

## **CURRICULUM VITAE Michele Bolla Pittaluga**

*Name and family name:* **Michele BOLLA PITTALUGA**  
*Place and date of birth:* Genova (Italy), 15 April 1975  
*Nationality:* Italian  
*Marital status:* Married, four children  
*Academic title:* Associate Professor  
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### **DEGREE**

- National Scientific Qualification to function as full professor in the field 08/A1 – Hydraulics, Hydrology, Hydraulic and Marine constructions for the period 04/09/2018 - 04/09/2024.
- Ph.D., University of Padova (Italy), 2003.
- Civil Engineering (BS+MS), (110/110 summa cum laude), University of Genova (Italy), 1999.

### **EMPLOYMENT RECORD**

- Associate Professor, Department of Civil, Chemical and Environmental Engineering, University of Genova (December 2019 – present).
- Assistant Professor, Department of Civil, Chemical and Environmental Engineering, University of Genova (January 2019 – November 2019).
- Research Scientist, Shell Global Solutions International, Den Haag, The Netherlands (July 2014 – December 2017).
- Assistant Professor, Department of Civil, Chemical and Environmental Engineering, University of Genova (June 2005 – June 2014).
- Post-doc, Department of Environmental Engineering, University of Genova (February 2003 – June 2005).
- Phd student, University of Padova (November 1999 – February 2003).

### **ACADEMIC AND PROFESSIONAL INTERESTS**

The main research interests are related to river and estuarine morphodynamics, turbidity currents, dynamics of fluvial networks, sediment transport, river engineering, physical hydraulic modelling. Both theoretical and experimental approaches are employed in the research.

### **EDITORIAL DUTIES**

- Associate Editor of the Journal of Geophysical Research - Earth Surface (October 2017 – present).
- Article reviewer for: Nature Communications, Geophysical Research Letters, Geological Society of America Bulletin, Reviews of Geophysics, Journal of Fluid Mechanics, Water Resources Research, Sedimentology, Geomorphology, Journal of Geophysical Research, Earth Surface Processes and Landforms, Advances in Water Resources, Journal of Applied Mechanics, Journal of Hydraulic Research, Global and Planetary Change, Hydrology and Earth System Sciences, Physical Geography, Meccanica.

- Proposal reviewer for: National Science Foundation (USA), The Netherlands Organization for Scientific Research, University of Padova (Italy).

### **PRIZES**

Dallaporta Prize (CoRiLa) for the best PhD thesis published in the years 2002 – 2004 and relative to the safeguard of the Venice Lagoon.

### **PARTECIPATION IN FUNDED RESEARCH PROGRAMS**

- Interreg Alcotra 2020 “Concert-Eaux” on the Morphodynamics of the Roja River. Role: Collaborator.
- Hydralab+ (EU’s Horizon 2020 Research and Innovation Programme) 2018. “Splitting nature at its seams: morphodynamic stability of river and tidal bifurcations”, PI: M. Kleinhans. Experiments at the HR Wallingford (UK) laboratory. Role: Local Coordinator.
- Shell Global Solutions Int., 2014-2017. “River, deltaic and submarine morphodynamics”, Role: Co-Principal Investigator.
- Progetto di Ateneo 2014. “Morphodynamics of river bifurcations with dominant suspended load”. Role: Principal Investigator.
- Progetto di Ateneo 2011. “Morphodynamics of turbidity currents in meandering submarine channels”. Role: Principal Investigator.
- Shell Int. E&P, 2009-2011 “Modelling meandering submarine channels”. Role: Principal Investigator.
- PRIN, 2008. “Eco-morphodynamics of tidal networks and climate change”. Role: Collaborator. Principal Investigator: Stefano Lanzoni.
- Fondazione CaRiVe, 2008. “Models for the generation, propagation and transport of the environmental hazard”. Role: Collaborator. Principal Investigator: Stefano Lanzoni.
- Progetto di Ateneo, 2008. “Modelling turbidity currents in meandering submarine channels”. Role: Collaborator. Principal Investigator: G. Seminara.
- PRIN, 2006. “Models of the eco-geomorphological evolution of tidal flats and salt marshes in lagoon environments”. Role: Collaborator. Principal Investigator: Marco Tubino.
- Progetto di Ateneo, 2006. “Morphodynamics of meandering tidal channels”. Role: Collaborator. Principal Investigator: G. Seminara.
- Fondazione CaRiVe, 2005-2008. “Models for the generation, propagation and transport of the environmental hazard”. Role: Collaborator. Principal Investigator: G. Seminara.
- CoRiLa, 2004-2006. “Mathematical and physical modelling of sedimentary processes in the Venice Lagoon”. Role: Collaborator. Principal Investigator: G. Seminara.
- National research program, 2003. “Fluvial Hydro-morphodynamics and interaction with structures and natural processes”. Role: Collaborator. Principal Investigator: M. Colombini.
- CoRiLa, 2001-2003. “Experimental investigations and modelling of morphological mechanisms in the Venice Lagoon”. Role: Collaborator. Principal Investigator: G. Seminara.
- National research program, 2001. “Morphodynamics of Fluvial Networks”. Role: Collaborator. Principal Investigator: M. Colombini.

### **INSTITUTIONAL CONSULTING PROJECTS**

Principal investigator or participant to numerous institutional consulting projects for public agencies (Agenzia Interregionale per il Fiume Po, Regione Liguria, Regione Toscana, Provincia di Genova, Provincia di Imperia, local municipalities) and private companies (Shell, D.E.A.M., Cociv) in the field of river and coastal morphodynamics and turbidity currents:

- 2020. Title: "High-resolution modelling of turbidity current activity at Malampaya GEP KP435". Client: Shell Global Solutions. Role: Principal Investigator.
- 2019. Title: "Estimation of the river effect on the triggering of turbidity currents". Client: Shell Global Solutions. Role: Principal Investigator.
- 2019. Title: "Hydraulic and morphodynamic modelling of the ligurian reach of the Scrivia River". Client: Unione dei Comuni dello Scrivia. Role: Collaborator. Principal Investigator: Marco Colombini.
- 2019. Title: "Hydraulic and morphodynamic modelling of the Vobbia torrent upstream the Vobbietta dam". Client: Comune di Isola del Cantone. Role: Collaborator. Principal Investigator: Marco Colombini.
- 2019. Title: "Detailed hydraulic analysis of a river flood diversion along the Chiaravagna stream". Client: Consorzio Collegamenti Integrati Veloci. Role: Principal Investigator.
- 2018. Title: "Modeling of turbidity currents in the Malampaya pipeline at KP435". Client: Shell Global Solutions. Role: Principal Investigator.
- 2018. Title: "Modeling of turbidity currents". Client: Shell Global Solutions. Role: Principal Investigator.
- 2018. Title: "Modeling of turbidity currents for a sacrificial berm solution to protect a Gas Export Pipeline". Client: Shell Global Solutions. Role: Principal Investigator.
- 2014. Title: "Hydraulic and morphodynamic modelling of the terminal reach of the Nervia and Evigno torrents". Client: Provincia di Imperia. Role: Collaborator. Principal Investigator: Marco Colombini.
- 2012. Title: "Consultancy project on turbidity currents". Client: D.E.A.M. Role: Principal Investigator.
- 2012. Title: "Morphodynamics of the Magra River and its major tributaries following the 25/10/2011 river flood and delineation of the countermeasures needed for mitigation of the hydraulic hazard ". Client: Regione Toscana. Role: Participant.
- 2011. Title: "Evaluation of the reduction of flooding hazard due to dredging operations along the terminal reach of the Magra River". Client: Regione Liguria. Role: Participant.
- 2010. Title: "Physical mobile bed modelling of the Tanaro River in the Alessandria city reach". Client: Agenzia Interregionale per il Fiume Po. Role: Participant.
- 2009. Title: "River morphodynamics manual for engineers and government executives". Client: Regione Liguria. Authors: G. Seminara, M. Bolla Pittaluga e M. Colombini.
- 2007. Title: "Technical support for the analysis of river engineering projects ". Client: Regione Liguria. Role: Participant.
- 2007. Title: "Hydraulic modelling of the Bormida River and Orba torrent". Client: Agenzia Interregionale per il Fiume Po. Role: Participant.
- 2006. Title: "Investigations for the definition of the hydraulic hazard along the Armea torrent ". Client: Provincia di Imperia. Role: Participant.
- 2006. Title: "Hydraulic modelling of statistically significant floods propagating along the main reach of the Tanaro River". Client: Agenzia Interregionale per il Fiume Po. Role: Participant.
- 2001. Title: "Hydraulic modelling of river floods in the Durasca torrent at the confluence with the Vara river". Client: Provincia di Imperia. Role: Participant.

#### **PROFESSIONAL ACTIVITY**

- July 2017 – December 2017. Research activity related to the theoretical and numerical modelling of turbidity currents, with emphasis on investigating the triggering mechanisms,

the spatial and temporal development, their impact on a submarine pipeline and the sediment transport induced by the current. Client: Shell Global Solutions. Role: Principal Investigator.

- 2008. Professional experience characterized by research activity on the morphodynamics of the Roja River (Italy). Role: Technical-legal consultant for the Tribunale Superiore delle Acque Pubbliche (R.G.47/2007).
- 2008. Professional experience characterized by research activity on the morphodynamics of the Armea River. Technical-legal consultant for the Tribunale Superiore delle Acque Pubbliche (R.G.284/2006).

#### **FURTHER ACADEMIC RESPONSABILITIES**

- Member of the Scientific Committee of the PhD program in “Fluid dynamics and Environmental Processes in Engineering” of the University of Genova (2006 – present).
- Member of the Research Committee of the Department of Civil, Chemical and Environmental Engineering, University of Genova (2018 – present).
- Member of the Third Mission Committee of the Department of Civil, Chemical and Environmental Engineering, University of Genova (2019 – present).
- Member of the Accreditation Committee of the Bachelor in Civil and Environmental Engineering, University of Genova (2018 – present).
- Examiner PhD dissertation of Jan de Leeuw, Faculty of Geosciences, Utrecht University (The Netherlands), 2017.
- Examiner PhD dissertations of the PhD program “Scienze dell’ingegneria civile e ambientale”, University of Padova, 2014.
- Examiner PhD dissertation of A. Herrero, Universitat Politècnica de Catalunya, Barcelona, 2013.
- Examiner PhD dissertations of the PhD program “Fluid dynamics and Environmental Processes in Engineering”, University of Genova, 2010.

#### **TEACHING**

##### **Master Courses:**

- Hydraulics: lecturer (2019 – present) and teaching assistant (2018 – 2019) to students attending the 2<sup>nd</sup> year in Civil and Environmental Engineering.
- Introduction to Environmental Engineering: lecturer to students attending the 3<sup>rd</sup> year in Civil and Environmental Engineering (2018 – present).
- River Morphodynamics and Sediment Transport: lecturer to students attending the 3<sup>rd</sup> year in Civil and Environmental Engineering (2017 – 2018) and 5<sup>th</sup> year of Environmental Engineering (2020 – present).
- River Morphodynamics and Sediment Transport: teaching assistant to students attending the 3<sup>rd</sup> year in Civil and Environmental Engineering (2013 – 2014).
- Fluid Mechanics: lecturer to students attending the degree in Mechanical Engineering (2008 – 2013).
- Fluvial Hydraulics: lecturer to students attending the 5<sup>th</sup> year in Civil and Environmental Engineering (2006 – 2008). Teaching assistant in 2004 - 2005 and from 2009 – 2014.
- Fluid Mechanics I and II: lecturer and teaching assistant for the degree in Chemical Engineering (2001 – 2002).
- Hydraulics II: lecturer and teaching assistant for the degree in Civil and Environmental Engineering (2001 – 2002).

**Phd Courses:**

- Lectures on the theory of boundary layers (4 hours – 2009).

**Further teaching activities:**

- 'Fluvial morphodynamics' – Provincia Imperia (2014).
- 'Basic elements of fluvial morphodynamics' - Regione Toscana (2012).
- 'Fluvial restoration' - Master Scuola Edile Provincia di Savona (2006).
- 'Fluvial hydraulics' - Provincia di La Spezia (2004).

**Student supervision**

Supervisor of two Phd students (M. Stagnaro, 2014 and N. Ragno, present), co-supervisor of one PhD student (G. Nobile, 2008), supervisor of one post-doc (G. Porcile, present), co-supervisor of two post-docs (A. Frascati, 2009-2011 e R. Luchi, 2009-2014) and supervisor or co-supervisor of > 40 Bachelor and Master theses concerning river/tidal morphodynamics and turbidity currents (2000 – present).

**VISITS**

- Visiting Researcher – Instituto de Hidraulica Ambiental, Universidad de Cantabria (Spain) - 2013 (2 months).
- Visiting Researcher – University of South Carolina (USA) - 2009 (2 months).

**AFFILIATIONS**

- Registered to the Order of Engineers of the Genova Province (2000 – present).

**INVITED TALKS AND SEMINARS**

- 2019: Seminar: "How typhoons trigger turbidity currents in submarine canyons", Deltares - Delft, The Netherlands.
- 2019: Invited talk: "Splitting nature at its seams: morphodynamic stability of river and tidal bifurcations" at the Hydralab+ project event in Bucharest, Romania, May 20-24, 2019.
- 2018: Invited talk: "On the role of mathematical modelling in sediment management" at the ITCOLD (National Committee Large Dams) workshop, Genova, Italy, October 4-5, 2018.
- 2018: Invited talk: "On a research experience in the industry: a road worth following?" at the Italian PhD days, Catania, June 20-22, 2018.
- 2015: Invited talk at the "Estuary Day Workshop", Hohai University, Nanjing, China, October 13-15, 2015 (declined).
- 2015: Seminar: "Morphodynamic equilibrium of alluvial estuaries", Flanders Hydraulics Research - University of Gent, Antwerp, Belgium.
- 2015: Invited talk at the two-days symposium "From fluid dynamics to morphodynamics" in honour of Prof. G. Seminara in occasion of his retirement, University of Genova, June 25-26, 2015.
- 2014: Invited talk at the International meeting on world river deltas, July 21-24, 2014, at the Baikal Geography Institute in Istomino, Russia (declined).
- 2013: Invited talk: "The dynamics of the recent flood occurred in Tuscany. A case study: the Magra River". Conference "Flood hazard in Tuscany", Florence, Italy.
- 2013: Invited talk: "Morphodynamic modelling for river management". ARPAL Conference "Simulare Conviene", Genoa, Italy.

- 2012: Invited talk: "The Magra River flood of the 25 October 2011: Aulla". Joined Conference University of Florence and of Genoa "Mitigation and Adaptation to River Floods", Genoa, Italy.
- 2009: Seminar: "A non linear model for river meandering", Department of Civil and Environmental Engineering, University of South Carolina, USA.
- 2008: Co-author of the keynote lecture: "Non linearity and temporal overshooting in river meandering" (paper authors: Bolla Pittaluga M. and Seminara G.), River Flow 2008, Esme-Izmir, Turkey.
- 2007: Seminar: "A non linear model for river meandering", Shell International Exploration and Production, Houston, USA.
- 2007: Seminar: "A non linear model for the equilibrium bed configuration in meandering rivers", University of Genoa, Italy.
- 2003: Invited talk: "Tidal morphodynamics". Summer School "Geophysical Turbulence 2003", La Londe les Maures, France.

#### **NATIONAL AND INTERNATIONAL COLLABORATIONS**

- Octavio Sequeiros (Shell), Alessandro Frascati (Shell), Oriol Falivene (Shell) and Zane Jobe (Colorado School of Mines) on river, coastal and deepwater morphodynamics. Three joint journal publications, several industrial research projects and one patent.
- Marteen Kleinhans (Utrecht University) and Giovanni Coco (University of Auckland, New Zealand) on river bifurcations. One research grants awarded (Hydralab+ 2018) and one joint journal publication.
- Gary Parker (University of Illinois) and Jasim Imran (University of South Carolina) on turbidity currents and deepwater morphodynamics. Two joint journal publications.
- Peter Nelson (Colorado State University) on bedrock river morphodynamics. One joint journal publication.
- Stefano Lanzoni (University of Padova) on river and estuarine morphodynamics. Two joint journal publications.

#### **PUBLICATIONS**

Author of 24 papers published in referred journals (Scientific Reports – Nature Publisher Group, Commun. Earth Environ. – Nature Publisher Group, Journal of Geophysical Research, Geophysical Research Letters, Water Resources Research, Geomorphology, Physics of Fluids, Earth Surface Processes and Landforms, Journal of Sedimentary Research), 4 monographs in books, 48 conference proceedings, 1 international patent, 23 technical reports and 6 internal Shell technical reports.

Genova (Italy), 1/10/2020