

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

Marin K. Clark, associate professor of Earth and environmental sciences, with tenure, College of Literature, Science, and the Arts, is recommended for promotion to professor of Earth and environmental sciences, with tenure, College of Literature, Science, and the Arts.

Academic Degrees:

Ph.D.	2003	Massachusetts Institute of Technology
B.S.	1995	Cornell University

Professional Record:

2018 – present	Acting Chair, Department of Earth and Environmental Sciences, University of Michigan
2014 – 2018	Associate Chair for Graduate Studies, Department of Earth and Environmental Sciences, University of Michigan
2013 – present	Associate Professor, Department of Earth and Environmental Sciences, University of Michigan
2008 – 2014	Faculty Associate, Program in the Environment (PitE), University of Michigan
2006 – 2013	Assistant Professor, Department of Geological Sciences (now Earth and Environmental Sciences), University of Michigan
2003 – 2005	Texaco Prize Post-doctoral Research Fellow, California Institute of Technology

Summary of Evaluation:

Teaching – Professor Clark has contributed significantly to the educational mission of the Department of Earth and Environmental Sciences. She has taught across all academic levels, both in Ann Arbor and at the Camp Davis Rocky Mountain Field Station in Wyoming. Professor Clark has also added significantly to the learning outcomes of two upper-level courses by implementing cutting-edge projects using remote sensing techniques to map coastal erosion in Michigan and tectonic features in Wyoming. She has contributed to the professional development of graduate students and mentored students in research outside of traditional courses. She also co-led a summer field school for graduate students that was sponsored by the National Science Foundation (NSF) and taught at Camp Davis. Since 2014, Professor Clark has mentored three post-doctoral scholars, graduated two Ph.D. students, one M.S. student, and currently has two active Ph.D. students.

Research – Professor Clark conducts research on the geologic processes that shape Earth's landscape over a wide range of spatial and temporal scales. She is best known for her work on continental dynamics in the Himalayan/Tibet region. Professor Clark developed a new landslide model based on empirical slope-stability relationships and input from digital elevation models and ground motion prediction models. She applied the model to the distribution of ~25,000 landslides following the 2015 Gorkha earthquake in Nepal. Research on earthquakes and landslides has obvious benefits to society, especially to agencies charged with emergency response and long-term hazard evaluation. Hundreds to thousands of landslides can occur after a major earthquake, causing widespread damage to infrastructure. Professor Clark's research helps us understand landslide processes and, ultimately, may aid in forecasting landslide potential.

Recent and Significant Publications

- “Strong variation in weathering of layered rock maintains hillslope-scale strength under high precipitation,” with V. Voigtlander, et al., *Earth Surface Processes and Landforms*, 43, 2018, pp. 1183-1194, doi: 10.1002/esp.4290.
- “The size, distribution, and mobility of landslides caused by the 2015 Mw7.8 Gorkha earthquake, Nepal,” with K. Roback, et al., *Geomorphology*, 301, 2018, pp. 121-138, doi:10.1016/j.geomorph.2018.01.030.
- “Observations of landslides caused by the April 2015 Gorkha earthquake in Nepal based on land, UAV and satellite reconnaissance,” with D. Zekkos, et al., *Earthquake Spectra*, 33, 2017, n. S1, pp. S95-S114. doi: 10.1193/121616EQS237M.
- “Co-seismic landslides reveal near-surface rock strength in a high-relief, tectonically active setting,” with S. Gallen and J. Godt, *Geology*, 43, 2015, n. 1, pp. 11-14. doi:10.1130/G36080.1.

Service – Professor Clark served as the associate chair for graduate studies for four years and carried out thoughtful, critical, assessments followed by effective implementation of significant changes. She was elected by her peers to serve on the departmental Executive Committee. Professor Clark has served the profession as a member of the editorial boards of *Geology* (2008-2010) and *Lithosphere* (2015-2017), and she has served on three NSF proposal review panels in 2010, 2014, and 2016.

External Reviews:

Reviewer (A)

“The foundational geodynamics work with emphasis on Asia and western North America has continued with important review papers...as well as substantial student-led contributions... These rich and dense papers thoughtfully synthesize topographic metrics, orography and climate, faulting history, thermochronology, sedimentary systems, and geophysical constraints to strengthen our understanding of the evolution of mountain belts and continental deformation. No doubt, Professor Clark is a world leader in these topics. Her perspective and her steady production of quality work propels a substantial part of these research topics globally.”

Reviewer (B)

“...I am excited about Dr. Clark’s landslide and geomorphology efforts. There, I think that she personally moved the debate forward significantly, and her work has already inspired a range of new research.”

Reviewer (C)

“...Marin is clearly deserving of promotion to Full Professor, not only on the basis of her research and publications, but also her strong record as a teacher, and graduate student advisor. ... I would rank Marin among the most successful and visible people in active tectonics...”

Reviewer (D)

“I have also been repeatedly impressed with how Dr. Clark exploits new technologies to provide innovative insights on ‘old’ problems. ...I know few...other researchers at this stage in their careers who have tackled such a range of topics with the care, creativity, and impact that Dr. Clark has achieved.”

Reviewer (E)

“Her earlier work...on the links between the surface evolution of orogenic belts with deep-seated tectonic processes established Prof. Clark as a world leader in the broad field of tectonics. She has

continued this line of research and has continued to make fundamental contributions to our science. ...an example of Prof. Clark's deep insights and creative ideas is her recent paper in *Nature* (2012)."

Reviewer (F)

"I am very impressed with the quality and quantity of her work. Her scholarly impact is large... Her work clearly has shaped a broad international effort to understand Tibetan tectonics and is now making significant contributions on earthquake-induced landsliding (and rapid response to earthquakes)."

Reviewer (G)

"...she a broadly trained scientist who brings a suite of interdisciplinary methods to bear on old problems in a new way."

Reviewer (H):

"Gallen et al., 2015 is without doubt the most important paper from Marin's work on modern earth surface processes and landforms. It has revealed that rock deformation and weathering overrule intact rock strength, opening a challenging path towards more realistic representations of the role of substrate in landscape dynamics."

Summary of Recommendation:

Professor Clark has established a productive and impactful research program, has made substantial contributions to the undergraduate and graduate programs in her department, and is a valued colleague within the university and within her professional community. The Executive Committee of the College of Literature, Science, and the Arts and I recommend that Associate Professor Marin K. Clark be promoted to the rank of professor of Earth and environmental sciences, with tenure, College of Literature, Science, and the Arts.



Elizabeth R. Cole, Interim Dean
Professor of Women's Studies, Psychology,
and Afroamerican and African Studies
College of Literature, Science, and the Arts

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