Marco Marani, Professore Ordinario
Dipartimento di Ingegneria Civile, Edile e Ambientale, Universita' di Padova, via Loredan 20, 35131 Padova

Educazione:
Dottorato in Idrodinamica, Universita' di Padova 1997
Laurea in Ingegneria Civile, Universita' di Padova 1993

Posizioni accademiche:

Professore Ordinario, Dipartimento di Ingegneria Civile, Edile e Ambientale, Universita' di Padova	2012-oggi
Adjunct Professor, Earth and Ocean Sciences Division and Department of Civil and Environmental Engineering – Duke University, USA	2018-oggi
Professor, Earth and Ocean Sciences Division and Department of Civil and Environmental Engineering – Duke University, USA	2012 – 2018
Professore Associato, Dipartimento di Ingegneria Idraulica, Marittima, Ambientale e Geotecnica, Universita' di Padova	2003-2012
Ricercatore, Dipartimento di Ingegneria Idraulica, Marittima, Ambientale e Geotecnica, Universita' di Padova	1995-2003

Principali Progetti di Ricerca:
- PI, "Venice 2021", Venice Water Authority, 2018-2021.
- PI, "Modellazione e osservazione delle dinamiche verticali di accrescimento barenale", CoRiLa (Italy), 2016-2017.
- PI, "Optimal Satellite-based Estimation of Extreme Rainfall at the Global Scale", NASA Earth Science Fellowship, Duke University, 2017-2020
- Co-PI, "Watershed, estuarine, and local drivers of coastal marsh establishment and resilience", NSF, 2016-2019.
- Co-PI, "The Direct and Indirect Effect of Plantation Forestry Expansion on Usable Water in the Southeastern US", NSF, 2014-2018.
- Co-PI, "Impacts on human health and the environment from resource extraction in the Amarakaeri Reserve (Peru). Hydrology Component", Hunt Oil Corp., 2014-2015.
- Coordinator, 'Hydrological Processes' unit, University of Padova Strategic Research Project: 'Geological and hydrological processes: monitoring, modelling, and impacts in North-Eastern Italy', 2009-2011;
- Unit coordinator for the project *Transport phenomena in hydrological catchments: hydrological and geophysical experiments and modelling* funded by the CARIPARO foundation, 2008-2011;
- Coordinator of the research activities towards a morphological management plan for the Venice Lagoon, Venice Water Authority, 2007-2011;
- PI, Remote sensing of zonation and biodiversity of vegetation in the Venice lagoon marshes, University of Padova, 2005-2007;
- PI, National Project (PRIN) 'Hydodynamics and morphodynamics of the long-term evolution of lagoon environments', 2006-2008;
- PI, applied research project 'Development of a mathematical model of rainfall infiltration in the Marghera (Venice) industrial area', Istituto Centrale per la Ricerca sull'Ambiente Marino, 2005;
- PI, EU Research and Technological Development V Framework: *Tidal Inlets Dynamics and Environment* (TIDE – No. EVK3-CT-2001-00064), 2002-2005
- PI, National CORILA project, Modelling and observations of solutes and suspended matter transport in the Venice Lagoon drainage basins, 2004-2006;
- PI, *Dinamica degli ambienti a marea, Agenzia Spaziale Italiana,* 2000-2002

Servizio e riconoscimenti:
Direttore, Centro di Idrodinamica e Morfodinamica Lagunare, Universita' di Padova, 2019-
Socio Effettivo, Istituto Veneto di Scienze Lettere ed Arti, 2019-
Socio, Accademia Galileiana di Scienze, Lettere e Arti, 2018-
Coordinatore, Dottorato in Scienze dell'Ingegneria Civile e Ambientale, Universita' di Padova,
Guest Professor in the State Key Laboratory of Water Resources and Hydropower Engineering Science, Wuhan University, 2016-2019

Associate Editor of Water Resources Research 2004-2011
Member of the American Geophysical Union and of the European Geosciences Union; Organizer of multiple sessions at the annual meetings of the American Geophysical Union and the European Geosciences Union

Studenti di dottorato e Post-Doc:
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 (2013-2018); Arianna Miniussi (2016-2019, Helmoltz Center, Halle); Enrico Zorzetto (2015-2020); Maria Francesca Caruso (2019-oggi).
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-Oggi), Mattia Pivato (2018-Oggi).

Seminari Invitati (selezione)

IAHR World Congress, Panama, Coupled morphological-biological dynamics, and the fate of coastal transitional environments, September, 2019.
Fridays for Future, University of Padova, Changing Extremes, May 2019.
Instituto Tecnologico 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, CINID-WWAP-Perugia University for Foreigners Winter School, Perugia, Beyond traditional extreme value theory: lessons learned from rainfall and hurricane intensity, February 2019.
La definizione di eventi estremi, Agenzia Regionale per la Protezione Ambietale del Veneto, Teolo (Padova), September 2018.
Festival della Bonifica, San Dona' di Piave, *La Laguna di Venezia, evoluzione passata e scenari futuri*, May 2018.
Seminario Collegio degli Ingegneri di Venezia, Venezia, Eustatismo e subsidenza: stato delle conoscenze e conseguenze attese sulla morfologia e sull'ecosistema della Laguna di Venezia, May 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", Lectures: *Extreme Events*, Venice, July 2015.
Venice International University, Interdisciplinary 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 WISeNet 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.
Duke University, Duke Visualization Forum, *Intertidal bio-geomorphic patterns and the history of the lagoon of Venice*, Durham, February 2012.

Principali Pubblicazioni

Marco Marani ha pubblicato piu' di **100 articoli** in riviste recensite, **5 Capitoli** in libri editi, circa **130 abstract** in conferenze scientifiche internazionali, e' stato editore di **2 libri**. L'H-index e' ***H=38*** secondo Scopus e **H=45** secondo Google Scholar. Le pubblicazioni piu' citate sono:

Silvestri, S., A. Defina, M. Marani (2005). Tidal regime, salinity and salt-marsh plant zonation, Estuarine, Coast. and Shelf Sci., vol. 62, pp. 119-130 ISSN: 0272-7714. [**290 citations**]
D'Alpaos A, Lanzoni S, Marani M, Rinaldo A, Landscape evolution in tidal embayments: Modeling the interplay of erosion, sedimentation, and vegetation dynamics, J. of Geophys. Res.- Earth Surface, 112 (F1), F01008, 2007. [**237**]
E. Belluco, M. Camuffo, S. Ferrari, L. Modenese, S. Silvestri, A. Marani, M. Marani, Mapping salt-marsh vegetation by multispectral and hyperspectral remote sensing, Remote Sensing of Environment, 105, 54–67, 2006. [**218**]
Marani, M. A. D'Alpaos, S. Lanzoni, L. Carniello and Andrea Rinaldo, Biologically-controlled multiple equilibria of tidal landforms and the fate of the Venice lagoon, Geophys. Res. Lett., 34, L11402, doi:10.1029/2007GL030178, 2007 [**152**]
D'Alpaos, A., S. Lanzoni, M. Marani, S. Fagherazzi, and A. Rinaldo, Tidal network ontogeny: Channel initiation and early development, J. Geophys. Res., 110, F02001, doi:10.1029/2004JF000182, 2005. [**149**]
Rinaldo A., S. Fagherazzi, S. Lanzoni, M. Marani, W.E. Dietrich, (1999) Tidal networks 2. Watershed delineation and comparative network morphology, Water Resour Res., 35 (12), 3905-3917, [**139**]
Marani, M., E. Belluco, A. D'Alpaos, A. Defina, S. Lanzoni and A. Rinaldo, On the drainage density of tidal networks, Water Resouces Research, 39 (2), 1040, doi:10.1029/2001WR001051, 2003. [**133**]
Volpe, V., S. Silvestri, M. Marani, Remote sensing retrieval of suspended sediment concentration in shallow waters, Remote Sensing of Environment, 115, 1, 44-54, doi:10.1016/j.rse.2010.07.013, 2011. [**127**]
Fagherazzi, S., A. Bortoluzzi, W.E. Dietrich, A. Adami, S. Lanzoni, M. Marani, A. Rinaldo, Tidal networks 1. Automatic network extraction and preliminary scaling features from digital terrain maps, Water Resources Research, 35 (12), 3891-3904, 1999. [**121**]
Rinaldo A., S. Fagherazzi, S. Lanzoni, M. Marani, W.E. Dietrich, Tidal networks 3. Landscape-forming discharges and studies in empirical geomorphic relationships, Water Resources Research, 35 (12), 3919-3929, 1999. [**115**]
Marani, M., A. D'Alpaos, S. Lanzoni, L. Carniello, A. Rinaldo, The importance of being coupled: Stable states, catastrophic shifts and hysteresis in tidal eco-morphodynamics, Journal of Geophysical Research, vol. 115, F04004, doi:10.1029/2009JF001600, 2010. [**114**]
Marani, M., A. D'Alpaos, S. Lanzoni, M. Santalucia, Understanding and predicting wave erosion of marsh edges, Geophys. Res. Lett., 38, L21401, doi:10.1029/2011GL048995, 2011. [**111**]
Marani, M., C. Da Lio, A. D'Alpaos, Vegetation engineers marsh morphology through multiple competing stable states, Proceedings of the National Academy of Sciences, February 11, doi:10.1073/pnas.1218327110, 2013. [**106**]
Marani, M., S. Lanzoni, D. Zandolin, G. Seminara and A. Rinaldo, Tidal Meanders, Water Resources Research, 38 (11), 1225-1239, 2002. [**101**]

Articoli recenti

Zorzetto, E., M. Marani, A. Canale, (2020) Hierarchical Bayesian modelling of hydrological extremes, submitted.

Miniussi, A., Villarini, G., & Marani, M. (2020). Analyses through the metastatistical extreme value distribution identify contributions of tropical cyclones to rainfall extremes in the eastern United States. *Geophysical Research Letters*, 47, e2020GL087238. https://doi.org/10.1029/2020GL087238
Miniussi, A., G. Villarini, M. Marani (2020). Analyses through the Metastatistical Extreme Value distribution identify contributions of Tropical Cyclones to rainfall extremes in the Eastern US, HydroShare, https://doi.org/10.4211/hs.384c9df02fab4051a21db7e4f210eb36
Miniussi, A., Marani, M., & Villarini, G. (2020). Metastatistical extreme value distribution applied to floods across the continental united states. Advances in Water Resources, 136 doi:10.1016/j.advwatres.2019.103498
Zorzetto, E., & Marani, M. (2020). Extreme value metastatistical analysis of remotely sensed rainfall in ungauged areas: Spatial downscaling and error modelling. Advances in Water Resources, 135 doi:10.1016/j.advwatres.2019.103483
Hosseini, S. R., Scaioni, M., & Marani, M. (2020). Extreme Atlantic hurricane probability of occurrence through the Metastatistical Extreme Value Distribution. Geophysical Research Letters, 47, 2019GL086138. https://doi.org/10.1029/2019GL086138
Diringer, S. E., Berky, A. J., Marani, M., Ortiz, E. J., Karatum, O., Plata, D. L., . . . Hsu-Kim, H. (2019). Deforestation due to artisanal and small-scale gold mining exacerbates soil and mercury mobilization in madre de dios, peru. Environmental Science and Technology, doi:10.1021/acs.est.9b06620.
Marani, M. and E. Zorzetto (2019), Doubly stochastic distributions of extreme events, arXiv, https://arxiv.org/abs/1902.09862
Yousefi Lalimi, F., Marani, M., Heffernan, J. B., D'Alpaos, A., & Murray, A. B. (2020). Watershed and ocean controls of salt marsh extent and resilience. Earth Surface Processes and Landforms, doi:10.1002/esp.4817
Marani, M. and E. Zorzetto (2019), Doubly stochastic distributions of extreme events, arXiv, https://arxiv.org/abs/1902.09862
Zorzetto, E., and Marani, M. (2019). Downscaling of rainfall extremes from satellite observations. Water Resources Research, 55, https://doi.org/10.1029/2018WR022950
Finotello, A., S. Lanzoni, M. Ghinassi, M. Marani, A. Rinaldo, A. D'Alpaos (2018). Migration rates of tidal meanders, Proceedings of the National Academy of Sciences, 115 (7) 1463-1468; DOI: 10.1073/pnas.1711330115
Jian, Y., S. Silvestri, J. Brown, R. Hickman, M. Marani (2016), The Predictability of Mosquito Abundance from Daily to Monthly Time Scales, Ecological App., 10.1002/eap.1405.
Zorzetto, E., G. Botter, and M. Marani (2016), On the emergence of rainfall extremes from ordinary events, Geophys. Res. Lett., 43, 8076–8082, doi:10.1002/2016GL069445.
Manoli, G., Domec, J.-C., Novick, K., Oishi, A. C., Noormets, A., Marani, M. and Katul, G. (2016), Soil-Plant-Atmosphere Conditions Regulating Convective Cloud Formation Above Southeastern US Pine Plantations. Glob Change Biol. doi:10.1111/gcb.13221.
Marani, M., and S. Zanetti (2015), Long term oscillations in rainfall extremes in a 268 year daily time series, Water. Resour. Res., 51, 1, 639–647, doi:10.1002/2014WR015885.
Marani, M., and M. Ignaccolo, A Metastatistical Approach to Rainfall Extremes, Adv. Water Resour., 79, 121–126, doi:10.1016/j.advwatres.2015.03.001, 2015.
Pelletier, JD, A.B. Murray, A, Pierce, JL, Bierman, PR, Breshears, DD, Crosby, BT, Ellis, M, Foufoula-Georgiou, E, Heimsath, AM, Houser, C, Lancaster, N, Marani, M, Merritts, DJ, Moore, LJ, Pederson, JL, Poulos, MJ, Rittenour, TM, Rowland, JC, Ruggiero, P, Ward, DJ, Wickert, AD, and Yager, EM. "Forecasting the response of Earth's surface to future climatic and land use changes: A review of methods and research needs." Earth's Future 3, no. 7 (July 2015): 220-251.
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.
Jian Y, Silvestri S, Brown J, Hickman R, Marani M. (2014), The temporal spectrum of adult mosquito population fluctuations: conceptual and modeling implications. PloS one 9(12)
Biswal, B., M. Marani, "Universal" Recession Curves and their Geomorphological Interpretation, Advances in Water Resources, 65: 34-42, 2014.