

WILLIAM NARDIN

Ph.D., Assistant Professor

University of Maryland Center for Environmental Science
Horn Point Laboratory
2020 Horn Point Road, Cambridge, MD 21613, USA
Tel: +1 (410)221-8232
wnardin@umces.edu

1. ACADEMIC APPOINTMENTS

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

Horn Point Laboratory, USA

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

Horn Point Laboratory, USA

University of California - Berkeley, USA, Synthesis Postdoc NSF-Award (March 2016 - March 2017)

Department of Geography

Project: Eco-geomorphological model of coastal wetlands

Advisor: Laurel Larsen

Shared Postdoc: Indiana University and Boston University

- **Indiana University, Bloomington, USA, Postdoc (March 2013 - February 2014)**

Department of Geological Science

Project funded by NSF - Catchments and Coastlines-The Influence of Sediment Load and Type on Delta Morphodynamics and Deposits, Wax Lake Delta, Louisiana, USA.

Advisor: Douglas A. Edmonds

- **Boston University, Boston, USA, Postdoc (March 2014 - December 2015)**

Department of Earth and Environment

Project funded by ONR - Observations and measurements in the mangrove forest and adjacent tidal flat at the seaward end of Cu Lao Dung, Mekong River, Vietnam

Advisor: Sergio Fagherazzi

2. EDUCATION

University of Rome “La Sapienza”, Italy, Ph.D., Hydraulic and Environmental Engineering (June 2013)

Department of Civil and Environmental Engineering

Dissertation title: “The effect of wind waves on the development of river mouth bars”

Advisors: Roberto Guercio

University of Rome “La Sapienza”, Italy, Master and Bachelor in Environmental Engineering (December 2001)

Department of Civil and Environmental Engineering

Dissertation title: “Numerical modeling of field devices hydrodynamic vortex separators”

Advisor: Roberto Guercio

3. AWARDS AND PROFESSIONAL EXPERIENCES

Postdoc Fellowship (2015), National Center for Earth-Surface Dynamics funded by NSF (Earth-casting: case studies in predicting Earth-surface response to change)

Hosted by University of California - Berkeley, CA. Advisors: Laurel Larsen, Patricia Wiberg and Sergio Fagherazzi.

Project: Eco-geomorphological model of coastal wetlands.

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.

Convener (with Eric Merriam, Laurel Larsen and Erkan Istanbuluoglu), Special Session, “Ecohydrologic and Ecogeomorphologic Processes at the Intersection of Landscapes and Environmental Change”, fall meeting AGU, San Francisco, 2016.

Convener (with Evan B. Goldstein and Cheryl J. Hapke), Special Session, “Coastal Geomorphology and Morphodynamics”, fall meeting AGU, San Francisco, 2015.

Convener (with Sergio Fagherazzi and Gregory Okin), Special Session, “Ecogeomorphology: feedbacks between biota and sediment transport at the earth surface”, fall meeting AGU, San Francisco, 2014.

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

4. INVITED TALKS AND COLLOQUIA

NASA, Lanham, MD, USA, Nov 2017, How does vegetation shape landscape evolution? Tradeoffs among hydrodynamics, sediment fluxes, and vegetation.

University of Maryland – CBL, Salomons, MD, USA, Oct 2017, How does vegetation community impacts landscape evolution?

University of Maryland – IMET, Baltimore, MD, USA, Oct 2017, How does vegetation community impacts landscape evolution?

University of New South Wales, Sydney, Australia, June 2016, A vision in Water Engineering

University of Maryland – Horn Point Lab, Cambridge, MD, USA, May 2016, Feedbacks between vegetation and sediment fluxes on river deltas

Pontificia Universidad de Chile, Santiago, Chile, April 2016, The effect of wind waves and vegetation on river mouth morphodynamics

Potsdam University, Potsdam, Germany, October 2015, Vegetation impacts on river delta during flood

The University of Queensland, Brisbane, Australia, May 2015, Feedback between waves, sediment fluxes and vegetation at the river mouth

Woods Hole Oceanographic Institution, MA, USA, November 2014, Vegetation influence on sediment spatial distributions on river deltas

5. STUDENTS ADVISING

2018 Visiting scholar: Yuri Taddia (University of Ferrara, Italy): model advising and project collaboration;

2017-2018 Visiting student: Alessandro Gerevini (University of Parma, Italy): model learning and thesis advising;

2017-2018 Visiting scholar: Sara Lera (University of Rome La Sapienza, Italy): model advising and graduate school project development;

2017 Research Experiences for Undergraduates: Jesse Fleri (Utah State University)

2015 External Examiners for Shawn R. Harrison Ph.D. candidate (Waikato University-New Zealand).

2014 Hogyi Yao (East China Normal University & Boston University): model learning and model setup;

2014 Silvia Locatelli (Polytechnic of Milan & Boston University): model learning and thesis advising;

6. SKILLS AND EXPERTISE

- Programming Skills: FORTRAN, MATLAB, GIS, R

- Flood and Hydraulic software: Delft3D, SWAN, Flow3D, X-Beach
- Topographic survey: technical instruments and data analysis (GPS, Total Station)
- Acoustic Doppler Current Profile (ADCP): Instruments and data analysis for hydrodynamic survey
- Structural Analysis software AutoCAD, SAP2000

7. LANGUAGES

- Italian (mother tongue)
- English (full professional proficiency)
- Spanish (good conversational)

8. SERVICIES

Reviewer activities for: Geophysical Research Letters (2), Journal of Geophysical Research (3), The Geological Society of America Bulletin, Journal of Coastal Research, Geomorphology (3), Journal of Ecology, Water Resources Research, Remote Sensing, Earth Surface Processes and Landforms (2), Advances in Water Resources (2), Ocean Dynamics, Continental Shelf Research (2).

9. SELECTED FIELD WORK

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. Hydrodynamic and Topographic survey, instruments deployment (ADCP and ISCO sampler), vegetation and sediment analysis.

10. IN THE NEWS

Cover of Nature Geoscience, October 2014, Nardin and Edmonds, Optimum vegetation height and density for inorganic sedimentation in deltaic marshes, Nature Geoscience, (2014), doi:10.1038/ngeo2233.

11. PUBLICATIONS

Peer-reviewed journal publications:

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.

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

Bullock, E. L., Fagherazzi, S., **Nardin, W.**, Vo-Luong, P., Nguyen, P., & 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*.

Bryan, K. R., **Nardin, W.**, Mullarney, J. C., & 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*.

- 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.
- 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.
- 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.
- Nardin W.**, D. A. Edmonds and S. Fagherazzi, Influence of vegetation on spatial patterns of sediment deposition in deltaic islands during flood, *Advances in Water Resources* (2016) doi: 10.1016/j.advwatres.2016.01.001.
- 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.
- 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.
- Nardin, W.** and D.A. Edmonds, Optimum vegetation height and density for inorganic sedimentation in deltaic marshes, (2014), *Nature Geoscience*, doi:10.1038/ngeo2233.
- 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 published, *Journal of Geophysical Research: Oceans*, doi:10.1002/2013JC009312.
- 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.
- 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.

Under Review

- B. Ferdowsi, J. D. Gartner, K. N. Johnson, A. Kasprak, A. B. Limaye, K. L. Miller, **W. Nardin**, A. C. Ortiz, M. Perignon, A. Tejedor (all equal contribution) Earthcasting: Geomorphic prediction for society. (*under review; target: Earth's Future*)
- Nardin W.** and S. Fagherazzi, Chenier plain development: feedbacks between waves, mud, and sand, (*under review; target: Geophysical Research Letters*).

In preparation (final draft; to be submitted soon)

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. (*target: Earth Surface Processes and Landforms*)

Nardin W., S. Lera and J. Nienhius, The impact of offshore waves and vegetation on the sediment budget in the Virginia Coast Reserve (VA). (*target: Earth Surface Processes and Landforms*)

Fleri J., L. Staver, S. Lera and **W. Nardin**, The effect of tides, wind and vegetation seasonality in controlling water and sediment fluxes in Poplar Island (MD), USA. (*target: Earth Surface Processes and Landforms*)

Conference presentations and posters

(*denotes oral presentation of the first author)

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, February 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.