

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

Approved by the
Regents
May 21, 2015

Mark G. Flanner, assistant professor of atmospheric, oceanic and space 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 University of California, Earth System Science, Irvine, CA
B.S. 2002 University of Wisconsin, Biomedical Engineering, Madison, WI

Professional Record:

2009 – Present Assistant Professor, Department of Atmospheric, Oceanic and Space Sciences,
University of Michigan
2009 – Present Assistant Professor, Department of Earth and Environmental Sciences, University
of Michigan
2007 – 2009 Post-Doctoral Fellow, Advanced Study Program, National Center for Atmospheric
Research (NCAR), Boulder, CO

Summary of Evaluation:

Teaching: Professor Flanner's classroom teaching is outstanding. His average teaching evaluations across graduate and undergraduate courses range from 4.6 to 4.9. Supporting letters from students are extraordinary stating that Professor Flanner is the very definition of excellent teaching. He has successfully graduated one doctoral student and is looking to graduate four more in the next two years.

Research: Professor Flanner has compiled an innovative, excellent research portfolio focused on some of the most important emerging problems in climate change. In addition to basic research, which will have an impact on deterministic predictions of the state of a rapidly changing Arctic, Professor Flanner has performed policy-relevant research for the Arctic Council. His H-index is 22, which would be a significant accomplishment for a researcher 20 years after completing the Ph.D.; Professor Flanner has been out seven years.

Professor Flanner is particularly well-known for his work on the effect of light-absorbing impurities in snow, and has recently developed a novel instrument used in field measurements of radiation-snow interaction. He is an interdisciplinary hire, and he has worked actively developing research grants with the Department of Earth and Environmental Sciences. He is successfully acquiring research support, currently, with five active grants of \$1.5 million (his share). Professor Flanner's research record is outstanding.

Recent and Significant Publications:

- Perket, J., Flanner, M. G. and Kay, J. E., (2014), "Diagnosing shortwave cryosphere radiative effect and its 21st century evolution in CESM," *Journal of Geophysical Research*, 119, 1356-1362, doi:10.1002/2013JD021139.
- Painter, T. H., Flanner, M. G., Kaser, G., Marzeion, B., VanCuren, R. A. and Abdalati, W., (2013), "End of the Little Ice Age in the Alps forced by industrial black carbon," *Proceedings of the National Academy of Sciences*, 110, 15216-15221, 10.1073/pnas.1302570110.
- Flanner, M. G., Zender, C. S., Hess, P. G., Mahowald, N. M., Painter, T. H., Ramanathan, V. and Rasch, P. J., (2009), "Springtime warming and reduced snow cover from carbonaceous particles," *Atmospheric Chemistry and Physics*, 9, 2481-2497.
- Flanner, M. G., (2009), "Integrating anthropogenic heat flux with global climate models," *Geophysical Research Letters*," 36, L02801, doi:10.1029/2008GL036465.
- Flanner, M. G., Shell, K. M., Barlage, M., Perovich, D. K. and Tschudi, M. A., (2011), "Radiative forcing and albedo feedback from the Northern Hemisphere cryosphere between 1979 and 2008," *Nature Geoscience*, 4, 151-155, doi: 10.1038/ngeo1062.

Service: Professor Flanner has made substantial service contributions to the research community. An important and unique contribution is as the U.S. representative to the Arctic Monitoring and Assessment Program (AMAP) Short-Lived Climate Forcers Expert Group. This group is under the auspices of the Arctic Council, which is a high-level ministerial organization that addresses the rapidly changing interaction amongst Arctic states as they position themselves in light of vast environmental changes. Professor Flanner has served on several committees at the department level and for the college, with his largest service contributions focused on student recruitment.

External Reviewers:

Reviewer A: "Mark has generated an extraordinary set of influential papers that are clear signs that he is a scientist of great talent, great ambition, and great accomplishment... Were Mark Flanner being considered for promotion to Associate Professor with tenure at my department, I feel assured that he would be promoted. Not only is his publication record influential, but it is creative and inspiring, as is evident from the strong student and postdoctoral scientists that he attracts to his group."

Reviewer B: "Mark's climate modeling work, in which he designs interesting experiments that allow him to quantify processes of interest and test hypotheses, is particularly impressive..."

Reviewer C: "Mark is a world recognized leader in the field of radiative and climate impacts of light-absorbing impurities in snow and ice. The seminal paper by Flanner et al. (2007) represents the first global climate study that treats coupled snow aerosol heating and snow aging... Mark has 36 peer-review journal publications. These papers have been cited more than 1900 times with an H-index of 22 (Web of Science): His papers were cited 550 times in 2013! Mark's productivity in terms of both quality and quantity, in my opinion, is on a par with or beyond typical associate professors at major research universities..."


Reviewer D: "I expect Prof. Flanner to continue to provide important contributions to critical problems of concern to climate scientists and policy makers. His contributions are exceptional in comparison with his peers and I feel he is deserving of promotion to the level of associate professor with tenure at the University of Michigan."

Reviewer E: "These advances have lead [sic] to a series of high quality and influential papers led by Prof. Flanner and members of his group and broader network of collaborators. The quality of scholarship in these papers is of the highest standard – thorough, careful, clear, very well grounded in the literature, and with implications of the research clearly laid out."

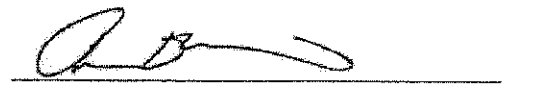
Reviewer F: "I had the privilege of meeting Mark at a scientific conference on Climate Change some years ago and discussing with him his breakthrough contribution that appeared in *Nature*...Mark is clearly deserving of promotion to Associate Professor with tenure in the departments at the University of Michigan, or for that matter, at any institution of higher learning."

Reviewer G: "Dr. Flanner has a very robust track record of external funding including a NSF CAREER grant and various other grants from NASA and NSF. He also has already taken on substantial nationally and internationally highly visible leadership roles, for example as lead author of a United Nations Environmental Program (UNEP) report and contributing author to the IPCC's Fifth Assessment Report."

Summary of Recommendation: Professor Flanner has established research, teaching and service records that are exceptional. He has emerged as a lead researcher in the field of cryospheric science and the Arctic. Students laud his teaching skills, and external reviewers note the quality and importance of the work of his students. He is considered a recognized leader in the field of radiative and climate impacts of light-absorbing impurities in snow and ice. It is with the support of the College of Engineering and the College of Literature, Science, and the Arts Executive Committees that we recommend Mark G. Flanner 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, Sciences, 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 Literature, Science, and the Arts

May 2015