Approved by the Regents
May 21, 2015

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

Eric A. Hetland, 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.	2006	Massachusetts Institute of Technology
M.A.	2000	State University of New York, Binghamton
B.S.	1996	University of California, Santa Cruz

Professional Record:

2008 – present	Assistant Professor, Department of Earth and Environmental Sciences, University of Michigan
2005 – 2008	Post-doctoral Scholar, California Institute of Technology

Summary of Evaluation:

Teaching – Professor Hetland is an effective and talented teacher. He has developed and taught a diverse suite of courses, ranging from introductory survey courses on natural hazards to upper-level undergraduate and graduate courses on fluid dynamics, data analysis, and tectonophysics. His courses are particularly valued for their focus on quantitative reasoning and methods. Professor Hetland's teaching also extends beyond the classroom. He has included twelve undergraduate students in his research, several of whom have successfully advanced to top-rate graduate schools. He currently supervises three Ph.D. students and has published with two of his more senior students.

Research – Professor Hetland is a geophysicist who is widely regarded as a leader in the study of earthquake physics and dynamics. He is well known for the development and advancement of quantitative models of crustal deformation that include complex rheologies, and more recently for the development of a new method for extracting information about Earth's structure from geodetic observations of surface deformation fields. Professor Hetland is highly regarded for the rigor and sophistication of his modeling and analysis, and for his ability to identify new research directions that advance the field. He has a very productive research program that has produced twenty-five journal articles and garnered five years of funding from the National Science Foundation.

Recent and Significant Publications:

"Bias in estimates of lithosphere viscosity from interseismic deformation," with T. T. Hines, *Geophysical Research Letters*, 40, 2013, pp. 4260-4265 (doi:10.1002/grl.50839).

"Regional stresses inferred from coseismic slip models of the 2008 Mw 7.9 Wenchuan, China, earthquake," with L. Medina Luna, *Tectonophysics*, 584, 2012, pp. 43-53 (doi:10.1016/j.tecto.2012.03.027).

"Postseismic and interseismic deformation due to fault creep II: Transient creep and interseismic stress shadows on megathrusts," with M. Simons, *Geophysical Journal International*, 181, 2010, pp. 99-112 (doi:10.1111/j.1365-246X.2009.04482.x).

"An asperity model for fault creep and interseismic deformation in northeastern Japan," with R. V. S. Kanda and M. Simons, *Geophysical Journal International*, 2012 (doi:10.1093/gji/ggs028).

Service – Professor Hetland has provided substantial service to his department including service on the Graduate Admissions, Turner Student Awards, and Computer committees. He has also assisted in organizing and judging the Michigan Geophysical Union, a graduate-student led research symposium convened by the Department of Earth and Environmental Sciences and the College of Engineering's Department of Atmospheric, Oceanic and Space Sciences. Professor Hetland has contributed more broadly by serving as a university liaison to several community consortiums, by convening special sessions at national and regional scientific meetings, and by organizing workshops on crustal deformation modeling.

External Reviewers:

Reviewer (A)

"Eric stands out among his peers in that he combines very practical mathematical and computer programming skills with great insight in important geophysical and geological problems. He has applied his skills to a number of important problems in plate boundary deformation and fault mechanics (with applications in Turkey, California, Central Asia, and Japan) and his research has resulted in a substantial number of highly regarded publications."

Reviewer (B)

"Eric Hetland is certainly among the finest specialists investigating the mechanics of the seismic cycle. …[he] has very solid technical expertise and is well respected in the community. His research is well focused on a core topic in active tectonics. I am confident that he will continue to produce very solid science…"

Reviewer (C)

"…it is clear to me that Prof. Hetland has selected important research problems, and he has made significant contributions in several areas. …the rigor of Prof. Hetland's modeling is impressive, and he has produced original insights about key questions in his field."

Reviewer (D)

"Dr. Hetland has made strong contributions to his field. He compares favorably with other early career successes… He has also collaborated with some of the best and the brightest in his field of interest, and from the breadth of these colloborations [sic] appears to be a valued colleague. … Dr. Hetland's research contributions are very strong and the thoughtfulness with which he has approached his teaching clearly recommend his case."

Reviewer (E)

"…I found his research substantial and interesting, and he has accumulated a portfolio of research and service contributions that is of the standard I would expect to see for advancing to tenure at the University of Michigan."

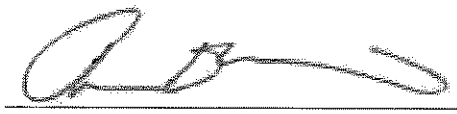
Reviewer (F)
"There are few enough people who have both the mathematical skill and the interest in this topic to advance the subject in a significant way, but I think he is one of them. I think there are many unsolved problems in this field, and I would expect that someone with Dr[.] Hetland's record of publications and skill with analysis will continue to make important contributions to the way in which faulting is understood."

Reviewer (G)
"Crustal deformation models before Dr. Hetland's Ph.D[.] work were lagging behind our empirical knowledge… … Dr. Hetland explored concepts that were barely on the radar screen of other researchers… All of these topics are now being explored by numerous crustal deformation researchers in order to better understand the complex deformation observed after earthquakes."

Reviewer (H)
"In comparison to his peers in crustal geodynamics, Eric stands above all of them. ... Eric is not susceptible to the hype that motivates so many in the community. He takes his time, thinks carefully, and then writes careful (and sometimes challenging) papers. … Eric is clearly asking much more sophisticated questions than any of [his peers]… …Eric is a unique geophysicist, a deep thinker with broad talents…"

Reviewer (I)
"This field has attracted a lot of talent in the past decade, but Eric is clearly in the top cohort. He is distinguished as being the most careful and rigorous scientist – regardless of seniority - using continuum models and geodetic data to estimate the rheological properties of the upper 100 km of the earth."

Summary of Recommendation:
Professor Hetland is widely recognized for the quality and rigor of his research. He is an accomplished instructor and dedicated mentor, who has provided valuable service at Michigan and beyond. The Executive Committee of the College of Literature, Science, and the Arts and I recommend that Assistant Professor Eric A. Hetland be promoted to the rank of associate professor of Earth and environmental sciences, with tenure, College of Literature, Science, and the Arts.



Andrew D. Martin
Dean, and Professor of Political Science
College of Literature, Science, and the Arts

May 2015