University of Maryland
CENTER FOR ENVIRONMENTAL SCIENCE
HORN POINT LABORATORY

CURRICULUM VITAE

William Nardin

Horn Point Laboratory
University of Maryland Center for Environmental Science
P.O. Box 775 Cambridge, Maryland 21613
Phone: 4102218232 /Email: wnardin@umces.edu

Education

Bachelor and Master University of Rome "La Sapienza", Italy, (Environmental Engineering), 2001
Ph.D. University of Rome "La Sapienza", Italy, (Environmental Engineering), 2013

Areas of professional expertise

Ecogeomorphology, Coastal Morphodynamics, Remote Sensing, Coastal Resilience

Professional Background

Assistant Professor, University of Maryland, Center for Environmental Science, (March 2017 – current) Horn Point Laboratory, USA

Adjunct Faculty, University of Maryland, Center for Environmental Science, (Sept 2016 – March 2017) Horn Point Laboratory, USA

Synthesis Postdoc NSF-Award, University of California - Berkeley, USA, (March 2016 - March 2017), Department of Geography, Advisor: Laurel Larsen.

Shared Postdoc: Indiana University and Boston University

- Indiana University, Bloomington, USA, Postdoc (March 2013 - February 2014)
  Department of Geological Science
  Advisor: Douglas A. Edmonds

- Boston University, Boston, USA, Postdoc (March 2014 - December 2015)
  Department of Earth and Environment
  Advisor: Sergio Fagherazzi

Visiting Scholar (June 2011-May 2012), Department of Earth Sciences, Boston University. Advisor: Sergio Fagherazzi.

Hydraulic Engineer (2002 – 2009) in the Italian "Civil Protection Department" - corps of engineers and geologists for Hydrogeological Risk Assessment and Geohazard, before embracing a scientific career in 2009 at University of Rome "La Sapienza", Italy.

Publications

Peer Reviewed Publications (underlined students and postdocs advised)

1. Fagherazzi, S., Mariotti, G., Leonardi, N., Canestrelli, A., **Nardin, W**., & Kearney, W. S. (2020). Salt marsh dynamics in a period of accelerated sea level rise. Journal of Geophysical Research: Earth Surface, 125, e2019JF005200. https://doi.org/10.1029/2019JF005200.

2. **William Nardin**, Sara Lera, and Jaap Nienhuis, Effect of offshore waves and vegetation on the sediment budget in the Virginia Coast Reserve (VA), Earth Surface Processes and Landforms, (2020). DOI: 10.1002/esp.4951.

3. Weilun Gao, Jaap Nienhuis, **William Nardin**, Zheng Bing Wang, Dongdong Shao, Tao Sun and Baoshan Cui, Wave controls on deltaic shoreline-channel morphodynamics: insights from a coupled model, Water Resources Research, (2020), https://doi.org/10.1029/2020WR027298.

4. Vona, I.; Gray, M.W.; **Nardin, W**. The Impact of Submerged Breakwaters on Sediment Distribution along Marsh Boundaries. Water, (2020), 12, 1016.

5. Mahdi Khademishamami, **William Nardin**, Experimental observations on fine sand winnowing from immobile gravel substrate, Advances in Water Resources, Volume 142, (2020), 103659, ISSN 0309-1708, https://doi.org/10.1016/j.advwatres.2020.103659.

6. Pitarch J., F. Falcini, **W. Nardin,** V. Brando, A. Di Cicco and S. Marullo (2019). Linking flow-stream variability to grain size distribution of suspended sediment from a satellite-based analysis of the Tiber River plume (Tyrrhenian Sea). Scientific Reports 9 (1), 1-10. Doi: 10.1038/s41598-019-56409-8.

7. Fleri J., S. Lera, A. Gerevini, L. Staver, **W. Nardin** (2019), "Empirical observations and numerical modelling of tides, channel morphology, and vegetative effects on accretion in a restored tidal marsh". Earth Surface Processes and Landforms. DOI: 10.1002/esp.4646.

8. Weilun Gao, D. Shao, Z.B. Wang, **W. Nardin**, P. Rajput, W. Yang Long-term Cumulative Effects of Intra-annual Variability of Unsteady River Discharge on the Progradation of Delta Lobes: A Modeling Perspective. Journal of Geophysical Research: Earth Surface, (2019). https://doi.org/10.1029/2017JF004584.

9. Lera S., **W. Nardin,** L. Sanford, C. Palinkas and R. Guercio (2019). The impact of submersed aquatic vegetation on the development of river mouth bars. Earth Surface Processes and Landforms, doi:10.1002/esp.4585.

10. Corbau C., E. Zambello, I. Rodella, K. Utizi, **W. Nardin**, U. Simeoni (2019). Quantifying the impacts of the human activities on the evolution of Po delta territory during the last 120 years, Journal of Environmental Management, https://doi.org/10.1016/j.jenvman.2018.11.096.

11. Weilun Gao, Dongdong Shao, Zheng Bing Wang, **W. Nardin**, Wei Yang, Tao Sun, Baoshan Cui, (2018). Combined Effects of Unsteady River Discharges and Wave Conditions on River Mouth Bar Morphodynamics. Geophysical Research Letters. https://doi.org/10.1029/2018GL080447.

12. **Nardin, W.**, and Fagherazzi, S. (2018). The role of waves, shelf slope, and sediment characteristics on the development of erosional chenier plains. Geophysical Research Letters, 45. https://doi.org/10.1029/2018GL078694.

13. **Nardin W.,** L. Larsen, S. Fagherazzi and P. Wiberg, (2018). Tradeoffs among hydrodynamics, sediment fluxes and vegetation community in the Virginia Coast Reserve, USA, Estuarine, Coastal and Shelf Science (2018), doi: 10.1016/j.ecss.2018.06.009.

14. Fagherazzi, S., K.R. Bryan, and **W. Nardin**. (2017). Buried alive or washed away: The challenging life of mangroves in the Mekong Delta. Oceanography 30(3):48–59, doi.org/10.5670/oceanog.2017.313.

15. Bullock, E. L., Fagherazzi, S., **Nardin, W.**, Vo-Luong, P., Nguyen, P., and Woodcock, C. E. (2017). Temporal patterns in species zonation in a mangrove forest in the Mekong Delta, Vietnam, using a time series of Landsat imagery. Continental Shelf Research, doi:10.1016/j.csr.2017.07.007.

16. Bryan, K. R., **Nardin, W.**, Mullarney, J. C., and Fagherazzi, S. (2017). The role of cross-shore tidal dynamics in controlling intertidal sediment exchange in mangroves in Cù Lao Dung, Vietnam. Continental Shelf Research, doi:10.1016/j.csr.2017.06.014.

17. **Nardin W.**, Locatelli S., Pasquarella V., Rulli M. C., Woodcock C. E. and S. Fagherazzi (2016), Dynamics of a fringe mangrove forest detected by Landsat images in the Mekong river delta, Vietnam, Earth Surface Processes and Landforms, doi:10.1002/esp.3968.

18. **Nardin W.**, Woodcock C. E. and S. Fagherazzi (2016), Bottom sediments affect Sonneratia mangrove forests in the prograding Mekong delta, Vietnam, Estuarine, Coastal and Shelf Science, doi:10.1016/j.ecss.2016.04.019.

19. Nienhuis J., Ashton A., **Nardin W.**, Fagherazzi S., Giosan L. (2016), Alongshore sediment bypassing as a control on river mouth morphodynamics,

Journal of Geophysical Research: Earth Surface, 121, doi:10.1002/20156JF003780.

20. **Nardin W.**, D. A. Edmonds and S. Fagherazzi, Influence of vegetationon spatial patterns of sediment deposition in deltaic islands during flood, Advances in Water Resources (2016) doi: 10.1016/j.advwatres.2016.01.001.

21. Moffett K. B., **Nardin W.**, Silvestri S., Wang C. and S. Temmerman (2015), Multiple stable states and catastrophic shifts in coastal wetlands: progress, challenges, and opportunities in validating theory using remote sensing and other methods, Remote sensing review, (2015), 7, 10184-10226; doi:10.3390/rs70810184.

22. Fagherazzi S., Edmonds D.A., **Nardin W.**, Leonardi N., Canestrelli A., Falcini F., Jerolmack D., Geleynse N., Mariotti G, Rowland J., Slingerland R. (2015) Dynamics of river mouth deposits, Reviews of Geophysics, doi:10.1002/2014RG000451.

23. **Nardin, W.** and D.A. Edmonds, Optimum vegetation height and density for inorganic sedimentation in deltaic marshes, (2014), Nature Geoscience, doi:10.1038/ngeo2233.

24. Canestrelli A., **W. Nardin**, D. A. Edmonds, S. Fagherazzi, R. Slingerland (2014), Importance of frictional effects and jet instability on the morphodynamics of river mouth bars and levees pubblished, Journal of Geophysical Research: Oceans, doi:10.1002/2013JC009312.

25. **Nardin, W.**, G. Mariotti, D. A. Edmonds, R. Guercio, and S. Fagherazzi (2013), Growth of river mouth bars in sheltered bays in the presence of frontal waves, Journal of Geophysical Research: Earth Surface, 118, doi:10.1002/jgrf.20057.

26. **Nardin, W.** and S. Fagherazzi (2012), The effect of wind waves on the development of river mouth bars, Geophysical Research Letters, 39, L12607, doi:10.1029/2012GL051788.

Recent Presentations, Posters and Websites

Marzia Rizzo*, Benjamin Lane, Sairah Malkin, Carmela Vaccaro, Umberto Simeoni, **William Nardin** and Corinne Corbau. Macro-plastic weathering in a coastal environment: field experiment in Chesapeake Bay, Maryland. European Geophysical Union 2020. April 2020.

N Woodard*, M Gray, **W Nardin**. Greening the Grey: Integrating Oysters to Enhance Grey Infrastructure Effectiveness Against Sea Level Rise. Ocean Sciences Meeting 2020. February 2020.

W Nardin*, M Mazzarino, S Lorie, S Longo. Field observation and numerical modeling to investigate the seasonal evolution of a restored salt marsh. AGU Fall Meeting 2019. December 2019.

W Gao, D Shao*, **W Nardin**, ZB Wang, W Yang, T Sun, B Cui. Effects of Unsteady River Discharge on Deltaic Morphodynamics. AGU Fall Meeting 2019. December 2019.

F Falcini, J Pitarch, **W Nardin***, V Brando, A Di Cicco, S Marullo. Linking flow-stream variability to grain size distribution of suspended sediment from a satellite-based analysis. AGU Fall Meeting 2019. December 2019.

I Vona***, W Nardin**, M Gray. Breakwaters impact on sediment supply for salt marsh. AGU Fall Meeting 2019. December 2019.

G Franchi*, J Anderson, C Corbau, **W Nardin**. Marine debris detection in a coastal vegetated area using UAVs. AGU Fall Meeting 2019. December 2019.

Y Taddia, **W Nardin***, C Corbau, G Franchi, Lw Staver. Channels'shape Evolution Detected by Uavs In A Restored Salt Marsh. Coastal Sediment 2019. May 2019.

A New Concept for Lagoon Protection Guiding Spit Growth. C Corbau, U Simeoni, A Lazarou, **W Nardin***. Coastal Sediment 2019. May 2019.

KN Johnson*, B Ferdowsi, JD Gartner, A Kasprak, KL Miller, **W Nardin**, AC Ortiz, A Tejedor, Earthcasting: Geomorphic Prediction for Society. AGU Fall Meeting Abstracts. December 2018.

Y Taddia*, **W Nardin**, C Corbau, G Franchi, G Silsbe, S Lorie. UAVs to assess channels' shape evolution in a restored salt marsh. AGU Fall Meeting Abstracts. December 2018.

S Lera*, **W Nardin**, J Nienhuis. The impact of offshore waves and vegetation on the sediment budget in theVirginia Coast Reserve (VA). AGU Fall Meeting Abstracts. December 2018.

M Khademishamami*, **W Nardin**. Laboratory observations on fine sand erosion from a coarse immobile bed. AGU Fall Meeting Abstracts. December 2018.

C Corbau*, E Zambello, I Rodella, K Utizi, **W Nardin**, U Simeoni. Historical Land use evolution of the Po River Delta driven by human activities. AGU Fall Meeting Abstracts. December 2018.

W Gao*, D Shao, W Zheng Bing, **W Nardin**, W Yang, T Sun, B Cui. Coupling Effects of Unsteady River Discharges and Wave Conditions on River Mouth Bar Morphodynamics. AGU Fall Meeting Abstracts. December 2018.

Falcini*, Federico; Pitarch, Jaime; Benincasa, Mario; Brando, Vittorio; **Nardin, William**; Di Cicco, Annalisa; Vona, Iacopo; Marullo, Salvatore; Santoleri, Rosalia. Remote Sensing analysis of Riverine Sediment Plumes: from Spectral Signature to Coastal Morphodynamic diagnosis, MED2018, Frascati (Italy), December 2018.

Lera S. *, L. Sanford, C. Palinkas, R. Guercio and **W. Nardin**, The impact of submersed aquatic vegetation on the development of river mouth bars: ecogeomorphology and restoration scenarios, *AGU Oceans meeting*, Portland, USA, February 2018.

Nardin William* and Lauren Larsen, Multi-vegetation feedbacks affecting flow and sediment routing in Everglades ridges and slough, INTERCOH 2017, Montevideo (Uruguay) November 2017.

Nardin William* and Sergio Fagherazzi, Chenier plain genesis explained by feedbacks between waves, mud, and sand - EGU General Assembly Conference Abstracts, April 2017.

Sergio Fagherazzi*, **William Nardin**, Curtis Woodcock, Valerie Pasquarella, Silvia Locatelli and Maria Cristina Rulli Dynamics of a fringe mangrove forest detected by Landsat images in the Mekong delta, Vietnam, AGU Oceans meeting, New Orleans, USA, Febbruary 2016.

Nardin W.*, Curtis Woodcock, Nguyen Hoang Phong and Sergio Fagherazzi, Bottom sediments affect Sonneratia mangrove forests in the prograding Mekong delta, Vietnam, AGU Oceans meeting, New Orleans, USA, February 2016.

Nardin W.*, D. A. Edmonds and S. Fagherazzi, Freshwater vegetation influence on sediment spatial distribution in river delta during flood, Coastal Sediment, San Diego, May 2015.

Nienhuis J.*, Andrew Ashton, Liviu Giosan, **William Nardin**, Sergio Fagherazzi, Sediment bypassing of river mouths: mechanisms and effects on delta evolution, Coastal Sediment, San Diego, May 2015.

Nienhuis J.*, Andrew Ashton, Liviu Giosan, **William Nardin**, Sergio Fagherazzi, Sediment bypassing of river mouths: mechanisms and effects on delta evolution, AGU Fall meeting, San Francisco, USA, December 2014.

Nardin W.*, Douglas Edmonds, Sergio Fagherazzi, Growth and evolution of river mouth bars under wave attack, AGU Fall meeting, San Francisco, USA, December 2014.

Olliver E.*, Douglas A. Edmonds, **William Nardin**. The role of vegetation in the development and resiliency of a coastal freshwater deltaic system, AGU Fall meeting, San Francisco, USA, December 2014.

Fagherazzi S.*, Edmonds D.A., **Nardin W.**, Leonardi N., Canestrelli A., Falcini F., Jerolmack D., Mariotti G., Rowland J.C., Slingerland R.L., Building land: modelling the dynamics of river mouth deposits, International Deltas Conference: Deltas: Genesis, Dynamics, and Ecology, Istomino, Russia, July 21-24 2014.

Canestrelli A.*, **William Nardin**, Douglas Edmonds, Sergio Fagherazzi, Rudy Slingerland. Three-dimensional numerical modeling of shallow jets: importance of frictional effects on the morphodynamics of river mouth bars and levees, AGU Fall meeting, San Francisco, USA, 9 – 13 December 2013.

Nardin W.* and Douglas A. Edmonds. Ideal vegetation height maximizes sedimentation in freshwater deltaic marshes during flood, AGU Fall meeting, San Francisco, USA, 9 – 13 December 2013.

Fagherazzi S.*, Leonardi N., Canestrelli A., **Nardin W.** Effect of waves and tides on mouth bar morphology and hydrodynamics: implications for fluvial wetlands, AGU Chapman Conference on Hydrogeomorphic Feedbacks and Sea Level Rise in Tidal Freshwater River Ecosystems, Reston, VA, USA, 13 – 16 November 2012.

Teaching and Mentoring

Teaching

Fall 2018: **Coastal Risk and Resilience, MEES608U** (seminar class)

Spring 2019: **Sediment Dynamics in Coastal and Estuarine Environments, MEES 698G**

Spring 2020: **Marine Biophysical System, MEES 698R**

Field Experience

Plum Island Sound (MA), 2011 and 2012. Topographic survey, vegetation monitoring, sediment analysis

Grand Chenier (LA), 2012. Hydrodynamic and Topographic survey, instruments deployment (ADCP, CTD and RBR), vegetation and sediment analysis

Cu Lao Dung (Vietnam), 2014 and 2015. Hydrodynamic and Topographic survey, instruments deployment (ADCP and RBR), vegetation and sediment analysis

Poplar Island (MD), 2017, 2018, 2019. Hydrodynamic and Topographic survey, instruments deployment (ADCP and ISCO sampler), vegetation and sediment analysis.

Horn Point Laboratory - Lake Cove (MD), 2018, 2019. Hydrodynamic and Topographic survey, instruments deployment (GPS and drone survey, wave characteristics).

Assateague Island (MD), 2019. Topographic survey (GPS survey).

Yellow River Delta (China), 2019: vegetation survey and initial visit for spring 2020 instruments deployments.

Other Activities

2018 Member of Sea level rise expert group for Sea level rise projections for Maryland 2018. Boesch, D.F., W.C. Boicourt, R.I. Cullather, T. Ezer, G.E. Galloway, Jr., Z.P. Johnson, K.H. Kilbourne, M.L. Kirwan, R.E. Kopp, S. Land, M. Li, **W. Nardin**, C.K. Sommerfield, W.V. Sweet. 2018. Sea-level Rise: Projections for Maryland 2018, 27 pp. University of Maryland Center for Environmental Science, Cambridge, MD.