

# Daniel J. Short Gianotti

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

email: [gianotti@mit.edu](mailto:gianotti@mit.edu)

## Academic Appointments

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- 2021-Present    *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

## Areas of Specialization

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Land Surface Processes • Microwave Remote Sensing • Ecohydrology  
Terrestrial Climate Feedbacks • Water-Carbon-Energy Cycle Coupling  
Spatial and Scaling Statistics • Environmental Remote Sensing

## Education

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- 2011-2016    PhD in Geography and Environment, Boston University  
**Dissertation Title:** *The Potential Predictability of Precipitation over the Continental United States*  
**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

## Grants and Funding

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- in preparation*    “Separating the Structural and Physiological Dynamics of Global Primary Productivity,” NASA Research Opportunities in Earth and Space Sciences, NNH24ZDA001N-CARBON, Carbon Cycle Science. PI: **DJ Short Gianotti**, CO-Is: BE Morgan, D Entekhabi, DL Des Marais. \$750,000.
- Funded:**    “Causes of Historical Change, Environmental Resiliency and Future of the Caspian Sea,” Private  
2024-2027    Donor Grant. PI: D Entekhabi, CO-Is: **DJ Short Gianotti**, MR Alizadeh. \$494,747.
- Funded:**    “Landcover Stability: Heating and Drying of Plants and Soils,” MIT-Portugal Program. First Author:  
2024-2026    **DJ Short Gianotti**, PI: D Entekhabi. \$259,002.
- Funded:**    “Analysis of Water Relations in the Soil-Plant Continuum Using Microwave-Lidar Synergy, Fun-  
2020-2021    dació “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

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### MANUSCRIPTS IN PROGRESS .....

- in review* Gannon, MJ, **DJ Short Gianotti**, & D Entekhabi, “Meteorological-to-Agricultural Drought Transitions in Historical and Future Climates,” *In review* at Water Resources Research.
- sub. date:*  
*Nov 5, 2024* Eisenacher, S, A Fluhner, J Bliefernicht, **DJ Short Gianotti**, H Kunstmann, & T Jagdhuber, “Spatio-Temporal Soil Moisture Influences on Lightning Density within continental United States,” Final draft completed, awaiting co-author input. *Expected submission: November 5, 2024* to Journal of Geophysical Research: Atmospheres.
- sub. date:*  
*Nov 15, 2024* Alizadeh, MR, **DJ Short Gianotti**, & D Entekhabi, “Causal Regimes of Soil-Plant-Atmospheric Water Tied to Photosynthetic Pathways in US Grasslands,” Final draft nearing completion. *Expected submission: November 15, 2024* to Nature Plants.
- sub. date:*  
*Dec 1, 2024* Alizadeh, MR, **DJ Short Gianotti**, J Adamowski, & D Entekhabi, “Observed Interactions of Water in Soil-Vegetation-Atmosphere Continuum Across Dry and Wet Regimes,” Final draft completed, awaiting co-author input. *Expected submission: December 1, 2024* to Water Resources Research.
- sub. date:*  
*Dec 1, 2024* **Short Gianotti, DJ**, MR Alizadeh, & D Entekhabi, “Review of Soil Moisture Impacts on Human Heat Stress and Mortality,” Manuscript in progress. *Expected submission: December 1, 2024* to Nature Reviews Earth and Environment.

### 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,” Global Change Biology, 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 Southeast 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 Yao, P, 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 Jonard, F, 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/10.1029/2020GL090331>

[//doi.org/10.1029/2019GL086498](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 Haghighi, 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 **Short Gianotti, DJ\***, 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,” 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 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<sup>\*‡</sup>**, , 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<sup>\*</sup>**, 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<sup>\*</sup>, **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<sup>\*†</sup>** (2020) “Water limitation and vegetation response,” Arnold Arboretum of Harvard University Research Talks Series, Arnold Arboretum.
- 2019 **Short Gianotti, DJ<sup>\*</sup>** (2019) “Water availability controls on vegetated ecosystems,” Ralph M. Parsons Laboratory Environmental Science Seminar Series, Massachusetts Institute of Technology.
- 2019 Toft<sup>\*†</sup>, N, N Lutz<sup>\*†</sup>, **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<sup>\*</sup>** (2016) “The Potential Predictability of Precipitation over the Continental United States,” Dissertation Defense, Boston University.
- 2015 **Gianotti, DJ<sup>\*</sup>** (2015) “Weather models for climate variability,” Dept. of Earth & Env. Graduate Student Presentations, Boston University.
- 2014 **Gianotti, DJ<sup>\*</sup>** (2014) “Real weather, fake weather, and the California Drought,” Dept. of Earth & Env. Graduate Student Presentations, Boston University.
- 2012 **Gianotti, DJ<sup>\*</sup>** (2012) “How predictable is rain?” Dept. of Geography & Env. Graduate Student Presentations, Boston University.
- 2012 **Gianotti, D<sup>\*</sup>**, 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, <b>D Gianotti</b> , K Hardie, D White, & A Pinto (2005), "Waste Stabilization Pond Design and Performance Study," Prepared for the Alaska Department of Environmental Conservation.
2003	<b>Gianotti, DJ</b> (2003), "Fluid drop coalescence in a Hele-Shaw cell," Undergraduate Mathematics Thesis, Advised by A Nadim, <i>Harvey Mudd College</i> .
2002	Lampe, K, K Hultman, K Hedstrom, <b>D Gianotti</b> , E Deyo, & R Seat (2002), "Internal metrology for the Space Interferometry Mission," Undergraduate Physics Clinic Report, Advised by R Haskell, D MacDonald, & B Nemati, <i>Harvey Mudd College &amp; NASA-JPL</i> .

## Published Software Packages

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2016	<b>Short Gianotti, DJ</b> (2016) "Occurrence Markov Chain daily precipitation model," <a href="http://github.com/dgianotti/OMC-precip">http://github.com/dgianotti/OMC-precip</a> , <a href="https://doi.org/10.5281/zenodo.45435">https://doi.org/10.5281/zenodo.45435</a> .
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## Published Datasets

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2024	<b>Short Gianotti, DJ.</b> (2024). Processed Data for Short Gianotti et al., "Two Sub-Annual Time-Scales and Coupling Modes for Terrestrial Water and Carbon Cycles" (2024), <i>Global Change Biology</i> . [Data set]. In <i>Global Change Biology</i> . Zenodo. <a href="https://doi.org/10.5281/zenodo.13144427">https://doi.org/10.5281/zenodo.13144427</a> .
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## Appointments Held

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2021-Present	Research Scientist, Massachusetts Institute of Technology
2016-2021	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

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### Teaching Fellow:

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

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**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

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2015 ComSciCon 2015 Communicating Science Workshop, Harvard University.

## Professional Service

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

## CONFERENCE AND 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  
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  
Boston Area Hydrology Journal Club  
Harvard Plants & Climate  
IEEE