

Jonathan E. Nichols, Ph.D.**Curriculum Vitae**

Lamont-Doherty Earth Observatory of Columbia University
205C Geoscience
61 Route 9W
Palisades, NY 10964
jnichols@ldeo.columbia.edu
Office: 845-365-8428
Mobile: 201-988-9143
Twitter: @BogFossil
www.bogfossil.org

Positions

Lamont Associate Research Professor, Lamont-Doherty Earth Obs., Columbia Univ.	2016—Present
Lecturer, Department of Anthropology, Columbia University	2018
Lamont Assistant Research Professor, Lamont-Doherty Earth Obs., Columbia Univ.	2012—2016
Adjunct Assistant Professor, Barnard College Department of Environmental Science	2012—Present
Fellow, NASA Postdoctoral Program, NASA Goddard Institute for Space Studies	2009—2012

Education

Ph.D., Geological Sciences, Brown University, <i>Advisor</i> : Yongsong Huang	2010
<i>Dissertation title</i> : Reconstructing Holocene Hydroclimate in Eastern North America from Ombrotrophic Peatland Sediments	
Sc.M., Geological Sciences, Brown University, <i>Advisor</i> : Yongsong Huang	2006
<i>Thesis title</i> : <i>n</i> -Alkane methods for paleohydrologic reconstruction in ombrotrophic peat.	
B.S., Geological Sciences, Cum Laude, Tufts University, <i>Advisor</i> : John C. Ridge	2004
<i>Honors Thesis Title</i> : Varve stratigraphic and paleomagnetic analysis of glacial lake sediments in the valley of Sandy Stream, Jackman, Maine	

Publications

Nichols, J.E., D. M. Peteet, C. M. Moy, (**in revision**) Enhanced westerly wind reduces Alaskan peat carbon accumulation, *Geophysical Research Letters*.

Nichols, J.E., Peteet, D.M. (2019) Rapid expansion of northern peatlands and doubled estimate of carbon storage. *Nat. Geosci.* **12**, 917–921 doi:10.1038/s41561-019-0454-z

Beilman, D., Massa, C., **Nichols, J.**, Elison Timm, O., Kallstrom, R., & Dunbar-Co, S. (2019). Dynamic Holocene Vegetation and North Pacific Hydroclimate Recorded in a Mountain Peatland, Moloka'i, Hawai'i. *Frontiers in Earth Science*, **7**, 188.

Nichols, J. E., Peteet, D. M., Andreev, A. A., Stute, F., & Ogus, T. N. (2019). Holocene Ecohydrological Variability on the East Coast of Kamchatka. *Frontiers in Earth Science*, **7**, 106.

Peteet, D. M., **Nichols, J. E.**, & Mann, D. H. (2019). Holocene vegetation, climate, and carbon sequestration history of western Kodiak Island, Alaska. *Frontiers in Earth Science*, **7**, 61.

Peteet, D. M., **Nichols, J.**, Kenna, T., Chang, C., Browne, J., Reza, M., Kovari, S., Liberman, L., and Stern-Protz, S. (2018). Sediment starvation destroys New York City marshes' resistance to sea level rise. *Proceedings of the National Academy of Sciences*, **115**(41), 10281-10286.

Gallego-Sala, A. V. 72 co-authors, incl. **J.E. Nichols** (2018), Latitudinal limits to the predicted increase of the peatland carbon sink with warming, *Nature Climate Change* **8**, 907–913, doi:10.1038/s41558-018-0271-1.

- Anderson, H.J., C.M. Moy, M.J. Vandergoes, **J.E. Nichols**, C.R. Riesselman, R. Van Hale (2018) Southern Hemisphere westerly wind influence on New Zealand Hydrology during the Late Glacial and Holocene, *Journal of Quaternary Science* 33 (6), 689-701.
- Williams, J.W., E. Grimm, J. Blois, D. Charles, E. Davis, S. Goring, R. Graham, A. Smith, M. Anderson, J. Arroyo-Cabral, A. Ashworth, J. Betancourt, B. Bills, R. Booth, P. Buckland, B. Curry, T. Giesecke, S. Jackson, C. Latorre, **J. Nichols**, T. Purdum, R. Roth, M. Stryker, H. Takahara (2018). The Neotoma Paleoecology Database, a multiproxy, international, community-curated data resource. *Quaternary Research*, 89(1), 156-177.
- Marlon, J. R., Pederson, N., Nolan, C., Goring, S., Shuman, B., Booth, R., Bartlein, P. J., Berke, M. A., Clifford, M., Cook, E., Dieffenbacher-Krall, A., Dietze, M. C., Hessler, A., Hubeny, J. B., Jackson, S. T., Marsicek, J., McLachlan, J., Mock, C. J., Moore, D. J. P., **Nichols, J.**, Robertson, A., Schaefer, K., Trouet, V., Umbanhowar, C., Williams, J. W., and Yu, Z.: (2017) Climatic history of the northeastern United States during the past 3000 years, *Clim. Past*, 13, 1–24.
- Nichols, J.**, D. M. Peteet, S. Frolking, and J. Karavias (2017), A probabilistic method of assessing carbon accumulation rate at Imnavait Creek Peatland, Arctic Long Term Ecological Research Station, Alaska, *Journal of Quaternary Science*, 45(3), 300, doi:10.1029/2010GL043584.
- Loisel, J., van Bellen, S., Pelletier, L., Talbot, J., Hugelius, G., Karran, D., Yu, Z., **Nichols, J.** and Holmquist, J. (2017). Insights and issues with estimating northern peatland carbon stocks and fluxes since the Last Glacial Maximum. *Earth-science reviews*, 165, 59-80.
- Turner, T. E., Swindles, G. T., Charman, D. J., Langdon, P. G., Morris, P. J., Booth, R. K., Parry, L.E. & **Nichols, J. E.** (2016). Solar cycles or random processes? Evaluating solar variability in Holocene climate records. *Scientific Reports*, 6.
- Peteet, D. M., **Nichols, J. E.**, Moy, C. M., McGeachy, A., & Perez, M. (2016). Recent and Holocene climate change controls on vegetation and carbon accumulation in Alaskan coastal muskegs. *Quaternary Science Reviews*, 131, 168-178.
- Heusser, L. E., Kirby, M. E., & **Nichols, J. E.** (2015). Pollen-based evidence of extreme drought during the last Glacial (32.6–9.0 ka) in coastal southern California. *Quaternary Science Reviews*, 126, 242-253.
- Nichols, J. E.**, Peteet, D. M., Moy, C. M., Castañeda, I. S., McGeachy, A., & Perez, M. (2014). Impacts of climate and vegetation change on carbon accumulation in a south-central Alaskan peatland assessed with novel organic geochemical techniques. *The Holocene*, 24(9), 1146-1155.
- Loisel, J., Z. Yu, D.W. Beilman, M.J. Amesbury, L.R. Belyea, F. De Vleeschouwer, B. Fiałkiewicz-Kozieł, S.A. Finkelstein, M. Galka, M. Garneau, D. Hammarlund, W. Hinchcliffe, J. Holmquist, P. Hughes, A. Lamarre, M. Lamentowicz, D. Large, M. Lavoie, G. MacDonald, G. Magnan, M. Mäkilä, G. Mallon, P. Mathijssen, D. Mauquoy, J. McCarroll, T.R. Moore, **J. Nichols**, B. O'Reilly, P. Oksanen, M. Packalen, D. Peteet, P.J.H. Richard, S. Robinson, T. Ronkainen, M. Rundgren, A.B.K. Sannel, C. Tarnocai, T. Thom, E. Tuittila, M. Turetsky, M. Väliranta, M. van der Linden, B. van Geel, S. van Bellen, D. Vitt, Yan Zhao, W. Zhou, D. Anderson, Joan Bunbury, F.M. Chambers, D.J. Charman, M.C. Jones, E.S. Klein (2014) A database and synthesis of northern peatland soil properties and Holocene carbon and nitrogen accumulation. *The Holocene* 24(9), 1028-1042.
- Nichols, J. E.**, P. D. F. Isles, and D. M. Peteet (2014), A novel framework for quantifying past methane recycling by Sphagnum-methanotroph symbiosis using carbon and hydrogen isotope ratios of leaf wax biomarkers. *Geochem. Geophys. Geosyst.*, 15, doi:10.1002/2014GC005242.
- Charman, D. J., Beilman, D. W., Blaauw, M., Booth, R. K., Brewer, S., Chambers, F. M., Christen, J. A., Gallego-Sala, A., Harrison, S. P., Hughes, P. D. M., Jackson, S. T., Korhola, A., Mauquoy, D., Mitchell, F. J. G., Prentice, I. C., van der Linden, M., De Vleeschouwer, F., Yu, Z. C., Alm, J., Bauer, I. E., Corish, Y. M. C., Garneau, M., Hohl, V., Huang, Y., Karofeld, E., Le Roux, G., Loisel, J., Moschen, R., **Nichols, J. E.**, Nieminen, T. M., MacDonald, G. M., Phadtare, N. R., Rausch, N., Sillasoo, Ü., Swindles, G. T., Tuittila, E.-S., Ukonmaanaho, L., Väliranta, M., van Bellen, S., van Geel, B., Vitt, D. H., and Zhao, Y. (2013) Climate-related changes in peatland carbon accumulation during the last millennium. *Biogeosciences*, 10, 929-944, doi:10.5194/bg-10-929-2013

- F. M. Chambers, R. K. Booth, F. De Vleeschouwer, M. Lamentowicz, G. Le Roux, D. Mauquoy, **J.E. Nichols**, B. van Geel, (2012) Development and refinement of proxy-climate indicators from peats, *Quaternary International* 268, 21-33, 10.1016/j.quaint.2011.04.039.
- Peteet, D. M., M. Beh, C. Orr, D. Kurdyla, **J. E. Nichols**, and T. P. Guilderson. (2012) Delayed Deglaciation or Extreme Arctic Conditions 21-16 cal. kyr at Southeastern Laurentide Ice Sheet Margin? *Geophys. Res. Lett.*, doi:10.1029/2012GL051884.
- Nichols, J.E.**, Huang, Y. (2012) Hydroclimate of the northeastern US is highly sensitive to solar forcing. *Geophys. Res. Lett.* 39, L04707, DOI:10.1029/2011GL050720
- Nichols, J.E.** (2011) Procedures for extraction and purification of leaf wax biomarkers from peats. *Mires and Peat* 7.
- De Vleeschouwer, F., P.D.M. Hughes, **J.E. Nichols**, F.M. Chambers, editors (2010/11) A review of protocols in peat paleoenvironmental studies. *Mires and Peat* 7.
- Nichols, J.E.**, R.K. Booth, S.T. Jackson, E.G. Pendall, Y. Huang (2010). Differential hydrogen isotopic ratios of *Sphagnum* and vascular plant biomarkers in ombrotrophic peatlands as a quantitative proxy for precipitation—evaporation balance. *Geochimica et Cosmochimica Acta* 74, 1407—1416. doi:10.1016/j.gca.2009.11.012.
- McClymont, E.L., E. Pendall, **J. Nichols** (2010). Stable isotopes and organic geochemistry in peat: Tools to investigate past hydrology, temperature and biogeochemistry. *PAGES News* 18(1).
- Nichols, J.E.**, M. Walcott, R. Bradley, J. Pilcher, Y. Huang (2009). Quantification of Precipitation Seasonality and Summer Surface Wetness Using Ombrotrophic Sediments from an Arctic Norwegian Peatland. *Quaternary Research* 72, 443—451.
- Nichols, J.E.**, Y. Huang (2007) C23—C31 *n*-alkan-2-ones are biomarkers for the genus *Sphagnum* in freshwater peatlands. *Organic Geochemistry* 38, 1972—1976. doi:10.1016/j.orggeochem.2007.07.002
- Nichols, J.E.**, R.K. Booth, S.T. Jackson, E.G. Pendall, Y. Huang (2006) *n*-Alkane Methods for Paleohydrologic Reconstruction in Ombrotrophic Peat. *Organic Geochemistry* 37, 1505—1513.

Peer-Reviewed Book Chapters

- deJong, R., M. Blaauw, F.M. Chambers, T.R. Christensen, F. de Vleeschouwer, W. Finsinger, S. Fronzek, M. Johansson, U. Kokfelt, M. Lamentowicz, G. LeRoux, D. Mauquoy, E.A.D. Mitchell, **J.E. Nichols**, E. Samaritani, B. vanGeel (2010) Climate and Peatlands, in *Changing Climates, Earth Systems and Society*, ed. John Dodson. Springer.

Writing for Popular Audiences

- Nichols, J.E. (19 November 2015) Peat Fires Choking Southeast Asia Pose a New Threat to Global Climate. *Earth Institute Blog*. <http://blogs.ei.columbia.edu/2015/11/19/peat-fires-choking-southeast-asia-pose-a-new-threat-to-global-climate/>

Additional Publications in Preparation

- Nichols, J.E.**, Y. Huang, Stable isotopic compositions of waters and plant leaf waxes in an ombrotrophic bog. *Organic Geochem.* (in prep.)
- Nichols, J.E.**, C.M. Moy, D.M. Peteet, A. Weiss. A multiproxy record of postglacial southern westerly wind variability from the Auckland Islands, New Zealand. (in prep).
- Nichols, J.E.**, C.M. Moy, D.M. Peteet. Tectonic control of ecohydrology and nutrient cycling on Middleton Island, Alaska (in prep).

Funding

- Nichols, JE, NSF P2C2, New Zealand Climate in Three Warm Periods: MIS 5e, The Early Holocene, and Today.
- Shaman, J., **Nichols JE**, Antony SJ, Boleman N, Peteet D., Evolution in the Arctic: Genomic reconstruction of microbial, plant and animal communities during the Holocene. Research Initiatives in Science and Engineering (RISE) 2018.
- Crossland, Z; **Nichols, JE**; Rothschild, N; Peteet, DM. Interpreting urban environmental data: New York City's changing landscapes. Collaboratory Fellows Program 2017.
- Nichols, J.E.**, Climate and Life High School Internship Program, 2019.
- Nichols, J.E.**, Reconstructing Late Glacial–Holocene Southern Hemisphere Westerly Wind Variability with Sediments from New Zealand’s Auckland Islands LDEO Climate Center Award, 2015.
- Nichols, J.E., Peteet, D.M., Naczi, R. (NY Botanical Garden) Constraining the Relationship Between Vegetation Change and Net Carbon Sequestration in Arctic and Boreal Peatlands (NSF DEB Ecosystems), \$150,000
- Nichols, J.E.**, Climate and Life High School Internship Program, 2018.
- Liu, T. (undergraduate advisee), J.E. Nichols, Calibrating Fatty Alcohol Paleotemperature Proxy, LDEO Climate Center.
- Nichols, J.E. Climate, Carbon, and Fire in the Forest Peatlands of Borneo, LDEO Climate Center.
- NZARI (C. Moy, et al.): Postglacial changes in the location and intensity of the southern westerly winds, subantarctic Auckland Islands, 2014 (NZ\$ 80,000)
- Pavia, F.J., G. Winckler, J.E. Nichols, *Leaf wax n-alkane concentrations and stable isotope composition in dust - A new dust proxy for the South Pacific*, LDEO Climate Center Award, Spring 2013, \$10,000.
- Nichols, J.E., D.M. Peteet, L. Heusser, *Late Glacial Climate Change in Mid-Latitude South America: Temperature and Moisture*, LDEO Climate Center Award, Spring 2013, \$9,996.
- Nichols, J.E, Second workshop of the “Development of Isotopic Proxies for Paleoenvironmental Interpretation: A Carbon Perspective” (DIPPI-C) working group, Thermo Scientific, \$2,000.
- Nichols, J.E, Second workshop of the “Development of Isotopic Proxies for Paleoenvironmental Interpretation: A Carbon Perspective” (DIPPI-C) working group, LDEO Climate Center, Fall 2012, \$10,000.
- New Zealand Fast Start (C. Moy, et al.) The winds of change: Evaluating New Zealand’s hydrologic response to changing Southern Hemisphere westerly winds, \$345,000
- Nichols, J.E., *Organic Geochemistry of the Glacial Lake Varves of New England*, LDEO Climate Center Grant, Fall 2011, \$4750
- Nichols, J.E., D.M. Peteet, *Carbon Storage and Paleoclimate in Alaskan Peatlands*, LDEO Climate Center Grant, Spring 2011, \$8000
- Peteet, DM, S Frolking, JE Nichols, NSF ARC-1022979, Collaborative Research: Long-term carbon storage shifts in high-latitude peatlands with paleoclimate change: Linking peatland modeling with paleoecology and paleohydrology, \$403,656.
- Peteet, D.M., T. Kenna, J.E. Nichols, *Dating of Piermont Marsh Droughts as Identified from XRF Elemental Data and Plant Macrofossils* LDEO Climate Center Grant, Fall 2010, \$7998
- Peteet, D.M., Nichols, J.E., *Linking Holocene Vegetation and Carbon Accumulation with Hydrological Change Using Macrofossils, C/N, Stable Isotopes and Biomarkers from Sutherland Pond/Fen and Tamarack Pond*, Black Rock Forest Consortium Grant, March 2010, \$5000
- Nichols J.E., D.M. Peteet, *Linking peatland hydrology to changes in methane flux* LDEO Climate Center Grant, Fall 2009, \$7820

Presentations at Professional Meetings

- Nichols, J.E.**, Ogus, T., Peteet, D.M. and Andreev, A., 2018, December. Analysis of Sterol Diagenesis Stages in a Peat Core from Kamchatka, Russia. In AGU Fall Meeting Abstracts.

- Peteet, D.M., Meyer, C., Valdivia-McCarthy, A.D.C., Gorczicky, C., Stern-Protz, S., Chang, C., Kwong, C., Kenna, T.C. and **Nichols, J.E.**, 2018, December. Four Centuries of Shifts in Coastal Carbon with Human Impact in Alley Marsh and Udall's Cove, Queens, NY. In AGU Fall Meeting Abstracts.
- Nichols, J.E.**, Peteet, D.M. and Naczi, R.F.C., 2018, December. Family Matters: Within Plant Families, n-Alkane Distributions Indicate Habit and Anatomy. In AGU Fall Meeting Abstracts.
- Nichols J**, Peteet D, Moy C, Heusser L, Massa C, Beilman D, Vandergoes M, Curtin L (2018) Postglacial Paleoclimate Preserved in Pan-Pacific Peatlands, *Goldschmidt Abstracts*, 2018.
- Nichols, JE**, CM Moy, DM Peteet, M Vandergoes, L Curtin, G Gilmer, Cryptic outgassing from the Southern Ocean during the Holocene, AGU Fall Meeting Abstracts 2017
- Peteet, DM, EJ Corbett, JE Nichols, TC Kenna, C Chang, Peat Archives in the Hudson River Estuary: Marsh Formation, Carbon Storage and Release, and Resilience, AGU Fall Meeting Abstracts 2017
- Moy, CM, G Gilmer, **JE Nichols**, JM Browne, L Curtin, M Vandergoes, Postglacial Records of Southern Hemisphere Climate and Oceanographic Change From the New Zealand Subantarctic Auckland Islands, AGU Fall Meeting Abstracts 2017
- Beilman, DW; Kallstrom, R; Elison Timm, O; **Nichols, JE**; Massa, C, A multi-proxy record of Holocene hydroclimate change from a windward montane wetland, Molokai, Hawaii, AGU Fall Meeting Abstracts, 2016
- Peteet, DM; **Nichols, JE**; Kenna, TC; Lamb, A; Taylor, M; Reza, M; O'Connor, J; Kovari, S; Chang, C; Reguyal, S, Blue Carbon Accumulation, Paleoecology, Human Impact, and Sea Level History of Yellow Bar and JoCo Marshes, Jamaica Bay, New York City, AGU Fall Meeting Abstracts, 2016
- Nichols, JE**; Peteet, DM, New Algorithm for Peat Carbon Accumulation Estimation Reveals and Quantifies the Global Importance of Northern Peatlands to the Late Glacial and Early Holocene Carbon Cycle, AGU Fall Meeting Abstracts, 2016
- Loisel, J; **Nichols, JE**; Kaiser, K; Beilman, DW; Yu, Z, Cellulose and Lignin Carbon Isotope Signatures in Sphagnum Moss Reveal Complementary Environmental Properties, AGU Fall Meeting Abstracts, 2016
- Massa, C; Beilman, DW; Nichols, JE; Elison Timm, O, Investigation of n-Alkane Distributions in Modern Plant Litter from Hawaii wetlands: a potential proxy for past vegetation and hydroclimate changes?, AGU Fall Meeting Abstracts, 2016
- Nichols, J.E.**, Moy, C.M., Peteet, D.M., Weiss, A., Curtin, L., A Multiproxy reconstruction of Southern Westerlies from the Auckland Islands, American Geophysical Union Fall Meeting 2015.
- Nichols, J.E.**, D.M. Peteet, Holocene Changes in Climate and Ecological Gradients across the Alaskan Arctic Assessed with Multiple Organic Geochemical and Paleoecological Techniques, American Geophysical Union Fall Meeting 2014.
- Juhl, A.; Karavias, J.; **Nichols, J.**; Hess, F. Bringing Science into the Classroom. National Science Teachers' Association 2014 National Conference. April 2014.
- Nichols, J.E.**, D. M. Peteet; M. Gemma; C. Fedio; F. J. Pavia, Family Matters: Sphagnaceae Versus Cyperaceae in Peatland Carbon Storage. American Geophysical Union Fall Meeting, 2013.
- Peteet, D.M., **J. E. Nichols**; C. Fedio; M. Gemma; D. H. Mann. Carbon Storage, Leaf Wax Abundances, D/H ratios, and Moss Diversity Linked to Increased Moisture in Early Holocene Arctic Alaska Records. American Geophysical Union Fall Meeting, 2013.
- Pavia, F.J., G. Winckler, **J.E. Nichols**, The Sensitivity of n-alkanes in Marine Sediments to Changes in Dustiness: Further Developing the Use of Leaf Wax Biomarkers as a Dust Proxy. American Geophysical Union Fall Meeting, 2013.
- Nichols, J.E.** Peter Isles, Dorothy Peteet (2013) A Novel Carbon and Hydrogen Isotope Method for Quantifying Past Methane Recycling by Sphagnum-Methanotroph Symbiosis, *Central European Geology* 56, 244. (Presented at the 10th Applied Isotopes in Geochemistry meeting, Budapest, Hungary).
- Nichols, J. E.**; Peteet, D. M. ;Pavia, F. J.; Karavias, J.; Ouni, S., *Complex And Highly Variable Carbon Accumulation At Imnavait Creek Peatland*, 43rd International Arctic Workshop, April 2013.

- Nichols, J.E.**, Frank J. Pavia, Dorothy M. Peteet, Tracking Holocene Methane Release from Alaskan Peatlands using H and C isotope ratios of Biomarkers. American Geophysical Union Fall Meeting, 2012.
- Pavia, Frank J., **J.E. Nichols**, D.M. Peteet, Reconstructing Paleoclimate and Carbon Storage of Alaskan Peatlands During the Holocene. American Geophysical Union Fall Meeting, 2012.
- Peteet, D.M.; **J. E. Nichols**; S. Ouni; F. Pavia; Y. Pearl Holocene peatland shifts in vegetation, carbon, and climate at Imnavait, Alaska. American Geophysical Union Fall Meeting, 2012.
- Moy, C. M.; J. Crusius; **J.E. Nichols**; A.W. Schroth; D. M. Peteet; L. Giosan; T. C. Kenna; T. I. Eglinton Eolian deposition of glacial flour dust to the Gulf of Alaska during the Holocene. American Geophysical Union Fall Meeting, 2012.
- Nichols, J.E.**, (2012) (INVITED) Towards a paleo-methane proxy: Combining carbon and hydrogen isotope ratios of biomarkers. *Geological Society of America Abstracts with Programs*, Vol. 44, 473.
- Nichols, J.E.**, Compound-Specific H and C isotope measurements reveal new aspects of Holocene Hydrological and Carbon Cycles. *International Peat Congress, Stockholm, Sweden, June 2012*.
- Nichols, J.E., P.D. Isles, D.M. Peteet, Towards a paleo-methane flux proxy: Combined $\delta^{13}\text{C}$ and δD of *Sphagnum* Biomarkers. *1st Workshop of the working group, Development of Isotopic Proxies for Paleoenvironmental Interpretation – Carbon (DIPPI-C)*. Durham, UK, May 2012.
- Isles, P.D., **J.E. Nichols**, D.M. Peteet, T.C. Kenna, The Roles of *Sphagnum* and *Cyperaceae* in the Methane Cycle of an Ombrotrophic Bog Revealed by the Carbon Isotope Ratios of Leaf Waxes. *American Geophysical Union Fall Meeting*, 2011
- Nichols, J.E.**, D.M. Peteet, C.M. Moy, *The Atmosphere's Imprint on the Hydrologic and Carbon Cycle in the Alaskan Arctic and Subarctic*, American Geophysical Union Fall Meeting 2011.
- Tabanpour, B., **J.E. Nichols**, P.D. Isles, D.M. Peteet, Novel Method for Estimating Variations in Salinity in the Hudson Estuary Using Stable Isotopes of Leaf Waxes. *American Geophysical Union Fall Meeting*, 2010.
- Nichols, J.E.**, D.M. Peteet, C.M. Moy, B. Tabanpour, P.D. Isles, Links Between the Hydrological Cycle and Carbon Cycle Constrained with Stable Isotope Ratios of Leaf Waxes in an Alaskan Peatland, *American Geophysical Union Fall Meeting*, 2010.
- Nichols, J.E.**, A. N. LeGrande, S. Lewis, R. K. Booth, G. A. Schmidt, D. Peteet, Y. Huang, Using an isotope enabled coupled atmosphere-ocean model to understand variations in isotope records from peatlands. *American Geophysical Union Fall Meeting*, 2009.
- Wang, J., **J. E. Nichols**, Y. Huang, A Paleoevaporation Proxy Using Compound Specific Stable Isotope Measurements from Peatland Biomarkers. *American Geophysical Union Fall Meeting*, 2009.
- Nichols, J.E.**, R.K. Booth, Y. Huang. Abrupt onset of widespread drought at the mid-Holocene transition observed from New England through Eastern Michigan. *American Geophysical Union Fall Meeting*, 2008.
- Wang, J., **J.E. Nichols**, Y. Huang. Novel proxies for reconstructing paleohydrology from ombrotrophic peatlands: biomarker and compound-specific H and C stable isotope ratios. *American Geophysical Union Fall Meeting*, 2008.
- Nichols, J.E.**, R.K. Booth, S.T. Jackson, E.G. Pendall, M. Walcott, R. Bradley, J. Pilcher, Y. Huang. Novel stable isotope methods for quantitation of precipitation seasonality from ombrotrophic peatland sediments. *American Geophysical Union Fall Meeting*, 2007.
- Nichols, J.E.**, M. Walcott, R. Bradley, J. Pilcher, Y. Huang. Biomarker and Stable Isotope Ratios as Novel Sensitive Indicators of Paleohydrology: An Example from an Ombrotrophic Bog in Coastal Arctic Norway. *Geological Society of America, Northeastern Section Annual Meeting*, 2007.
- Nichols, J.E.**, R.K. Booth, S.T. Jackson, E.G. Pendall, Y. Huang. Holocene Paleohydrological Changes in Northern Michigan: Interpretations of Biomarker Distributions and Compound Specific Stable Isotope Analysis From a Peatland. *American Geophysical Union Fall Meeting*, 2006.
- Nichols, J.E.**, R.K. Booth, S.T. Jackson, E.G. Pendall, Y. Huang. Water Table Depth Reconstruction in Ombrotrophic Peatlands Using Biomarker Abundance Ratios and Compound-Specific Hydrogen Isotope Composition. *American Geophysical Union Fall Meeting*, 2005.

Awards

NASA Postdoctoral Fellowship, Fall 2009—2012
Brown University Dissertation Fellowship, Spring 2009
National Science Foundation “GK-12” Teaching fellowship, Fall 2007—Spring 2008
Brown University First Year Graduate Fellowship, Fall 2004—Spring 2005
The Berger, Lehman Scholars Fund, Tufts University Geology, 2004
The Charles E. Stearns Scholarship Prize, Tufts University Geology, 2003

Invited Presentations

Rutgers University Earth and Environmental Science Colloquium, September 2019: Peatlands at the Nexus of the Global Carbon Cycle and Ocean-Atmosphere System (Host: Christopher Lepre).
Rowan University Geology Department Colloquium, April 2018: Big Peat and the Kiwis: How northern hemisphere peatlands may have obscured the upwelling of deep Southern Ocean carbon in the Holocene (Host: Gerald Rustic).
Princeton Univ. Environmental Geology and Geochemistry Seminar (EGGS) Seminar: Big Peat and the Kiwis: How northern hemisphere peatlands may have obscured the upwelling of deep Southern Ocean carbon in the Holocene (Host: Jesse Farmer).
USGS Seminar, November, 2017. *Northern Peatlands' Role in a Dynamic Holocene Carbon Cycle*. (Host: Miriam Jones).
CUNY Graduate Center, Colloquium, Earth and Environmental Sciences, *More peat than we thought: Northern peatlands and the hyperactive Holocene carbon cycle*. September, 2017 (Host: A. Koutavas)
New York Botanical Garden, July 19, 2013, *The influence of vegetation and climate on Holocene carbon accumulation in Alaskan Peatlands: Lessons for the future* (Host: Dr. Robert F.C. Naczi)
Rutgers University, Quaternary Studies Association Lecture Series, November 21, 2011
Columbia University Hydrology Consortium, March 31, 2011, *Wetlands: The crossroads of the Hydrosphere, Biosphere, and Atmosphere*
Adelphi University Environmental Studies Program, March 7, 2011, *Growin' in the Wind: Reconstructing the Hydrologic Cycle with Stable Isotope Tracers* (Host: Prof. Beth Christensen)
Columbia University Department of Earth and Environmental Engineering, November 30, 2010, *Growin' in the Wind: Reconstructing the Hydrologic Cycle with Stable Isotope Tracers* (Host: Prof. Peter Schlosser)
Lafayette College Department of Geology, October 1, 2010, *Growin' in the Wind: Reconstructing the Hydrologic Cycle with Fossil Leaf Waxes* (Host: Prof. Kira Lawrence).
Lamont-Doherty Earth Observatory Division of Biology and Paleoenvironment Seminar Series, October 30, 2009: *Reconstructing the Terrestrial Hydrologic Cycle Using Abundances and Stable Isotope Ratios of Organic Biomarkers in Peat*.
Peatland Paleoclimate Workshop, Vihula, Estonia, May 19, 2009: Plenary Talk on Biomarkers and Stable Isotopes in Peatland Paleoclimate Reconstruction (Organized by Stephen Jackson and Dan Charman).
Lamont-Doherty Earth Observatory Division of Biology and Paleoenvironment Seminar Series, November 7, 2008: *Paleohydrologic Reconstruction from Peatland Sediments* (Host: Dr. Dorothy Peteet).

Mentoring

Jack Besnoy, Northern Valley Demarest Regional High School, 2017–2019, Paleoecology and Human Impact in the Demarest Nature Center.

Climate and Life High School Intern Program, 2019, 5 students, Quantifying heavy metals in New York marsh sediments, AND Linking concentrations of redox-sensitive elements with carbon accumulation in Alaskan peatlands.

Margaret Calcio, Summer 2019, Barnard College, "Relationship Between Elemental Chemistry and Carbon Accumulation Rates in Northern Peatlands."

Dylan Levene, Summer 2019, University of Southern California, "Impact of Redox Chemistry on Carbon Accumulation in Peatlands."

Climate and Life High School Intern Program, 2018, 4 students, Leaf wax biomarkers and plant taxonomy in peatland sediments from Kamchatka, Far East Russia.

Tia Ogus, Summer 2018, LDEO Intern Program, Analysis of Sterol Diagenesis in a Peat Core from Kamchatka, Far East Russia.

Caitlin Etri, Summer 2017, LDEO Visiting Arctic Science Teacher (VAST) Program

Fabian Stute, Summer 2016, LDEO Intern Program, The influence of climate, vegetation, and fire on carbon accumulation in forest peatlands of Borneo.

Anna Weiss, Summer 2015, LDEO Intern Program, Reconstructing Southern Hemisphere Westerlies using peatland sediments from the Auckland Islands, New Zealand

Tianjia Liu, Summer 2014, LDEO Intern Program, Climate of the North Pacific using sediments from Middleton Island, AK

Katherine Keller, Spring 2014, Columbia University Department of Chemistry

Yuval Pearl, Summer 2013, Abraham Joshua Heschel High School Science Research Placement Program, Leaf waxes in Arctic plants

Sylvie Rosen, Summer 2013, Abraham Joshua Heschel High School Science Research Placement Program, Pharmaceuticals and Personal Care Products in the Sediments of Piermont Marsh

Marina Gemma, Summer 2013, LDEO Intern Program, Climate and Carbon Accumulation in Alaska Peatlands

Caitlin Fedio, Summer 2013, LDEO Intern Program, Climate and Carbon Accumulation in Alaska Peatlands

Frank Pavia, Academic year 2012-13, Columbia University Department of Chemistry/DEES

John Karavias, Summer 2012, Visiting Arctic Science Teacher (VAST)

Yuval Pearl, Summer 2012, Abraham Joshua Heschel High School Science Research Placement Program

Frank Pavia, Summer 2012, LDEO Intern program

Alicia McGeachy and Max Perez, Summer 2011, New York City Research Initiative (NYCRI).

Peter Isles, MS 2011, Columbia University Department of Ecology, Evolution, and Environmental Biology
Thesis Title: An Inquiry into the Determinants of the Stable Carbon Isotope Signatures of Sphagnum Biomarkers from an Ombrotrophic Bog

Baruch Tabanpour, NASA Summer program for undergraduates 2010, *Novel Method for Estimating Variations in Salinity in the Hudson Estuary Using Stable Isotopes of Leaf Waxes*

Teaching

Columbia University Department of Anthropology & Department of Earth and Environmental Science
Co-Instructor: ANEEGU4522_001_2018_3: The Emerging City: Environmental Histories of New York

- Fall 2018

Columbia University Department of Earth and Environmental Engineering
Co-Instructor: EAEE 3900y (3 points): America's Water and the Effects of El Nino (Independent Study).

- Spring 2016

Barnard College Department of Environmental Science
Co-Instructor: Physical Hydrology (with Martin Stute)

- Spring 2012, 2015: Designed and taught "Ecohydrology" portion of the course.

Columbia University Department of Earth and Environmental Science

Guest Lecturer: Wetlands and Climate Change, Prof. Dorothy Peteet

- Fall 2009, 2011, 2013, 2015: Presented a guest lecture entitled, “Organic and Stable Isotope Geochemistry for Paleoclimate Reconstruction in Peatlands”

Brown University Department of Geological Sciences

Teaching Assistant: Environmental Geochemistry, Prof. Yongsong Huang

- Fall 2008: Design and supervise laboratory investigations for students’ final projects. Organize and implement field trips to collect environmental samples for analysis as part of the laboratory investigations. Lead weekly review sessions for assistance with problem sets. Grade problem sets. Lecture in professor’s absence.
- Fall 2005: Design and implement field trips. Implement laboratory investigations. Grade problem sets.

Teaching Assistant: Limnology, Prof. James M. Russell

- Spring 2007: Lead weekly review sessions for assistance with problem sets. Grade problem sets. Lecture in professor’s absence.

Brown University SPARK (for high-achieving middle school students)

T.A.: Forces of Nature: Monster Storms, Global Warming, and the Science of Weather, Prof. Thompson Webb, III

- Summer 2008: Lead field trip to nearby salt marsh. Supervise computer exercises, including creating animations of daily weather data and preparation of final presentations.

Brown University Graduate Teaching Fellows in K-12 Education, “GK-12 Fellow”

- Summer 2007—Spring 2008: Work with high school chemistry and physics teachers to develop lessons for their classes in keeping with NSF’s goal of integrating “cutting-edge research into the classroom”. Teach four, 1.5-hour classes (1 chemistry, 3 physics) weekly (in the fall) or biweekly (in the spring). Coach at weekly meetings of after school science olympiad team. Participate in professional development activities with graduate fellows and high school teachers.

Acadia Institute of Oceanography, Residential Marine Science Program for students 12—18

Instructor

- Summer 2004: Design and implement classroom, laboratory, and field lessons covering marine biology, chemistry, physics, and geology. Design and implement environmental science-themed recreational activities (e.g. hikes in Acadia National Park, visits to raptor rehabilitation center)

Teaching Intern

- Summers 2001, 2002: Assist instructors in above activities

Tufts University Department of Geology

Teaching Assistant: The Dynamic Earth, Profs. Robert L. Reuss, Anne F. Gardulski

- Fall 2002 and Fall 2003: Supervise laboratory and field exercises. Assist grading exams.

Teaching Assistant: Environmental Geology, Prof. John C. Ridge

- Spring 2004 and Spring 2003: Supervise laboratory and field exercises Assist grading exams.

Synergistic Activities and Outreach

Organizer, Neotoma Biomarker Database Training and Organizational Workshop, LDEO, February 2018.

Biomarker Data Steward, Neotoma Paleoecology Database, 2017—present.

Organizer, PAGES C-PEAT (Carbon in Peatlands on Earth through Time) Workshop at LDEO, October 2015

Member, Lamont Hall Restoration Committee, Fall 2014—Present.

Organizer: 2nd Annual Workshop of the Development of Isotopic Proxies for Paleoenvironmental Interpretation—Carbon (DIPPI-C).

- 35 International participants at LDEO August 20-22, 2013.

Earth2Class Teacher Workshop: Visiting Arctic Science Teacher (VAST) Program (with science teacher advisee, John Karavias) April 23, 2013.

- Presented results from research conducted of which VAST program was a part. Participants received continuing education credits in support of New York State teaching licensure.

Committee Member, LDEO Climate Center, 2012—present

Coordinator, Outstanding Student Presentation Award (OSPA) for Paleoceanography and Paleoclimatology Section, AGU Fall Meeting, 2012

- Recruited and organized judges, compiled judges' responses, and chose winners for PP's OSPAs.

Mentor, Visiting Arctic Science Teacher (VAST) Program

- Include a high school science teacher in fieldwork and help develop Arctic science curriculum.

Presenter/Organizer, Columbia University Hydrology Consortium, Spring, 2011:

- Bi-weekly seminar series aimed at bringing together scientists from throughout the Columbia community, linked by a common interest in hydrology and hydroclimate

Invited speaker on weather and climate

- February 25, 2011; Kent Place School, Summit, NJ (AP Environmental Science Class)

“A Day in the Life of the Hudson River: Snapshot Day”

- October 8, 2009: Representing Lamont-Doherty Earth Observatory, taught high school students a field lesson in fluvial sedimentology for the event coordinated by The Hudson River Estuary Program of New York State Department of Environmental Conservation and Hudson Basin River Watch

Brown University/Vartan Gregorian Elementary School Science Outreach Program

- 2005—2007: Design and teach science lessons for fourth grade students

Invited panelist for discussion following screening of “An Inconvenient Truth”

- Fall 2006: Temple Emanu-El, Providence, RI sponsored by the Coalition on the Environment and Jewish Life (COEJL)
- Summer 2007: Brown University, sponsored by Summer@Brown (for High School Students)

Graduate Student Representative to Brown University Geology Faculty, Fall 2007—2009

Sheridan Center for Teaching and Learning in Higher Education

- Teaching Certificate I, Spring 2005

Associate Editor

- Geochemistry, Geophysics, Geosystems, Special Theme— Development of Isotopic Proxies for Paleoenvironmental Interpretation—Carbon (DIPPI-C)

Reviewer

- *Chemical Geology*
- *Earth and Planetary Science Letters*
- *Geochemistry, Geophysics, Geosystems*
- *Geochimica et Cosmochimica Acta*
- *Journal of Quaternary Science*
- *JGR Biogeosciences*
- National Environmental Research Council (UK)
- NSF AGS-GEO/ATM
- NSF Geobiology and Low Temperature Geochemistry
- PNAS
- *Organic Geochemistry*
- *Palaeogeography, Palaeoclimatology, Palaeoecology*
- *Quaternary International*
- *Quaternary Science Reviews*
- *The Holocene*

Activities and Responsibilities

Analytical

- Develop numerical models to predict changes in climate using environmental data
- Use environmental measurements to construct statistical models of drought and flood
- Collect and analyze environmental data to validate predictive models of climate
- Assess impacts of climate change on the both the built and natural environment

Managerial

- Supervise and coordinate research activities of undergraduates, graduate students, technicians
- Develop and manage budgets for scientific activities, including personnel
- Organize and lead scientific expeditions to field locations throughout the world
- Construct, maintain, and operate state-of-the-art analytical laboratory facility

Communicative

- Present scientific results to international audiences; publish and review scientific papers
- Perform outreach to educate general public and lawmakers on environmental science topics
- Design, teach new courses for Earth & Environmental Science, Anthropology, Archaeology
- Promote awareness of scientific activities through documentary filmmaking and social media

Other Proficiencies

- Analytical chemical instrumentation: gas chromatography (GC), quadrupole mass spectrometry (GC-MSD), isotope ratio mass spectrometry (IRMS), x-ray fluorescence spectroscopy (XRF), laser induced breakdown spectroscopy (LIBS)
- Oral, written, and visual science communication for technical and non-technical audiences
- Software: R (statistical); Geographical Information System (GIS); Vector Graphics; MS Office

Professional Memberships

American Geophysical Union
Geological Society of America
Sigma Xi, Brown University Chapter