

PROMOTION RECOMMENDATION
The University of Michigan
College of Engineering
Department of Climate and Space Sciences and Engineering

Jeremy N. Bassis, associate professor of climate and space sciences and engineering, with tenure, Department of Climate and Space Sciences and Engineering, and associate professor of earth and environmental sciences, without tenure, Department of Earth and Environmental Sciences, College of Literature, Science, and the Arts, is recommended for promotion to professor of climate and space sciences and engineering, with tenure, Department of Climate and Space Sciences and Engineering, and 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 Geophysics and Oceanography, La Jolla, CA
B.S.	2000	Pennsylvania State University, Physics, State College, PA

Professional Record

2015 – present	Associate Professor (with tenure), Department of Climate and Space Sciences and Engineering, University of Michigan
2015 – present	Associate Professor (without tenure), Department of Earth and Environmental Sciences, University of Michigan
2010 – 2015	Assistant Professor, Department of Earth and Environmental Sciences, University of Michigan
2010 – 2015	Assistant Professor, Department of Climate and Space Sciences and Engineering, University of Michigan

Summary of Evaluation:

Teaching: Professor Bassis has demonstrated a commitment to teaching that includes both the classroom and improving the departmental culture. He has taught and re-designed a required course for graduate students, developed one new breadth course, re-designed an elective course for undergraduates, and developed a new course for non-science majors. He has chaired or co-chaired the dissertations of 10 Ph.D. students (six completed, four current) and served on 20 doctoral committees for students in other departments. He has advised several undergraduate student researchers, and in 2019 he was part of a faculty team that led an undergraduate team on a Research Experience for Undergraduates (REU) expedition to Greenland. The students published on this experience in *EOS*. He has been a leader on issues of DEI; for example, a 2018 review of the CLaSP graduate program found significant issues with respect to student experience and the departmental climate. Professor Bassis took on a leadership role and has been serving since then as the graduate chair to address these problems. He is widely regarded as an excellent instructor by both graduate and undergraduate students.

Research: Professor Bassis' research interests focus on the evolution of the climate, especially using global circulation models for the Earth's atmosphere. Recently, he has moved into the realm of data science and development of novel methodologies for the Earth system models. He is well known for the rigor of the complex simulation experiments that he has devised for model verification. Professor Bassis has published over 20 refereed publications since his last promotion in 2015. His citation metrics gives an H-index of 29 in Google Scholar. He prioritizes students' publications with students

receiving lead authorship, publishing in leading journals of the field. Professor Bassis' funding is well over \$2M, assuring his group with sustained productivity. Letters from external reviewers also commented positively regarding his funding and productivity and support his promotion.

Recent and Significant Publications

- Bassis, J.N., B. Berg, A. J. Crawford, D. I. Benn, "Transition to marine ice cliff instability controlled by ice thickness gradients and velocity," *Science*. 2021; 372(6548): 1342-1344.
- Ultee, L., & Bassis, J. N. (2020), "SERMeQ model produces a realistic upper bound on calving retreat for 155 Greenland outlet glaciers," *Geophysical Research Letters*, 47, e2020GL090213.
- Kachuck, S. B., Martin, D. F., Bassis, J. N., & Price, S. F. (2020), "Rapid viscoelastic deformation slows marine ice sheet instability at Pine Island Glacier," *Geophysical Research Letters*, 47.
- Ma, Y., & Bassis, J. N. (2019), "The effect of submarine melting on calving from marine terminating glaciers," *Journal of Geophysical Research: Earth Surface*, 124, 334–346.
- Walker, C.C., J.N. Bassis, "Propagation of vertical fractures through planetary ice shells: The role of basal fractures at the ice-ocean interface and proximal cracks," *Planetary Science Journal*, 2021; 2(135).

Service: Professor Bassis has contributed to the research community at the department and university level as well as nationally and internationally. A few examples include his authorship of the IPCC Special Report on the Ocean and Cryosphere (2018-2019). He was an associate editor of the leading journal in his field, *Journal of Geophysical Research – Earth Surfaces* (2012- 2015). At the university level, he has served as the department graduate chair and in that role has been an active liaison to the Rackham School of Graduate Studies. He has served as their fellowship evaluator for three years, and has also served on the college library committee. He has served on 18 different committees in his department, including but not limited to the Executive Committee, Awards Committee, Qualifying Exam Committee, and DEI Committee.

Professor Bassis was the lead organizer for the Rackham-sponsored "Re-envisioning Graduate Education" initiative aimed at developing a new applied class that focused on the intersection between poverty, race, and climate. In this class, students work with a community partner to develop actionable climate policies, e.g., the Washtenaw Community Water Resources, to develop a systemic plan for the placement of green infrastructure that would be equitably placed to make green spaces accessible to all. Professor Bassis was among the group of faculty who founded the department Justice, Equality, Diversity, and Inclusivity (JEDI) council designed to respond more directly to inequities in the department and across the geosciences. Beyond the department, he took the JEDI council concept to the International Thwaites Glacier Collaboration (ITGC), which is a multinational science project involving research groups from the US, UK, and South Korea. Professor Bassis has been a key figure in advancing diversity, equity, and inclusivity in the department.

External Reviewers:

Reviewer A: "The Bassis and Walker (2012) paper in the Proceedings of the Royal Society is one of the few essential papers in the field and must be included in any serious consideration of the potential for large, rapid sea-level rise. His *Science* paper this year provides a much-needed path for incorporation of key physics into larger models."

Reviewer B: "Dr. Bassis' work has direct implications for policy in terms of its impact on sea level rise and coastal communities globally. While many scientists (including myself) work on topics of relevance to policy, it is rare to see a scientist who works closely to inform decision-makers via

publications, service, and education. Dr. Bassis has done all three.”

Reviewer C: “My perception is that Professor Bassis is widely regarded as one of the pre-eminent mid-career scientists in his field, researching fundamental aspects of ice sheet behaviour and specifically targeting some questions that are of societal importance.”

Reviewer D: “Jeremy Bassis’s [sic] contributions are of high scientific rigour and quality, and I consider him as the leading figure in the field of calving mechanics...”

Reviewer E: “Dr. Bassis was not only able to identify the key important problems to work on but has proven himself to be incredibly creative and rigorous in tackling these problems. His impressive quantitative skills and deep understanding of the mechanics and the dynamics of ice deformation provided a solid foundation for some incredibly fruitful contributions to glaciology.”

Summary of Recommendation: Professor Bassis is a world-class researcher and a compassionate teacher. 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 professor of climate and space sciences and engineering, with tenure, College of Engineering, and professor of earth and environmental sciences, without tenure, Department of Earth and Environmental Sciences, College of Literature, Science, and the Arts.



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