation*. 9/19-26. P. 45.

Frazier, G., McGlynn, DF., Barry, LE., **Lerdau, M.**, Pusede,SE., Isaacman-VanWertz, G. (2022) Sesquiterpenes in the southeastern US: concentrations, composition, and their role in atmospheric chemistry. *Environmental Science: Atmospheres*. 2: 1208-1220. DOI: 10.1039/d2ea00059h

**Lerdau, M**. (2022) Edward O. Wilson, genetics, and human behaviour. *Bioessays* DOI: 10.1002/bies.202200034.

Cannon, C. and **Lerdau, M**. (2022) Asking Only Half the Question in Explaining Tropical Diversity. Accepted to *Trends in Ecology and Evolution* on 25 January, 2022).

Zhang, H., Shugart, H., Wang, B., and **Lerdau, M.** (2021) The significance of aggregation methods in functional group modelling. <https://www.mdpi.com/1999-4907/12/11/1560/pdf>

**McGlynn, D., Barry, L., Lerdau, M.,   Pusede, S., and Isaacman-VanWertz, G. (2021)** Variability in the composition of biogenic volatile organic compounds in a southeastern US forest and their role in atmospheric reactivity. *Atmospheric Chemistry and Physics*. <https://doi.org/10.5194/acp-2021-416>.

Monson, R., Trowbridge, A., Lindroth, R. and **Lerdau, M.** (2021) Coordinated resource allocation to plant growth‐defense trade‐offs. *New Phytologist*. doi:10.1111/NPH.17773.

Chen, K., Hu, L., Wang, C., Yang, W., Zi, H., **Lerdau, M**. (2021) Herbaceous plants influence bacterial communities, while shrubs influence fungal communities in subalpine coniferous forests. *Forest Ecology and Management*. <https://doi.org/10.1016/j.foreco.2021.119656>.

Brosi, B., Hall, E., Inouye, B., **Lerdau, M.** (2021) Trade-offs among resilience, robustness, and performance and how we might study them. *Journal of Integrative and Comparative Biology*, <https://doi.org/10.1093/icb/icab178> .

Hu, L., Zi, H., Xueping, L., **Lerdau, M**., Wang, C. (2021) Root dynamics along a restoration chronosequence of revegetated grassland on the degraded alpine meadow on Qinghai-Tibetan Plateau, China. *Land Degradation and Development*.13: 3561-3572. <https://doi.org/10.1002/ldr.3954>.

Koong Y, Smith, J., Jablonski, A., Tatham, E., Scanlon, T., Lerdau, M., Novick, K., Yang, X. (2020). High heterogeneity in canopy temperature among co-occurring tree species in a temperate forest. *JGR-Biogeosciences* doi: 10.1029/2020JG005892. November, 2020.

Cook B, Haverkamp A, Hansson B, Roulston T, Lerdau M, Knaden M. (2020) Pollination in the Anthropocene: a Moth Can Learn Ozone-Altered Floral Blends. *Journal of Chemical Ecology*. 46 (9). https://doi.org/10.1007/s10886-020-01211-4

Helm, L., Yang, X., and **Lerdau, M**. (2020) Solar-induced chlorophyll fluorescence and short-term photosynthetic response to drought. *Ecological Applications*. <https://esajournals.onlinelibrary.wiley.com/doi/abs/10.1002/eap.2101>

Shugart, H., Foster, A., Wang, B., Druckenbrod, D. Ma, J., **Lerdau, M.**, Saatchi, S., Yang, X., Yan, X. Gap Models across Micro- to Mega-scales of Time and Space: Examples of Tansley’s Ecosystem Concept. (2020) *Forest Ecosystems*. <https://forestecosyst.springeropen.com/articles/10.1186/s40663-020-00225-4>

Hu, L., Zi, H., Wu, P., Wang, Y., **Lerdau, M**., Wu, W., and Wang, C. 2019. Soil bacterial communities re-vegetated grasslands with *Elymus natans* are largely influenced by soil pH and total phosphorus across restoration time. *Land Degradation & Development*. 30: 2243-2256. https://doi.org/10.1002/ldr.3414

Wang, B., Shugart, H., and **Lerdau, M**. 2019. Shining light on radiative impacts. *Nature Geoscience*. <https://doi.org/10.1038/s41561-019-0413-8>.

Wang, B. Brewer, P., Shugart, H., **Lerdau, M**., Allison, S. 2019. Building bottom-up aggregate-based models (ABMs) in soil systems with a view of aggregates as biogeochemical reactors. *Global Change Biology*. <https://doi.org/10.1111/gcb.14684>

**Lerdau, M**. 2019. A Beauty of an Introduction to an Idea of Beauty [review of The Evolution of Beauty, by Richard Prum.]. *Birding*. 50.2: 65-66.

Demetillo, M., Anderson, J., Geddes, J., Yang, X., Najacht, E., Herrera, S., Kabasares, K., Kotsakis, A., **Lerdau, M**., and Pusede, S. 2019. Observing drought influences on ozone air pollution. *Environmental Science and Technology*. **DOI:** 10.1021/acs.est.8b04852 (discussed in *Science*, Plautz, J. 2019. Drought is not just about water. It affects air pollution, too. https://www.sciencemag.org/news/2019/04/drought-not-just-about-water-it-affects-air-pollution-too)

Cannon, C. and **M. Lerdau**. 2019. Demography and destiny: the syngameon in hyperdiverse systems. *Proceedings of the National Academy of Sciences*. 116 (17) 8105. doi.org/10.1073/pnas.1902040116

Wang, B. Brewer, P., Shugart, H., **Lerdau, M**., Allison, S. 2019. Soil aggregates as biogeochemical reactors and implications for soil-atmosphere exchange of greenhouse gases. *Global Change Biology*. 25: 373-385.

Wang, B., J. Shuman, H., Shugart, and **M. Lerdau**. 2018. Biodiversity matters in feedbacks between climate change and air quality: a study using an individual-based model. *Ecological Applications.*28: 1223-1231. DOI:10.1002/eap.1721

Zi HB, Wang CT, Wang GX, Wu PF, **Lerdau M**, Ade LJ, Hu L. 2018. Response of soil bacterial community and enzyme activity to experimental warming of an alpine meadow. *European Journal of Soil Science*. 69: 429-438 DOI: 10.1111/ejss.12547.

Ade, L., Hu, L., Zi, H. Wang, C., **Lerdau, M**., and Dong, S.  2018. Effect of snowpack on the soil bacteria of alpine meadows in the Qinghai-Tibetan Plateau of China.  *Catena*. 164: 13-22.

Pan, J., Huang, D. Gui Z., Zhang, H., Xinyu, X., Zengfeng, M., Gao, S., **Lerdau, M**., Chu, C., Li, L. 2018. Overexpression of microRNA408 enhances photosynthesis, growth, and seed yield in diverse plants.  *Journal of Integrative Plant Biology*.   doi: 10.1111/jipb.12634

Hu L., Zi HB, Ade LJ, **Lerdau M**, Wang CT. 2017. Effects of zokors (*Myospalax baileyi*) on plant, on abiotic and biotic soil characteristic of an alpine meadow. *Ecological Engineering*. 103:95-105.

Wang B., Shugart H., **Lerdau M**. 2017. Sensitivity of global greenhouse gases budget to tropospheric ozone pollution. *Environmental Research Letters*. 12(8): 084001.

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Wang, C., Xinquan Z., Hongbiao Z., Luji A., Lei H., Genxu W., **Lerdau M**., 2017. The effect of simulated warming on root dynamics and soil microbial community in an alpine meadow of the Qinghai-Tibet Plateau. *Applied Soil Ecology*. 116:30-41.

Aneece, I., Epstein, H., and **Lerdau, M**. 2017. Correlating species and spectral diversities using hyperspectral remote sensing in early-successional fields. *Ecology and Evolution*. 7:3475-3488.

Wang, B., Shugart, H., **Lerdau, M**. (2017). An individual-based model of forest volatile organic compound emissions—UVAFME-VOC v1.0. *Ecological Modelling*. 350: 69-78.

Wang B., **Lerdau M**, He Y., 2017. Widespread production of non-microbial greenhouse gases in soils. *Global Change Biology*. 23: 4472-4482

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# Lerdau, M. “Minding (and bridging) the gap between evolutionary ecology and atmospheric biogeochemistry in a study of plant pollinator behaviour. (2016) *New Phytologist*. DOI: 10.1111/nph.13752

Wang, B., Schuman, J., Shugart, H., and **Lerdau, M**. Forests and ozone: productivity, carbon storage, and feedbacks. *Scientific Reports* **6**, Article number: 22133(2016) doi:10.1038/srep22133.

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Lerdau, M. (2014) The Gaia hypothesis: Science on a pagan planet. Quarterly Review of Biology. 89: 253-255.

Hickman, J. and **M. Lerdau**. (2013) Biogeochemical impacts of the northward expansion of kudzu under climate change: the importance of ecological context. *Ecosphere*: 4(10): 121. http//dx.doi.org/10.1890/ES13-00142.1.

Hickman, J. and **M. Lerdau**. (2013) The Native-Invasive balance: implications for nutrient cycling. *Oecologia*. DOI: 10.1007/s00442-013-2607-x

Oikawa, P. and **M. Lerdau**. (2013) Catabolism of volatile organic carbon influences growth and survival of plants. *Trends in Plant Sciences*. doi.org/10.1016/j.tplants.2013.08.011

**Lerdau, M.** and J. Wickham (2011) Non-natives: four risk factors. *Nature*. 475: 36-37.

Oikawa, P., L. Li, B. Geibel, L. Sternberg, and **M. Lerdau**. (2011) Investigating the source of mature leaf methanol emissions in tomato *Lycopersicon esculentum*. *New Phytologist 191:* 1031-1040.

Niinemets U et al. (14 co-authors in including **M. Lerdau**) (2011) Estimations of isoprenoid emission capacity from enclosure studies: measurements, data processing, quality and standardized measurement protocols. *Biogeosciences*. 8: 2209-2246.

Oikawa, P., L. Li, M. Timko, and **M. Lerdau**. (2011) Short term changes in methanol emission and pectin methylesterase activity are not directly affected by light in *Lycopersicon esculentum*. *Biogeosciences*,8: 1023-1030.

Duval, Benjamin; Dijkstra, Paul; Natali, Susan; Megonigal, J. Ketterer, Michael; **Lerdau, Manuel**; Drake, Bert; Gordon, Gwyneth; Anbar, Ariel; Hungate, Bruce. (2011) Plant-soil distribution of potentially toxic elements in response to elevated atmospheric CO2. *Environmental Science and Technology*. 45: 2570-2574

Gotsch SG, Powers JS, **Lerdau MT** (2010) Leaf traits and water relations of 12 evergreen species in Costa Rican wet and dry forests: patterns of intra-specific variation across forests and seasons. *Plant Ecology*. 211: 133-146.

**Lerdau MT** and Hickman JE (2010). Mechanisms and feedbacks in N fixation and NO production (letter). Proceedings of the National Academy of Sciences. 107: E154.

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Powers, J., 22 co-authors, and **M. Lerdau** [final author] (2009) Decomposition in tropical forests: a pan-tropical study of the effects of litter type, litter placement and mesofaunal exclusion across a precipitation gradient. *Journal of Ecology*. doi: 10.1111/j.1365-2745.2009.01515.x

Vickers, C., J. Gershenzon, **M. Lerdau**, and F. Loreto (2009) A unified mechanism of action for isoprenoids in plant abiotic stress. *Nature: Chemical Biology*. 5:283-291.

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Jardine, K., T. Karl, M. Lerdau, P. Harley, A. Guenther, and J. Mak (2009) Carbon isotope analysis of acetylaldehyde emitted from leaves following mechanical stress and anoxia. *Plant Biology*. 11:591-597.

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**Lerdau, M**. (2007). A positive feedback with negative consequences. *Science*, **316**: 212-213.

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**Lerdau, M**. and J. Gershenzon (1997) Allocation theory and the costs of chemical defenses in plants. pp. 265-277 IN: *Resource Allocation in Plants and Animals* (Bazzaz, F. and J. Grace, eds.). Academic Press, San Diego, USA.

**Lerdau, M**. and M. Keller (1997) Controls over isoprene emission from trees in a sub-tropical dry forest. *Plant, Cell, and Environment* 20:569-578.

**Lerdau, M.**, A. Guenther, and R. Monson (1997) Production and emission of volatile organic compounds by plants. *Bioscience* 47:373-383.

**Lerdau, M.** (1996) Insects and ecosystem function. *Trends Ecology Evolution*. 11:151-151.

**Lerdau, M.**, P. Matson, R. Fall, and R. Monson (1995) Ecological controls over monoterpene emissions from douglas fir (*Pseudotsuga menziesii*). *Ecology* 76: 2640-2647.

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**Lerdau, M.T**., S. Dilts, B. Lamb, E Allwine, and H. Westberg. (1994) Monoterpene emissions from Ponderosa Pine. *Journal of Geophysical Research* 99(D):16609-16615.

**Lerdau, M.**, M. Litvak, and R. Monson, R.K. (1994) Plant Chemical Defense: Monoterpenes and the growth-differentiation balance hypothesis. *Trends in Ecology and Evolution*. 9:58-61.

**Lerdau, M**. (1993) Formal equivalence among resource allocation models: what is the appropriate currency? *Functional Ecology* 7: 507-508.

**Lerdau, M.T**. and Penuelas, J. (1993) Terpenes in plants: links between the biosphere and the atmosphere. *Mundo Cientifico* 13:60-64 (in Spanish).

**Lerdau, M**. (1992) Future discounts and resource allocation in plants. *Functional Ecology* 6:371-375.

**Lerdau, M**., Holbrook, N.M., Mooney, H.A., Rich, P.M., Whitbeck, J.L. (1992) Seasonal patterns of acid fluctuations and resource storage in the arborescent cactus *Opuntia excelsa* in relation to light availability and size. *Oecologia*. 92:166-171.

**Lerdau, M**. (1991) Plant function and biogenic terpene emission. IN: *Trace Gas Emissions by Plants* (Sharkey, T. et al. eds.). Academic Press, San Diego. pp. 121-134.

Bazzaz, F. and **M. Lerdau** (1990) Response of seedlings of tropical trees to cool temperatures predicted by ‘Nuclear Winter’ scenarios. *Environmental Conservation* 17:337-340.

Workshops Organized

Biology and Climate Change Interventions. NSF-sponsored workshop held in Sunday River, ME. June, 2022. (J. Gurevitch of SUNY-Stony Brook PI).

Air Pollution and Climate Change. NASA-JPL/CalTech. Pasadena, CA. Lead organizer along with J. Neu of JPL/CalTech., January, 2019.

Development of Global Network of Scientists working on Fagaceae. UC Davis & Morton Arboretum. Co-organizer (C. Cannon of Morton Arboretum Lead organizer). October, 2018

Reducing Sexual Harassment at the University of Virginia. University of Virginia. Charlottesville, VA. Co-organizer (L. Columbus lead organizer). October, 2018.

**Invited talks and workshops (2023 only)**

Invited workshop participant.  “Opportunities and Challenges in Academic Publishing”. Joint AGU, ESA, AAAS workshop in Washington, DC.  February

Invited workshop participant.  “Developing an integrated plan for Morven Farm.” Joint Provost’s Office and Real Estate Foundation workshop at Morven Farm.  March

Invited Workshop Participant.  “Ozone loss in the troposphere: chemical and biological controls.”  NASA-GISS and JPL virtual workshop. April

Invited Workshop participant. “Engineering the atmosphere to ameliorate climate change.”  Univ. Minnesota, Twin Cities.  June

Invited Talk.  NASA Goddard.  “Physiological basis of remote sensing of plant health.”  May

Invited Talk.  Univ. Minnesota, Twin Cities.  “Ecological impact of atmospheric geoengineering, a physiological perspective.”  June

Invited talk. Bowdoin College.  “Biodiversity and atmospheric chemistry.” October

Invited talk. Harvard University.  “Biodiversity and atmospheric chemistry”.   November

Invited talk. Harvard Forest. “Integrating multi-scale ecological research and the student experience.”   November

**Service**

Professional Service

Panel Service:

NSF-ORCC Panel 2024; NSF GRFP Panel 2021-22; USDA-MultiCultural Scholars Program Panel, April-2021; NSF IEP Panel, 2020; NSF CNH2-Panel, 2020: NEON Biogeochemistry Working Group, 2019-present. DOE Young Investigator, 2016; NSF-IOS, 2015; European Research Council External Expert, 2008-2013; US-NSF-IOS, ICOB, 2013; NSF GK-12, 2008; NSF Ecological & Evolutionary Physiology, 2000, 2006; NASA LBA, 2005; NASA EOS-IDS, 1999; NSF-USDA-NASA-DOE TECO, 1998.

Proposal Reviewer Service:

 NSF Ecological and Evolutionary Physiology, NSF Ecology; NSF Ecosystems, NSF Biogeochemistry; NSF Atmospheric Chemistry; DOE Global Change (NIGEC); NASA Pre-Doctoral Fellowship; NASA Atmospheric Chemistry; NERC (Great Britain); NRF (South Africa); NRC (New Zealand); GNSF (Greece).

External Promotion and Tenure review

Promotion to Associate Professor with Tenure, Univ. California System (Irvine and Berkeley[2X])

Promotion to Senior Scientist rank for NASA

Promotion to Full Professor, Yale University

Promotion to Full Professor, Portland State University

Editorial Service:

Ecological Society of America, Search Committee for Editor in Chief for *Ecological Monographs*.

Ecological Society of America, Publications Committee member, 2020-present (Chair of Data Procedures Subcommittee)

Editorial Board, *Northeastern Naturalist*, 2020-2022

Editorial Board, *Ecology*, 2020-present

Guest Editor, *Proceedings of the National Academy of Sciences* [USA]. 2017

Guest Subject Editor, *Ecological Applications*, 2015-present

Associate Editor, *Biology Letters*, 2014-present

Editorial Board, University of Virginia Press. 2009-2012

Associate Editor, *Journal of Geophysical Research-Biogeosciences*. 2005-2010

Associate Editor, *Oecologia*. 2006-2014 & Review Editor-in-Chief, *Oecologia*. 2009-2010

Editorial Review Board, *Quarterly Review of Biology*. 1995-2007

Manuscript reviewer for:

 *African Journal of Biotechnology; Agricultural and Forest Meteorology; Agriculture, Ecosystems, and Environment; American Journal of Botany; American Midland Naturalist; Annals of Botany; American Naturalist; Atmospheric Chemistry and Physics; Atmospheric Environment; Atmospheric Measurement and Techniques; Biogeochemistry; Biogeosciences; Biology Letters; Biotropica; Canadian Journal of Forest Research; Chemosphere; Ecological Indicators; Ecological Monographs; Ecology; Ecology and Evolution; Environmental and Experimental Botany; Environmental Pollution; Environmental Science & Technology; Functional Ecology; Genetics; Geoderma; Geophysical Research Letters; Global Biogeochemical Cycles; Global Change Biology; Journal of Chemical Ecology; Journal of Geophysical Research-Atmospheres; ; Journal of Geophysical Research-Biogeosciences; Journal of Plant Growth and Nutrition; Journal of Tropical Ecology; Land Degradation and Development; Nature; Oecologia; New Phytologist; Northeastern Naturalist; Physiologica Plantarum; Plant, Cell and Environment; Plant Ecology; Plant Physiology; Plant and Soil; Planta; PLOS One; Proceedings of the National Academy of Sciences; Science; The Plant Cell; Science of the Anthropocene; Science of the Total Environment; Tree Physiology; Trees: Structure and Function; Trends in Ecology and Evolution; Trends in Plant Sciences; Urban Forestry and Urban Greening; Vegetatio*

##### College & University Service (UVA unless noted)

Provost’s Working Group on Faculty Evaluation, 2020-present

Global Infectious Disease Institute, 2018-present

Committee on Faculty Rules, 2018-present, Chair 2019-20 & 2022-present

Nelson Fund Committee, 2018-present (Chair 2019-20)

Advisory Committee, Directors of Diversity and Inclusion, 2019-2020

Faculty Mentor, GradSTAR Faculty Student Mentoring Program, OAAA, 2017-present

Steering Committee Chair, Directors of Diversity and Inclusion, 2018-2019

Member, Southeast Asia Studies Committee, 2015-present

Member, Sustainability @UVA Committee, 2015-present

Sexual Misconduct Hearing Board member, 2013-2022 (transferred to new format and name in September, 2015)

Member, UVa Food Collaborative Steering Committee, 2010-2019

Executive Committee member, Center for Latin American and Inter-American Studies, 2007-2010

Member, Dean’s Committee on Graduate Program Evaluation, 2009-2010.

Member, Dean’s Committee Asian Scientific Exchange, 2010-2014

Science Projects Advisor, Volunteers for Westhaven Community Afterschool Program, 2010-present

Morven Summer Institute Academic Board, 2011-present

International Residential College Faculty Fellow, 2011-present

Office of African American Affairs Mentor, 2012-2019

SUNY-SB. Biology Marshal, 2004.

SUNY-SB. University Affirmative Action Committee, 1997-2000.

##### Significant Departmental Service (UVA unless noted)

Promotion and Tenure Committee (**Chair**) for Sally Pusede, 2021

Admissions Committee **Chair**, 2020-2021

Member, Search Committee for Hydroclimatology position, 2019-2020

Department Director of Diversity and Inclusion, 2017-2020

Member, Search Committee for two Geoscience positions. 2017-2018

Member, Third Year Review Committee for Assistant Professor Sally Pusede. 2018

**Chair**, Renewal and Promotion Committee for Research Associate Professor, David Carr, 2015-2016.

Promotion Committee (**Chair**) for Associate Professor Deborah Lawrence (2011-12)

Promotion Committee (member) for Associate Professor Karen McGlathery (2008-09)

SUNY-SB. Ecology & Evolution Ph. D. Program **Director**, 1999-2005

SUNY-SB. Ecology & Evolution Master’s Program **Director** (acting), 1999, 2005

SUNY-SB. Ecology & Evolution Ph. D. Entering Students Advisory Committee, 1995,1996,1998

SUNY-SB. Ecology & Evolution Preliminary Exam Committee, 1996, 1997 (**Chair**); 2002

Community Service

M-Cubed Academy Circle of Brothers (100 Black Men of Charlottesville). Guest speaker and mentor to middle and high school students.

Burgundy Center for Wildlife Studies, Capon Bridge, WV. Director Search Committee Member & Chair. 2021-2022.

Guest speaker and Distance Resource Scientist on ecosystems and climate change to The Urban Academy, a New York City Public School, Fall, 2020.

Science Coordinator for the Westhaven Community Afterschool Program, an afterschool enrichment program for children from traditionally under-served communities. 2011-2020

Albemarle County (VA) Natural History Board, *pro bono* work for Albemarle County on issues relating to conservation and ecosystem services. 2014-2018.

Consulting Ecologist (*pro bono*) for Friends of the Bay, a Long Island NGO devoted to preserving Long Island Sound. December 2002-2006

Mentor for minority undergraduates (SEEDS) at the Ecological Society of America Annual Meeting. 1999-2002.

Outside Advisor to Horace Mann School (in Bronx, NY) AP Environmental Studies and AP Biology Classes. 1995-2001.

Academic Ecologist at TERC Summer workshop for High School Biology Teachers. 1995

Post-Docs and Students supervised

Post-Doctoral Fellows

Paul Brewer (2017-2020), next position, post-doc at Arizona State University

Alycia Crall (2010-2012), next position: Research Scientist, University of Virginia Medical School.

Megan McGroddy (2008-2010), next position: Research Scientist, University of Virginia;

Beth Leger (2004-2006), next position: Assistant Professor, University of Nevada, Reno;

Kate Howe (2002-2004), next position State Environmental Biologist for Indiana;

Jennifer Powers (2001-2004), next position: NSF ADVANCE Fellow, Univ. Minnesota;

Laura Hyatt (2000-2002) next position: Assistant Professor, Rider College;

Tim Howard (1998-2000), next position: Staff Scientist, The Nature Conservancy, Albany, NY;

Ph. D. Students and next position[np]

Allison Wallace (1997, np: Assistant Professor, Minnesota State University Morehead)

Heather Throop (2002, np: NOAA Global Change Fellow, Univ. Arizona),

Dennis Gray (2003, np: NASA Exobiology Fellow, Univ. Connecticut),

Nina Theis (2003, np: Putnam Fellow, Harvard University),

Andre Levy (2004, np: National Museum, Lisbon)

Jennifer Funk (2004, np: ESA/NPS Fellow, Stanford University),

Isabel Ashton (2005, np: Mellon Fellow, Univ. California, Irvine,

Sybil Gotsch (2006, np: Post-Doc, NC. State Univ.),

Sue Natali (2008, np: Post-Doc, Univ. Florida),

Jonathan Hickman (2009, np: Fellow, Earth Institute, Columbia University),

Ramona Walls (2009, np: Post-Doc NY Bot. Garden),

Patty Oikawa (2011, np: Post-Doc UC Riverside),

Stephen Chan (2013, np: Post-Doc Oregon State University),

Bin Wang (2017, np: Post-Doc UC Irvine),

Brynn Cook (2019, np: California Council on Science and Technology, Fellow),

Andrew Jablonski (present)

Master's Students

Bridget Cimaglia (1995),

Jenny Carroll (2002)

Catherine Vincent (2019)

Undergraduate Students

Anthony Caravello, 1995-1997 (next position, MD student at Columbia Univ.)

Megan O'Rourke, 2000-2002 (next position, PhD student at Cornell Univ.)

Leslie Gonzalez, 2001-2003 (next position, Master’s student at Western Washington Univ.)

Clara Pelaez 2004-2005 (next position, MD student at SUNY Downstate)

Cristina Cornell (2008-2010)

Adrianna Forster (2010-2011) next position, PhD student at Univ. of Virginia

Julia Dunville (2010-2012)

Ed Schrom, (2013-2015), next position, PhD student at Princeton Univ.

Levi Helm (2016-2018), next position, PhD student at Arizona State Univ.

Carson Lambert (2019-2020), next position, MS student at Duke Univ.

Luciana Codella (2018-2020, co-advised with H. Shugart)

Ross Brown (2020-2023)

Alexandra Visek (2022-present)

**Educational Activities**

###### Classes offered

Introductory Biology [served as Course Director for this 600-person class]

General Ecology

Global Ecology in a Changing World,

Freshman Seminars: Scientific Thinking, Environmental Issues and Societal Responses

Graduate Ecology & Graduate Seminars: Trace Gas Exchange, Macroecology, Social Implications of Ecological Processes, Plant Nutrition

The Elemental Plant

Ecology of Land Use

Plant Ecophysiology

Agroecology

Terrestrial Ecosystems (co-taught with Howie Epstein)

Biosphere/Atmosphere Interactions (co-taught with Sally Pusede)

Food and nutrition in a changing world

Food: Science and Sustainability

Conservation Ecology

###### Curricular Activities

Environmental Thought and Practice Steering Committee at UVA 2022-present

Environmental Thought and Practice Curriculum Revision Committee at UVA 2017-2020

SUNY-SB Co-founder of Environmental Studies Undergraduate Major at 1997

SUNY-SB Co-author of Environmental Studies Undergraduate Major Curriculum. 1997

SUNY-SB. Co-Chair and Ecology and Evolution Representative to Environmental Science Doctoral Program Committee. 2003-2006