Approved by the Regents
May 17, 2012

PROMOTION RECOMMENDATION
The University of Michigan
College of Engineering

Xianglei Huang, assistant professor of atmospheric, oceanic and space sciences, Department of Atmospheric, Oceanic, and Space Sciences, College of Engineering, 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.

Academic Degrees:

Ph.D.	2004	California Institute of Technology, Planetary Science, Pasadena, CA
M.S.	2000	California Institute of Technology, Planetary Science, Pasadena, CA
B.S.	1997	University of Science and Technology of China, Atmospheric Physics and Environmental Sciences, Anhui, P.R. China

Professional Record:

2006 – Present	Assistant Professor, Department of Atmospheric, Oceanic, and Space Sciences, University of Michigan
2006	Associate Research Scholar, Princeton University, Princeton, NJ
2004 – 2006	Post-doctoral Research Associate, Princeton University, Princeton, NJ
1998 – 2004	Graduate Research/Teaching Assistant, California Institute of Technology, Pasadena, CA

Summary of Evaluation:

Teaching: Professor Huang has become an excellent teacher. He has taught both undergraduate and graduate core courses in his department's atmospheric science program multiple times, and has developed a core course for a newly established Master of Engineering in Applied Climate. In addition to teaching and developing formal courses, Professor Huang has served as advisor for two undergraduate directed study projects and co-advised on two others.

Professor Huang's Q1/Q2 scores are uniformly good. Overall Q1 and Q2 averages, not including the two seminars he co-taught, are 4.19 and 4.38, respectively. Undergraduate and graduate students uniformly praise Professor Huang's teaching and mentoring.

Professor Huang chairs three Ph.D. students and co-chairs a fourth student. One student recently defended in late 2011 and another is scheduled to defend in 2012. Professor Huang serves as chair of one student and co-chair of the other student near graduation. They have published two journal articles together, with one more under review, as well as co-authored seven conference talks. While at Princeton, Professor Huang served as a mentor for a graduate student and published one journal article with this individual.

Research: Professor Huang's research involves using satellite measurements of outgoing infrared hyperspectral radiation to assess and improve leading global climate models. He is nearly unique in that he is equally comfortable with theory and with characterizing and improving the calibration of the satellite instruments that provide his data. Basically, his research encompasses both fundamental scientific issues upon which climate research is based, as well as practical engineering that enables experimental validation of global climate models and predictions.

Professor Huang has published 20 peer-reviewed journal articles (10 as first author), and given 34 talks at leading conferences. He is the principal investigator on four current grants, co-investigator on two others, and has total current funding of ~$2M. Professor Huang has established himself as a significant contributing member of the international climate science research community.

Recent and Significant Publications:

Chunpeng Wang, Zhengzhao Johnny Luo, and Xianglei Huang, "Parallax Correction in Collocating CloudSat and MODIS Observations: Method and Application to Convection Study," *Journal of Geophysical Research-Atmospheres*, 116, D17201, doi:10.1029/2011JD016097, September 2011.

Xianglei Huang, Norman G. Loeb, and Wenze Yang, "Spectrally resolved fluxes derived from collocated AIRS and CERES measurements and their application in model evaluation, Part II: cloudy sky and band by band cloud radiative forcing over the tropical oceans over the tropical oceans," *Journal of Geophysical Research Atmospheres*, 115, D21101, doi:10.1029/2010JD013932, November 2010.

Xianglei Huang and Hui Su, "Cloud radiative effect on tropical troposphere to stratosphere transport represented in a large-scale model," *Geophysical Research Letters*, 35, L21806, doi:10.1029/2008GL035673, November 2008.

Xianglei Huang, Wenze Yang, Norman G. Loeb, and V. Ramaswamy, "Spectrally resolved fluxes derived from collocated AIRS and CERES measurements and their application in model evaluation, Part I: clear sky over the tropical oceans," *Journal of Geophysical Research Atmospheres*, 113, D09110, doi:10.1029/2007JD009219, May 2008.

Xianglei Huang, V. Ramaswamy, and M. Daniel Schwarzkopf, "Quantification of the source of errors in AM2 simulated tropical clear sky outgoing longwave radiation," *Journal of Geophysical Research – Atmospheres*, 111, D14107, doi:10.1029/2005JD006576, July 2006.

Xianglei Huang, Brian J. Soden, and Darren L. Jackson, "Interannual co-variability of tropical temperature and humidity: a comparison of model, reanalysis data and satellite observation," *Geophysical Research Letters*, 32, L17808, doi:10.1029/2005GL023375, September 2005.

Service: Professor Huang's service contributions are also very commendable, complimenting well his research and teaching endeavors. Professor Huang has served on the Department of Atmospheric, Oceanic, and Space Sciences (AOSS) executive committee, and has co-chaired the AOSS departmental seminar committee. He also has been an active participant in the departmental qualifying exam and Ph.D. dissertation committees. Professor Huang was a member of the AOSS undergraduate recruiting committee developing a plan for better introducing freshmen and students who have not declared majors in an attempt to increase the AOSS undergraduate population. In addition, has served on the College of Engineering (CoE) Scholastic Standing Committee. He recently joined the CoE International Programs Committee where he can help to enhance the college's visibility in China and Southeast Asia.

Professor Huang has an exemplary record of service in a number of professional societies such as the American Meteorological Society (AMS) and American Geophysical Union (AGU). He routinely serves on technical program committees and chairs sessions at key conferences in his field, including the Atmospheric Science Section of AGU. In addition, he serves as an associate editor for the *Journal of Atmospheric and Oceanic Technology* published by the AMS, and has served as an associate editor for the *Journal of Climate* also by the AMS. His level of engagement and visibility in professional societies and federal review panels is unusually high for someone at his stage of career. A clear indication of his standing in the scientific and technical community is his selection as a member on the "science definition team" for NASA mission CLARREO, and service on the "science teams" for NASA missions AIRS, and CERES.

External Reviewers:
Reviewer A: "Through this collaboration, as well as the ones with members of the NASA Atmospheric Infrared Sounder (AIRS) science team and scientists at modeling centers here in the United States and Canada, Dr. Huang's scientific impact will be international in scope because NASA CERES observations, NASA AIRS observations and global climate modeling outputs from the national centers are used by the international scientific community."

Reviewer B: "Considering the above criteria, as well as the candidate's journal publication record, the quality of those publications and external funding success, I would not hesitate to recommend that Xianglei Huang be promoted to Associate Professor with tenure."

Reviewer C: "Xianglei's work is at the leading edge of scientific research and particularly is at the intersection of measurement (instrument) science and climate modeling. There are few researchers in the field today whose work has such critical and far-reaching impact…Xianglei's work comparing the computed top-of-atmosphere (TOA) infrared spectrum with that derived from climate models has had tremendous impact on the field."

Reviewer D: "Professor Huang is very extremely well positioned for future observational studies of climate variability. He is an international leader in comparing climate models to high-spectral resolution observational data (AIRS so far) and is the first person to demonstrate the overwhelming superiority of high-spectral resolution measurements over traditional broadband measurements for diagnosing liens in existing climate models."

Reviewer E: "...he is already well known in the atmospheric science community because of his research…I am confident that Dr. Huang will be one of [the] leading scientists in the discipline of atmospheric radiation in the future."

Summary of recommendation: Professor Huang is very a prominent and productive planetary scientist. He is an excellent teacher and mentor and 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 Xianglei Huang for promotion to associate professor of atmospheric, oceanic and space sciences, with tenure, Department of Atmospheric, Oceanic, and Space Sciences, College of Engineering.

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

May 2012