

Francesca Messina, PhD

Research Scientist - The Water Institute of the Gulf

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Education

PhD in Engineering for the Built and Natural Environment, April 2015

Politecnico di Torino, Torino, Italy

PhD student visitor at The University of Texas, Austin, Texas, from July to December 2013

M.S. in Environmental Engineering, December 2011

Politecnico di Torino, Torino, Italy

B.S. in Environmental Engineering, October 2009

Politecnico di Torino, Torino, Italy

Research Interests:

Groundwater engineering, groundwater-surface interaction, water quality, computational fluid dynamic, particle transport in porous media, delta management, real time forecasting

Professional Experience:

The Water Institute of the Gulf **2016 (June) - Present**
Baton Rouge (Louisiana)

- *Research Scientist*

The Water Institute of the Gulf **2015 (Sept) – 2016 (May)**
Baton Rouge (Louisiana)

- *Postdoctoral Fellow*

Politecnico di Torino **2015 (Jan-Sept)**
Torino (Italy)

- *Postdoctoral Fellow*

Politecnico di Torino **2012 (Feb-July)**
Torino (Italy)

- *Teaching assistant (geometry)*

Prosystem Ingegneria S.r.l. **2011-2012**
Pinerolo (Torino - Italy)

- *Company consultant - Quality Management Systems, Environment Management System (UNI EN ISO 9001 - UN EN ISO 14001) and FSC Certification (FSC-STD-40-004)*

Politecnico di Torino

2007-2011

Torino (Italy)

- *Student tutor (mathematical analysis I and II, geometry, groundwater engineering)*

Awards, Honors:

- National RemTech 2012 awards for the best Master degree thesis
- *Premio Optime*, best graduates 2011-2012, assigned by *Unione Industriale di Torino*
- *Premio Ambiente Domani* given by *Camera di Commercio Industria Artigianato e Agricoltura di Torino* in 2012
- Winner in the academic year 2008/2009 of the Scholarship *Ing. Giulio Axerio* banned by the institution *Ing. Giulio Axerio*. In the academic years 2009/2010 and 2010/2011, the same institution conferred her financial benefits on the basis of the academic merit

Computational Skills:

- C++ programming language
- COMSOL Multiphysics
- Matlab
- Visual Modflow
- ENVI
- Autocad
- ArcGis
- Microsoft Office (Word, Excel and Power Point)
- MIKE flood (32 hour course)
- Delft3D
- Delft-FEWS

Personal Skills:

- Mother Language: Italian
- Other Languages: English (advanced), French (intermediate)

Certifications:

- Qualification to the Engineer profession, Sector *Civile-Ambientale*, Class 38/S by *Ordine degli Ingegneri di Torino* (Italy)
- FIRST Diploma by the *University of Cambridge*
- DELF B1 Diploma by the *Commission nationale du DELF et du DALF*

PUBLICATIONS

- F. Messina, D. Marchisio, R. Sethi, *An extended and total flux normalized correlation equation for predicting single-collector efficiency*, Journal of Colloid and Interface Science, 2015 Volume 446, pages 185-193, 10.1016/j.jcis.2015.01.024

- F. Messina, *Pore-scale simulation of micro and nanoparticle transport in porous media*, Dissertation for the Ph.D. Degree in Engineering for the Built and Natural Environment, Politecnico di Torino, Torino (Italy), April 2015, Supervised by Prof. Rajandrea Sethi and Prof. Daniele Marchisio
- Messina F., Tosco T., Sethi R., *On the failure of upscaling the single-collector efficiency to the transport of colloids in an array of collectors*, *Water Resour. Res.*, 2016, 52, 5492–5505, doi:10.1002/2016WR018592.

CONFERENCE PROCEEDINGS AND PRESENTATIONS

- Messina F., Icardi M., Marchisio D., Sethi R., *Microscale Simulation of Nanoparticles Transport in Porous Media for Groundwater Remediation*, COMSOL Conference 2012, Milano, 10th-12th October 2012
- Messina F., Sethi R., *Microscale modeling of zerovalent iron micro and nanoparticles transport in porous media*, Remtech 2012, Ferrara, 19th - 21st September 2012
- Icardi M., Boccardo G., Messina F., Marchisio D., Sethi R., *Two and three dimensional simulation of flow and particle transport in porous media*, SIMAI 2012, Torino, 25th - 28th June 2012
- Messina F., Icardi M., Marchisio D., Sethi R., *Pore scale simulation of micro and nanoscale zerovalent iron particles transport*, 5th International Conference on Porous Media, Prague, 22nd - 24th May 2013
- Icardi M., Boccardo G., Messina F., Marchisio D., Sethi R., Tempone R., Prudhomme S., *Pore-scale investigation of flow in saturated and unsaturated media: computational tools and upscaling*, XXI congresso associazione italiana meccanica teorica e applicata, Torino, 17th - 20th September 2013
- Messina F., Sethi R., *A new definition of a correlation equation for single collector efficiency*, European Geosciences Union General Assembly 2014, Vienna, 27th April – 2nd May 2014
- Messina F., Sethi R., Marchisio D., *Normalization and extension of the single-collector efficiency correlation equation for predicting transport of (nano)particles*, Nanosafety Forum for Young Scientists, Siracusa, 9th - 10th October 2014
- Messina F., Marchisio D., Sethi R., *Normalization and extension of single-collector efficiency correlation equation*, European Geosciences Union General Assembly 2015, Vienna, 13th - 17th April 2015
- Messina F., Marchisio D., Sethi R., *A Normalized and Extended Correlation Equation for Predicting Single-Collector Efficiency in Physicochemical Filtration in Saturated Porous Media*, 7th International Conference on Porous Media, Padova, 18th - 21th May 2015
- Messina F., Marchisio D., Sethi R., *A new Correlation Equation for Predicting Single-Collector Efficiency in Physicochemical Filtration in Saturated Porous Media*, ECCE10-ECAB3-EPIC5, Nice, 27th September - 1st October 2015
- Sethi R., Messina F., Marchisio D., *A novel total flux normalized correlation equation for predicting single-collector efficiency*, AGU FALL MEETING, San Francisco, 14th-18th December 2015
- Meselhe E., Twight D., Messina F., Khadka A., Costanza K., *Coastal Eco-morphological Real-time Forecasting (CERF) System*, State of The Coast, New Orleans, LA, June 1-3, 2016
- Meselhe E., Pereira J., Messina F., Khadka A., Miller R., Mallory R., Scott D.S., Couvillion B., Beck H., Feldbaum A., Ramatchandirane C., Allison M., *Comprehensive Modeling Approach to Analyze the Calcasieu Ship Channel Salinity Control Measures Project*, State of The Coast, New Orleans, LA, June 1-3, 2016