

Daniel J. Nowacki

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Employment

Research Oceanographer 3/2015–present

U.S. Geological Survey · Coastal & Marine Geology Program, Santa Cruz, CA

3/2015–3/2017 as Mendenhall Postdoctoral Research Fellow; 3/2015–7/2018 in Woods Hole, MA

Measuring and numerical modeling of sediment-transport, sea-level, and coastal-change processes in estuarine (salt marshes, lagoons) and beach environments; assessment of coastal-change hazards; wave-vegetation interaction; collection, analysis, quality control, and publishing of diverse observational time-series data; execution of field operations in diverse and challenging environments; authoring of journal articles, reports, and presentations at scientific conferences

Graduate Research Assistant 12/2009–2/2015

University of Washington · School of Oceanography, Seattle, WA

Field-based sediment transport studies of the tidal Mekong and Amazon rivers; observational and numerical investigations of tidal-flat sediment transport on the U.S. West coast; authoring of journal articles

Graduate Research Assistant 6/2008–11/2009

University of Washington · Dept. of Civil & Environmental Engineering, Seattle, WA

Research on sediment dynamics of the tidal Columbia River plume; dynamics of turbulent sediment removal; shelf impacts of anthropogenic influence and coastal engineering

Hydrologist 7/2004–5/2008

U.S. Geological Survey · National Research Program, Reston, VA

7/2004–9/2006 as contractor; 10/2006–5/2008 as Federal employee

Surface-water and hyporheic-flow investigations in the Florida Everglades and sandy streams; maintenance of long-term Everglades water-quality and flow-velocity monitoring station; authoring of technical reports and co-authorship of journal articles

Education

Doctor of Philosophy 2015

University of Washington · School of Oceanography

Thesis title: Sediment dynamics in tidal systems spanning a range of fluvial influence

Advisor: Andrea Ogston

Master of Science in Engineering 2010

University of Washington · Department of Civil & Environmental Engineering

Thesis title: Sediment removal from the Columbia River plume using a control volume formulation

Advisor: Alexander Horner-Devine

Bachelor of Science in Computer Engineering 2004

Syracuse University · College of Engineering & Computer Science

Summa cum laude; GPA 3.91/4.00 · Physics Minor

Skills, Training, &c.

- Hydrodynamic/hydrologic/wave/sediment transport model (SWAN, SWASH, Delft3D, ROMS, COAWST) configuration, execution, and analysis in parallel-computing environments
- Expert computational skills including time-series analysis, rapid interfacing with novel data sources, data QA/QC and standards-based archival in netCDF, shell scripting, Linux/UNIX

- system administration
- Innovative software tools and languages including scientific Python stack (pandas, xarray, dask), MATLAB, FORTRAN, GIS. Contributor to the xarray code base. Effective scientific visualization with matplotlib and d3.js.
GitHub repo: <https://github.com/dnowacki-usgs>; Website: <https://nowacki.org>
 - Varied and extensive field-based scientific research experience on four continents including riverine, estuarine, coastal, and deep-ocean settings. Ship/field time: 60+ days tidal Amazon River, Brazil; 50+ days Florida Everglades; 40+ days Waipaoa shelf, New Zealand; 25+ days Mekong River estuary, Vietnam; 20+ days Chincoteague Bay, MD/VA; 20+ days Grand Bay, AL/MS; 20+ days Jamaica Bay & Great South Bay, NY; 20+ days Willapa tidal flats, WA; 15+ days Puget Sound; ≤ 14 days each: Washington/Oregon shelf; Kaktovik, Alaska; Sego Sandstone, Book Cliffs, UT; Rincón, Puerto Rico
 - Instrumentation design and integration. Development of novel data-collection techniques.
 - Small boat operation experience in support of scientific research; U.S. DOI MOCC certified
 - U.S. Government B-3 aviation training; OSHA forklift operator training; USGS firearms training (shotgun)

Teaching

Graduate Teaching Assistant OCEAN 410: Marine Geology & Geophysics OCEAN 201: Introduction to Oceanography Lab University of Washington · School of Oceanography	2012, 2013
Guest Lecturer Friday Harbor Labs Marine Sedimentary Processes Research Apprenticeship University of Washington · School of Oceanography	2012, 2013

Grants, Activities, Awards, and Scholarships

USGS Mendenhall Research Fellowship Two-year Federal postdoctoral appointment with the USGS Coastal & Marine Geology Program	2015
Pan-American Advanced Studies Institute Short course: “Toward a Sustained Operational River-to-Shelf Observation & Prediction System for the Amazon” Universidade Federal Fluminense, Niteroi, Brazil	2013
School of Oceanography Innovation Grant Development of an underwater imaging system	2013
National Defense Science & Engineering Graduate (NDSEG) fellowship Three-year tuition and salary award for study leading to a Ph.D	2010–2013
Engineers Without Borders USA, University of Washington chapter Active graduate-student member; served on two assessment and implementation trips to Andean Bolivia in 2009 and 2011	2008–2011
USGS/DOI STAR Award U.S. Geological Survey	2007
Institute of Electrical and Electronics Engineers (IEEE) Best Senior Design Project Implementation Award Syracuse University	2004

Peer-Reviewed Publications

- Nittrouer, C.A., DeMaster, D.J., Kuehl, S.A., Figueiredo Jr., A.G., Sternberg, R.W., Faria, L.E.C., Silveira, O.M., Allison, M.A., Kineke, G.C., Ogston, A.S., Souza Filho, P.W.M., Asp, N.E., **Nowacki, D.J.**, Fricke, A.T., 2021, Amazon Sediment Transport and Accumulation Along the Continuum of Mixed Fluvial and Marine Processes, *Annual Review of Marine Science*, doi:10.1146/annurev-marine-010816-060457.
- Nowacki, D.J.**, Ganju, N.K., 2020, Sediment dynamics of a divergent bay-marsh complex, *Estuaries and Coasts*, doi:10.1007/s12237-020-00855-5.
- Nowacki, D.J.**, Grossman, E.E., 2020, Sediment transport in a restored, river-influenced Pacific Northwest estuary, *Estuarine, Coastal and Shelf Science*, doi:10.1016/j.ecss.2020.106869.
- Wasson, K., Ganju, N.K., Defne, Z., Endris, C., Elsey-Quirk, T., Thorne, K.M., Freeman, C.M., Guntenspergen, G., **Nowacki, D.J.**, Raposa, K.B., 2019, Understanding tidal marsh trajectories: evaluation of multiple indicators of marsh persistence, *Environmental Research Letters* 14, doi:10.1088/1748-9326/ab5a94.
- Nowacki, D.J.**, Ganju, N.K., 2019, Simple metrics predict salt-marsh sediment fluxes, *Geophysical Research Letters* 46, doi:10.1029/2019GL083819.
- Nowacki, D.J.**, Ogston, A.S., Nittrouer, C.A., Fricke, A.T., Asp, N.E., Souza Filho, P.W.M., 2019, Seasonal, tidal, and geomorphic controls on sediment import to Amazon River tidal floodplains, *Earth Surface Processes and Landforms*, doi:10.1002/esp.4616.
- Fricke, A.T., Nittrouer, C.A., Ogston, A.S., **Nowacki, D.J.**, Asp, N.E., Souza Filho, P.W.M., 2018, Morphology and dynamics of the intertidal floodplain along the Amazon tidal river, *Earth Surface Processes and Landforms*, doi:10.1002/esp.4545.
- Nowacki, D.J.**, Ganju, N.K., 2018, Storm impacts on hydrodynamics and suspended-sediment fluxes in a microtidal back-barrier estuary, *Marine Geology* 404, doi:10.1016/j.margeo.2018.06.016.
- Ogston, A.S., Allison, M.A., McLachlan, R.L., **Nowacki, D.J.**, Stephens, J.D., 2017, How tidal processes impact the transfer of sediment from source to sink: Mekong River collaborative studies, *Oceanography* 30, doi:10.5670/oceanog.2017.311.
- Fricke, A.T., Nittrouer, C.A., Ogston, A.S., **Nowacki, D.J.**, Asp, N.E., Souza Filho, P.W.M., da Silva, M.S., 2017, River tributaries as sediment sinks: Processes operating where the Tapajós and Xingu rivers meet the Amazon tidal river, *Sedimentology*, doi:10.1111/sed.12372.
- Nowacki, D.J.**, Beudin, A., Ganju, N.K., 2017, Spectral wave dissipation by submerged aquatic vegetation in a back-barrier estuary, *Limnology & Oceanography*, doi:10.1002/lno.10456.
- Ganju, N.K., Suttles, S.E., Beudin, A., **Nowacki, D.J.**, Miselis, J.L., Andrews, B.D., 2016, Quantification of storm-induced bathymetric change in a back-barrier estuary, *Estuaries and Coasts*, doi:10.1007/s12237-016-0138-5.
- Nowacki, D.J.**, Ogston, A.S., Nittrouer, C.A., Fricke, A.T., Van, P.D.T., 2015, Sediment dynamics in the lower Mekong River: transition from tidal river to estuary, *Journal of Geophysical Research: Oceans*, doi:10.1002/2015JC010754.
- Nowacki, D.J.**, Ogston, A.S., 2013, Water and sediment transport of channel-flat systems in a mesotidal mudflat: Willapa Bay, Washington, *Continental Shelf Research*, doi:10.1016/j.csr.2012.07.019.
- Nowacki, D.J.**, Horner-Devine, A.R., Nash, J.D., Jay, D.A., 2012, Rapid sediment removal from the Columbia River Plume, *Continental Shelf Research* 35, doi:10.1016/j.csr.2011.11.013.
- Harvey, J.W., Noe, G.B., Larsen, L.G., **Nowacki, D.J.**, McPhillips, L.E., 2011, Field flume reveals aquatic vegetation's role in sediment and particulate phosphorus transport in a shallow aquatic ecosystem, *Geomorphology* 126, doi:10.1016/j.geomorph.2010.03.028.
- Harvey, J.W., Schaffranek, R.W., Noe, G.B., Larsen, L.G., **Nowacki, D.J.**, O'Connor, B.L., 2009, Hydroecological factors governing surface water flow on a low-gradient floodplain, *Water Resources Research* 45, doi:10.1029/2008wr007129.

Publications Under Review or in Preparation

Nowacki, D.J., et al., Sediment dynamics of an urbanized Pacific Northwest estuarine embayment, in prep.

Technical Reports & Data Releases

Montgomery, E.T., Martini, M.A., Lightsom, F.L., Butman, B., **Nowacki, D.J.**, Suttles, S.E., 2008, Documentation of the U.S. Geological Survey Oceanographic Time-Series Measurement Database (ver. 3.0, April 2021), *U.S. Geological Survey Open-File Report 2007-1194*, doi:10.3133/ofr20071194.

Erickson R.A., Bulliner E.A., Bristol S., Fienen M.N., Garrity C., Kline K.L., **Nowacki D.J.**, Roberts N.J., Burnett J.L., and Hebert, J.L., 2020, Jupyter Data Stories: *U.S. Geological Survey software release*, doi:10.5066/P9NDQRX6.

Nowacki, D.J., Grossman, E.E., and Curran, C.A., 2020, Oceanographic measurements collected in the Stillaguamish River Delta, Port Susan, Washington, USA from March 2014 to July 2015: *U.S. Geological Survey data release*, doi:10.5066/P9RK8H7X.

Nowacki, D.J., Suttles, S.E., Ganju, N.K., Montgomery, E.T. and Martini, M.A., 2019, Oceanographic and Water Quality Measurements Collected in Jamaica Bay, NY and Great South Bay, NY, August 2017–June 2018: *U.S. Geological Survey data release*, doi:10.5066/P9BD78FQ.

Nowacki, D.J., Ganju, N.K., Suttles, S.E., Borden, J., and Nichols, A., 2018, Discharge measurements made in Bayou Heron and Bayou Middle, Grand Bay, Mississippi in January 2017: *U.S. Geological Survey data release*, doi:10.5066/P98NHB82.

Nowacki, D.J., Suttles, S.E., Ganju, N.K., Montgomery, E.T. and Martini, M.A., 2018, Oceanographic and water quality measurements collected in Grand Bay, Alabama/Mississippi, August 2016–January 2017: *U.S. Geological Survey data release*, doi:10.5066/P9UG9JYQ.

Suttles, S.E., Ganju, N.K., Brosnahan, S.M., Montgomery, E.T., Dickhudt, P.J., Beudin, A., **Nowacki, D.J.**, and Martini, M.A., 2017, Summary of oceanographic and water-quality measurements in Chincoteague Bay, Maryland and Virginia, 2014–15, *U.S. Geological Survey Open-File Report 2017-1032*, doi:10.3133/ofr20171032.

Schaffranek, R.W., Stewart, M.A., and **Nowacki, D.J.**, 2007, Surface-Water Exchange through Culverts along State Road 9336 within Everglades National Park, 2004-2005, *U.S. Geological Survey Data Series 358*, doi:10.3133/ds358.

Presentations (As First Author Only)

Nowacki, D.J., Stevens, A.W., Takesue, R.K., Grossman, E.E., VanArendonk, N.R., Sediment Dynamics Within an Urbanized Pacific Northwest Estuarine Embayment, AGU Fall Meeting, 1–17 December 2020, San Francisco, CA (virtual).

Nowacki, D.J., Grossman, E.E., Stevens, A.W., VanArendonk, N.R., Crosby, S.C., Hydrodynamics and suspended-sediment transport within an urbanized Pacific Northwest estuarine embayment, 2020 Salish Sea Ecosystem Conference, 21–22 April 2020, Vancouver, BC Canada (virtual).

Nowacki, D.J., Stevens, A.W., Crosby, S.C., Grossman, E., VanArendonk, N.R., Tehranirad, B., Assessing Coastal Water-Level Variability in the Salish Sea via a Spatially Extensive Network of Real-time Water-level Sensors and Hydrodynamic Modeling, 2020 Ocean Sciences Meeting, 16–21 February 2020, San Diego, CA.

Nowacki, D.J., Ganju, N.K., Contrasting Sediment Dynamics in Two Degrading Salt-Marsh Complexes: Grand Bay, AL/MS and Jamaica Bay, NY, 2018 Ocean Sciences Meeting, 11–16 February 2018, Portland, OR.

Nowacki, D.J., Ganju, N.K., Suttles, S.E., Hydrodynamics and sediment transport in a rapidly eroding salt-marsh complex, Coastal and Estuarine Research Federation 24th Biennial Conference, 5–9 November 2017, Providence, RI.

Nowacki, D.J., Beudin, A., Ganju, N.K., Response of suspended-sediment fluxes to storms in a

- back-barrier estuary, Chincoteague Bay, MD/VA, USA, 2016 Ocean Sciences Meeting, 21–26 February 2016, New Orleans, LA.
- Nowacki, D.J.**, Ganju, N.K., A field and numerical study of wave attenuation by submerged vegetation in Chincoteague Bay, Coastal and Estuarine Research Federation 23rd Biennial Conference, 8–12 November 2015, Portland, OR.
- Nowacki, D.J.**, Ogston, A.S., Nittrouer, C.A., Fricke, A.T., Souza-Filho, P.W.M., Asp, N.E., Tidal-channel flow and sediment transport in environments influenced by the tidal Amazon River, Brazil, 2014 Ocean Sciences Meeting, 23–28 February 2014, Honolulu, HI.
- Nowacki, D.J.**, Ogston, A.S., Nittrouer, C.A., Fricke, A.T., Souza-Filho, P.W.M., Asp, N.E., Dynamics of sediment transport in large tropical tidal rivers via observations in the Mekong and Amazon, AGU Fall Meeting, 9–13 December 2013, San Francisco, CA.
- Nowacki, D.J.**, Ogston, A.S., Nittrouer, C.A., Souza-Filho, P.W.M., Silva, M.S., Silveira, O.F., Fricke, A.T., The Amazon tidal river as a missing link in the transport of water and sediment to the ocean, University of Washington Water Symposium, 18 April 2012, Seattle, WA.
- Nowacki, D.J.**, Ogston, A.S., Nittrouer, C.A., Souza-Filho, P.W.M., Silva, M.S., Silveira, O.F., Fricke, A.T., Water and sediment transport in the Amazon tidal river and its tributaries, Ocean Sciences Meeting, 20–24 February 2012, Salt Lake City, UT.
- Nowacki, D.J.**, Ogston, A.S., 2011, Multiple scales of controls on sediment transport in intertidal flats: tidal stage, storms, and seasons, AGU Chapman Conference on Source to Sink Systems Around the World and Through Time, 24–27 January 2011, Oxnard, CA.
- Nowacki, D.J.**, Ogston, A.S., 2010, Water-surface elevation controls on sediment-transport dynamics in channel-flat environments of intertidal flats, AGU Fall Meeting, 15–17 December 2010, San Francisco, CA.
- Nowacki, D.J.**, Ogston, A.S., Nittrouer, C.A., 2010, Water-surface elevation controls on sediment-transport dynamics in channel-flat environments of intertidal flats, AGU Ocean Sciences Meeting, 22–26 February 2010, Portland, OR.
- Nowacki, D.J.**, Horner-Devine, A.R., Nash, J.D., Jay, D.A., 2009, Turbulent Removal of Sediment from a Buoyant River Plume, Coastal and Estuarine Research Federation 20th Biennial Conference, 1–5 November 2009, Portland, OR.

Professional Memberships

American Geophysical Union

2007–present