Curriculum Vitae

GANGSHENG WANG

Department of Biological Systems Engineering
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EDUCATION

Ph.D. Biological/Agricultural Engineering, Washington State University, Pullman, WA, expected December 2010
Ph.D. Physical Geography, Chinese Academy of Sciences (CAS), Beijing, China, 2005
M.S. Hydrology and Water Resources, Wuhan University, Wuhan, China, 2002
B.S. Hydrology and Water Resources, Wuhan University, Wuhan, China, 2000

RESEARCH EXPERIENCE

2007 – Graduate Research Assistant, Washington State University, Pullman, WA

- *Carbon/nitrogen cycle and Soil greenhouse gas (*CO_2, N_2O, and CH_4*) emissions*: field data analysis; model parameterization and uncertainty analysis; modeling system development (C#).
- *Watershed hydrology*: field experimental design, data collection and analysis (weather, soil moisture, streamflow); parameter optimization method and system development for SWAT model (Fortran); impact analysis of tillage management on water infiltration.

2005 – 2007 Research Assistant, Institute of Geographical Sciences and Natural Resources Research (IGSNRR), CAS, Beijing, China

- *Watershed hydrology*: field data sampling of aquatic organisms; modification of SWAT model and its parameter optimization; impact analysis of dams/sluices on water quantity and quality.

2002 – 2005 Graduate Research Assistant, IGSNRR, CAS, Beijing, China

- *Distributed hydrological model*: development of Distributed Time-Variant Gain Model (DTVGM); system development based on C++ Class and Structure; sensitivity and uncertainty analysis; impact analysis of climate variations and human activities; water resources management.

2000 – 2002 Graduate Research Assistant, Wuhan University, Wuhan, China

- *Hydrology*: distributed hydrological modeling; hydrologic forecasting and its software development.

RESEARCH INTERESTS

- ❖ Soil physics, soil carbon and nitrogen dynamics
- ❖ Hydrology, eco-hydrology, and soil-vegetation-atmosphere interactions

QUALIFICATIONS

- Solid background and training in areas of hydrology, soil physics, soil carbon-nitrogen dynamics, and environmental biophysics.
- Strong programming skills in Fortran, C++, C#, VB, SQL, and Mathematica.
- Proficiency in GIS analysis (Arc/Info, ArcGIS, and ArcView) and statistical analysis (SAS and minitab).
- Extensive skills and knowledge in numerical analysis, mathematical modeling, optimizing algorithm, Bayesian statistics, and Markov Chain Monte Carlo (MCMC) technique.

AWARDS and HONORS

- 2010, The Walter & Vinnie Hinz Scholarship Award, Biological Systems Engineering, Washington State University.
- 2009, Second Grade Award for the Advancement in Science and Technology (Ranked 4th), Anhui Province, China. *Study on the impact of dams/sluices on water environment and aquatic ecosystem in the Huai River basin of China.*
- 2005, President's Outstanding Award of the Chinese Academy of Sciences.
- 2004, First Grade Award for the Natural Sciences (Ranked 5th), Hubei Province, China. *Study on theory and approaches of nonlinear hydrological system.*
- 2000, designated as Meritorious, *2000 International Mathematical Contest in Modeling*, the Consortium for Mathematics and its Applications, the National Security Agency, USA.
- 1999, First Grade Award, *China Undergraduate Mathematical Contest in Modeling*, Ministry of Education, the Consortium for Mathematics and its Applications, China.
- 1996–2000, First Grade Scholarship for outstanding students (every semester), Wuhan University, China.

RESEARCH GRANTS

- CAS Grant (PI): Uncertainty and identifiability of hydrological modeling based on Bayesian inference, 2005 – 2006.
- CAS Grant (Co-Investigator): Integrated modeling of trans-watershed water system, 2005 – 2007.
- NSF-China Grant (Co-Investigator): Self-memorized distributed hydrological modeling with feedback from human activities, 2006 – 2007.

PROGESSIONAL MEMBERSHIP

International Association of Hydrological Sciences (IAHS): 2003 – present
International Water Resources Association (IWRA): 2005 – 2008

SELECTED PUBLICATIONS

Wang G., S. Chen, and C. Frear. A unit response curve method to estimate greenhouse gas emissions from dairy farms following manure applications. (*to be submitted*)

Wang G., and S. Chen. Modeling of soil greenhouse gas emissions and related parameterization and uncertainty: a review. (*to be submitted*)

Wang G., and S. Chen. Evaluation of a soil greenhouse gas emission model using Bayesian inference and MCMC: I. model scheme and uncertainty. (*to be submitted*)

Wang G., and S. Chen. Evaluation of a soil greenhouse gas emission model using Bayesian inference and MCMC: II. Parameter identifiability and equifinality. (*to be submitted*)

Wang G., M. Barber, S. Chen, and J. Wu. Multi-site calibration and validation of the SWAT model using soil moisture data. (*in preparation*)

Wang, G. and J. Xia. 2010. Improvement of SWAT2000 modeling to assess the impact of dams and sluices on streamflow in the Huai River basin of China. **Hydrological Processes**, 24, 1455–1471. Doi: 10.1002/hyp.7606.

Wang, G., J. Xia, and J. Chen. 2009. Quantification of effects of climate variations and human activities on runoff by a monthly water balance model: A case study of the Chaobai River basin in northern China. **Water Resources Research**. 45, W00A11, doi: 10.1029/2007WR006768.

Xia J., G. Wang, and G. Tan et al., 2005. Development of distributed time-variant gain model for simulating nonlinear hydrological Systems, **Science in China (Series D)**, 48(6): 713–723.

Xia J., Z. Wang, and G. Wang et al. The Renewability of Water Resources and its Quantification in the Yellow River in China. **Hydrological Processes**, 2004, 18: 2327–2336.

Wang G., J. Xia, and J. Chen. 2010. A multi-parameter sensitivity and uncertainty analysis method to evaluate relative importance of parameters and model performance. **Geographical Research** (in Chinese), 2010, 29(2): 263–270.

Wang G., J. Xia and C. Niu. 2004. Flow routing method and its application in distributed hydrological modeling. **Geographical Research** (in Chinese), 2004, 23(2): 175–182.

PRESENTATIONS

Oral presentation: *Tillage management impacts on soil moisture and streamflow in the Pataha Creek Watershed*. 2010 UCOWR/NIWR Annual conference, July 13–15, 2010, Seattle, WA.

Poster presentation: *Enhancing summer instream flow for fish through land management*. 2010 Western Division of the American Fisheries Society Annual Meeting. April 19–23, 2010, Salt Lake City, UT.

Oral presentation: *A distributed monthly water balance model for quantifying hydrological response to climate changes and human activities*. International Conference on Poyang Lake Ecological Environment System. June 27–30, 2005, Nanchang, China.

Oral presentation: *A distributed hydrological model applied to Heihe mountainous basin in western China*. XXIII General Assembly of the International Union of Geodesy and Geophysics (IUGG). June 30 – July 11, 2003, Sapporo, Japan.