

CURRICULUM VITAE

□ Name: **AMILCARE M. PORPORATO**

□ **Education:**

May, 1992, Master in Civil Engineering, Polytechnic of Turin, Italy.

November, 1996, Ph.D., Polytechnic of Milan, Italy.

□ **Employment:**

Thomas J. Wu '94 Professor, Department of Civil and Environmental Engineering (CEE) and Princeton Environmental Institute (PEI), Princeton University, 2018-present.

Addy Professor, Department of Civil and Environmental Engineering, Duke University, 2014-2017.

Associate Professor, Department of Civil and Environmental Engineering, Duke University, 2003-2008.

Associate Professor, Nicholas School of the Environment and University Program in Ecology, Duke University, 2004-present (secondary appointment).

Associate Professor, Department of Hydraulics, Transport and Civil Infrastructure, Polytechnic of Turin, Italy. 2001-2003.

Visiting Scholar, Department of Civil and Environmental Engineering and Center for Energy and Environmental Studies, Princeton University. 1999-2001.

Assistant Professor with Tenure, Department of Hydraulics, Transport and Civil Infrastructure, Polytechnic of Turin, Italy. 1998-2001.

Research Associate, Environmental and Water Resources Division, Department of Civil Engineering, Texas A&M University, 1998.

Assistant Professor, Department of Hydraulics, Transport and Civil Infrastructure, Polytechnic of Turin, Italy. 1995-1998.

□ **Awards and recognitions:**

May 1992, *Magna Cum Laude* distinction, Polytechnic of Turin, Italy.

June 1996, “Arturo Parisatti” International Prize, awarded by the “Istituto Veneto di Scienze, Lettere ed Arti”, Venice (Italy), for the paper “Nonlinear analysis of river flow time sequences” by Amilcare Porporato and Luca Ridolfi.

March 2007, “Professor Senol Utku’ Award (jointly with S. Manzoni) for best paper “A theoretical analysis of nonlinearities and feedbacks in soil carbon and nitrogen cycles’ in Soil Biology and Biogeochemistry, Department of Civil and Environmental Engineering, Duke University.

2008-2009, Landolt Chair in Sustainable Development and Innovation, EPFL (Ecole Polytechnique Federale de Lausanne, Switzerland).

2010, The Earl Brown II Outstanding Civil Engineering Faculty Award, 2010.

2011, Lagrange Fellow – Polytechnic of Turin, ISI and CRT Foundations.

2012, American Geophysical Union (AGU) Fellow.

2013-15, Distinguished Visiting Professor, Brazilian Science Foundation.

2014-2019, Addy family professor of Civil and Environmental Engineering – Bass Chair, recognition for excellence in teaching and research, Duke University

2015, Borland Lecture in Hydrology – Hydrology Days, Colorado State University, Fort Collins, CO.

2016, Hydrologic Sciences Award (AGU).

2018, Highly cited researcher: <https://hcr.clarivate.com/#freeText%3Dporporato>

2019, Highly cited researcher: <https://publons.com/researcher/3175621/amilcare-porporato/>

2020, Dalton Medal, European Geophysical Union (EGU).

□ **Service: Department (excerpta)**

Princeton (2017-present): Acting Director Graduate Studies (2021-2022); Director, Water and the Environment Challenge (HMEI-PEI); Director, Food-water initiative HMEI; Faculty Search Committee (PEI and CEE), member. Faculty Search Committee (CEE), chair; University-wide: ‘Limited Submission Prize Committee’(2018-2022); University faculty adviser for engineers without borders (2022-present).

Duke: Curriculum committee; Space committee; Graduate student committee; Departmental Review Committee. Building Infrastructure committee for the Strategic Planning Process; EXCELL committee. Working Group for proposal for the Earth Science and Engineering initiative. Faculty Search Committee (chair).

Hydrologic community (excerpta)

Didactic Coordinator, Hydroaid: International School “Water for Development”, Co-organized by the Polytechnic of Turin and the Italian Ministry of Foreign Affairs, Turin, Italy, 2002-2003.

External Committee of the Graduate Program, Polytechnic of Turin, Italy, 2003-present.

Reviewer for various international journals (Water Resources Research, J. of Hydrology, Advances in Water Resources, J. Hydrol. Sciences, Oecologia, J. Hydrometeorology. Plant and Soil, J. Geophys. Res., among others) and national (NSF, NASA, USDA) and international agencies (Italy, Canada, The Netherland, Switzerland, among others).

Chairman and Convener of the Ecohydrology session of the AGU Spring Meetings 2001 and 2002 and EGU Spring Meetings 2005-2007.

Invited Advisor for the Round Table: *'Monitoring the Health of the Planet'*, organized by the *National Research Council's Board on Earth Sciences and Resources*, The National Academies, Santa Fe, November 4, 2005.

Chairman and Organizer of the special session on Ecohydrology: Denmark, CMWR XVI International Conference on Computational Methods in Water Resources, Copenhagen, Denmark, 19-22 June 2006

Co-convener of Special Session "Science impact in hydrology: interaction between research and applied engineering" (invited speakers only) Vienna EGU General Assembly 2008.

Member of the Precipitation and Climate Sub-division of EGU/Hydrological Sciences, 2008-present

Dalton medal committee (chair); Interpore award committee

Co-organizer of international workshop: Ecohydrology and Sustainability, co-sponsored by NSF-DEB, USAID and the Pratt School of Engineering, June 13-14, 2011, Duke University.

Editor: Water Resources Research (AGU), 2004-2009. Hydrological Processes: 2011-2017.

Editorial Board: Hydrologic Processes, Hydrologic Science Journal, Advances in Water Resources, Entropy.

□ **Other Academic and Scientific Responsibilities (excerpta):**

National Research Group for Studies of Turbulence and Vorticity, Italian Ministry of University and Scientific and Technologic Research, MURST. 1996-2000.

Scientific Coordinator, Project for the study of a flood forecasting procedure for the Tanaro River, Polytechnic of Turin and City of Alba, Italy. 1996-1997.

Scientific Coordinator, Project for real time flood forecasting for Piemonte rivers. Polytechnic of Turin and Piemonte Region, Italy.

Scientific Coordinator, Project for the study the geomorphological evolution of the Pellice River. Polytechnic of Turin and the Province of Turin, Italy, 2001-2003.

National Research Group for Studies on the Impact of climate, soil, and vegetation on flood dynamics funded by the Italian Ministry of University and Scientific and Technologic Research, MURST. 2001-2003.

NSF-funded, Synthesis Team for 'Water cycle dynamics in a changing environment: advancing hydrologic science through synthesis'.

Organizer: NSF workshop on Food-Energy-Water (FEW) Nexus in Dakar Senegal (March 2016) and chairman of FEW session at Next Einstein Forum organized by African Institute of Mathematical Sciences.

Director, IGERT-WiSeNet program on wireless sensing networks at Duke University 2015-2018.

Deputy Director, NSF-funded Calhoun Critical Zone Observatory – 2014-2021.

Evaluation Nucleus of the Polytechnic of Turin, president – 2022-present.

Leadership Team, Carbon Mitigation Initiative at Princeton.

Member: American Geophysical Union (AGU), European Geophysical Union (EGU), International Association of Hydrological Sciences (IAHS).

□ **Major fields of Research:**

Near-wall turbulence and dynamics of coherent structures

Open channel flows and fluvial hydraulics

Nonlinear time series analysis: application to river-flow dynamics and flood forecasting.

Stochastic processes in hydrology.

Soil moisture dynamics and ecohydrology of water-controlled ecosystems.

Soil biogeochemistry

Soil-atmosphere interaction

Eco-hydrology and sustainability; environmental complexity

□ **Courses:**

- Fluid Mechanics (Graduate and Undergrad. Course, Polytechnic of Turin)
- Hydraulics (Graduate and Undergraduate Course, Polytechnic of Turin)
- Design of Hydraulic Constructions (Graduate Course, Polytechnic of Turin)
- Environmental Hydraulics (Graduate Course, Polytechnic of Turin)
- Ecohydrology (teaching assistant; graduate course at Princeton University)
- Hydrology (Graduate Course, Polytechnic of Turin)
- Hydrology of extreme events (undergraduate Course, Polytechnic of Turin)
- Fluvial Hydrology (Duke University)
- Engineering Data Analysis (Duke University)
- Physiological Ecology and Ecosystem Science (Duke University)
- Nonlinear and stochastic processes in hydrology CE265 (Duke University)
- Fluid Mechanics (Duke University).
- Ecohydrology and Environmental Sustainability (EPFL-Lausanne)
- Water Resources (Duke University)

- Environmental Thermodynamics (Duke University; Princeton University)
- Ecohydrology (Duke University; Princeton University)
- Water, Engineering and Civilization (Princeton University)

□ **Current and Former Students**

Ms Students: >30 Ms students graduated from Polytechnic of Turin, Duke University or Princeton University having Dr Porporato as an advisor or co-advisor.

PhD Students:

P. Perona (PhD 2000, Polytechnic of Turin), co-advised with L. Ridolfi, Reconstruction of differential equations from time series and nonlinear dynamics of near wall turbulence; Now chair professor at University of Edinburgh.

F. Laio (PhD 2001, Polytechnic of Turin), co-advised with L. Ridolfi, Stochastic modeling of soil moisture and plant dynamics; currently full professor at the Polytechnic of Turin.

D. Poggi (PhD 2002, Polytechnic of Turin), co-advised with L. Ridolfi, Turbulence dynamics near smooth and rough walls; currently full professor at the Polytechnic of Turin.

Carlo Camporeale (PhD 2004, Polytechnic of Turin) Co-advised with L. Ridolfi; long-term dynamics of meandering rivers; currently full professor at the Polytechnic of Turin.

Edoardo Daly (PhD 2004, Polytechnic of Turin) Thesis title: Coupled dynamics of photosynthesis, transpiration, and soil water balance; currently senior lecturer at Monash University, Melbourne.

Enrico Racca (PhD 2007, Polytechnic of Turin), Co-advised with L. Ridolfi. Stochastic modeling of turbulent time series.

Stefano Manzoni (PhD 2008, Duke University), Hydrologic controls on soil biogeochemistry. Now associate professor at Stockholm Univ.

Giulia Vico (PhD 2009, Duke University), Soil moisture dynamics and ecosystem response. Now associate professor at Univ. of Uppsala, Sweden.

James Rigby (PhD 2009, Duke University), Propagation of extreme hydroclimatic events in terrestrial ecosystems. Now Res. Scientist at USGS.

Xue Feng (PhD 2015), Ecohydrology of Seasonally Dry Regions. Now Assistant Professor at University of Minnesota.

Mark Bartlett (PhD 2017), Mean field approach to watershed hydrology. Now at Stantec.

Sara Bonetti (PhD 2019). Now postdoc at ETH Zurich

Norm Pelak (PhD 2019), now postdoc at UC-Merced.

Salvatore Calabrese (PhD 2019), now assistant professor at TAMU.

Samantha Hartzell (2020), now assistant professor at Portland State University.

Shashank Anand (2023), now postdoctoral fellow at Princeton University.

Current PhD students at Princeton:

Sara Cerasoli (2024), Damola Olaitan (2027), Elizabeth Cultra (2027).

□ **Recent Projects and Research Grants (PI=Primary Investigator)**

DOE-NIGEC (PI; 2004-2006), Great Plains Regional Center, Transferring alterations in climate extremes to plant productivity and soil biogeochemistry in grasslands: the soil water balance as a mediator of the dynamics, \$322,425.

DOE-NIGEC (Co-PI; 2004-2007): Southeast Regional Center, An Optimal Merger of Data and Models for Carbon Sequestration Assessment, \$480,000.

DOE-Duke Forest FACE (2004-2009): Forest-Atmosphere Carbon Transfer and Storage (Porporato's budget \$172,238).

NSF-EAR (In collaboration with G. Katul; 2006-2009) De-convolving the effects of rising atmospheric CO₂, solar dimming, and afforestation, \$445,475.

NSF-EAR (In collaboration with G. Katul; 2007-2010) Eco-hydrologic controls on convective rainfall triggering and space-time development, \$363,873.

Australian NSF (Co-PI) Ecohydrology in mine restoration, \$90,000.

USDA-ARS Temple (TX) (PI; 2007-2010): Modeling water and carbon dynamics in the LYCOG experiment, \$65,000.

NSF-CBET (PI; 2010-2013): Sustainable use of water and soils in seasonally dry regions: exploring the continuum between natural and intensively managed ecosystems, \$373,000+\$15,000+\$50,000.

NSF-EAR (PI; 2011): Monsoon snowmelt interaction in the 2010 extreme Pakistan flood, \$45,000.

USDA-AFRI (In collaboration with G. Katul and R. Oren; 2011-2014): CO₂ and water fluxes in pine plantations, \$450,000.

NSF-CBET (PI; 2013-2014) Stochastic models of soil moisture and reservoir dynamics for sustainable irrigation, \$50,000.

NSF-EAR (PI; 2013-2016) Local and nonlocal eco-hydrological controls on soil moisture and biogeochemical dynamics, \$373,000.

USDA (PI; 2013-2018): Dynamics of soil formation and ecohydrology, \$70,000.

BARD (2015-2016): Postdoctoral fellowship for Y. Mau on soil salinization in arid and semi-arid regions.

USDA (AFRI): Postdoctoral fellowship for M. Bartlett on modelling of CAM photosynthesis.

NSF-OISE -- NSF workshop on Food-Energy-Water (FEW) Nexus in Dakar Senegal (March 2016), \$100,000.

NSF-EAR (Co-PI; 2013-2020) Human and Natural Forcings of Critical Zone Dynamics and Evolution at the Calhoun Critical Zone Observatory:

An observatory that integrates the sciences of water, mineral, and organic matter cycles of CZ degradation and recovery, \$5,000,000.

NSF-EAR FESD (Co-PI; 2013-2020) Biodiversity and landscape dynamics effects on Amazon biodiversity, \$5,000,000.

NSF-EAR – (PI; October 2018-2020) Supplement for CCZO project, \$70k.

Carbon Mitigation Initiative – bp grant to Princeton University; Leadership Team.

PUBLICATIONS

□ **Publications, Books:**

- 1) Rodriguez-Iturbe I. and A. Porporato, *Ecohydrology of water-controlled ecosystems: plants and soil moisture dynamics*. Cambridge University Press, Cambridge, UK. 2004.
- 2) D’Odorico P. and A. Porporato (Editors), *Dryland ecohydrology*. Springer-Verlag, Berlin, 2006.
- 3) P D’Odorico, A Porporato, C Runyan (Editors) *Dryland Ecohydrology* 2nd Edition, Springer, 2019.
- 4) Porporato, A. and Yin, J., 2022. *Ecohydrology: Dynamics of Life and Water in the Critical Zone*. Cambridge University Press.

□ **publications, Book Chapters:**

- 1) Porporato A. and I. Rodriguez-Iturbe, Stochastic Soil Moisture Dynamics and vegetation Response, in ‘*Celebrating statistics, for the 80th birthday of Sir David Cox*’ edited by A. Davison, Oxford University Press, 2005.
- 2) Manzoni S., Porporato A., and P. D’Odorico, Modeling Carbon and Nitrogen cycling in arid and semi arid ecosystems, in *Dryland ecohydrology*. Springer-Verlag, Berlin, 2006.
- 3) D’Odorico P., and A. Porporato, Soil moisture dynamics in water-limited ecosystems, in *Dryland ecohydrology*. Springer-Verlag, Berlin, 2006.
- 4) Katul, G.G., C.G. Williams, M. Siqueira, D. Poggi, A. Porporato, H. McCarthy, and R. Oren, Dispersal of Transgenic Conifer Pollen, in “*Landscapes, Genomics and Transgenic Conifer Forests*”, ed. C. G. Williams, Springer Series on Managing Forest Ecosystems, Vol. 9, Chapter 8, pp. 121-146, 2006.
- 5) Daly, E., Katul G. and A. Porporato, Ecohydrology, in *Groundwater Engineering Handbook*, CRC Press, 2006.
- 6) Yin J. Porporato A, D’Odorico P, Rodriguez-Iturbe I, chapter of “Ecohydrology” in “*Encyclopedia of Water: Science, Technology, and Society*”, Edited by Patricia Maurice, John Wiley & Sons, 2018.

- 7) P D'Odorico, A Porporato, C Runyan, Ecohydrology of arid and semiarid ecosystems: an introduction, in *Dryland Ecohydrology* (2nd Ed.), 1-27, Springer, 2019.
- 8) J Yin, P D'Odorico, A Porporato, Soil Moisture Dynamics in Water-Limited Ecosystems, in *Dryland Ecohydrology* (2nd Ed.), 31-48, Springer, 2019.
- 9) S Manzoni, MH Ahmed, A Porporato, Ecohydrological and Stoichiometric Controls on Soil Carbon and Nitrogen Dynamics in Drylands, in *Dryland Ecohydrology* (2nd Ed.), 279-307, Springer, 2019.

□ **Publications, Papers in Journals (>280 peer reviewed; ISI-WOS citations >15,800, H index 60; Google Scholar citations >26,800, H index 78):**

- 1) Porporato A. and Ridolfi L. (1996). *Clues to the existence of deterministic chaos in river flow*. *International Journal of Modern Physics B* **10**(15), 1821-1862.
- 2) Porporato A. and Ridolfi L. (1997). *Nonlinear analysis of river flow time sequences*. *Water Resources Research* **33**(6), 1353-1367.
- 3) Porporato A. and Ridolfi L. (1997). *Nonlinear analysis of near-wall turbulence time series*. *Applied Scientific Research*, **57**, 523-261.
- 4) Porporato A. and Ridolfi L. (1997). *Influence of weak trends on exceedance probability*. *Stochastic Hydraulics Hydrology*, **12**, 1-14.
- 5) Perona P., Porporato A. and Ridolfi L. (1998) *A simple experimental equation for the bursting cycle*. *Physics of Fluids*, **10**(11), 3023-3026.
- 6) Porporato A. (1999). *Conditional sampling and state space reconstruction*. *Experiments in Fluids*, **26**, 441-450.
- 7) Rodriguez-Iturbe I., Porporato A., Ridolfi L., Cox D. and Isham V. (1999) *Probabilistic modelling of water balance at a point: the role of climate, soil and vegetation*. *Proceedings of the Royal Society, series A*, **455**, 3789-3805.
- 8) Porporato A. and Ridolfi L. (1998). *Reply to the comments by Sivakumar et al. to the paper "Nonlinear analysis of river flow time sequences" by A. Porporato and L. Ridolfi*, *Water Resour. Res.* **33**(6), 1353-1367. *Water Resources Research*, **35**(3), 899-901.
- 9) Rodriguez-Iturbe I., D'Odorico P., Porporato A. and Ridolfi L. (1999) *Tree-grass coexistence in savannas: the role of spatial dynamics and climate fluctuations*. *Geophysical Research Letters*. **26**(2), 247-250.
- 10) Rodriguez-Iturbe I., D'Odorico P., Porporato A. and Ridolfi L. (1999) *On the spatial and temporal links between vegetation, climate and soil*. *Water Resources Research*, **35**(12), 3709-3722.

- 11) Porporato A., D'Odorico P., Ridolfi L. and Rodriguez-Iturbe I. (2000) *A spatial model for soil-atmosphere interaction: model construction and linear stability analysis*. Journal of Hydrometeorology, **1**(1), 61-74.
- 12) Perona P., Porporato A. and Ridolfi L. (2000) *On the trajectory method for reconstruction of differential equations from time series*. Nonlinear Dynamics, **23**, 13-33.
- 13) D'Odorico P., Ridolfi L. Porporato A. and Rodriguez-Iturbe I. (2000) *Preferential States of Seasonal Soil Moisture: the Impact of Climate Fluctuations*. Water Resources Research, **36**(8), 2209-2219.
- 14) Ridolfi L., D'Odorico P., Porporato A. and Rodriguez-Iturbe I. (2000) *Duration and Frequency of Water Stress in Vegetation: An Analytical Model*. Water Resources Research, **36**(8), 2297-2307.
- 15) Ridolfi L., D'Odorico P., Porporato A. and Rodriguez-Iturbe I. (2000) *Impact of Climate Variability on the Vegetation Water Stress*. Journal Geophys. Res., **105**(D14), 18013-18025.
- 16) Porporato A. and Ridolfi L. (2001). *Multivariate nonlinear prediction of river flow*. J. Hydrology, **248**, 109-122.
- 17) D'Odorico P., Porporato A., and Ridolfi L. (2001) *Transition between stable states in the dynamics of soil development*. Geophysical Research Letters, **28**(4), 595-598.
- 18) Rodriguez-Iturbe I., Porporato A., Laio F., and Ridolfi L. (2001) *Plants in water controlled ecosystems: Active role in hydrological processes and response to water stress. I. Scope and general outline*. Advances in Water Research, **24**, 695-705.
- 19) Laio F., Porporato A., Ridolfi L., and Rodriguez-Iturbe I. (2001) *Plants in water controlled ecosystems: Active role in hydrological processes and response to water stress. II. Probabilistic soil moisture dynamics*. Advances in Water Research, **24**, 707-723.
- 20) Porporato A., Laio F., Ridolfi L., and Rodriguez-Iturbe I. (2001) *Plants in water controlled ecosystems: Active role in hydrological processes and response to water stress. III. Vegetation water stress*. Advances in Water Research, **24**, 725-744.
- 21) Laio F., Porporato A., Fernandez-Illescas C., and Rodriguez-Iturbe I. (2001) *Plants in water controlled ecosystems: Active role in hydrological processes and response to water stress. IV. Applications to real cases*. Advances in Water Research, **24**, 745-762.
- 22) Laio F., Porporato A., Ridolfi L., and Rodriguez-Iturbe I. (2001) *Mean first passage times of processes driven by white shot noise*. Physical Review E, **63**, 036105.
- 23) Porporato A. and Sordo S. (2001) *On the incomplete similarity for turbulent velocity profiles in rough pipes*. Phys. of Fluids, **13**, 2596.

- 24) Perona P., D'Odorico P., Porporato A., and Ridolfi L. (2001) *Reconstructing the temporal dynamics of snow cover from observations*, Geophys. Res. Letters, **28**, 2975.
- 25) Rodriguez-Iturbe I., Porporato A., Laio F., and Ridolfi L. (2001) *Intensive or extensive use of soil moisture: plant strategies to cope with stochastic water availability*. Geophys. Res. Letters., **28**(23), 4495.
- 26) Fernandez-Illescas C., Porporato A., Laio F., and Rodriguez-Iturbe I. (2001). *The eco-hydrological role of soil texture in water-limited ecosystems*. Water Resources Research. **37**(12), 2863-2872.
- 27) Poggi D., Porporato A., Ridolfi L. (2002) *An experimental contribution to near-wall measurements by means of a special laser Doppler anemometry technique*. Exp. in Fluids, **32**, 366-375.
- 28) Laio, F., Porporato A., Ridolfi, L. and Rodriguez-Iturbe, I. (2002). *On the seasonal dynamics of mean soil moisture*. J. Geophys. Res.-Atmospheres. **107**(D15), 101029.
- 29) Porporato, A., D'Odorico, P., Laio, F., Ridolfi, L. and Rodriguez-Iturbe, I. (2002). *Ecohydrology of water-controlled ecosystems*. Advances in Water Resources, **25**, 1335-1348 (**Invited paper**).
- 30) Porporato A. and L. Ridolfi (2002) *Some dynamical properties of a differential model for the bursting cycle in the near-wall turbulence*. Phys. Fluids Phys, **14**(12), 4278-4283.
- 31) Porporato A. and I Rodriguez-Iturbe (2002) *Ecohydrology – A challenging multidisciplinary research perspective*. J. Hydrol. Sci., **47**(5), 811-822. (**Invited paper**)
- 32) Poggi D., Porporato A., Ridolfi L. (2003) *Analysis of the small-scale structure of turbulence on smooth and rough walls*. Phys. Fluids **15**(1), 35-41-46.
- 33) Porporato A., D'Odorico P., Laio F., and I. Rodriguez-Iturbe (2003) *Hydrologic controls on soil carbon and nitrogen cycles. I Modeling scheme*. Adv. Water Res, **26**(1), 45-58.
- 34) D'Odorico P., Laio F., Porporato A., and I. Rodriguez-Iturbe (2003) *Hydrologic controls on soil carbon and nitrogen cycles. II A case study*. Adv. Water Res, **26**(1), 59-70.
- 35) Porporato A., Laio F., Ridolfi L., Caylor K., and Rodriguez-Iturbe I. (2003) *Soil moisture and plant stress dynamics along the Kalahari precipitation gradient*. J. Geophys. Res., **108**(D3), 4127-4134.
- 36) Ridolfi L., D'Odorico P., Porporato A. and I Rodriguez-Iturbe (2003) *Stochastic soil moisture dynamics along a hillslope*. J. Hydrol., **272**, 264-275. (**Invited paper**).

- 37) Laio F., Porporato A., Revelli R., and Ridolfi L. (2003) *A comparison of nonlinear flood forecasting methods*. Water Resour. Res., **39**(5), 1129-1132.
- 38) Porporato A. and Ridolfi L. (2003). *Detecting determinism and nonlinearity in river-flow time series*. J. Hydrologic sciences, 48(5), 763-780.
- 39) Ridolfi L., D'Odorico P., Porporato A. and I. Rodriguez-Iturbe (2003) *The influence of stochastic soil moisture dynamics on gaseous emissions of NO₂O and N₂*. J. Hydrol. Sci., 48(5), 781-798.
- 40) Daly E., and A. Porporato (2004) *A note on groundwater flow along a hillslope*. Water Resour. Res., 40, W01601-W01605.
- 41) Poggi P., Porporato A., Ridolfi L., Katul G., and J. Albertson (2004) *The effect of vegetation density on canopy sub-layer turbulence*. Boundary-Layer Meteorology, 111 (3): 565-587.
- 42) Daly E., Porporato A., and I. Rodriguez-Iturbe (2004) *Coupled dynamics of photosynthesis, transpiration, and soil water balance. I Upscaling from hourly to daily level*. J. Hydrometeor., 5, 546-558, 2004.
- 43) Daly E., Porporato A., and I. Rodriguez-Iturbe (2004) *Coupled dynamics of photosynthesis, transpiration, and soil water balance. II Stochastic dynamics and ecohydrological significance*. J. Hydrometeor., 5, 559-566, 2004.
- 44) Poggi D., Porporato A., Ridolfi L., Albertson J., Katul G., (2004) *Interaction between large and small scales in the canopy sublayer*. Geophys. Res. Lett., 31, L05102, doi: 10.1029/2003GL018611, 2004.
- 45) Kumagai T., Katul G.G., Saitoh T.M., Odair Y.S, Manfroi J., Morooka T., Ichie T., Kuraji K., Suzuki M., and A. Porporato. *Water cycling in a Bornean tropical rainforest under current and projected precipitation scenarios*. Water Resour. Res. 40, W001104, 2004.
- 46) Austin A., Yahdjian L., Stark J.H., Belnap J., Porporato A., Burke I.C., Norton U., Ravetta D.A., and S. M. Schaeffer, *Water pulses and biogeochemical cycles in arid and semiarid ecosystems*, Oecologia 141, 221-235, 2004.
- 47) Porporato A., D'Odorico P., *Phase transitions driven by state-dependent Poisson noise*, Phys. Rev. Lett. 92(11), 110601, 2004.
- 48) D'Odorico P., Porporato A., *Preferential states in soil moisture and climate dynamics*, Proc. Nat. Acad. Sci. USA, 101(24), 8848-8851, 2004.
- 49) D'Odorico P., Porporato A., Laio F., Ridolfi L., and I. Rodriguez-Iturbe, *Probabilistic modeling of nitrogen and carbon dynamics in water limited ecosystems*. Ecological Modelling 179, 205–219, 2004.
- 50) Porporato A., Daly E., and I. Rodriguez-Iturbe, *Soil water balance and ecosystem response to climate change*, Am. Nat., 164(5), 625-633, 2004

- 51) Daly E. and A. Porporato (2004) *Similarity solutions of nonlinear diffusion problems related to mathematical hydraulics and the Fokker-Plank equation*, Phys. Rev. E 70, 056303-1-8, 2004.
- 52) Kumagai T., Katul G., A. Porporato, T. M. Saitoh, M. Ohashi, T. Ichie, and M. Suzuki, *Carbon and water cycling in a Bornean tropical rainforest under current and future climate scenarios*, Adv. Water Resour. 27, 1135-1150, 2004.
- 53) Laio F., Porporato A., Ridolfi L., and S. Tamea, *Detecting nonlinearity in time series driven by non Gaussian noise: the case of river flow*. Nonlin. Proc. in Geophys. 11, 463-470, 2004.
- 54) Manzoni S., Porporato A., D'Odorico P. and I. Rodriguez-Iturbe. *Soil nutrient cycles as a nonlinear dynamical system*. Nonlin. Proc. in Geophys. 11, 589-598, 2004.
- 55) Daly E. and A. Porporato, *A review of soil moisture dynamics: from rainfall infiltration to ecosystem response*. Environm. Eng. Sciences, 22(1), 9-24, 2005. **(Invited paper)**.
- 56) Racca E., and A. Porporato, *Langevin equations from time series*. Phys. Rev. E, 71, 027101, 2005.
- 57) Parlange M.B., Berkowitz B., Porporato A., Torgesen T., and S.W. Tyler, *Editorial: Future of Water Resources Research*, Water Resour. Res., 41 (1), W01001, 2005.
- 58) Katul, G.G., A. Porporato, R. Nathan, M. Siqueira, M. Soons, D. Poggi, H. Horn, and S. Levine, *Mechanistic Analytical Models for Long Distance Seed Dispersal by Wind*, Am. Nat., 166 (3): 368-381, 2005.
- 59) Isham V., D.R. Cox, I. Rodriguez-Iturbe, A. Porporato, and S. Manfreda, *Representation of space time variability of soil moisture*, Proc. Royal Soc. A., 461 (2064): 4035-4055, 2005.
- 60) Daly E., And A. Porporato, *Some Self-Similar Solutions in River Morphodynamics*, Water Resour. Res. 41, W12503, 2005.
- 61) Camporeale C., P. Perona, A. Porporato, L. Ridolfi, *On the long-term behavior of meandering rivers*, Water Resour. Res. 41 (12): Art. No. W12403, 2005.
- 62) Daly E. and A. Porporato, *Probabilistic dynamics of some jump-diffusion systems*, Phys. Rev. E, 73, 26108, 2006.
- 63) Ridolfi L., Porporato A., and R. Revelli, *Green function of the linearized de Saint Venant equations*, J. Eng. Mech. ASCE, 132(2): 125-132, 2006.
- 64) Katul G., Porporato A., D. Cava, and M. Siqueira, *An analysis of intermittency, scaling, and surface renewal in atmospheric surface layer turbulence*, Physica D, 215, 117-126, 2006.

- 65) Rodriguez-Iturbe I., V. Isham, D.R. Cox, S. Manfreda, A. Porporato, *Space-time modeling of soil moisture: stochastic rainfall forcing with heterogeneous vegetation*, *Water Resour. Res.*, 42, W06D05, 2006.
- 66) Daly E. and A. Porporato, *Impact of Hydro-Climatic Fluctuations on the Soil Water Balance*, *Water Resour. Res.*, 42 W06401, 2006.
- 67) Porporato A., G. Vico, and P. Fay, *Interannual hydroclimatic variability and Ecosystem Superstatistics*. *Geophys. Res. Lett.*, 33, L5402, 2006.
- 68) Rigby, J. R., and A. Porporato, *Simplified stochastic soil-moisture models: a look at infiltration*, *Hydrol. Earth Syst. Sci.*, 10, 861–871, 2006.
- 69) Daly, E., and A. Porporato, *State-dependent fire models and related renewal processes*, *Phys. Rev. E*, 74, 041112, 2006.
- 70) Daly, E., and A. Porporato, *Inter-time jump statistics of state-dependent Poisson processes*, *Phys. Rev. E*, 75, 011119, 2007.
- 71) Botter, G., A. Porporato, I. Rodriguez-Iturbe, and A. Rinaldo, *Basin-scale soil moisture dynamics and the probabilistic characterization of carrier hydrologic flows: slow, leaching prone component of the hydrologic response*, *Water Resour. Res.*, 43, W02417, 2007.
- 72) Camporeale C., A. Porporato, P. Perona, L. Ridolfi, *Hierarchy of models for meandering rivers and related morphodynamic processes*, *Rev. Geophys.*, 45, RG1001, 2007.
- 73) Juang J.-Y., A. Porporato, P. C. Stoy, M. S. Siqueira, A. C. Oishi, M. Detto, H.-S. Kim, and G. G. Katul, *Hydrologic and Atmospheric Controls on Initiation of Convective Precipitation*. *Water Resour. Res.*, 43, W03421, 2007.
- 74) Juang, J.Y., Katul, G.G., Porporato, A., Stoy, P.C., Siqueira, M.B., Detto, M., Kim, H.S., and Oren, R., *Eco-hydrological controls on summertime convective rainfall triggers*, *Global Change Biology*, 13,1-10, 2007.
- 75) Porporato, A., J.R. Rigby, and E. Daly, *Irreversibility and fluctuation theorem in stationary time series*, *Phys. Rev. Lett.*, 98, 094101, 2007.
- 76) Perona P., Porporato A., and L. Ridolfi, *A stochastic process for the interannual snow storage and melting dynamics*, *J. Geophys Res.*, 112 (D8), D08107, 2007.
- 77) Manzoni S. and A. Porporato, *A theoretical analysis of nonlinearities and feedbacks in soil carbon and nitrogen cycles*, *Soil Biology and Biochemistry*, 39 (7), 1542-1556, 2007.
- 78) Katul, G.G., Porporato, A., Daly, A., Oishi, C., Kim, H.Y., Stoy, P.C., Juang, J.Y., and Siqueira, M.B., *On the spectrum of soil moisture from hourly to inter-annual scales*, *Water Resour. Res.*, 43 (5), W05428, 2007.

- 79) Botter G., A. Porporato, E. Daly, I. Rodriguez-Iturbe, and A. Rinaldo, Basin-scale soil moisture dynamics and the probabilistic characterization of carrier hydrologic flows: slow, leaching prone component of the hydrologic response, *Water Resour. Res.*, 43 (6), W06404, 2007.
- 80) Maggi F. and A. Porporato, Coupled moisture and microbial dynamics, *Water Resour. Res.*, 43 (7), W07444, 2007.
- 81) D'Odorico P., Laio F., Porporato A., Ridolfi L., and N. Barbier, Noise-induced vegetation patterns in fire-prone savannas, *J. Geophysical Res.-Biogeosciences*, 112 (G2), G02021, 2007.
- 82) Katul G., Porporato A., and R. Oren, Stochastic dynamics of plant-water interactions, *Annu. Rev. Ecol. Syst.*, 38,767-791, 2007.
- 83) Manfreda S. Cox D.R, Isham V., Porporato A., and I. Rodriguez-Iturbe, Reply to comment by S. Nadarajah on "Space-time modeling of soil moisture: Stochastic rainfall forcing with heterogeneous vegetation", *Water Resour. Res.*, 43 (10): Art. No. W10602, 2007.
- 84) Botter G., Peratoner F., Porporato A., Rodriguez-Iturbe I., and A. Rinaldo, Signatures of large-scale soil moisture dynamics on streamflow statistics across U.S. climate regimes, *Water Resour. Res.*, 43, W11413, doi:10.1029/2007WR006162, 2007.
- 85) Botter G., Daly E., Porporato A., Rodriguez-Iturbe I., and A. Rinaldo, Probabilistic dynamics of soil nitrate: the coupling of eco-hydrological and bio-geochemical processes, *Water Resour. Res.*, 44, W03416, 2008.
- 86) Siqueira M., G.G. Katul, and A. Porporato, Onset of water stress, hysteresis in plant conductance, and hydraulic lift: scaling soil water dynamics from millimeters to meters, *Water Resour. Res.*, 44, W01432, 2008.
- 87) Manzoni S., A. Porporato, and J. P. Schimel, Soil heterogeneity in lumped mineralization-immobilization models. *Soil Biology and Biochemistry* 40, 1137–1148, 2008.
- 88) Ridolfi L., Porporato A., and R. Revelli, Closure to "Green's Function of the Linearized de Saint-Venant Equations", *J. of Engineering Mechanics-ASCE*, 134(9), 809, 2008.
- 89) Rigby J. R. and A. Porporato. Spring frost risk in a changing climate, *Geophys. Res. Lett.* 35, L12703, 2008.
- 90) Daly E., Oishi A.C., Porporato A., A stochastic model for daily subsurface CO₂ concentration and related soil respiration, *Adv. Water Res.*, 31(7), 987-994, 2008.
- 91) Vico G., Porporato A., Modelling C₃ and C₄ photosynthesis under water-stressed conditions, *Plant and Soil* 313(1-2), 187-203, 2008.

- 92) Botter G., Zanardo S., Porporato A., Rodriguez-Iturbe I., and A. Rinaldo, Eco-hydrological model of low duration curves and annual minima, *Water Resour. Res.* 44(8), W8418, 2008.
- 93) Manzoni S., R.B. Jackson, J.A. Trofymow, and A. Porporato, The global stoichiometry of litter nitrogen mineralization, *Science*, 321(5889), 684-686, 2008.
- 94) Viola F., Daly E., Vico G., Cannarozzo M., Porporato A., Transient soil-moisture dynamics and climate change in Mediterranean ecosystems, *Water Resources Research*, 44(11), W11412, 2008
- 95) Daly, E. and A. Porporato, Correlation-anti-correlation transition driven by state-dependent Poisson noise, *Physica D*, 238, 170-174, 2009.
- 96) Vico G., Porporato A., Probabilistic description of topographic slope and aspect, *Journal of Geophysical Research - Earth surface*, 114-FO1011, 2009.
- 97) Siqueira M., Porporato A., and G.G. Katul, Soil moisture feedbacks on convection triggers: the role of soil-plant hydrodynamics, *J. Hydromet.* 10, 96-112, 2009.
- 98) Wang L., P. D'Odorico, S. Manzoni, A. Porporato, and S. Macko, Carbon and nitrogen dynamics in southern African savannas: the effect of vegetation-induced patch-scale heterogeneities and large scale rainfall gradients. *Climatic Change*, 92(1-2), 63-76, 2009.
- 99) Katul G.G., A. Porporato, and D. Poggi, Roughness effect on fine scale anisotropy and anomalous scaling in atmospheric flows, *Phys. of Fluids* 21, 035106, 2009.
- 100) Manzoni S. and A. Porporato, Modeling mineralization and biogeochemistry across scales, *Soil Biology and Biogeochemistry* 41(7), 1355-1379, 2009.
- 101) Daly E, S Palmroth, P Stoy, M Siqueira, AC Oishi, JY Juang, R Oren, A Porporato, GG Katul, The effects of elevated atmospheric CO₂ production and concentration dynamics in a maturing pine forest, *Biogeochemistry* 94(3), 271-287, 2009.
- 102) Porporato A, Atmospheric Boundary-Layer Dynamics with constant Bowen Ratio, *Boundary Layer Meteorol.* 132(2), 227-240, 2009.
- 103) Molini A., GG Katul, and A Porporato, Revisiting rainfall clustering and intermittency across different climatic regimes, *Water Resour, Res.*, 45, W11403, 2009.
- 104) Botter G, A Porporato, I Rodriguez-Iturbe, and A Rinaldo, Nonlinear Storage-discharge relations and catchment streamflow regimes. *Water Resour, Res.*, 45, W10427, 2009.

- 105) Manzoni S, Katul GG, Porporato A, Analysis of soil carbon transit times and age distributions using network theories, *J. Geophys. Res. (Biogeosci.)*, 114, G04025, 2009.
- 106) Manzoni S., R.B. Jackson, J.A. Trofymow, and A. Porporato (2010) Stoichiometry of carbon, nitrogen and phosphorous decomposition, *Ecol. Monogr.* 80 (1), 89-106.
- 107) Vico, G., and A. Porporato, Traditional and micro-irrigation with stochastic soil moisture, *Water Resour. Res.*, 46 doi:10.1029/2009WR008130, 2010.
- 108) Suweis, S., E. Bertuzzo, G. Botter, A. Porporato, I. Rodriguez-Iturbe, and A. Rinaldo, The Impact of Stochastic Fluctuations in Storage-Discharge Relation on Streamflow Distributions, *Water Resour. Res.*, 46 doi:10.1029/2009WR00803, 2010.
- 109) Botter G., S. Basso, A. Porporato, I. Rodriguez-Iturbe, and A. Rinaldo, Natural streamflow regime alterations: the damming of the Piave river basin (Italy), *Water Resour. Res.*, 46 doi:10.1029/2009WR008523, 2010.
- 110) Ceola S, Botter G, Bertuzzo E, et al. Comparative study of ecohydrological streamflow probability distributions, *Water Resour. Res.*, 46, W09502, (2010).
- 111) Rigby JR, Porporato A. Precipitation, dynamical intermittency, and sporadic randomness, *Adv. Water. Resour.*, 33(8), 923-932 (2010).
- 112) Molini A, Katul GG, Porporato A., Causality across rainfall time scales revealed by continuous wavelet transforms, *J. Geophys. Res.*, 115, D14123 (2010).
- 113) Konings AG, Katul GG, Porporato A., The rainfall-no rainfall transition in a coupled land-convective atmosphere system, *Geophys. Res. Lett.*, L14401 (2010).
- 114) Thompson SE, Katul GG, Porporato A., Role of microtopography in rainfall-runoff partitioning: An analysis using idealized geometry, *Water Resour. Res.* 46, W07520 (2010).
- 115) Daly E, Porporato A., Effect of different jump distributions on the dynamics of jump processes, *Phys. Rev. E*, 061133 (2010).
- 116) Buendia C, Kleidon A, Porporato A., The role of tectonic uplift, climate, and vegetation in the long-term terrestrial phosphorous cycle, *Biogeosciences*, 7(6), 2025-2038 (2010).
- 117) Suweis S, Rinaldo A, Van der Zee SEATM, A. Maritan, E. Daly, and Porporato A., Stochastic modeling of soil salinity, *Geophys. Res. Lett.* 37 L07404 (2010).

- 118) Molini A, Katul GG, Porporato A., Scale-wise evolution of rainfall probability density functions fingerprints the rainfall generation mechanism, *Geophys. Res. Lett.*, 37, L07403 (2010).
- 119) D'Odorico P, Laio F, Porporato, L. Ridolfi, A. Rinaldo, and I. Rodriguez-Iturbe (2010). *Ecohydrology of Terrestrial Ecosystems*, *Bioscience.*, 60(11), 898-907.
- 120) Vico G., and A. Porporato (2011), From rainfed agriculture to stress-avoidance irrigation I. A generalized irrigation scheme with stochastic soil moisture, *Advances in Water Resources*, 34(2), 263-271.
- 121) Vico G., and A. Porporato (2011), From rainfed agriculture to stress-avoidance irrigation II. Sustainability, crop yield, and profitability, *Advances in Water Resources*, 34 (2), 272-281.
- 122) Manzoni S., Vico G., Katul G.G., Fay P.A., Polley W., Palmroth, S., and A. Porporato (2011), Optimizing stomatal conductance for maximum carbon gain under water stress: A meta-analysis across plant functional types and climates, *Functional Ecology* 25(3), 456-467.
- 123) Manzoni S. and A. Porporato (2011), Common hydrologic and biogeochemical controls along the soil-stream continuum. *Hydrological Processes*, 25(8), 1355-1360 (**Invited Commentary**).
- 124) Manzoni S., Katul G.G., Fay P.A., Polley W., and A. Porporato (2011), Modeling the vegetation-atmosphere carbon dioxide and water vapor interactions along a controlled CO₂ gradient. *Ecological Modelling* 222(3), 653-665.
- 125) Molini A, Katul GG, and A. Porporato (2011), Maximum discharge from snowmelt in a changing climate *Geophys. Res. Lett.* 38, L05402.
- 126) Battle-Aguilar J, Brovelli A, Porporato A., and D.A. Berry (2011) Modelling soil carbon and nitrogen cycles during land use change. A review, *Agronomy for Sustainable Development*, 31(2), 251-274.
- 127) Molini A, Talkner P, Katul GG, and A. Porporato (2011) First passage time statistics of Brownian motion with purely time dependent drift and diffusion, *Physica A*, 390(11), 1841-1852.
- 128) Manzoni Stefano; Vico Giulia; Katul Gabriel; et al. Optimizing stomatal conductance for maximum carbon gain under water stress: a meta-analysis across plant functional types and climates, *Functional Ecology*, 25 (3), 456-467 2011.
- 129) Suweis Samir; Porporato Amilcare; Rinaldo Andrea; et al. Prescription-induced jump distributions in multiplicative Poisson processes *Phys Rev. E*, 83 (6) 061119 2011.
- 130) Ramirez-Cobo Pepa; Lee Kichun Sky; Molini Annalisa; et al. A wavelet-based spectral method for extracting self-similarity measures in time-varying

two-dimensional rainfall maps JOURNAL OF TIME SERIES ANALYSIS
32 (4) 351-363 2011.

- 131) Simoni S.; Padoan S.; Nadeau D. F.; et al. Hydrologic response of an alpine watershed: Application of a meteorological wireless sensor network to understand streamflow generation Water Res. Research 47 W10524, 2011.
- 132) Porporato A.; Kramer P. R.; Cassiani M.; et al. Local kinetic interpretation of entropy production through reversed diffusion. Phys. Rev. E 84(4), 041142, 2011.
- 133) Manzoni S., Molini A. and A. Porporato, Stochastic modelling of phytoremediation. Proc. R. Soc. A. 467(2135), 3188-3205, 2011.
- 134) Katul G.G.; Konings A.G. and A. Porporato, Mean Velocity Profile in a Sheared and Thermally Stratified Atmospheric Boundary Layer. Phys Rev. Lett., 107(26), 268502, 2011.
- 135) Kumagai T. and A Porporato, Strategies of a Bornean tropical rainforest water use as a function of rainfall regime: isohydric or anisohydric? Plant Cell & Environm. 35(1) 61-71, 2012.
- 136) Viola F., Noto L.V., Cannarozzo M., La Loggia G. and Porporato A. Olive yield as a function of soil moisture dynamics, Ecohydrology, 5(1), 99-107, 2012.
- 137) Manzoni S., Schimel J.P. and A. Porporato, Responses of soil microbial communities to water stress: results from a meta-analysis, Ecology 93(4), 930-938, 2012.
- 138) Montosi E.; Manzoni S.; Porporato A. and A. Montanari, An ecohydrological model of malaria outbreaks, Hydrology and Earth System Sciences, 16(8), 2759-2769, 2012.
- 139) Vergutz L., Manzoni S., Porporato A., Novais, R.F. and R.B. Jackson, Global resorption efficiencies and concentrations of carbon and nutrients in leaves of terrestrial plants, Ecol. Monogr., 82(2), 205-220, 2012.
- 140) Konings A.G., Feng X., Molini A., Manzoni S., Vico G. and A. Porporato, Thermodynamics of an idealized hydrologic cycle, Water Res. Research, 48, W05527, 2012.
- 141) Feng X., Vico G. and A. Porporato, On the effects of seasonality on soil water balance and plant growth, Water Res. Research, 48 W05543, 2012.
- 142) Kumagai T. and A. Porporato, Drought-induced mortality of a Bornean tropical rain forest amplified by climate change, J. Geophys. Res. 117, G02032, 2012.
- 143) Manzoni S., Pineiro G. Jackson R.B., Jobbagy E.G., Kim J.H. and A. Porporato, Analytical models of soil and litter decomposition: Solutions for mass loss and time-dependent decay rates, Soil Biol. Biogeochem. 50, 66-76, 2012

- 144) Perona P., Daly E., Crouzy B., and A. Porporato, Stochastic dynamics of snow avalanche occurrence by superposition of Poisson processes, *Proc. Royal Soc. A*, 468(2148), 4193-4208, 2012.
- 145) Katul G., Porporato A., and V. Nikora, Existence of $k(-1)$ power-law scaling in the equilibrium regions of wall-bounded turbulence explained by Heisenberg's eddy viscosity, *Phys. Rev. E*, 86(6), 066311, 2012.
- 146) Manzoni S., Vico G., Porporato A. et al., Biological constraints on water transport in the soil-plant-atmosphere system, *Adv. Water Resour.* 51, 292-304, 2013.
- 147) Vico G. and A. Porporato. Probabilistic description of crop development and irrigation water requirements with stochastic rainfall. *Water Resour. Res.* 49(3), 1466-1482 DOI: 10.1002/wrcr.20134, 2013.
- 148) Manzoni S., Vico G., Katul G., Palmroth S., Jackson R.B. and A. Porporato, Hydraulic limits on maximum plant transpiration and the emergence of the safety-efficiency trade-off, *New Phytol.* 198(1), 169-178, DOI: 10.1111/nph.12126, 2013.
- 149) Feng X., Porporato A. and I. Rodriguez-Iturbe, Changing rainfall seasonality in the tropics, *Nature Climate Change*, doi:10.1038/nclimate1907, 2013.
- 150) Katul G, Porporato A, C. Manes et al. Co-spectrum and mean velocity in turbulent boundary layers, *Phys of Fluids*, 25(9), 154 (2013).
- 151) Bartlett M., Vico G. and A. Porporato, Elliptically symmetric distributions of elevation gradients of topographic aspects, *Math. Geosci.* 45(7), 819 (2013).
- 152) Rubol S., Manzoni S., Bellin A., and A. Porporato, Modeling soil moisture and oxygen effects on soil biogeochemical cycles including dissimilatory nitrate reduction to ammonium (DNRA), *Adv. Water. Res.* 62, 106 (2013).
- 153) Manzoni S., Vico G., Palmroth S., Porporato A., and G. Katul, Optimization of stomatal conductance for maximum carbon gain under dynamic soil moisture, *Adv. Water Res.* 62, 90 (2013).
- 154) Rohr T., Manzoni S., Feng X., Vico G., and A. Porporato, Effects of rainfall seasonality on carbon storage in tropical dry tropics, *J. Geophys. Res.* 118(3), 1156 (2013).
- 155) Porporato A. And I. Rodriguez-Iturbe, Ecohydrology Bearings - Invited Commentary. From random variability to ordered structures: a search for general synthesis in ecohydrology. *Ecohydrology*, 6(3), 333 (2013).
- 156) Manzoni, Stefano; Vico, Giulia; Palmroth, Sari, Porporato A. and G. Katul, optimization of stomatal conductance for maximum carbon gain under dynamic soil moisture, *Adv. Water Res.* 62, 90-105 (2013).

- 157) Zhang Q., Manzoni S., Katul G. and A. Porporato, The hysteretic evapotranspiration- Vapor pressure deficit relation, *J. Geophys. Res. Biogeosci.* 119(2), 125-140 (2014).
- 158) Katul G., Porporato A., Shah S. et al., Two phenomenological constants explain similarity laws in stably stratified turbulence, *Phys. Rev. E* 89(2), 023007 (2014).
- 159) Vico G., Revelli R. and Porporato A, Ecohydrology of street trees: design and irrigation requirements for sustainable water use, *Ecohydrology* 7(2), 508-523 (2014).
- 160) A. Porporato Dual structure of thermodynamics, *Phys. Rev. E.* 89(4), 042126 (2014).
- 161) Parolari A., Katul G. and A. Porporato, An ecohydrological perspective on drought-induced forest mortality, *J. Geophys. Res. Biogeochemistry*, 119(5), 965-981 (2014).
- 162) Manzoni, S., Schaeffer, S. M., Katul, G. Porporato A. and J. P. Schimel, A theoretical analysis of microbial eco-physiological and diffusion limitations to carbon cycling in drying soils, *Soil Biol. Biogeochem.*, 73, 69-83 (2014).
- 163) Manzoni S., Katul G. and A. Porporato, A dynamical system perspective on plant hydraulic failure, *Water Resour. Res.*, 50(6), 5170-5183 (2014).
- 164) Yin, J., Porporato A. and J. Albertson, Interplay of climate seasonality and soil moisture-rainfall feedback, *Water Resour. Res.* 50(7), 6053-6066 (2014).
- 165) Manzoni S., Vico G., Katul G., Palmroth S. and A. Porporato, Optimal plant water-use strategies under stochastic rainfall, *Water Resour. Res.* 50(7), 5379-5394 (2014).
- 166) Band, L. E.; McDonnell, J. J.; Duncan, J. M.; et al. Ecohydrological flow networks in the subsurface, *Ecohydrology*, 7(4), 1073-1078 (2014).
- 167) Bartlett, Mark S.; Vico, Giulia; Porporato, Amilcare, Coupled carbon and water fluxes in CAM photosynthesis: modeling quantification of water use efficiency and productivity, *Plant and Soil*, 383(1-2), 111-138 (2014).
- 168) Mau, Yair; Feng, Xue; Porporato, Amilcare, Multiplicative jump processes and applications to leaching of salt and contaminants in the soil. *Phys Rev. E* 90(5), 052128 (2014).
- 169) Vico G., and A. Porporato, Ecohydrology of Agroecosystems: Quantitative Approaches Towards Sustainable Irrigation *BULLETIN OF MATHEMATICAL BIOLOGY*, 77(2), 298-318 (2015).
- 170) Feng X., Porporato A. and I. Rodriguez-Iturbe, Stochastic soil water balance under seasonal climates, *Proc. Royal Soc. A* 471(2174), 20140623 (2015).

- 171) Hartzell S., Bartlett M.S., Virgin L. and A. Porporato Nonlinear dynamics of the CAM circadian rhythm in response to environmental forcing, *J. Theor. Biology* 368, 83-94 (2015).
- 172) Ghannam K, Poggi D, Porporato A, Katul GG, The Spatio-temporal Statistical Structure and Ergodic Behaviour of Scalar Turbulence Within a Rod Canopy, *BOUNDARY-LAYER METEOROLOGY* 157(3), 447-460 (2015).
- 173) Bartlett MS, Daly E, McDonnell JJ, Parolari AJ, Porporato A, Stochastic rainfall-runoff model with explicit soil moisture dynamics, *Proc. Royal Soc. A*, 471, [DI 10.1098/rspa.2015.0389](https://doi.org/10.1098/rspa.2015.0389) (2015).
- 174) Katul GG, Manes C, Porporato A, Bou-Zeid E, Chamecki M, Bottlenecks in turbulent kinetic energy spectra predicted from structure function inflections using the Von Karman-Howarth equation, *Phys. Rev. E*, 92, 033009 (2015).
- 175) Mau Y, Porporato A, A dynamical system approach to soil salinity and sodicity, *Adv. Water Resour.*, 83, 68-76 (2015).
- 176) Parolari AJ, Katul GG, Porporato A, The Doomsday Equation and 50 years beyond: new perspectives on the human-water system, *WILEY INTERDISCIPLINARY REVIEWS-WATER*, 2(4), 407-414 (2015).
- 177) Porporato A, Feng X, Manzoni S, Mau Y, Parolari AJ, Vico G, Ecohydrological modeling in agroecosystems: Examples and challenges, *Water Resour. Res.*, 51(7), 5081-5099 (2015).
- 178) Rigby JR, Yin J, Albertson JD, Porporato A, Approximate Analytical Solution to Diurnal Atmospheric Boundary-Layer Growth Under Well-Watered Conditions, *BOUNDARY-LAYER METEOROLOGY*, 156(1), 73-89 (2015).
- 179) Vico G, Thompson SE, Manzoni S, Molini A, Albertson JD, Almeida-Cortez JS, Fay PA, Feng X, Guswa AJ, Liu H, Wilson TG, Porporato A, Climatic, ecophysiological, and phenological controls on plant ecohydrological strategies in seasonally dry ecosystems, *ECOHYDROLOGY*, 8(4), 660-681 (2015).
- 180) Pascale S, Lucarini V, Feng X, Porporato A, ul Hasson S, Analysis of rainfall seasonality from observations and climate model, *CLIMATE DYNAMICS*, 44(11-12), 3281-3301 (2015).
- 181) Porporato A, Calabrese S, On the probabilistic structure of water age, *Water Resour. Res.* [10.1002/2015WR017027](https://doi.org/10.1002/2015WR017027) (2015).
- 182) S Pascale, V Lucarini, X Feng, A Porporato, S ul Hasson, Analysis of rainfall seasonality from observations and climate models, *Climate Dynamics* 44 (11-12), 3281-3301 (2015).
- 183) G Vico, SE Thompson, S Manzoni, A Molini, JD Albertson, A Porporato et al., Climatic, ecophysiological, and phenological controls on plant

- ecohydrological strategies in seasonally dry ecosystems, *Ecohydrology* 8 (4), 660-681 (2015).
- 184) AJ Parolari, GG Katul, A Porporato, The Doomsday Equation and 50 years beyond: new perspectives on the human-water system, *Wiley Interdisciplinary Reviews: Water* 2 (4), 407-414 (2015).
- 185) JR Rigby, J Yin, JD Albertson, A Porporato, Approximate Analytical Solution to Diurnal Atmospheric Boundary-Layer Growth Under Well-Watered Conditions, *Boundary-Layer Meteorology* 156 (1), 73-89 (2015).
- 186) A Porporato, X Feng, S Manzoni, Y Mau, AJ Parolari, G Vico, Ecohydrological modeling in agroecosystems: Examples and challenges, *Water Resources Research* 51 (7), 5081-5099 (2015).
- 187) GG Katul, C Manes, A Porporato, E Bou-Zeid, M Chamecki, Bottlenecks in turbulent kinetic energy spectra predicted from structure function inflections using the Von Kármán-Howarth equation, *Physical Review E* 92 (3), 033009 (2015).
- 188) S Calabrese, A Porporato, Linking age, survival, and transit time distributions, *Water Resources Research* 51 (10), 8316-8330 (2015).
- 189) J Yin, JD Albertson, JR Rigby, A Porporato, Land and atmospheric controls on initiation and intensity of moist convection: CAPE dynamics and LCL crossings, *Water Resources Research* 51 (10), 8476-8493 (2015).
- 190) MS Bartlett, E Daly, JJ McDonnell, AJ Parolari, A Porporato, Stochastic rainfall-runoff model with explicit soil moisture dynamics, *Proc. R. Soc. A* 471 (2183), 20150389 (2015).
- 191) K Ghannam, D Poggi, A Porporato, GG Katul, The spatio-temporal statistical structure and ergodic behaviour of scalar turbulence within a rod canopy, *Boundary-Layer Meteorology* 157 (3), 447-460 (2015).
- 192) NF Pelak, AJ Parolari, A Porporato, Bistable plant–soil dynamics and biogenic controls on the soil production function, *Earth Surface Processes and Landforms*, 41(8), 1011-17 (2016).
- 193) A Porporato, S Calabrese, Comment on “Storage selection functions: A coherent framework for quantifying how catchments store and release water and solutes” by Rinaldo et al., *Water Resources Research* 52 (1), 613-615 (2016).
- 194) S Pascale, V Lucarini, X Feng, A Porporato, S ul Hasson, Projected changes of rainfall seasonality and dry spells in a high greenhouse gas emissions scenario, *Climate Dynamics* 46 (3-4), 1331-1350 (2016).
- 195) MS Bartlett, AJ Parolari, JJ McDonnell, A Porporato, Beyond the SCS-CN method: A theoretical framework for spatially lumped rainfall-runoff response, *Water Resources Research* (2016).

- 196) MS Bartlett, AJ Parolari, JJ McDonnell, A Porporato, Framework for event-based semidistributed modeling that unifies the SCS-CN method, VIC, PDM, and TOPMODEL, *Water Resources Research* (2016).
- 197) Y Mau, A Porporato, Optimal control solutions to sodic soil reclamation, *Advances in Water Resources* 91, 37-45 (2016).
- 198) AJ Parolari, A Porporato, Forest soil carbon and nitrogen cycles under biomass harvest: Stability, transient response, and feedback, *Ecological Modelling* 329, 64-76 (2016).
- 199) Katul, G. G., Banerjee, T., Cava, D., Germano, M., & Porporato, A., Generalized logarithmic scaling for high-order moments of the longitudinal velocity component explained by the random sweeping decorrelation hypothesis. *Physics of Fluids*, 28(9), 095104 (2016).
- 200) Souza, R., Feng, X., Antonino, A., Montenegro, S., Souza, E., & Porporato, A., Vegetation response to rainfall seasonality and interannual variability in tropical dry forests. *Hydrological Processes*, 30(20), 3583-3595 (2016).
- 201) Pelak, N., & Porporato, A., Sizing a rainwater harvesting cistern by minimizing costs. *Journal of Hydrology*, 541, 1340-1347 (2016).
- 202) Calabrese, S., & Porporato, A., Multiple outflows, spatial components, and nonlinearities in age theory. *Water Resources Research*, 53(1), 110-126 (2017).
- 203) Yin, J., Albertson, J. D., & Porporato, A., A probabilistic description of entrainment instability for cloud-topped boundary-layer models. *Quarterly Journal of the Royal Meteorological Society*, 143(703), 650-660 (2017).
- 204) Bonetti, S., Manoli, G., Manes, C., Porporato, A., & Katul, G. G., Manning's formula and Strickler's scaling explained by a co-spectral budget model. *Journal of Fluid Mechanics*, 812, 1189-1212 (2017).
- 205) Bonetti, S., & Porporato, A. On the dynamic smoothing of mountains. *Geophysical Research Letters*, 44(11), 5531-5539 (2017).
- 206) Bartlett, M. S., Parolari, A. J., McDonnell, J. J., & Porporato, A., Reply to comment by Fred L. Ogden et al. on "Beyond the SCS-CN method: A theoretical framework for spatially lumped rainfall-runoff response,". *Water Resources Research* (2017).
- 207) Bonetti, S., Feng, X., & Porporato, A., Ecohydrological controls on plant diversity in tropical South America. *Ecohydrology*, 10(6) (2017).
- 208) Liu, Y., Parolari, A. J., Kumar, M., Huang, C. W., Katul, G. G., & Porporato, A., Increasing atmospheric humidity and CO₂ concentration alleviate forest mortality risk. *Proceedings of the National Academy of Sciences*, 114(37), 9918-9923 (2017).
- 209) Parolari, A. J., Mobley, M. L., Bacon, A. R., Katul, G. G., Richter D., & Porporato, A., Boom and bust carbon-nitrogen dynamics during reforestation. *Ecological Modelling*, 360, 108-119 (2017).

- 210) Calabrese, S., Porporato, A., & Parolari, A. J., Hydrologic Transport of Dissolved Inorganic Carbon and Its Control on Chemical Weathering. *Journal of Geophysical Research: Earth Surface*, 122(10), 2016-2032 (2017).
- 211) Hartzell, S., Bartlett, M. S., & Porporato, A., The role of plant water storage and hydraulic strategies in relation to soil moisture availability. *Plant and Soil*, 419(1-2), 503-521 (2017).
- 212) Calabrese, S., Porporato, A., Laio, F., D'Odorico, P., & Ridolfi, L., Age distribution dynamics with stochastic jumps in mortality. *Proc. R. Soc. A*, 473, 2207, 20170451 (2017).
- 213) N Pelak, R Revelli, A Porporato, A dynamical systems framework for crop models: Toward optimal fertilization and irrigation strategies under climatic variability, *Ecological Modelling* 365, 80-92 (2017).
- 214) Yin, J., & Porporato, A., Diurnal cloud cycle biases in climate models. *Nature communications*, 8(1), 2269 (2017).
- 215) Buendia C, Kleidon A, Manzoni S, Reu B, Porporato A, Evaluating the effect of nutrient redistribution by animals on the phosphorus cycle of lowland Amazonia, *Biogeosciences*, 15(1), 279 (2018).
- 216) Revelli R and A Porporato, Ecohydrological model for the quantification of ecosystem services provided by urban street trees, *Urban Ecosystems* 1-16 (2018).
- 217) Bonetti S, Bragg A, Porporato A, On the theory of drainage area for regular and non-regular points, *Proc Royal Soc.* 474:20170693 (2018).
- 218) Hartzell S, M Bartlett, J Yin, A Porporato. Similarities in the evolution of plants and cars, *PloS one* 13 (6), e0198044 (2018).
- 219) Calabrese, S., Richter, D. D., & Porporato, A. The formation of clay-enriched horizons by lessivage. *Geophysical Research Letters*, 45(15), 7588-7595 (2018).
- 220) Schwantes, A.M., Parolari, A.J., Swenson, J.J., Johnson, D.M., Domec, J.C., Jackson, R.B., Pelak, N. and Porporato, A. Accounting for landscape heterogeneity improves spatial predictions of tree vulnerability to drought. *New Phytologist*, 220(1), 132-146 (2018).
- 221) Bartlett, M. S., and Porporato, A. State dependent jump processes: Ito-Stratonovich interpretations, potential, and transient solutions. *Phys. Rev. E* 98 (5), 052132 (2018).
- 222) Bartlett, M. S. and A. Porporato, A class of exact solutions of the Boussinesq equation for horizontal and sloping aquifers. *Water Resources Research*, 54(2), 767-778 (2018).
- 223) Hartzell S., Bartlett M.S and A. Porporato, Unified representation of the C3, C4, and CAM photosynthetic pathways with the Photo3 model, *Ecol. Modelling*, 384, 173-187 (2018).

- 224) Revelli R. And A Porporato, Ecohydrological model for the quantification of ecosystem services provided by urban street trees, *Urban Ecosystems*, 21 (5), 1019-1019, 2018.
- 225) Bartlett MS and A Porporato, State-dependent jump processes: Ito-Stratonovich interpretations, potential, and transient solutions, *Phys. Rev. E* 98(5), 052132, 2018.
- 226) Porporato A, Calabrese S, and T. Hueckel, Thermodynamic Relations among Isotropic Material Properties in Conditions of Plane Shear Stress, *Entropy* 21(3), 295, 2019.
- 227) Yu, K., D'Odorico, P., Collins, S.L., Carr, D., Porporato, A., Anderegg, W.R., Gilhooly III, W.P., Wang, L., Bhattachan, A., Bartlett, M. and Hartzell, S., 2019. The competitive advantage of a constitutive CAM species over a C4 grass species under drought and CO2 enrichment. *Ecosphere*, 10(5), e02721.
- 228) Calabrese, S., & Porporato, A. (2019). Impact of ecohydrological fluctuations on iron-redox cycling. *Soil Biology and Biochemistry*, 133, 188-195.
- 229) Calabrese, S. and Porporato, A., 2019. Origin of negative temperatures in systems interacting with external fields. *Physics Letters A*, 383(18), pp.2153-2158.
- 230) Yin, J., Calabrese, S., Daly, E. and Porporato, A., 2019. The Energy Side of Budyko: Surface-Energy Partitioning from Hydrological Observations. *Geophysical Research Letters*.
- 231) Daly, E., Calabrese, S., Yin, J. and Porporato, A., 2019. Linking parametric and water-balance models of the Budyko and Turc spaces. *Advances in Water Resources*, 134, p.103435.
- 232) Yin, J. and Porporato, A., 2019. Looking Up or Looking Down? Hydrologic and Atmospheric Perspectives on Precipitation and Evaporation Variability. *Geophysical Research Letters*, 46(21), pp.11968-11971.
- 233) Pelak, N. and Porporato, A., 2019. Dynamic evolution of the soil pore size distribution and its connection to soil management and biogeochemical processes. *Advances in Water Resources*, 131, p.103384.
- 234) Bartlett, M.S., Porporato, A. and Rondoni, L., 2019. Jump processes with deterministic and stochastic controls. *Physical Review E*, 100(4), p.042133.
- 235) Liu, Y., Kumar, M., Katul, G.G. and Porporato, A., 2019. Reduced resilience as an early warning signal of forest mortality. *Nature Climate Change*, 9(11), pp.880-885.
- 236) Bonetti, S., Richter, D.D. and Porporato, A., 2019. The effect of accelerated soil erosion on hillslope morphology. *Earth Surface Processes and Landforms*, 44(15), pp.3007-3019.
- 237) Feng, X., Thompson, S.E., Woods, R. and Porporato, A., 2019. Quantifying asynchronicity of precipitation and potential evapotranspiration in Mediterranean climates. *Geophysical Research Letters*.

- 238) Daly, E., Calabrese, S., Yin, J. and Porporato, A., 2019. Hydrological Spaces of Long-Term Catchment Water Balance. *Water Resources Research*.
- 239) Yin, J. and Porporato, A., 2019. Radiative effects of daily cycle of cloud frequency in past and future climates. *Climate Dynamics*, pp.1-13.
- 240) Bonetti, S., Hooshyar, M., Camporeale, C. and Porporato, A., 2020. Channelization cascade in landscape evolution. *Proceedings of the National Academy of Sciences*.
- 241) Anand, S.K., Hooshyar, M. and Porporato, A., 2020. Linear layout of multiple flow-direction networks for landscape-evolution simulations. *Environmental Modelling & Software*, 133, p.104804.
- 242) Hartzell, S., Bartlett, M.S., Inglese, P., Consoli, S., Yin, J. and Porporato, A., 2020. Modelling nonlinear dynamics of Crassulacean acid metabolism productivity and water use for global predictions. *Plant, Cell & Environment*.
- 243) Hooshyar, M., Wagner, C.E., Baker, R.E., Metcalf, C.J.E., Grenfell, B.T. and Porporato, A., 2020. Cyclic epidemics and extreme outbreaks induced by hydro-climatic variability and memory. *Journal of the Royal Society Interface*, 17(171), p.20200521.
- 244) Hooshyar, M., Bonetti, S., Singh, A., Foufoula-Georgiou, E. and Porporato, A., 2020. From turbulence to landscapes: Logarithmic mean profiles in bounded complex systems. *Physical Review E*, 102(3), p.033107.
- 245) Calabrese, S. and Porporato, A., 2020. Wetness controls on global chemical weathering. *Environmental Research Communications*, 2(8), p.085005.
- 246) Manzoni, S., Chakrawal, A., Fischer, T., Schimel, J.P., Porporato, A. and Vico, G., 2020. Rainfall intensification increases the contribution of rewetting pulses to soil heterotrophic respiration. *Biogeosciences*, 17(15), pp.4007-4023.
- 247) Hooshyar, M., Anand, S. and Porporato, A., 2020. Variational analysis of landscape elevation and drainage networks. *Proceedings of the Royal Society A*, 476(2239), p.20190775.
- 248) Wagner, C.E., Hooshyar, M., Baker, R.E., Yang, W., Arinaminpathy, N., Vecchi, G., Metcalf, C.J.E., Porporato, A. and Grenfell, B.T., 2020. Climatological, virological and sociological drivers of current and projected dengue fever outbreak dynamics in Sri Lanka. *Journal of the Royal Society Interface*, 17(167), p.20200075.
- 249) Souza, R., Hartzell, S., Feng, X., Antonino, A.C.D., de Souza, E.S., Menezes, R.S.C. and Porporato, A., 2020. Optimal management of cattle grazing in a seasonally dry tropical forest ecosystem under rainfall fluctuations. *Journal of Hydrology*, p.125102.
- 250) Gandhi, P., Bonetti, S., Iams, S., Porporato, A. and Silber, M., 2020. A fast-slow model of banded vegetation pattern formation in drylands. *Physica D: Nonlinear Phenomena*, p.132534.

- 251) Yin, J. and Porporato, A., 2020. Radiative effects of daily cycle of cloud frequency in past and future climates. *Climate Dynamics*, 54(3-4), pp.1625-1637.
- 252) Porporato, A., Hooshyar, M., Bragg, A.D. and Katul, G., 2020. Fluctuation-theorem and extended thermodynamics of turbulence. *Proc Royal Soc. A*, 476(2243), 20200468.
- 253) Yin, J., Molini, A. and Porporato, A., 2020. Impacts of Solar Intermittency on Future Photovoltaic Reliability. *Nature Communications*, 11(1), 4781.
- 254) Hooshyar, M., Katul, G. and Porporato, A., 2021. Spectral Signature of Landscape Channelization. *Geophysical Research Letters*, 48(8), p.e2020GL091015.
- 255) Cipolla, G., Calabrese, S., Noto, L.V. and Porporato, A., 2021. The role of hydrology on enhanced weathering for carbon sequestration I. Modeling rock-dissolution reactions coupled to plant, soil moisture, and carbon dynamics. *Advances in Water Resources*, 154, p.103934.
- 256) Cipolla, G., Calabrese, S., Noto, L.V. and Porporato, A., 2021. The role of hydrology on enhanced weathering for carbon sequestration II. From hydroclimatic scenarios to carbon-sequestration efficiencies. *Advances in Water Resources*, 154, p.103949.
- 257) Bertagni, M.B., Paulot, F. and Porporato, A., 2021. Moisture Fluctuations Modulate Abiotic and Biotic Limitations of H₂ Soil Uptake. *Global Biogeochemical Cycles*, 35(12), p.e2021GB006987.
- 258) Porporato, A., 2021. Hydrology without dimensions. *Hydrology and Earth System Sciences Discussions*, pp.1-31.
- 259) Anand, S.K., Hooshyar, M., Martin Nordbotten, J. and Porporato, A., 2021. A minimalist model for coevolving supply and drainage networks. *Royal Society open science*, 8(2), p.201407.
- 260) Cerasoli, S., Yin, J. and Porporato, A., 2021. Cloud cooling effects of afforestation and reforestation at midlatitudes. *Proceedings of the National Academy of Sciences*, 118(33).
- 261) Hooshyar, M. and Porporato, A., 2021. Mean Dynamics and Elevation-Contributing Area Covariance in Landscape Evolution Models. *Water Resources Research*, 57(8), p.e2021WR029727.
- 262) Anand, S.K. and Porporato, A., 2021. Increased asymmetry of pit-over-peak statistics with landscape smoothing. *Earth Surface Processes and Landforms*.
- 263) Porporato, A., Ridolfi, L. and Rondoni, L., 2021. Hydrodynamic holes and Froude horizons: Circular shallow water profiles for astrophysical analogs. *Physical Review Research*, 3(2), p.023119.
- 264) Miller, G., Hartzell, S. and Porporato, A., 2021. Ecohydrology of epiphytes: Modelling water balance, CAM photosynthesis, and their climate impacts. *Ecohydrology*, 14(3), p.e2275.

- 265) Calabrese, S., Garcia, A., Wilmoth, J.L., Zhang, X. and Porporato, A., 2021. Critical inundation level for methane emissions from wetlands. *Environmental Research Letters*, 16(4), p.044038.
- 266) Hartzell, S., Bartlett, M.S., Inglese, P., Consoli, S., Yin, J. and Porporato, A., 2021. Modelling nonlinear dynamics of Crassulacean acid metabolism productivity and water use for global predictions. *Plant, Cell & Environment*, 44(1), pp.34-48.
- 267) Cerasoli, S., Yin, J. and Porporato, A., 2021. Cloud cooling effects of afforestation and reforestation at midlatitudes. *Proceedings of the National Academy of Sciences*, 118(33).
- 268) Porporato, A., 2022. Hydrology without dimensions. *Hydrology and Earth System Sciences*, 26(2), pp. 355-374.
- 269) Perri, S. and Porporato, A., 2022. Environmental concentrations as ratios of random variables. *Environmental Research Letters*, 17(2), p.024011.
- 270) Jackson, R.B., Ahlström, A., Hugelius, G., Wang, C., Porporato, A., Ramaswami, A., Roy, J. and Yin, J., 2022. Human well-being and per capita energy use. *Ecosphere*, 13(4), p.e3978.
- 271) Perri, S., Molini, A., Hedin, L.O. and Porporato, A., 2022. Contrasting effects of aridity and seasonality on global salinization. *Nature Geoscience*, 15(5), pp.375-381.
- 272) Puy, A., Sheikholeslami, R., Gupta, H.V., Hall, J.W., Lankford, B., Lo Piano, S., Meier, J., Pappenberger, F., Porporato, A., Vico, G. and Saltelli, A., 2022. The delusive accuracy of global irrigation water withdrawal estimates. *Nature communications*, 13(1), p.3183.
- 273) Cipolla, G., Calabrese, S., Porporato, A. and Noto, L.V., 2022. Effects of precipitation seasonality, irrigation, vegetation cycle and soil type on enhanced weathering—modelling of cropland case studies across four sites. *Biogeosciences*, 19(16), pp.3877-3896.
- 274) Bertagni, M.B. and Porporato, A., 2022. The carbon-capture efficiency of natural water alkalization: implications for enhanced weathering. *Science of The Total Environment*, 838, p.156524.
- 275) Anand, S.K., Bonetti, S., Camporeale, C., Hooshyar, M. and Porporato, A., 2022. Comment on “Groundwater Affects the Geomorphic and Hydrologic Properties of Coevolved Landscapes” by Litwin et al. *Journal of Geophysical Research: Earth Surface*, 127(10), p.e2022JF006669.
- 276) Calabrese, S., Wild, B., Bertagni, M.B., Bourg, I.C., White, C., Aburto, F., Cipolla, G., Noto, L.V. and Porporato, A., 2022. Nano-to global-scale uncertainties in terrestrial enhanced weathering. *Environmental Science & Technology*, 56(22), pp.15261-15272.
- 277) Anand, S.K., Bonetti, S., Camporeale, C. and Porporato, A., 2022. Inception of Regular Valley Spacing in Fluvial Landscapes: A Linear Stability Analysis. *Journal of Geophysical Research: Earth Surface*, 127(11), p.e2022JF006716.

- 278) Bertagni, M.B., Pacala, S.W., Paulot, F. and Porporato, A., 2022. Risk of the hydrogen economy for atmospheric methane. *Nature communications*, 13(1), p.7706.
- 279) Cerasoli, S. and Porporato, A., 2023. California's groundwater overdraft: An environmental Ponzi scheme? *Journal of Hydrology*, p.129081.
- 280) Yin J. and Porporato A., 2023 Global Self-Similar Scaling of Terrestrial Carbon with Aridity, *Geophys. Res. Letters*, 50(3) e2022GL101040.
- 281) Perri, S., Levin, S., Hedin, L.O., Wunderling, N. and Porporato, A., 2023. Socio-political feedback on the path to net zero. *One Earth*.
- 282) Montana, F., Camporeale, C., Porporato, A. and Rondoni, L., 2023. Inertial and geometrical effects of self-propelled elliptical Brownian particles. *Physical Review E*, 107(5), p.054607.
- 283) Cerasoli, S. and Porporato, A., 2023. Optimal Resource Allocation for Carbon Mitigation. *Sustainability*, 15(13), p.10291.
- 284) Yin, J. and Porporato, A., 2023. Global distribution of climatic aridity. *Geophysical Research Letters*, 50(20), p.e2023GL105228.
- 285) Anand, S.K., Bertagni, M.B., Singh, A. and Porporato, A., 2023. Eikonal equation reproduces natural landscapes with threshold hillslopes. *Geophysical Research Letters*, 50(21), p.e2023GL105710.
- 286) Perri, S., Detto, M., Porporato, A., & Molini, A. (2023). Salinity-induced limits to mangrove canopy height. *Global Ecology and Biogeography*.
- 287) MB Bertagni, RH Socolow, JMP Martirez, EA Carter, C Greig, Y Ju, ... and A Porporato, Minimizing the impacts of the ammonia economy on the nitrogen cycle and climate, *Proceedings of the National Academy of Sciences* 120 (46), e2311728120
- 288) SK Anand, MB Bertagni, A Singh, A Porporato, Eikonal equation reproduces natural landscapes with threshold hillslopes, *Geophysical Research Letters* 50 (21), e2023GL105710
- 289) SK Anand, MB Bertagni, TD Drivas, A Porporato, Self-similarity and vanishing diffusion in fluvial landscapes, *Proceedings of the National Academy of Sciences* 120 (51), e2302401120

□ **Invited Presentations and Keynote Talks (selected):**

- 1) Rodriguez-Iturbe I., F. Laio, A. Porporato and L. Ridolfi, (2000) “Intensive or extensive use of soil moisture: plant strategies to cope with stochastic water availability.” Fall Meeting, American Geophysical Union, San Francisco. Abstract in *EOS Trans.* AGU, November 2000. **(Invited)**.
- 2) Porporato A., P. D’Odorico, F. Laio, and I. Rodriguez-Iturbe (2001) “Water balance and soil nitrogen cycle: fluctuations at different time scales”. Abstract in *EOS Trans.* American Geophysical Union, November 2001 **(Invited)**
- 3) A Porporato (2002) *Prediction for pulse effects on soil carbon and nitrogen using a stochastic soil moisture model*, Workshop on Resource Pulse Use in Semi-Arid Ecosystems, University of Arizona, Tucson, USA, August 2002 **(Invited)**.
- 4) Porporato A., *Hydrologic controls on vegetation*, XXVIII Convegno Nazionale di Idraulica e Costruzioni Idrauliche, Potenza, Italy, 16-19 Settembre 2002 **(Keynote talk)**.
- 5) D’Odorico P., Porporato A., Laio F. and I. Rodriguez-Iturbe (2002) *Soil moisture and nitrogen cycle modeling in arid environments*. Proc. of the 1st CNR-Princeton workshop, Princeton, USA, October 23-25, 2002 **(Invited)**.
- 6) D’Odorico, P.; Laio, F.; Porporato, A.; Rodriguez-Iturbe, I, The Impact Of Climatic Extremes on the Nitrogen Cycle. Nice (France), April 2003, Joint AGU-EGS Assembly **(Invited)**.
- 7) A. Porporato, *International Alpine Summer School, Fundamental Issues in Geophysics and Environmental Fluid Mechanics*, Course XIII: Water-Vegetation Interaction and Biodiversity in Changing Environment, Valsavarenche, Italy, June 13-22, 2005 **(Invited)**.
- 8) A. Porporato, Patterns in Ecohydrology: soil, climate and vegetation Interactions. *Sir Mark Oliphant Conference: International Frontiers of Science and Technology Thresholds and Pattern Dynamics: A New Paradigm for Predicting Climate Driven Processes for Sustainable Land and Water Management*, July 3–7, 2005 The University Club, The University of Western Australia, Perth, Australia **(Keynote talk)**.
- 9) A. Porporato, Ecohydrological interactions, Invited presentation at the Round Table: ‘*Monitoring the Health of the Planet*’, organized by the *National Research Council’s Board on Earth Sciences and Resources*, Santa Fe, November 4, 2005 **(Invited)**.
- 10) Porporato A., Rigby J. and I. Rodriguez-Iturbe, 2005, Stochastic Models of Pulse-Reserve Dynamics in Water-Limited Ecosystems, AGU Fall Meeting Dec 2005. Abstract in *Eos Trans. AGU*, 86(52), Fall Meet. Suppl., Abstract B31E-05 **(Invited)**.
- 11) Porporato, A.; Manzoni, S. Nonlinearities and eco-hydrological feedbacks in soil carbon and nitrogen cycles, European Geosciences Union General Assembly 2006 Vienna, Austria, 02 – 07 April 2006 **(Invited)**.

- 12) Utah State University, Logan: "Stochastic soil moisture dynamics and plant water stress", Feb 2007 (**Invited**).
- 13) Center for Nonlinear and Complex Systems, Duke University: "Random Jumps in Ecohydrology", May 2008 (**Invited**).
- 14) "Noise in Life 2007: Stochastic dynamics in the Neurosciences"; invited lecture on 'Dynamical systems with state dependent jumps', Max Plank Institute for the Physics of Complex Systems, Dresden, Nov 7-9, 2007 (**Invited**).
- 15) Manzoni S., P.A. Fay, H.W. Polley, G. Katul, and A. Porporato, 2008. Nonlinear grassland dynamics along a CO₂ gradient. 38th Annual Biological System Simulation Group Conference, Blackland Research & Extension Center, Texas Agricultural Experiment Station, Temple, TX (**Invited**).
- 16) A. Porporato, 'Theory of Hydrology' session of the Colorado CUAHSI Biennial Colloquium on Hydrologic Science and Engineering, July 14-16 2008 Boulder CO (**Invited**).
- 17) A. Porporato, 'Biogeochemistry and Ecohydrology in complex terrain' session of the Colorado CUAHSI Biennial Colloquium on Hydrologic Science and Engineering, July 14-16 2008 Boulder CO (**Invited**).
- 18) A. Porporato, Ecohydrology and Ecophysiology of Plants in Water-Limited Environments" The University of Western Australia, Perth, WA, Australia 15-19 September 2008 (**Keynote talk**).
- 19) A. Porporato, EPFL-Landolt bank program in "Innovative Strategies for a Sustainable Future," **keynote address** at the opening meeting. Sept. 26, 2008.
- 20) A Porporato, Max Plank Institute for Biogeochemistry. Jena, Germany, February 2009. Invited talk.
- 21) S Manzoni and A Porporato, Hydrologic controls on the nitrogen cycles. **Invited talk** at the AEESP 2009 conference on Grand Challenges in Environmental Engineering and Science: Research and Education, 26-29 July 26-29, the University of Iowa, USA.
- 22) Porporato A., Manzoni S., and G. Vico (2010). Integrating water, carbon, and nutrient cycling at the landscape scale (**Invited**). Eos Trans. AGU, Fall Meet. Suppl., Abstract B22E-03.
- 23) Porporato A., Vico G., and S. Manzoni (2010). Sustainable use of water resources and nutrients under stochastic rainfall variability: Ecohydrology of managed ecosystems (**Invited**). Latsis Symposium 2010, EPFL, Lausanne, Switzerland.
- 24) Porporato A., Vico G., and S. Manzoni (2010). Exploring the continuum between rainfed and stress-avoidance irrigation in seasonally-dry regions (**Invited**). Eos Trans. AGU, Joint Meet. Suppl., Abstract H31A-04.

- 25)Manzoni S. and A. Porporato (2010). Stoichiometric vs. hydroclimatic controls on soil biogeochemical processes (**Invited to plenary session**). European Geosciences Union General Assembly, Abstract EGU2010-6796.
- 26)Porporato A., Manzoni S., Molini A., Rigby J. R., and G. Vico (2010). Biologically defined extremes: survival and ecosystem shifts under climate change (**Invited**). European Geosciences Union General Assembly, Abstract EGU2010-14226.
- 27)Porporato A. Ecohydrology and ecosystem biodiversity. Meetings of the Americas, Cancun May 2013 **Invited Plenary Talk**
- 28)Porporato A., Sustainable use of soil and water resources in semiarid, managed ecosystems Ecohydrology Meeting, June 2013, Beer Sheva, Israel (**Invited**).
- 29)Porporato A. **Distinguished Seminar Series**, Univ. of Saskachewan Oct 2014.
- 30)Porporato A. Active role of plants in hydroclimate, Andlinger Center, **Distinguished Seminar Series**, Nov 2014, Princeton.
- 31)**Borland Lecture in Hydrology**, Hydrology Days, March 23 2015 Colorado State University, CO.
- 32)University of Minnesota, October 2, 2018, **Distinguished seminar series**.
- 33) Interpore 2019 Valencia – **invited speaker** Ecohydrology: interactions of life and water around a porous medium.”
- 34)AGU Fall meeting 2022: Porporato, A.M. and Yin, J., 2022, December. Global self-similar scaling of terrestrial carbon stock with aridity. In Fall Meeting 2022. AGU (invited).
- 35)Intrusion – international conference on environmental porous media – **keynote talk**. June 2023, Bari
- 36)Ecohydrology summer school – Univ. of Palermo. Invited Lecturer.

Publications, Abstracts of conference presentations:

No longer reported

Publications, Thesis-Dissertations:

- 1) Porporato A. (1992) *On the precision in the measurement of turbulent quantities and study of the velocity profile*. M.S. Thesis (in Italian).
- 2) Porporato A. (1996) *Searching for low-dimension elements in near-wall turbulence*. Ph.D. Thesis (In Italian).

Interdisciplinary activities (excerpta):

Bass Connections project: Beauty in Balance and Balance in Beauty: An Exploration of the Laws of Physics in Abstract Modern Art (2016-2017), Duke University

<https://bassconnections.duke.edu/project-teams/beauty-balance-and-balance-beauty-exploration-laws-physics-abstract-modern-art-2016>

CEE art exhibit (Nov 2017), Duke university: <https://cee.duke.edu/about/news/home-grown-artists-reveal-works-cee-department-walls>

Nov 30th, 2018 -- Nature's Nation faculty panel "confluence of environmental science and art" – Princeton University Museum:

<https://www.princeton.edu/news/2018/12/05/natures-nation-faculty-panel-explores-confluence-environmental-science-and-art>