

# Daniel J. Short Gianotti

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## 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 <b>Dissertation Title:</b> <i>The Potential Predictability of Precipitation over the Continental United States</i> <b>Committee:</b> 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 press</i>	<b>Short Gianotti, DJ</b> , & D Entekhabi, “Local and general patterns of terrestrial water-carbon coupling,” <i>In press</i> at Geophysical Research Letters.
<i>in revision</i>	<b>Short Gianotti, DJ</b> , KA McColl, AF Feldman, X Xu, & D Entekhabi, “Two Sub-Annual Time-Scales and Coupling Modes for Terrestrial Water and Carbon Cycles,” <i>In revision</i> at Global Change Biology.
<i>in revision</i>	Gannon, MJ, <b>DJ Short Gianotti</b> , & D Entekhabi, “Propagation from Meteorological Drought to Agricultural Drought Intensifies Under Climate Change,” <i>In revision</i> at Earth’s Future.

# PUBLISHED JOURNAL ARTICLES

- 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 Gentine, & 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/>

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 Gentine, & 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 Geophysical 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,” Amer-

ican 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 Development, 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.

## Grants and Funding

- 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 *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, 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:** *Propagation from meteorological drought to agricultural drought under climate change*

Thesis: <https://hdl.handle.net/1721.1/150225>

2021-2022 Lily N Zhang (MIT SB in Earth, Atmospheric, & Planetary Sciences)

**Thesis Title:** *Evaporative Controls on Convective Adjustment: a Satellite-Based Assessment of Convective Available Potential Energy (CAPE) During Surface Drydowns*

Thesis: <https://hdl.handle.net/1721.1/144854>

2018-2019 Apisada (Ju) Chulakadabba (MIT SB in Civil & Environmental Engineering)

**Thesis Title:** *Water and carbon flux responses to soil moisture pulses in the Western United States*

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)  
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  
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

