

# Hongbin Yu

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## EDUCATION

- Ph.D., Atmospheric Chemistry, Georgia Institute of Technology, 08/2000  
Thesis: Radiative effects of aerosols on the environment in China (*Advisor: Prof. Shaw C. Liu*)
- M.S., Atmospheric Physics, Nanjing University, China, 07/1992  
Thesis: A mesoscale atmospheric dispersion modeling system (*Advisor: Prof. Weimei Jiang*)
- B.S., Atmospheric Physics, Nanjing University, China, 07/1989  
Thesis: Wind-tunnel modeling of atmospheric boundary layer and air pollution (*Advisor: Prof. Weimei Jiang*)

## EMPLOYMENT HISTORY

- Research Scientist II, School of Earth and Atmospheric Sciences, Georgia Institute of Technology, 2003 - present
- Post-Doctoral Fellow, School of Earth and Atmospheric Sciences, Georgia Institute of Technology, 2000 - 2002
- Research Assistant, School of Earth and Atmospheric Sciences, Georgia Institute of Technology, 1996 - 2000
- Lecturer, Department of Atmospheric Sciences, Nanjing University, China, 1992 – 1996

## TEACHING EXPERIENCE

- Boundary Layer Meteorology (1993, 1994), Nanjing University, China
- Air Pollution Meteorology (1995), Nanjing University, China
- FORTRAN Programming (1994, 1995, 1996), Nanjing University, China

## RESEARCH INTERESTS

- Aerosols and their radiative impacts
- Application of satellite remote sensing of aerosols and land surface in climate modeling
- Tropospheric chemistry
- Boundary layer meteorology and air pollution over complex terrain

## REFERRED PUBLICATIONS

- **Yu, Hongbin**, R.E. Dickinson, M. Chin, Y.J. Kaufman, M. Zhou, L. Zhou, Y. Tian, O. Dubovik, and B.N. Holben (2004), The direct radiative effect of aerosols as determined from a

combination of MODIS retrievals and GOCART simulations, *Journal of Geophysical Research*, 109, D03206, doi:10.1029/2003JD003914.

- Tian, Y., Dickinson, R.E., Zhou, L., Zeng, X., Dai, Y., Myneni, R.B., Knyazikhin, Y., Zhang, X., Friedl, M., **Yu, H.**, Wu, W., and Shaikh, M (2004), Comparison of seasonal and spatial variations of LAI/FPAR from MODIS and Common Land Model, *Journal of Geophysical Research*, 109(D1), D01103, 10.1029/2003JD003777.
- Zhou, L., Dickinson, R.E., Tian, Y., Jin, M., Ogawa, K., **Yu, H.**, and Schmugge, T. (2003), A sensitivity study of climate and energy balance simulations with use of satellite derived emissivity data over the northern Africa and the Arabian peninsula. *Journal of Geophysical Research*, 108(D24), 4795, doi:10.1029/2003JD004083.
- Tian, Y., Dickinson, R.E., Zhou, L., Zeng, X., Dai, Y., Myneni, R.B., Knyazikhin, Y., Zhang, X., Friedl, M., **Yu, H.**, Wu, W., and Shaikh, M (2003), Comparison of seasonal and spatial variations of LAI/FPAR from MODIS and Common Land Model, *Journal of Geophysical Research*, .
- Zhou, L., Dickinson, R.E., Tian, Y., Zeng, X., Dai, Y., Yang, Z., Schaaf, C.B., Gao, F., Jin, Y., Strahler, A., Myneni, R.B., **Yu, H.**, Wu, W., and Shaikh, M. (2003), Comparison of Seasonal and Spatial Variations of Albedos from MODIS and Common Land Model, *Journal of Geophysical Research*, 108(D15), 4488, doi:10.1029/2002JD003326.
- **Yu, Hongbin**, R.E. Dickinson, M. Chin, Y.J. Kaufman, B.N. Holben, I.V. Geogdzhayev, and M.I. Mishchenko (2003): Annual cycle of global distributions of aerosol optical depth from integration of MODIS retrievals and GOCART model simulations. *Journal of Geophysical Research*, 108(D3), 4128, doi:10.1029/2002JD002717.
- **Yu, Hongbin**, S.C. Liu, and R.E. Dickinson (2002): Radiative effects of aerosols on the evolution of the atmospheric boundary layer. *Journal of Geophysical Research*, 107(D12), 4142, doi:10.1029/2001JD000754.
- Wang Yuhang, Shaw C. Liu, **Hongbin Yu**, Scott T. Sandholm, Donald R. Blake, and Tai-Yie Chen (2000): Influence of convection and biomass burning on tropospheric chemistry over the tropical Pacific. *Journal of Geophysical Research*, 105, 9321-9333.
- Chameides W.L., **H. Yu**, S.C. Liu, M. Bergin, X. Zhou, L. Mearns, W. Gao, C.S. Kiang, R. Saylor, Chao Luo, Yan Huang, A. Steiner, and F. Giorgi (1999): A case study of the effect of atmospheric aerosols and regional haze on agriculture: An opportunity to enhance crop yields in China through emission controls? *Proceedings of the National Academy of Sciences of the United States of America (PNAS)*, 96 (24), 13626-13633.
- Liu S.C., **H. Yu**, B. Ridley, Y. Wang, D.D. Davis, Y. Kondo, M. Koike, B.E. Anderson, G.W. Sachse, G.L. Gregory, H. Fuelburg, A. Thompson, and H. Singh (1999): Sources of reactive nitrogen in the upper troposphere during SONEX. *Geophysical Research Letters*, 26, 2441-2444.
- Jiang Weimei, **Hongbin Yu**, and Xin Li (1999): Random walk modeling of wake dispersion for the exhaust tower of an underground tunnel in urban area. *Journal of Environmental Sciences*, 11(4), 474-479.
- Jiang Weimei, and **Hongbin Yu** (1994): Study on the thermal internal boundary layer and dispersion of air pollutant in coastal area by numerical simulation. *Advances in Atmospheric Sciences*, 11(3), 285-290.

Papers listed below are in chinese:

- Jiang Weimei, **Hongbin Yu**, Guoliang Xie, Jian Wu, Honggui Zhu, and Hening Sun (1998): An experimental study on environmental impact of automobile exhaust from urban transportation tunnels. *Acta Scientiae Circumstantiae*, 18(2), 188-193.
- **Yu Hongbin**, and Weimei Jiang (1996): Lagrangian simulation of buoyant-plume dispersion in the convective boundary layer. *Scientia Atmospherica Sinica*, 20(6), 745-750.
- **Yu Hongbin**, and Weimei Jiang (1996): Dispersion of air pollutants in the wake area of exhaust tower in Shanghai city. *Acta Aerodynamica Sinica*, 14(3), 349-354.
- **Yu Hongbin**, Hongnian Liu, and Weimei Jiang (1996): Experimental study on flow and dispersion in an open mine-pit. *Journal of Nanjing University*, 32, 219-223.
- **Yu Hongbin**, and Weimei Jiang (1996): A model for dust dispersion in the convective boundary layer. *Journal of Nanjing University*, 32 (Disaster Edition), 247-252.
- Liu Hongnian, **Hongbin Yu**, and Weimei Jiang (1996): Three-dimensional Modeling of flow and dispersion characteristics over a hill. *Journal of Nanjing University*, 32, 39-42.
- Wang Shuyu, **Hongbin Yu**, Weimei Jiang, Xiaoping Lu, and Ruming Zhou (1996): Experimental study on wind and turbulence in shoreline environment. *Journal of Nanjing University*, 32, 308-313.
- **Yu Hongbin**, and Weimei Jiang (1994): A mesoscale simulation system for atmospheric dispersion in shoreline area. *Acta Scientiae Circumstantiae*, 14(2), 191-197.
- **Yu Hongbin**, and Weimei Jiang (1994): Observational study of turbulent characteristics in the atmospheric surface layer over lake-shore area. *Journal of Nanjing University*, 30, 369-374.
- **Yu Hongbin**, and Weimei Jiang (1994): Application of random walk model to the assessment of regional atmospheric environmental impacts. *Electrical Power Environmental Protection*, 10(1), 20-30.
- Jiang Weimei, Guoliang Xie, and **Hongbin Yu** (1994): Fluid modeling of atmospheric diffusion from an elevated point source with trace gas in wind tunnel. *Journal of Nanjing University*, 30, 227-234.
- Jiang Weimei, Yumao Xu, and **Hongbin Yu** (1994): **Fundamentals of Boundary Layer Meteorology**, *Nanjing University Press*, Nanjing, 1994. ISBN 7-305-2589-4.
- **Yu Hongbin**, and Weimei Jiang (1993): A stochastic model for prediction of fumigation dispersion in coastal area. *Scientia Atmospherica Sinica*, 17(5), 629-635.
- Jiang Weimei, **Hongbin Yu**, and Xiaomin Wu (1993): A practical puff trajectory model with wind shear for regional multi-source application. *Scientia Meteorological Sinica*, 13(2), 137-145.
- **Yu Hongbin**, and Weimei Jiang (1992): A new formula of atmospheric pollution coefficient and its application. *China Environmental Science*, 12(5), 389-392.
- Jiang Weimei, **Hongbin Yu**, and Weifang Cai (1991): Fluid modeling experiment in wind tunnel for atmospheric environment and air pollution in PBL. *Scientia Meteorological Sinica*, 11(3), 272-282.

## MANUSCRIPTS SUBMITTED AND IN PREPARATION

- **Yu Hongbin**, Rong Fu, R.E. Dickinson et al., Dynamical and thermodynamic controls on smoke-cloud interactions over Amazon, *in preparation*.
- Matsui, Toshihiso, Sonia Kreidenweis, and Roger A. Pielke Sr., Bret Schichtel, **Hongbin Yu**,

Mian Chin, Allen Chu, Evaluation and assimilation of GOCART and MODIS aerosol optical depth across the eastern U.S., *submitted to Geophys. Res. Lett.*

- Anderson, T., et al., A-Train strategy for quantifying direct aerosol forcing of climate: Step-wise development of an observational basis for aerosol optical depth, aerosol forcing efficiency, and aerosol anthropogenic fraction, *submitted to Bull. Am. Meteorol. Soc.*

## CONFERENCE PROCEEDINGS, PRESENTATIONS

- **Yu Hongbin**, Rong Fu, R.E. Dickinson et al., Dynamical and thermodynamic controls on smoke-cloud interactions over Amazon, 8th IGAC Conference, September 3 – 7, 2004, Christchurch, New Zealand.
- **Yu, Hongbin**, Influences of biomass burning smoke on land-atmosphere interaction and cloud over Amazon. AEROCENTER, NASA Goddard Space Flight Center, Greenbelt, Maryland, April 16, 2004.
- **Yu, Hongbin**, Yan Zhang, R.E. Dickinson, Rong Fu, Simulations of smoke-land-atmosphere interactions over forest and pasture, AGU 2003 Fall meeting, San Francisco, December 8-12, 2003.
- Zhou, Mi, **Hongbin Yu**, and R.E. Dickinson: Application of MODIS land albedo to estimate of aerosol direct radiative forcing, Solar Radiation and Climate Gordon Conference, July 13-18, 2003, New London, NH.
- **Yu, Hongbin** (2002): Impacts of aerosols on the land-air interactions. NASA Goddard Space Flight Center, AEROCENTER, Greenbelt, Maryland, March 20, 2002.
- **Yu, Hongbin**, S.C. Liu, and R.E. Dickinson (2001): Radiative effects of aerosols on the evolution of the atmospheric boundary layer. EOS Trans., AGU 2001 Spring Meeting, A51B-03, Boston, Mass., May 29 – June 2, 2001.
- Liu S.C., and **Hongbin Yu** (1999): Modelling the vertical distributions of non-methan hydrocarbons and their potential impact on the background atmosphere. in *NATO Report V-102*, KFA, pp.125-136, Juelich, Germany.
- Xie Guoliang, **Hongbin Yu**, and Weimei Jiang (1994): Fluid modeling experiment in wind tunnel of effluent dispersion from a tower for under-ground tunnel with trace gas. pp.524-529 in *Proceedings of the 4th China National Conference on Wind Engineering and Industrial Aerodynamics*, November 1994, Shanghai.
- Jiang Weimei, and **Hongbin Yu** (1993): Study on the thermal internal boundary layer and dispersion of air pollutant in coastal area by numerical simulation. in *Proceedings of Third Asia-Pacific Symposium on Wind Engineering* (eds: K.M. Lam and Y.K. Cheung), p.1035-1040, December 13-15, 1993, Hongkong.
- **Yu Hongbin**, and Weimei Jiang (1990): Fluid modeling study on building wake and dispersion of pollutants. pp.340-346 in *Proceedings of the 3rd China National Conference on Wind Engineering and Industrial Aerodynamics*, 1990, Beijing.

## RESEARCH PROJECTS

- “Investigating the Influences of Vegetation, Biomass Burning, Clouds on Wet Season Onset Over the Amazon Using Terra, Aqua in Conjunction with In Situ and Other Satellite Data Sets”, Co-I, funded by NASA’s Office of Earth Science (OES), January 2004 - December

2006.

- “Response of the land climate system to surface hydrological and radiative forcing”, Co-I, funded by NASA Multidisciplinary Research in Climate, Chemistry, and Global Modeling, January 2004 – December 2006.
- "Improving the processes of land-atmospheric interactions in CCSM2.0 at high resolution", Co-I, funded by Department of Energy (DOE), July 2001 – June 2004.
- "Diagnostics of the mechanisms that control the interannual variations of the South American climate and its connection to climate over North America", Co-I, funded by National Science Foundation (NSF), June 2002 – May 2005.
- "Developing global aerosol climatology for modeling aerosol-climate interactions", supported by NASA GSFC AEROCENTER Visitor Program, September 2002 – May 2003.

## **REVIEW ACTIVITIES**

- Journal of Geophysical Research
- Geophysical Research Letters
- Advances in Atmospheric Sciences
- IEEE Transactions on Geoscience and Remote Sensing
- Terrestrial, Atmospheric and Oceanic Sciences
- Journal of Environmental Modeling and Software
- National Science Foundation
- Netherlands Organization for Scientific Research (NWO, the Dutch research council)
- Lawrence Livermore National Laboratory

## **HONORS, AWARDS, AND RECOGNITIONS**

- Research Excellence Award (1999-2000), EAS, Georgia Institute of Technology
- Award for Advance in Science and Technology (1995), National Education Commission of China
- Teaching Excellence Award (1995, 1996), Nanjing University
- Excellent Student Coordinator Honor (1995), Nanjing University
- Yingsong Junior Faculty Award (1995), Nanjing University

## **MEMBERSHIP**

- American Geophysical Union
- American Meteorological Society