

PROMOTION RECOMMENDATION
The University of Michigan
College of Literature, Science, and the Arts

Nathan D. Sheldon, assistant professor of Earth and environmental sciences, College of Literature, Science, and the Arts, is recommended for promotion to associate professor of Earth and environmental sciences, with tenure, College of Literature, Science, and the Arts.

Academic Degrees:

Ph.D.	2003	University of Oregon
M.A. equivalent	2006	Royal Holloway, University of London
B.A.	1999	Carleton College

Professional Record:

2011 – present	Assistant Professor, Department of Earth and Environmental Sciences, University of Michigan
2008 – 2011	Assistant Professor, Department of Geological Sciences, University of Michigan
2004 – 2007	Lecturer (equivalent to Assistant Professor), Department of Earth Sciences, Royal Holloway, University of London
2003 – 2004	Post-doctoral Research Associate, University of Oregon

Summary of Evaluation:

Teaching – Professor Sheldon has taught a diverse suite of courses, ranging from on-campus lectures and laboratories to off-campus field courses. His “Environmental Geology” course attracts students with broad interests and has become highly evaluated by students. Professor Sheldon engages a large number of undergraduates in his research and is on an unusually large number of Ph.D. dissertation committees. Two of his Ph.D. students have National Science Foundation graduate fellowships, reflecting the high caliber of the students he attracts to his research program. He also coordinated the upper-level writing requirement for undergraduates.

Research – Professor Sheldon is best known for his study of ancient soils (paleosols) and for developing various geochemical proxies to extract information on ancient climates and atmospheric carbon dioxide (CO₂) levels throughout Earth history. Professor Sheldon has been particularly active in developing new collaborations with colleagues in the department and across Michigan’s campus, as well as those at other institutions, particularly in areas of microbial biochemistry and climate modeling. He has a strong publication record with a healthy citation rate. The Sheldon and Tabor (2009) paper is mentioned by nearly every reviewer as a comprehensive study that will have a lasting impact on the discipline. He has been awarded four major external grants from the National Science Foundation (NSF) and the National Aeronautics and Space Administration (NASA). He was the principal investigator (PI) on two of these awards.

Recent and Significant Publications:

“High-resolution isotopic record of C₄ photosynthesis in a Miocene grassland,” with J. M. Cotton and C. A. E. Strömberg, *Paleogeography, Palaeoclimatology, Paleoecology*, 337-338, 2012, pp. 88-98.

“Microbially induced sedimentary structures in the ca. 1100 Ma terrestrial Midcontinent Rift of North America,” in *Microbial Mats in Siliciclastic Systems Through Time*, N. Noffke and H. Chafetz (eds.), SEPM Special Publications, 101, 2012, pp. 153-162.

“Continental climatic and weathering response to the Eocene-Oligocene transition,” with E. Costa, et al., *Journal of Geology*, 120(124), pp. 596-610.

“Quantitative paleoenvironmental and paleoclimatic reconstruction using Paleosols,” with N. J. Tabor, *Earth-Science Reviews*, 95, 2009, pp. 1-52.

Service – Professor Sheldon has performed effective service in his department and in his discipline. He has been an active participant in graduate admissions and in revising the undergraduate curriculum. He has served as an editor for two of the top journals in his field and has been invited to participate in workshops sponsored by the National Research Council and the National Science Foundation. He also served on a NASA panel.

External Reviewers:

Reviewer (A)

“Dr. Sheldon is a highly productive, widely-read, and ambitious early career scientist. He has an impressive number of publications, in journals relevant to his field. He has a very impressive success history with NSF and NASA funding, one especially stellar for a scientist [of his generation]. He appears to be an enthusiastic educator and mentor.”

Reviewer (B)

“...he has averaged about 5 publications per year since he joined the faculty in 2008. This is a significant accomplishment. ... He is producing high quality results, and he is doing all the right things to lead the scientific community in his area. I believe that he would get tenure at my own institution.”

Reviewer (C)

“Clearly his most influential paper is the recent review with Neil Tabor on environmental indicators in soils. ... His paper on pCO₂ constraints on pre-Cambrian is a thoughtful approach to the very difficult problem of constraining this key green-house gas quite deep in geological time.”

Reviewer (D)

“His record demonstrates an ambitious and energetic scientist [of his generation] with many ideas and a respectable funding record from the National Science Foundation. ... I believe that Dr. Sheldon has established a strong professional record and is on a trajectory of increasing success.”

Reviewer (E)

“I consider Dr. Sheldon to be ONE OF THE most promising, rapidly rising...geochemists studying fossil soils (paleosols) today, with an established national and international reputation. ... Dr. Sheldon also made [a] very significant contribution by writing the seminal tome (Sheldon and Tabor, 2009) published in *Earth-Science Reviews* that summarized quantitative paleo-environmental and paleoclimate reconstruction using paleosols.”

Reviewer (F)

“Nathan is the ‘whole package’ in this discipline; it is difficult to imagine him having a serious rival in this field within his [cohort]... By simple objective criteria, Nathan’s record of publication and advising also paints the picture of a *focused*, hard working [*sic*] and accomplished research scientist. ... He is the lead author of a highly cited review paper (published in 2009) that is intellectually deep, comprehensive and likely to be the go-to introduction and overview of the field for years to come.”

Reviewer (G)

“Over the last decade, because of his rigorous approach and high productivity, Dr. Sheldon has established himself as a (perhaps the) leading expert on the use of paleosols to reconstruct paleoenvironmental conditions. This preeminence is reflected in his 2009 Earth Science Reviews paper.”

Reviewer (H)

“Nathan Sheldon is the best in his field, junior or senior. ... He recognized early in his career that the first records of life on land and the continental archives of changing climate spanning geologic time were grossly understudied, and now he is leading the charge with the best work in these essential areas.”

Summary of Recommendation:

Professor Sheldon is widely recognized as one of the leading figures in his field. He is also a highly valued educator and mentor. The Executive Committee of the College of Literature, Science, and the Arts and I recommend that Assistant Professor Nathan D. Sheldon be promoted to the rank of associate professor of Earth and environmental sciences, with tenure, College of Literature, Science, and the Arts.



Terrence J. McDonald
Arthur F. Thurnau Professor,
Professor of History and Dean
College of Literature, Science, and the Arts

May 2013