

Daniel J. Short Gianotti

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Massachusetts Institute of Technology
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Current position

2016-Present *Postdoctoral Associate*, Massachusetts Institute of Technology

Areas of specialization

Hydroclimate · Ecohydrology · Terrestrial Climate Feedbacks
Precipitation Predictability · Water-Carbon-Energy Cycle Coupling

Education

2011-2016 PhD in Geography and Environment, Boston University
Dissertation Title: *The Potential Predictability of Precipitation over the Continental United States*
Defense Date: August 9, 2016
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

JOURNAL ARTICLES

2018i Akbar, R, **DJ Short Gianotti**, GD Salvucci, & D Entekhabi (2018) “Mapped Hydroclimatology of Evapotranspiration and Drainage Runoff Using SMAP Brightness Temperature Observations and Precipitation Information,” *Water Resources Research* (*submitted*).

2018h **Short Gianotti, DJ**, GD Salvucci, R Akbar, K McColl, & D Entekhabi (2018) “Representative soil column water content and residence times from SMAP and GPM,” *Water Resources Research* (*in preparation*).

2018g **Short Gianotti, DJ**, BT Anderson, & GD Salvucci (2018), “A kernel-auto-regressive weather generator for improved subseasonal-to-seasonal precipitation statistics,” *Water Resources Research* (*in preparation*).

2018f 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* (*in press*).

2018e

- Short Gianotti, DJ**, AJ Rigden, GD Salvucci, & D Entekhabi (2018) "Satellite and station observations demonstrate water availability's effect on continental-scale evaporative and photosynthetic land surface dynamics," *Water Resources Research* (*in review*).
- 2018d Rigden, AJ, GD Salvucci, D Entekhabi, & **DJ Short Gianotti** (2018) "Partitioning evapotranspiration over the continental United States using weather station data," *Geophysical Research Letters* 45 (18), 9605–9613.
- 2018c Akbar, R, **DJ Short Gianotti**, KA McColl, E Haghighi, GD Salvucci, & D Entekhabi (2018), "Estimation of landscape soil water losses from satellite observations of soil moisture," *Journal of Hydrometeorology* 19 (5), 871–889.
- 2018b Akbar, R, **DJ Short Gianotti**, KA McColl, E Haghighi, GD Salvucci, & D Entekhabi (2018) "Hydrological storage length-scales represented by remote sensing estimates of soil moisture and precipitation," *Water Resources Research* 54 (3), 1476–1492.
- 2018a Haghighi, E, **DJ Short Gianotti**, R Akbar, GD Salvucci, & D Entekhabi (2018) "Soil and atmospheric controls on the land surface energy balance: A generalized framework for distinguishing moisture- and energy-limited evaporation regimes," *Water Resources Research* 53 (3), 1831–1851.
- 2017b McColl, K, W Wang, B Peng, R Akbar, **D Short Gianotti**, M Pan, & D Entekhabi (2017), "Global characterization of surface soil moisture drydowns," *Geophysical Research Letters* 44 (8), 3682–3690.
- 2017a Anderson, BT, JC Furtado, E Di Lorenzo, **DJ Short Gianotti** (2017), "Tracking the Pacific Decadal Precession," *Journal of Geophysical Research: Atmospheres* 122 (6) 3214–3227.
- 2016b Anderson, BT, **DJ Short Gianotti**, GD Salvucci, & J Furtado (2016), "Dominant timescales of potentially predictable precipitation variations across the continental United States," *Journal of Climate* 29, 8881–8897.
- 2016a Anderson, BT, **DJ Short Gianotti**, J Furtado, & E Di Lorenzo (2016), "A decadal precession of atmospheric pressures over the North Pacific," *Geophysical Research Letters* 43 (8) 3921–3927.
- 2015c Anderson, BT, **DJ Short Gianotti**, & GD Salvucci (2015), "Detectability of historical trends in station-based precipitation characteristics over the continental United States," *Journal of Geophysical Research* 120 (10) 4842–4859.
- 2015b Gill, AL, AS Gallinat, R Sanders-DeMott, AJ Rigden, **DJ Short Gianotti**, JA Mantooth, & PH Templer (2015), "Changes in Autumn Senescence in Northern Hemisphere Deciduous Trees: a Meta-Analysis of Autumn Phenology Studies," *Annals of Botany*, (Special Issue on Plants and Climate Change) 116, 875–888.
- 2015a Anderson, BT, **D Gianotti**, & G Salvucci (2015), "Characterizing the potential predictability of seasonal, station-based heavy precipitation accumulations and extreme dry-spell durations," *Journal of Hydrometeorology* 16 (2) 843–856.
- 2014 **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.
- 2013b Pal, I, BT Anderson, GD Salvucci, & **DJ Gianotti** (2013), "Shifting seasonality and increasing frequency of precipitation in wet and dry seasons across the US," *Geophysical Research Letters* 40 (15), 4030–4035.
- 2013a **Gianotti, D**, BT Anderson, & GD Salvucci (2013), "What Do Rain Gauges Tell Us about the Limits of Precipitation Predictability?" *Journal of Climate* 26 (15), 5682–5688.

CONFERENCE PRESENTATIONS

- 2018 **Short Gianotti, DJ**, GD Salvucci, AJ Rigden, D Entekhabi* (2018) “Linkages between water, energy and carbon cycles revealed by SMAP,” SMAP End of Prime Mission Science Meeting, Jet Propulsion Laboratory, Pasadena, CA.
- 2018 Akbar, R, **Short Gianotti, DJ***, K McColl, E Haghighi, GD Salvucci, D Entekhabi (2018) “Estimation of ecosystem-scale soil water losses from satellite observations of soil moisture,” SMAP End of Prime Mission Science Meeting, Jet Propulsion Laboratory, Pasadena, CA.
- 2017 **Short Gianotti, DJ***, AJ Rigden, GD Salvucci, & D Entekhabi (2017) “Effects of water availability through the coupled land-atmosphere system,” American Geophysical Union Fall Meeting: H12G-07, New Orleans, LA.
- 2017 Haghighi, E*, **Short Gianotti, DJ**, R Akbar, GD Salvucci, & D Entekhabi (2017) “What determines transitions between energy- and moisture-limited evaporative regimes?” American Geophysical Union Fall Meeting: H44C-07, New Orleans, LA.
- 2017 Salvucci, GD*, AJ Rigden, **DJ Short Gianotti**, & D Entekhabi (2017) “Soil moisture (SMAP) and vapor pressure deficit controls on evaporation fraction over the Continental U.S.,” American Geophysical Union Fall Meeting: H12G-01, New Orleans, LA.
- 2017 **Short Gianotti, DJ***, AJ Rigden, GD Salvucci, & D Entekhabi (2017) “Soil moisture controls on water/energy/carbon coupling,” Science Utilization of SMAP Meeting, Cambridge, MA.
- 2017 Akbar, R*, **DJ Short Gianotti**, E Haghighi, GD Salvucci, & D Entekhabi (2017) “Estimation of ecosystem-scale soil water losses from satellite observations of soil moisture,” Science Utilization of SMAP Meeting, Cambridge, MA.
- 2017 Entekhabi, D*, SMAP Science Team, **DJ Short Gianotti**, Akbar, R, AJ Rigden, GD Salvucci, & JS Kimball (2017) “The Science Applications of SMAP,” Science Utilization of SMAP Meeting, Cambridge, MA.
- 2016 **Short Gianotti, DJ***, AJ Rigden, GD Salvucci, & D Entekhabi (2016) “Soil Moisture Controls on Evaporative Fraction,” American Geophysical Union Fall Meeting: H24C-03, San Francisco, CA.
- 2015 **Short Gianotti, DJ***, GD Salvucci, & BT Anderson (2015) “California Drought, Weather Variability, and Climate Variability,” AGU Chapman Conference on California Drought: Causes, Impacts, and Policy, Irvine CA.
- 2014 **Short Gianotti, DJ***, BT Anderson, & GD Salvucci (2014) “Characterizing weather and climate variability for precipitation: A data-based stochastic modeling framework,” American Geophysical Union Fall Meeting, San Francisco CA.
- 2014 **Short Gianotti, DJ***, BT Anderson, & GD Salvucci (2014) “Stochastic analysis of California’s recent precipitation drought in the context of the last one hundred years,” American Geophysical Union Fall Meeting, San Francisco CA.
- 2014 Dietze, M*, HE Emery, D Gergel, **D Gianotti**, JA Mantooth, & AJ Rigden (2014), “Integrating satellite and tower phenology: a case-study in real-time ecological forecasting” American Geophysical Union Fall Meeting, San Francisco CA.
- 2014 Dietze, M*, HE Emery, D Gergel, **D Gianotti**, JA Mantooth, & AJ Rigden (2014), “Predicting phenology: A case-study in real-time ecological forecasting,” Ecological Society of America Annual Meeting, Sacramento CA.
- 2013 **Gianotti, DJ***, BT Anderson, & GD Salvucci (2013), “Potential Predictability of Precipitation: Occurrence or Intensity?” 38th Climate Diagnostic and Prediction Workshop, College Park MD.
- 2012 **Gianotti, DJ***, BT Anderson, & GD Salvucci (2012), “Establishing Potential Predictability of U.S. Precipitation Using Rain Gauge Data,” 37th Climate Diagnostic and Prediction Workshop, Fort

Collins CO.

- 2012 Pal, I*, BT Anderson, G Salvucci, & **D Gianotti** (2012), "Magnitude and significance of observed trends in precipitation frequency over the U.S.," 37th Climate Diagnostic and Prediction Workshop, Fort Collins CO.
- 2012 Anderson, BT*, **D Gianotti**, & GD Salvucci (2012), "Historical expansion of the summertime monsoon over the southwestern United States: What can regional models tell us about its causes?" Regional Spectral Modeling Workshop, Scripps Institution of Oceanography, San Diego CA.
- 2012 Pal, I*, BT Anderson, G Salvucci, & **D Gianotti** (2012), "Magnitude and significance of observed trends in precipitation frequency over the US," American Geophysical Union Fall Meeting, San Francisco CA.
- 2011 **Gianotti, D***, BT Anderson, & G Salvucci (2011), "Stochastic and deterministic aspects of observed seasonal-mean precipitation variations and extreme event occurrences over the United States," American Geophysical Union Fall Meeting, San Francisco CA.
- 2011 Anderson, BT*, **D Gianotti**, & GD Salvucci (2011), "Detection of historical summertime monsoon precipitation variations and trends over the southwestern United States," WCRP Open Science Conference, Denver CO.
- 2011 Anderson, BT*, **D Gianotti**, & GD Salvucci (2011), "Detection of historical precipitation variations and trends over the continental United States," Department of Energy Principal Investigators Meeting, Washington DC.
- 2007 Schubert, DH*, **DJ Gianotti**, & K Sauers (2007), "Upgrades to a wastewater lagoon treatment system in a rural sub-Arctic community in Alaska," International Symposium on Cold Region Development, Tampere Finland.
- 2007 Schubert, DH*, **DJ Gianotti**, & G Jones (2007), "Application of a Thermal-hydraulic Model to Analyze and Design a Circulating Water System in Alaska," International Symposium on Cold Region Development, Tampere Finland.
- 2005 **Gianotti, DJ***, C Woolard, & D White (2005), "Wastewater treatment lagoon design in rural Alaska," 45th Alaska Water and Wastewater Management Association Annual Statewide Conference, Juneau AK.

* denotes presenting author

NON-REFEREED RESEARCH DOCUMENTS

- 2007 Schubert, DH, **DJ Gianotti**, & K Sauers (2007), "Upgrades to a wastewater lagoon treatment system in a rural sub-Arctic community in Alaska," Proceedings of the 8th International Symposium on Cold Region Development.
- 2007 Schubert, DH, **DJ Gianotti**, & G Jones (2007), "Application of a Thermal-hydraulic Model to Analyze and Design a Circulating Water System in Alaska," Proceedings of the 8th International Symposium on Cold Region Development.
- 2005 Woolard, C, **D Gianotti**, K Hardie, D White, & A Pinto (2005), "Waste Stabilization Pond Design and Performance Study," Prepared for the Alaska Department of Environmental Conservation.
- 2003 **Gianotti, DJ** (2003), "Fluid drop coalescence in a Hele-Shaw cell," Undergraduate Mathematics Thesis, Advised by A Nadim, *Harvey Mudd College*.
- 2002 Lampe, K, K Hultman, K Hedstrom, **D Gianotti**, E Deyo, & R Seat (2002), "Internal metrology for the Space Interferometry Mission," Undergraduate Physics Clinic Report, Advised by R Haskell, D MacDonald, & B Nemati, *Harvey Mudd College & NASA-JPL*.

Published software packages

2016 **Short Gianotti, DJ** (2016) "Occurrence Markov Chain daily precipitation model," <http://github.com/dgianotti/OMC-precip>, DOI:10.5281/zenodo.45435.

Appointments held

2016-Present	Postdoctoral Associate, Massachusetts Institute of Technology
2011-2015	Research Assistant, Boston University
2011	Math Teacher, Boston Public Schools
2004-2010	Private Tutor, Anchorage & Los Angeles
2007-2008	Lab Technician, California Institute of Technology
2005-2006	Environmental Engineering Associate, GV Jones & Associates
2004-2005	Research Assistant, University of Alaska, Anchorage
2003-2005	Substitute Teacher, Anchorage School District
2004	Staff, National Youth Science Camp
2001-2003	Writing Consultant, Harvey Mudd College
2002	Research Assistant, Lawrence Berkeley National Lab

Teaching

Teaching Fellow:

Introduction to Quantitative Environmental Modeling (Boston University)

Guest Lecturer:

Introduction to Hydrology and Water Resources (MIT)

Introduction to Hydrologic Modeling (MIT)

K-12 Instruction:

High school mathematics (Boston Public Schools)

All subjects, all ages (Substitute Teacher – Anchorage School District)

Private Tutoring:

All subjects through advanced secondary

Chemistry, biology through introductory undergraduate

Math, physics, writing through advanced undergraduate

Professional development

2015 *ComSciCon 2015* Communicating Science Workshop, Harvard University.

Professional service

JOURNAL REVIEWS

Bulletin of the American Meteorological Society

Hydrology and Earth System Sciences

Journal of Hydrometeorology

International Journal of Climatology

MEMBERSHIPS

American Geophysical Union
Boston Water Group