


PERSONAL INFORMATION

Andrea Maranzoni



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Scopus Author Identifier: 24478928900 [Web of Science ResearcherID: C-4595-2011](#)

Sex M | Date of birth 22/07/1973 | Nationality Italian

WORK EXPERIENCE

From February 2019 to present

**Associate Professor of Hydraulics**

University of Parma; 12, via Università, IT-43121, Parma (PR), Italy; <https://www.unipr.it/>

- Teaching and scientific research in the field of Hydraulic Engineering

**Business or sector** Higher education and scientific research

From December 2008 to February 2019

**Assistant Professor of Hydraulics**

University of Parma; 12, via Università, IT-43121, Parma (PR), Italy; <https://www.unipr.it/>

- Scientific research and teaching in the field of Hydraulic Engineering

**Business or sector** Higher education and scientific research

From January 2005 to December 2008

**Assistant Professor of Hydraulic Structures**

University of Brescia; 15, Piazza del Mercato, IT-25121 Brescia (BS), Italy; <https://www.unibs.it/>

- Scientific research and teaching in the field of Hydraulic Engineering

**Business or sector** Higher education and scientific research

From January 2004 to December 2004

**Research Fellow**

University of Parma; 12, via Università, IT-43121, Parma (PR), Italy; <https://www.unipr.it/>

- Collaboration in research activities on the topic: "Numerical and physical modelling of two-dimensional free-surface flows with shocks"
- Activity concerning: "Definition of flood scenarios due to levee breaches in the Parma-Enza sector using a two-dimensional hydrodynamic model" in agreement between the Po River Basin Authority and the Department of Civil, Environmental, Land Engineering and Architecture, University of Parma

**Business or sector** Scientific research

EDUCATION AND TRAINING

From January 2001 to December 2003

**PhD in Civil Engineering**

Title of the dissertation: "Numerical and physical modelling of 2D free-surface flows"

University of Parma, Italy

- Hydraulic engineering, hydraulic protection of the territory

From October 1992 to February 2000

**Degree in Civil Engineering (cum laude)**

Title of the thesis: "Numerical simulation and experimental verification of unsteady mixed flows in pipes"

University of Parma, Italy

- Civil engineering, Hydraulic engineering

From September 1987 to  
July 1992

High school leaving qualification in scientific studies (top grade)

High School "G. Ulivi", Parma, Italy

- Scientific studies

PERSONAL SKILLS

Mother tongue(s) Italian

Other language(s)

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
French	A2	B1	A2	A2	B1
English	A2	B1	A2	A2	B1

Levels: A1/A2: Basic user - B1/B2: Independent user - C1/C2 Proficient user  
[Common European Framework of Reference for Languages](#)

Digital skills

SELF-ASSESSMENT				
Information processing	Communication	Content creation	Safety	Problem solving
Proficient user	Proficient user	Independent user	Independent user	Independent user

Levels: Basic user - Independent user - Proficient user  
[Digital competences - Self-assessment grid](#)

- Good command of Office suite (word processor, spread sheet, presentation software)
- Good command of photo editing software Adobe Photoshop
- Good programming skills with FORTRAN e Pascal languages
- Good command of software MATLAB e LabVIEW.
- Good command of automatic drawing software AutoCAD.
- Good knowledge of the main commercial hydraulic engineering software packages (HEC-RAS, SWMM, etc.)

Other skills

- Good ability to use various laboratory instruments for the measurement of hydraulic quantities

ADDITIONAL INFORMATION

Main scientific interests

- Numerical and physical modelling of unsteady free surface flows
- Shallow water equations
- Assessment of flood hazard due to levee breach or dam-break
- Probabilistic mapping of flood hazard
- Mathematical modelling of mixed (free surface-pressurized) flows
- Flood routing in rivers and mitigation of flood hazard
- Hydrodynamic actions of floods on structures
- Finite volume methods for shallow water models
- Computational Fluid Dynamics
- Imaging techniques for water surface measurement
- Analysis of seismic-induced flow motions
- Analysis of the performance of side weirs
- Analysis of spatially varied flows

- Editorial activities**
- Guest Editor of the Special Issue “Advances in Dam-Break Modeling for Flood Hazard Mitigation: Theory, Numerical Models, and Applications in Hydraulic Engineering”, MDPI Water (ISSN 2073-4441). Co-Editors: Francesca Aureli and Gabriella Petaccia.  
[https://www.mdpi.com/journal/water/special\\_issues/dam\\_model\\_flood\\_hydraulic](https://www.mdpi.com/journal/water/special_issues/dam_model_flood_hydraulic)
- Referee activities**
- Reviewer for: International Journal for Numerical Methods in Fluids (Wiley), Journal of Hydraulic Engineering (ASCE), Applied Mathematical Modelling (Elsevier), Environmental Fluid Mechanics (Springer), Engineering Applications of Computational Fluid Mechanics (Taylor & Francis), Advances in Water Resources (Elsevier), Canadian Journal of Civil Engineering (Canadian Science Publishing), Plos One (Public Library of Science), Proceedings of the Institution of Civil Engineers - Water Management (ICE Publishing), Urban Water Journal (Taylor & Francis), Water (MDPI), Water Science and Technology (IWA Publishing).  
<https://publons.com/researcher/1414425/andrea-maranzoni/peer-review/>
- Publications**
- Maranzoni, A. (2021). “Analysis of the water surface profiles of spatially varied flow with increasing discharge using the method of singular points”. Journal of Hydraulic Research, IAHR, in press, 1-19. ISSN: 0022-1686, DOI: 10.1080/00221686.2020.1844812.
- Maranzoni, A., Tomirotti, M. (2020). “3D CFD analysis of the performance of oblique and composite side weirs in converging channels”. Journal of Hydraulic Research, IAHR, in press, 1-19. ISSN: 0022-1686, DOI: 10.1080/00221686.2020.1818304.
- Pilotti, M., Milanese, L., Bacchi, V., Tomirotti, M., Maranzoni, A. (2020). “Dam-Break wave propagation in alpine valley with HEC-RAS 2D: Experimental Cancano test case”. Journal of Hydraulic Engineering, ASCE, 146(6), 05020003. ISSN: 0733-9429, DOI: 10.1061/(ASCE)HY.1943-7900.0001779.
- Maranzoni, A. (2020). “Galilean-invariant expression for Bernoulli’s equation”. Journal of Hydraulic Engineering, ASCE, 146(2), 04019061. ISSN: 0733-9429, DOI: 10.1061/(ASCE)HY.1943-7900.0001680.
- D’Oria, M., Maranzoni, A., Mazzoleni, M. (2019). “Probabilistic assessment of flood hazard due to levee breaches using fragility functions”. Water Resources Research, Wiley, 55(11), 8740-8764. ISSN: 1944-7973, DOI: 10.1029/2019WR025369
- Maranzoni A., Mignosa P. (2018). “Seismic-generated unsteady motions in shallow basins and channels. Part I: Smooth analytical solutions”. Applied Mathematical Modelling, Elsevier, 68, 696-711. ISSN: 0307-904X, DOI: 10.1016/j.apm.2018.07.046.
- Maranzoni A., Mignosa P. (2018). “Seismic-generated unsteady motions in shallow basins and channels. Part II: Numerical modelling”. Applied Mathematical Modelling, Elsevier, 68, 712-731. ISSN: 0307-904X, DOI: 10.1016/j.apm.2018.07.045.
- Maranzoni A., Mignosa P. (2018). “Numerical modelling of seismic-generated waves in reservoirs: a case study”. In: IDRA18, Proceedings of the XXXVI Italian Congress of Hydraulics and Hydraulic Structures. Ancona: Department of Civil, Building and Architecture Engineering (DICEA), Polytechnic University of Marche. Ancona, 12-14 September 2018. ISBN:9788894379907.
- Maranzoni A., Mignosa P. (2018). “Numerical treatment of a discontinuous top surface in 2D shallow water mixed flow modeling.” International Journal for Numerical Methods in Fluids, Wiley, 86(4), 290-311. ISSN: 1097-0363, DOI: 10.1002/flid.4418.
- Maranzoni A., Pilotti M., Tomirotti M. (2017). “Experimental and numerical analysis of side weir flows in a converging channel”. Journal of Hydraulic Engineering, ASCE, 143(7), 04017009. ISSN: 0733-9429, DOI: 10.1061/(ASCE)HY.1943-7900.0001296.
- Dazzi S., Maranzoni A., Mignosa P. (2016). “Modellazione numerica 1D del somonto di un ponte [1D numerical modeling of a flood surmounting a bridge]”. In: IDRA16, Proceedings of the XXXV Italian Congress of Hydraulics and Hydraulic Structures, pp. 1095-1098. Bologna: Department of Civil, Chemical, Environmental and Materials Engineering (DICAM), Alma Mater Studiorum, University of Bologna. Bologna, 14-16 September 2016. ISBN: 9788898010400, DOI: 10.6092/unibo/amsacta/5400.
- Maranzoni A., Dazzi S., Aureli F., Mignosa P. (2016). “Modellazione numerica 2D del funzionamento in pressione di un ponte mediante slot di Preissmann [2D numerical modeling of a mixed flow under a bridge by means of the Preissmann slot approach]”. In: IDRA16, Proceedings of the XXXV Italian Congress of Hydraulics and Hydraulic Structures, pp. 1095-1098. Bologna: Department of Civil, Chemical, Environmental and Materials Engineering (DICAM), Alma Mater Studiorum, University of Bologna. Bologna, 14-16 September 2016. ISBN: 9788898010400, DOI: 10.6092/unibo/amsacta/5400.
- Dazzi S., Maranzoni A., Mignosa P. (2016). “Local time stepping applied to mixed flow modelling”. Journal of Hydraulic Research, IAHR, 54(2), 145-157. ISSN: 0022-1686, DOI: 10.1080/00221686.2015.1132276.

## Publications

- Maranzoni A., Dazzi S., Aureli F., Mignosa P. (2015). "Extension and application of the Preissmann slot model to 2D transient mixed flows". *Advances in Water Resources*, Elsevier, 82, 70-82. ISSN: 0309-1708, DOI: 10.1016/j.advwatres.2015.04.010.
- Aureli F., Dazzi S., Maranzoni A., Mignosa P. (2015). "Validation of single- and two-equation models for transient mixed flows: a laboratory test case". *Journal of Hydraulic Research*, IAHR, 53(4), 440-451. ISSN: 0022-1686, DOI: 10.1080/00221686.2015.1038324.
- Longo S., Ungarish M., Di Federico V., Chiapponi L., Maranzoni A. (2015). "The propagation of gravity currents in a circular cross-section channel: experiments and theory". *Journal of Fluid Mechanics*, Cambridge University Press, 764, 513-537. ISSN: 0022-1120, DOI:10.1017/jfm.2014.701.
- Aureli F., Dazzi S., Maranzoni A., Mignosa P., Vacondio R. (2015). "Experimental and numerical evaluation of the force due to the impact of a dam-break wave on a structure". *Advances in Water Resources*, Elsevier, 76, 29-42. ISSN: 0309-1708, DOI: 10.1016/j.advwatres.2014.11.009.
- Pilotti M., Maranzoni A., Milanese L., Tomirotti M., Valerio G. (2014). "Dam-break modeling in alpine valleys". *Journal of Mountain Science*, Springer, 11(6), 1429-1441. ISSN: 1672-6316, DOI: 10.1007/s11629-014-3042-0.
- Aureli F., Maranzoni A., Mignosa P. (2014). "A semi-analytical method for predicting the outflow hydrograph due to dam-break in natural valleys". *Advances in Water Resources*, Elsevier, 63, 38-44. ISSN: 0309-1708, DOI: 10.1016/j.advwatres.2013.11.001.
- Aureli F., Dazzi S., Maranzoni A., Mignosa P. (2014). "A combined color-infrared imaging technique for measuring water surface over non-horizontal bottom". *Experiments in Fluids*, Springer, 55, 1701. ISSN: 0723-4864, DOI: 10.1007/s00348-014-1701-0.
- Aureli F., Maranzoni A., Mignosa P., Puma F. (2013). "Scenari di allagamento a seguito di rotte arginali di Po [Flooding scenarios following levee breaches in the Po River]". In: Giuseppe Frega (Ed.), *Tecniche per la difesa dall'inquinamento [Techniques for defense against pollution]*. pp. 529-551. Cosenza: Edibios, ISBN: 978-88-97181-24-8.
- Pilotti M., Maranzoni A., Milanese L., Tomirotti M., Valerio G. (2013). "Hydraulic hazard mapping in alpine dam break prone areas: the Cancano dam case study". *Proceedings of the XXXV IAHR World Congress*, Chengdu, China, 8-13 September 2013.
- Aureli F., Maranzoni A., Mignosa P., Vacondio R. (2012). "Evaluation of the impact force caused by a dam-break flood on structures". In: IDRA2012, *Proceedings of the XXXIII Italian Congress of Hydraulics and Hydraulic Structures*, p. 5. Brescia: Department of Civil Engineering, Architecture, Land and Environment (DICATA), University of Brescia. Brescia, 10-14 September 2012. (Integral contribution on CD-Rom). Cosenza: Edibios, ISBN: 978-88-97181-18-7.
- Pilotti M., Maranzoni A., Tomirotti M., Valerio G. (2011). "1923 Gleno dam break: case study and numerical modeling". *Journal of Hydraulic Engineering*, ASCE, 137(4), 480-492. ISSN: 0733-9429, DOI: 10.1061/(ASCE)HY.1943-7900.0000327.
- Aureli F., Maranzoni A., Mignosa P., Ziveri C. (2011). "An image processing technique for measuring free surface of dam-break flows". *Experiments in Fluids*, Springer, 50(3), 665-675. ISSN: 0723-4864, DOI: 10.1007/s00348-010-0953-6.
- Aureli F., Maranzoni A., Mignosa P., Ziveri C. (2010). Closure to "Dam-break flows: acquisition of experimental data through an imaging technique and 2D numerical modelling". *Journal of Hydraulic Engineering*, ASCE, 136(7), 458-460. ISSN: 0733-9429, DOI: 10.1061/(ASCE)HY.1943-7900.0000208.
- Aureli F., Maranzoni A., Mignosa P., Ziveri C. (2009). "An imaging technique for laboratory water depth measurement of rapidly varying flows". In: *Abstracts of the 33rd IAHR Congress, Water Engineering for a Sustainable Environment* (Vancouver, Canada, 9-14 August 2009), pp. 99-106. ISBN: 978-94-90365-01-1. IAHR, Madrid (Spain).
- Pilotti M., Maranzoni A., Tomirotti M., Valerio G. (2008). "Modellazione numerica dell'onda conseguente all'ipotetico crollo della prima diga di Cancano [Numerical modeling of the dam-break wave resulting from the hypothetical collapse of the first Cancano dam]". In: IDRA08, *Proceedings of the XXXI Italian Congress of Hydraulics and Hydraulic Structures* (Perugia, 9-12 September 2008), p. 222. ISBN/EAN: 978-88-6074-220-9. (Integral contribution on CD-Rom). Morlacchi Editor, Perugia (Italy).
- Aureli F., Maranzoni A., Mignosa P., Ziveri C. (2008). "2D numerical modelling for hydraulic hazard assessment: a dam-break case study". In: *River Flow 2008, Proceedings of the International Conference on Fluvial Hydraulics* (Ceşme, 3-5 September 2008), Vol. 1, pp. 729-736. ISBN: 978-605-60136-1-4. Kubaba Congress Department and Travel Services, Ankara (Turkey).
- Aureli F., Maranzoni A., Mignosa P., Ziveri C. (2008). "A weighted surface-gradient method for the integration of 2D shallow water equations with topography". *Advances in Water Resources*, Elsevier, 31(7), 962-974. ISSN: 0309-1708, DOI: 10.1016/j.advwatres.2008.03.005.
- Aureli F., Maranzoni A., Mignosa P., Ziveri C. (2008). "Dam-break flows: acquisition of experimental data through an imaging technique and 2D numerical modelling". *Journal of Hydraulic Engineering*, ASCE, 134(8), 1089-1101. ISSN: 0733-9429, DOI: 10.1061/(ASCE)0733-9429(2008)134:8(1089).

## Publications

- Maranzoni A., Pilotti M., Tomirotti M., Valerio G. (2007). "Numerical and experimental modelling of the initial stages of dam-break flow". In: AIMETA 2007, XVIII AIMETA Congress of Theoretical and Applied Mechanics (11-14 September 2007), pp. 536-537. ISBN/ISSN: 978-88-89720-69-1. (Integral contribution on CD-Rom). Starrylink Editor, Brescia (Italy).
- Aureli F., Maranzoni A., Mignosa P., Ziveri C. (2007). "A simple methodology for the dam-break wave evaluation". In: Abstracts of the 32nd IAHR Congress, Harmonizing the Demands of Art and Nature in Hydraulics (Venice, 1-6 July 2007), Vol. 1, p. 341. ISBN/ISSN: 88-89405-06-6. (Integral contribution on CD-Rom). CORILA, Venice (Italy).
- Aureli F., Maranzoni A., Mignosa P., Ziveri C. (2007). "A weighted surface-depth gradient method for the solution of the 2D shallow water equations". In: Abstracts of the 32nd IAHR Congress, Harmonizing the Demands of Art and Nature in Hydraulics (Venice, 1-6 July 2007), Vol. 1, p. 179. ISBN/ISSN: 88-89405-06-6. (Integral contribution on CD-Rom). CORILA, Venice (Italy).
- Pilotti M., Maranzoni A., Tomirotti M. (2007). "An efficient tool for hydraulic hazard analysis in alpine valleys". In: Hydroinformatics 2006, Proceedings of the 7th International Conference on Hydroinformatics (Nice, 4-8 September 2006), Vol. 3, pp. 2276-2283. ISBN/ISSN: 81-903170-4-0. Research Publishing Services, Chennai (India).
- Aureli F., Maranzoni A., Mignosa P., Ziveri C. (2006). "Fully-2D and quasi-2D modeling of flooding scenarios due to embankment failure". In: River Flow 2006, Proceedings of the International Conference on Fluvial Hydraulics (Lisbon, 6-8 September 2006), Vol. 2, pp. 1473-1482. ISBN/ISSN: 0-415-40815-6. Taylor & Francis, London (UK).
- Aureli F., Maranzoni A., Mignosa P., Ziveri C. (2006). "Una metodologia per il calcolo dell'onda conseguente a dam-break [A methodology for calculating the flooding wave resulting from dam-break]". In: Idra2006, Proceedings of the XXX Italian Congress of Hydraulics and Hydraulic Structures (Rome, 10-15 September 2006), p. 242. ISBN/ISSN: 88-87242-81-X. (Integral contribution on CD-Rom). Casa Editrice Università La Sapienza, Rome (Italy).
- Pilotti M., Maranzoni A., Tomirotti M. (2006). "Modellazione matematica della propagazione dell'onda di piena conseguente al crollo della diga del Gleno [Mathematical modeling of the dam-break wave following the collapse of the Gleno dam]". In: Idra2006, Proceedings of the XXX Italian Congress of Hydraulics and Hydraulic Structures (Rome, 10-15 September 2006), p. 279. ISBN/ISSN: 88-87242-81-X. (Integral contribution on CD-Rom). Casa Editrice Università La Sapienza, Rome (Italy).
- Aureli F., Maranzoni A., Mignosa P., Ziveri C. (2006). "Flood hazard mapping by means of fully-2D and quasi-2D numerical modeling: a case study". In: Floods, from Defence to Management; Proceedings of the Third International Symposium on Flood Defence (Nijmegen, 25-27 May 2005), p. 252. ISBN/ISSN: 0 415 39119 9. (Integral contribution on CD-Rom). Taylor & Francis, Leiden (Netherlands).
- Aureli F., Maranzoni A., Mignosa P. (2004). "Verifica sperimentale di due schemi ai volumi finiti per la simulazione di fenomeni di moto rapidamente vario a pelo libero [Experimental verification of two finite volume schemes for the simulation of unsteady free-surface flows]". In: IdraTrento, Proceedings of the XXIX Italian Congress of Hydraulics and Hydraulic Structures (Trento, 7-10 September 2004), Vol. 1, pp. 765-772. ISBN/ISSN: 88-7740-382-9. Editoriale Bios, Cosenza (Italy).
- Aureli F., Maranzoni A., Mignosa P. (2004). "Simulation of flooding caused by an embankment breaking by means of a 2D finite volume numerical model". In: River Flow 2004, Proceedings of the 2nd International Conference on Fluvial Hydraulics. (Naples, 23-25 June 2004), Vol. 2, pp. 929-936. ISBN/ISSN: 90 5809 688 2. Taylor & Francis, London (UK).
- Aureli F., Maranzoni A., Mignosa P. (2004). "Experimental modeling of rapidly varying flows on wet bed and in presence of submersible obstacles". In: River Flow 2004, Proceedings of the 2nd International Conference on Fluvial Hydraulics. (Naples, 23-25 June 2004), Vol. 2, pp. 849-858. ISBN/ISSN: 90 5809 688 2. Taylor & Francis, London (UK).
- Aureli F., Maranzoni A., Mignosa P. (2004). "Two dimensional modeling of rapidly varying flows by finite volume schemes". In: River Flow 2004, Proceedings of the 2nd International Conference on Fluvial Hydraulics. (Naples, 23-25 June 2004), Vol. 2, pp. 837-847. ISBN/ISSN: 90 5809 688 2. Taylor & Francis, London (UK).
- Aureli F., Maione U., Maranzoni A., Mignosa P. (2004). "Synthetic hydrographs as a design tool for flood routing evaluation". In: River Flow 2004, Proceedings of the 2nd International Conference on Fluvial Hydraulics. (Naples, 23-25 June 2004), Vol. 2, pp. 1049-1056. ISBN/ISSN: 90 5809 688 2. Taylor & Francis, London (UK).
- Aureli F., Maranzoni A., Mignosa P. (2003). "Parma University simulations of the isolated building test case". In: 3rd IMPACT Project Workshop, Université catholique de Louvain (Louvain-la-Neuve, Belgium, 5-7 November 2003).



## Research projects

- “RELAID: REnaissance of LArge Italian Dams”, financed by the Italian Ministry for Education, MIUR, 2020-2022 (total 600000 €). Participant in the Parma University Research Unit. <https://relaid.wordpress.com/>
- 2018 - Annual funding for basic research (FFABR) of the Italian Ministry for Education, MIUR (€ 3000)

## Teaching activities

- 2017-present: Environmental and Coastal Hydraulics, 2<sup>nd</sup> Module (Master’s Degree Course in Civil Engineering, University of Parma, Italy)
- 2016-present: Fluid Mechanics (Bachelor’s Degree Course in Mechanical Engineering, University of Parma, Italy)
- 2009-2015: Hydraulics (Bachelor’s Degree Course in Civil and Environmental Engineering, University of Parma, Italy)
- 2007-2008: Hydraulics AB, 1st Module (Bachelor’s Degree Course in Civil Engineering, University of Parma, Italy)
- Environmental Hydraulics (Master’s Degree Course in Environmental and Land Management Engineering, University of Brescia, Italy)
- Advising PhD students: Susanna Dazzi, PhD in Hydraulic Engineering, University of Parma, 2013-2015
- Advisor and co-advisor of 25 Bachelor’s and Master’s degree theses at the Universities of Parma and Brescia, Italy

## Memberships

- Member of the Faculty Board of the PhD Programme in Civil Engineering and Architecture, University of Parma, Italy. [https://dia.unipr.it/en/Faculties\\_Board](https://dia.unipr.it/en/Faculties_Board)
- 2020-present: Vice Coordinator of the PhD Programme in Civil Engineering and Architecture, University of Parma, Italy
- Member of the Italian Hydraulic Group (GII). <https://www.gii-idraulica.net/>
- Member of CIDEA - Interdepartmental Center for Energy and the Environment, University of Parma, Italy. <https://www.centritecnopolo.unipr.it/cidea/>
- Member of the Order of Engineers of Parma, Italy, since 2000. <https://ordingparma.it/>