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water, energy, carbon, weather & climate

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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.

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

2022c **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, 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 **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 (2022), "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

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 **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 Gianott, 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 **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** 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 **Sixth Assessment Report** Intergovernmental Panel on Climate Change

Second Order Draft for Working Group I (WGI)

2018 **Special Report on Climate Change, Desertification, Land Degradation, Sustainable Land Management, Food Security, and Greenhouse gas fluxes in Terrestrial Ecosystems** 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