

GUIDO DANIEL SALVUCCI

Department of Earth and Environment
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Principal Fields of Interest:

Vadose zone hydrology: land surface water and energy balance processes; groundwater-vadose zone interactions; analytical descriptions of infiltration, drainage and evaporation processes.

Remote sensing: estimation of evapotranspiration and water budget at large scales;

Stochastic hydrology: spatial and temporal aggregation and disaggregation of hydrologic fields; measurement-model scale discrepancies; hypothesis testing in land-atmosphere interactions.

Hydroclimatology: coupled atmospheric water and energy balance processes

Education:

Ph.D., Department of Civil and Environmental Engineering (Hydrology). Massachusetts Institute of Technology, Cambridge, Massachusetts. May, 1994. Thesis Title: Hillslope and Climatic Controls on Hydrologic Fluxes. Thesis Advisor: Dara Entekhabi

M.S., Department of Civil and Environmental Engineering (Hydrology and Hydroclimatology). Massachusetts Institute of Technology, Cambridge, Massachusetts. 1992.

B.S., Department of Applied Science (Atmospheric Fluid Dynamics). New York University, New York, New York. 1989

B.E., Department of Civil Engineering (Water Resources and Hydrology). The Cooper Union for the Advancement of Arts and Science, New York, New York. 1989

Employment:

Professor, Department of Earth and Environment,
Boston University, Boston, Massachusetts, July, 2012 – present.

Professor, Joint Appointment in the Departments of Geography and Earth Science,
Boston University, Boston, Massachusetts, September, 2005 – July, 2012.

Associate Professor with Tenure, Joint Appointment in the Departments of Geography and Earth Science, Boston University, Boston, Massachusetts, September, 2000 – August, 2005.

Assistant Professor, Joint Appointment in the Departments of Geography and Earth Science,
Boston University, Boston, Massachusetts, September, 1994 – August, 2000

Awards and Honors:

James B. Macelwane Medal of the American Geophysical Union, 2003.

Fellow of the American Geophysical Union, 2003.

Editor's Award, Journal of Hydrometeorology, American Meteorological Society, 2005.

Dean's Teaching Recognition Award, College of Arts and Sciences, 2000.

Recipient of National Aeronautics and Space Administration New Investigator Program grant, 1996.

Visiting Appointments:

Visiting Scholar, Department of Civil and Environmental Engineering, Massachusetts Institute of Technology, Cambridge, Massachusetts. September 2000 – August 2001

Lecturer, Vadose Zone Hydrology: Issues at the Boundary Between Groundwater and Surface Water, Short Course, June, 1998, Institute of Hydraulics, University of Perugia, Italy.

Visiting Researcher, CSIRO Division of Water Resources, Canberra, ACT, AU, July-August, 1995.

Teaching Experience:

Water Resources and Environment, Department of Geography, College of Arts and Sciences, Boston University, Boston, Massachusetts.

Introduction to Hydrogeology and Aquatic Chemistry, Department of Earth Sciences, College of Arts and Sciences, Boston University, Boston, Massachusetts.

Models for Hydrologic Analysis, Department of Geography, College of Arts and Sciences, Boston University, Boston, Massachusetts.

Dynamic Landsurface Hydrology, Departments of Earth Sciences and Geography, College of Arts and Sciences, Boston University, Boston, Massachusetts.

Introduction to Quantitative Environmental Modeling, Department of Geography, College of Arts and Sciences, Boston University, Boston, Massachusetts.

Geodynamics of the Earth II: Fluids and Fluid Transport, Departments of Earth Sciences and Geography, College of Arts and Sciences, Boston University, Boston, Massachusetts.

Vadose Zone Hydrology: Issues at the Boundary Between Groundwater and Surface Water, Short Course, June 22 - June 27, 1998, Institute of Hydraulics, University of Perugia, Italy.

Academic Service:

College Appointment, Promotion and Tenure Committee, Boston University, College of Arts and Sciences, September 2014- May 2015.

Member, Vision Committee, Department of Earth and Environment, 2012.

Chair, Department of Earth Sciences, Boston University, College of Arts and Sciences, September 2005- August 2010.

Co-Chair, Certificate Ph.D. Program in Terrestrial Biogeosciences offered by the departments of Geography and Environment, Earth Sciences, and Biology, September 2009-present

Associate Chair, Department of Geography, Boston University, College of Arts and Sciences, September, 2003- August, 2005.

College Appointment, Promotion and Tenure Committee, Boston University, College of Arts and Sciences, September 2002- December 2002 & September 2014-May 2015

University Appointment, Promotion and Tenure Committee, Boston University, June 2004- May 2005.

Academic Policy Committee, Boston University, College of Arts and Sciences, September 1995- August 1997

Environmental Science Faculty Advisory Committee, Center for Energy and Environmental Studies, Boston University, Boston, Massachusetts, September 1994-present.

Various Committees (Searches, Curriculum, Library etc), Departments of Earth Sciences and Geography, Boston University, College of Arts and Sciences, September 1994-present

Professional Service:

Editorial:

Editor for *AMS's Journal of Hydrometeorology*, 1/1/2008-12/31/2010.

Associate Editor for *AMS's Journal of Hydrometeorology*, 12/31/2010-4/1/2012.

Associate Editor for *AGU's Water Resources Research*, 1998-2001.

Editorial Board for *Advances in Water Resources*, 2000-present

Advisory Panels and Committees:

Workshop Member, 'Community Modeling and Long-Term Predictions of the Regional-Scale Integrated Water Cycle, *Department of Energy*, September, 2012

Committee Member, 'Committee on Strategic Advice on the U.S. Climate Change Science Program, *National Research Council*, 2006-2009.

Panelist, "Review of GEWEX Americas Prediction Project (GAPP) Science and Implementation Plan", workshop held by the *National Research Council* Board of Atmospheric Sciences and Climate, March-June, 2005.

Panelist, "Groundwater Fluxes Across Interfaces", workshop held by the *National Research Council* Committee on Hydrologic Sciences, Egg Harbor Wisconsin, 5/12/2002-5/15/2002.

Fellows Selection Committee of the Hydrology Section of the *American Geophysical Union*, 2004 – 2006

Editorial Search Committee for *Journal of Geophysical Research D* of the *American Geophysical Union*, 2004

Science Steering Group, NASA Water Cycle Initiative, July 2001-July 2002.

Surface Water Committee of the Hydrology Section of the *American Geophysical Union*, July 1994 - present

Committee on Hydrologic Science, Consortium of Universities for the Advancement of Hydrologic Science, Inc. (CUAHSI), 2002.

Working Group and chair of science subcommittee for the NSF initiated Consortium for Hydrologic Research, Jan-March 2001.

Review Panels:

Proposal Review Panel *National Oceanic and Atmospheric Administration, Climate Prediction Program for the Americas* (December 2009)

Proposal Review Panel *National Aeronautics and Space Administration, Terrestrial Hydrology Program* (September 2008)

Proposal Review Panel *National Science Foundation Earth Sciences Division, Hydrology Program* (Twice per year, 2003-2005)

Proposal Review Panel *National Aeronautics and Space Administration GEWEX panel* (1997)

Special Sessions Chaired:

Chair of special session: “Scaling in time and space, methodological approaches”, at the Catchment Scale Hydrologic Modeling and Data Assimilation Workshop, Princeton University, Princeton, NJ, October 26, 2004

Scientific Technical Committee and Session Chair for AGU Chapman Conference *State-of-the-Art in Hillslope Hydrology*, Sunriver Oregon, October 8-12, 2001

Co-Convener and Co-Chair of special session: Diagnosing and Modeling Rate-Limiting Processes in Soil Hydrology, at the Spring 2000 meeting of the *American Geophysical Union*

Co-Convener and Co-Chair of special session: Sources of variation of soil moisture, at the Spring 1998 meeting of the *American Geophysical Union*

Chair of special session: Coupled land and atmospheric processes, at the 13th Conference on Hydrology at the February 1997 annual meeting of the *American Meteorological Society*

Co-Convener and Co-Chair of special session: The role of unchanneled flows, soil moisture content, and rain variability in the formation of floods, at the Spring 1995 meeting of the *American Geophysical Union*

Manuscript Reviewer: *Water Resources Research, American Society of Civil Engineers Journal of Irrigation and Drainage Engineering, Geophysical Research Letters, Advances in Water Resources, Geology, Journal of Coastal Research, Agricultural and Forest Meteorology, United States Geological Survey Water Resources Division Manuscript Reviews, Hydrological Processes, Journal of Hydrometeorology, Journal of Geophysical Research Atmospheres, Journal of Hydrology, Groundwater.*

Proposal Reviewer: *National Science Foundation, National Aeronautics and Space Administration, and National Oceanic and Atmospheric Administration, U. S. Army Research Office*

Professional Accreditation:

Engineer in Training, New York State. 1989

Professional Society Affiliation:

American Geophysical Union

American Meteorological Society

Graduate Student Advisees (First Reader)

completed:

Michael R. Ravella, M.A., 1998.: Thesis Title: Field Observations of the Relation Between Near Surface Soil Moisture and the Similar Media Parameter Alpha. (Currently Consultant)

Etsuko Amano, M.A., 1997.: Thesis Title: Estimation of Interstorm Soil-Limited Evaporation over Bare and Sparsely Vegetated Surfaces Using Remote Sensing.

Thambirajah Saravanapavan, MA, 1999.: Thesis Title: Analysis of rate-limiting processes in soil evaporation with implications for soil resistance models. (Currently Consultant)

John B. Levine, Ph.D., 2002: Thesis Title: Coupled saturated-unsaturated zone modeling of hydrologic processes (Currently Consultant)

Hideki Kanamaru, Ph.D., 2002: Thesis Title: Diagnostic Study of Atmospheric Water and Energy Budgets from Observations and Atmospheric General Circulation Models. (Currently Climate Modeling Officer at United Nations Food and Agricultural Organization)

Vania Toninelli, Ph.D., 2003: (co-advised) Student at Polytechnic Institute of Milan:
Thesis Title: Parameter Estimation of Water Balance Models.

Jennifer Saleem, Ph.D., 2005: Thesis Title: Observational analyses of hydrologic scaling: The roles of heterogeneity and non-local interaction as inferred from soil moisture and precipitation data. (Currently Assistant Professor at East Carolina University, Department of Geography)

Mutlu Ozdogan, Ph.D., 2005: The effect of irrigation on the regional hydroclimatology of southern Turkey. (Currently Assistant Professor at University of Wisconsin, Department of Forest Ecology and Management)

Corey Pettijohn, Ph.D., 2008: Thesis Topic: Land-atmosphere evaporation feedback processes. (Currently Postdoctoral Research Associate at Oregon State University)

Jian Sun, Ph.D., 2011: Thesis Topic: Parameter Estimation of Coupled Water and Energy Balance Model Based on Stationary Constraints on Temperature and Moisture.

Sam Tuttle, MA, 2011: A Model for Estimating Evapotranspiration at the Watershed Scale

current:

Sam Tuttle, Ph.D.: Thesis Topic: Soil Moisture Remote Sensing
(expected completion of Ph.D., 8/31/15)

Angela Rigden, Ph.D.: Thesis Topic: Long-Term Trends in Evaporation
(expected completion of Ph.D., 8/31/15)

Dan Gianotti, Ph.D.: Thesis Topic: Precipitation Predictability (co-advised with B. Anderson)

(expected completion of Ph.D., 8/31/15)

Principal-Investigator Proposals:

Pending:

Funded:

Salvucci, G.D, An exploration of multi decadal, continental scale evapotranspiration inferred from weather data, *National Science Foundation, Hydrologic Sciences Program*, \$333,635, 2/15/15-2/14/18

Salvucci, G.D, A New Approach for Validating Satellite Estimates of Soil Moisture, *National Aeronautics and Space Administration, Terrestrial Hydrology Program*, 8/16/12-8/15/015, \$297,424

Salvucci, G.D (BU-PI) and D. Entekhabi (MIT-PI), Estimation of evaporation efficiency linking water and energy balance based on remotely sensed measurements, *National Aeronautics and Space Administration (NEWS program)*, 5/1/06-4/31/09, \$599,434 (BU portion \$ 269,285)

Salvucci, G.D., New scale appropriate diagnostics for evaluating land surface parameterizations and water balance using remotely sensed data, *National Aeronautics and Space Administration (GWEC)* 2/15/02-2/14/05, \$280,000.

Salvucci, G.D., C. Woodcock, M.A. Friedl, and B. Anderson, The effects of agricultural expansion on regional hydrology in Southeastern Turkey, *National Aeronautics and Space Administration (LCLUC)* 8/15/01-8/14/04, \$541,982.

Salvucci, G.D., Scale dependence in water balance sensitivity to soil moisture, *National Science Foundation, Division of Earth Sciences, Hydrologic Sciences Program*, 8/1/00-7/31/03, \$184,616, Sole-Principal Investigator

Salvucci, G.D., Direct estimation of the form and scale-dependence of soil moisture control on land surface water balance, *National Aeronautics and Space Administration Land Surface Hydrology Program*, 8/1/99-7/31/00, \$50,000, Sole-Principal Investigator

Salvucci, G.D., Thermal and hydrologic signatures of soil controls on evaporation: A combined water and energy balance approach with implications for remote sensing of evaporation, *National Aeronautics and Space Administration, Mission to Planet Earth*, 7/1/96-6/30/00, \$286,917, Sole-Principal Investigator

Salvucci, G.D., Integrated modeling of groundwater, unsaturated zone, and surface hydrologic processes over prairie topography, *National Science Foundation, Division of Earth Sciences, Hydrologic Sciences Program*, 8/1/97-7/31/99, \$51,412, Sole-Principal Investigator

Salvucci, G.D., Direct use of satellite remote sensing in the estimation of hydrologic transports, *National Aeronautics and Space Administration* 5/1/98-4/31/01, \$131,000, Boston University Principal Investigator, Project is Parallel Submission with D. Entekhabi, Principal Investigator and R.L. Bras, Co-Investigator, at Massachusetts Institute of Technology,

Funded Co-Investigator Proposals:

Anderson, B., and G.D. Salvucci, Inherent Predictability of Observed Seasonal Mean Precipitation Variations Over the Continental United States, , *National Science Foundation, Division of Atmospheric and Geospace Sciences, Climate and Large-scale Dynamics Program*, \$405,249, 9/1/2010-8/31/2013

Anderson, B., and G.D. Salvucci, Detection of historical and future precipitation variations and extremes over the continental United States, *Department of Energy*, \$484,944, 9/1/2011-8/31/2014

Phillips, N. , G.D. Salvucci and M.A. Friedl, Vegetation Control of Ecohydrologic Processes, *National Science Foundation, Division of Earth Sciences, Water Cycle Program*, 1/1/03-12/31/05, \$338,412.

Anderson, B., and G.D. Salvucci, Proposal to perform event-based studies of interannual variations in Summertime precipitation over the southwestern United States, *National Oceanic and Atmospheric Administration*, 1/1/03-12/31/05, \$259,047.

Moghaddam, M. (PI), S. Sorooshian, S. Wofsy, R. Cuenca. E. Rodriguez, D. Entekhabi, S. Saatchi, G. Salvucci, R. Yahya, and D. Moller, Dual low frequency radar for soil moisture under vegetation and at depth, Instrument Incubator Program, *National Aeronautics and Space Administration*, 9/1/01-8/31/04, \$4,015,000. (BU Subcontract is \$64,256)

Woodcock, C.E., F. El Baz, C. Cleveland, M. Friedl, S. Gopal, R. Kaufmann, J. Key, D. Dye, R. Myneni, G.D. Salvucci, and A. Strahler, Center for Excellence in Remote Sensing at Boston University, *National Aeronautics and Space Administration*, 1/1/98-12/31/98, \$380,000.

Proposals as Collaborator:

Kurtz, A, Silica sources and water flowpaths in a tropical watershed: a combined Ge/Si, oxygen isotope, and hydrometric study, *National Science Foundation, Division of Earth Sciences, Hydrologic Sciences Program*, 2006-2008, \$162,500

Journal Publications:

(** denotes student advisee)

Working Papers (In Progress)

Sun J., and G.D. Salvucci, Evaluating complexity and performance of three land surface energy balance models , for submission to *Journal of Hydrology*

In Review

Rigden, A.J., and G. D. Salvucci, Evapotranspiration based on Equilibrated Relative Humidity (ETRHEQ): Evaluation over the Continental United States, in review at *Water Resources Research*

Tuttle**, S.E., and G. D. Salvucci, 2015. Empirical Evidence of Contrasting Soil Moisture-Precipitation Feedbacks Across the U.S., in review at *Science*

In Press

Anderson, B.T , D. J. Gianotti**, G.D. Salvucci, 2014, Characterizing the potential predictability of seasonal, station-based heavy precipitation accumulations and extreme dry-spell durations, *Journal of Hydrometeorology*

Published

Gianotti**, D. J., Anderson, B.T., G.D. Salvucci, 2014, The potential predictability of precipitation occurrence, intensity, and seasonal totals over the continental United States, *Journal of Climate*, 27(18), 6904-6918, 10.1175/JCLI-D-13-00695.1

Lintner, B. R., Gentine, P., Findell, K. L., and G.D. Salvucci, G. D., The Budyko and complementary relationships in an idealized model of large-scale land-atmosphere coupling, *Hydrol. Earth Syst. Sci. Discuss.*, 11, 9435-9473, doi:10.5194/hessd-11-9435-2014, 2014

Farhardi **,L., Entekhabi, D., Salvucci, G.D., and J. Sun**, 2014, Estimation of Land surface Water and Energy Balance Parameters Using Conditional Sampling of Surface States,*Water Resources Research*, 50(2), 1805-1822, 10.1002/2013WR014049

Sun** J., and G.D. Salvucci, 2014, Performance assessment of a new stationarity-based parameter estimation method with a simplified land surface model using in-situ and remotely sensed surface states, *Journal of Hydrometeorology*, 15(1), 340-358, 10.1175/JHM-D-12-0118.1

Tuttle**, S.E., and G. D. Salvucci, 2014. A new approach for validating satellite estimates of soil

- moisture using large-scale precipitation: comparing AMSR-E products, *Remote Sensing of Environment*, 142, 207-222.
- Pal, I.** , B.T. Anderson, G.D. Salvucci, and Gianotti** , D. 2013. Shifting seasonality and increasing frequency of precipitation in wet and dry seasons across the U.S.. *Geophys. Res. Lett.*. doi: 10.1002/grl.50760
- Gianotti** , D. J., Anderson, B.T., G.D. Salvucci, 2013, What do rain gauges tell us about the limits of precipitation predictability?, *Journal of Climate*, 26(15), 5682-5688. DOI: 10.1175/JCLI-D-12-00718.1
- Lintner, B.R., Gentine, P., Findell, K. L., D'Andrea, F., Sobel, A.H., and G.D. Salvucci, 2013. An idealized prototype for large-scale land-atmosphere coupling, *Journal of Climate*, 26(7), 2379-2389, doi: 10.1175/JCLI-D-11-00561.1
- Salvucci, G.D., and P. Gentine, 2013. Emergent relation between surface vapor conductance and relative humidity profiles yields evaporation from weather data, *Proceedings of the National Academy of Sciences*, 110 (16), 6287-6291, DOI: 10.1073/pnas.1215844110
- Gentine, P. , D'Odorico, P., Lintner B. R., Sivandran, G., and G. Salvucci, 2012,.Interdependence of climate, soil, and vegetation as constrained by the Budyko curve, *Geophysical Research Letters*, 39, DOI: 10.1029/2012GL053492
- Sun** , J., G.D. Salvucci, and D. Entekhabi, 2012. Estimates of Evapotranspiration from MODIS and AMSR-E Land Surface Temperature and Moisture over the Southern Great Plains, *Remote Sensing of Environment*, 127, 44-59, DOI: 10.1016/j.rse.2012.08.020.
- Tuttle** , S.E., G.D. Salvucci, 2012, A new method for calibrating a simple, watershed-scale model of evapotranspiration: maximizing the correlation between observed streamflow and model-inferred storage, *Water Resources Research*, 48, W05556, DOI: 10.1029/2011WR011189
- Shokri, N., and G.D. Salvucci, 2011, Effects of the depth of water table on the evaporation from porous media, *Vadose Zone Journal*, 10 (4), 1309-1318, DOI: 10.2136/vzj2011.0027.
- Salvucci, G.D., and Entekhabi, D, 2011, An alternate and robust approach to calibration for the estimation of land surface model parameters based on remotely sensed observations, *Geophysical Research Letters*, 38, L16404, doi:10.1029/2011GL048366
- Sun** , J, and G.D. Salvucci, L. Farhardi, and D. Entekhabi, 2011, Parameter Estimation of Coupled Water and Energy Balance Models Based on Stationary Constraints on Temperature and Moisture, *Water Resources Research*, 47, W02512, doi:10.1029/2010WR009293
- Kurtz, A. C., F. Lugolobi** , and G. Salvucci, 2011, Germanium-silicon as a flow path tracer: Application to the Rio Icaos watershed, *Water Resour. Res.*, 47, W06516, doi:10.1029/2010WR009853

- Renninger**, H.J., N. Phillips, and G.D. Salvucci, 2010, Wet vs. dry season transpiration in an Amazonian rainforest palm, *Iriartea deltoidea*, *Biotropica*, 42(4), 470-479
- Anderson, B, Wang**, J., Salvucci, G.D., Ghopal, S., and S. Islam, 2010, Observed trends in summertime precipitation over the southwestern United States, *Journal of Climate*, 23(7), 1937-1944
- Pettijohn, J. C.** , and G. D. Salvucci, 2009, A new two-dimensional physical basis for the complementary relation between terrestrial and pan evaporation, 10(2), 565-574, *Journal of Hydrometeorology*.
- Anderson, B, Wang**, J., Ghopal, S., Salvucci, G.D., 2009, Influence of daily rainfall characteristics on regional summertime precipitation over the Southwestern United States, 10(5), 1218-1230, *Journal of Hydrometeorology*.
- Pettijohn, J. C.** , G. D. Salvucci, N.G. Phillips, and M.J. Daley, 2009, Mechanisms of moisture stress in a mid-latitude temperature forest: Implications for feedforward and feedback controls from an irrigation experiment, 220(7), 968-978, *Ecological Modeling*
- Anderson, B, G.D. Salvucci, A.C. Ruane, J.O. Roads, and M. Kanamitsu, 2008, A new metric for estimating the influence of evaporation on seasonal precipitation rates, 9(3), 576-588, *Journal of Hydrometeorology*.
- Lyon, S., and twenty others, including Salvucci, G.D., 2008, Coupling terrestrial and atmospheric water dynamics to improve prediction in a changing environment, 89(9), 1275-1279, *Bulletin of the American Meteorological Society*
- Wang, **J, R.L. Bras, M. Lerdau, , and G. D. Salvucci , 2007, A maximum hypothesis of transpiration, 112, 938-951, *Journal of Geophysical Research: Biogeosciences*, 112, G03010, doi:10.1029/2006JG000255.
- Wang, **J, B. Anderson, and G. D. Salvucci , 2007, Stochastic modeling of daily summertime rainfall over the Southwestern U.S. Part 2: intraseasonal variability, 8(4), 938-951, *Journal of Hydrometeorology*.
- Ozdogan, **M., C. Woodcock, G.D. Salvucci, and H. Demir, 2006, Changes in summer irrigated crop area and water use in Southeastern Turkey: Implications for current and future water resources, 20(3), 467-488, *Water Resources Management*
- Wang, **J, B. Anderson, and G. D. Salvucci , 2006, Stochastic modeling of daily summertime rainfall over the Southwestern U.S. Part 1: interannual variability, 7(4), 739-754, *Journal of Hydrometeorology*.
- Pettijohn, J. C.** , and G. D. Salvucci, 2006, Impact of an unstressed canopy conductance on the Bouchet-Morton Complementary Relationship, 42(9), W09418, *Water Resources Research*

- Ozdogan, **M., G. D. Salvucci, and B. Anderson, 2006: Examination of the Bouchet-Morton complementary relationship using a mesoscale climate model and observations under a progressive irrigation scenario, 7(2), 235-251, *Journal of Hydrometeorology*.
- Saleem, **J.A., and G. D. Salvucci, 2005: Investigating hydrologic scaling: observed effects of heterogeneity and non-local processes across hillslope, watershed and regional scales, *Water Resources Research*, 41, W11417, doi:10.1029/2005WR004032
- Wang, J, Salvucci, G.D., and R.L. Bras 2004, An extremum principle of evaporation, *Water Resources Research*, 40, W09303.
- Kanamaru, **H., Salvucci, G.D., and D. Entekhabi, 2004: Central United States atmospheric water and energy budgets adjusted for diurnal sampling biases using top of atmosphere radiation, *Journal of Climate* 17(6), 2454-2465.
- Ozdogan, **M., and G. D. Salvucci, 2004: Irrigation induced changes in potential evapotranspiration in Southeastern Turkey: Test and application of Bouchet's complementary hypothesis, *Water Resources Research*, 40, W040301.
- Kanamaru, **H., and G. D. Salvucci, 2003, Correcting wind induced errors in atmospheric water and energy budgets with application to the Mississippi river basin, *Journal of Hydrometeorology*, 4(3), 518-529.
- Salvucci, G.D., **J. A. Saleem, and R. Kaufmann, 2002: Investigating soil moisture feedbacks on precipitation with tests of Granger causality, *Advances in Water Resources*, 25, 1305-1312. (Invited paper for the 25th Anniversary Issue).
- Saleem, **J.A., and G. D. Salvucci, 2002: Comparison of soil wetness indices for inducing functional similarity of hydrologic response across sites in Illinois, in *Journal of Hydrometeorology*, 3, 80-91.
- Dong, **J., G.D. Salvucci, and R. Myneni, 2001: Improving numerical precision of simulated soil water fluxes in land surface models, *Journal of Geophysical Research*, 106(D13), 14,357-14,368.
- Salvucci, G.D., and Levine, **J.B., 2001: Influence of groundwater-vadose zone interactions on the spatial distribution of hydrologic fluxes, in *Spatial Patterns in Catchment Hydrology - Observations and Modelling*, Edited by R. Grayson and G. Blöschl, Cambridge University Press.
- Salvucci, G. D, 2001: Estimating the moisture dependence of root zone water loss using conditionally averaged precipitation, *Water Resources Research*, 37(5), 1357-1366.
- Salvucci, G.D., and **C. Song, 2000: Derived distributions of storm depth and frequency conditioned on monthly total precipitation: Adding value to historical and satellite-derived estimates of monthly precipitation, *Journal of Hydrometeorology*, 1(2), 113-120.

- Saravanapavan, *T., and G. D. Salvucci, 2000: Analysis of rate-limiting processes in soil evaporation with implications for soil resistance models, *Advances in Water Resources*, 23, 493-502.
- Levine, ** J.B., G.D. Salvucci, 1999: Characteristic rate and time scales of supply-limited transpiration under a Richards/Cowan framework, *Water Resources Research*, 35(12), 3947-3954.
- Kim, C.P., G.D. Salvucci, and D. Entekhabi, 1999: Groundwater-Surface water interaction over simple hillslopes, *Hydrology and Earth Systems Science*, 3(3), 375-384.
- Levine, ** J.B. and G.D. Salvucci, 1999. Equilibrium analysis of groundwater-vadose zone interactions and the resulting spatial distribution of hydrologic fluxes across a Canadian prairie, *Water Resources Research*, 35(5), 1369-1383.
- Amano, ** E., and G.D. Salvucci, 1999: Detection and use of three signatures of soil limited evaporation at FIFE, *Remote Sensing of Environment*, 67(1), 108-122.
- Seely, ** B., K. Lajtha, and G.D. Salvucci, 1998: Differences in N fluxes along a gradient of soil texture in a coastal forest ecosystem on Cape Cod, *Biogeochemistry*, 42(3), 325-343.
- Salvucci, G.D., 1998: Limiting relations between soil moisture and texture with implications for measured, modeled and remotely sensed estimates, *Geophysical Research Letters*, 25(10), 1757-1760.
- Hatton, T.J., G.D. Salvucci, and H.Wu, 1997: Eagleson's optimality theory of an ecohydrological equilibrium: quo vadis ?, *Functional Ecology*, 11, 665-674.
- Salvucci, G.D., 1997: Soil and moisture independent estimation of stage-two evaporation from potential evaporation and albedo or surface temperature, *Water Resources Research*, 33(1), 111-122.
- Salvucci, G.D., 1996: Series solution for Richards equation under concentration boundary conditions and uniform initial conditions, *Water Resources Research*, 32(8), 2401-2407.
- Salvucci, G.D. and D. Entekhabi, 1995: Hillslope and climatic controls on hydrologic fluxes, *Water Resources Research*, 31(7), 1725-1739.
- Salvucci, G.D. and D. Entekhabi, 1995: Poned infiltration into soils bounded by a water table, *Water Resources Research*, 31(11), 2751-2759.
- Salvucci, G.D. and D. Entekhabi, 1994: Explicit expression for Green-Ampt (Delta function diffusivity) infiltration rate and cumulative storage, *Water Resources Research*, 30(9), 2661-2663.
- Salvucci, G.D. and D. Entekhabi, 1994: Equivalent steady soil moisture profile and the time

compression approximation in water balance modeling, *Water Resources Research*, 30(10), 2737-2750.

Salvucci, G.D. and D. Entekhabi, 1994: Comparison of the Eagleson statistical-dynamical water balance model with numerical simulations, *Water Resources Research*, 30(10), 2751-2758.

Gong, G., D. Entekhabi and G.D. Salvucci, 1994: Regional and seasonal estimates of spatial rainstorm coverage based on station precipitation observations, *Journal of Climate*, 7(10), 1495-1505.

Salvucci, G.D., 1993: An approximate solution for steady vertical flux of moisture through an unsaturated homogeneous soil, *Water Resources Research*, 29(11), 3749-3753.

Conference and Seminar Contributions:

Invited

Salvucci, G.D., An exploration of multi decadal, continental scale evapotranspiration inferred from weather data, San Francisco State University, Dawdy Lecture, Department of Earth and Climate Sciences

Salvucci, G.D. and P. Gentile, Variability of Relative Humidity Reveals and Estimates Land Surface Controls on Evapotranspiration, presented at 2012 Fall Meeting, AGU, San Francisco, Calif., 3-7 Dec

Salvucci, G.D., A Simple Method for Estimating Column Soil Moisture from Surface Moisture Without a Land Surface Model and its Application to Diagnostics of Land-Atmosphere Interaction, H42E-02, presented at 2011 Fall Meeting, AGU, San Francisco, Calif., 5-9 Dec

Salvucci, G.D., "New insights into old methods for estimating evapotranspiration based on land-atmosphere coupling over heterogenous surfaces ", Columbia University, Department of Earth and Environmental Engineering, October 2011.

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