




Daniel Short Gianotti

water, energy, carbon, weather & climate

contact

Parsons Laboratory
15 Vassar St.
MIT Building 48
Cambridge, MA
United States

gianotti@mit.edu
206.914.8269
dgianotti.com
 dgianotti
 dgianotti
 @DanGianotti

research

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

academic appointments

- 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

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

- submitted* **Microwave satellites capture soil moisture dynamics deeper than a few centimeters and are relevant to plant water uptake** Nature Geoscience
Feldman, AF, **DJ Short Gianotti**, J Dong, R Akbar, WT Crow, KA McColl, JB Nippert, NM Holbrook, FE Rockwell, RL Scott, RH Reichle, A Chatterjee, J Joiner, B Poulter, D Entekhabi, “Microwave satellites capture soil moisture dynamics deeper than a few centimeters and are relevant to plant water uptake,” *Submitted* to Nature Geoscience.
Preprint: <https://doi.org/10.1002/essoar.10511280.1>
- in revision* **Emergent coupling of terrestrial photosynthesis to turbulent heat partitioning** Proceedings of the National Academy of Sciences
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 revision* in PNAS.
- in revision* **Observed water- and light-limitation across global ecosystems** Biogeosciences
Jonard, Francois, AF Feldman, **DJ Short Gianotti**, & D Entekhabi, “Observed water- and light- limitation across global ecosystems,” *In revision* 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.
- re-submitted* **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," *Re-submitted* at Water Resources Research.
- 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

- 2022b **Can Surface Soil Moisture Information Identify Evapotranspiration Regime Transitions?** Geophysical Research Letters
Dong, J, R Akbar, **DJ Short Gianotti**, AF Feldman, WT Crow, & D Entekhabi, "Can Surface Soil Moisture Information Identify Evapotranspiration Regime Transitions?," Geophysical Research Letters. <https://doi.org/10.1029/2021GL097697>
- 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*
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 **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

Emergent observed coupling of terrestrial water, energy, and carbon fluxes

American Geophysical Union
Fall Meeting

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

Observed landscape responsiveness to climate forcing

American Geophysical Union
Fall Meeting

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

A new framework for global soil moisture dry-down analysis and its application for vegetation water stress quantification

American Geophysical Union
Fall Meeting

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

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 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 **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 **Postdoctoral Associate** Massachusetts Institute of Technology
- 2011-2015 **Research Assistant** Boston University
- 2011 **Math Teacher** Boston Public Schools

2004-2010	Tutor	Private Practice
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	Massachusetts Institute of Technology
2017	Introduction to Hydrologic Modeling	Massachusetts Institute of Technology

K-12 Instruction:

2010-2011	High school mathematics	Boston Public Schools
2004-2006	Substitute Teacher 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 <i>Drought Cascades in Past & Future Climates</i>	MIT MS in Climate, Environment, & Sustainability
2021-2022	Lily Zhang <i>Progression of Convective Available Potential Energy over Surface Drydowns</i>	MIT SB in Earth, Atmospheric, & Planetary Sciences
2018-2019	Apisada (Ju) Chulakadabba <i>Integration of Satellite and In-situ Data for the Study of Vegetation Responses to Precipitation Pulses in the Southwestern United States</i>	MIT SB in Civil & Environmental Engineering

First-year Mini-UROP:

2019	Nicole Toft <i>Impacts of Soil Moisture on Ecosystem Carbon and Water Exchanges</i>	MIT Civil & Environmental Engineering
2019	Naomi Lutz <i>Impacts of Soil Moisture on Ecosystem Carbon and Water Exchanges</i>	MIT Civil & Environmental Engineering

Undergraduate UROP:

2019	Nicole Toft <i>Land-atmosphere interactions at the inter-storm scale</i>	MIT Civil & Environmental Engineering
------	--	---------------------------------------

professional development

2015	ComSciCon 2015 Communicating Science Workshop	Harvard University
------	---	--------------------

professional service

Conference & Workshop Organization

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

Non-Journal Reviews

2020	Sixth Assessment Report Second Order Draft for Working Group I (WGI)	Intergovernmental Panel on Climate Change
2018	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	Intergovernmental Panel on Climate Change

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

Last updated: May 9, 2022

Latest CV version available at: <http://www.github.com/dgianotti/CV>

DJ Short Gianotti → D Entekhabi → I Rodriguez-Iturbe → DR Cox → SJ Taylor → P Erdős