

# Samuel E. Muñoz

Assistant Professor  
Department of Marine & Environmental Sciences  
Department of Civil & Environmental Engineering  
Northeastern University

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## I. EDUCATION & EMPLOYMENT HISTORY

### *Education*

- 2004-2008            B.Sc. (Honors), Physical Geography (Minor: Geomatics)  
Carleton University (Ottawa, Canada)  
Advisor: Michael Pisaric
- 2008-2010           M.Sc., Geography  
University of Ottawa (Ottawa, Canada)  
Advisor: Konrad Gajewski
- 2010-2015           Ph.D. Physical Geography (Minor: Quaternary Science)  
University of Wisconsin-Madison (Madison, Wisconsin)  
Advisor: John (Jack) Williams

### *Employment History*

- 2015-2017           Weston Howland Jr. Postdoctoral Scholar  
Department of Geology & Geophysics  
Woods Hole Oceanographic Institution  
Sponsors: Jeffrey P. Donnelly & Liviu Giosan
- 2017-present        Adjunct Scientist  
Department of Geology & Geophysics  
Woods Hole Oceanographic Institution
- 2017-present        Assistant Professor  
Department of Marine & Environmental Sciences  
Department of Civil & Environmental Engineering  
Northeastern University

## II. SCHOLARSHIP & RESEARCH

### Publications

As of June 3, 2021:

Google Scholar: h-index = 14, total times cited = 1016

*Peer-Reviewed articles* (n= 29 Published or In Press)

†Indicates graduate student advisee; \*Indicates undergraduate student advisee

*My lab uses the Vancouver Protocol as a guideline for determining authorship. As first author on a paper, I typically performed all analyses and wrote most of the text. As final author, I typically worked closely with the first author on all analyses, interpretation, writing, and editing of the manuscript.*

Broadman E., Kaufman D.S., Anderson R.S., Bogle S., Ford M., Fortin D., Henderson A.C.G., Lacey J.H., Leng M.J., McKay N.P., **Muñoz S.E.** (in review) Reconstructing postglacial hydrologic and environmental change in the eastern Kenai Peninsula lowlands using proxy data and mass balance modeling. *Quaternary Research*.

Arcusa S.H., McCay N.P., Wiman C. †, Patterson S., **Muñoz S.E.**, Aquino-Lopez M.A. (in review) New approaches to dating intermittently varved sediment, Columbine Lake, Colorado, USA. *Geochronology*.

Dunne, K., Dee, S.G., Reinders, J.†, **Muñoz, S.E.**, Nittrouer, J. (in review). Enhanced probability of catastrophic Mississippi River floods under high emissions scenarios. *Geophysical Research Letters*.

Stubbins A, Lavender Law K, **Muñoz SE**, Bianchi TS, Zhu L (in press) Plastics in the Earth System. *Science*.

Reinders J†, & **Muñoz SE** (2021). Improvements to flood frequency analysis using climate and paleoflood data. *Water Resources Research*, doi: 10.1029/2020WR028631.

Wiman C†, Hamilton B\*, Dee SG, **Muñoz SE** (2021). Reduced lower Mississippi River discharge during the Medieval era. *Geophysical Research Letters*, e2020GL091182.

White AJ, **Muñoz SE**, Schroeder S, Stevens LR (2021). Reply to Skousen and Aiuvalasit: On the Primacy of Archaeological Data. *American Antiquity*, 86(1): 203-205.

**Muñoz SE**, Porter TJ, Bakkelund A, Nusbaumer J, Dee SG, Hamilton, B.\*, Giosan L, Tierney JE (2020) Lipid biomarker record documents hydroclimatic variability of the Mississippi River basin during the Common Era. *Geophysical Research Letters*, e2020GL087237.

Broadman E, Kaufman DS, Henderson ACG, Berg EE, Anderson RS, Leng MJ, Stahnke SS, **Muñoz SE** (2020) Multi-proxy evidence for millennial-scale changes in North Pacific Holocene hydroclimate from the Kenai Peninsula lowlands, south-central Alaska. *Quaternary Science Reviews*.

White AJ, **Muñoz SE**, Schroeder S, Stevens LR (2020) After Cahokia: Indigenous repopulation and depopulation of the Horseshoe Lake watershed AD 1400 – 1900. *American Antiquity*, doi: 10.1017/aaq.2019.103

- Lombardi R, Davis L, Stinchcomb G, **Muñoz SE**, Stewart L, Therrell M (2020) Fluvial activity in major river basins of the eastern U.S. during the Holocene. *The Holocene*, doi: 10.1177/0959683620919978
- Arcusa S, McKay N, Routson C, **Muñoz SE** (2019) Dust-drought interactions over the last 15,000 years: a network of lake sediment records from the San Juan Mountains, Colorado. *The Holocene*, doi: 10.1177/0959683619875192
- White AJ, Stevens LR, Lorenzi V, **Muñoz SE**, Schroeder (2019) Fecal stanols show simultaneous flooding and seasonal precipitation change correlate with Cahokia's population decline. *Proceedings of the National Academy of Sciences*, doi: 10.1073/pnas.1809400116
- Muñoz SE**, Giosan L, Blusztajn J, Rankin C, Stinchcomb G (2019) Radiogenic fingerprinting reveals anthropogenic and buffering controls on sediment dynamics of the Mississippi River system. *Geology*, doi: 10.1130/G45194.1
- Wilhelm B, Ballesteros Cánovas JA, MacDonald N, Toonen WHJ, Baker V, Barriendos M, Benito G, Brauer A, Corella JP, Denniston R, Glaser R, Ionita M, Kahle M, Liu T, Luetscher M, Macklin M, Mudelsee M, **Muñoz SE**, Schulte L, St. George S, Stoffel M, Wetter O. (2019) Interpreting historical, botanical, and geological evidence to aid preparations for future floods. *WIREs Interdisciplinary Reviews*, doi: 10.1002/wat2.1318
- Walsh JR, Corman JR, **Muñoz SE** (2018) Coupled long-term limnological data and sedimentary records reveal novel control on water quality in a eutrophic lake. *Limnology & Oceanography*, doi: 10.1002/lno.11083.
- Giosan L, Orsi WD, Coolen M, Dunlea AG, Thirumalai K, **Muñoz SE**, Clift PD, Donnelly JP, Galy V, Fuller DQ (2018) Neoglacial climate anomalies and the Harappan metamorphosis. *Climate of the Past*, doi: 10.5194/cp-2018-37.
- Brugam R, **Muñoz SE** (2018) A 1,600-year record of human impacts on a floodplain lake in the Mississippi River valley. *Journal of Paleolimnology*, doi: 10.1007/s10933-018-0033-0.
- White AJ, Stevens LR, Lorenzi V, **Muñoz SE**, Lipo CP, Schroeder S (2018) A test of fecal stanols as indicators of population change. *Journal of Archaeological Science* 93: 129-134.
- Muñoz SE**, Giosan L, Therrell MD, Remo JWF, Shen Z, Sullivan RM, Wiman C, O'Donnell M, Donnelly JP (2018) Climate variability, river engineering, and unprecedented flood risk along the Mississippi River. *Nature*, doi: 10.1038/nature26145.
- Muñoz SE**, Dee SG. (2017) El Niño increases the risk of lower Mississippi River flooding. *Scientific Reports*, doi:10.1038/s41598-017-01919-6s.
- Walsh JR, **Muñoz SE**, Vander Zanden MJ. (2016) Outbreak of an undetected invasive species triggered by a climate anomaly. *Ecosphere*, doi:10.1002/ecs2.1628.
- Beach T, Johnson KM, McCusker Hill M, **Muñoz SE**, Peros M (2016) The view from the "Anthropocene": New perspectives in human-induced environmental change. *Anthropocene*, doi:10.1016/j.ancene.2016.09.004.
- Radeloff VC, Williams JW, Bateman BL, Burke KD, Carter SK, Childress ES, Cromwell KJ, Gratton C, Hasley AO, Kraemer BM, Latzka AW, Marin-Spiotta E, Meine CD, **Muñoz SE**, Neeson TM,

Pidgeon AM, Rissman AR, Rivera RJ, Szymanski LM, Usinowicz J (2015). The rise of novelty in ecosystems. *Ecological Applications* 25(8): 2051-2068.

**Muñoz SE**, Gruley KE, Fike DA, Schroeder S, Williams JW (2015) Reply to Baires et al.: Shifts in Mississippi River flood remain a contributing factor to Cahokia's emergence and decline. *Proceedings of the National Academy of Sciences*, doi: 10.1073/pnas.1509404112.

**Muñoz SE**, Gruley KE, Massie A, Fike DA, Schroeder S, Williams JW (2015). Cahokia's emergence and decline coincided with shifts of flood frequency on the Mississippi River. *Proceedings of the National Academy of Sciences* 112(20): 6319-6324.

**Muñoz SE**, Mladenoff DJ, Schroeder S, Williams JW (2014). Defining the spatial patterns of land use associated with the indigenous societies of eastern North America. *Journal of Biogeography*, 41(12): 2195-2210.

**Muñoz SE**, Schroeder S, Fike DA, Williams JW (2014). A record of sustained prehistoric and historic land use from the Cahokia region, Illinois, USA. *Geology* 42(6): 499-502.

Gajewski K, **Muñoz SE**, Peros M, Viau A, Morlan R, Betts M (2011) The Canadian Archaeological Radiocarbon Database (CARD): archaeological radiocarbon dates in North America and their paleoenvironmental context. *Radiocarbon* 53(2): 371-394.

**Muñoz SE**, Gajewski K, Peros M (2010) Synchronous environmental and cultural change in the prehistory of the northeastern United States. *Proceedings of the National Academy of Sciences*, doi: 10.1073/pnas.1005764107.

**Muñoz SE**, Gajewski K (2010) Distinguishing prehistoric human influence on late Holocene forests in southern Ontario, Canada. *The Holocene* 20(6): 967-981.

Peros M, **Muñoz SE**, Gajewski K, Viau AE (2010) Prehistoric demography of North America inferred from radiocarbon data. *Journal of Archaeological Science* 37: 656-664.

#### *Book chapters*

Toonen WHJ, **Muñoz SE**, Cohen KM, Macklin MG (2019) High-Resolution Sedimentary Paleoflood Records in Alluvial River Environments: A Review of Recent Methodological Advances and Application to Flood Hazard Assessment, in *Palaeohydrology: Traces, Tracks and Trails of Extreme Events* (J. Herget & A. Fontana, eds.), Springer, pp. 213-228.

#### *Non-Reviewed articles*

Davis L, Harden TM, **Muñoz SE**, Godaire J, O'Connor JE (2018) Preface to historic and paleoflood analyses: New perspectives on climate, extreme flood risk, and the geomorphic effects of large floods. *Geomorphology*, doi: 10.1016/j.geomorph.2018.10.021.

**Muñoz SE** (2013) Review of 'Surviving Sudden Environmental Change (J. Cooper & P. Sheets, eds.)'. *Heritage & Society* 6(2): 203-204.

#### *Books*

**Muñoz SE** & Parrish H (2019) Shaped by Rivers. Field Guides to the Anthropocene Drift, no. 2. Goethe Institut, Munich, Germany.

## Conference Abstracts

\*Indicates invited presentation; †Indicates graduate student advisee

Hudson P, Heitmuler F, **Muñoz SE**, Costello J (2021) Contextualized sedimentation rates for large floods along the lower Mississippi River: the importance of flood duration. European Geophysical Union, abstract 15498.

\***Muñoz SE** (2020) High magnitude floods in the late Holocene: insights from muds and models. American Geophysical Union Fall Meeting, abstract 662662.

\***Muñoz SE** (2020) High magnitude floods in the late Holocene: insights from muds and models. American Quaternary Association biannual meeting.

Reinders J† & **Muñoz SE** (2020) Improvements to flood frequency analysis using climate and paleoflood data. American Quaternary Association biannual meeting.

Reinders J† & **Muñoz SE** (2020) Improvements to flood frequency analysis using climate and paleoflood data. American Geophysical Union fall meeting.

Wiman C†, Hamilton B, Dee SG, **Muñoz SE** (2020) Reduced lower Mississippi River discharge during the Medieval climate anomaly. American Quaternary Association biannual meeting.

Wiman C†, Hamilton B, Dee SG, **Muñoz SE** (2020) Reduced lower Mississippi River discharge during the Medieval era. American Geophysical Union fall meeting.

**Muñoz SE** & Porter TJ (2019) Flood hazard dipole across the Mississippi River basin: Observations, Reconstructions, and Implications. American Geophysical Union Fall Meeting, abstract H44F-02, San Francisco, CA.

Reinders J†, van Hengstum PJ, Beighley RE, **Muñoz SE** (2019) How unusual was Hurricane Harvey? New paleoflood records for southeast Texas. American Geophysical Union Fall Meeting, abstract H41N-1905 San Francisco, CA.

Wiman C†, McKay N, Routson C, Arcusa S, **Muñoz SE** (2019) Late Holocene spring snowfall and hydroclimate variability inferred from varved sediments, Columbine Lake, Colorado. American Geophysical Union Fall Meeting, abstract PP42B-04, San Francisco, CA.

**Muñoz SE** & Toonen WHJ (2019) Recent advances in the palaeoflood hydrology of alluvial rivers. International Quaternary Association meeting, abstract O3216, Dublin, Ireland.

**Muñoz SE** & Toonen WHJ (2018) Recent advances in the palaeoflood hydrology of alluvial rivers. American Quaternary Association Biannual Meeting, Ottawa, Canada.

\***Muñoz SE** (2018) Floodplain lakes as a Rosetta Stone for paleohydrology, paleoecology, and paleoclimatology. Geological Society of America Annual Meeting, Paper No. 277-1, Indianapolis, IN.

Giosan L, **Muñoz SE**, Khonde NN, Naing T, Yang Q, Min Tun M, Clift PD (2018) The Ayeyawady Delta: Links between monsoon, floods, and sediment fluxes. American Geophysical Union Fall Meeting, abstract #EP13C-2115, Washington, DC.

Giosan L, Orsi WD, Coolen MJL, Wuchter C, Dunlea AG, Thirumalai K, **Muñoz SE**, Clift PD, Donnelly JP, Galy V, Fuller DQ (2018) Neoglacial climate anomalies and the Indus Civilization's metamorphosis. American Geophysical Union Fall Meeting, abstract #PP11D-1273, Washington, DC.

- Muñoz SE**, Therrell MD, Remo JW, Giosan L, Donnelly JP (2017) Climatic and anthropogenic controls on Mississippi River floods: a multi-proxy palaeoflood approach. American Geophysical Union Fall Meeting, abstract PP-42A-04, New Orleans, LA.
- Muñoz SE** (2017) The view from the mud: Environmental perspectives on the rise and fall of Cahokia, a prehistoric city on the Mississippi River. American Association of Geographers Annual Meeting, Boston, MA.
- Muñoz SE**, Giosan L, Donnelly JP, Dee SG (2016) Extreme Mississippi River floods in the late Holocene: Reconstructions and simulations. American Geophysical Union Fall Meeting, abstract no. H42E-06, San Francisco, CA.
- \***Muñoz SE** (2016) Forests, Fields, and Floods: Environmental change and the rise and fall of Cahokia. Geological Society of America Annual Meeting, abstract 91-1, Denver, CO.
- Muñoz SE**, Giosan L, Donnelly JP (2016) A new generation of paleoflood records for the lower Mississippi River. Geological Society of America Annual Meeting, abstract 303-9, Denver, CO.
- Muñoz SE**, Giosan L, Donnelly JP, Dee SG, Shen Z (2016) Taming the Mighty Mississippi: Integrating paleo-flood data and modeling to understand the patterns and causes of extreme floods on a major river system. European Geophysical Union Annual Meeting, abstract EPSC2016-1808, Vienna Austria.
- \***Muñoz SE** (2015) Developing a long-term perspective of flooding in the Mississippi River basin using fluvio-lacustrine sediments. Geological Society of America Annual Meeting, Paper no. 82-12, Baltimore, MD.
- Muñoz SE**, Gruely KE, Massie A, Fike DA, Schroeder S, Williams JW (2015) Forests, Fields, and Floods: The historical ecology of the Cahokia region, Illinois, USA. American Association of Geographers Annual Meeting, Chicago, IL.
- Muñoz SE**, Gruely KE, Massie A, Williams JW (2014) Flooding of the Great River during the Common Era: A palaeohydrological record of high magnitude flood events from the central Mississippi River valley. American Geophysical Union Fall Meeting, abstract PP21E-05, San Francisco, CA.
- Muñoz SE**, Gruely KE, Massie A, Schroeder S, Williams JW (2014) Forests, Fields, and Floods: An environmental (Pre)history of the Cahokia Region. Midwestern Archaeology Conference Annual Meeting, Champaign, IL.
- Muñoz SE**, Schroder S, Fike DA, Williams JW (2014) A Paleoenvironmental record of prehistoric and historic land use from the Cahokia region. Society for American Archaeology Annual Meeting, abstract no. 260, Austin, TX.
- Muñoz SE**, Williams JW, Fike DA (2013) A record of recurrent prehistoric and historic land use from the Cahokia Region, Illinois USA. Geological Society of American Annual Meeting, Paper No. 5, Session No. 327, Denver, CO.
- Muñoz SE** & Gajewski K (2011) Distinguishing the influence of prehistoric agriculture on late Holocene forests of southern Ontario, Canada. American Association of Geographers Annual Meeting, Seattle, WA.
- \***Muñoz SE**, Gajewski K, Peros MC (2011) Synchronous environmental and cultural change in the prehistory of the Northeastern United States. Geological Society of America Annual Meeting, Paper no. 9, Session No. 161, Minneapolis, MN.

## **Presentations**

### *Invited Seminars*

- Muñoz SE** (2021) Riverine floods in the late Holocene: insights from muds and models. Department of Geology & Geophysics, University of Wyoming.
- Muñoz SE** (2020) Riverine floods in the late Holocene: insights from muds and models. Department of Earth & Environment, Boston University.
- Muñoz SE** (2020) Riverine floods in the late Holocene: insights from muds and models. Department of Earth & Atmospheric Sciences, Indiana University.
- Muñoz SE** (2020) Riverine floods in the late Holocene: insights from muds and models. Department of Earth, Environmental and Planetary Sciences, Rice University.
- Muñoz SE** (2020) Mississippi River floods in the late Holocene: new sedimentary records from floodplain lakes. US Army Corps of Engineers, Mississippi River Geomorphology & Potamology.
- Muñoz SE** (2020) Rivers in the Anthropocene: Insights from Muds and Models. Department of Earth, Atmospheric, and Planetary Sciences, Massachusetts Institute of Technology, Cambridge, MA.
- Muñoz SE** (2019) Climatic and anthropogenic controls on Mississippi River floods: Insights from paleoflood records. NOAA Climate Program Office Webinar, Inland flooding in a changing climate: 2019 Mississippi/Missouri basin.
- Muñoz SE** (2019) The Past, Present, and Future of Mississippi River Floods. Mississippi River Research Consortium, La Crosse, WI.
- Muñoz SE** (2019) Forests, Fields, and Floods: Muddy perspectives on Cahokia, a prehistoric city on the Mississippi. Department of Geography & Earth Science, University of Wisconsin–La Crosse, La Crosse, WI.
- Muñoz SE** (2018) Muddy Perspectives: Recent advances in the application of geoscience in archaeology. Boston University, Department of Anthropology, Boston MA.
- Muñoz SE** (2018) Floodplain lakes as a ‘Rosetta Stone’ for assessing environmental change in low-lying regions. Department of Geosciences, Baylor University, Waco, TX.
- Muñoz SE** (2017) Connections, Hazards, and Sustainability across the land-sea interface. Department of Marine & Environmental Sciences, Northeastern University, Nahant, MA.
- Muñoz SE** (2017) New perspectives on hydroclimatic extremes: Merging reconstructions, observations, and simulations. Department of Geology, Rowan University, Glassboro, NJ.
- Muñoz SE** (2017) New perspectives on hydrometeorological extremes: Merging reconstructions, observations, and simulations. Department of Geography & Earth Sciences, University of North Carolina at Charlotte, Charlotte, NC.
- Muñoz SE** (2016) Extreme flooding of the Mississippi River: Lessons from lake sediments. Department of Geological Sciences, University of Colorado at Boulder, Boulder, CO.
- Muñoz SE** (2016) Extreme flooding of the Mississippi River: Stories from lake sediments. Department of Marine Science, Coastal Carolina University, Conway, SC.
- Muñoz SE** (2016) Flooding of the Mississippi River in the Common Era: Stories from lake sediments. Department of Geology & Geophysics, Woods Hole Oceanographic Institution, Woods Hole, MA.

- Muñoz SE** (2015) Developing a long-term perspective on flooding in the Mississippi River basin. Department of Earth, Environmental, and Planetary Sciences, Brown University, Providence, RI.
- Muñoz SE** (2015) Developing a long-term perspective on flooding in the Mississippi River basin using lake sediments. Department of Earth, Environment, and Physics, Worcester State University, Worcester, MA.
- Muñoz SE** (2015) Human dimensions of environmental change: Lessons from Earth history. Department of Geography, University of Alabama, Tuscaloosa, AL.
- Muñoz SE** (2015) Using oxbow lake sediments to understand the paleoecology and paleohydrology of the Cahokia region, Illinois, USA. Department of Earth Sciences, University of Minnesota, Minneapolis, MN.
- Muñoz SE** (2014) The marvels of mud: Using lake sediments to uncover the ecological history of the Cahokia region. Chicago Archaeological Society, Evansville, IL.
- Muñoz SE** (2014) The marvels of mud: Using lake sediments to understand the role of humans in Earth history. Department of Geography, University of Wisconsin–Platteville, Platteville, WI.
- Muñoz SE** (2014) The marvels of mud: Using lake sediments to uncover the ecological history of the Cahokia region. Illinois State Museum, Springfield, IL.
- Muñoz SE** (2014) The marvels of mud: Using lake sediments to uncover the ecological history of the Cahokia region. Cahokia Mounds State Historic Site & Interpretive Center, Collinsville, IL.

### III. RESEARCH GRANTS

#### *External – Funded*

- 2021-2024 Collaborative Research: Morphodynamic simulations of coastal storms and overwash to characterize back-barrier lake stratigraphies. National Science Foundation (NSF) Geomorphology & Land Use Dynamics (GLD). **Muñoz SE** (PI) & Chen Q (Co-I). Total cost: \$591,190 (\$353,666 to Northeastern).
- 2018-2019 RAPID: Collaborative Research: Sediment and Contaminant Mobilization by Extreme Flooding associated with Hurricane Florence. National Science Foundation (NSF) Geomorphology & Land Use Dynamics (GLD) and Geobiology & Low Temperature Geochemistry (GG). **Muñoz SE** (PI), Fernandez LA (Co-I), Larese-Casanova P (Co-I). Total cost: \$17,850 (\$7,850 to Northeastern).
- 2018-2021 Collaborative Research: Re-evaluating precipitation extremes and flood hazard in the wake of Hurricane Harvey. National Science Foundation (NSF) Hydrologic Sciences (HS). **Muñoz SE** (PI) & Beighley SE (Co-I). Total cost: \$259,140 (\$199,936 to Northeastern).
- 2018-2021 Collaborative Research: Extreme floods on the lower Mississippi River in the context of late Holocene climatic variability. National Science Foundation (NSF) Paleo-Perspectives on Climate Change (P2C2). **Muñoz SE** (PI). Total cost: \$586,529 (\$292,959 to Northeastern).
- 2013-2015 Doctoral Dissertation Research: Assessing the characteristics and consequences of prehistoric land use in the Cahokia region. National Science Foundation (NSF), Geography & Spatial Sciences (GSS). Williams JW (PI), **Muñoz SE** (Co-I). Total cost: \$14,509.



*External – Pending*

- 2022-2025 Collaborative Research: Evaluating the Past and Future of Mississippi River Hydroclimatology to constrain risk via integrated climate modeling, observations, and reconstructions. National Science Foundation (NSF) Climate and Large-scale Dynamics (CLD). Dee SG (PI) & **Muñoz SE** (Co-I). Total cost: \$446,343 (\$135,783 to Northeastern).
- 2022-2026 DISES: Hydrocultural Urbanism and the Medieval Climatic Optimum (800-1300 CE) in the Mississippi Valley. National Science Foundation (NSF) Dynamics of Integrated Socio-Environmental Systems (DISES). Pauketat TR (PI), Aiuvalasit MJ (Co-I), **Muñoz SE** (Co-I), Cook ER (Co-I), Alt SM (Co-I). Total cost: \$1,500,000 (\$200,572 to Northeastern).

*Internal – Funded*

- 2018-2020 Coastal flooding prediction and mitigation: Integrating high-fidelity computer models with field observations. Global Resilience Institute (GRI). Chen Q (PI), **Muñoz SE** (Co-I), Fu YR (Co-I). Total cost: \$100,000.
- 2016-2018 Fingerprinting Mississippi River sediment flux to the Gulf of Mexico. Ocean and Climate Change Institute (OCCI) of the Woods Hole Oceanographic Institution. **Muñoz SE** (PI), Giosan L (Co-I). Total cost: \$67,342.

## IV. TEACHING & ADVISING

*Courses taught at Northeastern University*

1. Dynamic Earth (ENVR 1200), Undergraduate, 4 credits
  - a. Fall 2020: 67 students
  - b. Fall 2019: 55 students
  - c. Fall 2018: 65 students
2. Dynamic Earth Lab (ENVR 1201), Undergraduate, 1 credit
  - a. Fall 2020: 24 students
  - b. Fall 2019: 25 students
  - c. Fall 2018: 28 students
3. Natural Disasters & Catastrophes (ENVR 1104), Undergraduate, 4 credits
  - a. Spring 2019: 21 students
4. Seminar in Geosciences (EEMB 7104), Graduate, 2 credits

\*New course developed for new PhD program in Marine & Environmental Sciences, co-taught with J. Bowen, J. Ries, and A. Stubbins

  - a. Spring 2019: 8 students
5. Climate & Atmospheric Change (ENVR 5150 / CIVE 5699), Undergraduate/Graduate, 4 credits

\*New course developed for new BS Environmental Science & Sustainability, interdisciplinary with Civil & Environmental Engineering

  - a. Spring 2021: 25 students
  - b. Spring 2020: 21 students

### *Supervision of Graduate Students at Northeastern University*

Joeri Reinders	2018-present, Ph.D. in Marine & Environmental Sciences: Geosciences track. Dissertation: Reevaluating flood hazard in southeast Texas in the wake of Hurricane Harvey using paleoflood data
Charlotte Wiman	2019-present, Ph.D. in Marine & Environmental Sciences: Geosciences track. Dissertation: Late Holocene paleoflood hydrology of the Mississippi River basin
Michelle O'Donnell	2020-present, Ph.D. in Civil & Environmental Engineering. Dissertation: Hydrologic simulations of the past and future Mississippi River and tributaries.

### *Supervision of Undergraduate Students at Northeastern University*

#### 1. Senior Capstone

Brynnydd Hamilton	2021
Olivia Burek	2021
Aaron Goodman	2019
Carleigh Norton	2019
Daniel Litchmore	2018

#### 2. Co-op Research Experience

Brynnydd Hamilton	2020
Olivia Burek	2020
David Carter	2018

#### 3. Directed Study

Isabella Lopez	2019
Brandan Lawrence	2019

#### 4. Interns

Alex Bellavia	2021 (NU MSC Summer Internship)
Porta Freeman	2021 (NU MSC Summer Internship)
B Parazin	2020
Isabella Lopez	2020
Annie Tucker	2019 (NU MSC Summer Internship)
Brynnydd Hamilton	2019 (UG Research Award for Women in Physics)
Ilana Hirschfeld	2019
Michelle Chen	2018
Daniel Litchmore	2018

### *Advising Activities at Northeastern University*

#### Ph.D. Committees

Seyed Mohammad Saleh Niknejad	2020-2021, Ph.D. Interdisciplinary Engineering
Kevin Ryan	2018-present, Ph.D. Marine & Environmental Sciences
Jessica Gould	2018-present, Ph.D. Marine & Environmental Sciences
Brian Donnelly	2018-present, Ph.D. Marine & Environmental Sciences
Kate Duffy	2018-present, Ph.D. in Civil & Environmental Engineering
Cassandra Nickles	2018-2021, Ph.D. in Civil & Environmental Engineering
Bharat Sharma	2018-present, Ph.D. in Civil & Environmental Engineering
Kiera O'Donnell	2017-present, Ph.D. Marine & Environmental Sciences
Dongmei Feng	2017-2018, Ph.D. in Civil & Environmental Engineering

## V. SERVICE & PROFESSIONAL DEVELOPMENT

### *Departmental Service at Northeastern University*

2020-present	Member, Graduate Curriculum Committee
2019	Member, Ad hoc committee on undergraduate curriculum
2018-present	Member, Muckenhoupt Award Committee
2018-present	Member, Seminar Series Committee
2018-2019	Member, Undergraduate Curriculum Committee

### *College Service at Northeastern University*

2020	Member, College of Science Fall Teaching Focus Group
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### *Service to the Discipline & Profession*

Journal Editing	<i>Geomorphology</i> (Historic and Palaeofloods Special Issue, Co-Editor)
Journal Reviewer	<i>Annals of the American Association of Geographers, Anthropocene; Archeometry; Catena; Earth Surface Processes &amp; Landforms; Ecological Monographs; Earth Science Reviews; Frontiers in Earth Sciences; Geology; Geomorphology; Geophysical Research Letters; Global and Planetary Change; Holocene; Journal of Biogeography; Journal of Ecology; Journal of Quaternary Science, Nature Communications; Nature Geoscience; Palaeogeography, Palaeoclimatology, Palaeoecology; Physical Geography; PLOS ONE; Quaternary Science Reviews; Scientific Reports; Sustainability; Water</i>
Proposal Panelist	National Science Foundation – PREEVENTS National Science Foundation – Hydrological Sciences (HS)
Proposal Reviewer	National Science Foundation – Geomorphology & Land use dynamics (GLD) National Science Foundation – Geography & Spatial Sciences (GSS) National Science Foundation – Hydrological Sciences (HS) National Science Foundation – Paleo Perspectives on Climate Change (P2C2) National Science Foundation – EAR Postdoc Program National Science and Engineering Research Council (Canada)– Earth Sciences National Geographic Society National Oceanographic & Atmospheric Administration – Sea Grant
Conference Sessions	Geological Society of America 2016 Annual Meeting, “T59. Paleofloods and Related Fluvial Processes during the Late Quaternary: Reconstructions and Causes.” Co-organized with Lisa Davis and Matthew Therrell (University of Alabama)  American Geophysical Union 2016 Fall Meeting, “H092. Shifting Rivers: Trends in Flood Magnitude and Frequency” Co-organized with Scott St. George (University of Minnesota) and Stacey Archfield (USGS)
Position Statements	Geological Society of America, Position Statement on “U.S. Flood Risk Management” Co-written with representatives from academia and government.

*Service to the Community & Public*

- 2019 Speaker & Panelist, NOAA Climate Program Office Webinar on 2019 Mississippi & Missouri River Floods
- 2017 Speaker & Panelist, END Initiative Panel on Climate Change
- 2017-present Media interviews published in 20+ venues, including National Public Radio (*Science Friday*), Washington Post, Associated Press
- 2016 Speaker & Panelist, Woods Hole community screening of “Before the Flood”
- 2016 Featured Scientist, Ancient Mysteries S1E2 “America’s Hidden Pyramid City”, aired on Channe5 (UK) and Smithsonian Channel (USA)
- 2015 Speaker, Wednesday Nite @ the Lab, Wisconsin Public Television

Professional Society Affiliations:      American Geophysical Union  
   American Quaternary Association  
   American Association of Geographers  
   Geological Society of America