

GIANLUCA BOTTER

PERSONAL DATA

Born in Conegliano (TV) on 2/28/1976.

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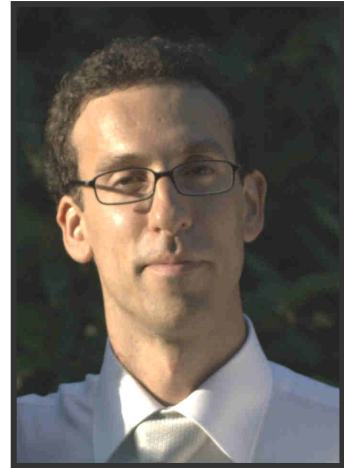
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CURRENT POSITION

Associate Professor (Professore Associato Confermato SSD ICAR/02), University of Padova

EDUCATION AND EMPLOYEMENT RECORD

High School Diploma, Liceo Scientifico “Galileo Galilei”, Conegliano, TV (score 60/60) (1995)

Degree in Environmental Engineering (Laurea in Ingegneria per l’Ambiente ed il Territorio), University of Padova (110/110). (Thesis title: “Trasporto di soluti reattivi a scala di bacino”; M. Marani and A. Rinaldo advisors) (2001)

Professional Engineer (2002-)

Ph.D., Doctoral School “Hydrodynamics and Environmental Engineering”, University of Padova (Thesis title: “Basin-scale transport models”; A. Rinaldo advisor) (2005)

Visiting Research Associate, Department of Civil and Environmental Engineering, Duke University, Durham (NC) USA (2005-2006)

Post-doctoral fellow, Department IMAGE, University of Padova (2006-2007);

Research Associate, Department IMAGE and International Center for Hydrology “D. Tonini”, University of Padova. (2007 - 2008)

Assistant Professor (Ricercatore Universitario Confermato SSD ICAR/02), University of Padova (2008 - 2014)

Associate Professor (Professore Associato Confermato SSd ICAR/02), University of Padova (2014 -)

TEACHING ACTIVITY

Graduate and Doctoral Courses:

“Water resources management” (Gestione delle risorse idriche), M. Sc. in Environmental Engineering (Laurea Specialistica in Ingegneria per l’Ambiente ed il Territorio), University of Padova – (2007 -)

“Mathematical Methods III: Stochastic processes” (Metodi Matematici III: Processi stocastici), Doctoral School in Civil and Environmental Engineering Sciences, University of Padova – (2006 - 2011)

“Hydrology” (Idrologia), Bachelor Degree in Environmental Engineering (Laurea Triennale in Ingegneria per l’ambiente ed il territorio), University of Padova – (2011 -)

“Statistics and data analysis”, Doctoral School in Civil and Environmental Engineering Sciences, University of Padova – (2012-)

Supervisorship:

Advisor or supervisor of several Ph.D. thesis: Stefano Zanardo (University of Padova, 2009-2011); Paolo Benettin (University of Padova, 2011-2014); Behnam Doulatyari (University of Neuchatel, 2011-2015); Stefano Basso (University of Neuchatel, 2012-); Gianluca Lazzaro (University of Padova, 2013-), Andrea Betterle (University of Neuchatel, 2015-), Marta Ferrazzi (University of Padova, 2015-), Silvia Garbin (University of Padova, 2015-).

SCIENTIFIC ACTIVITY

Author or co-author of more than 100 works, including more than 50 papers in peer-reviewed journals (ISI h-index= 19, 915 citations) and 2 book chapters.

Member of the Editorial Board of *Advances in Water Resources*. Reviewer for several international journals, including *Nature Climate Change*, *PNAS*, *Water Resources Research*, *Journal of Hydrology*, *Geophysical Research Letters*, *Hydrology and Earth System Sciences*, *Advances in Water Resources*, *Ecohydrology*, *Hydrological Sciences Journal*, *Journal of Environmental Management*, *Environmental Science & Technology*, *Environmental Modelling & Software*.

Lecturer at several international and national congresses (including most of the recent European Geosciences Union American Geophysical Union meetings and the Italian Conference of Hydraulics and Hydraulic Engineering). Several invited lectures during national and international conferences.

He has been involved in several national/international research projects funded by the Italian Ministry for University and Research, the Italian Research Council and the European Community: RIMOF “Rischio Idraulico e Morfodinamica Fluviale” (2004-2005); AQUATERRA EU project (2004-2009); CARIPARO project “Transport phenomena in catchments: hydro-geophysical experiments and modelling” (2008 -); PRIN project “Analysis of flow and transport processes at the hillslope scale”, local coordinator of the University of Padova Research Unit (2010 -); ex-60% MIUR project “Sviluppo ed applicazione di un approccio eco-idrologico per la valutazione dell’effetto degli invasi artificiali sulle risorse idriche”, principal investigator (2009 - 2011); Progetto di Ateneo “Impatto del regime idrologico sulle dinamiche trofiche in ecosistemi fluviali”, principal investigator (2010 - 2012); ex-60% MIUR project “Funzioni di memoria per la modellazione dei processi di trasporto a scala di bacino: indagini teoriche e numeriche”, principal investigator (2011 - 2013); SNF project “River Floodplain”, co-P.I.

(2013-2017); EU-ITN *Marie Curie training network ADVOCATE*, associate partner (2013-2015); EU-ITN *Marie Curie training network HYPOTRAIN*. Associate partner (2015-).

AWARDS

Winner of the Torricelli Award (2008-2010) – best under-34 Italian researcher in the hydraulic disciplines.

2011 Outstanding Referee Citation for Excellence in Refereeing (*Water Resources Research*), American Geophysical Union.

2013 Outstanding Reviewer Award for the scientific journal *Advances in Water Resources*, Elsevier.

RESEARCH ACTIVITY

The research activity (carried out both in Italy and in the United States) mainly concerns the following areas:

- 1) **Catchment-scale flow processes and models of the hydrologic response:** basin scale flow processes have been analyzed in the general theoretical framework defined by the formulation of transport by travel time distributions. The research in this area dealt with the study of the interactions between rainfall, morphologic and transport features to define the hydrologic response of a river basins across scales. The work done in this area concerned the development (and the application) of continuous-time hydrologic models, aimed at describing in a stochastic framework some relevant short-term and long-term properties of the catchment response. The application of the tools developed for flood forecasting and the design/management of hydraulic engineering devices in real-world contexts has been also addressed. Papers related to the above issues are papers B1, B4, B5, B6, B15, B49, C1, D1, D2, D3, D5 and D8 in the list below;
- 2) **Observation and modelling of solute transport processes in the hydrologic response:** most of the chemical species transported by streamflows derives from the interaction between rainfall and soil (e.g., immobile soil moisture or mineral soil components). The transport of solutes through the hydrologic response is thus eminently controlled by the residence time of water, which defines both the catchment “memory” of past chemical inputs and the time available for mass transfer processes occurring in hillslopes. Coupled flow and transport models has been developed, studied theoretically and applied to some relevant solute species, including isotopes, nitrates, pesticides and lithium. Experimental observations have been carried out to improve the understanding of the hydrological processes driving the mobilization of solutes during rainfall events. A coherent analytical, stochastic framework has been developed to explain the different properties of hydrograph and chemical responses of river basins, and to relate the residence and travel time distribution in hillslopes to the underlying climate, soil and vegetation features. Papers relevant to the above issues are papers B2, B3, B4, B5, B13, B16, B19, B26, B27, B28, B29, B32, B35, B37, B44, B45, B46, B47, B48, B52, D4 and D6 of the list below;
- 3) **Hydrologic controls on nutrient cycling and transport:** the fate of the nutrients stored in the soil-water system is strongly affected by the stochastic variability of rainfall, which is

transmitted to soil moisture (which controls the microbial and photosynthetic activity) and streamflows (which control the in-stream removal rate due to hyporheic exchange and uptake). These complex dynamics have been explored in a stochastic framework, both numerically and analytically. In particular, the research activities dealt with the modelling of nitrogen and chloride transport from spatially distributed sources to the river network and then to the receiving water bodies. The various interactions among climate, soil, vegetation, hydrological processes and anthropogenic impacts have been carefully analyzed, and novel analytical expressions for the pdf of the soil nitrate content, and of the removal rate constant in streams have been derived. Publications dedicated to this issue are B6, B12, B22 and D7 in the list below;

- 4) **Characterization of natural river flow regimes:** streamflows are the dynamical byproduct of heterogeneous hydro-meteorological and ecological processes. The pronounced temporal variability of streamflows, indeed, reflects the random characters of key hydrologic fluxes (e.g. precipitation), and the heterogeneity of underlying transport dynamics. An analytical probabilistic characterization of the streamflows has been obtained by linking streamflow dynamics to the underlying precipitation patterns via large-scale soil moisture dynamics. Two distinct hydrologic regimes (leading to different shapes of the streamflow pdf) have been identified on the basis of simple climatic, soil vegetation and transport parameters. The model has been validated by means of the analysis of continuous streamflow measurements in several catchments throughout the world. The approach has been used to evaluate the impact of long-term hydroclimatic fluctuations on streamflow regimes. In this framework, the importance of streamflow variability for riverine ecosystems has been also pointed out. The papers related to the above issue are papers B7, B8, B9, B10, B14, B17, B20, B21, B23, B24, B25, B30, B31, B33, B34, B36, B40, B41, B42, B50, B51, C2, D9, D10, D11 and D12 in the list below;
- 5) **Anthropogenic alteration of river regimes:** the anthropogenic exploitation of water resources provides valuable services to humans, like energy production and sanitary services. However, the regulation of rivers by means of dams, weirs, withdrawals, etc may lead to a diffuse overexploitation of surface water resources and severe disturbances to natural flow regimes, with potentially dramatic consequences for riverine environments. The impact of anthropogenic regulation on river flow regimes has been analysed in the papers A2, A4, A5, A6, A9, A13, B20, B30, B38, B40, B43, D12 and D14 of the list below.

SOLICITED TALKS

- A1) **Botter, G.**, Ecoidrologia, scienza e Ingegneria: quali connessioni? *Giornata di Studi sull'Idrologia*, Università della Basilicata, Potenza, 2006.
- A2) **Botter, G.**, Fluttuazioni stocastiche della precipitazione e regime idrologico dei bacini naturali ed antropizzati, *XXXII Convegno Nazionale di Idraulica e Costruzioni Idrauliche*, Palermo, 2010.
- A3) **Botter, G.**, Eco-hydrological characterization of streamflow probability distributions, *Latsis Symposium*, Ecole Polytechnique Fédérale de Lausanne, 2010.
- A4) **Botter, G.** and A. Rinaldo, Acqua, energia e biodiversità, “*Acqua ed Energia – giornata mondiale dell'acqua 2011*”, Accademia Nazionale dei Lincei, Roma, 2011.

- A5) **Botter G.**, Mini-idroelettrico, capacità ottimale e sostenibilità, “*la strategia energetica in Italia ed il ruolo delle fonti rinnovabili*”, Associazione Idrotecnica Italiana, Napoli, 2013.
- A6) **Botter G.**, Hydroclimatic fluctuations and river flow regimes, *Environmental Engineering Seminar Series - EESS | ENAC – EPFL*, Lausanne, 2013.
- A7) Basso S., G. Lazzaro, M. Schirmer, **G. Botter**, Hydro-economic performances of streamflow withdrawal strategies: the case of small run-of-river power plants, *10th General Assembly of the European Geosciences Union*, Vienna, 2014.
- A8) **Botter G.**, Travel time distributions and catchment scale transport models: recent advances and new challenges, *INRS-VIU-UniPD International workshop on hydrogeology and hydrogeology sciences*, Venice, 2014.
- A9) **Botter G.**, S. Basso, G. Lazzaro, A. Rinaldo, River flow regime alterations induced by hydropower production, *1st International Symposium on Energy Challenges and Mechanics*, Aberdeen, 2014.
- A10) **Botter G.**, Modeling river hydrochemistry using dynamic travel time distributions: recent advances and new challenges, *2014 Seminar Series @ University of Minnesota, St. Paul (MN)*, 2014.
- A11) **Botter G.**, P. Benettin, K. McGuire, J. Kirchner, Modeling river hydrochemistry using dynamic travel time distributions, *11th General Assembly of the European Geosciences Union*, Vienna, 2014.
- A12) **Botter G.**, P. Benettin, A. Rinaldo, StorAGE Selection Functions: a new tool for characterizing dispersion processes and catchment scale solute transport, *11th General Assembly of the European Geosciences Union*, Vienna, 2014.
- A13) **Botter G.**, Freshwater, Energy Production and Ecosystem Services of River Networks, *International Conference “FRESHWATER AND CULTURE” @ EXPO2015: Feeding the Plant – Energy for life*, Milano, 2015

PUBLICATIONS

Papers on peer-reviewed international journals (ISI h-index=19, number of citations = 915):

- B1) **Botter, G.**, and A. Rinaldo, Scale effect on geomorphological and kinematic dispersion, *Water Resources Research*, 39(10), doi:10.1029/2003WR002154, 2003.
- B2) **Botter G.**, E. Bertuzzo, A. Bellin and A. Rinaldo, On the Lagrangian formulations of reactive solute transport in the hydrologic response, *Water Resources Research*, 41(10), doi:10.1029/2004WR003544, 2005.
- B3) Rinaldo A., E. Bertuzzo and **G. Botter**, Nonpoint source transport models from empiricism to coherent theoretical frameworks, *Ecological Modelling*, 184, 19-35, 2005.
- B4) Rinaldo, A., **G. Botter**, E. Bertuzzo, T. Settin, A. Uccelli, and M. Marani, Transport at basin-scales, 1. Theoretical framework, *Hydrology and Earth System Sciences*, 10, 19-29, 2006.

- B5) Rinaldo, A., **G. Botter**, E. Bertuzzo, T. Settin, A. Uccelli, and M. Marani, Transport at basin-scales, 2. Applications, *Hydrology and Earth System Sciences*, 10, 31-48, 2006.
- B6) **Botter G.**, T. Settin, M. Marani and A. Rinaldo, A stochastic model of nitrate transport and cycling, *Water Resources Research*, 42, W04415, doi:10.1029/2005WR004599, 2006.
- B7) **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 components of the hydrologic response, *Water Resources Research*, 43, W02417, doi:10.1029/2006WR005043, 2007.
- B8) **Botter, G.**, A. Porporato, E. Daly, I .Rodriguez-Iturbe and A. Rinaldo, Probabilistic characterization of base flows in river basins: roles of soil, vegetation and geomorphology, *Water Resources Research*, 43, W06404, doi:10.1029/2006WR005397, 2007.
- B9) Settin, T., **G. Botter**, I .Rodriguez-Iturbe and A. Rinaldo, Numerical studies of soil moisture distributions in heterogeneous catchments, *Water Resources Research*, 43, W05425, doi:10.1029/2006WR005737, 2007.
- B10) **Botter, G.**, F. Peratoner, A. Porporato, I. Rodriguez-Iturbe, and A. Rinaldo, Signatures of large-scale soil moisture dynamics on streamflow statistics across U.S. climate regimes, *Water Resources Research*, 43, W11413, doi:10.1029/2007WR006162, 2007.
- B11) Kim K., A.M. Thompson and **G. Botter**, Modeling of thermal runoff response from an asphalt-paved plot in the framework of the mass response functions, *Water Resources Research*, 44, doi:10.1029/2007WR005993, 2008.
- B12) **Botter, G.**, A. Porporato, I. Rodriguez-Iturbe, and A. Rinaldo, Probabilistic dynamics of soil nitrate: the coupling of eco-hydrological and bio-geochemical processes, *Water Resources Research*, 44, doi:10.1029/2007WR006108, 2008.
- B13) **Botter G.**, F. Peratoner, M. Putti, A. Zuliani, R. Zonta, A. Rinaldo and M. Marani, Observation and modeling of catchment scale solute transport in the hydrologic response: a tracer study, *Water Resources Research*, 44, doi:10.1029/2007WR006611, 2008.
- B14) **Botter, G.**, S. Zanardo, A. Porporato, I. Rodriguez-Iturbe and A. Rinaldo, Eco-hydrological model of flow duration curves and annual minima, *Water Resources Research*, 44, W08418, doi:10.1029/2008WR006814, 2008.
- B15) Rinaldo, A., L. Nicotina, E. Alessi Celegon, F. Beraldin, **G. Botter**, L. Carniello, G. Cecconi, a. Defina, T. Settin, A. Uccelli, L. D'Alpaos, M. Marani, Sea level rise, hydrologic runoff, and the flooding of Venice, *Water Resources Research*, 44, W12434, doi:10.1029/2008WR007195, 2008.
- B16) **Botter, G.**, E. Milan, E. Bertuzzo, S. Zanardo, M. Marani, A. Rinaldo, Inferences from a tracer circulation experiment, *Journal of Hydrology*, 369, 368-380, doi: 10.1016/j.jhydrol.2009.02.012, 2009.
- B17) **Botter, G.**, A. Porporato, I. Rodriguez-Iturbe, and A. Rinaldo, Nonlinear storage-discharge relations and catchment streamflow regimes, *Water Resources Research*, 45, W10427, doi:10.1029/2008WR007658, 2009.
- B18) Rao, P. S. C., N. B. Basu, S. Zanardo, **G. Botter**, A. Rinaldo, Contaminant load-discharge relationships across scales in engineered catchments: Order out of complexity, *18th World*

- B19) **Botter, G.**, E. Bertuzzo, and A. Rinaldo, Transport in the hydrologic response: Travel time distributions, soil moisture dynamics, and the old water paradox, *Water Resources Research*, doi:10.1029/2009WR008371, 2010.
- B20) **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 Resources Research*, doi:10.1029/2009WR008523, 2010.
- B21) Suweis, S., E. Bertuzzo, **G. Botter**, A. Porporato, I. Rodriguez-Iturbe, and A. Rinaldo, Impact of stochastic fluctuations in storage-discharge relations on streamflow distributions, *Water Resources Research*, doi:10.1029/2009WR008038, 2010.
- B22) **Botter, G.**, N. Basu, S. Zanardo, P.S.C. Rao, A. Rinaldo, Stochastic modeling of nutrient losses in streams: interactions of climatic, hydrologic and biogeochemical controls, *Water Resources Research*, doi:10.1029/2009WR008758, 2010.
- B23) Ceola, S., **G. Botter**, E. Bertuzzo, A. Porporato, I. Rodriguez-Iturbe, A. Rinaldo, Comparative study of ecohydrological streamflow probability distributions, *Water Resources Research*, doi:10.1029/2010WR009102, 2010.
- B24) **Botter, G.**, Stochastic recession rates and the probabilistic structure of streamflows, *Water Resources Research*, doi:10.1029/2010WR009217, 2010.
- B25) Muneeppeerakul, R., S. Azaele, **G. Botter**, A. Rinaldo, I. Rodriguez-Iturbe, Gamma pulse model for daily streamflow analysis: a two-scaled application, *Water Resources Research*, doi:10.1029/2010WR009286, 2010.
- B26) **Botter, G.**, E. Bertuzzo, and A. Rinaldo, Catchment residence and travel time distributions: The master equation, *Geophysical Research Letters*, 38, L11403, doi:10.1029/2011GL047666, 2011.
- B27) Rinaldo, A., K. J. Beven, E. Bertuzzo, L. Nicotina, J. Davies, A. Fiori, D. Russo, and **G. Botter**, Catchment travel time distributions and water flow in soils, *Water Resources Research*, 47, W07537, doi:10.1029/2011WR010478, 2011.
- B28) **Botter, G.**, Catchment mixing processes and travel time distributions, *Water Resources Research*, 48, doi:10.1029/2011WR011160, 2012.
- B29) Zanardo, S., N. B. Basu, **G. Botter**, A. Rinaldo, and P. S. C. Rao, Dominant controls on pesticide transport from tile to catchment scale: Lessons from a minimalist model, *Water Resources Research*, 48, doi:10.1029/2010WR010088, 2012.
- B30) Basso, S. and **G. Botter**, Streamflow variability and optimal capacity of run-of-river hydropower plants, *Water Resources Research*, 48, W10527, doi:10.1029/2012WR012017, 2012.
- B31) Ceola, S., E. Bertuzzo, L. Mari, **G. Botter**, I Hödl, T.J. Battin, M. Gatto, and A. Rinaldo, Light and hydrologic variability as drivers of stream biofilm dynamics in a flume experiment, *Ecology*, 10.1002/eco.1357, 2014.

- B32) Bertuzzo, E., M. Thomet, **G. Botter** and A. Rinaldo, Catchment-scale herbicides transport: Theory and application, *Advances in Water Resources*, vol. 52, p. 232-242, doi: 10.1016/j.advwatres.2012.11.007, 2013.
- B33) Ceola, S., I. Hödl, M. Adlboller, G. Singer, E. Bertuzzo, L. Mari, **G. Botter**, J. Waringer, T.J. Battin, A. Rinaldo, Hydrologic variability affects Invertebrate grazing on phototrophic biofilms in stream microcosms, *PLoS ONE*, 8(4), doi: 10.1371/journal.pone.0060629, 2013.
- B34) Schaepli, B., A. Rinaldo and **G. Botter**, Analytic probability distributions for snow-dominated streamflow, *Water Resources Research*, 49, 2701–2713, doi:10.1002/wrcr.20234, 2013.
- B35) Benettin, P., Y. van der Velde, S. E. A. T. M. van der Zee, A. Rinaldo, and **G. Botter**, Chloride circulation in a lowland catchment and the formulation of transport by travel time distributions, *Water Resources Research*, 49, 4619–4632, doi: 10.1002/wrcr.20309, 2013.
- B36) **Botter, G.**, S. Basso, I. Rodriguez-Iturbe, A. Rinaldo, Resilience of river flow regimes, *Proceedings of the National Academy of Sciences of the United States of America*, 110 (32) , doi: 10.1073/pnas.131192011012925-12930, 2013.
- B37) Benettin, P., A. Rinaldo, **G. Botter**, Kinematic of age mixing in advection-dispersion models, *Water Resources Research*, 49, 8539-8551, doi: 10.1002/2013WR014708, 2013.
- B38) Lazzaro, G., S. Basso, M. Schirmer, **G. Botter**, Water management strategies for run-of-river power plants: Profitability and hydrologic impact between the intake and the outflow, *Water Resources Research*, 49, 8285-8298, doi: 10.1002/2013WR014210, 2013.
- B39) Park, J., **G. Botter**, J. Jawitz, P.S.C. Rao, Stochastic modeling of hydrologic variability of geographically isolated wetlands: Effects of hydro-climatic forcing and wetland bathymetry, *Advances in Water Resources*, <http://dx.doi.org/10.1016/j.advwatres.2014.03.007>, 2014.
- B40) **Botter, G.**, Flow regime shifts in the Little Piney creek (US), *Advances in Water Resources*, 71, 54-65, doi: <http://dx.doi.org/10.1016/j.advwatres.2014.05.010>, 2014.
- B41) Doulatyari, B., S. Basso, M. Schirmer, **G. Botter**, River flow regimes and vegetation dynamics along a river transect, *Advances in Water Resources*, 83 (285-298), <http://dx.doi.org/10.1016/j.advwatres.2014.06.015>, 2014.
- B42) Doulatyari, B., A. Betterle, S. Basso, B. Biswal, M. Schirmer, **G. Botter**, Predicting streamflow distributions and flow duration curves from landscape and climate, *Advances in Water Resources*, DOI:10.1016/j.advwatres.2015.06.013, 2015.
- B43) Lazzaro, G. and **G. Botter**, Run-of-river power plants in Alpine regions: whither optimal capacity?, *Water Resources Research*, 51(7), DOI:10.1002/2014WR016642, 2015.
- B44) Rinaldo, A., P. Benettin, C. Harman, M. Hrachowitz, K. McGuire, Y. Van der Velde, E. Bertuzzo, **G. Botter**, Storage selection functions: A coherent framework for quantifying how catchments store and release water and solutes, *Water Resources Research*, 51(6), 4840-4847, DOI: 10.1002/2015WR017273, 2015.
- B45) Benettin, P., JW Kirchner, A Rinaldo, **G Botter**. Modeling chloride transport using travel time distributions at Plynlimon, *Wales, Water Resources Research*, 51(4), DOI: 10.1002/2014WR016600, 2015.

- B46) Benettin, P., A. Rinaldo, **G. Botter**, Tracking residence times in hydrological systems, forward and backward formulations, *Hydrological Processes*, DOI:10.1002/hyp.10513, 2015.
- B47) Queloiz, P., E. Bertuzzo, L. Carraro, G. Botter, F. Miglietta, P.S.C. Rao, A. Rinaldo, Transport of fluorobenzoate tracers in a vegetated hydrologic control volume: 1. Experimental results, *Water Resources Research*, 51(4), DOI:10.1002/2014WR016433, 2015.
- B48) Queloiz, P., L. Carraro, P. Benettin, **G. Botter**, A. Rinaldo, E. Bertuzzo, Transport of fluorobenzoate tracers in a vegetated hydrologic control volume: 2. Theoretical inferences and modeling, *Water Resources Research*, 51(4), DOI:10.1002/2014WR016508, 2015.
- B49) F. Comola, B. Schaepli, P. Da Ronco, **G. Botter**, M. Bavay, A. Rinaldo, M. Lehning, Scale-dependent effects of solar radiation patterns on the snow-dominated hydrologic response, *Geophysical Research Letters*, 42(10), DOI:10.1002/2015GL064075, 2015.
- B50) Basso, S., M. Schirmer, **G. Botter**, Climate and landscape controls on effective discharge, *Geophysical Research Letters*, 42(12), DOI:10.1002/2015GL066014, 2015.
- B51) Basso, S., M. Schirmer, **G. Botter**, On the emergence of heavy-tailed streamflow distributions, *Advances in Water Resources*, 82, 98-105, DOI:10.1016/j.advwatres.2015.04.013
- B52) Benettin P., S.W. Bailey, J.L. Campbell, M.B. Green, A. Rinaldo, G.E. Likens, K. McGuire, **G. Botter**, Linking water age and solute dynamics in streamflow at the Hubbard Brook Experimental Forest, NH, USA, *Water Resources Research*, 51(12), DOI:10.1002/2015WR017552, 2015.

Book Chapters:

- C1) Ferri, M., M. Marani, **G. Botter**, T. Settin, A. Uccelli, A. Rinaldo, “Il modello idrologico del Piave chiuso a Nervesa” on *Rischio Idraulico e Morfodinamica Fluviale*, Cierre Grafica, 2005.
- C2) A. Castellarin, D. Huges, **G. Botter**, A. Viglione, T.B.M.J. Ouarda, M. Sivapalan, R. Vogel, C. Spence, D. Post, “ Prediction of flow duration curves in ungauged catchments” on *Runoff Prediction in Ungauged Basins - Synthesis across Processes, Places and Scales*, edited by G.Blöschl, M. Sivapalan, H. Savenije and T. Wagener, Cambridge University Press, 2013.

Conference papers and Proceedings:

- D1) Rinaldo, A., M. Marani, S. Silvestri, **G. Botter**, A. Bellin, R. Rigon, M. Ferri, F. Baruffi, A. Rusconi, Modelli geomorfologici - MonteCarlo per la previsione di piene fluviali: Fiume Brenta chiuso a Bassano, *XXVIII Congresso di Idraulica e Costruzioni Idrauliche, Potenza*, 3, 23-27, 2002.
- D2) Rinaldo, A., M. Marani, S. Silvestri, **G. Botter**, A. Bellin, R. Rigon, M. Ferri, F. Baruffi, A. Rusconi, Sul tempo di ritorno delle piene: metodi geomorfologici-montecarlo e fiume Brenta chiuso a Bassano, *Atti Lincei*, ACL-198, 2004
- D3) Rinaldo, A., M. Marani, S. Silvestri, **G. Botter**, A. Bellin, R. Rigon, M. Ferri, F. Baruffi, A. Rusconi, Sulle piene del Brenta chiuso a Bassano, *Istituto Veneto di Scienze, Lettere ed Arti*, 2004.

- D4) **Botter, G.**, A. Bellin, M. Marani, A. Rinaldo, Reactive transport models at basin scale, *XXIX Convegno di Idraulica e Costruzioni Idrauliche*, Trento, 2, 533-541, 2004.
- D5) Ferri, M., F. Baruffi, A. Rusconi, **G. Botter**, T. Settin, A. Uccelli, M. Marani, A. Rinaldo, Sulle piene del fiume Piave chiuso a Nervesa della Battaglia, *XXIX Convegno di Idraulica e Costruzioni Idrauliche*, Trento, 2, 107-115, 2004.
- D6) Rinaldo, A. and **G. Botter**, Flow and transport at basin scale, new tools, open problems, *SOWA meeting*, Praga, 2004.
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