

# Daniel J. Short Gianotti

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## Current position

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

## Areas of specialization

Hydroclimatology · Ecohydrology · Water, Carbon, and Energy Cycle Coupling  
Potential Predictability of Precipitation · Land-Atmosphere Interactions  
Stochastic and Statistical Modeling

## 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, Guido D. Salvucci, Michael C. Dietze, Dara Entekhabi, & Anthony C. Janetos (chair)

1999-2003 BS in Mathematics, Harvey Mudd College

## Publications & talks

### JOURNAL ARTICLES

2017j **Short Gianotti, DJ**, GD Salvucci, R Akbar, & D Entekhabi (2017) “The hydrologic depth of SMAP soil moisture,” (*in preparation*).

2017i **Short Gianotti, DJ**, BT Anderson, & GD Salvucci (2017), “Weather noise correctly dominates climate signals in global climate model precipitation,” (*in preparation*).

2017h **Short Gianotti, DJ**, BT Anderson, & GD Salvucci (2017), “A kernel-auto-regressive weather generator for improved subseasonal-to-seasonal precipitation statistics,” (*in preparation*).

2017g Rigden, AJ, GD Salvucci, D Entekhabi, & **DJ Short Gianotti** (2017) “Divergent response of transpiration and soil evaporation to warming over the U.S.,” *Nature* (*in submission*).

2017f Akbar, R, **DJ Short Gianotti**, KA McColl, E Haghighi, GD Salvucci, & D Entekhabi (2017), “Estimation of ecosystem-scale soil water losses from satellite observations of soil moisture,” *Journal of Hydrometeorology* (*in submission*).

2017e **Short Gianotti, DJ**, AJ Rigden, GD Salvucci, & D Entekhabi (2017) “Large-scale effects of water-limitation on the coupling of the water, energy, and carbon cycles,” *Nature Geoscience* (*in review*).

2017d Akbar, R, **DJ Short Gianotti**, KA McColl, E Haghighi, GD Salvucci, & D Entekhabi (2017) “What

effective hydrological depth do remote sensing estimates of soil moisture and precipitation represent?” *Water Resources Research* (*in review*).

- 2017c Haighighi, E, **DJ Short Gianotti**, R Akbar, GD Salvucci, & D Entekhabi (2017) “Soil and atmospheric controls on the land surface energy balance: A generalized framework for distinguishing moisture- and energy-limited evaporation regimes,” *Water Resources Research* (*in review*).
- 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 Mantooh, & 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

- 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\*, **Short Gianotti, DJ**, 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 Entekhabi, D\*, SMAP Science Team, **Short Gianotti, DJ**, 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 Geophysi-

cal 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 Ana-

lyze 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*.

#### NON-CONFERENCE PRESENTATIONS

- 2016 **Short Gianotti, DJ**, (2016) “The Potential Predictability of Precipitation over the Continental United States,” Dissertation Defense, Boston University.
- 2015 **Gianotti, DJ**, (2015) “Weather models for climate variability,” Dept. of Earth & Env. Graduate Student Presentations, Boston University.
- 2014 **Gianotti, DJ**, (2014) “Real weather, fake weather, and the California Drought,” Dept. of Earth & Env. Graduate Student Presentations, Boston University.
- 2012 **Gianotti, DJ**, (2012) “How predictable is rain?” Dept. of Geography & Env. Graduate Student Presentations, Boston University.
- 2012 **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.

## 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

## Professional development

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

## Professional service

### JOURNAL REVIEWS

Hydrology and Earth System Sciences  
Journal of Hydrometeorology  
International Journal of Climatology

### MEMBERSHIPS

American Geophysical Union  
Boston Water Group