

Han-Li Liu

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Education:

1996	Ph.D.	Atmospheric and Space Physics	The University of Michigan
1989	B.S.	Fluid Mechanics	University of Science and Technology of China

Appointments:

2012-Present	Senior Scientist	NCAR/HAO
2006–2012	Scientist III	NCAR/HAO
2003–2006	Scientist II	NCAR/HAO
1999–2003	Scientist I	NCAR/HAO
1997–1999	Postdoctoral Visitor	NCAR/HAO
1996–1997	Postdoctoral Research Fellow	The University of Michigan
1991–1996	Research Assistant	The University of Michigan

Research Interests:

Han-Li Liu's research includes the theoretical, numerical, and interpretive studies of the dynamics, structure, and solar/terrestrial responses of the Earth's middle and upper atmosphere, with special emphasis on modeling physical and chemical processes on both global and local scales, and the nonlinear couplings of the global and local scale processes and different regions of the atmosphere. He also works on the development and improvement of general circulation models (GCMs) and parameterization schemes for the GCMs, including the NCAR Thermosphere-Ionosphere-Mesosphere-Electrodynamics GCM (TIME-GCM) and the Whole Atmosphere Community Climate Model (WACCM); thermospheric extension of WACCM; development of diagnostic tools for analyzing the large scale data sets of the model results and interpretive studies of observations using model diagnostics; development of mesoscale atmospheric models, including the upward extension of the Weather Research and Forecast (WRF) model; geophysical turbulence and self-organized critical phenomena in geophysics.

Professional Affiliations

American Geophysical Union
American Meteorological Society

Professional Activities

2011-Present	Co-Chair, Whole Atmosphere Working Group, NCAR Community Earth System Model (CESM).
2009-Present	Member, NOAA Space Weather Prediction Center (SWPC) Interest Group.
2007-Present	Adjunct Associate Professor, University of Colorado, Boulder.
2004-Present	Visiting Professor, Key Laboratory for Space Weather, Chinese Academy of Sciences, China.
2006-2009	Associate Editor, Journal of Geophysical Research-Space Physics.
2005-2008	Chair, HAO Visitor Committee.
2007-2009	Member, CEDAR Science Steering Committee.
2004-2007	Faculty Affiliate, Colorado State University.
2003-2004	Committee Member, NCAR/UCAR Early Career Scientist Assembly

Publications:

- Liu, H.-L., and M. E. Hagan, Local heating/cooling of the mesosphere due to gravity wave and tidal coupling, *Geophys. Res. Lett.*, 25, 2941-2944, 1998.
- Liu, H.-L., P. B. Hays, and R. G. Roble, A numerical study of gravity breaking and impacts on turbulence and mean state, *J. Atmos. Sci.*, 56, 2152-2177, 1999
- Liu, H.-L., M. E. Hagan, and R. G. Roble, Local mean state changes due to gravity wave breaking modulated by diurnal tide, *J. Geophys. Res.*, 105, 12,381-12,396, 2000.
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- Liu, H.-L., R. G. Roble, M. J. Taylor, and W. R. Pendleton, Jr., Mesospheric planetary waves at northern hemisphere fall equinox, *Geophys. Res. Lett.*, 28, 1903-1906, 2001.
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- Liu, H.-L., and J. W. Meriwether, Analysis of a temperature inversion event in the lower mesosphere, *J. Geophys. Res.*, 109, D02S07, 10.1029/2002JD003026, 2004.
- Liu, H.-L., and R. G. Roble, Dynamical processes related to the atomic oxygen equinox transition, *J. Atmos. Solar Terr. Phys.*, 66, 769-779, 2004.
- Liu, H.-L., E. R. Talaat, R. G. Roble, R. S. Lieberman, D. M. Riggan, and J.-H. Yee, 6.5-Day wave and its seasonal variability in the middle and upper atmosphere, *J. Geophys. Res.*, 109, D21112, doi:10.1029/2004JD004795, 2004.
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