

# Daniel Short Gianotti

water, energy, carbon, weather & climate

## contact

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## research

water-energy-carbon  
cycle coupling  
terrestrial climate  
feedbacks  
climate predictability  
stochastic methods  
hydroclimatology  
remote sensing  
ecohydrology

## current position

2016-Present **Postdoctoral Associate**

Parsons Laboratory, Department of Civil & Environmental Engineering

Massachusetts Institute of Technology

## education

2011-2016 **PhD in Geography and Environment**

Boston University

**Dissertation Title:** *The Potential Predictability of Precipitation over the Continental United States*

**Link:** <https://open.bu.edu/handle/2144/19726>

**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

*in review*

**Emergent coupling of terrestrial photosynthesis to turbulent heat partitioning**

Nature

**Short Gianotti, DJ**, KA McColl, X Xu, AF Feldman, & D Entekhabi, "Ecosystem structural dynamics dominate physiology in coupling the terrestrial water and carbon cycles," *In review* in PNAS.

*in review*

**Observed water- and light-limitation across global ecosystems**

Remote Sensing of Environment

Jonard, Francois, AF Feldman, **DJ Short Gianotti**, & D Entekhabi, "Observed water- and light- limitation across global ecosystems," *In review* at Biogeosciences.

*in review*

**Satellite-based assessment of meteorological and agricultural drought in Mainland Southeast Asia**

Journal of Selected Topics in Applied Earth Observations and Remote Sensing

Li, Y, H Lu, D Entekhabi, **DJ Short Gianotti**, AF Feldman, K Yang, & W Wang, "Satellite-based assessment of meteorological and agricultural drought in Mainland Southeast Asia," *In review* to Journal of Selected Topics in Applied Earth Observations and Remote Sensing.

- in revision* **Land Surfaces at the Tipping-Point for Water and Energy Balance Coupling** Water Resources Research  
Dong, J, R Akbar, AF Feldman, **DJ Short Gianotti**, & D Entekhabi, “Land Surfaces at the Tipping-Point for Water and Energy Balance Coupling,” *In revision* at Water Resources Research.
- accepted* **Can Surface Soil Moisture Information Identify the Landscape Evapotranspiration Transition Between Energy- and Water-limited Regimes?** Geophysical Research Letters  
Dong, J, R Akbar, **DJ Short Gianotti**, AF Feldman, WT Crow, & D Entekhabi, “Can Surface Soil Moisture Information Identify the Landscape Evapotranspiration Transition Between Energy- and Water-limited Regimes?,” *Accepted* at Geophysical Research Letters.
- in prep* **A kernel-auto-regressive weather generator for improved subseasonal-to-seasonal precipitation statistics** Journal of Hydrometeorology  
**Short Gianotti, DJ**, GD Salvucci, & BT Anderson, “A kernel-auto-regressive weather generator for improved subseasonal-to-seasonal precipitation statistics,” *In preparation* for Journal of Hydrometeorology.  
Preprint: <https://doi.org/10.1002/essoar.10503866.1>

## Published Journal Articles

- 2022a **Observed landscape responsiveness to climate forcing** Water Resources Research  
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 **A long term spatially and temporally consistent global daily soil moisture dataset derived from AMSR-E/2** Scientific Data  
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 **Patterns of plant rehydration and growth following pulses of soil moisture availability** Biogeosciences  
Feldman, AF, **DJ Short Gianotti**, AG Konings, P Gentine, & D Entekhabi (2021), “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 **Landscape-scale plant water content and carbon flux behavior following moisture pulses: from dryland to mesic environments** Water Resources Research  
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 **Historical landscape drainage estimates derived from satellite-era hydrological dynamics** Water Resources Research  
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 **Land-atmosphere drivers of landscape-scale plant water content loss** Geophysical Research Letters  
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 **Value of chlorophyll fluorescence for quantifying hydrological states and fluxes: Current status and challenges** Agricultural and Forest Meteorology  
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 **Terrestrial evaporation and moisture drainage in a warmer climate** Geophysical Research Letters  
**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 **Satellite-based assessment of land surface energy partitioning-soil moisture relationships and effects of confounding variables** Water Resources Research  
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 **Landscape water storage and subsurface correlation from satellite surface soil moisture and precipitation observations** Water Resources Research  
 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 **Mapped hydroclimatology of evapotranspiration and drainage runoff using SMAP brightness temperature observations and precipitation information** Water Resources Research  
 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 **Satellite and station observations demonstrate water availability's effect on continental-scale evaporative and photosynthetic land surface dynamics** Water Resources Research  
 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 **Pulse-response vegetation water uptake is persistent across biomes** Nature Plants  
 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 **Partitioning evapotranspiration over the continental United States using weather station data** Geophysical Research Letters  
 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 **Estimation of landscape soil water losses from satellite observations of soil moisture** Journal of Hydrometeorology  
 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 **Hydrological storage length- scales represented by remote sensing estimates of soil moisture and precipitation** Water Resources Research  
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 **Soil and atmospheric controls on the land surface energy balance: A generalized framework for distinguishing moisture- and energy-limited evaporation regimes** Water Resources Research  
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 **Global characterization of surface soil moisture drydowns** Geophysical Research Letters  
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 **Tracking the Pacific Decadal Precession** Journal of Geophysical Research: Atmospheres  
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 **Dominant timescales of potentially predictable precipitation variations across the continental United States** Journal of Climate  
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 **A decadal precession of atmospheric pressures over the North Pacific** Geophysical Research Letters  
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 **Detectability of historical trends in station-based precipitation characteristics over the continental United States** *Journal of Geophysical Research*  
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 **Changes in Autumn Senescence in Northern Hemisphere Deciduous Trees: a Meta-Analysis of Autumn Phenology Studies** *Annals of Botany*  
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 **Characterizing the potential predictability of seasonal, station- based heavy precipitation accumulations and extreme dry-spell durations** *Journal of Hydrometeorology*  
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 **The Potential Predictability of Precipitation Occurrence, Intensity, and Seasonal Totals over the Continental United States** *Journal of Climate*  
**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 **Shifting seasonality and increasing frequency of precipitation in wet and dry seasons across the US** *Geophysical Research Letters*  
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 **What Do Rain Gauges Tell Us about the Limits of Precipitation Predictability?** *Journal of Climate*  
**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*

- 2021      **An emergent spatial Water/Energy/Carbon relationship explained by local coupling**      Ameriflux Year of Water Fluxes Community Meeting  
**Short Gianotti, DJ\***, & D Entekhabi, “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      **Satellite-observed patterns of plant water refilling and growth response following pulses of soil moisture availability**      Ecological Society of America Annual Meeting  
Feldman, AF\*, **DJ Short Gianotti**, AG Konings, A Chulakadabba, P Gentine, & D Entekhabi, “Satellite-observed patterns of plant water refilling and growth response following pulses of soil moisture availability,” Ecological Society of America Annual Meeting, Virtual.
- 2020      **Emergent Climatological Coupling of the Terrestrial Carbon Sink with Water and Energy Availability**      American Geophysical Union Fall Meeting  
**Short Gianotti, DJ\***, AF Feldman, KA McColl, GD Salvucci, & D Entekhabi, “Emergent Climatological Coupling of the Terrestrial Carbon Sink with Water and Energy Availability,” American Geophysical Union Fall Meeting: B117-03, Virtual.
- 2020      **Land-atmosphere drivers of landscape-scale plant water content loss using satellite observations**      American Geophysical Union Fall Meeting  
Feldman, AF\*, **DJ Short Gianotti**, IF Trigo, GD Salvucci, & D Entekhabi, “Land-atmosphere drivers of landscape-scale plant water content loss using satellite observations,” American Geophysical Union Fall Meeting: B090-02, Virtual.
- 2020      **SMAP Measurements Show Water Movement in the Soil-Plant Continuum as Pulses**      16th Specialist Meeting on Microwave Radiometry (MicroRAD)  
Feldman, AF\*, **DJ Short Gianotti**, AG Konings, P Gentine, KA McColl, R Akbar, GD Salvucci, & D Entekhabi, “SMAP Measurements Show Water Movement in the Soil-Plant Continuum as Pulses,” 16th Specialist Meeting on Microwave Radiometry (MicroRAD), Virtual.
- 2019      **Land Surface Fluxes and Hydrologic Sensitivities in a Warmer Climate**      American Geophysical Union Fall Meeting  
**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 **Satellite-based assessment of land surface energy partitioning-soil moisture relationships and effects of confounding variables** American Geophysical Union Fall Meeting  
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 **The impact of higher-than-radiometer resolution landscape and weather features on SMAP product** American Geophysical Union Fall Meeting  
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 **Surface-Subsurface Linkages Derived From SMAP Time Series** SMAP Science Team Meeting  
**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 **Consequences of the Acceleration of Water Cycle on Surface Water Balance Components Using SMAP Observations** SMAP Science Team Meeting  
**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 **Decadal Distribution of ET and Drainage Based on SMAP Based Hydrologic Analogues and Historical Precipitation** SMAP Science Team Meeting  
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 **Seasonal Hydroclimatology of ET and Drainage from SMAP TB and Precipitation** SMAP Science Team Meeting  
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 **Satellite-Based Assessment of Surface Energy Partitioning Soil Moisture Relationships** SMAP Science Team Meeting  
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 **Estimating Surface Soil Moisture from AMSR2 TB with Artificial Neural Network Method and SMAP Products** IEEE Geoscience and Remote Sensing Society  
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 **Hydrologic length scale of L-band radiometric soil moisture retrievals** American Geophysical Union Fall Meeting  
**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 **Water Exchange Patterns in the Soil-Plant Continuum Based on SMAP Microwave Satellite Measurements** American Geophysical Union Fall Meeting  
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 **Estimating Surface Soil Moisture from AMSR2 TB with Machine Learning Methods and SMAP Products** American Geophysical Union Fall Meeting  
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 **Partitioning evapotranspiration over the continental United States using SMAP observations and weather station data** American Geophysical Union Fall Meeting  
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 **Water Use Efficiency Dependence on Soil Moisture** Science Utilization of SMAP Meeting  
**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 **Water Exchange Patterns in the Soil-Plant Continuum Based on SMAP Microwave Satellite Measurements** Science Utilization of SMAP Meeting  
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 **Linkages between water, energy and carbon cycles revealed by SMAP** SMAP End of Prime Mission Science Meeting  
**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 **Estimation of ecosystem-scale soil water losses from satellite observations of soil moisture** SMAP End of Prime Mission Science Meeting  
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 **Effects of water availability through the coupled land-atmosphere system** American Geophysical Union Fall Meeting  
**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 **What determines transitions between energy- and moisture-limited evaporative regimes?** American Geophysical Union Fall Meeting  
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 **Soil moisture (SMAP) and vapor pressure deficit controls on evaporation fraction over the Continental U.S.** American Geophysical Union Fall Meeting  
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 **Soil moisture controls on water/energy/carbon coupling** Science Utilization of SMAP Meeting  
**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      **Estimation of ecosystem-scale soil water losses from satellite observations of soil moisture**      Science Utilization of SMAP Meeting  
Akbar, R\*, **DJ Short Gianotti**, E Haighighi, 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      **The Science Applications of SMAP**      Science Utilization of SMAP Meeting  
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      **Soil Moisture Controls on Evaporative Fraction**      American Geophysical Union Fall Meeting  
**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      **California Drought, Weather Variability, and Climate Variability**      AGU Chapman Conference on California Drought: Causes, Impacts, and Policy  
**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      **Characterizing weather and climate variability for precipitation: A data-based stochastic modeling framework**      American Geophysical Union Fall Meeting  
**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      **Stochastic analysis of California's recent precipitation drought in the context of the last one hundred years**      American Geophysical Union Fall Meeting  
**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      **Integrating satellite and tower phenology: a case-study in real-time ecological forecasting**      American Geophysical Union Fall Meeting  
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 **Predicting phenology: A case-study in real-time ecological forecasting** Ecological Society of America Annual Meeting  
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 **Potential Predictability of Precipitation: Occurrence or Intensity?** Climate Diagnostic and Prediction Workshop  
**Gianotti, DJ\***, BT Anderson, & GD Salvucci (2013), "Potential Predictability of Precipitation: Occurrence or Intensity?" 38th Climate Diagnostic and Prediction Workshop, College Park MD.
- 2012 **Establishing Potential Predictability of U.S. Precipitation Using Rain Gauge Data** Climate Diagnostic and Prediction Workshop  
**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 **Magnitude and significance of observed trends in precipitation frequency over the U.S.** Climate Diagnostic and Prediction Workshop  
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 **Historical expansion of the summertime monsoon over the southwestern United States: What can regional models tell us about its causes?** Regional Spectral Modeling Workshop  
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 **Magnitude and significance of observed trends in precipitation frequency over the U** American Geophysical Union Fall Meeting  
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 **Stochastic and deterministic aspects of observed seasonal-mean precipitation variations and extreme event occurrences over the United States** American Geophysical Union Fall Meeting  
**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      **Detection of historical summertime monsoon precipitation variations and trends over the southwestern United States**      WCRP Open Science Conference  
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      **Detection of historical precipitation variations and trends over the continental United States**      Department of Energy Principal Investigators Meeting  
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      **Upgrades to a wastewater lagoon treatment system in a rural sub- Arctic community in Alaska**      International Symposium on Cold Region Development  
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      **Application of a Thermal-hydraulic Model to Analyze and Design a Circulating Water System in Alaska**      International Symposium on Cold Region Development  
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      **Wastewater treatment lagoon design in rural Alaska**      Alaska Water and Wastewater Management Association  
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

- 2020      **Climatic Changes in Land Surface Evaporation and Drainage to Streams**      Parsons Laboratory, MIT  
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 **Thirsty plants: Tracking their water uptake from space** Parsons Laboratory, MIT  
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 **Water limitation and vegetation response** Arnold Arboretum, Harvard University  
**Short Gianotti, DJ\*** (2020) “Water limitation and vegetation response,” Arnold Arboretum of Harvard University Research Talks Series, Arnold Arboretum.
- 2019 **Water availability controls on vegetated ecosystems** Massachusetts Institute of Technology  
**Short Gianotti, DJ\*** (2019) “Water availability controls on vegetated ecosystems,” Ralph M. Parsons Laboratory Environmental Science Seminar Series, Massachusetts Institute of Technology.
- 2019 **Impacts of Soil Moisture on Ecosystem Carbon and Water Exchanges** Massachusetts Institute of Technology  
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 **The Potential Predictability of Precipitation over the Continental United States** Boston University  
**Short Gianotti, DJ\*** (2016) “The Potential Predictability of Precipitation over the Continental United States,” Dissertation Defense, Boston University.
- 2015 **Weather models for climate variability** Boston University  
**Gianotti, DJ\*** (2015) “Weather models for climate variability,” Dept. of Earth & Env. Graduate Student Presentations, Boston University.
- 2014 **Real weather, fake weather, and the California Drought** Boston University  
**Gianotti, DJ\*** (2014) “Real weather, fake weather, and the California Drought,” Dept. of Earth & Env. Graduate Student Presentations, Boston University.
- 2012 **How predictable is rain?** Boston University  
**Gianotti, DJ\*** (2012) “How predictable is rain?” Dept. of Geography & Env. Graduate Student Presentations, Boston University.
- 2012 **Stochastic and deterministic aspects of observed seasonal-mean precipitation variations and extreme event occurrences over the United States** Boston University  
**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      **Upgrades to a wastewater lagoon treatment system in a rural sub-Arctic community in Alaska**      International Symposium on Cold Region Development  
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      **Application of a Thermal-hydraulic Model to Analyze and Design a Circulating Water System in Alaska**      International Symposium on Cold Region Development  
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      **Waste Stabilization Pond Design and Performance Study**      Alaska Department of Environmental Conservation  
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      **Fluid drop coalescence in a Hele-Shaw cell**      Harvey Mudd College  
**Gianotti, DJ** (2003), “Fluid drop coalescence in a Hele-Shaw cell,” Undergraduate Mathematics Thesis, Advised by A Nadim, *Harvey Mudd College*.
- 2002      **Internal metrology for the Space Interferometry Mission**      NASA-JPL  
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      **Occurrence Markov Chain daily precipitation model**  
**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	<b>Postdoctoral Associate</b>	Massachusetts Institute of Technology
2011-2015	<b>Research Assistant</b>	Boston University
2011	<b>Math Teacher</b>	Boston Public Schools
2004-2010	<b>Tutor</b>	Private Practice
2007-2008	<b>Lab Technician</b>	California Institute of Technology
2005-2006	<b>Environmental Engineering Associate</b>	GV Jones & Associates
2004-2005	<b>Research Assistant</b>	University of Alaska, Anchorage
2003-2005	<b>Substitute Teacher</b>	Anchorage School District
2004	<b>Staff</b>	National Youth Science Camp
2001-2003	<b>Writing Consultant</b>	Harvey Mudd College
2002	<b>Research Assistant</b>	Lawrence Berkeley National Lab

## teaching

### Teaching Fellow:

2015	<b>Introduction to Quantitative Environmental Modeling</b>	Boston University
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### Guest Lecturer:

2016-2018	<b>Introduction to Hydrology and Water Resources</b>	Massachusetts Institute of Technology
2017	<b>Introduction to Hydrologic Modeling</b>	Massachusetts Institute of Technology

### K-12 Instruction:

2010-2011	<b>High school mathematics</b>	Boston Public Schools
2004-2006	<b>Substitute Teacher</b> All subjects, all ages	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 Gannon**    MIT MS in Climate, Environment, & Sustainability  
*Drought Cascades in Past & Future Climates*

2021-2022    **Lily Zhang**    MIT SB in Earth, Atmospheric, & Planetary Sciences  
*Progression of Convective Available Potential Energy over Surface Drydowns*

2018-2019    **Apisada (Ju) Chulakadabba**    MIT SB in Civil & Environmental Engineering  
*Integration of Satellite and In-situ Data for the Study of Vegetation Responses to Precipitation Pulses in the Southwestern United States*

### First-year Mini-UROP:

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

2019    **Naomi Lutz**    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**    Harvard University  
Communicating Science Workshop

## professional service

### Conference & Workshop Organization

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

### Non-Journal Reviews

2020	<b>Sixth Assessment Report</b>	Intergovernmental Panel on Climate Change
	Second Order Draft for Working Group I (WGI)	
2018	<b>Special Report on Climate Change, Desertification, Land Degradation, Sustainable Land Management, Food Security, and Greenhouse gas fluxes in Terrestrial Ecosystems</b>	Intergovernmental Panel on Climate Change
	First Order Draft for US Global Change Research Program	

## Journal Reviews

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

## Memberships & Research Communities

American Geophysical Union  
 Boston Water Group  
 Boston Area Hydrology Journal Club  
 Harvard Plants & Climate  
 IEEE