

Daniel J. Short Gianotti

Parsons Laboratory
Massachusetts Institute of Technology
15 Vassar St., Building 48
Cambridge, MA 02139 U.S.A.

email: gianotti@mit.edu
URL: <http://www.dgianotti.com>

Academic appointments

2021-Present	<i>Research Scientist</i> , Massachusetts Institute of Technology Parsons Laboratory Department of Civil & Environmental Engineering
2016-2021	<i>Postdoctoral Associate</i> , Massachusetts Institute of Technology Parsons Laboratory Department of Civil & Environmental Engineering

Areas of specialization

Hydroclimate · Ecohydrology · Terrestrial Climate Feedbacks
Climate Predictability · Water-Carbon-Energy Cycle Coupling

Education

2011-2016	PhD in Geography and Environment, Boston University Dissertation Title: <i>The Potential Predictability of Precipitation over the Continental United States</i> Committee: Bruce T. Anderson (primary advisor), Guido D. Salvucci, Michael C. Dietze, Dara Entekhabi, & Anthony C. Janetos (chair)
1999-2003	BS in Mathematics, Harvey Mudd College

Publications & talks

MANUSCRIPTS IN PROGRESS

<i>in revision</i>	Gannon, MJ, DJ Short Gianotti , & D Entekhabi, “Propagation from Meteorological Drought to Agricultural Drought Intensifies Under Climate Change,” <i>In revision</i> at Earth’s Future.
--------------------	---

PUBLISHED JOURNAL ARTICLES

2024b	Short Gianotti, DJ , KA McColl, AF Feldman, X Xu, & D Entekhabi, (2024) “Two sub-annual timescales and coupling modes for terrestrial water and carbon cycles,” <i>Global Change Biology</i> ,
-------	---

30, e17463. <https://doi.org/10.1111/gcb.17463>.

- 2024a **Short Gianotti, DJ**, & D Entekhabi, (2024) “Local and general patterns of terrestrial water-carbon coupling,” *Geophysical Research Letters*, 51, e2024GL109625. <https://doi.org/10.1029/2024GL109625>.
- 2023e Feldman, AF, **DJ Short Gianotti**, J Dong, IF Trigo, GD Salvucci, D Entekhabi, (2023) “Tropical surface temperature response to vegetation cover changes and the role of drylands,” *Global Change Biology*, 29, 110-125. <https://doi.org/10.1111/gcb.16455>
- 2023d Dong, J, R Akbar, AF Feldman, **DJ Short Gianotti**, & D Entekhabi, (2023) “Land Surfaces at the Tipping-Point for Water and Energy Balance Coupling,” *Water Resources Research*, 59. <https://doi.org/10.1029/2022WR032472>
- 2023c Zhang, LN, **DJ Short Gianotti**, & D Entekhabi, (2023) “Land Surface Influence on Convective Available Potential Energy (CAPE) Change During Interstorms,” *Journal of Hydrometeorology*, 24(8), 1365-1376. <https://doi.org/10.1175/JHM-D-22-0191.1>
- 2023b Xu, Y, Q He, P Yao, H Lu, K Yang, AF Feldman, **DJ Short Gianotti**, & D Entekhabi, (2023) “Global Characterizations of Drydown Events from a Long-Term Satellite Soil Moisture Dataset,” *IEEE International Geoscience and Remote Sensing Symposium*, 2843-2845. <https://doi.org/10.1109/IGARSS52108.2023.10282498>
- 2023a Feldman, AF, **DJ Short Gianotti**, J Dong, R Akbar, WT Crow, KA McColl, A Konings, JB Nippert, SJ Tumber-Davila, NM Holbrook, FE Rockwell, RL Scott, RH Reichle, A Chatterjee, J Joiner, B Poulter, & D Entekhabi, (2023) “Remotely sensed soil moisture can capture dynamics relevant to plant water uptake,” *Water Resources Research*, 59. <https://doi.org/10.1029/2022WR033814>
- 2022d Jonard, F, AF Feldman, **DJ Short Gianotti**, & D Entekhabi, (2022) “Observed water and light limitation across global ecosystems,” *Biogeosciences*, 19, 5575-5590. <https://doi.org/10.5194/bg-19-5575-2022>
- 2022c Li, Y, H Lu, D Entekhabi, **DJ Short Gianotti**, K Yang, C Luo, AF Feldman, W Wang, & R Jiang (2022), “Satellite-based assessment of meteorological and agricultural drought in Mainland South-east Asia,” *Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, 15, 6180-6189. <https://doi.org/10.1109/JSTARS.2022.3190438>
- 2022b Dong, J, R Akbar, **Short Gianotti, DJ**, AF Feldman, WT Crow, & D Entekhabi (2022), “Can Surface Soil Moisture Information Identify Evapotranspiration Regime Transitions?” *Geophysical Research Letters*. <https://doi.org/10.5194/bg-2020-380>
- 2022a Feldman, AF, **DJ Short Gianotti**, IF Trigo, GD Salvucci, & D Entekhabi (2022), “Observed landscape responsiveness to climate forcing,” *Water Resources Research*. <https://doi.org/10.1029/2021WR030316>
- 2021b P Yao, H Lu, J Shi, T Zhao, K Yang, MH Cosh, **DJ Short Gianotti**, & D Entekhabi (2021), “A long term spatially and temporally consistent global daily soil moisture dataset derived from AMSR-E/2,” *Scientific Data*. <https://doi.org/10.1038/s41597-021-00925-8>
- 2021a Feldman, AF, **DJ Short Gianotti**, AG Konings, P Gentile, & D Entekhabi (2020), “Patterns of plant rehydration and growth following pulses of soil moisture availability,” *Biogeosciences*, 18, 831-847, <https://doi.org/10.5194/bg-18-831-2021>.

Preprint: <https://doi.org/10.5194/bg-2020-380>

- 2020e Feldman, AF, J Chulakadabba, **DJ Short Gianotti**, & D Entekhabi (2020), “Landscape-scale plant water content and carbon flux behavior following moisture pulses: from dryland to mesic environments,” *Water Resources Research*. <https://doi.org/10.1029/2020WR027592>
- 2020d Akbar, R, **DJ Short Gianotti**, GD Salvucci, & D Entekhabi (2020), “Historical Landscape Drainage Estimates Derived from Satellite-Era Hydrological Dynamics,” *Water Resources Research*. <https://doi.org/10.1029/2020WR027307>
- 2020c Feldman, AF, **DJ Short Gianotti**, IF Trigo, GD Salvucci, & D Entekhabi (2020), “Land-atmosphere drivers of landscape-scale plant water content loss,” *Geophysical Research Letters*. <https://doi.org/10.1029/2020GL090331>
- 2020b F Jonard, S DeCannière, N Brüggemann, P Gentine, **DJ Short Gianotti**, G Lobet, DG Miralles, C Montzka, BR Pagán, U Rascher, & H Vereecken (2020), “Value of chlorophyll fluorescence for quantifying hydrological states and fluxes: Current status and challenges,” *Agricultural and Forest Meteorology* 291. <https://doi.org/10.1016/j.agrformet.2020.108088>
- 2020a **Short Gianotti, DJ**, R Akbar, AF Feldman, GD Salvucci, & D Entekhabi (2020), “Terrestrial Evaporation and Moisture Drainage in a Warmer Climate,” *Geophysical Research Letters* 47. <https://doi.org/10.1029/2019GL086498>
Preprint: <https://doi.org/10.1002/essoar.10501441.1>
- 2019d Feldman, AF, **DJ Short Gianotti**, I Trigo, GD Salvucci, & D Entekhabi (2019), “Satellite-based assessment of land surface energy partitioning-soil moisture relationships and effects of confounding variables,” *Water Resources Research* 55, 10657–10677. <https://doi.org/10.1029/2019WR025874>
- 2019c **Short Gianotti, DJ**, GD Salvucci, R Akbar, K McColl, & D Entekhabi (2019), “Landscape water storage and subsurface correlation from satellite surface soil moisture and precipitation observations,” *Water Resources Research* 55, 9111–9132. <https://doi.org/10.1029/2019WR025332>
- 2019b Akbar, R, **DJ Short Gianotti**, GD Salvucci, & D Entekhabi (2019), “Mapped Hydroclimatology of Evapotranspiration and Drainage Runoff Using SMAP Brightness Temperature Observations and Precipitation Information,” *Water Resources Research* 55, 3391–3413. <https://doi.org/10.1029/2018WR024459>
- 2019a **Short Gianotti, DJ**, AJ Rigden, GD Salvucci, & D Entekhabi (2019), “Satellite and station observations demonstrate water availability’s effect on continental-scale evaporative and photosynthetic land surface dynamics,” *Water Resources Research* 55, 540–554. <https://doi.org/10.1029/2018WR023726>
- 2018e Feldman, AF, **DJ Short Gianotti**, AG Konings, KA McColl, R Akbar, GD Salvucci, & D Entekhabi (2018), “Pulse-response vegetation water uptake is persistent across biomes,” *Nature Plants* 4 (12), 1026–1033. <https://doi.org/10.1038/s41477-018-0304-9>
- 2018d Rigden, AJ, GD Salvucci, D Entekhabi, & **DJ Short Gianotti** (2018), “Partitioning evapotranspiration over the continental United States using weather station data,” *Geophysical Research Letters*

45 (18), 9605–9613. <https://doi.org/10.1029/2018GL079121>

- 2018c Akbar, R, **DJ Short Gianotti**, KA McColl, E Haghighi, GD Salvucci, & D Entekhabi (2018), “Estimation of landscape soil water losses from satellite observations of soil moisture,” *Journal of Hydrometeorology* 19 (5), 871–889. <https://doi.org/10.1175/JHM-D-17-0200.1>
- 2018b Akbar, R, **DJ Short Gianotti**, KA McColl, E Haghighi, GD Salvucci, & D Entekhabi (2018), “Hydrological storage length-scales represented by remote sensing estimates of soil moisture and precipitation,” *Water Resources Research* 54 (3), 1476–1492. <https://doi.org/10.1002/2017WR021508>
- 2018a Haighighi, E, **DJ Short Gianotti**, R Akbar, GD Salvucci, & D Entekhabi (2018), “Soil and atmospheric controls on the land surface energy balance: A generalized framework for distinguishing moisture- and energy-limited evaporation regimes,” *Water Resources Research* 53 (3), 1831–1851. <https://doi.org/10.1002/2017WR021729>
- 2017b McColl, K, W Wang, B Peng, R Akbar, **D Short Gianotti**, M Pan, & D Entekhabi (2017), “Global characterization of surface soil moisture drydowns,” *Geophysical Research Letters* 44 (8), 3682–3690. <https://doi.org/10.1002/2017GL072819>
- 2017a Anderson, BT, JC Furtado, E Di Lorenzo, **DJ Short Gianotti** (2017), “Tracking the Pacific Decadal Precession,” *Journal of Geophysical Research: Atmospheres* 122 (6) 3214–3227. <https://doi.org/10.1002/2016JD025962>
- 2016b Anderson, BT, **DJ Short Gianotti**, GD Salvucci, & J Furtado (2016), “Dominant timescales of potentially predictable precipitation variations across the continental United States,” *Journal of Climate* 29, 8881–8897. <https://doi.org/10.1175/JCLI-D-15-0635.1>
- 2016a Anderson, BT, **DJ Short Gianotti**, J Furtado, & E Di Lorenzo (2016), “A decadal precession of atmospheric pressures over the North Pacific,” *Geophysical Research Letters* 43 (8) 3921–3927. <https://doi.org/10.1002/2016GL068206>
- 2015c Anderson, BT, **DJ Short Gianotti**, & GD Salvucci (2015), “Detectability of historical trends in station-based precipitation characteristics over the continental United States,” *Journal of Geophysical Research* 120 (10) 4842–4859. <https://doi.org/10.1002/2014JD022960>
- 2015b Gill, AL, AS Gallinat, R Sanders-DeMott, AJ Rigden, **DJ Short Gianotti**, JA Mantooth, & PH Templer (2015), “Changes in Autumn Senescence in Northern Hemisphere Deciduous Trees: a Meta-Analysis of Autumn Phenology Studies,” *Annals of Botany*, (Special Issue on Plants and Climate Change) 116, 875–888. <https://doi.org/10.1093/aob/mcv055>
- 2015a Anderson, BT, **D Gianotti**, & G Salvucci (2015), “Characterizing the potential predictability of seasonal, station-based heavy precipitation accumulations and extreme dry-spell durations,” *Journal of Hydrometeorology* 16 (2) 843–856. <https://doi.org/10.1175/JHM-D-14-0111.1>
- 2014a **Short Gianotti, DJ**, BT Anderson, & GD Salvucci (2014), “The Potential Predictability of Precipitation Occurrence, Intensity, and Seasonal Totals over the Continental United States,” *Journal of Climate* 27 (18), 6904–6918. <https://doi.org/10.1175/JCLI-D-13-00695.1>
- 2013b Pal, I, BT Anderson, GD Salvucci, & **DJ Gianotti** (2013), “Shifting seasonality and increasing frequency of precipitation in wet and dry seasons across the US,” *Geophysical Research Letters* 40

(15), 4030–4035. <https://doi.org/10.1002/grl.50760>

- 2013a **Gianotti, D**, BT Anderson, & GD Salvucci (2013), “What Do Rain Gauges Tell Us about the Limits of Precipitation Predictability?” *Journal of Climate* 26 (15), 5682–5688. <https://doi.org/10.1175/JCLI-D-12-00718.1>

CONFERENCE PRESENTATIONS

** denotes presenting author*

- 2023 **Short Gianotti, DJ*** & D Entekhabi, (2023) “Time-scales of water/carbon coupling and their similarities across biomes,” American Geophysical Union Fall Meeting: B31A-05, San Francisco, CA.
- 2023 Feldman, AF*, **DJ Short Gianotti**, J Dong, R Akbar, WT Crow, KA McColl, AG Konings, JB Nippert, SJ Tumber-Davila, NM Holbrook, FE Rockwell, RH Reichle, AChatterjee, J Joiner, B Poulter, & D Entekhabi, (2023) “Remotely sensed soil moisture can capture dynamics relevant to plant water uptake,” American Geophysical Union Fall Meeting: H12E-06, San Francisco, CA.
- 2023 Zhang, LN*, **DJ Short Gianotti**, & D Entekhabi (2023) “Land Surface Influence on Convective Available Potential Energy (CAPE) Change During Interstorms,” American Geophysical Union Fall Meeting: H11D-04, San Francisco, CA.
- 2023 Jonard, F, S De Canniere, AF Feldman, **DJ Short Gianotti**, & D Entekhabi* (2023) “Remote sensing based framework for observing water and light limitation across global ecosystems,” American Geophysical Union Fall Meeting: H13M-1632, San Francisco, CA.
- 2023 Xu, Y*, Q He, P Yao, H Lu, K Yang, AF Feldman, **DJ Short Gianotti**, & D Entekhabi (2023) “Global Characterizations of Drydown Events from a Long-Term Satellite Soil Moisture Dataset,” IEEE International Geoscience and Remote Sensing Symposium, Pasadena, CA.
Conference Paper: <http://doi.org/10.1109/IGARSS52108.2023.10282498>
- 2023 Chaparro, D*, T Jagdhuber, M Piles, M Link, A Fluhrer, MJ Baur, AF Feldman, **DJ Short Gianotti**, & D Entekhabi (2023) “Analyses of the relationship between horizontal and vertical brightness temperatures for derivation of signal-to-noise ratio and vegetation metrics,” The Fifth Space for Hydrology Workshop, Lisbon, Portugal.
- 2023 Gannon, M*, **DJ Short Gianotti**, & D Entekhabi (2023) “The Drought Cascade in a Changing Climate,” American Meteorological Society Annual Meeting: 10B.1, Denver, CO.
- 2023 Zhang, LN*, D Entekhabi, & **DJ Short Gianotti** (2023) “Land Surface Influence on Convective Available Potential Energy (CAPE) Change During Drydowns,” American Meteorological Society Annual Meeting: JointJ2B.2, Denver, CO.
- 2022 Feldman, AF*, **DJ Short Gianotti**, J Dong, IF Trigo, GD Salvucci, & D Entekhabi (2022) “Tropical surface temperature response to vegetation cover changes and the role of drylands,” American Geophysical Union Fall Meeting: B15B-05, Chicago, IL.
- 2022 Zhang, LN*, D Entekhabi, & **DJ Short Gianotti** (2022) “Land Surface Influence on Convective Available Potential Energy (CAPE) Evolution During Drydowns,” American Geophysical Union

Fall Meeting: H11F-01, Chicago, IL.

- 2022 **DJ Short Gianotti***, ER Williams, LN Zhang, & D Entekhabi (2022) “Soil Moisture Impacts on Convective Lightning Triggering,” American Geophysical Union Fall Meeting: H32I-07, Chicago, IL.
- 2022 Entekhabi, D*, R Akbar, J Dong, AF Feldman, & **DJ Short Gianotti** (2022) “Detection and mapping of shifts in dominant hydrologic processes guide model development,” Frontiers in Hydrology Meeting: 126-067, San Juan, Puerto Rico.
- 2022 **Short Gianotti, DJ***, KA McColl, X Xu, AF Feldman, & D Entekhabi (2022) “Ecosystem structural dynamics dominate water-use efficiency in coupling the terrestrial water and carbon cycles,” Frontiers in Hydrology Meeting: 241-04, San Juan, Puerto Rico.
- 2022 Feldman, AF*, **DJ Short Gianotti**, IF Trigo, GD Salvucci, & D Entekhabi (2022) “Observed landscape responsiveness to climate forcing,” Frontiers in Hydrology Meeting: 139-07, San Juan, Puerto Rico.
- 2022 Dong, J*, R Akbar, **DJ Short Gianotti**, AF Feldman, WT Crow, & D Entekhabi (2022) “Can Surface Soil Moisture Information Identify Landscape Evapotranspiration Regime Transitions?,” Frontiers in Hydrology Meeting: 100-07, San Juan, Puerto Rico.
- 2021 **Short Gianotti, DJ***, KA McColl, X Xu, AF Feldman, & D Entekhabi (2021) “Emergent observed coupling of terrestrial water, energy, and carbon fluxes,” American Geophysical Union Fall Meeting: B15D-1460, New Orleans, LA.
- 2021 Feldman*, AF, **DJ Short Gianotti**, IF Trigo, GD Salvucci, & D Entekhabi (2021) “Observed landscape responsiveness to climate forcing,” American Geophysical Union Fall Meeting: H25L-1178, New Orleans, LA.
- 2021 Dong, J*, R Akbar, AF Feldman, **DJ Short Gianotti**, & D Entekhabi (2021) “A new framework for global soil moisture dry-down analysis and its application for vegetation water stress quantification,” American Geophysical Union Fall Meeting: H15W-1305, New Orleans, LA.
- 2021 **Short Gianotti, DJ***, & D Entekhabi (2021) “An emergent spatial Water/Energy/Carbon relationship explained by local coupling,” 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.
- 2020 Feldman, AF*, **DJ Short Gianotti**, AG Konings, A Chulakadabba, P Gentile, & D Entekhabi (2020) “Satellite-observed patterns of plant water refilling and growth response following pulses of soil moisture availability,” Ecological Society of America Annual Meeting, Virtual.
- 2020 **Short Gianotti, DJ***, AF Feldman, KA McColl, GD Salvucci, & D Entekhabi (2020) “Emergent Climatological Coupling of the Terrestrial Carbon Sink with Water and Energy Availability,” American Geophysical Union Fall Meeting: B117-03, Virtual.
- 2020 Feldman, AF*, **DJ Short Gianotti**, IF Trigo, GD Salvucci, & D Entekhabi (2020) “Land-atmosphere drivers of landscape-scale plant water content loss using satellite observations,” American Geo-

physical Union Fall Meeting: B090-02, Virtual.

- 2020 Feldman, AF*, **DJ Short Gianotti**, AG Konings, P Gentine, KA McColl, R Akbar, GD Salvucci, & D Entekhabi (2020) "SMAP Measurements Show Water Movement in the Soil-Plant Continuum as Pulses," 16th Specialist Meeting on Microwave Radiometry (MicroRAD), Virtual.
- 2019 **Short Gianotti, DG***, R Akbar, AF Feldman, GD Salvucci & D Entekhabi (2019) "Land Surface Fluxes and Hydrologic Sensitivities in a Warmer Climate," American Geophysical Union Fall Meeting: H54G-08, San Francisco, CA.
- 2019 Feldman, AF*, **DJ Short Gianotti**, IF Trigo, GD Salvucci, & D Entekhabi (2019) "Satellite-based assessment of land surface energy partitioning-soil moisture relationships and effects of confounding variables," American Geophysical Union Fall Meeting: H53F-05, San Francisco, CA.
- 2019 Li, Y*, H Lu, D Entekhabi, & **DJ Short Gianotti** (2019) "The impact of higher-than-radiometer resolution landscape and weather features on SMAP product," American Geophysical Union Fall Meeting: H51S-1771, San Francisco, CA.
- 2019 **Short Gianotti, DG**, GD Salvucci, R Akbar, R Cuenca, & D Entekhabi* (2019) "Surface-Subsurface Linkages Derived From SMAP Time Series," SMAP Science Team Meeting #13, Arcadia, CA.
- 2019 **Short Gianotti, DG**, R Akbar, AF Feldman, GD Salvucci, & D Entekhabi* (2019) "Consequences of the Acceleration of Water Cycle on Surface Water Balance Components Using SMAP Observations," SMAP Science Team Meeting #13, Arcadia, CA.
- 2019 Entekhabi*, D, R Akbar, & **DJ Short Gianotti** (2019) "Decadal Distribution of ET and Drainage Based on SMAP Based Hydrologic Analogues and Historical Precipitation," SMAP Science Team Meeting #13, Arcadia, CA.
- 2019 Akbar, R, **DJ Short Gianotti**, GD Salvucci, & D Entekhabi (2019) "Seasonal Hydroclimatology of ET and Drainage from SMAP TB and Precipitation," SMAP Science Team Meeting #13, Arcadia, CA.
- 2019 AF Feldman, **DJ Short Gianotti**, I Trigo, GD Salvucci, & D Entekhabi (2019) "Satellite-Based Assessment of Surface Energy Partitioning Soil Moisture Relationships," SMAP Science Team Meeting #13, Arcadia, CA.
- 2019 Yao, P*, H Lu, S Yue, F Yang, H Lyu, K Yang, KA McColl, **DJ Short Gianotti**, & D Entekhabi (2019) "Estimating Surface Soil Moisture from AMSR2 TB with Artificial Neural Network Method and SMAP Products," IEEE Geoscience and Remote Sensing Society: Paper #2869, Yokohama, Japan.
- 2018 **Short Gianotti, DG***, GD Salvucci, KA McColl, R Akbar, & D Entekhabi (2018) "Hydrologic length scale of L-band radiometric soil moisture retrievals," American Geophysical Union Fall Meeting: H42G-02, Washington, DC.
- 2018 Feldman, AF*, **DJ Short Gianotti**, AG Konings, KA McColl, R Akbar, GD Salvucci, & D Entekhabi (2018) "Water Exchange Patterns in the Soil-Plant Continuum Based on SMAP Microwave Satellite Measurements," American Geophysical Union Fall Meeting: B53D-06, Washington, DC.
- 2018 Lu, H, F Yang, H Lyu, K Yang*, KA McColl, **DJ Short Gianotti**, & D Entekhabi (2018) "Estimating Surface Soil Moisture from AMSR2 TB with Machine Learning Methods and SMAP Products,"

American Geophysical Union Fall Meeting: H51W-1649, Washington, DC.

- 2018 Salvucci, GD*, AJ Rigden, D Entekhabi, & **DJ Short Gianotti** (2018) "Partitioning evapotranspiration over the continental United States using SMAP observations and weather station data," American Geophysical Union Fall Meeting: H41F-01, Washington, DC.
- 2018 **Short Gianotti, DJ**, GD Salvucci, AJ Rigden, & D Entekhabi (2018) "Water Use Efficiency Dependence on Soil Moisture," Science Utilization of SMAP Meeting #2, Arcadia, CA.
- 2018 Feldman, AF*, **DJ Short Gianotti**, AG Konings, KA McColl, R Akbar, GD Salvucci, & D Entekhabi (2018) "Water Exchange Patterns in the Soil-Plant Continuum Based on SMAP Microwave Satellite Measurements," Science Utilization of SMAP Meeting #2, Arcadia, CA.
- 2018 **Short Gianotti, DJ**, GD Salvucci, AJ Rigden, & D Entekhabi* (2018) "Linkages between water, energy and carbon cycles revealed by SMAP," SMAP End of Prime Mission Science Meeting, Jet Propulsion Laboratory, Pasadena, CA.
- 2018 Akbar, R, **Short Gianotti, DJ***, K McColl, E Haghighi, GD Salvucci, & D Entekhabi (2018) "Estimation of ecosystem-scale soil water losses from satellite observations of soil moisture," SMAP End of Prime Mission Science Meeting, Jet Propulsion Laboratory, Pasadena, CA.
- 2017 **Short Gianotti, DJ***, AJ Rigden, GD Salvucci, & D Entekhabi (2017) "Effects of water availability through the coupled land-atmosphere system," American Geophysical Union Fall Meeting: H12G-07, New Orleans, LA.
- 2017 Haghighi, E*, **Short Gianotti, DJ**, R Akbar, GD Salvucci, & D Entekhabi (2017) "What determines transitions between energy- and moisture-limited evaporative regimes?" American Geophysical Union Fall Meeting: H44C-07, New Orleans, LA.
- 2017 Salvucci, GD*, AJ Rigden, **DJ Short Gianotti**, & D Entekhabi (2017) "Soil moisture (SMAP) and vapor pressure deficit controls on evaporation fraction over the Continental U.S.," American Geophysical Union Fall Meeting: H12G-01, New Orleans, LA.
- 2017 **Short Gianotti, DJ***, AJ Rigden, GD Salvucci, & D Entekhabi (2017) "Soil moisture controls on water/energy/carbon coupling," Science Utilization of SMAP Meeting, Cambridge, MA.
- 2017 Akbar, R*, **DJ Short Gianotti**, E Haghighi, GD Salvucci, & D Entekhabi (2017) "Estimation of ecosystem-scale soil water losses from satellite observations of soil moisture," Science Utilization of SMAP Meeting, Cambridge, MA.
- 2017 Entekhabi, D*, SMAP Science Team, **DJ Short Gianotti**, Akbar, R, AJ Rigden, GD Salvucci, & JS Kimball (2017) "The Science Applications of SMAP," Science Utilization of SMAP Meeting, Cambridge, MA.
- 2016 **Short Gianotti, DJ***, AJ Rigden, GD Salvucci, & D Entekhabi (2016) "Soil Moisture Controls on Evaporative Fraction," American Geophysical Union Fall Meeting: H24C-03, San Francisco, CA.
- 2015 **Short Gianotti, DJ***, GD Salvucci, & BT Anderson (2015) "California Drought, Weather Variability, and Climate Variability," AGU Chapman Conference on California Drought: Causes, Impacts, and

Policy, Irvine CA.

- 2014 **Short Gianotti, DJ***, BT Anderson, & GD Salvucci (2014) "Characterizing weather and climate variability for precipitation: A data-based stochastic modeling framework," American Geophysical Union Fall Meeting, San Francisco CA.
- 2014 **Short Gianotti, DJ***, BT Anderson, & GD Salvucci (2014) "Stochastic analysis of California's recent precipitation drought in the context of the last one hundred years," American Geophysical Union Fall Meeting, San Francisco CA.
- 2014 Dietze, M*, HE Emery, D Gergel, **D Gianotti**, JA Mantooth, & AJ Rigden (2014), "Integrating satellite and tower phenology: a case-study in real-time ecological forecasting" American Geophysical Union Fall Meeting, San Francisco CA.
- 2014 Dietze, M*, HE Emery, D Gergel, **D Gianotti**, JA Mantooth, & AJ Rigden (2014), "Predicting phenology: A case-study in real-time ecological forecasting," Ecological Society of America Annual Meeting, Sacramento CA.
- 2013 **Gianotti, DJ***, BT Anderson, & GD Salvucci (2013), "Potential Predictability of Precipitation: Occurrence or Intensity?" 38th Climate Diagnostic and Prediction Workshop, College Park MD.
- 2012 **Gianotti, DJ***, BT Anderson, & GD Salvucci (2012), "Establishing Potential Predictability of U.S. Precipitation Using Rain Gauge Data," 37th Climate Diagnostic and Prediction Workshop, Fort Collins CO.
- 2012 Pal, I*, BT Anderson, G Salvucci, & **D Gianotti** (2012), "Magnitude and significance of observed trends in precipitation frequency over the U.S.," 37th Climate Diagnostic and Prediction Workshop, Fort Collins CO.
- 2012 Anderson, BT*, **D Gianotti**, & GD Salvucci (2012), "Historical expansion of the summertime monsoon over the southwestern United States: What can regional models tell us about its causes?" Regional Spectral Modeling Workshop, Scripps Institution of Oceanography, San Diego CA.
- 2012 Pal, I*, BT Anderson, G Salvucci, & **D Gianotti** (2012), "Magnitude and significance of observed trends in precipitation frequency over the US," American Geophysical Union Fall Meeting, San Francisco CA.
- 2011 **Gianotti, D***, BT Anderson, & G Salvucci (2011), "Stochastic and deterministic aspects of observed seasonal-mean precipitation variations and extreme event occurrences over the United States," American Geophysical Union Fall Meeting, San Francisco CA.
- 2011 Anderson, BT*, **D Gianotti**, & GD Salvucci (2011), "Detection of historical summertime monsoon precipitation variations and trends over the southwestern United States," WCRP Open Science Conference, Denver CO.
- 2011 Anderson, BT*, **D Gianotti**, & GD Salvucci (2011), "Detection of historical precipitation variations and trends over the continental United States," Department of Energy Principal Investigators Meeting, Washington DC.
- 2007 Schubert, DH*, **DJ Gianotti**, & K Sauers (2007), "Upgrades to a wastewater lagoon treatment system in a rural sub-Arctic community in Alaska," International Symposium on Cold Region Devel-

opment, Tampere Finland.

2007 Schubert, DH*, **DJ Gianotti**, & G Jones (2007), "Application of a Thermal-hydraulic Model to Analyze and Design a Circulating Water System in Alaska," International Symposium on Cold Region Development, Tampere Finland.

2005 **Gianotti, DJ***, C Woolard, & D White (2005), "Wastewater treatment lagoon design in rural Alaska," 45th Alaska Water and Wastewater Management Association Annual Statewide Conference, Juneau AK.

INVITED TALKS, SEMINARS, AND NON-CONFERENCE PRESENTATIONS

* denotes presenting author

† denotes student advisee

‡ denotes invited talk

2024 **Short Gianotti, DJ***[‡], D Entekhabi, KA McColl, AF Feldman, & X Xu (2024) "Patterns and Drivers of Water/Carbon Coupling Across Biomes," Energy & Water Resources Spring Seminar Series, Department of Civil & Environmental Engineering, Cornell University.

2020 **Short Gianotti, DJ***, R Akbar, AF Feldman, GD Salvucci, & D Entekhabi (2020) "Climatic Changes in Land Surface Evaporation and Drainage to Streams," Ralph M. Parsons Laboratory Remote Environmental Science Seminar Series, Massachusetts Institute of Technology.

2020 Feldman, AF*, **DJ Short Gianotti**, AG Konings, P Gentine, & D Entekhabi (2020) "Thirsty plants: Tracking their water uptake from space," Ralph M. Parsons Laboratory Remote Environmental Science Seminar Series, Massachusetts Institute of Technology.

2020 **Short Gianotti, DJ***[‡] (2020) "Water limitation and vegetation response," Arnold Arboretum of Harvard University Research Talks Series, Arnold Arboretum.

2019 **Short Gianotti, DJ*** (2019) "Water availability controls on vegetated ecosystems," Ralph M. Parsons Laboratory Environmental Science Seminar Series, Massachusetts Institute of Technology.

2019 Toft*[†], N, N Lutz*[†], **DJ Short Gianotti**, & D Entekhabi (2019) "Impacts of Soil Moisture on Ecosystem Carbon and Water Exchanges," Civil & Environmental Engineering Mini-UROP Presentations, Massachusetts Institute of Technology.

2016 **Short Gianotti, DJ*** (2016) "The Potential Predictability of Precipitation over the Continental United States," Dissertation Defense, Boston University.

2015 **Gianotti, DJ*** (2015) "Weather models for climate variability," Dept. of Earth & Env. Graduate Student Presentations, Boston University.

2014 **Gianotti, DJ*** (2014) "Real weather, fake weather, and the California Drought," Dept. of Earth & Env. Graduate Student Presentations, Boston University.

2012 **Gianotti, DJ*** (2012) "How predictable is rain?" Dept. of Geography & Env. Graduate Student Presentations, Boston University.

2012 **Gianotti, D***, BT Anderson, & G Salvucci (2012), "Stochastic and deterministic aspects of observed

seasonal-mean precipitation variations and extreme event occurrences over the United States,” Science and Engineering Research Symposium, Boston University.

NON-REFEREED RESEARCH DOCUMENTS

- 2007 Schubert, DH, **DJ Gianotti**, & K Sauers (2007), “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.
- 2007 Schubert, DH, **DJ Gianotti**, & G Jones (2007), “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.
- 2005 Woolard, C, **D Gianotti**, K Hardie, D White, & A Pinto (2005), “Waste Stabilization Pond Design and Performance Study,” Prepared for the Alaska Department of Environmental Conservation.
- 2003 **Gianotti, DJ** (2003), “Fluid drop coalescence in a Hele-Shaw cell,” Undergraduate Mathematics Thesis, Advised by A Nadim, *Harvey Mudd College*.
- 2002 Lampe, K, K Hultman, K Hedstrom, **D Gianotti**, E Deyo, & R Seat (2002), “Internal metrology for the Space Interferometry Mission,” Undergraduate Physics Clinic Report, Advised by R Haskell, D MacDonald, & B Nemati, *Harvey Mudd College & NASA-JPL*.

Published software packages

- 2016 **Short Gianotti, DJ** (2016) “Occurrence Markov Chain daily precipitation model,” <http://github.com/dgianotti/OMC-precip>, DOI:10.5281/zenodo.45435.

Published datasets

- 2024 **Short Gianotti, DJ**. (2024). Processed Data for Short Gianotti et al., “Two Sub-Annual Time-Scales and Coupling Modes for Terrestrial Water and Carbon Cycles” (2024), Global Change Biology. [Data set]. In Global Change Biology. Zenodo. <https://doi.org/10.5281/zenodo.13144427>.

Grants and Funding

- submitted “Emergent Land Surface Benchmarks for Climate Models,” Google Research: Creating ML Benchmarks for Climate Problems. First Author: **DJ Short Gianotti**, PI: D Entekhabi. \$262,172.
- 2024-2026 “Landcover Stability: Heating and Drying of Plants and Soils,” MIT-Portugal Program. First Author: **DJ Short Gianotti**, PI: D Entekhabi. \$259,002.
- 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.

Appointments held

2016-Present	Postdoctoral Associate, Massachusetts Institute of Technology
2011-2015	Research Assistant, Boston University
2011	Math Teacher, Boston Public Schools
2004-2010	Private Tutor, Anchorage & Los Angeles
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
2002	Research Assistant, Lawrence Berkeley National Lab

Teaching

Teaching Fellow:

2015	<i>Introduction to Quantitative Environmental Modeling</i> (Boston University)
------	--

Guest Lecturer:

2016-2018	<i>Introduction to Hydrology and Water Resources</i> (MIT)
2017	<i>Introduction to Hydrologic Modeling</i> (MIT)

K-12 Instruction:

2010-2011	High school mathematics (Boston Public Schools)
2004-2006	All subjects, all ages (Substitute Teacher – Anchorage School District)

Private Tutoring:

2002-2010	Math, physics, writing through advanced undergraduate
2006-2010	Chemistry, biology through introductory undergraduate
2006-2010	All subjects through advanced secondary

Mentorship

Thesis Committee Member:

2022-2023	Meriah J Gannon (MIT MS in Climate, Environment, & Sustainability) Thesis Title: <i>Propagation from meteorological drought to agricultural drought under climate change</i> Thesis: https://hdl.handle.net/1721.1/150225
2021-2022	Lily N Zhang (MIT SB in Earth, Atmospheric, & Planetary Sciences) Thesis Title: <i>Evaporative Controls on Convective Adjustment: a Satellite-Based Assessment of Convective Available Potential Energy (CAPE) During Surface Drydowns</i> Thesis: https://hdl.handle.net/1721.1/144854
2018-2019	Apisada (Ju) Chulakadabba (MIT SB in Civil & Environmental Engineering) Thesis Title: <i>Water and carbon flux responses to soil moisture pulses in the Western United States</i>

Thesis: <https://hdl.handle.net/1721.1/122233>

First-year Mini-UROP:

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

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

Undergraduate UROP:

2019 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 & WORKSHOP ORGANIZATION

2023 *American Geophysical Union Fall Meeting* – Advances in Understanding Water-Energy-Carbon Interactions (B43E, B52A)

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

2021 Primary Convener: **Daniel J Short Gianotti**, Conveners: Xiangtao Xu, Yanlan Liu, & Vincent Humphrey *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

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
Boston Area Hydrology Journal Club
Harvard Plants & Climate
IEEE