

PERSONAL INFORMATION

Annunziato Siviglia



Department of Civil, Environmental and Mechanical Engineering (DICAM) University of Trento
Via Mesiano, 77
38123
Trento

+39-0461-281941

annunziato.siviglia@unitn.it
nunzio.siviglia@gmail.com

Skype nunzio_siviglia

ORCID: orcid.org/0000-0003-1192-1596

Scopus Author ID: 2502931040

Sex Male | Date of birth 14/03/1971 | Nationality Italian

EMPLOYMENT HISTORY

October 2019 –today

Associate Professor in Hydraulics

Department of Civil, Environmental and Mechanical Engineering (DICAM) University of Trento

March 2013 –September 2019

Senior Scientist and Lecturer

Laboratory of Hydraulics, Hydrology and Glaciology (VAW), ETH Zurich

April 2006 - November 2012

Postdoc – Research Fellow

Department of Civil and Environmental Engineering, University of Trento

- Hydropeaking modeling and related ecohydraulics processes

July 2003 - March 2006

Postdoc – Research Fellow

DIAM (now DICCA), University of Genoa, Italy

- Numerical modelling of free-surface flows and sediment transport

January 2000 - December
2002

Ph.D Grant

DIAM (now DICCA), University of Genoa, Italy

- Ph.D in Environmental Fluid Mechanics

EDUCATION AND TRAINING

2003

Ph.D in Environmental Fluid Mechanics

DIAM (now DICCA), University of Genoa, Italy (visiting Ph.D, student at Manchester Metropolitan University in 2001)

- Fluid Dynamics and Environmental Engineering Processes

1999

MSc in Environmental Engineering

University of Genoa, Italy

- Fluvial Hydraulics

PERSONAL SKILLS

Languages: *Italian* native speaker, *English* fluent

Communication skills

Good communication skills developed either teaching different courses or giving talks at international conferences

Organisational / managerial skills	Leadership and tutoring (Ph.D and Master students)
Job-related skills	Innovation and development for basic research and applied research

ADDITIONAL INFORMATION

- Affiliations**
- International Association for Hydro-Environment Engineering and Research, (IAHR)
 - American Geophysical Union (AGU)
 - Gruppo Italiano di Idraulica (GII)

- Major Institutional Activities**
- Technical Consultant for the Genova Law Court: Investigations on the November 10th, 2011 flood in the Fereggiano creek). (Trial duration 6 years)
 - Technical Consultant for the Genova Law Court: Investigations on the October 4th, 2010 flood in the Chiaravagna creek). (Trial duration 7 years)

- Sessions and Workshops organization**
- Dam breach analysis. STK/VAW-Workshop, Bern 26th April, 2017 (nearly 60 participants both from practice and academia)
 - Convenor of the European Geophysical Union (EGU) session: Numerical modelling of river morphodynamics, Wien, Austria (2014)
 - Convenor of the European Geophysical Union (EGU) session: Dam operations: abiotic and biotic effects, release management and mitigation/restoration options, Wien, Austria (2010 and 2011)

- Awards**
- Outstanding contribution in reviewing for Advance in Water Resources (2015)
 - Italian national scientific qualification as Associate Professor in the scientific sector 08/A1 Hydraulics, Hydrology, Hydraulic and Marine Structures (2013)

**Reviewing Activities
ISI Journals, books and
funding institutions**

Reviewer for the following ISI journals:

Aquatic Sciences, Advances in Water Resources, Computers & Fluids, Computers & Geosciences, Earth Surface Processes and Landforms, Ecohydrology, Frontiers, Geophysical Research Letters, Geomorphology, Hydrological Processes, International Journal of Sediment Research, Journal of Ecohydraulics, Journal of Fluid Mechanics, Journal of Computational Physics, Journal of Hydraulic Engineering, Journal of Hydraulic Research, Journal of Hydrology, Journal of Geophysical Research, Natural Hazards, Physical Review Letters, River Research and Applications, Science of Total Environment, Scientific Reports, Water Resources Research.

6 papers reviewed in 2020

Reviewer of the following book:

- Gradually-varied flow profiles in open channels: analytical solutions by using Gaussian hypergeometric functions (2014), in Springer Science & Business Media, Springer

Reviewer for the following funding institutions:

- Swiss National Science Foundation
- The Netherlands Organisation for Scientific Research

Editorial Responsibilities

Member of the Editorial Board of:

- International Journal of Sediment Research (2017-present)
- Journal of Ecohydraulics (2016-present)
- Advances in Water Resources (2015-present)

Guest Editor of the following special issues:

- Hydropeaking in regulated rivers - from process understanding to mitigation measure design. Science of the Total Environment (with C. Hauer from BOKU University and G. Zolezzi from University of Trento) (2017)
- Numerical modelling of river morphodynamics. Advances in Water Resources. Volume 93, Part A, pp. 1-150 (July 2016) (with A. Crosato from UNESCO-IHE Delft)
- Dam operations for sustainable regulated river management. River Research and Applications. Volume 28, Issue 6, pp. 675–792 (2012). (with M.C. Bruno, Fondazione Mach, Trento)

Supervision of junior researchers:

Current Ph.D students

- Cunico I. (DICAM, University of Trento). River Ecomorphodynamic modeling, (2020-2023)
- van Rooijen E. J. (ETH Zurich). Numerical modelling of mesohabitats, (2018-2021).
- Salerno L. (Polytechnic University of Turin). Rivers as catalysts of carbon sequestration (2018-2021). Co-supervision with Prof. C. Camporeale (Polytechnic University of Turin)

Former Ph.D students

- Caponi F. (ETH Zurich). BASEveg Eco-morphodynamic modelling for gravel bed rivers, (2015-2019)
- Peter S. (ETH Zurich). Dam break analysis under uncertainty, (2013 - 2017)
- Facchini M. (ETH Zurich). Re-establishment of the sediment continuum at an alpine reservoir: influence on river morphology, ecology and flood prevention, (2013 - 2017)
- Vanzo D. (University of Trento). Hydro- and Thermopeaking : effects, modelling and possible mitigation strategies, (2011 - 2015)
- Stecca G. (University of Trento). Numerical modelling of gravel-bed river morphodynamics, (2009 – 2012)

Visiting Ph.D students

- Carraro F. (University of Ferrara). Development of a new strategy for river morphodynamic upscaling to be used for long term simulations, (April – July 2016)
- Adami L. (University of Trento). River dynamics and alternate Bars in Alpine Rivers: numerical modeling over long spatial and temporal scales, (September 2014 – March 2015)

Postdocs:

- Vanzo D. Development of the in-house software BASEMENT: boundary conditions, wetting and drying algorithm, new numerical scheme and parallelization, (2015 – 2018)

Supervision of Master and
Project thesis:

Master thesis:

- Fantin D. (University of Trento). Numerical modeling of the eco-morphological evolution of the Allondon River, (2020).
- Boeswald L. (ETH Zurich). Characteristic timescale of interactions between vegetation and alternate gravel bar morphodynamics in the Alpine Rhine river, (2019)
- Pastzi P. (ETH Zurich). Study of fish mesohabitat dynamics in the Moesa river, (2019)
- Skourtis E. (ETH Zurich). Changes in habitat quality of benthic invertebrate and brown trout due to the hydropower system in the Maggia river, (2018)
- Koch A. (ETH Zurich). Vegetation pattern evolution on the alternate bars in the Alpine Rhine River: image analysis and numerical modelling, (2017)
- Anzellotti M. (University of L'Aquila). Numerical modelling of feedbacks between vegetation and alternate bars morphodynamics, (2017)
- Howald F. (ETH Zurich). Mitigation of fish stranding risk under hydropeaking scenarios: a modeling approach, (2016)
- Dalpiaz G. (University of Trento). Development of a modelling framework for the evaluation of the effectiveness of selective withdrawals from reservoirs in Switzerland to reduce thermal impact on downstream rivers, (2016)
- Bianco L. (University of Genova). One-dimensional modelling of morphological changes induced by repeated sediment bypass operations, (2016)
- Caponi F. (University of Trento). Eco-hydraulic river modelling at the Mesohabitat scale: an unsupervised approach, (2015)
- Montalvo I.V. (ETH Zurich). Dam break analysis: tools for the estimation of damages, (2014)
- Tettamanti S. (University of Trento). Numerical modeling of eco-morphological evolution of river bars, (2013)
- Carolli F. (University of Trento). Modelling white-water rafting suitability in the hydropower regulated Noce River, (2012)
- Vanzo D. (University of Trento). Morphodynamics of gravel bed rivers: a two-dimensional numerical study, (2011)
- Zanol M. (University of Trento). Modelling hydropeaking effects on the riparian aquifer, (2010).
- Piccolroaz S. (University of Trento). Numerical modelling of flood prevention in the Tagliamento River, (2009)
- Hatchkinson D. (University of Sheffield). The impacts of hydropower production on flow regime and ecology in alpine rivers, (2008)
- Avesani D. (University of Trento). 1-D numerical model for the simulation of thermopeaking waves in regulated rivers, (2007)

Project thesis:

- Pastzi P. (ETH Zurich). Modeling ecological effects of the recently proposed minimum flow releases in the Maggia river, (2018)
- Wetzel T. (ETH Zurich). Modeling vegetated bar morphodynamics in the Alpine Rhine river, (2018).
- Patrissi D. (ETH Zurich). Hydro-morphological evolution of Ticino River: field data analysis and preliminary numerical investigations, (2017)
- Arnold M. (ETH Zurich). Assessment of the numerical scheme for mobile bed computations implemented in BASEMENT, (2015)

Ph.D thesis examined

- Chavarrias V. (Delft University of Technology). Obtaining well-posedness in mathematical modelling of fluvial morphodynamic
- Cordier F. (Université de Paris-Est). Bars morphodynamics in trained rivers with heterogeneous sediment, (2018)
- Calvani G. (University of Florence). Riparian vegetation in fluvial environments: linking timescales through flow uprooting (2018)
- Pisaturo G. (University of Trento). Protection infrastructures and methods for reducing the impacts downstream of hydropower plants, (2017)
- Zia H. (University of Genève). A numerical model for simulating sediment routing in shallow water flow, (2015)
- Guillén-Ludeña S. (EPFL, Lausanne). Hydro-morphodynamics of open-channel confluences with low discharge ratio and dominant tributary sediment supply, (2015)
- Mazzuoli M. (University of Genova). Transition to turbulence in an oscillatory boundary layer and its effects on the motion of a rigid particle, (2013)

Teaching

Master courses:

2020 - present	Fluid Mechanics (University of Trento) (6 ECTS, nearly 200 students).
2017 - present	Ecohydraulics and Habitat Modelling (cutting-edge course for master students in Environmental Engineering at ETH) (3 ECTS, nearly 40 students, first edition in autumn 2017. I proposed and built the course with prof. R. Stocker, K. Jorde, P. Armin, V. Fernandez)
2017 - 2019	River Morphodynamic Modelling (in 2017 I proposed this new course for master students that is now offered in the spring semester at ETH to both Civil and Environmental engineers.) (3 ECTS, nearly 40 students, students' course evaluation 2017: 4/5)
2017 - 2019	Experimental and Computer Laboratory I: Flow module (ETH Zurich) (2 ECTS, nearly 30 students). Contents: Backwater curves with Hec-Ras and flood propagation with BASEMENT
2015 - 2019	Guest lecturer in the course Numerical Hydraulics. Topics: Finite volumes for shallow water equations and hydro- thermopeaking modeling (ETH Zurich) (nearly 50 students)
2013 – 2016	Numerical Modelling in Hydraulics and River Engineering (ETH Zurich) (3 ECTS, nearly 30 students)
2006 – 2012	Teaching assistant in the course: Programmazione e Algoritmi in Fortran 90/95 per Ingegneri Civili ed Ambientali (University of Trento)
2006 – 2012	Teaching assistant in the course: Hydrodynamics (University of Trento)
2003 – 2006	Teaching assistant in the course: Hydraulic II (University of Genova)

Ph.D courses:

2002	Teaching assistant in the course: Shock-Capturing Methods for Hyperbolic Partial Differential Equations held by Prof. E.F. Toro at University of Trento
------	---

Course for practitioners:

2002	Computation of water surface profiles with Hec-Ras (course offered to engineers working in La Spezia)
------	---

Further education

- Attendance of the course: *Foundations of Teaching and Learning* held by the Educational Development and Technology Department at ETH Zurich. (9-12 February 2018)

Invited talks

Plenary talks:

- 2021 Numerical modeling of gravel-bed rivers. Gravel Bed Rivers: Processes, resilience and management in a changing environment (GBR9), Chile
- 2015 Modeling of mixed-sediment morphodynamics in gravel bed rivers using the active layer approach: insights from mathematical and numerical analysis. Gravel-bed Rivers: Processes and Disasters (GBR8), Japan

Seminars:

- 2021 Eco-Morfodinamica fluviale: uno spostamento di paradigma. Accademia dei Lincei, World Water Day 2011, Rome
- 2019 Modeling vegetation controls on gravel bed river morphodynamics. Advances in Mathematical Modelling of Hydraulic and Morphodynamic Problems, Deltares (Delft).
- 2018 Riverbed and surface composition adjustments in a gravel-bed river subject to repeated sediment bypass tunnel operations. Swiss Competence Center for Energy Research Supply and Electricity (SCCER-SoE) Annual Conference, Luzern 14th September
- 2017 Feedbacks between plant roots and river morphodynamics: a modelling approach. Pre-conference short course of River Coastal and Estuarine Morphodynamics (RCEM) conference, Padova, Italy
Modelling the interactions between vegetation and morphodynamics in gravel bed rivers. EDF, Laboratoire d'Hydraulique Saint-Venant, France.
- 2015 Thermopeaking in Alpine streams: quantitative characterization of sub-daily alterations and mitigation effects to heatwaves. Eawag, Surface Waters - Research and Management (Surf), Luzern, Switzerland
Transcritical conditions and bistable solutions in collapsible tubes with discontinuous mechanical properties. From fluid dynamics to morphodynamics symposium, University of Genova
- 2014 Modeling vegetation controls on fluvial morphological trajectories. Workshop: Topics in Morphodynamics, University of Genova
- 2012 Hydro-Thermopeaking in Alpine streams: mathematical modelling and ecological effects. Norwegian University of Science and Technology , Trondheim
- 2011 Assessing hydrological and thermal alterations at multiple temporal scales: Adige and Noce River, Italy Geoitalia, Turin
Effetti eco-idraulici a valle degli impianti idroelettrici nei corsi d'acqua alpini. Accademia dei Lincei, World Water Day 2011, Rome
- 2008 Thermopeaking in Alpine streams: field observations, modelling and ecological effects. Leibniz-Institute of Freshwater Ecology and Inland Fisheries, Berlin
Morphodynamics of the natural environment. KRSU University, Kyrgystan
- 2006 One dimensional hydro-morphodynamics modelling: Numerical solutions and applications to natural rivers. University of Granada

Competitive research funding

Period	Title	Financed by	Role	Budget
2018 - 2021	Rivers as catalysts of carbon sequestration	Compagnia di San Paolo foundation	PI with Prof. C. Camporeale (Polytechnic University of Turin)	1 Ph.D
2017 - 2020	TiRiLab TicinoRivers Lab. Commissioned by Interreg Alpine Space Program, Federal Office for Spatial Development (ARE), Canton Ticino.	Interreg Alpine Space Program, Federal Office for Spatial Development (ARE), Canton Ticino.	PI with Prof. P. Molnar (ETH Zurich)	80,000 CHF
2015 - 2019	BASEveg Eco-morphodynamic modelling for gravel bed rivers.	Swiss National Science Fundation (SNSF)	PI	277,251 CHF

Major Projects

Period	Title	Financed by	Role	Budget
2017 - 2021	Mesohabitat modelling and morpholgy	Federal Office for the Environment (BAFU)	Project leader	1 Ph.D
2013 - 2017	Dam break analysis under uncertainty.	Swiss Federal Office of Energy (SFOE).	Project leader	1 Ph.D
2013 - 2017	Re-establishment of the sediment continuum at an alpine reservoir: influence on river morphology, ecology and flood prevention.	Federal Office for the Environment (BAFU)	Project leader	1 Ph.D
2013 - 2018	BASEMENT-basic simulation environment for computation of environmental flow and natural hazard simulation. Commissioned by Swiss Federal Office for Water and Geology (BWG) and Laboratory of Hydraulics, Hydrology and Glaciology (VAW).	Federal Office for the Environment (BAFU), Swiss Federal Office for Water and Geology (BWG) and Laboratory of Hydraulics, Hydrology and Glaciology (VAW).	Member of the Advisory board and Scientific advisor	Nearly 500,000 CHF

Publications

Bibliometric indicators
(situation on 26.10.2020)

Scopus:
50 documents, 992 citations by 710 documents, h-index 17

Web of Science
46 documents, 930 citations (without self-citations 846) by 671 documents, h-index 17

International Peer Reviewed
Articles
under revision

1. Van Rooijen** E., D. Vanzo, D.F. Vetsch, R. M. Boes, A. Siviglia (revision in preparation). *Enhancing an unsupervised clustering algorithm with a spatial contiguity constraint for river habitat analysis*. Ecohydrology
2. Siviglia A., D. Vanzo, E.F. Toro (submitted). *A splitting scheme for the coupled Saint-Venant-Exner model*. Adv. Water Resour.,

International Peer Reviewed
Articles
Published between 2015 and today

3. Caponi** F., D.F. Vetsch, A. Siviglia (2020). *A model study of the combined effect of above and below ground plant traits on the ecomorphodynamics of gravel bars*. Sci. Rep., 10(1), 17062
4. Toro E.F., L. Muller, A. Siviglia (2020). *Bounds for wave speeds in the Riemann problem: direct theoretical estimates*. Comput. Fluids, 209, 104640
5. Caponi** F., A. Koch*, W. Bertoldi, D.F. Vetsch, A. Siviglia (2019). *When does vegetation establish on gravel bars? Observations and modeling in the Alpine Rhine river*. Front. environ. sci. 7, 124
6. Chavarrias V., G. Stecca, A. Siviglia, A. Blom (2019). *A regularization strategy for modeling mixed-sediment river morphodynamics*. Adv. Water Resour., 127, pp. 291-309
7. Caponi** F., A. Siviglia (2018). *Numerical modeling of plant root controls on gravel bed river morphodynamics*. Geophys. Res. Lett., 45 (17), pp. 9013–9023
8. Piccolroaz S., M. Toffolon, C. T. Robinson, A. Siviglia (2018). *Exploring and quantifying river thermal response to heatwaves*. Water, 10(8), 1098
9. Peter** J.S., A. Siviglia, J. Nagel, S. Marelli, R.M. Boes, D. Vetsch, B. Sudret (2018). *Development of probabilistic dam breach model using Bayesian inference*. Water Resour. Res., 54, pp 4376–4400
10. Carraro* F., D. Vanzo, V. Caleffi, A. Valiani, A. Siviglia (2018). *Mathematical study of linear morphodynamic acceleration and derivation of the MASSPEED approach*. Adv. Water Resour., 117, pp 40–52
11. Hauer C., A. Siviglia, G. Zolezzi (2017). *Hydropeaking in regulated rivers - From process understanding to design of mitigation measures*. Sci. Total Environ., 579, pp 22-26
12. Carolli M., G. Zolezzi, D. Geneletti, A. Siviglia, F. Carolli*, O. Cainelli (2017). *Modelling white-water rafting suitability in a hydropower regulated Alpine River*. Sci. Total Environ., 579, pp 1035-1049
13. Vanzo** D., A. Siviglia, E.F. Toro (2016). *Pollutant transport by shallow water equations on unstructured meshes: hyperbolic reformulation and numerical solution via a novel flux splitting approach*. J. Comput. Phys., 321, pp 1–20
14. Piccolroaz S., E. Calamita, B. Majone, A. Gallice, A. Siviglia, M. Toffolon (2016). *Prediction of river water temperature: a comparison between a new family of hybrid models and statistical approaches*. Hydrol. Process., 30(21), pp 3901-3917
15. Vanzo** D., G. Zolezzi, A. Siviglia (2016). *Eco-hydraulic modeling of the interactions between hydropeaking and river morphology*. Ecohydrology, 9(3), pp 412–437
16. Vanzo** D., A. Siviglia, M. Carolli, G. Zolezzi, (2016). *Characterization of sub-daily thermal regime in alpine rivers: quantification of alterations induced by hydropeaking*. Hydrol. Process., 30, pp. 1052-1070
17. Stecca. G, A. Siviglia, A. Blom (2016). *An accurate numerical solution to the the Saint-Venant-Hirano model for mixed-sediment morphodynamics*. Adv. Water Resour., 93, Part A, pp 39–61
18. Siviglia A., A. Crosato (2016). *Numerical modelling of river morphodynamics: Latest developments and remaining challenges*. Adv. Water Resour., 93, Part A, pp 1-3
19. Carolli* M., D. Vanzo**, A. Siviglia, G. Zolezzi, M.C. Bruno, K. Alfredsen (2015). *A simple procedure for the assessment of hydropeaking flow alterations with applications to alpine streams from different geographical areas*. Aquatic Sciences, 77 (4), pp. 639-653

** indicates supervised Ph.D students
* co-supervised Ph.D or MSc student

International Peer Reviewed
Articles

** indicates supervised Ph.D students
and * co-supervised Ph.D or
MSc student

20. Stecca G., A. Siviglia, A. Blom (2014). Mathematical analysis of the Saint-Venant-Hirano model for mixed-sediment morphodynamics. *Water Resour. Res.*, 50(10), pp 7563–89
21. Siviglia A., M. Toffolon (2014). Multiple states for flow through a collapsible tube with discontinuities. *J. Fluid Mech.*, 761, pp 105-122
22. Bertoldi W., A. Siviglia, S. Tettamanti*, M. Toffolon, D. Vetsch, S. Francalanci (2014). Modeling vegetation controls on fluvial morphological trajectories. , *Geophys. Res. Lett.*, 41(20), pp. 7167–7175
23. Siviglia A., M. Toffolon (2013). Steady analysis of transcritical flows in collapsible tubes with discontinuous mechanical properties: implications for arteries and veins., *J. Fluid Mech.*, 736, pp 195-215
24. Siviglia A., G. Stecca**, D. Vanzo*, G. Zolezzi, E.F. Toro, M. Tubino (2013). Numerical modelling of two-dimensional morphodynamics with applications to river bars and bifurcations. *Adv. Water Resour.*, 52, pp 243–260
25. Bruno M.C., A. Siviglia, M. Carolli, B. Maiolini (2013). Multiple drift responses of benthic invertebrates to interacting hydropeaking and thermopeaking waves. *Ecohydrology*, 6(4), pp 511–522
26. Toro E.F., A. Siviglia (2013). Flow in Collapsible Tubes with Discontinuous Mechanical Properties: Mathematical Model and Exact Solutions. *Commun. Comput. Phys.*, 13(2), pp 361–385
27. Carolli M., M.C. Bruno, A. Siviglia, B. Maiolini (2012). Responses of benthic invertebrates to abrupt changes of temperature in flume simulations. *River Res. Appl.*, 28(6), pp 678–691
28. Bruno M.C., A. Siviglia (2012). Assessing impacts of dam operations: interdisciplinary approaches for sustainable regulated river management. *River Res. Appl.*, 28(6), pp 675–677
29. Stecca** G., A. Siviglia, E.F. Toro (2012). A Finite Volume Upwind-Biased Centred Scheme for Hyperbolic Systems of Conservation Laws: Application to Shallow Water Equations. *Commun. Comput. Phys.*, 12(4), pp 1183-1214
30. Zolezzi G., A. Siviglia, M. Toffolon (2011). Thermopeaking in Alpine streams: event characterization and time scales. *Ecohydrology*, 4(4), pp 564–576
31. Stecca** G., A. Siviglia, E.F. Toro (2010). Upwind-biased FORCE schemes with applications to free-surface shallow flows. *J. Comput. Phys.*, 229(18), pp 6362–6380
32. Toffolon M., A. Siviglia, Zolezzi G., (2010). Thermal wave dynamics in rivers affected by hydropeaking. *Water Resour. Res.*, 46(8), W08536
33. Canestrelli A., M. Dumbser, A. Siviglia, E.F. Toro (2010). Well-balanced high-order centered schemes on unstructured meshes for shallow water equations with fixed and mobile bed. *Adv. Water Resour.*, 33(3), pp 291–303
34. Zolezzi G., Bellin A., Bruno M.C., Maiolini B., A. Siviglia (2009). Assessing hydrological alterations at multiple temporal scales: Adige River, Italy. *Water Resour. Res.*, 45(12), W12421
35. Siviglia A., A. Stocchino, M. Colombini (2009). Case study: design of flood control systems on the Vara River by numerical and physical modeling. *J. Hydraul.Eng.*, 135(12), pp 1063-1072
36. Siviglia A., E.F. Toro (2009). WAF method and splitting procedure for simulating hydro and thermal peaking waves in open channel flows. *J. Hydraul.Eng.*, 135(8), pp 1063-1072
37. Canestrelli A., A. Siviglia, M. Dumbser, E.F. Toro (2009). Well-balanced high-order centred schemes for non-conservative hyperbolic systems. Applications to shallow water equations with fixed and mobile bed. *Adv. Water Resour.*, 32(6), pp 834–844
38. Siviglia A., R. Repetto, G. Zolezzi, M. Tubino (2009). River bed evolution due to channel expansion: general behaviour and application to a case study (Kugart River, Kyrgyz Republic). *River Res. Appl.*, 24(9), pp 1271–1288
39. Siviglia A., G. Nobile, M. Colombini (2008). Quasi-conservative formulation of the one-dimensional Saint-Venant–Exner model. *J. Hydraul.Eng.*, 134(10), pp 1521-1526
40. Lanzoni S, A. Siviglia, A. Frascati, G. Seminara (2006). Long waves in erodible channels and morphodynamic influence. *Water Resour. Res.*, 42
41. Siviglia A., A. Cantelli (2006). Effect of bottom curvature on mudflow dynamics: Theory and experiments. *Water Resour. Res.*, 45(12)
42. Toro E.F., A. Siviglia (2003). PRICE: Primitive Centred Schemes for hyperbolic systems. *Int. J. Numer. Meth. Fluids.*, 42(12), pp 1263-1291

Chapters in books

1. Siviglia A, G. Stecca, A. Blom (2017). Modeling of mixed-sediment morphodynamics in gravel bed rivers using the active layer approach: insights from mathematical and numerical analysis, in *Gravel-bed Rivers: Processes and Disasters* - D. Tsutsumi and J.B. Laronne eds., Wiley, pp.703-728
2. Veza P. A. Goltara, M. Spairani, G. Zolezzi, A. Siviglia, D. Stellan, C. Comoglio, and P. Parasiewicz (2015). Habitat Indices for Rivers: Quantifying the Impact of Hydro-Morphological Alterations on the Fish Community, in *Engineering Geology for Society and Territory - Volume 3* - G. Lollino et al. eds., Springer International Publishing Switzerland
3. Toro. E.F., A. Siviglia (2011). Simplified blood flow model with discontinuous vessel properties: analysis and exact solutions, in *Modelling Physiological Flows* - D. Ambrosi, A. Quarteroni, G. Rozza eds., Springer

Guidelines

1. Carolli M., Vanzo D. G. Zolezzi, A. Siviglia, M.C. Bruno (2014). Guidelines for the quantification of hydropeaking pressure. Commissioned by Istituto Superiore per la Protezione e la Ricerca Ambientale (ISPRA)
2. Maiolini B., M. Tubino, G. Zolezzi, P. Sartori, M.C. Bruno, A. Siviglia (2007). The research project Report (Regulation of River Discharges): guidelines for an eco-compatible management of the Adige river dynamics. Commissioned by Adige River Basin Authority.

Conference papers
(peer reviewed)

1. Caponi F., A. Siviglia (2018). The role of vegetation uprooting on fluvial morphodynamics: a modeling approach. 12th International Symposium on Ecohydraulics (ISE 2018), Tokyo, Japan
2. Serlet A.J., A. Koch, G. Zolezzi, W. Bertoldi, A. Siviglia, A. Gurnell (2018). Observations of morphological and vegetation dynamics in regulated rivers with alternate bars. 12th International Symposium on Ecohydraulics (ISE 2018), Tokyo, Japan
3. Vanzo, D, M. Tancon, G. Zolezzi, K. Alfredsen, A. Siviglia (2016). A modeling approach for the quantification of fish stranding risk: the case of Lundesokna river (Norway). 11th International Symposium on Ecohydraulics, Melbourne, Australia.
4. Peter, S. J., A. Siviglia, R.M. Boes (2015). Dam Break Analysis under Uncertainty – Introducing BASEbreach. Proc. 13th ICOLD International Benchmark Workshop on Numerical Analysis of Dams, EPF Lausanne, Switzerland.
5. Chavarrias V., G. Stecca, A. Siviglia, A. Blom (2015). Ellipticity of the Saint-Venant-Hirano model for mixed-sediment river morphodynamics. In 9th IAHR Symposium on River, Coastal and Estuarine Morphodynamics (RCEM), Iquitos, Perú.
6. Stecca G., A. Siviglia, A. Blom (2015). Mathematical analysis and accurate numerical solution of the Saint-Venant-Hirano model for mixed-sediment morphodynamics. In 9th IAHR Symposium on River, Coastal and Estuarine Morphodynamics (RCEM), Iquitos, Perú.
7. Facchini M., A. Siviglia, and R. M. Boes, (2015). Downstream morphological impact of a sediment bypass tunnel - preliminary results and forthcoming actions. In Proceedings of the International Workshop on Sediment Bypass Tunnels, VAW Mitteilungen 232. Laboratory of Hydraulics, Hydrology and Glaciology (VAW), ETH Zurich, R. M. Boes, editor.
8. Carolli, M., D. Vanzo, A. Siviglia, G. Zolezzi, (2014). How much hydropeaking? Development of a first screening approach to assess the level of pressure in an Alpine region. Proceedings of 10th International Symposium on Ecohydraulics, Wien
9. Vanzo D., G. Zolezzi, A. Siviglia, (2014). Operational or compensation? A modelling study of some hydropeaking mitigation measures Proceedings of 10th International Symposium on Ecohydraulics, Wien
10. Bruno M. C., A. Siviglia, G. Zolezzi, M. Carolli, B. Maiolini (2014). Effects of flow and temperature alterations on benthic invertebrates in flume simulations. Proceedings of 10th International Symposium on Ecohydraulics, Wien
11. Tarekegn T.H., M. Toffolon, M. Righetti, A. Siviglia (2014). Modelling suspended sediment wave dynamics of reservoir flushing. Proceedings of River Flow 2014, Reservoir Sedimentation, pp 163-173
12. Siviglia A., G. Zolezzi, M. Toffolon, M.C. Bruno, B. Maiolini, (2012). Ecohydraulics of thermopeaking in Alpine streams. Proceedings of 9th International Symposium on Ecohydraulics, Wien
13. Vanzo D., A. Siviglia, G. Zolezzi, G. Stecca, M. Tubino (2011). Interaction between steady and migrating bars in straight channels. In: Proceedings of the 7th IAHR symposium on River, Coastal and Estuarine Morphodynamics: RCEM 2011
14. Canestrelli, A., A. Siviglia, M. Dumbser, and E.F. Toro (2010). New well-balanced high-order centered schemes for shallow water equations with fixed and movable bed. European IAHR congress, Edinburgh
15. Stecca, G., A. Siviglia, E.F. Toro (2010). Upwind-biased force schemes on unstructured meshes with applications to free-surface shallow flows. European IAHR congress, Edinburgh
16. Siviglia A., M. Salvaro, G. Zolezzi, M. Carolli, M.C. Bruno, and B. Maiolini (2009). Field observations of Thermopeaking in Alpine streams. In Proceedings of The 7th International Symposium on Ecohydraulics, Concepcion, Chile, ISE-1A4-FRB37th, Concepcion, Chile
17. Zolezzi G., R. Repetto, A. Siviglia, M. Tubino, M. Toropov, and M. Serafini (2007). Mathematical modelling of silting in the Kugart River, Kyrgyzstan. In: Proceedings of the 5th IAHR symposium on River, Coastal and Estuarine Morphodynamics: RCEM 2007, vol. 2, pp. 1179-1186. London: Taylor & Francis-Balkema
18. Siviglia A., and M. Toffolon (2007). Quasi-Two-Dimensional Enhancement of the Saint Venant-Exner Coupled Model for Unsteady Simulations in Natural Channels. In: Proceedings of the 5th IAHR symposium on River, Coastal and Estuarine Morphodynamics: RCEM 2007, vol. 2, pp. 897-904 London: Taylor & Francis-Balkema.
19. Stocchino A., A. Siviglia, and M. Colombini (2005). Flood control of the Vara River (North-western Italy). 4th IAHR Symposium on River, Coastal and Estuarine Morphodynamics: RCEM 2005, Urbana Champaign (USA)

Conference papers
(peer reviewed)

20. Siviglia A., B. Federici, M. Rinaldi, and I. Becchi (2004). Sediment transport and morphodynamics of the Tanaro River (North-western Italy). *Sediment Transfer through the Fluvial System IAHS-AISH Publication* (288), pp. 308–315
21. Siviglia A., and A. Cantelli (2003). A Herschel-Bulkley model for mud flow down a curved bottom: theory and experiments. 3rd IAHR Symposium on River, Coastal and Estuarine Morphodynamics: RCEM 2003, Barcelona

Proceedings of International
conferences
(last 2 years)

1. Lukovic M., F.G. Michalec, M. Holzner, A. Siviglia (2018). Sub-diffusive behaviour of benthic copepods -evidence for active counter-current swimming and drift avoidance in advective media (2018). *Physics and Ecology: Challenges at the frontier*, 9-11th October, Menorca, Spain
2. Facchini M., W. Bertoldi, R. Boes, D. Vetsch, A. Siviglia (2018). Effects of natural and anthropogenic repeated water and sediment inputs to gravel bed rivers: a numerical study. AGU Fall Meeting, Washington D.C.
3. Caponi F., A. Koch, A. Siviglia, D. Vetsch, W. Bertoldi (2018). Vegetation Pattern Evolution on the Alternate Bars in the Alpine Rhine River: Image Analysis and Numerical Modelling. AGU Fall Meeting, Washington D.C.
4. Siviglia A., F. Caponi (2018). Plant root controls on riverbed evolution: a numerical modeling study. AGU Fall Meeting, Washington D.C.
5. Siviglia A., D. Vanzo, E.F. Toro (2018). A robust and efficient two-dimensional numerical model for the simulation of river pollutant and thermal dynamics. IAHR European meeting, Trento
6. Dalpiaz G., A. Siviglia, M. Toffolon (2018). Analysis of suitable thermal conditions for the use of reservoirs' selective withdrawal in Switzerland: present state and future scenarios. European IAHR congress, Trento
7. Vanzo D. S. Peter, A. Siviglia, D.F. Vetsch (2018). GPGPU-based hydrodynamic modeling and uncertainty propagation assessment: an example for flood risk analysis. European IAHR congress, Trento
8. Vanzo D., L. Adami, A. Siviglia, G. Zolezzi, D. F. Vetsch (2017). The role of numerical diffusion in river alternate bar simulations. 10th Symposium on River, Coastal and Estuarine Morphodynamics (RCEM 2017): Book of Abstracts, p. 253.
9. Vetsch D.F., L. Vonwiller, D. Vanzo, A. Siviglia (2017). Morphological response to sediment replenishment in confined meandering rivers. 10th Symposium on River, Coastal and Estuarine Morphodynamics (RCEM 2017): Book of Abstracts, p. 258
10. Vonwiller L., D. Vanzo, A. Siviglia, G. Zolezzi, D. F. Vetsch, R. M. Boes (2017). Response of free migrating bars to sediment supply reduction. 10th Symposium on River, Coastal and Estuarine Morphodynamics (RCEM 2017): Book of Abstracts, pp. 259.