Approved by the Regents May 21, 2015

PROMOTION RECOMMENDATION
The University of Michigan
College of Engineering
Department of Atmospheric, Oceanic and Space Sciences
College of Literature, Science, and the Arts
Department of Earth and Environmental Sciences

Jeremy N. Bassis, assistant professor of atmospheric, oceanic and sciences, Department of Atmospheric, Oceanic and Space Sciences, College of Engineering, and assistant professor of Earth and environmental sciences, Department of Earth and Environmental Sciences, College of Literature, Science, and the Arts, is recommended for promotion to associate professor of atmospheric, oceanic and space sciences, with tenure, Department of Atmospheric, Oceanic and Space Sciences, College of Engineering, and associate professor of Earth and environmental sciences, without tenure, Department of Earth and Environmental Sciences, College of Literature, Science, and the Arts.

Academic Degrees:

Ph.D.	2007	Scripps Institution of Oceanography, Earth Sciences, San Diego, CA
B.S.	2000	Pennsylvania State University, Physics, University Park, PA

Professional Record:

2009 – Present	Assistant Professor, Department of Atmospheric, Oceanic and Space Sciences, University of Michigan, Ann Arbor, MI
2009 – Present	Assistant Professor, Department of Earth and Environmental Sciences, University of Michigan, Ann Arbor, MI
2008 – 2009	Post-doctoral Scholar, Department of the Geophysical Sciences, University of Chicago, Chicago, IL
2007 – 2008	Visiting Scientists, Department of the Geophysical Sciences, University of Chicago, Chicago, IL
2007 – 2008	Post-doctoral Researcher, Scripps Institution of Oceanography, Institute of Geophysics and Planetary Physics, La Jolla, CA

Summary of Evaluation:
Teaching: Professor Bassis' classroom teaching is excellent. His average Q1 and Q2 scores average in the 4.5+ range. Letters collected from students are uniformly filled with praise. He has successfully graduated one doctoral student with another three doctoral students in the pipeline. The undergraduates who have done research with him have expressed appreciation for the skill-based research experiences he has provided.

Research: Professor Bassis is rapidly emerging as an international leader in ice shelf fracture and crevasse evolution, more commonly referred to as "calving." He was a recipient of an NSF CAREER award in 2012. External reviewers are uniformly enthusiastic about his research. They describe his research as "pioneering" in the development of the theoretical and mathematical foundation for understanding ice shelves, which is described as one of the "holy

grails" of climate change. This research has great scientific and societal impact because the water contained in the Earth's ice shelves (e.g. the western Antarctic ice shelf) is sufficient to cause disastrous increases in sea level, if (or when) this ice rejoins the oceans. His H-index is 11, which is excellent for a researcher only seven years past the Ph.D. Professor Bassis has eight research grants funded by NASA, NSF and DoE, totaling over $1.8M.

Recent and Significant Publications:

Bassis, J. N. and Jacobs, S., 2013, "Diverse calving patterns linked to glacier geometry," *Nature Geoscience*, 6(10), 833-836.

Walker, C.C., Bassis, J. N. and Liemohn, M., 2012, "On the application of simple rift basin models to the South Polar Region of Enceladus," *Journal of Geophysical Research*, 117, E07003, doi:10.1029/2012JE004084.

Bassis, J.N. and Walker, C.C., 2011, "Upper and lower limits on the stability of calving glaciers from the yield strength envelope of ice," *Proceedings of the Royal Society*, doi: 10.1098/rspa.2011.0422, p. 1-19.

Bassis, J.N., 2011, "The Statistical Physics of Iceberg Calving and the Emergence of Universal Calving Laws," *Journal of Glaciology*, (57)201, p. 3-17.

Bassis, J.N., "The Physics of Ice Sheets," 2008, in special International Polar Year edition of *Physics Education*, 43(4), p. 375-382.

Service: Professor Bassis has a very strong record of service to his department, the university, and the science community. He has served on numerous high visibility NSF and NASA panels in Earth science. He is also a frequent reviewer for scientific manuscripts and research proposals submitted to leading journals and major federal sponsors of climate research, respectively. Notably, he is an associate editor for first-tier *Journal of Geophysical Research.* He has also served on 10 Ph.D. dissertation committees at the University of Michigan and at other leading universities. In his department, Professor Bassis has served on nine separate committees, including the AOSS Executive Committee.

External Reviewers:

Reviewer A: "His expertise in this area fills a critical niche in glaciology to which limited attention has been paid."

Reviewer B: "His contributions have been most significant in the area of ice shelf fracture and crevasse production and propagation, as well as, more recently, in the field of structural stability of ice cliffs. Without exaggeration, there can be no more important field of study in glaciology today…Dr. Bassis has been a pioneer in (1) recognizing the importance and implications of the ice cliff, and (2) attempting to determine a physical law controlling their heights. It is likely that this work will be in most models soon, and in the textbooks shortly."

Reviewer C: "… in May 2014, at the International Glaciological Society Symposium on the Cryospheric Contribution to Sea Level Change and the subsequent Workshop on Calving Glaciers. The latter event gathered together the world's leading researchers on the calving problem to assess the state of the art and develop future research strategies. It is indicative of his high standing and visibility in this field that Bassis was an invited keynote speaker, and was entrusted with lead authorship of a major review paper in Reviews of Geophysics."

Reviewer D: "His 2011 paper in Journal of Glaciology on the role of statistical physics in glacier retreat, and a paper in Nature Geoscience in 2013, have been important motivating factors in my own, research in glacier calving...He is a world leader in the understanding and advancement of understanding of glacier calving dynamics...He is now often cited as an invited speaker in top-level research conferences in glaciology...."

Reviewer E: "...the papers he has written offer new approaches to old problems. This is not an incremental approach to science, but rather a disruption to the equilibrium."

Reviewer F: "...Jeremy Bassis is already a pioneer in this field [of his cohort]. He is the one that I turn to when I have a related question and I consider him the world-leading capacity in this field. No one else is comprising the entire range of physics that is required for an adequate understanding of fracturing as Dr. Bassis is doing it in his research"

Reviewer G: "...he is certainly one of the top 5 experts in the nation focusing on calving, his papers are well cited in the community..."

Reviewer H: "Dr. Jeremy Bassis is a leader in the field of ice sheet modeling, and someone that I consider to be one of the real innovators in polar earth science."

Summary of Recommendation: Professor Bassis has proven to be a talented teacher and an excellent mentor. He is emerging as an international leader in ice shelf fracture and crevasse evolution and he has a strong record of service to his department, the university and the science community. It is with the support of the College of Engineering and the College of Literature, Science, and the Arts Executive Committees that we recommend Jeremy N. Bassis for promotion to associate professor of atmospheric, oceanic and space sciences, with tenure, Department of Atmospheric, Oceanic and Space Sciences, College of Engineering, and associate professor of Earth and environmental sciences, without tenure, Department of Earth and Environmental Sciences, College of Literature, Science, and the Arts.

David C. Munson, Jr.
Robert J. Vlasic Dean of Engineering
College of Engineering

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

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