

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

Shasha Zou, associate professor of climate and space sciences and engineering, without tenure, College of Engineering, is recommended for the granting of tenure to be held with her title of associate professor of climate and space sciences and engineering, Department of Climate and Space Sciences and Engineering, College of Engineering.

Academic Degrees:

Ph.D. 2009 University of California, Los Angeles, Space Physics, Los Angeles, CA  
M.S. 2006 University of California, Los Angeles, Space Physics, Los Angeles, CA  
B.S. 2004 University of Science and Technology of China, Space Physics, Hefei, China

Professional Record:

2015–present Associate Professor (without tenure), Department of Climate and Space Sciences and Engineering, University of Michigan  
2010–2015 Assistant Research Scientist, Department of Climate and Space Sciences and Engineering, University of Michigan  
2009–2010 Research Fellow, Department of Climate and Space Sciences and Engineering, University of Michigan  
2009–2009 Post-doctoral Researcher, Atmospheric and Oceanic Sciences, University of California, Los Angeles, CA

Summary of Evaluation:

Teaching: Professor Zou is a talented and energetic classroom instructor. Her classroom experience includes a variety of courses at different levels and sizes. Letters from students note her enthusiasm for the material, her engaging style, her openness to flipping the classroom into discussion sessions, and her willingness to open her research laboratory for class projects. She is a dedicated advisor and mentor of student research projects at both the undergraduate and graduate level. She has graduated two Ph.D. students as co-chair and currently advises three Ph.D. students. She is also active in advising M.S. and undergraduate students as well as post-doctoral scholars.

Research: Professor Zou is an expert in ionospheric physics with an emphasis on solar wind-magnetosphere-ionosphere-thermosphere (M-I-T) coupling. She brought her knowledge of ionospheric measurement techniques to NASA's Themis mission, using the combination of space and ground measurements to address the often ignored problem of the role of the ionosphere on the large-scale magnetospheric dynamics. Lately, she has expanded her observational studies to large-scale modeling of the solar wind-magnetosphere-ionosphere coupling, as well as the use and development of data and those models toward operational space weather prediction. She is a rising star in M-I-T science and considered one of the top

researchers in this field. She has authored more than 50 papers and has been cited more than 900 times. She received the American Geophysical Union's Fred L. Scarf Award in 2010 and the URSI Young Scientist Award in 2011, two of the most distinguished awards for early-career scientists in the field of space physics. She has secured a substantial amount of research funding and her standing among her peers is exceptional.

#### Recent and Significant Publications:

- Wang, Z., Zou, S., Shepherd, S., Liang, J., Gjerloev, J., Ruohoniemi, J., Kunduri, B., Wygant, J., "Multi-instrument observations of mesoscale enhancement of SAPS associated with an injection," *J. Geophys. Res. – Space Physics*, 2019; 124.
- Ren, J., Zou, S., Gillies, R. G., Donovan, E., Varney, R. H., "Statistical characteristics of polar cap patches observed by RISR-C," *J. Geophys. Res. – Space Physics*, 2018; 123.
- Zou, S., Ozturk, D., Varney, R., Reimer, A., "Effects of sudden commencement on the ionosphere: PFISR observations and global MHD simulation," *Geophys. Res. Letts*, 2017; 44(7): 3047-3058.
- Zou, S., Ridley, A., Jia, X., Boyd, E., Nicolls, M., Coster, A., Thomas, E., Ruohoniemi, J. M., "PFISR observation of intense ion upflow fluxes associated with an SED during the 1 June 2013 geomagnetic storm," *J. Geophys. Res. – Space Physics*, 2017; 122(2): 2589-2604.
- Zou, Z., Moldwin, M.B., Ridley, A.J., Nicolls, M. J., Coster, A. J., Thomas, E. G., Ruohoniemi, J. M., "On the generation/decay of the storm-enhanced density plumes: Role of the convection flow and field-aligned ion flow," *J. Geophys. Res. – Space Physics*, 10/10/2014; 119(10): 8543-8559.

Service: Professor Zou has served on several internal committees including her department's Executive Committee, STEP Committee (chair), Graduate Admissions Committee (chair), and Ph.D. Oral Exam Committee. At the national level, in addition to refereeing, and serving as a proposal panel reviewer, she has been a leader in the NSF GEM and CEDAR communities. At the international level, she was recently elected as secretary to the Asia Oceania Geoscience Society (AOGS) Solar-Terrestrial Interactions section. These leadership roles within the department, and U.S. and International professional communities clearly indicates her dedication to service and trust of her peers.

#### External Reviewers:

Reviewer A: "...I believe Shasha Zou is an outstanding scientist who will more than likely become a significant leader in the worldwide community of space physics researchers and educators. I have no doubt she would receive tenure at [my institution] and I sincerely believe she is more than deserving of tenure at the University of Michigan too. If granted, I believe she will bring lasting prestige to your institution."

Reviewer B: "...Dr. Shasha Zou is certainly worthy of tenure. She has an outstanding research record and continues to make significant contributions. She has excellent potential for continuing to do so. She is a leader of her peers, and has an outstanding service record. I can say unequivocally that she would be tenured at my institution..."

Reviewer C: "...Prof. Zou is one of the best ionospheric physicists in the world. She is an

excellent teacher and a generous mentor. She has given her best to the university and the space physics community. Prof. Zou should be promoted to the rank of associated [sic] professor with tenure.”

Reviewer D: “...Shasha is the most talented, independent, and productive scientist [of her cohort] that I know of in the space physics community. I wholeheartedly support her promotion to the tenured associate professor position.”

Reviewer E: “It is my pleasure to enthusiastically support Dr. Zou’s application for tenure. I have no doubt that she will continue to be a productive researcher in the future. By pursuing multiple lines of research through both NASA and NSF, she is well-positioned to continue to secure funding and produce important results.”

Reviewer F: “...I identify Shasha as a member of the elite group of space physicists that will propel the discipline forward over the coming decade. Shasha’s work provides fundamental research in support of the nation’s burgeoning space weather interests, and will likely contribute to understanding stellar-planetary systems elsewhere in the universe as exoplanet research matures.”

Reviewer G: “...I find Prof. Zou’s case to be quite complete and impactful. This case would warrant tenure and promotion at our institution....She is on an upward trajectory as she pursues challenging research topics and leadership opportunities within the community.”

Summary of Recommendation: Professor Zou has made significant contributions to the field of magnetosphere-ionosphere-thermosphere physics; she is an excellent teacher and mentor; and she is a leader who contributes both in external and internal service. It is with the support of the College of Engineering Executive Committee that I recommend Shasha Zou for the granting of tenure to be held with her title of associate professor of climate and space sciences and engineering, Department of Climate and Space Sciences and Engineering College of Engineering.



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Alec D. Gallimore, Ph.D.  
Robert J. Vlasic Dean of Engineering  
College of Engineering

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