

Marco Marani, Professor

Nicholas School of the Environment and Pratt School of Engineering, Duke University, NC – USA
Department of Civil, Environmental and Architectural Engineering, University of Padova – Italy.

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Personal: Born December 10th 1966.

Education and training:

PhD in Hydrodynamics, University of Padova (Italy) 1997

Master in Civil Engineering, University of Padova (Italy) 1993

Employment:

Professor, Department of Civil, Architectural, and Environmental, Engineering, University of Padova, Italy	2016 – present
Adjunct Professor, Earth and Ocean Sciences Division and Department of Civil and Environmental Engineering – Duke University, NC	2016-present
Professor, Earth and Ocean Sciences Division and Department of Civil and Environmental Engineering – Duke University, NC	2011-2018
Associate Professor, University of Padova, Italy	2003-2011
Assistant Professor, University of Padova	1995-2003

Research:

Marco Marani's research interests have spanned fluvial geomorphology, hydro-meteorology, flow and transport in the hydrologic cycle, eco-geomorphology of coastal areas, remote sensing, hydrologic drivers of disease vectors. A long-term focus has been understanding and predicting coastal system dynamics and resilience, particularly in response to broad environmental changes. Rainfall, and extremes in particular, have also been one of Marani's main interests. With his group he has, in recent years, developed an extension of the traditional extreme value theory, that relaxes long-standing limiting assumptions and opens the door for non-stationary theories. Mosquito dynamics, one of the dominant human disease vectors, are largely driven by hydrological processes. Marani and his group have recently developed and applied mechanistically-based and predictive models to describe mosquito dynamics in temperate climates, as the basis for disease control and prevention.

Service and recognitions:

Elected Member, Venice Academy of Sciences, Letters, and Arts, 2019-

Elected member, Galilean Academy of Science, Literature, and Arts, Padova, 2018-

Director of Graduate Studies, PhD School of Sciences of Civil and Environmental Engineering, University of Padova, 2017-

Appointed Guest Professor in the State Key Laboratory of Water Resources and Hydropower Engineering Science, Wuhan University, 2016-2019

Member of the American Geophysical Union (AGU) and of the European Geosciences Union (EGU);

Mentoring and Advising:

PhD Advisees (total=24): Sergio Fagherazzi, *Boston Univ.* (1996-1999, with A. Rinaldo and S. Lanzoni); Andrea D'Alpaos, *Univ. of Padova* (2001-2005, with A. Rinaldo and S. Lanzoni); Michele Ferri (2001-2005; *Autorita' di Bacino dell'Alto Adriatico, Venezia*); Alessandra Feola (2003-2007, *ISPRA, Venezia*); Tommaso Settin (2003-2007, *AIPO, Rovigo*); Alessandro Uccelli (2003-2007); Enrica Belluco (2003-2007, *Univ. di Padova*); Elisa Alessi Celegon (2004-2008, *i4 Ingegneria, Padova*); Ludovico Nicotina (2005-2009; *Risk Management Solutions, London*); Stefano Zanetti (2005-2009); Marta Altissimo (2005-2010); Omar Tosatto (2005-2010; *MMME, Padova*); Chiara Venier (2007-2010, *CNR Venice*); Basudev Biswal (2007-2010, *IIT Hyderabad*); Valeria Volpe (2008-2012); Cristina Da Lio (2009-2013, *CNR, Venice*); Jvan Barbaro (2010-2013); Svetlana

Blokhina (2010-2013); Yun Jian (2012-2014, US EPA); Xiaochi Zhou (2012-2015, Cornell)); Fateme Yousefi (2013-present); Enrico Zorretto (2015-present), Arianna Miniussi (2016-present).
Post-Docs: Samuela Franceschini (2010-2011; *Univ. of Venice*); Massimiliano Ignaccolo (2012-2013; *Corecompete, Raleigh*); Meijing Zhang (2014 – 2016); Gabriele Manoli (2014 – 2016, UC London); Marta Ferrazzi (2018-Present), Mattia Pivato (2018-Present).

Selected invited lectures

Instituto Tecnológico de Santo Domingo, Dominican Republic, Extreme rainfall, floods, and hurricane intensities: traditional engineering approaches and recent advances, April 2019.
IIHR, University of Iowa, Beyond traditional extreme value theory: lessons learned from rainfall, floods and hurricane intensity, February 2019.
Data Rich Hydrology, Perugia University for Foreigners Winter School, Perugia, Beyond traditional extreme value theory: lessons learned from rainfall and hurricane intensity, February 2019.
Veneto Region Environmental Protection Agency, The definition of extreme events, Sept. 2018
Pellestrina, Venice. MIT Venice/MOSE Summer School, The Morphology of the Lagoon of Venice. Current State and Future Trends, May 2017.
Wuhan University, Wuhan, China, Extreme Value Theory: Hydrologic applications and recent advances, November 2016.
Southern University of Science and Technology, Shenzhen, China, Changing hydrologic extremes, November 2016.
University of Virginia, Charlottesville, Distinguished Speaker Seminar - Department of Civil and Environmental Engineering and Department of Environmental Science, *Sea Levels, Atmospheric CO₂, and the Resilience of Coastal Environments*, April 2016.
EPFL Lausanne, ECHO Lab Seminar, *A metastatistical approach to modelling extreme rainfall distributions*, April 2016.
Venice International University, Duke Summer School on “Coping with Sea-level Rise”, *Extreme Events*, Venice, July 2015.
Venice International University, Workshop on Frontiers in Hydrology and Hydrogeoscience, *Some mechanisms of soil-plant-atmosphere interaction*, Venice, May 2014.
European Geosciences Union, General Assembly, *Emergent Biogeomorphic Patterns in Tidal Environments*, Vienna, April 2014.
Venice: Lessons Learned on Resilience and the “Natural” Environment, Symposium on Coastal Resilience, New York City Center for Science and Resilience Research, 17-18 October 2013.
Multiple stable states in tidal landscapes: responses to climate and land-use changes, NSF Workshop ‘Land-surface response to climate and land-use changes’, Biosphere 2, Tucson, September 2013.
IGERT WISNet Seminar Series, *Open Issues in the Observation of Ecological and Morphological Patterns in Tidal Environments*, Pratt School of Engineering, Duke University, 17 January 2013
American Geophysical Union Fall Meeting, *Spatial Organization and Bio-geomorphic Features in Tidal Marshes*, San Francisco, December 2012.
American Geophysical Union Fall Meeting, *Multiple Stable States and Pattern Formation in Tidal Environments*, San Francisco, December 2012.
MIT, Department of Civil and Environmental Engineering Seminar Series, *Emergent Bio-geomorphic Patterns in Tidal Environments*, Boston, September 2012.
Princeton University, Symposium and Celebration in Honour of Ignacio Rodriguez-Iturbe, *Wetlands Ecohydrology*, Princeton, March 2012.

In the News:

May 2016. NSF’s Science360 Radio featured the Ratliff, Braswell, and **Marani** PNAS paper on CO₂ fertilization of coastal marshes, [here](#).
February 2016. SciWorks Radio [interview](#) with Katherine Ratliff and **Marco Marani** covering the paper: Ratliff, KM, Braswell, AE, and Marani, M. "Spatial response of coastal marshes to increased atmospheric CO₂." *Proceedings of the National Academy of Sciences of the United States of America* 112, no. 51 (December 7, 2015): 15580-15584.
April 2015. [News coverage](#) of the mosquito model developed by Yun Jian, **Marco Marani**, Sonia Silvestri, and the Brunswick County Mosquito Control Staff and published in [PLOS ONE](#)