

# Dr. Kaicun Wang

Assistant Research Scientist  
Department of Geography  
University of Maryland  
College Park, MD20742  
+1-301-405-4538

[kcwang@umd.edu](mailto:kcwang@umd.edu)

Website: <http://www.geog.umd.edu/people/KWang.html>

## RESEARCH INTERESTS

- Global terrestrial evaporation climatology
- Hydroclimatology and global warming
- Satellite global land surface net radiation
- Global air pollution climatology and land surface radiation budget
- Satellite land surface characteristics climatology

## EDUCATION

**Ph. D. in Atmospheric Physics and Atmospheric Environment** from the Department of Atmospheric Science, Peking University, Beijing, China in June 2004

Dissertation Title: **Ground measurements and satellite remote sensing of surface characteristic parameters on the Tibetan Plateau**

Dissertation advisor: **Professor XiuJi Zhou, Academician of Chinese Academy of Sciences**

**M. Sc. in Atmospheric Physics and Atmospheric Environment** from the Department of Atmospheric Science, Lanzhou University, Lanzhou, China in July 2001

Thesis Title: **Corrections to NOAA/AVHRR reflectance and NDVI and their error analysis**

Thesis advisor: **Professor Changhe Chen**

**B. Sc. in Atmospheric Physics and Atmospheric Environment** from the Department of Atmospheric Science, Lanzhou University, Lanzhou, China in July 1998

Thesis Title: **Observational analysis on the characteristics of boundary layer and aerosol dispersion over transition region between urban and rural area**

Thesis advisor: **Professor Changhe Chen**

## PROFESSIONAL EXPERIENCE

**Assistant Research Scientist** at the Department of Geography, University of Maryland, College Park, USA., July 2008-present.

**Visiting Research Associate** at the Department of Geography, University of Maryland, College Park, USA., July 2006-June 2008.

**Visiting Scientist** at the Earth System Science Inter-discipline Center, University of Maryland, College Park, USA., May 2005-November 2005.

**Assistant Researcher** at the Institute of Atmospheric Physics, Chinese Academy of Science, Beijing, China, June 2004-December 2007.

## STUDENT MENTORING AND TEACHING EXPERIENCE

**Graduate Student Research Mentoring and Weekly Group Research Meeting**, During Professor Shunlin Liang's sabbatical leave from June 2008 to June 2009 (Six to eight graduate students).

**Advisor: a Ph.D (J. Wang) and a M.D graduate (J. Yang)** graduated from Institute of Atmospheric Physics, Chinese Academy of Sciences.

**Atmospheric Physics** for undergraduates, Department of Atmospheric Sciences, Lanzhou University, February-June, 1999.

**English for Computer Science and Techniques** for high school students, Lanzhou Vocational and Technique School, September 1999-January 2000.

## SERVICE

### Reviewer for the following international journals:

International Journal of Climatology  
Agricultural and Forest Meteorology  
Journal of Applied Meteorology and Climatology  
Theoretical and Applied Climatology  
Journal Geophysical Research  
Geophysical Research Letter  
Remote Sensing of Environment  
IEEE Transactions on Geoscience and Remote Sensing  
International Journal of Remote Sensing  
Photogrammetric Engineering and Remote Sensing  
Sensors.

### Secession Chair

FR4.104 -- Retrieval of Water and Energy Balance Parameters, IGARSS 2008, July 6-11, Boston, MA

THP.I -- Retrieval of Water and Energy Balance Parameters I, IGARSS 2008, July 6-11, Boston, MA

**Committee**, 2009 AAG Tellers Committee

**Chief student editor** of *Advances in Teaching and Learning at Lanzhou University*, 1997-1998

## PROJECT

I am the Primary Investigator for the Validation of MODIS land surface albedo and temperature products and estimation of surface net radiation proposal and the Co-Investigator for the GOES-R albedo Algorithm development project.

## PENDING PROPOSALS

Generation of global terrestrial evapotranspiration climatology (PI, under review of NASA)

Irrigation impacts on surface radiation and energy budgets in China (Co-I, under review of NASA).

Improvement of aerosol climatology over land by fusing meteorological and satellite observations (PI, under review of NSF).

## PUBLICATIONS

### Peer Review International Journals

1. **Wang, K.**, J. Liu, X. Zhou, M. Sparrow, M. Ma, et al. (2004). Validation of the MODIS global land surface albedo product using ground measurements in a semidesert region on the Tibetan Plateau. *Journal of Geophysical Research*, 109, D05107, doi: 10.1029/2003JD004229.
2. **Wang, K.**, X. Zhou, J. Liu and M. Sparrow (2005). Estimating surface solar radiation over complex terrain using moderate-resolution satellite sensor data. *International Journal of Remote Sensing*, 26(1), 47-58.
3. **Wang, K.**, Z. Wan, P. Wang, M. Sparrow, J. Liu, et al. (2005). Estimation of land surface upwelling long wave radiation and broadband emissivity using MODIS LST products. *Journal of Geophysical Research*, 110, D11109, doi: 10.1029/2004JD005566.
4. **Wang, K.**, P. Wang, J. Liu, M. Sparrow, S. Haginoya, et al. (2005). Variation of surface albedo and soil thermal parameters with soil moisture content at a semi-desert site on the western Tibetan Plateau. *Boundary-Layer Meteorology*, 116(1), 117-129.
5. **Wang, K.**, Z. Li and M. Cribb (2006). Estimation of evaporative fraction from a Combination of day and night land surface temperatures and NDVI: a new method to determine the Priestly-Taylor parameter. *Remote Sensing of Environment*, 102, 293-305.
6. **Wang, K.**, Z. Wan, P. Wang, J. Liu, and M. Sparrow (2007). Evaluation and improvement of the MODIS land surface temperature/emissivity products using ground-based measurements at a semi-desert site on the western Tibetan Plateau. *International Journal of Remote Sensing*, 28, 2549-2565.
7. **Wang, K.**, J. Wang, P. Wang, M. Sparrow, H. Chen, et al. (2007). Influences of urbanization on surface characteristics from MODIS: A case study for Beijing metropolitan. *Journal of Geophysical Research*, 112, D22S06, Doi:10.1029/2006JD007997.
8. **Wang, K.**, P. Wang, Z. Li, M. Sparrow, and M. Cribb (2007). A simple method to estimate evapotranspiration from a combination of net radiation, vegetation indices and temperatures. *Journal of Geophysical Research*, 112, D15107, DOI: 10.1029/2006JD008351.
9. Liang, S. T. Zheng, D. Wang, **K. Wang**, R. Liu, S. C. Tsay, S. Running, and J. Townshend (2007). Mapping high-resolution incident photosynthetically active radiation over land from polar-orbiting and geostationary satellite data. *Photogrammetric Engineering and Remote Sensing*, 73, 1085-1089.
10. Zheng, T., S. Liang, and **K. Wang** (2008). Estimation of incident photosynthetically

- active radiation from GOES visible imagery. *Journal of Applied Meteorology and Climatology*, 47, 853-868.
11. **Wang, K.**, R. E. Dickinson, and S. Liang (2008). Observational evidence on the effects of clouds and aerosols on net ecosystem exchange and evapotranspiration. *Geophysical Research Letter*, 35, L10401, doi:10.1029/2008GL034167.
  12. **Wang, K.**, and S. Liang (2008). An improved method for estimating global evapotranspiration based on satellite determination of surface net radiation, vegetation index, temperature, and soil moisture. *Journal of Hydrometeorology*, 9(4), 712-717.
  13. **Wang, K.**, and S. Liang (2009). Estimation of surface net radiation from solar radiation measurements. *Journal of applied Meteorology and Climatology*, 48, 634-643.
  14. **Wang, K.**, R. E. Dickinson, S. Liang (2009). Clear Sky Visibility has Decreased over Land Globally from 1973 to 2007. *Science*, 323, 1468-1470.
  15. **Wang, K.**, and S. Liang (2009). Evaluation of ASTER and MODIS collection 5 land surface temperature and emissivity products with surface longwave radiation observations at SURFRAD sites. *Remote Sensing of Environment*, in press.
  16. **Wang, K.**, S. Liang, D. Wang, and T. Zheng (2008). Simultaneous estimation of surface photosynthetically active radiation and albedo from GOES, *Remote Sensing of Environment*, revised.
  17. **Wang, K.**, M. Wild, R. E. Dickinson, and S. Liang (2008). Increase in global terrestrial evaporation from 1982 to 2002. *Proceedings of the National Academy of Sciences of the United States*, under review.
  18. **Wang, K.**, and S. Liang (2008). Estimation of global surface downward longwave radiation under clear and cloudy conditions. *Journal of Geophysical Research*, under review.
  19. **Wang, K.** and S. Liang (2008). Evaluation of MODIS land surface shortwave and visible albedo products at FLUXNET sites from 2000 to 2007. *Journal of Geophysical Research*, under review.
  20. **Wang, K.**, R. E. Dickinson, and S. Liang (2009). Changing surface winds and implications for global pan and terrestrial evaporation. *Science*, under review.

#### **Peer Review Journals in Chinese (with English abstract)**

1. **Wang, K.**, C. Chen, and N. Guo (2003). Corrections to NOAA/AVHRR reflectance and NDVI and error analysis. *Journal of Applied Meteorological Science*, 14(2), 165-175.
2. **Wang, K.**, C. Chen, L. Zhang, and W. Zhang (2004). Observational analysis on the characteristics of boundary layer and the advection over transition region between urban and rural area. *Plateau Meteorology*, 23(4), 529-533.
3. **Wang, K.**, W. Li, and L. Bai. (2004). Characteristics of change and transport of aerosols in the middle and upper troposphere and stratosphere over Indian Ocean and China in 1984-2000. *Journal of Applied Meteorological Science*, 15(2), 32-40.
4. **Wang, K.**, X. Zhou, and J. Liu (2004). The effects of terrain on the computed surface solar short-wave radiation. *Chinese Journal of Atmospheric Science*, 28(4), 625-633.
5. **Wang, K.**, J. Liu, and X. Zhou (2004). Using MODIS satellite data retrieves surface albedo under clear sky over China area and its characteristics analysis. *Chinese Journal of Atmospheric Science*, 28(6), 941-949.
6. **Wang, K.**, X. Zhou, W. Li, J. Liu, and P. Wang. (2005) Using satellite remotely sensed data to retrieve sensible and latent heat flux: a review. *Advance in Earth Sciences*, 20(1), 42-48.

7. Qi, D., P. Zhao, Q. Tu, **K. Wang** (2006). Numerical simulation of the run-off scheme in the RegCM2. *Journal of Nanjing Institute of Meteorology*, 29(6), 601-608.
8. Yang, J., H. Chen, **K. Wang**, and Z. Wang (2006). Analysis of surface albedo distribution and variation over Beijing region by using the MODIS data. *Remote Sensing Technique and Application*, 21(5), 403-406.
9. Wang, J., **K. Wang**, P. Wang (2007). Urban heat (cool) island over Beijing from MODIS land surface temperature. *Journal of Remote Sensing*, 11(3), 330-339.
10. **Wang, K.**, J. Wang, and P. Wang (2008). The accuracy of MODIS surface albedo over urban area and its algorithm improvement: A case study for Beijing. *Chinese Journal of Atmospheric Sciences*, 32(1), 67-74.
11. Wang, J., **K. Wang**, P. Wang (2008). A Three-Dimensional Model to Calculate Surface Reflectance over Urban Areas. *Chinese Journal of Atmospheric Sciences*, 32(5), 1119-1127.

### Peer review conference proceeding (First author)

1. **Wang, K.**, J. Liu, Z. Wan, P. Wang, M. Sparrow et al. (2005). Preliminary accuracy assessment of MODIS land surface temperature products at a semi-desert site, *Proceedings of SPIE*, 5832, p. 452-460. (Oral presentation).
2. **Wang, K.** (2005). Global land surface broadband emissivity from Terra/Aqua MODIS. The 9th International Symposium on Physical Measurements and Signatures in Remote Sensing (ISPMSRS 2005), 17 – 19 October 2005, Beijing, China
3. **Wang, K.** et al. (2008). Land Surface Thermal-IR Emissivity Modeling. JCSDA 6th Workshop on Satellite Data Assimilation, June 10-11, 2008 (Oral presentation).
4. **Wang, K. et al.** (2008). Simultaneous estimation of surface photosynthetically active radiation and albedo from GOES. IGARSS 2008, July 6-11, Boston, MA. (Oral presentation).
5. **Wang, K. and S. Liang** (2008). Estimation of Surface Net Radiation from Solar Shortwave Radiation Measurements. IGARSS 2008, July 6-11, Boston, MA. (Oral presentation).
6. **Wang, K. and S. Liang** (2008). An improved method for estimating global evapotranspiration based on satellite determination of surface net radiation, vegetation index, temperature, and soil moisture IGARSS 2008, July 6-11, Boston, MA. (Oral presentation).

### Book Chapter

Liang, S., **K. Wang**, W. Wang, et al. (2009). Mapping High-Resolution Land Surface Radiative Fluxes from MODIS: Algorithms and Preliminary Validation Results. In *Geospatial Technology for Earth Observation* (Li, D. Eds, Springer press), in press.

### Technique Report

Liang, S., **K. Wang**, Y. Yu. (2008). GOES-R ABI Albedo: Algorithm and Theoretical Basis Document (NOAA/NESDIS/STAR), 39 pages.

Liang, S, **K. Wang**, et al. (2008). Mapping High-Resolution Land Surface Radiative Fluxes from MODIS: Algorithm and Theoretical Basis Document (NASA), 41 pages.

**MEMBERSHIP IN PROFESSIONAL SOCIETIES**

American Meteorological Society  
American Geophysical Union  
IEEE  
American Association of Geographers

**HONORS AND AWARDS**

Who's Who of Professionals	2008-2009
Excellent Dissertation Award	Department of Atmospheric Science, Lanzhou University, June 2001
Excellence Award for Social Activity Internship	Lanzhou University, 1997
Second Class Scholarship Honor	Lanzhou University, 1997
Third Class Scholarship Honor	Lanzhou University, 1996
Second Class Scholarship Honor	Lanzhou University, 1995