# CURRICULUM VITAE


## Mingjie Shi

Carbon Cycle & Ecosystems Group, NASA Jet Propulsion Laboratory (512)906-4593
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## EDUCATION

Ph.D., Geological Sciences August 2013
Jackson School of Geosciences, The University of Texas at Austin

Master of Science, Meteorology June 2008
Institute of Atmospheric Physics, Chinese Academy of Sciences

Bachelor of Science, Applied Meteorology June 2005
Department of Applied Meteorology, College of Resources & Environmental Sciences, China Agricultural University

## RESEARCH INTERESTS

Climate Modeling, Land-Surface Modeling, Land Surface-Atmosphere Interactions,
Carbon Cycle, Nitrogen Cycle, Vegetation Dynamics, Terrestrial Hydrology, Remote Sensing

## PROFESSIONAL EXPERIENCE

- Postdoctoral Scholar, Carbon Cycle & Ecosystems Group, NASA Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA (November 2015 – present)
- Postdoctoral Scholar, Joint Institute for Regional Earth System Science & Engineering, University of California, Los Angeles/Carbon Cycle & Ecosystems Group, NASA Jet Propulsion Laboratory, Pasadena, CA (March 2014 – October 2015)
- Visiting Independent Advisor, Carbon Cycle & Ecosystems Group, NASA Jet Propulsion Laboratory, Pasadena, CA (June 2013 – February 2014)
- Graduate Research Assistant, Jackson School of Geosciences, The University of Texas at Austin, Austin, TX (September 2008 – May 2013)
- Visiting Scientist, The National Center for Atmospheric Research (NCAR), Boulder, CO (July 2010)
- Graduate Research Assistant, Institute of Atmospheric Physics, Chinese Academy of Sciences, Beijing, China (2005 – 2008)

## TEACHING EXPERIENCE

The University of Texas at Austin (Austin, Texas): Department of Geological Sciences, graduate course GEO 391 Land Atmosphere Interaction Dynamics, substitute lecturer, 12 October, 15 October, and 17 October, 2012.

## PROFESSIONAL ACTIVITIES

- Member of the American Geophysical Union (2009–present)
- Outstanding Student Paper Awards Judge for the American Geophysical Union Meeting (2014)
- Reviewer for scientific journals: Journal of Geophysical Research, Climate Change, Earth and Space

Science, Journal of Meteorology Research, Advances in Atmospheric Science, Global Change Biology, Ecological Modeling, Geoscientific Model Development

## PUBLICATIONS

- Tao, W., Stenchikov, G. L., Kalenderski, S., Prakash, J., Bangalath, H., Yang, Z.-L., **Shi, M.**, Quantifying contributions of local scale dust emission from the Arabian Red Sea Coastal Plain to the Red Sea nutrient balance (**submitted** to *Aeolian Research*).
- **Shi, M.**, Yang, Z.-L., Stenchikov, G. L., Parajuli, S. P., Tao, W., Kalenderski, S., 2016, Quantifying the impacts of landscape heterogeneity and model resolution on dust emissions in the Arabian Peninsula, *Environmental Modeling and Software*, 78, 106–119, doi: 10.1016/j.envsoft.2015.12.021.
- **Shi, M.,** Fisher. J. B., Brzostek, E. R., and Phillips R. P., 2016, Carbon cost of plant nitrogen acquisition: global carbon cycle impact from an improved plant nitrogen cycle in the Community Land Model, *Global Change Biology*, 22, 1299–1314, doi: 10.1111/gcb.13131.
- Christoffersen, B. O. and **Coauthors**, 2014, Mechanisms of water supply and vegetation demand govern the seasonality and magnitude of evapotranspiration in Amazonia and cerrado. *Agricultural and Forest Meteorology*, 191, 33–50, doi: 10.1016/j.agrformet. 2014.02.008.
- **Shi, M.**, Yang, Z.-L., Lawrence, D. M., Dickinson, R. E., Subin, Z. M., 2013, Spin-up processes in the Community Land Model version 4 with explicit carbon and nitrogen components. *Ecological Modelling*, 263, 308–325, doi:10.1016/j.ecolmodel.2013.04.008.
- **Shi, M.**, Yang, Z.-L., Landerer, F. W., 2013, Representing and evaluating the landscape freeze/thaw properties and their impacts on soil impermeability–hydrological processes in the community land model version 4. *J. Geophys. Res. Atmos.*, 118, 7542–7557, doi:10.1002/jgrd.50576.
- de Goncalves, L. G. G. and **Coauthors**, 2013, Overview of the Large-Scale Biosphere-Atmosphere Experiment in Amazônia Data Model Intercomparison Project (LBA-DMIP). *Agricultural and Forest Meteorology*, 182–183, 111–127.
- von Randow, C. and **Coauthors**, 2013, Inter-annual variability of carbon and water fluxes in Amazonian forest Cerrado and pasture sites, as simulated by terrestrial biosphere models. *Agricultural and Forest Meteorology*, 182–183, 145–155.
- **Shi, M.,** Yan, X., Jia, G., 2008, Advances in Researching Biogenic Volatile Organic Compounds Emissions. *Advances in Earth Science,* 23(8), 866–873 (in Chinese with English abstract).

## HONORS AND AWARDS

- Brundrett Endowed Presidential Scholarship 2010–2011
- DeFord Field Scholarship 2010
- China Agricultural University Excellent Student Second Prize Scholarship 2002– 2004
- Sinochem First Class Scholarship of Excellence 2003
- China Agricultural University Outstanding Student 2003

## SKILLS

### Computer skills

- Very good working knowledge of Unix environments (i.e., workstations, supercomputers), NCAR Command Language (NCL), Fortran, Shell
- Programming experience in Grid Analysis and Display System (GrADS), Matlab, Interactive Data Language (IDL), C++, and parallel computing

### Datasets

- Very familiar with the Moderate Resolution Imaging Spectroradiometer (MODIS) datasets, Special Sensor Microwave/Imager (SSM/I) observed landscape freeze/thaw Earth System Data Record

(FT-ESDR), the Gravity Recovery and Climate Experiment (GRACE) satellites observed terrestrial water storage variations, the Soil Moisture Active Passive (SMAP) product, and the SeaWinds Scatterometer onboard QuikSCAT (QSCAT) observation

**Models**

- Very familiar with CLM4.0, CLM4.5, CLM-Trunk, the Community Atmosphere Model (CAM), and the Community Earth System Model (CESM)
- Modeling experience in the Weather Research & Forecasting Model (WRF), the Ecosystem Demography (ED) model, and the FAREAST model (forest gap model)

**PRESENTATIONS**

2015 **Shi, M.,** Fisher. J. B., Brzostek, E. R., and Phillips R. P., Mycorrhizal Controls on Nitrogen Uptake Drive Climate at the Global Scale (poster), presented at American Geophysical Union, San Francisco, California, 15 December.

2015 **Shi, M.,** Fisher. J. B., Brzostek, E. R., and Phillips R. P., Nitrogen Acquisition Costs to Plants Reduce Net Primary Production at the Global Scale, presented at 20th Annual CESM Workshop, Breckenridge, Colorado, 17 June.

2015 **Shi, M.,** Fisher. J. B., Brzostek, E. R., and Phillips R. P., An Improved Plant Nitrogen Cycle in the Community Land Model, presented at Land Model, Biogeochemistry, Societal Dimensions Working Groups (/LMWG/BGCWG/SDWG), NCAR, Boulder, Colorado, 04 March.

2014 **Shi, M.,** Fisher. J. B., Brzostek, E. R., and Phillips R. P., From Root to Globe: How Does the Terrestrial Nitrogen Cycle Alter the Global Carbon Cycle? (poster), presented at American Geophysical Union, San Francisco, California, 17 December.

2013 Brzostek, E. R., Fisher. J. B., **Shi, M.,** Phillips, R. P., Mycorrhizal fungi and global land surface models? (poster), presented at American Geophysical Union, San Francisco, California, 13 December.

2013 **Shi, M.,** Fisher. J. B., and Brzostek, E. R., Global Carbon Cycle Impact from Improved Plant Nitrogen Cycle in CLM (poster), presented at American Geophysical Union, San Francisco, California, 09 December.

2012 **Shi, M.,** Yang, Z.-L., Tao W., Stenchikov G. L., Kalenderski S., and Jin Q., Quantifying the Relationship between Dust Emissions and Land Surface Heterogeneities Using CLM4 on the Arabian Peninsula (poster), presented at American Geophysical Union, San Francisco, California, 05 December.

2012 **Shi, M.** and Yang, Z.-L., Modeling Dust Emissions during the Texas Drought of 2011 (poster), presented at Water Forum II: Texas Drought and Beyond, The University of Texas at Austin, Austin, Texas, 22 October.

2012 **Shi, M.** and Yang, Z.-L., Understanding and Modeling Soil Hydrological Processes and Their Impacts on Carbon Dynamics in High-latitude Regions, presented at Land Model, Biogeochemistry, Chemistry Climate, Societal Dimensions Working Groups (SDWG/LMWG/BGCWG/ChemClimateWG), NCAR, Boulder, Colorado, 02 March.

2012 **Shi, M.** and Yang, Z.-L., Understanding and Modeling the Impacts of Soil Hydrological Processes on Carbon Dynamics in Boreal Ecosystems, presented at American Meteorological Society, New Orleans, Louisiana, 24 January.

2011 Yang, Z.-L., Niu, G.-Y., and **Shi, M.,** Improvement of CLM4 Soil Hydrology by Introducing Micropores/Macropores to the Soil/Aquifer Coupling, presented at Joint Land/BGC/Chemistry Working Group Meeting, NCAR, Boulder, Colorado, 15 March.

2010 **Shi, M.,** Yang, Z.-L., and Lawrence, D. M., Carbon, Nitrogen and Energy Fluxes Studies at the Amazon River Basin by using CLM4CN (poster), presented at The Meeting of the Americas, Foz

do Iguassu, Brazil, 09 August.

2010 **Shi, M.,** Yang, Z.-L., and Lawrence, D. M., Studies on Biogeochemistry Model Spin-up in CLM-CN, presented at 15th Annual CCSM Workshop, Breckenridge, 30 June.

2010 **Shi, M.** and Yang, Z.-L., Understanding the Factors Controlling CLM-CN Spin-up, presented at CCSM Land Model Working Group and Biogeochemistry Working Group Meetings (LMWG/BGCWG), NCAR, Boulder, Colorado, 10 February.

2007 **Shi, M.,** Yan, X., Jia, G., Zhang, N., A Module for Simulating Boreal Forest Biogenic Volatile Organic Compounds Emission (poster), presented at the international workshop of Marie Curie-iLEAPS, Helsingborg, Sweden, 18 October.