Daniel J Short Gianotti, Ph.D.

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Academic Appointments

2021 – · · · · **Research Scientist,** Massachusetts Institute of Technology.
Parsons Laboratory, Department of Civil & Environmental Engineering.

2016 – 2021 **Postdoctoral Associate,** Massachusetts Institute of Technology.
Parsons Laboratory, Department of Civil & Environmental Engineering.

Education

2011 – 2016 **Ph.D., Boston University,** Geography & Environment.
Thesis title: *The Potential Predictability of Precipitation over the Continental United States.*

1999 – 2003 **B.S., Harvey Mudd College,** Mathematics.
Thesis title: *Fluid Drop Coalescence in a Hele-Shaw Cell.*
Clinic title: *Internal Metrology for the JPL/NASA Space Interferometry Mission.*

Grants and Funding

in prep "Separating the Structural and Physiological Dynamics of Global Primary Productivity,"
NASA Research Opportunities in Earth and Space Sciences, NNH24ZDA001N-CARBON, Carbon Cycle Science.
To be submitted February 17, 2025.
PI: **DJ Short Gianotti**, CO-Is: BE Morgan, D Entekhabi, DL Des Marais. $750,000.

Funded: 2024-2027 "Causes of Historical Change, Environmental Resiliency and Future of the Caspian Sea,"
Private Donor Grant.
PI: D Entekhabi, CO-Is: **DJ Short Gianotti**, MR Alizadeh. $494,747.

Funded: 2024-2025 "Global Mapping of Groundwater Recharge and Sustainable Aquifer Water Withdrawals Using Satellite Observations,"
MIT Climate and Sustainability Consortium.
First Author: MR Alizadeh, PI: D Entekhabi, CO-I: **DJ Short Gianotti**. $122,080.

Funded: 2024-2026 "Landcover Stability: Heating and Drying of Plants and Soils,"
MIT-Portugal Program.
First Author: **DJ Short Gianotti**, PI: D Entekhabi. $259,002.

Funded: 2020-2021 "Analysis of Water Relations in the Soil-Plant Continuum Using Microwave-Lidar Synergy,"
Fundació La Caixa & Massachusetts Institute of Technology,
PIs: D Chaparro & D Entekhabi, CO-Is: **DJ Short Gianotti**, AF Feldman, & T Jagdhuber.
€22,000, Grant Number 1673204776.

Publications and Talks

† denotes student advisee.
⋆ denotes presenting author.

Manuscripts in Progress

1. F. AlNasser, **D. J. Short Gianotti**, and D. Entekhabi, "Soil moisture impact on convective initiation," *Water Resources Research*, 2026, In Revision at Water Resources Research.
2. **D. J. Short Gianotti** and D. Entekhabi, "Structural and canopy water-use efficiency drivers of water-carbon coupling patterns," *New Phytologist*, Re-submitted to New Phytologist.
3. M. R. Alizadeh, **D. J. Short Gianotti**, J. Adamowski, A. G. Konings, and D. Entekhabi, "Carbon fixation pathways drive grassland responses to soil moisture and atmospheric dryness," In review at Global Change Biology.
4. M. R. Alizadeh, **D. J. Short Gianotti**, J. Adamowski, and D. Entekhabi, "Observed interactions of water in soil-vegetation-atmosphere continuum across dry and wet regimes," For submission in Water Resources Research.
5. **D. J. Short Gianotti**, M. R. Alizadeh, and D. Entekhabi, "Review of soil moisture impacts on human heat stress and mortality," For submission in Nature Reviews Earth and Environment.

Published Journal Articles

1. **D. J. Short Gianotti**, M. J. Gannon†, and D. Entekhabi, "Meteorological to agricultural drought transitions compounded by heat waves in historical and future climates," *Water Resources Research*, 2026, In press at Water Resources Research.
2. S. Eisenacher, A. Fluhrer, J. Bliefernicht, **D. J. Short Gianotti**, H. G. Kunstmann, and T. Jagdhuber, "Lightning density and its coupled covariates within the continental united states," *Earth and Space Science*, vol. 12, 2025. DOI: 10.1029/2025EA004207
3. Y. Xu, Q. He, H. Lu, K. Yang, D. Entekhabi, and **D. J. Short Gianotti**, "A global dataset of remote sensing-based soil critical point and permanent wilting point," *Scientific Data*, vol. 12, 722 2025. DOI: 10.1038/s41597-025-05048-y
4. **D. J. Short Gianotti**, K. A. McColl, A. F. Feldman, X. Xu, and D. Entekhabi, "Two sub-annual timescales and coupling modes for terrestrial water and carbon cycles," *Global Change Biology*, vol. 30, e17463, 2024. DOI: 10.1111/gcb.17463
5. **D. J. Short Gianotti** and D. Entekhabi, "Local and general patterns of terrestrial water-carbon coupling," *Geophysical Research Letters*, vol. 51, e2024GL109625, 2024. DOI: 10.1029/2024GL109625
6. A. F. Feldman, **D. J. Short Gianotti**, J. Dong, I. F. Trigo, G. D. Salvucci, and D. Entekhabi, "Tropical surface temperature response to vegetation cover changes and the role of drylands," *Global Change Biology*, vol. 29, pp. 110–125, 2023. DOI: 10.1111/gcb.16455
7. J. Dong, R. Akbar, A. F. Feldman, **D. J. Short Gianotti**, and D. Entekhabi, "Land surfaces at the tipping-point for water and energy balance coupling," *Water Resources Research*, vol. 59, 2023. DOI: 10.1029/2022WR032472
8. L. N. Zhang†, **D. J. Short Gianotti**, and D. Entekhabi, "Land surface influence on convective available potential energy (cape) change during interstorms," *Journal of Hydrometeorology*, vol. 24, no. 8, pp. 1365–1376, 2023. DOI: 10.1175/JHM-D-22-0191.1
9. A. F. Feldman, **D. J. Short Gianotti**, J. Dong, R. Akbar, W. T. Crow, K. A. McColl, A. Konings, J. B. Nippert, S. J. Tumber-Davila, N. M. Holbrook, F. E. Rockwell, R. L. Scott, R. H. Reichle, A. Chatterjee, J. Joiner, B. Poulter, and D. Entekhabi, "Remotely sensed soil moisture can capture dynamics relevant to plant water uptake," *Water Resources Research*, vol. 59, 2023. DOI: 10.1029/2022WR033814

10 F. Jonard, A. F. Feldman, **D. J. Short Gianotti**, and D. Entekhabi, "Observed water and light limitation across global ecosystems," *Biogeosciences*, vol. 19, pp. 5575–5590, 2022. DOI: 10.5194/bg-19-5575-2022

11 Y. Li, H. Lu, D. Entekhabi, **D. J. Short Gianotti**, K. Yang, C. Luo, A. F. Feldman, W. Wang, and R. Jiang, "Satellite-based assessment of meteorological and agricultural drought in mainland southeast asia," *Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, vol. 15, pp. 6180–6189, 2022. DOI: 10.1109/JSTARS.2022.3190438

12 J. Dong, R. Akbar, **D. J. Short Gianotti**, A. F. Feldman, W. T. Crow, and D. Entekhabi, "Can surface soil moisture information identify evapotranspiration regime transitions?" *Geophysical Research Letters*, 2022. DOI: 10.5194/bg-2020-380

13 A. F. Feldman, **D. J. Short Gianotti**, I. F. Trigo, G. D. Salvucci, and D. Entekhabi, "Observed landscape responsiveness to climate forcing," *Water Resources Research*, 2022. DOI: 10.1029/2021WR030316

14 P. Yao, H. Lu, J. Shi, T. Zhao, K. Yang, M. H. Cosh, **D. J. Short Gianotti**, and D. Entekhabi, "A long term spatially and temporally consistent global daily soil moisture dataset derived from amsr-e/2," *Scientific Data*, 2021. DOI: 10.1038/s41597-021-00925-8

15 A. F. Feldman, **D. J. Short Gianotti**, A. G. Konings, P. Gentine, and D. Entekhabi, "Patterns of plant rehydration and growth following pulses of soil moisture availability," *Biogeosciences*, vol. 18, pp. 831–847, 2021. DOI: 10.5194/bg-18-831-2021

16 A. F. Feldman, J. Chulakadabba†, **D. J. Short Gianotti**, and D. Entekhabi, "Landscape-scale plant water content and carbon flux behavior following moisture pulses: From dryland to mesic environments," *Water Resources Research*, 2020. DOI: 10.1029/2020WR027592

17 R. Akbar, **D. J. Short Gianotti**, G. D. Salvucci, and D. Entekhabi, "Historical landscape drainage estimates derived from satellite-era hydrological dynamics," *Water Resources Research*, 2020. DOI: 10.1029/2020WR027307

18 A. F. Feldman, **D. J. Short Gianotti**, I. F. Trigo, G. D. Salvucci, and D. Entekhabi, "Land-atmosphere drivers of landscape-scale plant water content loss," *Geophysical Research Letters*, 2020. DOI: 10.1029/2020GL090331

19 F. Jonard, S. DeCannière, N. Brüggemann, P. Gentine, **D. J. Short Gianotti**, G. Lobet, D. G. Miralles, C. Montzka, B. R. Pagán, U. Rascher, and H. Vereecken, "Value of chlorophyll fluorescence for quantifying hydrological states and fluxes: Current status and challenges," *Agricultural and Forest Meteorology*, vol. 291, 2020. DOI: 10.1016/j.agrformet.2020.108088

20 **D. J. Short Gianotti**, R. Akbar, A. F. Feldman, G. D. Salvucci, and D. Entekhabi, "Terrestrial evaporation and moisture drainage in a warmer climate," *Geophysical Research Letters*, vol. 47, 2020. DOI: 10.1029/2019GL086498

21 A. F. Feldman, **D. J. Short Gianotti**, I. Trigo, G. D. Salvucci, and D. Entekhabi, "Satellite-based assessment of land surface energy partitioning-soil moisture relationships and effects of confounding variables," *Water Resources Research*, vol. 55, pp. 10 657–10 677, 2019. DOI: 10.1029/2019WR025874

22 **D. J. Short Gianotti**, G. D. Salvucci, R. Akbar, K. McColl, and D. Entekhabi, "Landscape water storage and subsurface correlation from satellite surface soil moisture and precipitation observations," *Water Resources Research*, vol. 55, pp. 9111–9132, 2019. DOI: 10.1029/2019WR025332

23 R. Akbar, **D. J. Short Gianotti**, G. D. Salvucci, and D. Entekhabi, "Mapped hydroclimatology of evapotranspiration and drainage runoff using smap brightness temperature observations and precipitation information," *Water Resources Research*, vol. 55, pp. 3391–3413, 2019. DOI: 10.1029/2018WR024459

24 **D. J. Short Gianotti**, A. J. Rigden, G. D. Salvucci, and D. Entekhabi, "Satellite and station observations demonstrate water availability's effect on continental-scale evaporative and photosynthetic land surface dynamics," *Water Resources Research*, vol. 55, pp. 540–554, 2019. DOI: 10.1029/2018WR023726

25 A. F. Feldman, **D. J. Short Gianotti**, A. G. Konings, K. A. McColl, R. Akbar, G. D. Salvucci, and D. Entekhabi, "Pulse-response vegetation water uptake is persistent across biomes," *Nature Plants*, vol. 4, no. 12, pp. 1026–1033, 2018. DOI: 10.1038/s41477-018-0304-9

26 A. J. Rigden, G. D. Salvucci, D. Entekhabi, and **D. J. Short Gianotti**, "Partitioning evapotranspiration over the continental United States using weather station data," *Geophysical Research Letters*, vol. 45, no. 18, pp. 9605–9613, 2018. DOI: 10.1029/2018GL079121

27 R. Akbar, **D. J. Short Gianotti**, K. A. McColl, E. Haghighi, G. D. Salvucci, and D. Entekhabi, "Estimation of landscape soil water losses from satellite observations of soil moisture," *Journal of Hydrometeorology*, vol. 19, no. 5, pp. 871–889, 2018. DOI: 10.1175/JHM-D-17-0200.1

28 R. Akbar, **D. J. Short Gianotti**, K. A. McColl, E. Haghighi, G. D. Salvucci, and D. Entekhabi, "Hydrological storage length-scales represented by remote sensing estimates of soil moisture and precipitation," *Water Resources Research*, vol. 54, no. 3, pp. 1476–1492, 2018. DOI: 10.1002/2017WR021508

29 E. Haghighi, **D. J. Short Gianotti**, R. Akbar, G. D. Salvucci, and D. Entekhabi, "Soil and atmospheric controls on the land surface energy balance: A generalized framework for distinguishing moisture- and energy-limited evaporation regimes," *Water Resources Research*, vol. 53, no. 3, pp. 1831–1851, 2018. DOI: 10.1002/2017WR021729

30 K. McColl, W. Wang, B. Peng, R. Akbar, **D. Short Gianotti**, M. Pan, and D. Entekhabi, "Global characterization of surface soil moisture drydowns," *Geophysical Research Letters*, vol. 44, no. 8, pp. 3682–3690, 2017. DOI: 10.1002/2017GL072819

31 B. T. Anderson, J. C. Furtado, E. Di Lorenzo, and **D. J. Short Gianotti**, "Tracking the pacific decadal precession," *Journal of Geophysical Research: Atmospheres*, vol. 122, no. 6, pp. 3214–3227, 2017. DOI: 10.1002/2016JD025962

32 B. T. Anderson, **D. J. Short Gianotti**, G. D. Salvucci, and J. Furtado, "Dominant timescales of potentially predictable precipitation variations across the continental United States," *Journal of Climate*, vol. 29, pp. 8881–8897, 2016. DOI: 10.1175/JCLI-D-15-0635.1

33 B. T. Anderson, **D. J. Short Gianotti**, J. Furtado, and E. Di Lorenzo, "A decadal precession of atmospheric pressures over the north pacific," *Geophysical Research Letters*, vol. 43, no. 8, pp. 3921–3927, 2016. DOI: 10.1002/2016GL068206

34 B. T. Anderson, **D. J. Short Gianotti**, and G. D. Salvucci, "Detectability of historical trends in station-based precipitation characteristics over the continental United States," *Journal of Geophysical Research*, vol. 120, no. 10, pp. 4842–4859, 2015. DOI: 10.1002/2014JD022960

35 A. L. Gill, A. S. Gallinat, R. Sanders-DeMott, A. J. Rigden, **D. J. Short Gianotti**, J. A. Mantooth, and P. H. Templer, "Changes in autumn senescence in northern hemisphere deciduous trees: A meta-analysis of autumn phenology studies," *Annals of Botany*, vol. 116, pp. 875–888, 2015. DOI: 10.1093/aob/mcv055

36 B. T. Anderson, **D. Gianotti**, and G. Salvucci, "Characterizing the potential predictability of seasonal, station-based heavy precipitation accumulations and extreme dry-spell durations," *Journal of Hydrometeorology*, vol. 16, no. 2, pp. 843–856, 2015. DOI: 10.1175/JHM-D-14-0111.1

37 **D. J. Short Gianotti**, B. T. Anderson, and G. D. Salvucci, "The potential predictability of precipitation occurrence, intensity, and seasonal totals over the continental United States," *Journal of Climate*, vol. 27, no. 18, pp. 6904–6918, 2014. DOI: 10.1175/JCLI-D-13-00695.1

38 I. Pal, B. T. Anderson, G. D. Salvucci, and **D. J. Gianotti**, "Shifting seasonality and increasing frequency of precipitation in wet and dry seasons across the US," *Geophysical Research Letters*, vol. 40, no. 15, pp. 4030–4035, 2013. DOI: 10.1002/grl.50760

39 **D. Gianotti**, B. T. Anderson, and G. D. Salvucci, "What do rain gauges tell us about the limits of precipitation predictability?" *Journal of Climate*, vol. 26, no. 15, pp. 5682–5688, 2013. DOI: 10.1175/JCLI-D-12-00718.1

Conference Presentations

1 **D. J. Short Gianotti**⋆, I. Trigo, and D. Entekhabi, "Stability of biosphere-climate coupling," in *American Geophysical Union Fall Meeting*, B11I-1579, New Orleans, LA, 2025. URL: https://agu.confex.com/agu/agu25/meetingapp.cgi/Paper/2005138

2 B. Wang⋆, K. A. McColl, **D. Short Gianotti**, and D. Entekhabi, "What drives day-to-day changes in evapotranspiration? partitioning the relative importance of radiative, atmospheric, and surface conditions," in *American Geophysical Union Fall Meeting*, H11C-08, New Orleans, LA, 2025. URL: https://agu.confex.com/agu/agu25/meetingapp.cgi/Paper/1880548

3 M. R. Alizadeh⋆, **D. Short Gianotti**, J. F. Adamowski, A. G. Konings, and D. Entekhabi, "Ecophysiological traits drives divergent grassland responses to soil and atmospheric dryness," in *American Geophysical Union Fall Meeting*, B31A-05, New Orleans, LA, 2025. URL: https://agu.confex.com/agu/agu25/meetingapp.cgi/Paper/1971902

4 **D. J. Short Gianotti**⋆, J. Chulakadabba, A. F. Feldman, K. A. McColl, X. Xu, and D. Entekhabi, "Dominan mechanisms of landscape water-carbon coordination," in *Harvard Continentality Workshop*, Cambridge, MA, 2025.

5 **D. J. Short Gianotti**⋆, J. Chulakadabba, A. F. Feldman, K. A. McColl, X. Xu, and D. Entekhabi, "Scaling roles of water-use efficiency and leaf area in large-scale water/carbon coupling," in *Dynamic Vegetation Modeling and Observations Conference*, Falmouth, MA, 2025.

6 M. R. Alizadeh⋆, **D. J. Short Gianotti**, J. A. Adamowski, and D. Entekhabi, "Observed interactions of water in soil-vegetation-atmosphere continuum across us," in *American Geophysical Union Fall Meeting*, H41K-0686, Washington, DC, 2024.

7 A. F. Feldman⋆, **D. Short Gianotti**, A. G. Konings, I. F. Trigo, G. D. Salvucci, and D. Entekhabi, "Plant response to pulse-drydown cycles and their role in the water cycle (invited)," in *American Geophysical Union Fall Meeting*, GC54F-01, Washington, DC, 2024.

8 **D. J. Short Gianotti**⋆ and D. Entekhabi, "Mechanisms stabilizing terrestrial evaporation and carbon uptake," in *American Geophysical Union Fall Meeting*, B21M-1457, Washington, DC, 2024.

9 **D. J. Short Gianotti**⋆ and D. Entekhabi, "Time-scales of water/carbon coupling and their similarities across biomes," in *American Geophysical Union Fall Meeting*, B31A-05, San Francisco, CA, 2023.

10 A. F. Feldman⋆, **D. J. Short Gianotti**, J. Dong, R. Akbar, W. T. Crow, K. A. McColl, A. G. Konings, J. B. Nippert, S. J. Tumber-Davila, N. M. Holbrook, F. E. Rockwell, R. H. Reichle, A. Chatterjee, J. Joiner, B. Poulter, and D. Entekhabi, "Remotely sensed soil moisture can capture dynamics relevant to plant water uptake," in *American Geophysical Union Fall Meeting*, H12E-06, San Francisco, CA, 2023.

11. L. N. Zhang★†, **D. J. Short Gianotti**, and D. Entekhabi, "Land surface influence on convective available potential energy (cape) change during interstorms," in *American Geophysical Union Fall Meeting*, H11D-04, San Francisco, CA, 2023.

12. F. Jonard, S. De Canniere, A. F. Feldman, **D. J. Short Gianotti**, and D. Entekhabi★, "Remote sensing based framework for observing water and light limitation across global ecosystems," in *American Geophysical Union Fall Meeting*, H13M-1632, San Francisco, CA, 2023.

13. Y. Xu★, Q. He, P. Yao, H. Lu, K. Yang, A. F. Feldman, **D. J. Short Gianotti**, and D. Entekhabi, "Global characterizations of drydown events from a long-term satellite soil moisture dataset," in *IEEE International Geoscience and Remote Sensing Symposium*, Pasadena, CA, 2023. DOI: 10.1109/IGARSS52108.2023.10282498

14. D. Chaparro★, T. Jagdhuber, M. Piles, M. Link, A. Fluhrer, M. J. Baur, A. F. Feldman, **D. J. Short Gianotti**, and D. Entekhabi, "Analyses of the relationship between horizontal and vertical brightness temperatures for derivation of signal-to-noise ratio and vegetation metrics," in *The Fifth Space for Hydrology Workshop*, Lisbon, Portugal, 2023.

15. M. Gannon★†, **D. J. Short Gianotti**, and D. Entekhabi, "The drought cascade in a changing climate," in *American Meteorological Society Annual Meeting*, 10B.1, Denver, CO, 2023.

16. L. N. Zhang★†, D. Entekhabi, and **D. J. Short Gianotti**, "Land surface influence on convective available potential energy (cape) change during drydowns," in *American Meteorological Society Annual Meeting*, JointJ2B.2, Denver, CO, 2023.

17. A. F. Feldman★, **D. J. Short Gianotti**, J. Dong, I. F. Trigo, G. D. Salvucci, and D. Entekhabi, "Tropical surface temperature response to vegetation cover changes and the role of drylands," in *American Geophysical Union Fall Meeting*, B15B-05, Chicago, IL, 2022.

18. L. N. Zhang★†, D. Entekhabi, and **D. J. Short Gianotti**, "Land surface influence on convective available potential energy (cape) evolution during drydowns," in *American Geophysical Union Fall Meeting*, H11F-01, Chicago, IL, 2022.

19. **D. J. Short Gianotti**★, E. R. Williams, L. N. Zhang†, and D. Entekhabi, "Soil moisture impacts on convective lightning triggering," in *American Geophysical Union Fall Meeting*, H32I-07, Chicago, IL, 2022.

20. D. Entekhabi★, R. Akbar, J. Dong, A. F. Feldman, and **D. J. Short Gianotti**, "Detection and mapping of shifts in dominant hydrologic processes guide model development," in *Frontiers in Hydrology Meeting*, 126-067, San Juan, Puerto Rico, 2022.

21. **D. J. Short Gianotti**★, K. A. McColl, X. Xu, A. F. Feldman, and D. Entekhabi, "Ecosystem structural dynamics dominate water-use efficiency in coupling the terrestrial water and carbon cycles," in *Frontiers in Hydrology Meeting*, 241-04, San Juan, Puerto Rico, 2022.

22. A. F. Feldman★, **D. J. Short Gianotti**, I. F. Trigo, G. D. Salvucci, and D. Entekhabi, "Observed landscape responsiveness to climate forcing," in *Frontiers in Hydrology Meeting*, 139-07, San Juan, Puerto Rico, 2022.

23. J. Dong★, R. Akbar, **D. J. Short Gianotti**, A. F. Feldman, W. T. Crow, and D. Entekhabi, "Can surface soil moisture information identify landscape evapotranspiration regime transitions?" In *Frontiers in Hydrology Meeting*, 100-07, San Juan, Puerto Rico, 2022.

24. **D. J. Short Gianotti**★, K. A. McColl, X. Xu, A. F. Feldman, and D. Entekhabi, "Emergent observed coupling of terrestrial water, energy, and carbon fluxes," in *American Geophysical Union Fall Meeting*, B15D-1460, New Orleans, LA, 2021.

25. A. F. Feldman★, **D. J. Short Gianotti**, I. F. Trigo, G. D. Salvucci, and D. Entekhabi, "Observed landscape responsiveness to climate forcing," in *American Geophysical Union Fall Meeting*, H25L-1178, New Orleans, LA, 2021.

26 J. Dong*, R. Akbar, A. F. Feldman, **D. J. Short Gianotti**, and D. Entekhabi, "A new framework for global soil moisture dry-down analysis and its application for vegetation water stress quantification," in *American Geophysical Union Fall Meeting*, H15W-1305, New Orleans, LA, 2021.

27 **D. J. Short Gianotti*** and D. Entekhabi, "An emergent spatial water/energy/carbon relationship explained by local coupling," in *Improving Understanding of Land-Atmosphere Interactions through Integration of Surface Flux and Atmospheric Boundary Layer Measurements Workshop, Ameriflux Year of Water Fluxes Community Meeting*, Virtual, 2021.

28 A. F. Feldman*, **D. J. Short Gianotti**, A. G. Konings, A. Chulakadabba†, P. Gentine, and D. Entekhabi, "Satellite-observed patterns of plant water refilling and growth response following pulses of soil moisture availability," in *Ecological Society of America Annual Meeting*, Virtual, 2020.

29 **D. J. Short Gianotti***, A. F. Feldman, K. A. McColl, G. D. Salvucci, and D. Entekhabi, "Emergent climatological coupling of the terrestrial carbon sink with water and energy availability," in *American Geophysical Union Fall Meeting*, B117-03, Virtual, 2020.

30 A. F. Feldman*, **D. J. Short Gianotti**, I. F. Trigo, G. D. Salvucci, and D. Entekhabi, "Land-atmosphere drivers of landscape-scale plant water content loss using satellite observations," in *American Geophysical Union Fall Meeting*, B090-02, Virtual, 2020.

31 A. F. Feldman*, **D. J. Short Gianotti**, A. G. Konings, P. Gentine, K. A. McColl, R. Akbar, G. D. Salvucci, and D. Entekhabi, "Smap measurements show water movement in the soil-plant continuum as pulses," in *16th Specialist Meeting on Microwave Radiometry (MicroRAD)*, Virtual, 2020.

32 **D. J. Short Gianotti***, R. Akbar, A. F. Feldman, G. D. Salvucci, and D. Entekhabi, "Land surface fluxes and hydrologic sensitivities in a warmer climate," in *American Geophysical Union Fall Meeting*, H54G-08, San Francisco, CA, 2019.

33 A. F. Feldman*, **D. J. Short Gianotti**, I. F. Trigo, G. D. Salvucci, and D. Entekhabi, "Satellite-based assessment of land surface energy partitioning-soil moisture relationships and effects of confounding variables," in *American Geophysical Union Fall Meeting*, H53F-05, San Francisco, CA, 2019.

34 Y. Li*, H. Lu, D. Entekhabi, and **D. J. Short Gianotti**, "The impact of higher-than-radiometer resolution landscape and weather features on smap product," in *American Geophysical Union Fall Meeting*, H51S-1771, San Francisco, CA, 2019.

35 **D. J. Short Gianotti**, G. D. Salvucci, R. Akbar, R. Cuenca, and D. Entekhabi*, "Surface-subsurface linkages derived from smap time series," in *SMAP Science Team Meeting #13*, Arcadia, CA, 2019.

36 **D. J. Short Gianotti**, R. Akbar, A. F. Feldman, G. D. Salvucci, and D. Entekhabi*, "Consequences of the acceleration of water cycle on surface water balance components using smap observations," in *SMAP Science Team Meeting #13*, Arcadia, CA, 2019.

37 D. Entekhabi*, R. Akbar, and **D. J. Short Gianotti**, "Decadal distribution of et and drainage based on smap based hydrologic analogues and historical precipitation," in *SMAP Science Team Meeting #13*, Arcadia, CA, 2019.

38 R. Akbar*, **D. J. Short Gianotti**, G. D. Salvucci, and D. Entekhabi, "Seasonal hydroclimatology of et and drainage from smap tb and precipitation," in *SMAP Science Team Meeting #13*, Arcadia, CA, 2019.

39 A. F. Feldman*, **D. J. Short Gianotti**, I. Trigo, G. D. Salvucci, and D. Entekhabi, "Satellite-based assessment of surface energy partitioning soil moisture relationships," in *SMAP Science Team Meeting #13*, Arcadia, CA, 2019.

40 P. Yao*, H. Lu, S. Yue, F. Yang, H. Lyu, K. Yang, K. A. McColl, **D. J. Short Gianotti**, and D. Entekhabi, "Estimating surface soil moisture from amsr2 tb with artificial neural network method and smap products," in *IEEE Geoscience and Remote Sensing Society*, Paper #2869, Yokohama, Japan, 2019.

41 **D. G. Short Gianotti**⋆, G. D. Salvucci, K. A. McColl, R. Akbar, and D. Entekhabi, "Hydrologic length scale of l-band radiometric soil moisture retrievals," in *American Geophysical Union Fall Meeting*, H42G-02, Washington, DC, 2018.

42 A. F. Feldman⋆, **D. J. Short Gianotti**, A. G. Konings, K. A. McColl, R. Akbar, G. D. Salvucci, and D. Entekhabi, "Water exchange patterns in the soil-plant continuum based on smap microwave satellite measurements," in *American Geophysical Union Fall Meeting*, B53D-06, Washington, DC, 2018.

43 H. Lu⋆, F. Yang, H. Lyu, K. Yang, K. A. McColl, D. J. Short Gianotti, and **D. Entekhabi**, "Estimating surface soil moisture from amsr2 tb with machine learning methods and smap products," in *American Geophysical Union Fall Meeting*, H51W-1649, Washington, DC, 2018.

44 G. D. Salvucci⋆, A. J. Rigden, D. Entekhabi, and **D. J. Short Gianotti**, "Partitioning evapotranspiration over the continental United States using smap observations and weather station data," in *American Geophysical Union Fall Meeting*, H41F-01, Washington, DC, 2018.

45 **D. J. Short Gianotti**⋆, G. D. Salvucci, A. J. Rigden, and D. Entekhabi, "Water use efficiency dependence on soil moisture," in *Science Utilization of SMAP Meeting #2*, Arcadia, CA, 2018.

46 A. F. Feldman⋆, **D. J. Short Gianotti**, A. G. Konings, K. A. McColl, R. Akbar, G. D. Salvucci, and D. Entekhabi, "Water exchange patterns in the soil-plant continuum based on smap microwave satellite measurements," in *Science Utilization of SMAP Meeting #2*, Arcadia, CA, 2018.

47 **D. J. Short Gianotti**, G. D. Salvucci, A. J. Rigden, and D. Entekhabi⋆, "Linkages between water, energy and carbon cycles revealed by smap," in *SMAP End of Prime Mission Science Meeting*, Jet Propulsion Laboratory, Pasadena, CA, 2018.

48 R. Akbar, **D. J. Short Gianotti**⋆, K. McColl, E. Haghighi, G. D. Salvucci, and D. Entekhabi, "Estimation of ecosystem-scale soil water losses from satellite observations of soil moisture," in *SMAP End of Prime Mission Science Meeting*, Jet Propulsion Laboratory, Pasadena, CA, 2018.

49 **D. J. Short Gianotti**⋆, A. J. Rigden, G. D. Salvucci, and D. Entekhabi, "Effects of water availability through the coupled land-atmosphere system," in *American Geophysical Union Fall Meeting*, H12G-07, New Orleans, LA, 2017.

50 E. Haghighi⋆, **D. J. Short Gianotti**, R. Akbar, G. D. Salvucci, and D. Entekhabi, "What determines transitions between energy- and moisture-limited evaporative regimes?" In *American Geophysical Union Fall Meeting*, H44C-07, New Orleans, LA, 2017.

51 G. D. Salvucci⋆, A. J. Rigden, **D. J. Short Gianotti**, and D. Entekhabi, "Soil moisture (smap) and vapor pressure deficit controls on evaporation fraction over the continental u.s.," in *American Geophysical Union Fall Meeting*, H12G-01, New Orleans, LA, 2017.

52 **D. J. Short Gianotti**⋆, A. J. Rigden, G. D. Salvucci, and D. Entekhabi, "Soil moisture controls on water/energy/carbon coupling," in *Science Utilization of SMAP Meeting*, Cambridge, MA, 2017.

53 R. Akbar⋆, **D. J. Short Gianotti**, E. Haghighi, G. D. Salvucci, and D. Entekhabi, "Estimation of ecosystem-scale soil water losses from satellite observations of soil moisture," in *Science Utilization of SMAP Meeting*, Cambridge, MA, 2017.

54 D. Entekhabi⋆, S. S. Team, **D. J. Short Gianotti**, R. Akbar, A. J. Rigden, G. D. Salvucci, and J. S. Kimball, "The science applications of smap," in *Science Utilization of SMAP Meeting*, Cambridge, MA, 2017.

55 **D. J. Short Gianotti**⋆, A. J. Rigden, G. D. Salvucci, and D. Entekhabi, "Soil moisture controls on evaporative fraction," in *American Geophysical Union Fall Meeting*, H24C-03, San Francisco, CA, 2016.

56 **D. J. Short Gianotti**⋆, G. D. Salvucci, and B. T. Anderson, "California drought, weather variability, and climate variability," in *AGU Chapman Conference on California Drought: Causes, Impacts, and Policy*, Irvine, CA, 2015.

57 **D. J. Short Gianotti**⋆, B. T. Anderson, and G. D. Salvucci, "Characterizing weather and climate variability for precipitation: A data-based stochastic modeling framework," in *American Geophysical Union Fall Meeting*, San Francisco, CA, 2014.

58 **D. J. Short Gianotti**⋆, B. T. Anderson, and G. D. Salvucci, "Stochastic analysis of california's recent precipitation drought in the context of the last one hundred years," in *American Geophysical Union Fall Meeting*, San Francisco, CA, 2014.

59 M. Dietze⋆, H. E. Emery, D. Gergel, **D. Gianotti**, J. A. Mantooth, and A. J. Rigden, "Integrating satellite and tower phenology: A case-study in real-time ecological forecasting," in *American Geophysical Union Fall Meeting*, San Francisco, CA, 2014.

60 M. Dietze⋆, H. E. Emery, D. Gergel, **D. Gianotti**, J. A. Mantooth, and A. J. Rigden, "Predicting phenology: A case-study in real-time ecological forecasting," in *Ecological Society of America Annual Meeting*, Sacramento, CA, 2014.

61 **D. J. Gianotti**⋆, B. T. Anderson, and G. D. Salvucci, "Potential predictability of precipitation: Occurrence or intensity?" In *38th Climate Diagnostic and Prediction Workshop*, College Park, MD, 2013.

62 **D. J. Gianotti**⋆, B. T. Anderson, and G. D. Salvucci, "Establishing potential predictability of u.s. precipitation using rain gauge data," in *37th Climate Diagnostic and Prediction Workshop*, Fort Collins, CO, 2012.

63 I. Pal⋆, B. T. Anderson, G. Salvucci, and **D. J. Gianotti**, "Magnitude and significance of observed trends in precipitation frequency over the u.s.," in *37th Climate Diagnostic and Prediction Workshop*, Fort Collins, CO, 2012.

64 B. T. Anderson⋆, **D. J. Gianotti**, and G. D. Salvucci, "Historical expansion of the summertime monsoon over the southwestern United States: What can regional models tell us about its causes?" In *Regional Spectral Modeling Workshop*, Scripps Institution of Oceanography, San Diego, CA, 2012.

65 I. Pal⋆, B. T. Anderson, G. Salvucci, and **D. J. Gianotti**, "Magnitude and significance of observed trends in precipitation frequency over the US," in *American Geophysical Union Fall Meeting*, San Francisco, CA, 2012.

66 **D. Gianotti**⋆, B. T. Anderson, and G. Salvucci, "Stochastic and deterministic aspects of observed seasonal-mean precipitation variations and extreme event occurrences over the United States," in *American Geophysical Union Fall Meeting*, San Francisco, CA, 2011.

67 B. T. Anderson⋆, **D. Gianotti**, and G. D. Salvucci, "Detection of historical summertime monsoon precipitation variations and trends over the southwestern United States," in *WCRP Open Science Conference*, Denver, CO, 2011.

68 B. T. Anderson⋆, **D. Gianotti**, and G. D. Salvucci, "Detection of historical precipitation variations and trends over the continental United States," in *Department of Energy Principal Investigators Meeting*, Washington, DC, 2011.

69 D. H. Schubert⋆, **D. J. Gianotti**, and K. Sauers, "Upgrades to a wastewater lagoon treatment system in a rural sub-arctic community in alaska," in *International Symposium on Cold Region Development*, Tampere, Finland, 2007.

70 D. H. Schubert⋆, **D. J. Gianotti**, and G. Jones, "Application of a thermal-hydraulic model to analyze and design a circulating water system in alaska," in *International Symposium on Cold Region Development*, Tampere, Finland, 2007.

71 **D. J. Gianotti**⋆, C. Woolard, and D. White, "Wastewater treatment lagoon design in rural alaska," in *45th Alaska Water and Wastewater Management Association Annual Conference*, Juneau, AK, 2005.

Invited Talks, Seminars, and Non-Conference Presentations

1 M. R. Alizedeh, K. Kummel⋆†, **D. J. Short Gianotti**⋆, and D. Entekhabi, "Global mapping of groundwater recharge and sustainable aquifer water withdrawls using satellite observations," in *MIT Energy Initiative, 2024 Future Energy Systems Center Fall Workshop*, Massachusetts Institute of Technology, Nov. 20, 2024.

2 **D. J. Short Gianotti**⋆, D. Entekhabi, K. A. McColl, A. F. Feldman, and X. Xu, "Patterns and drivers of water/carbon coupling across biomes," in *Energy & Water Resources Spring Seminar Series, Department of Civil & Environmental Engineering, Cornell University*, Invited Talk, Cornell University, 2024.

3 **D. J. Short Gianotti**⋆, R. Akbar, A. F. Feldman, G. D. Salvucci, and D. Entekhabi, "Climatic changes in land surface evaporation and drainage to streams," in *Ralph M. Parsons Laboratory Remote Environmental Science Seminar Series, Massachusetts Institute of Technology*, Massachusetts Institute of Technology, 2020.

4 A. F. Feldman⋆, **D. J. Short Gianotti**, A. G. Konings, P. Gentine, and D. Entekhabi, "Thirsty plants: Tracking their water uptake from space," in *Ralph M. Parsons Laboratory Remote Environmental Science Seminar Series, Massachusetts Institute of Technology*, Massachusetts Institute of Technology, 2020.

5 **D. J. Short Gianotti**⋆, "Water limitation and vegetation response," in *Arnold Arboretum of Harvard University Research Talks Series, Arnold Arboretum*, Invited Talk, Arnold Arboretum, 2020.

6 **D. J. Short Gianotti**⋆, "Water availability controls on vegetated ecosystems," in *Ralph M. Parsons Laboratory Environmental Science Seminar Series, Massachusetts Institute of Technology*, Massachusetts Institute of Technology, 2019.

7 N. Toft⋆†, N. Lutz⋆†, **D. J. Short Gianotti**, and D. Entekhabi, "Impacts of soil moisture on ecosystem carbon and water exchanges," in *Civil & Environmental Engineering Mini-UROP Presentations, Massachusetts Institute of Technology*, Student Advisee, Massachusetts Institute of Technology, 2019.

8 **D. J. Short Gianotti**⋆, "The potential predictability of precipitation over the continental United States," in *Dissertation Defense, Boston University*, Boston University, 2016.

9 **D. J. Gianotti**⋆, "Weather models for climate variability," in *Dept. of Earth & Env. Graduate Student Presentations, Boston University*, Boston University, 2015.

10 **D. J. Gianotti**⋆, "Real weather, fake weather, and the california drought," in *Dept. of Earth & Env. Graduate Student Presentations, Boston University*, Boston University, 2014.

11 **D. J. Gianotti**⋆, "How predictable is rain?" In *Dept. of Geography & Env. Graduate Student Presentations, Boston University*, Boston University, 2012.

12 **D. J. Gianotti**⋆, B. T. Anderson, and G. Salvucci, "Stochastic and deterministic aspects of observed seasonal-mean precipitation variations and extreme event occurrences over the United States," in *Science and Engineering Research Symposium, Boston University*, Boston University, 2012.

Other Research Documents

1 **D. J. Short Gianotti**, G. D. Salvucci, and B. T. Anderson. "A kernel auto-regressive weather generator for improved subseasonal-to-seasonal precipitation statistics." ESS Open Archive: essoar.10503866.1. URL: https://doi.org/10.1002/essoar.10503866.1

2. D. H. Schubert, **D. J. Gianotti**, and K. Sauers, "Upgrades to a wastewater lagoon treatment system in a rural sub-arctic community in alaska," Proceedings of the 8th International Symposium on Cold Region Development, Tech. Rep., 2007.

3. D. H. Schubert, **D. J. Gianotti**, and G. Jones, "Application of a thermal-hydraulic model to analyze and design a circulating water system in alaska," Proceedings of the 8th International Symposium on Cold Region Development, Tech. Rep., 2007.

4. C. Woolard, **D. Gianotti**, K. Hardie, D. White, and A. Pinto, "Waste stabilization pond design and performance study," Prepared for the Alaska Department of Environmental Conservation, Tech. Rep., 2005.

5. **D. J. Gianotti**, "Fluid drop coalescence in a hele-shaw cell," Undergraduate Mathematics Thesis, Advised by A. Nadim, Bachelor's Thesis, Harvey Mudd College, May 2003.

6. K. Lampe, K. Hultman, K. Hedstrom, **D. Gianotti**, E. Deyo, and R. Seat, "Internal metrology for the space interferometry mission," Undergraduate Physics Clinic Report, Advised by R. Haskell, D. MacDonald, and B. Nemati, Harvey Mudd College & NASA-JPL, Tech. Rep., 2002.

Published Software Packages

1. **D. J. Short Gianotti**, *Monotone copula filter v1.0.0*, version v1.0.0, Oct. 2025. DOI: 10.5281/zenodo.17460263

2. **D. Short Gianotti**, *Global soil water retention curves by lat-lon: Version 1.0.0*, version v1.0.0, Oct. 2025. DOI: 10.5281/zenodo.17298099

3. **D. J. Short Gianotti**, *Occurrence Markov chain daily precipitation model*, 2016. DOI: 10.5281/zenodo.45435

Published Datasets

1. **D. J. Short Gianotti**, *Processed data for Short Gianotti et al., "Two sub-annual time-scales and coupling modes for terrestrial water and carbon cycles"*, Data set, Global Change Biology, 2024. DOI: 10.5281/zenodo.13144427

Professional Appointments

2021 – · · · · **Research Scientist,** Massachusetts Institute of Technology.
2016 – 2021 **Postdoctoral Associate,** Massachusetts Institute of Technology.
2011 – 2015 **Research Assistant,** Boston University.
2010 – 2011 **Math Teacher,** Boston Public Schools.
2004 – 2010 **Private Tutor**. .
2007 – 2008 **Lab Technician,** California Institute of Technology.
2005 – 2006 **Environmental Engineering Associate,** GV Jones & Associates.
2004 – 2005 **Research Assistant,** University of Alaska, Anchorage.
2003 – 2005 **Substitute Teacher,** Anchorage School District.
2004 **Staff,** National Youth Science Camp.
2001 – 2003 **Writing Consultant,** Harvey Mudd College.

Professional Appointments (continued)

2002 **Research Assistant,** Lawrence Berkeley National Lab.

Teaching

Teaching Fellow

2015 *Introduction to Quantitative Environmental Modeling* (Boston University)

Guest Lecturer

2016 – 2018 *Introduction to Hydrology and Water Resources* (MIT)

2017 *Introduction to Hydrologic Modeling* (MIT)

K-12 Instruction

2010 – 2011 *High school mathematics* (Boston Public Schools)

2004 – 2006 *All subjects, K – 12* (Substitute Teacher – Anchorage School District)

Private Tutoring

2002 – 2010 Math, physics, writing through advanced undergraduate

2006 – 2010 Chemistry, biology through introductory undergraduate

All subjects through advanced secondary

Mentorship

Thesis Committee Member

2022-2023 Meriah J Gannon (MIT MS in Climate, Environment, & Sustainability)
Thesis: *Propagation from meteorological drought to agricultural drought under climate change*

2021-2022 Lily N Zhang (MIT SB in Earth, Atmospheric, & Planetary Sciences)
Thesis: *Evaporative Controls on Convective Adjustment: a Satellite-Based Assessment of Convective Available Potential Energy (CAPE) During Surface Drydowns*

2018-2019 Apisada (Ju) Chulakadabba (MIT SB in Civil & Environmental Engineering)
Thesis: *Water and carbon flux responses to soil moisture pulses in the Western United States*

First-year Mini-UROP

2019 Naomi Lutz (MIT Civil & Environmental Engineering): *Impacts of Soil Moisture on Ecosystem Carbon and Water Exchanges*

Nicole Toft (MIT Civil & Environmental Engineering): *Impacts of Soil Moisture on Ecosystem Carbon and Water Exchanges*

Undergraduate UROP

Nicole Toft (MIT Civil & Environmental Engineering): *Land-atmosphere interactions at the inter-storm scale*

Professional Development

2015 *ComSciCon 2015* Communicating Science Workshop, Harvard University.

Professional Service

2022 *Climate Action Through Education (CATE) Workshop* K-12 Climate Curriculum Tuning Workshop, MIT Sloan School.

Conference and Workshop Organization

2025 *American Geophysical Union Fall Meeting* – Advances in Understanding Water-Energy-Carbon Interactions (B31A, B33J)
Primary Convener: Yanlan Liu, Conveners: **Daniel J Short Gianotti**, Flavio Lehner, Justin S Menkin, & Xiangtao Xu,

2024 *American Geophysical Union Fall Meeting* – Advances in Understanding Water-Energy-Carbon Interactions (B12A, B13A)
Primary Convener: Yanlan Liu, Conveners: Joshua Fisher, Xiangtao Xu, **Daniel J. Short Gianotti**, Justin S. Mankin, Yushu Xia, & Kevin P. Tu

2023 *American Geophysical Union Fall Meeting* – Advances in Understanding Water-Energy-Carbon Interactions (B43E, B52A)
Primary Convener: Yanlan Liu, Conveners: Xiangtao Xu, Vincent Humphrey, & **Daniel J Short Gianotti**

2022 *American Geophysical Union Fall Meeting* – Advances in Understanding Water-Energy-Carbon Interactions (B15B-I/II/III)
Primary Convener: **Daniel J Short Gianotti**, Conveners: Xiangtao Xu, Yanlan Liu, & Vincent Humphrey

2021 *American Geophysical Union Fall Meeting* – Advances in Understanding Water-Energy-Carbon Interactions (B010-I/II)
Primary Convener: **Daniel J Short Gianotti**, Conveners: Xiangtao Xu, Yanlan Liu, & Vincent Humphrey

Non-journal Reviews

2020 *Intergovernmental Panel on Climate Change* – Sixth Assessment Report
Second Order Draft for Working Group I (WGI)

2018 *Intergovernmental Panel on Climate Change* – Special Report on Climate Change, Desertification, Land Degradation, Sustainable Land Management, Food Security, and Greenhouse gas fluxes in Terrestrial Ecosystems
First Order Draft for US Global Change Research Program

Journal Reviews

- Remote Sensing of Environment
- Geophysical Research Letters
- Water Resources Research
- Bulletin of the American Meteorological Society
- Hydrology and Earth System Sciences
- Journal of Hydrometeorology
- Journal of Climate
- Biogeosciences
- Nature Communications

Memberships & Research Communities

- American Geophysical Union
- Boston Water Group

Professional Service (continued)

- Boston Area Hydrology Journal Club
- Harvard Plants & Climate
- IEEE

References

Available on Request

Updated February 19, 2026.
Find the most up-to-date version of this CV here.