

NICOLE S. KHAN

CURRICULUM VITAE

CONTACT

INFORMATION

Department of Earth and Environmental Science
University of Pennsylvania
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EDUCATION

PhD Candidate (Earth and Environmental Science), Sept 2009 - Present
University of Pennsylvania, Philadelphia, PA, USA

Thesis: The application of stable carbon isotopes and microfossils to reconstruct processes shaping coastal evolution

Advisors: Dr. Benjamin Horton (Principal, University of Pennsylvania), Dr. Christopher Vane (Co-Principal, British Geological Survey), Dr. Fred Scatena (University of Pennsylvania), Dr. Alain Plante (University of Pennsylvania), Dr. Heinrich Holland (University of Pennsylvania)

Expected graduation: September 2013

Bachelor of Arts (Earth Science and Mathematics), Sept 2009
Boston University, Boston, MA, USA

EXPERIENCE

Teaching Assistant, Dept of Earth and Environmental Science, 2010 - Present
University of Pennsylvania, Philadelphia, PA, USA

Courses taught: Introduction to Geology (GEOL100), Oceanography (GEOL130)

Responsibilities include teaching and holding recitation sections for groups of 30-40 students, weekly grading of lab assignments and homework, individual tutoring during office hours, and examination preparation, monitoring, and grading

Research Assistant, Dept of Earth Science, Boston University, 2007 - 2009
Supervisors: Dr. Maureen Raymo, Dr. David Marchant, Dr. Duncan FitzGerald

Responsibilities included numerous laboratory and data preparation and analysis tasks, including creating and editing figures and tables relating to global changes in the carbonate compensation depth over the Cenozoic, performing grain-size and color analysis on Antarctic soils, updating the Antarctic Dry Valley climate database, and producing graphic core logs from sediments collected from Egypt and Brazil

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PEER-REVIEWED PUBLICATIONS

Khan, N.S., Horton, B.P., McKee, K.L., Jerolmack, D., Falcini, F., Enache, M.D., Vane, C.H., 2013, Tracking sedimentation from the historic A.D. 2011 Mississippi River flood in the deltaic wetlands of Louisiana, USA: *Geology*, published online 7 February 2013, doi: 10.1130/G33805.1

Falcini, F., **Khan, N.S.**, Macelloni, L., Horton, B.P., Lutken, C.B., McKee, K.L., Santoleri, R., Colella, S., Li, C., Volpe, G., D'Emidio, M., Salusti, A., Jerolmack, D.J., 2012, Linking the historic 2011 Mississippi River flood to coastal wetland sedimentation: *Nature Geoscience*, v. 5, no. 11, p. 803-807.

Vane, C.H., Kim, A., Moss-Hayes, V., Snape, C., Castro Diaz, M., **Khan, N.S.**, Engelhart, S., Horton, B.P., *in review*, Degradation of mangrove tissues by arboreal termites (*Nasutitermes acajutlae*) and their role in the mangrove C cycle (Puerto Rico): Chemical characterization and organic matter provenance using bulk $\delta^{13}\text{C}$, C/N, alkaline CuO oxidation-GC/MS and solid-state ^{13}C NMR, *Geochemistry, Geophysics, Geosystems*.

Khan, N.S., **Vane, C.H.**, **Horton, B.P.**, *in review*, Stable carbon isotope geochemistry of coastal wetland sediments as a sea-level indicator, in: I. Shennan, A. Long, B.P. Horton, eds., *Handbook of Sea-Level Research*, Wiley, Hoboken.

PUBLICATIONS IN PREPARATION

Khan, N.S., **Vane, C.V.**, **Horton, B.P.**, **Scatena, F.N.**, The application of stable carbon isotope geochemistry of mangrove sedimentary organic matter in the reconstruction of former relative sea levels and paleoenvironments, Puerto Rico.

Khan, N.S., **Vane, C.V.**, **Horton, B.P.**, The application of stable carbon isotope geochemistry of bulk sedimentary organic matter and diatoms in the construction of sea-level index points, Thames River Estuary, UK.

CONFERENCE ABSTRACTS

Khan, N.S., Vane, C.V., Horton, B.P., Scatena, F.N. The application of $\delta^{13}\text{C}$ and C/N of mangrove sedimentary organic matter to reconstruct former relative sea level and paleoenvironment, Puerto Rico. Geological Society of America Southeast Sectional Meeting, 2013. San Juan, Puerto Rico.

Khan, N.S., Vane, C.V., Horton, B.P., Scatena, F.N. Utility of $\delta^{13}\text{C}$ and C/N values in organic material in the reconstruction of former sea levels and paleoenvironment in the tropics, Luquillo Critical Zone, Puerto Rico. American Geophysical Union Annual Fall Meeting, 2012. San Francisco, CA

Engelhart, S.E., Horton, B.P., Peltier, W.R., **Khan, N.S.**, Liu, S., Vacchi, M. An expanded Holocene database of relative sea levels for North America and the Caribbean: Implications for 20th century sea-level rise and geophysical models. Geological Society of America Annual Meeting, 2012. Charlotte, NC.

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CONFERENCE ABSTRACTS (*CONT.*)

Kearney, W.S., Horton, B.P., Engelhart, S.E., Nelson, A.R., Witter, R.C., Vane, C.H., Milker, Y., **Khan, N.S.** Grain size characteristics of tidal marshes during a simulated megathrust earthquake at Bandon, Oregon. Geological Society of America Annual Meeting, 2012. Charlotte, NC.

Khan, N.S., Horton, B.P., McKee, K.L., Jerolmack, D., Falcini, F., Enache, M.D., Vane, C.H. Tracking wetland sedimentation from the historic 2011 Mississippi River Flood. Poster presentation. Geological Society of America Annual Meeting, 2012. Charlotte, NC.

Khan, N.S., Horton, B.P., McKee, K.L., Jerolmack, D., Falcini, F., Enache, M.D., Vane, C.H. Tracking wetland sedimentation from the historic 2011 Mississippi River Flood. 3rd Joint International conference of IGCP 588, "Preparing for coastal change," and INQUA 1001, "Late Quaternary records of coastal change," 2011. Kiel, Germany.

Engelhart, S.E., Peltier, W.R., Horton, B.P., **Khan, N.S.**, Liu, S., Vacchi, M. A Holocene database of relative sea levels for North America and the Caribbean: Implications for geophysical models. American Geophysical Union Annual Fall Meeting, 2011. San Francisco, CA.

Khan, N.S., McKee, K.L., Horton, B.P., Vervaeke, W., Jerolmack, D., Enache, M. Tracking the sediment deposition of the Great 2011 Mississippi River Flood. American Geophysical Union Annual Fall Meeting, 2011. San Francisco, CA

Lutken, C., D'Emidio, M., Falcini, F., Horton, B.P., Jerolmack, D.J., **Khan, N.S.**, Li, C., Macelloni, L., McKee, K.L. Connecting the historic 2011 Mississippi River flood to marsh sedimentation on the Delta. American Geophysical Union Annual Fall Meeting, 2011. San Francisco, CA.

Khan, N.S., Horton, B.P., Vane, C.H., Leng, M., Kendrick, C. Reconstruction of Holocene relative sea level from the Thames River Estuary: Implications for geophysical modeling. XVIII INQUA-Congress, 2011. Bern, Switzerland

Khan, N.S., Horton, B.P., Vane, C.H., Engelhart, S.E., Scatena, F.S. Late Holocene reconstruction of relative sea level, Luquillo Critical Zone Observatory, Puerto Rico. National Critical Zone Observatories All Hands Meeting, 2011. Tucson, AZ

Khan, N.S., Vane, C.H., Horton, B.P., Leng, M., Kendrick, C. (2011) A new record of Holocene sea-level change in the Thames Estuary and its implications for geophysical modeling. London Earth Meeting.

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CONFERENCE ABSTRACTS

(*CONT.*)

Khan, N.S., Vane, C.H., Horton, B.P., Engelhart, S.E., Scatena, F.S., Fackler, S.F. Utility of $\delta^{13}\text{C}$ and C/N values in organic material in the reconstruction of former sea levels and paleoenvironment in the tropics, Luquillo Critical Zone, Puerto Rico. IGCP 588, "Preparing for coastal change: A detailed process-response framework for coastal change at different timescales," 2010. Hong Kong.

RESEARCH GRANTS

NOSAMS Graduate Internship Program, 2012
American Quaternary Association (AMQUA) Travel Grant, 2012
International Quaternary Association (INQUA) Congress Travel Grant, 2011
NSF Critical Zone Observatory (CZO) European Travel Grant, 2010-2012
Stephen Hui Trust Fund Travel Grant, 2010
University of Pennsylvania Summer Stipend in Paleontology, 2010

AWARDS AND ACADEMIC RECOGNITION

National Ocean Sciences Accelerator Mass Spectrometry (NOSAMS) Graduate Internship Program, Woods Hole Oceanographic Institute, 2012
Project title: Determining accurate and precise chronologies of paleoenvironmental and relative sea-level change from mangrove environments

AGU Outstanding Student Presentation Award, 2011

Presentation title: Tracking the deposition of sediments from the Great Mississippi Flood of 2011

Benjamin Franklin Fellowship 2009-2012
Boston University Scholarship/Grant, 2005-2009
Boston University Dean's List, 2007-2009

ACTIVITIES AND PROFESSIONAL MEMBERSHIP

Communications correspondent for the Inaugural Amtrak Club Meeting
University of Pennsylvania, Philadelphia, PA, Spring 2012

Geological Society of America (GSA)
Quaternary Research Association (QRA)
American Quaternary Association (AMQUA)
American Geophysical Union (AGU)

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REFERENCES

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Dr. Christopher H. Vane

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Relationship: Co-Principal PhD advisor

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