Approved by the Regents
May 14, 2009

PROMOTION RECOMMENDATION
The University of Michigan
College of Engineering

Aaron J. Ridley, associate professor of atmospheric, oceanic and space sciences, without tenure, Department of Atmospheric, Oceanic and Space Sciences, College of Engineering, is recommended for the granting of tenure to be held with his title of associate professor of atmospheric, oceanic and space sciences, Department of Atmospheric, Oceanic and Space Sciences, College of Engineering.

Academic Degrees:

Ph.D.	1997	University of Michigan, Atmospheric, Oceanic and Space Sciences, Ann Arbor, MI
M.S.	1995	University of Michigan, Atmospheric, Oceanic and Space Sciences, Ann Arbor, MI
B.S.	1992	Eastern Michigan University, Physics, Ypsilanti, MI

Professional Record:

2006-present	Associate Professor, (without tenure), Department of Atmospheric, Oceanic and Space Sciences, University of Michigan
2005-present	Associate Research Professor, Department of Atmospheric, Oceanic and Space Sciences, University of Michigan
2003-2005	Associate Research Scientist, Department of Atmospheric, Oceanic and Space Sciences, University of Michigan
2000-2003	Assistant Research Scientist, Department of Atmospheric, Oceanic and Space Sciences, University of Michigan
1997-1999	Research Scientist, Southwest Research Institute, San Antonio, TX
1996-1997	Research Assistant, High Altitude Observatory, National Center for Atmospheric Research, Boulder, CO

Summary of Evaluation:

Teaching: Professor Ridley is an outstanding educator who succeeds in motivating and inspiring students to excel in scientific learning and research. Professor Ridley has distinguished himself as a dedicated and innovative instructor. Through Fall 2008, he has taught two large undergraduate courses (Extreme Weather AOSS102, with 176 enrolled, and Rocket Science AOSS101 with 85 enrolled) as well as six upper division and graduate classes. He made major changes to the content of the instrumentation classes essentially transforming them into hands-on design and engineering classes, with significant hardware content. In addition to his classroom teaching responsibilities, Professor Ridley has chaired or co-chaired six Ph.D. committees through 2008. He has an additional two Ph.D. students in the pipeline. Professor Ridley has also directed several undergraduate major projects.

Research: Professor Ridley's research record is excellent. He has shown tremendous productivity with over 90 refereed publications and a healthy level of sustained research funding. Professor Ridley is a rising star in his community and a brilliant and innovative colleague. Professor Ridley's research has focused on the system integration of three science disciplines: atmospheric physics, ionospheric physics, and magnetospheric physics. His key contributions and breakthroughs have a common overall characteristic: They generally relate to the connections and interfaces between such disciplines, making creative use of models and novel data-analysis techniques. Professor Ridley has established a research program at a scope that is exceptional for any modeler nationally. His publication record and the number of invited talks are exceptional, reflecting the broad impact and sought-after capability he offers to the community.

Recent and Significant Publications:

A.J. Ridley, "Effects of seasonal changes in the ionospheric conductances on magnetospheric fieldaligned currents," *Geophysical Research Letters, 34*, L05101, doi:10.1029/2006GL028444, 2007.
A.J. Ridley, "Alfvén wings at Earth's magnetosphere under strong interplanetary magnetic fields," *Annales Geophysicae, 25*, 533, 2007.
A.J. Ridley, Y. Deng, G. Tóth, "The global ionosphere-thermosphere model," *Journal of Atmospheric and Solar-Terrestrial Physics, 68*, 839, 2006.
A.J. Ridley, "A new formulation for the ionospheric cross polar cap potential including saturation effects," *Annales Geophysicae, 23*, 3522, 2005.
A.J. Ridley, T.I. Gombosi, D.L. De Zeeuw, C.R. Clauer, "Ionospheric control of the magnetospheric configuration: Thermospheric neutral winds," *Journal of Geophysical Research, 108*, 1328, doi: 10.1029/2002JA009464, 2003.
A.J. Ridley, D.L. De Zeeuw, T.I. Gombosi, K.G. Powell, "Using steady-state MHD results to predict the global state of the magnetosphere-ionosphere system," *Journal Geophysical Research, 106*, 30,067, 2001.
A.J. Ridley, C.R. Clauer, G. Lu, V.O. Papitashvili, "Ionospheric convection during nonsteady interplanetary magnetic field conditions," *Journal of Geophysical Research, 102*, 14,563, 1997.

Service: Professor Ridley's service record includes numerous activities within and outside of the University of Michigan. Within the University, he has contributed substantially to the definition and assessment of multidisciplinary design classes and independent student projects, one of the strategic emphases of the College of Engineering. He also has advised students at the graduate and undergraduate degree level. On the national and international stage, his service record emphasizes his capability as a community builder and discussion leader in broad and often disjointed communities. Professor Ridley has shown tremendous leadership and service in his broader scientific community. He has served on over six national committees tasked with critiquing and reviewing the Nation's infrastructure in Space Weather research. Professor Ridley has also been very active in disseminating scientific knowledge into practical applications. In particular, he worked as a consultant to support NOAA to transition science-grade space weather models toward their predictive application.

External Reviewers:
Reviewer A: "...Ridley has impressed me with his ability to recognize and successfully research very challenging space physical problems and to explain his insights in a clear and concise manner."

Reviewer B: "...I am somewhat surprised that Dr. Ridley is only now coming up for tenure, since he has certainly long established himself as a leading theorist of magnetosphere–upper atmosphere interactions. ... Dr. Ridley is systematically and continuously operating at the very cutting edge of space science and he has developed unique theoretical and data assimilative tools that are both revolutionizing and modernizing the field."

Reviewer C: "I like Aaron's focus on the interconnectedness of the solar wind-magnetosphere-ionosphere-thermosphere system. I like the way he uses simulation as an experimental tool. I applaud the way he views even his own results with great skepticism and an insistence on understanding the physics underlying simulation results."

Reviewer D: "My overall impression of Prof. Ridley's performance in research is that he has been prolific and innovative in publishing fundamental and practical results that advance magnetospheric and ionospheric physics. ... I can report that Prof. Ridley is very well-known in his research community, and, in my view, ranks in the top 5-10% among peers."

Reviewer E: "...Professor Aaron Ridley is at the forefront of his field – providing insightful ways to create models and in their applications to crucial issues in Space Physics. He will be a key component of your strong modeling efforts at Michigan in the years to come."

Reviewer F: "Aaron is a highly competent, dedicated, energetic, self-motivated scientist [of his cohort] with an excellent international reputation. There is no doubt in my mind that he is one of the top scientists [of his cohort] in the world who is involved in 'space physics' theory, modeling and measurements."

Reviewer G: "These achievements, as I previously documented, I believe already provide more than adequate evidence to demonstrate Ridley's exceptional mastery of his field, major contributions to his field, and important innovations to his field – all at a tenure level."

Reviewer H: "The breadth and depth of Prof. Ridley's research capabilities and experience are truly outstanding within the international community of space physicists."

Reviewer I: "Dr. Ridley is very active in pursuing research opportunities and collaborations, as can be determined from his current and pending support. He is able to identify key issues in the field that lead to proposals that are timely and appropriate."

Summary of Recommendation: Professor Ridley is an outstanding faculty member who has excelled in all areas of the academic profession: teaching, research, service. It is with the support of the College of Engineering Executive Committee that I recommend Aaron J. Ridley be granted tenure in his title as associate professor of atmospheric, oceanic and space sciences, Department of Atmospheric, Oceanic and Space Sciences, College of Engineering.

David C. Munson Jr.

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

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