

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

Eric A. Kort, assistant professor of climate and space sciences and engineering, Department of Climate and Space Sciences and Engineering, College of Engineering, is recommended for promotion to associate professor of climate and space sciences and engineering, with tenure, Department of Climate and Space Sciences and Engineering, College of Engineering.

Academic Degrees:

Ph.D. 2011 Harvard University, Applied Physics, Cambridge, MA  
M.S. 2005 Harvard University, Applied Physics, Cambridge, MA  
B.A. 2004 Pomona College, Physics, minor Mathematics, Claremont, CA

Professional Record:

2013-present Assistant Professor, Climate and Space Sciences and Engineering, University of Michigan  
2011-2013 W.M. Keck Institute for Space Studies Postdoctoral Fellow, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA  
2011 Post-doctoral Fellow, Atmospheric Science, Harvard University, Cambridge, MA

Summary of Evaluation:

Teaching: Professor Kort has introduced two new courses and completely revised several existing courses. He employs multiple teaching techniques to ensure full attention of different learners. He has also brought both data analysis and use of models to the classroom – a feature much appreciated by his students. His efforts have led to a significant increase in the number of students in the courses he teaches and overall strengthening of the CLaSP educational program. Professor Kort has graduated one Ph.D. student, with another due to graduate in 2019. He is advising another three students in progress. Professor Kort has also been active with undergraduate students and mentoring post-doctoral scholars.

Research: Professor Kort works in the field of atmospheric chemistry, with focus on composition of the atmosphere bearing on climate change. Professor Kort is best known for his discovery of an anomalous methane emission in the Four Corners region of the Southwest US and quantitative measurements of the emissions using space-based assets, which then were used to pinpoint the emissions arising as a result of oil and gas mining. This ground-breaking discovery received extensive coverage in the national and international press including the *New York Times*. Using standard metrics of research performance, his research record includes over 60 journal publications producing an h-index of 34, which in the atmospheric sciences is very high as compared to peers at a similar career stage. He is also successful in acquiring external research funding: his current research grants total almost \$2M and include an NSF CAREER award.

### Recent and Significant Publications:

- Alexander Gvakharia, Eric A Kort, Adam Brandt, Jeff Peisch, Thomas B Ryerson, Joshua P Schwarz, Mackenzie L Smith, Colm Sweeney, "Methane, Black Carbon, and Ethane Emissions from Natural Gas Flares in the Bakken Shale, North Dakota," *Environmental Science & Technology*, 04/21/2017; 51(9): 5317-5325.
- EA Kort, ML Smith, LT Murray, A Gvakharia, AR Brandt, J Peischl, TB Ryerson, C Sweeney, K Travis, "Fugitive emissions from the Bakken shale illustrate role of shale production in global ethane shift," *Geophysical Research Letters*, 05/16/2016; 43(9): 4617-4623.
- John Ware, Eric A Kort, Phil DeCola, Riley Duren, "Aerosol lidar observations of atmospheric mixing in Los Angeles: Climatology and implications for greenhouse gas observations," *Journal of Geophysical Research: Atmospheres*, 08/27/2016; 121(16): 9862-9878.
- Mackenzie L Smith, Eric A Kort, Anna Karion, Colm Sweeney, Scott C Herndon, Tara I Yacovitch, "Airborne ethane observations in the Barnett Shale: Quantification of ethane flux and attribution of methane emissions," *Environmental Science & Technology*, 07/07/2015; 49(13): 8158-8166.
- Eric A Kort, Christian Frankenberg, Keeley R Costigan, Rodica Lindenmaier, Manvendra K Dubey, Debra Wunch, "Four corners: The largest US methane anomaly viewed from space," *Geophysical Research Letters*, 10/16/2014; 41(19): 6898-6903.

Service: Professor Kort has served on several committees at both the department and the university level, including as a member of the transition team for the new School for Environment and Sustainability and as a member of President Schlissel's committee on Greenhouse Gas Reduction. Moreover, he has served internationally as a participant and author for the European Commission Joint Research Centre and the Japanese National Institute for Environmental Studies, and the World Meteorological Organization Integrated Global GHG Information System.

### External Reviewers:

Reviewer A: "Professor Kort's laser focus, keen intuition, brand new data and brilliant analyses have introduced multiple new avenues to the study of greenhouse gases at a scale that is useful for policy and action. That the U.S. Department of the Interior quickly updated their estimates based on Kort et al. (2014) bespeaks the importance and broad impact of Professor Kort's research. He has achieved in short order what many hope for in an entire career."

Reviewer B: "I like very much the teaching philosophy outlined and practiced by Eric Kort. He has not just copied existing teaching habits but developed his own individual teaching approach consisting both in frontal teaching and hands on data analysis and problem-solving work with a strong informatics component - with problems open-ended and not yet solved / pre-cooked."

Reviewer C: "... he has established a strong reputation for conducting aircraft measurement with high-precision and fast-responding trace gas analyzers. This measurement capacity has served him well. The novelty of his work lies more in improving emission estimates than in generating mechanistic insights regarding greenhouse gas cycling in the environment."

Reviewer D: “His research spans *in situ* and satellite data collection and analysis and model development and use to interpret those measurements. It is unusual and valuable for a single researcher to span both measurements and model analysis.”

Reviewer E: “Kort has established himself as one of the leaders internationally in understanding and verifying regional emissions of greenhouse gases. There are probably about 20 people at his level worldwide.”

Reviewer F: “His leadership of the Fertilizer Emissions Airborne Study (FEAST) and Twin Otter Project Defining Oil/gas Well emissions (TOPDOWN) campaigns, as well as his role as instrument PI and/or mission scientist in three other campaigns, is a truly amazing accomplishment for such a scientist [of his cohort].”

Reviewer G: “... familiarity with Kort’s work comes from our recent attempt to convince him to consider an appointment as Director in our [institution]. Thus, I clearly have the highest opinion of his current research vision and future potential.”

Summary of Recommendation: Professor Kort is an extremely active faculty member that benefits both the department and the university. He is well known both nationally and internationally, and is a sought-after partner for scientifically ambitious as well as societally highly relevant research endeavors. It is with the support of the College of Engineering Executive Committee that I recommend Eric A. Kort for promotion to associate professor of climate and space sciences and engineering, with tenure, 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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