

Curriculum Vitae

Mario Putti

BUSINESS ADDRESS:: :

University of Padova
Department of Mathematics
via Trieste 63
35121 Padova - Italy

Education

Laurea, Civil Engineering, University of Padua, Italy, 1984.

M.S., Civil Engineering, University of California at Los Angeles, 1987.

Ph.D., Civil Engineering, University of California at Los Angeles, 1989.

Positions Held

Postdoctoral Fellow, University of California Los Angeles, 1989-1990.

Assistant Professor, Dept. of Mathematical Methods and Models for Scientific Applications,
University of Padua, Italy, 1990-2001.

Visiting Professor, University of California at Los Angeles, USA, 2007-2008

Associate Professor, Dept. of Mathematical Methods and Models for Scientific Applications,
University of Padua, Italy, 2001-2011.

Associate Professor, Dept. of Mathematics, University of Padua, Italy, 2012-now.

Lecturer, Scuola Galileiana di Studi Superiori, University of Padua, Italy, 2009-2010.

Abilitazione Scientifica Nazionale di I Fascia (bando D.D. 1532/2016 settore concorsuale
01/A5), 2017-2023.

Teaching

Calcolo Numerico e Programmazione, 1st year Engineering Students, University of Padova;

Metodi Numerici per l'Ingegneria, 4th year Engineering Students, University of Padova;

Groundwater Hydrology, Graduate Course at UCLA, 2008;

Metodi Numerici per PDE, Scuola Galileiana di Studi Superiori, University of Padova.

Metodi Numerici per Equazioni Differenziali, 4th year Mathematics Students, University of
Padova.

Numerical Methods for Continuous Systems, 4th year Mathematical Engineering Students, University of Padova.

Introduction to hyperbolic conservation laws and their numerical solution, Phd School in Civil and Environmental Engineering Sciences, University of Padova.

Professional Societies

Member of SIAM (Society for Industrial and Applied Mathematics)

Member of AGU (American Geophysical Union)

Member of GNCS (Italian Gruppo Nazionale per il Calcolo Scientifico)

Professional Services

Reviewer for the following Journals:

SIAM J. Sci. Comput., SIAM J. Numer. Anal., J. Comput. Physics, Int. J. Numer. Meth. Engng., J. Comput. Geosci., Water Resour. Res., Adv. Water Res., Transport in Porous Media, J. of Hydrology.

Project proposal reviewer for the following Research Organizations:

ITALIAN CIVR, MIUR; US National Science Foundation; Spanish National Science Foundation; Swiss National Science Foundation; Israel-US Bilateral Science Foundation; ANR-the French National Research Agency.

Professional Achievements

Co-founder University spin off M3E s.r.l. (Mathematical Methods and Models for Engineering, <http://www.m3eweb.it>).

Software Licence (GPL) for the CATHY Model.

PhD Supervision

PhD student supervision and co-supervision (in Italy and abroad): A Mazzia (1994-1997); AC Bixio (1996-2000); M Camporese (2003-2006); G Passadore (2003-2007); M Monego (2005-2008); M Altissimo (2005-2010); O Tosatto (2005-2010); F Zanello (2007-2010); C Corrado (2007-2010); A Siade (2007-2012); D Schiavazzi (2010-2013); D Pasetto (2010-2013); G Manoli (2011-2014), C. Scudeler (2013-2016), E. Facca (2014-2018), E. Bachini (2016-).

Post doc supervision: M. Camporese, S. Weill, G. Fadda, D. Pasetto, E. Perracchione, E. Facca.

PhD Evaluation Committees

- Thesis Reviewer, Dipartimento di Matematica F. Brioschi Ph. D. course in Mathematical Engineering. Politecnico di Milano, Italy. February 2010.
- Thesis Reviewer, Dipartimento di Ingegneria del Territorio, Corso di Dottorato in Ingegneria del Territorio. Università degli Studi di Cagliari, Italy. December 2012.
- Member “Final Examination Committee”, PhD Program in Fluid Mechanics, University of Zaragoza, Spain. September 2013.
- Member “Final Examination Committee” Department of Civil and Environmental Engineering, PhD in Environmental Engineering, Università degli Studi di Trento, Italy. February 2014.
- Member “Final Examination Committee” Department of Civil and Environmental Engineering, PhD in Environmental and Infrastructure Engineering, Politecnico di Milano, Italy. March 2014.
- Member “Final Examination Committee” Dipartimento di Matematica F. Brioschi. Ph.D. Course in Mathematical Models and Methods for Engineering Politecnico di Milano, Italy. September 2014.
- Thesis Reviewer, Dipartimento di Matematica F. Brioschi Ph. D. course in Mathematical and Methods for Engineering. Politecnico di Milano, Italy. December 2017.
- Member “Final PhD Examination Committee” Department of Mathematics, University of Bergen, Norway, 2018

Promotion Committees

- Member “Commissione di Concorso Ricercatore tipo A”, University of Padova, Italy, 2016;
- Member “Commissione di Concorso Ricercatore tipo A”, University of Verona, Italy, 2016;
- Member “Commissione di Concorso Ricercatore tipo B”, Politecnico di Milano, Italy, 2017;
- Member “Comité de selection pour l’emploi de professeur des université - 1^{ère} classe”, Université Pierre et Marie Curie - Sorbonne, Paris, France, 2016.

Support letters for promotion committees of the following institutions:

Ben Gurion University of the Negev, Israel; Colorado School of Mines, USA; Ohio State University, USA; Sandia National laboratories, USA; UCLA, USA; UT-Austin, USA; UT-El Paso, USA.

Selected Recent Invited Presentations

- Invited Presentation. “Time step and stability control for a coupled model of surface and subsurface flow”; XVI Conference on Computational Methods in Water Resources, Chapel Hill, North Carolina, 2004.
- Key Note Plenary Lecture. “Modeling surface-subsurface water interactions at the catchment scale”; XVII Conference on Computational Methods in Water Resources, Copenhagen, Denmark, 2006.
- Key Note Plenary Lecture. “Modellazione matematica dei bacini fluviali”, Conference MUA2007 La Matematica Oggi per l’Uomo e per l’Ambiente, Florence, Italy, March 31, 2007.
- Research Seminar. “Soluzione numerica delle equazioni di flusso e trasporto in mezzi porosi in presenza di anisotropia”; IMATI-CNR-Pavia, June 2007.
- Research Seminar. “Surface-subsurface water interaction in catchment simulations”; UCLA, Los Angeles, CA, USA, October 2007.
- Research Seminar. “Ecohydrological Processes in Salt Marshlands of the Venice Lagoon”; Research Seminar Series, USGS, Menlo Park, CA, USA, March 2008.
- Research Seminar. “Data assimilation in an integrated surface-subsurface flow model”; Lawrence Livermore National Laboratory, Livermore, CA, USA, May 2008.
- Invited Presentation. “Effective permeability in the numerical solution of anisotropic diffusion Problems”; workshop on Discretization methods for viscous flows. 2009, Porquerolles, France.
- Invited Presentation. “Surface-groundwater flow coupling based on boundary condition switching”; SIAM Conference on Mathematical and Computational Issues in the Geosciences, 2009, Leipzig, Germany.
- Invited Presentation. “Ensemble Kalman Filter vs. Particle Filter for a Physically Based Coupled Model of Surface-Subsurface Flow”, AGU Fall Meeting, San Francisco, 2010.
- Research Seminar. “Immersed Finite Element and Data Assimilation for Environmental Applications”, EFLUM-EPFL, Lausanne, CH, 2011.
- Invited Presentation. “Intercomparison of fully coupled surface/subsurface hydrologic models: an ongoing effort”, Water Research Horizon Conference, UFZ, Berlin, 2011.
- Invited Presentation. “POD-based Monte Carlo technique for the solution of stochastic groundwater flow problems”, ENUMATH Conference, Leicester, UK, 2011
- Research Seminar. “POD-based Monte Carlo techniques for the solution of stochastic groundwater flow problems”, LHyGeS, University of Strasbourg, France, 2011.

- Invited Workshop Presentation. “Data assimilation in integrated surface-subsurface flow models of catchment dynamics”, SIMAI Conference, Turin, 2012.
- Research Seminar. “Finite volumes and mixed finite elements for anisotropic diffusion equations” Kolloquium des Departments Mathematik, University of Erlangen-Nürnberg, Germany, 2013.
- Invited Presentation. “Some mechanisms of soil-plant-atmosphere interaction.” 6th International Conference on Porous Media & Annual Meeting, Milwaukee, USA, 2014.
- Research Seminar. “Computational fluid-dynamics and applications to environmental problems”. Lectures on Computational Fluid Dynamics and Applications. Seminario LIFTEC, Campus Rio Ebro, Universidad Zaragoza, Spain, 2014.
- Research Seminar. “Modeling Shallow Water Flow on General Terrain” Institute of Mechanics, Materials and Civil Engineering, Université Catholique de Louvain, Belgium, 2015.
- Research Seminar. “Theory, numerics and applications of optimal transportation problems” Kolloquium Angewandte Mathematik, University of Erlangen-Nürnberg, Germany, 2015.
- Invited Workshop Presentation. “A biologically inspired deduction of the Monge-Kantorovich equation: an unexpected branching source.” Working day on Branched Transport, April 5th, 2016, Université Paris-Sud, Orsay, France
- Invited Workshop Presentation. “Biologically inspired formulation of optimal transportation problems”, Workshop Transport problems in Zurich, April 25, 2017.
- Research Seminar. “Biologically inspired formulation of optimal transportation problems. An unexpected branching source.” Santa Fe Institute of Complexity, July 26, 2017.
- Research Seminar. “Numerical solution of optimal transportation problems via a biologically inspired formulation.” Los Alamos National Laboratory, GT5, July 31, 2017.
- Invited Presentation. “A Monge-Kantorovich based model of plant root dynamics in soils.” ENUMATH-Voss, September 26, 2017.
- Invited Workshop Presentation. “Modeling plant root dynamics via Optimal Transport.” INRIA, November 7, 2017.
- Invited Workshop Presentation. “Solvers for problems with irregular structure arising in branch transport problems” Finse, Norway, January 10, 2018.

Organization of Recent International Conferences

- Co-Organizer of the International Symposium: Water Resources Systems Analysis: the Contributions of William Yeh. UCLA, 2008.
- (with Reed Maxwell) Special Session: Coupled surface-subsurface modeling across a range of temporal and spatial scales. Computational Methods in Water Resources, San Francisco, USA, 2008.

- (with Carol Woodward) Minisymposium: Iterative Solvers for Environmental Simulations, SIAM Geoscience, Long Beach, USA, 2011.
- (with Stephan Kollet, Reed Maxwell) Workshop: Integrated Hydrologic Model Intercomparison Workshop: Benchmark Simulations, Colorado School of Mines, USA, 2011.
- (with Carol Woodward) Minisymposium: Advances in Nonlinear and Linear Solvers for Water Resources Applications. Computational Methods in Water Resources, Urbana Champagne, USA, 2012.
- Co-Chair of the 2013 SIAM Conference on Mathematical and Computational Methods in the Geosciences, Padova, Italy, June 2013.
- (with Claudio Paniconi) Interdisciplinary Workshop on Frontiers in Hydrology and Geoscience, Venice International University, Venice, Italy, 2014.
- (with Dirk Pflüger) Minisymposium: Advances in Nonlinear and Linear Solvers. Computational Methods in Water Resources, Stuttgart, Germany, 2014.
- Co-Chair of the 2015 VII Interpore Annual Meeting, Padova, Italy, May 2015.
- (with Stefano Lanzoni and Simona Perotto) Minisymposium: Mathematical and numerical solution of PDEs on manifolds, SIAM Geoscience, Stanford, USA, 2015.
- (with Reed Maxwell) Minisymposium: Integrated hydrologic models: Advancements and applications. Computational Methods in Water Resources, Toronto, Canada, 2016.
- Organizing committee, SIAM GS 2017 SIAM Conference on Mathematical and Computational Issues in the Geosciences, Erlangen, Germany, September 11-14, 2017.
- (with Michel Kern, Geraldine Pichot, Carol Woodward) Minisymposium: Advances in Numerical Solvers for Water Resources Applications. Computational Methods in Water Resources, Saint Malo, France, 2018.

Recent Research Grants

- 2006-2008: Multiscale monitoring of CO₂ fluxes from agricultural soils and modeling of the spatial variability of the sources for quantification and control of emission into the atmosphere. Funded by University of Padova.
- 2008-2011: Transport phenomena in hydrological catchments: hydrological and geophysical-experiments and modelling, funded by Fondazione Cariparo
- 2010-2013: Nonlinear Partial Differential Equations: models, analysis, and control-theoretic problems, funded by Fondazione Cariparo.
- 2010-2013: EU Framework Programme 7 Collaborative Project CLIMB. Theme 6.3 Environmental Technologies, ENV.2009.1.1.5.2.
- 2010-2015: CARBOSTOP, funded by Ministero dell'Agricoltura e Foreste.

2014-2018: EU Framework Programme 7 Collaborative Project GLOBAQUA, Managing the Effects of Multiple Stressors on Aquatic Ecosystems under Water Scarcity, G.A. no. 603629.

2017-2018: Approximation and Discretization Methods for PDEs on Manifolds for Environmental Modeling. Funded by University of Padova.

2017-2020: EU Horizon 2020. ERA-NET-COFUND program, ERA-PLANET: The European network for observing our changing planet.

2017-2020: Miur. COFUND program, GEO-Essential. Essential Variables Workflows for Resource Efficiency and Environmental Management.

Bibliometric Indices

Scopus: # papers 115, # citations 2094, h-index: 25

Google scholar: # citations 3575, h-index: 30

Recent Research Interests

Numerical solution of Optimal Transport problems and applications

Shallow water equations on manifolds

Mimetic Finite Differences and Virtual Element Methods

Spectral methods on general domains

Machine learning and Data assimilation for environmental applications

PREPRINTS

- [1] E. Facca, F. Cardin, and M. Putti. Extended dynamic-monge-kantorovich equations for congested and branched transport problems. *SIAM J. Appl. Math.*, Submitted.(arXiv:1811.12691), 2018.
- [2] E. Facca, S. Daneri, F. Cardin, and M. Putti. Numerical solution of monge-kantorovich equations via a dynamic formulation. *SIAM J. Sci. Comput.*, Submitted(arXiv:1709.06765v1), 2018.
- [3] G. Manzini, G. Maguolo, and M. Putti. The high-order mixed mimetic finite difference method for time-dependent diffusion problems. *SIAM J. Num. Anal.*, Submitted, 2018.

JOURNAL PUBLICATIONS

- [4] L. Bergamaschi, E. Facca, A. Martínez, and M. Putti. Spectral preconditioners for the efficient numerical solution of a continuous branched transport model. *J. Comput. Appl. Math.*, In press, 2018.
- [5] I. Fent, M. Putti, C. Gregoretto, and S. Lanzoni. Modeling shallow water flows on general terrains. *Adv. Water Resources*, 121:316–332, 2018.
- [6] E. Facca, F. Cardin, and M. Putti. Towards a stationary Monge-Kantorovich dynamics: the Physarum Polycephalum experience. *SIAM J. Appl. Math.*, 78(2):651–676, 2018.
- [7] M. Bogoni, M. Putti, and S. Lanzoni. Modeling meander morphodynamics over self-formed heterogeneous floodplains. *Water Resour. Res.*, 53:5137–5157, 2017.
- [8] K. Haaken, G. P. Deidda, G. Cassiani, R. Deiana, M. Putti, C. Paniconi, C. Scudeler, and A. Kemna. Flow dynamics in hyper-saline aquifers: Hydro-geophysical monitoring and modeling. *HESS*, 21:1439–1454, 2017.
- [9] S. Kollet, M. Sulis, R. M. Maxwell, C. Paniconi, M. Putti, G. Bertoldi, E. T. Coon, E. Cordano, S. Endrizzi, E. Kikinzon, E. Mouche, C. Mglér, Y.-J. Park, J. C. Refsgaard, S. Stisen, and E. Sudicky. The integrated hydrologic model intercomparison project, IH-MIP2: A second set of benchmark results to diagnose integrated hydrology and feedbacks. *Water Resour. Res.*, 53:867–890, 2017.
- [10] D. Pasetto, M. Ferronato, and M. Putti. A reduced order model-based preconditioner for the efficient solution of transient diffusion equations. *Int. J. Numer. Methods Eng.*, 109:1159–1179, 2017.
- [11] C. Scudeler, C. Paniconi, D. Pasetto, and M. Putti. Examination of the seepage face boundary condition in subsurface and coupled surface/subsurface hydrological models. *Water Resour. Res.*, 53:1799–1819, 2017.
- [12] G. Cassiani, J. Boaga, M. Rossi, M. Putti, G. Fadda, B. Majone, and A. Bellin. Soilplant interaction monitoring: Small scale example of an apple orchard in Trentino, North-Eastern Italy. *Sci. Total Env.*, 543:851–861, 2016.

- [13] C. Scudeler, M. Putti, and C. Paniconi. Mass-conservative reconstruction of Galerkin velocity fields for transport simulations. *Adv. Water Resources*, 94:470–485, 2016.
- [14] C. Scudeler, L. Pangle, D. Pasetto, G.-Y. Niu, T. Volkmann, C. Paniconi, M. Putti, and P. Troch. Multiresponse modeling of variably saturated flow and isotope tracer transport for a hillslope experiment at the Landscape Evolution Observatory. *HESS*, 20:4061–4078, 2016.
- [15] L. Beirão da Veiga, G. Manzini, and M. Putti. Post processing of solution and flux for the nodal mimetic finite difference method. *Num. Meth. PDE*, 31(1):336–363, 2015.
- [16] S. Bonetti, G. Manoli, J.-C. Domec, M. Putti, M. Marani, and G. G. Katul. The influence of water table depth and the free atmospheric state on convective rainfall predisposition. *Water Resour. Res.*, 51(4):2283–2297, 2015.
- [17] G. Manoli, S. Bonetti, E. Scudiero, F. Morari, M. Putti, and P. Teatini. Modeling soilplant dynamics: Assessing simulation accuracy by comparison with spatially distributed crop yield measurements. *Vadose Zone J.*, 14:–, 2015.
- [18] G. Manoli, M. Rossi, D. Pasetto, R. Deiana, S. Ferraris, G. Cassiani, and M. Putti. An iterative particle filter approach for coupled hydro-geophysical inversion of a controlled infiltration experiment. *J. Comp. Phys.*, 283:37 – 51, 2015.
- [19] C. Paniconi and M. Putti. Physically based modeling in catchment hydrology at 50: Survey and outlook. *Water Resour. Res.*, pages n/a–n/a, 2015.
- [20] D. Pasetto, G.-Y. Niu, L. Pangle, C. Paniconi, M. Putti, and P. A. Troch. Impact of sensor failure on the observability of flow dynamics at the Biosphere 2 LEO hillslopes. *Adv. Water Resources*, 86:327–339, 2015.
- [21] G. Passadore, A. Sottani, L. Altissimo, M. Putti, and A. Rinaldo. Groundwater thermal monitoring to characterize streambed water fluxes of the brenta river (northern italy). *Procedia Env. Sci.*, 25:199 – 205, 2015.
- [22] M. Rossi, G. Manoli, D. Pasetto, R. Deiana, S. Ferraris, C. Strobbia, M. Putti, and G. Cassiani. Coupled inverse modeling of a controlled irrigation experiment using multiple hydro-geophysical data. *Adv. Water Resources*, 82:150 – 165, 2015.
- [23] J. Boaga, A. D’Alpaos, G. Cassiani, M. Marani, and M. Putti. Plant-soil interactions in salt marsh environments: Experimental evidence from electrical resistivity tomography in the venice lagoon. *Geophys. Res. Lett.*, 41(17):6160–6166, 2014. 2014GL060983.
- [24] G. Manoli, S. Bonetti, J. C. Domec, M. Putti, G. Katul, and M. Marani. Tree root systems competing for soil moisture in a 3d soil-plant model. *Adv. Water Resources*, 66:32–42, 2014.
- [25] R. Maxwell, M. Putti, S. Meyerhoff, J. d. Delfs, I. e. Ferguson, V. Ivanov, J. Kim, O. g. Kolditz, S. Kollet, M. Kumar, S. Lopez, J. Niu, C. Paniconi, Y. Park, M. Phanikumar, C. Shen, E. Sudicky, and M. Sulis. Surface-subsurface model intercomparison: A first

- set of benchmark results to diagnose integrated hydrology and feedbacks. *Water Resour. Res.*, 50, 2014.
- [26] G.-Y. Niu, D. Pasetto, C. Scudeler, C. Paniconi, M. Putti, P. A. Troch, S. B. DeLong, K. Dontsova, L. Pangle, D. D. Breshears, J. Chorover, T. E. Huxman, J. Pelletier, S. R. Saleska, and X. Zeng. Incipient subsurface heterogeneity and its effect on overland flow generation – insight from a modeling study of the first experiment at the biosphere 2 landscape evolution observatory. *HESS*, 18:1873–1883, 2014.
- [27] D. Pasetto, A. Guadagnini, and M. Putti. A reduced-order model for monte carlo simulations of stochastic groundwater flow. *Comput. Geosci.*, 18:157–169, 2014.
- [28] D. Pasetto, M. Putti, and W. W.-G. Yeh. A reduced-order model for groundwater flow equation with random hydraulic conductivity: Application to monte carlo methods. *Water Resour. Res.*, 49:1–14, 2013.
- [29] L. Bergamaschi, R. Bru, A. Martinez-Calomardo, J. Mas, and M. Putti. Low rank update of preconditioners for the nonlinear richards equation. *Math. Comp. Model.*, 57(7):1933–1941, 2013.
- [30] A. Lovison, F. Comola, P. Teatini, C. Janna, M. Ferronato, M. Putti, and G. Gambolati. Model calibration of a geomechanical problem with efficient global optimization. *Dolomites Res. Notes Approx.*, 6:140–150, 2013.
- [31] G. Manoli, S. Bonetti, E. Scudiero, P. Teatini, P. Binning, F. Morari, M. Putti, and M. Marani. Monitoring and modeling farmland productivity along the venice coastland, italy. *Procedia Env. Sci.*, 19:361–368, 2013.
- [32] S. Weill, M. Altissimo, G. Cassiani, R. Deiana, M. Marani, and M. Putti. Saturated area dynamics and streamflow generation from coupled surfacesubsurface simulations and field observations. *Adv. Water Resources*, 59:196–208, 2013.
- [33] L. Bergamaschi, R. Bru, A. Martinez-Calomardo, and M. Putti. Quasi-Newton acceleration of ILU preconditioners for two-phase flow equations in porous media. *Adv. Engng. Soft.*, 46:63–68, 2012.
- [34] O. Cainelli, A. Bellin, and M. Putti. On the accuracy of classic numerical schemes for modeling flow in saturated heterogeneous formations. *Adv. Water Resources*, 47:43–55, 2012.
- [35] D. Pasetto, M. Camporese, and M. Putti. Ensemble kalman filter versus particle filter for a physically-based coupled surfacesubsurface model. *Adv. Water Resources*, 47, 2012.
- [36] G. Passadore, M. Monego, L. Altissimo, A. Sottani, M. Putti, and A. Rinaldo. Alternative conceptual models and the robustness of groundwater management scenarios in the multi-aquifer system of the central veneto basin, italy. *Hydrogeology Journal*, 20:419–433, 2012.
- [37] A. Siade, M. Putti, and W. W.-G. Yeh. Reduced order parameter estimation using quasi-linearization and quadratic programming. *Water Resour. Res.*, 48:W06502, 2012.

- [38] W.-C. Cheng, M. Putti, D. R. Kendall, and W. W.-H. Yeh. A real-time groundwater management model using data assimilation. *Water Resour. Res.*, 47:W06528, 2011.
- [39] A. Mazzia, G. Manzini, and M. Putti. Bad behavior of godunov mixed methods for strongly anisotropic advection-dispersion equations. *J. Comp. Phys.*, 230:8410–8426, 2011. 10.1016/j.jcp.2011.07.021.
- [40] D. Pasetto, A. Guadagnini, and M. Putti. Pod-based monte carlo approach for the solution of regional scale groundwater flow driven by distributed recharge. *Adv. Water Resources*, 34:14501463, 2011.
- [41] S. Weill, A. Mazzia, C. Paniconi, and M. Putti. Coupling water flow and solute transport into a physically-based surfacesubsurface hydrological model. *Adv. Water Resources*, 34:128–136, 2011.
- [42] F. Zanello, P. Teatini, M. Putti, and G. Gambolati. Long term peatland subsidence: Experimental study and modeling scenarios in the venice coastland. *J. Geophys. Res.*, 116:F04002, 2011.
- [43] J. Barco, T. S. Hogue, M. Girotto, D. R. Kendall, and M. Putti. Climate signal propagation in southern california aquifers. *Water Resour. Res.*, 46:W00F05, 2010.
- [44] M. Camporese, C. Paniconi, M. Putti, and S. Orlandini. Surface-subsurface flow modeling with path-based runoff routing, boundary condition-based coupling, and assimilation of multisource observation data. *Water Resour. Res.*, 46:W02512, 2010.
- [45] A. Lovison, G. Manzini, A. Maritan, M. Putti, and A. Rinaldo. Spanning traceroutes over modular networks and general scaling degree distributions. *Phys. Rev. E*, 81(3):036105, Mar 2010.
- [46] M. Monego, G. Cassiani, R. Deiana, M. Putti, G. Passadore, and L. Altissimo. A tracer test in a shallow heterogeneous aquifer monitored via time-lapse surfcae ERT. *Geophysics*, 75:WA61–WA73, 2010.
- [47] A. Siade, M. Putti, and W. W.-G. Yeh. Snapshot selection for groundwater model reduction using proper orthogonal decomposition. *Water Resour. Res.*, 46:W08539, 2010.
- [48] M. Sulis, S. B. Meyerhoff, C. Paniconi, R. M. Maxwell, M. Putti, and S. J. Kollet. A comparison of two physics-based numerical models for simulating surface watergroundwater interactions. *Adv. Water Resources*, 33(4):456–467, 2010.
- [49] P. Teatini, M. Ferronato, G. Gambolati, D. Baù, and M. Putti. Anthropogenic venice uplift by seawater pumping into a heterogeneous aquifer system. *Water Resour. Res.*, 46:W11547, 2010.
- [50] M. Camporese, C. Paniconi, M. Putti, and P. Salandin. Ensemble Kalman filter data assimilation for a process-baes catchment scale model of surface and subsurface flow. *Water Resour. Res.*, page W10421, 2009.

- [51] M. Camporese, C. Paniconi, M. Putti, and P. Salandin. Comparison of data assimilation techniques for a coupled model of surface and subsurface flow. *Vadose Zone J.*, 8(4):1–9, 2009.
- [52] W.-C. Cheng, D. R. Kendall, M. Putti, and W. W.-G. Yeh. A nudging data assimilation algorithm for the identification of groundwater well pumping rates. *Water Resour. Res.*, 45:W08434, 2009.
- [53] G. Gambolati, P. Teatini, M. Ferronato, T. Strozzi, L. Tosi, and M. Putti. On the uniformity of anthropogenic Venice uplift. *Terra Nova*, 21(6):467–473, 2009.
- [54] M. Putti and F. Sartoretto. Linear Galerkin vs. mixed finite element 2D flow fields. *Int. J. Numer. Methods Fluids*, 60:1011–1031, 2009.
- [55] O. Tosatto, E. Belluco, S. Silvestri, N. Ursino, A. Comerlati, M. Putti, and M. Marani. Reply to comment on spatial organization and ecohydrological interactions in oxygen-limited vegetation ecosystems by marani et al., by l. r. gardner. *Water Resour. Res.*, 45:W05604, 2009.
- [56] G. Botter, 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 Resour. Res.*, 44:W05409, 2008.
- [57] M. Camporese, M. Putti, P. Salandin, and P. Teatini. Spatial variability of CO₂ efflux in a drained cropped peatland south of Venice, Italy. *J. Geophys. Res.*, 113:G04018, 2008.
- [58] N. Casteletto, M. Ferronato, G. Gambolati, M. Putti, and P. Teatini. Can Venice be raised by pumping water underground? a pilot project to help decide. *Water Resour. Res.*, 44:W01408, 2008.
- [59] F. Cardin, A. Lovison, and M. Putti. Implementation of an exact finite reduction scheme for steady state diffusion-reaction problems. *Int. J. Numer. Methods Eng.*, 69:1804–1818, 2007.
- [60] C. D’Haese, M. Putti, C. Paniconi, and N. Verhoest. Assessment of adaptive and heuristic time stepping for variably saturated flow. *Int. J. Numer. Methods Fluids*, 53:1173–1193, 2007.
- [61] M. Manzini and M. Putti. Mesh locking effects in the finite volume solution of 2-d anisotropic diffusion equations. *J. Comp. Phys.*, 220:751–771, 2007.
- [62] L. Bergamaschi, R. Bru, A. Martinez, and M. Putti. Quasi-Newton preconditioners for the inexact Newton method. *Electronic Trans. Num. Anal.*, 23:76–87, 2006.
- [63] M. Camporese, S. Ferraris, M. Putti, P. Salandin, and P. Teatini. Hydrological modeling in swelling/shrinking peat soils. *Water Resour. Res.*, 42:W06420, 2006.

- [64] A. Comerlati, M. Ferronato, G. Gambolati, M. Putti, and P. Teatini. Fluid-dynamical and geomechanical effects of CO_2 sequestration below the Venice lagoon. *Environmental & Engineering Geoscience*, 12:87–102, 2006.
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