JONATHAN H. JIANG

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Education

- **Ph.D. in Atmospheric Physics**, York University (1996)
- **M.Sc. in Astrophysics**, York University (1991)
- **B.Sc. in Astrophysics**, Beijing Normal University (1985)

Professional Experiences

- **Principal Research Scientist V** (2013-present); Research Scientist IV (2004-2012), Scientist III (2002-2003)
  Jet Propulsion Laboratory (JPL), California Institute of Technology, USA

  Project Scientist, Joint Inst. for Regional Earth System Science & Engineering, Univ. of California, Los Angeles

  Major responsibilities include:
  - Currently Funded Major Research Projects (*Total 22 funded projects to-date*):
    - NASA ACMAP: Principal Investigator (2015-present)
    - NASA NODA: Principal Investigator (2014-present)
    - NASA MAP Program: Principal Investigator (2013-present)
    - DOE DE-FOA-0000919: Co-Principal Investigator /UCLA (2014-present)
    - NASA IIP: Co-Investigator (2014-present)
    - California Energy Commission: Co-Investigator (2015-present)
    - NASA NEWS Program: Co-Investigator (2012-present)
  - Postdoctoral researchers currently supervised (*Total 7 postdoctoral researchers supervised to-date*):
    - Lei Huang (2013-present), Caltech postdoctoral scholar, Ph.D. from University of Texas, Austin.
    - Yuan Wang (2013-present), Caltech postdoctoral scholar, Ph.D. from Texas A&M, College Station.
  - Summer student currently supervised (*13 high-school/undergraduate/graduate summer students supervised to-date*):
    - Mark Bauman, graduate student, University of Hawaii at Manoa, Hawaii (2015)
  - Current service on students' thesis committees (*Total 6 students' thesis committees served since 2010*):
    - Mark Bauman, Ph.D. candidate, University of Hawaii at Manoa, Hawaii (2015-present).
    - Ryan Stanfield, Ph.D. candidate, University of North Dakota (2014-present).
    - Betsy Berry, Ph.D. candidate, University of Utah (2013-present).
    - Jinqiang Chen, Ph.D. candidate, California Institute of Technology (2013-present).
    - Erica Dolinar, M.Sc. candidate, University of North Dakota (2012-present).
  - MLS project: Upper tropospheric measurements bi-weekly summary (2005-present); MLS forward model development, implementation and simulation (2002-2004); MLS ice cloud retrieval/validation (2002-2009); Stratospheric gravity wave studies using UARS MLS, GPS and other satellite data, as well as model simulations, including development of a gravity wave simulator for GCM (2002-2005).
- **Caltech Postdoctoral Scholar** at JPL (1999-2001), California Institute of Technology, USA
  Major Achievements:
  - Conducted atmospheric convection, water vapor, and gravity wave studies using GPS and UARS MLS data.
  - Developed a microwave radiative transfer model for cloud ice simulations and retrievals for MLS missions.
- **Research Associate** (1998-1999), Université du Québec à Montréal, Canada
  Achievements:
  - Member of the NARCM (Northern Atmospheric Regional Climate Model) team responsible for development and testing of convective cloud parameterization for the NARCM project.
  - Implemented a fast stochastic cloud scheme into the NARCM model, and conducted model simulations.
  - Part-time Physics Lecturer: Instructed *Classic Mechanics* and *Introductory Astronomy* (twice) for the Physics Department at Trent University, Canada (1997-1998); Instructed *Introductory Astronomy* for the Physics Department at University of Waterloo, Canada (1999).
- **Postdoctoral Research Fellow** (1996-97), McGill University, Quebec, Canada
  Achievements:
  - Developed a fast stochastic cloud scheme for parameterization of cloud properties using sub-scale vertical velocity spectrum.
  - Part-time Physics Lecturer: Instructed *Introductory Astronomy* for the Physics Department at University of Waterloo, Canada (1996).
- **Research Assistant** (1992-95), Centre for Research in Earth & Space Sciences, York University, Canada
  Achievements:
  - Assisted the development of radiative transfer codes for Canadian Middle Atmospheric Model (CMAM) and conducted model simulations for the CMAM project.

- **Physics Lab Instructor** (1990-95), Department of Physics and Astronomy, York University, Canada
  Achievements:
  - Instructed *Advanced Physics Laboratory* to physics major students for five years.
- **Assistant Astronomer** (1989-1991), Space Astrophysics Lab, Institute of Terrestrial and Space Sciences, Canada
  Achievements:
  - Worked on IUE (International Ultraviolet Explorer) satellite data reduction for supergiant stars.
  - Combined IUE satellite observations with the ground based visual and IR data for comparison and evaluation of the Kurucz stellar atmospheric model for Cepheids and nonvariable supergiants; Conducted numerical simulations using the Kurucz stellar atmospheric model.
- **Assistant Physics Lecturer** (1985-1988), Nanking Institute of Technology, China
  Achievements:
  - Instructed *Introductory Physics Laboratory* and *Introductory Astronomy* for the Physics Department.

Selected Awards

- **NASA Exceptional Achievement Medal** (2013) *for outstanding achievements in using NASA satellite observations for climate studies and climate model evaluations, which contributed to the Intergovernmental Panel for Climate Change 5th Assessment Report.*
- **JPL Team Bonus Award** (2012) *for CMIP5 climate model evaluation publication.*
- **NASA Exceptional Achievement Medal** (2010) *for pioneering a new approach to quantifying the impact of air pollution on clouds and climate, through combining observations from multiple NASA satellites.*
- **NASA TC4 Team Achievement Award** (2008) *for outstanding contribution to NASA TC4 field experiment.*
- **JPL Team Bonus Award** (2007) *for Aura MLS Cloud Ice product.*
- **NASA Group Achievement Awards** (2006) *for Aura Microwave Limb Sounder Science Team.*
- **Ed Stone Award for Outstanding Research Paper** (2006) *Co-Author (2006).*
- **JPL Team Bonus Award** (2005) *for EOS MLS Atmospheric Science Publications Team.*
- **NASA Group Achievement Award** (2005) *for the Aura Project.*
- **GSFC Group Achievement Award** (2005) *for the Aura Science Team.*
- **NASA Space Act Award** (2005) *for significant contribution to MLS cloud forward model and level 2 software.*
- **NASA Group Achievement Award** (2005) *for Aura MLS Ground Data System Development Team.*
- **JPL SPOT Award** (2004) *for outstanding journal publications – four lead author publications in 2004.*
- **JPL SPOT Award** (2002) *for successfully development of MLS cloud forward model.*
- **Canadian NSERC Research Scholarship Award** (1999) *for outstanding early career scientists.*
- **American Meteorological Society Global Change Scholarship Award** (1996) *for outstanding Ph.D. thesis.*
- **York University Teaching Award** (1994) *for outstanding instructors and teaching assistants.*
- **Ontario Scholarship Awards** (1989, 1992) *for outstanding graduate students of Ontario Province, Canada.*

Other Professional and Volunteered Activities:

- **Professional Memberships**: American Geophysical Union; American Meteorological Society (1995-present).
- **Editor**, Earth and Space Science, American Geophysical Union (2014-present).
- **Associate Editor**, Journal of Geophysical Research – Atmosphere (2013-present).
- **Member**, AMS Atmospheric Chemistry Committee (2014-present).
- **Reviewer**, NASA, NSF, DOE, ESA, CSA panels (2002-present), AGU, AMS, EGU journals (1996-present), JPL RTD/DRDF/EVI (multiple times since 2003); Reviewed over 150 papers and proposals over the past 10 years.
- **Session chair,** served as session organizers and chairs at AGU, AMS, COSPAR, EGU, WPGM conferences and ISCCP, and CloudSat/CALIPSO science meetings over the past 10 years.
- **President**, Chinese-American Oceanic and Atmospheric Association, Southern California Chapter (2012-2015).
- **Board President,** Foothill Chinese School, La Canada Flintridge, California (2009-2011, 2014-2015).
- **Secretary**, Federation of Chinese Students and Professionals in Canada (1996-1999).
- **Vice-President**, York University Graduate Students Tenant Association (1994-1995).
- **President**, York University Chinese Students and Scholars Association (1993-1994).

Selected Publications (Total 112 peer-reviewed scientific publications to date; 4597 total citations; H-Index 32)

1. **Jiang, J.H.**, et al., An assessment of upper-troposphere and lower-stratosphere water vapor in MERRA, MERRA2, and ECMWF analysis using Aura MLS observations, *J. Geophys. Res*., doi:10.1002/2015JD023752, 2015.
2. **Jiang, J.H.,** et al., Evaluating the diurnal cycle of upper tropospheric ice clouds in climate models using SMILES observations, *J. Atmos. Sci.* 72, 1022–1044, doi: http://dx.doi.org/10.1175/JAS-D-14-0124.1, 2015.
3. Huang, L., **J.H. Jiang**, Z. Wang, H. Su, M. Deng, S. Massie, Climatology of cloud water content associated with different cloud types observed by A-Train satellites, *J. Geophys. Res*., 120, doi: 10.1002/2014JD022779, 2015.
4. Ao, C., **J.H. Jiang**, et al., Evaluation of CMIP5 upper troposphere geopotential height with GPS radio occultation

observations, *J. Geophys. Res*., 120, doi:10.1002/2014 JD022239, 2015.

5. Zhai, A., **J.H. Jiang**, Dependency of U.S. Hurricane economic loss on maximum wind speed and storm size, *Environmental Research Letters*, 9, 6, doi:10.1088/1748-9326/9/6/064019, 2014. **ERL Journal Highlight.**
6. Bhawar, R., **J.H. Jiang**, H. Su, and M.J. Schwartz, Variation of upper tropospheric clouds and water vapor over the Indian Ocean, *Int. J. Climatol*., doi:10.1002/ joc.3942, 2014.
7. Su, H., **J.H. Jiang**, C. Zhai, T.J. Shen, J.D. Neelin, G.L. Stephens, and L.Y. Yung, Weakening and strengthening structures in the Hadley circulation change under global warming and implications for cloud response and climate sensitivity, *J. Geophys. Res*., 119, doi:10.1002/2014 JD021642, 2014. **NASA Feature Story.**
8. Huang, L., **J.H. Jiang**, J.L. Tackett, H. Su, R. Fu, Seasonal and diurnal variation of aerosol extinction profile and type distribution from CALIPSO 5-year observation, *J. Geophys. Res*., 118, 10, doi:10.1002/jgrd.50407, 2013
9. Su, H., **J.H. Jiang**, Tropical clouds and circulation changes during the 2006-07 and 2009-10 El Niños, *J. Climate*, 26, 2, doi:10.1175/JCLI-D-1200 152.1, 2013.
10. Su, H., **J.H. Jiang**, C. Zhai, V.S. Perun, et al., Diagnosis of regime-dependent cloud simulation errors in CMIP5 models using A-Train satellite observations, *J. Geophys. Res*., 118, 7. doi:10.1029/2012JD018575, 2013.
11. **Jiang, J.H**. et al., Evaluation of cloud and water vapor simulations in CMIP5 climate models using NASA A-Train satellite observations, *J. Geophys. Res.* 117, 10.1029/2011JD017237, July 2012. **AGU Journal Highlight; EOS Research Spotlight; NOAA/GFDL News Release; Physics Update highlighted by *Physics Today*.**
12. Small, J., **J.H. Jiang**, H. Su, C. Zhai, Relationship between aerosol and cloud fraction over Australia, *Geophys. Res. Lett.* 38, L23802, doi:10.1029/ 2011GL049404, 2011.
13. **Jiang, J.H**. et al. Influence of convection and aerosol pollution on ice cloud particle effective radius, *Atmos. Chem. Phys*. 11, 457-463, doi:10.5194/acp-11-457-2011, 2011.
14. L'Ecuyer, T., **J.H. Jiang**, Touring the atmosphere aboard the A-Train, *Physics Today*, 63, 7, 36-41, 2010. **Invited.**
15. **Jiang, J.H**. et al., Five-year (2004-2009) Observations of upper tropospheric water vapor and cloud ice from MLS and comparisons with GEOS-5 analyses, *J. Geophys. Res.* 115, doi:10.1029/2009JD013256, 2010.
16. **Jiang, J.H**. et al., Aerosol-CO relationship and aerosol effect on Ice cloud particle size: Analyses from Aura MLS and Aqua MODIS observations, *J. Geophys. Res.* 114, D20207, doi:10.1029/2009JD012421, 2009.
17. Su, H., **J.H. Jiang**, G.L. Stephens, D.G. Vane, and N.J. Livesey, Radiative effects of upper tropospheric clouds observed by Aura MLS and CloudSat, *Geophys. Res. Lett*. 36, L09815, doi:10.1029/2009GL037173, 2009.
18. **Jiang, J.H**. et al., Clean and polluted clouds: relationships among pollution, ice cloud and precipitation in South America, *Geophys. Res. Lett.,* 35, L14804, doi:10.1029/2008GL034631, 2008. **NASA News Release.**
19. **Jiang, J.H**., N.J. Livesey, H. Su, L. Neary, J.C. McConnell, N.A. Richards, Connecting surface emissions, convective uplifting, and long-range transport of carbon monoxide in the upper-troposphere: New observations from the Aura Microwave Limb Sounder, *Geophys. Res. Lett.* 34, doi:10.1029/2007GL030638, 2007. **Selected for JPL Feature Story.**
20. **Jiang, J.H**., S.D. Eckermann, D.L. Wu, and D.Y. Wang, Inter-annual variation of gravity waves in the Arctic and Antarctic winter middle atmosphere, *Adv. Space Res.* 38, 2418-2423, 2006.
21. **Jiang, J.H**., S.D. Eckermann, D.L. Wu, K.Hocke, B. Wang, Y. Zhang, Seasonal variation of gravity wave sources from satellite observation, *Adv. Space. Res*. 35, 1925-1932, 2005.
22. Wu, D., **J.H. Jiang**, Interannual and Seasonal Variations of Diurnal Tide, Gravity Wave, Ozone, and Water Vapor as Observed by MLS during 1991-1994, *Adv. Space. Res.* 35, no.11, pp 1999-2004, 2005.
23. **Jiang, J.H**., and D. Wu, Ice and water permittivities for millimeter and sub-millimeter remote sensing applications, *Atmos. Sci. Lett.,* 5, 146-151, 2004.
24. **Jiang, J.H**., S.D. Eckermann, D.L. Wu, and J. Ma, A search for mountain waves in MLS stratospheric limb radiances from the winter northern hemisphere: Data analysis and global mountain wave modeling, *J. Geophys. Res.,* Vol. 109, D3, D03107, 10.1029/ 2003JD003974, 2004.
25. **Jiang, J.H**. et al., Geographical distribution and inter-seasonal variability of tropical deep-convection: UARS MLS observations and analyses, *J. Geophys. Res*., Vol. 109, D3, D03111, 10.1029/2003JD003756, 2004.
26. **Jiang, J.H**., et al, Comparison of GPS/SAC-C and MIPAS/ENVISAT temperature profiles and its possible implementation for EOS MLS observations, *CHAMP Mission Results for Gravity, Magnetic Field Maping, and GPS Atmospheric Sounding*, C. Reigber, H. Luehr, P. Schwintzer, J. Wickert (eds.), Springer-Verlag, Berline/Heidelberg/New York, pp. 573-578, 2004.
27. Wu, D., **J.H. Jiang**, EOS MLS algorithm theoretical basis for cloud measurements, *Technical Document*, D-19299, Jet Propulsion Laboratory, 2004.
28. **Jiang, J.H**., D. Wu, S.D. Eckermann, and J. Ma, Mountain waves in the middle atmosphere, Microwave Limb Sounder observations and analyses, *Adv. Space Res*., Vol 32/5, 801-806, 2003.
29. **Jiang, J.H**., D. Wu, and S.D. Eckermann, Upper Atmosphere Research Satellite (UARS) MLS observation of mountain waves over the Andes, *J. Geophys. Res*., 107,D20, 8729, 10.1029/ 2002JD002091, 2002.
30. Wu, D., **J.H. Jiang**, MLS observations of atmospheric gravity waves over Antarctica, *J. Geophys. Res.* 107, doi:10.1029/ 2002JD002390, 2002.
31. **Jiang, J.H.** and D. Wu, UARS MLS Observations of Gravity Waves Associated with the Arctic Winter Stratospheric Vortex, *Geophys. Res. Lett.,* 28, 527-530, 2001.