CURRICULUM VITAE

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Scientist
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EDUCATION

- Ph.D. (2009) in Water & Environmental Engineering, The University of Hong Kong, HKSAR
- M.E. (2004) in Environmental Engineering, Xi'an University of Arch. & Tech., Xi'an, China
- B.E. (2001) in Environmental Engineering, Xi'an University of Arch. & Tech., Xi'an, China

RESEARCH INTEREST

Water resources management, Climate and land use changes, Sustainable development of environment and bioenergy, Hydrological and water quality modeling, Biogeochemical modeling, Ecosystem carbon dynamics, Global environmental change, Water-Carbon-Nitrogen cycle, Soil erosion and sediment transport, Reservoir simulation/optimization, Data assimilation

RESEARCH/TEACHING/WORKING EXPERIENCE

- Nov. 2009 to present Scientist, ASRC Research and Technology Solutions, contractor to the U.S. Geological Survey (USGS) Earth Resources Observation and Science (EROS) Center, Sioux Falls, SD 57198, USA
- Sep. 2009 to Oct. 2009 Research Assistant (full time) for Department of Civil and Environmental Engineering, The University of Hong Kong, HKSAR
- Sep. 2005 to Apr. 2009 Teaching Assistant for a course/lab: Course of 'Introduction of Hydrology', Field experiment of 'Testing saturated hydraulic conductivity', and lab experiment of 'GIS application for hydrology', Department of Civil and Environmental Engineering, The University of Hong Kong, HKSAR
- Sep. 2005 to Apr. 2009 Research Assistant, Department of Civil and Environmental Engineering, The University of Hong Kong, HKSAR
- Jun. 2004 to Aug. 2005 Assistant Engineer in Water supply and water treatment engineering design, Water Resources Division, Capital Engineering & Research Incorporation Limited (CERI), Beijing, China

PROFESSIONAL ACTIVITY

- **Editorial Board Member:** Agricultural Science, Frontiers in Environmental Science
- **Journal Reviewer:**

Proceedings of the National Academy of Sciences
Climatic Change
Science of the Total Environment
Journal of Hydrology
Environmental Modelling & Software
Advances in Geosciences (Hydrological Science)
African Journal of Biotechnology
International Journal of Sediment Research
Journal of Hydroinformatics
Ecohydrology
Journal of the American Water Resources Association
Hydrological Processes
Regional Environmental Change
Stochastic Environment Research and Risk Assessment
Hydrological Science Journal

- **Internal Reviewer:** USGS EROS Center
- **Proposal Reviewer:** International Arid Lands Consortium (IALC)
- **Professional Society:**
  American Geophysical Union (AGU): 2008–2013
  International Association for Hydro-Environment Engineering and Research – Hong Kong (IAHR-HK)

ARTICLE AWARD/HONOR

- Article (Wu Y and Liu S, 2012. Environmental Modelling & Software, 31: 99–109) was on the **Top 25 Hottest Article List** (**ranked 13th**) for a full year 2012.
  http://top25.sciencedirect.com/subject/environmental-science/13/journal/environmental-modelling-software/13648152/archive/42/
- Article (Wu Y and Liu S, 2012. Environmental Modelling & Software, 31: 99–109) was selected as a **key/groundbreaking** Research Article by the Center for Top Earth and Environmental Science Research (see Earth Emphasis website at the link shown below).
  http://earthemphasis.com/key-research-articles/automating-calibration-sensitivity-and-uncertainty-analysis-of-complex-models-using-the-r-package-flexible-modeling-environment-fme-swat-as-an-example/
- Article (Wu Y, Liu S, and Chen J, 2012. Environmental Development, 2: 142–144) was selected as the **outstanding communication** for year 2012 by the journal editors.
  http://www.journals.elsevier.com/environmental-development/news/environmental-development-award-best-research-paper-2012/

PEER-REVIEWED JOURNAL PUBLICATION

1. **Wu Y** and Liu S, 2014. Improvement of the R-SWAT-FME framework to support multiple variables and multi-objective functions, ***Science of the Total Environment***, 466–467:455–466. DOI: 10.1016/j.scitotenv.2013.07.048.
   http://www.sciencedirect.com/science/article/pii/S0048969713008164#
2. **Wu Y**, Liu S, Sohl T, and Young C, 2013. Projecting the land cover change and its environmental

impacts in the Cedar River Basin in the Midwestern United States, ***Environmental Research Letters***, 8(2), 024025. DOI: 10.1088/1748-9326/8/2/024025. http://iopscience.iop.org/1748-9326/8/2/024025/

3. **Wu Y** and Chen J, 2013. Investigating the effects of point source and nonpoint source pollution on the water quality of the East River (Dongjiang) in South China, ***Ecological Indicators***, 32: 294–304. DOI: 10.1016/j.ecolind.2013.04.002. http://www.sciencedirect.com/science/article/pii/S1470160X13001520
4. **Wu Y** and Chen J, 2013. Analyzing the water budget and hydrological characteristics and responses to land use in a monsoonal climate river basin in South China, ***Environmental Management***, 51(6): 1174-1186. DOI: 10.1007/s00267-013-0045-5. http://link.springer.com/article/10.1007/s00267-013-0045-5
5. **Wu Y**, Li T, Sun L, and Chen J, 2013. Parallelization of a hydrological model using the message passing interface, ***Environmental Modelling & Software***, 43: 124–132. DOI: 10.1016/j.envsoft.2013.02.002. http://www.sciencedirect.com/science/article/pii/S1364815213000327
6. **Wu Y** and Chen J, 2013. Estimating irrigation water demand using an improved method and optimizing reservoir operation for water supply and hydropower generation: a case study of the Xinfengjiang reservoir in southern China, ***Agricultural Water Management***, 116: 110–121. DOI: 10.1016/j.agwat.2012.10.016. http://www.sciencedirect.com/science/article/pii/S0378377412002636
7. **Wu Y** and Chen J, 2012. Modeling of soil erosion and sediment transport in the East River Basin in southern China, ***Science of the Total Environment***, 441: 159–168. DOI: 10.1016/j.scitotenv.2012.09.057. http://www.sciencedirect.com/science/article/pii/S0048969712012570
8. **Wu Y** and Liu S, 2012. Modeling of land use and reservoir effects on nonpoint source pollution in the Iowa River Basin, ***Journal of Environmental Monitoring***, 14(9): 2350–2361. DOI: 10.1039/C2EM30278K. http://pubs.rsc.org/en/content/articlelanding/2012/em/c2em30278k
9. **Wu Y**, Liu S, and Gallant A, 2012. Predicting impacts of increased CO_2 and climate change on the water cycle and water quality in the semiarid James River Basin of the Midwestern USA, ***Science of the Total Environment***, 430: 150–160. DOI: 10.1016/j.scitotenv.2012.04.058. http://www.sciencedirect.com/science/article/pii/S0048969712005906
10. **Wu Y**, Liu S, and Chen J, 2012. Urbanization eases water crisis in China, ***Environmental Development***, 2: 142–144. DOI: 10.1016/j.envdev.2012.02.003. http://www.sciencedirect.com/science/article/pii/S2211464512000395
11. **Wu Y**, Liu S and Li Z, 2012. Identifying potential areas for biofuel production and evaluating the environmental effects: a case study of the James River Basin in the Midwestern United States, ***Global Change Biology Bioenergy***. 4(6): 875–888. DOI: 10.1111/j.1757-1707.2012.01164.x. http://onlinelibrary.wiley.com/doi/10.1111/j.1757-1707.2012.01164.x/full
12. Chen J and **Wu Y**, 2012. Advancing representation of hydrologic processes in the Soil and Water Assessment Tool (SWAT) through integration of the TOPographic MODEL (TOPMODEL) features, ***Journal of Hydrology***, 420–421: 319–328. DOI: 10.1016/j.jhydrol.2011.12.022. http://www.sciencedirect.com/science/article/pii/S002216941100905X
13. **Wu Y** and Liu S, 2012. Automating calibration, sensitivity and uncertainty analysis of complex models using the R package Flexible Modeling Environment (FME): SWAT as an example, ***Environmental Modelling & Software***, 31: 99–109. DOI: 10.1016/j.envsoft.2011.11.013.

http://www.sciencedirect.com/science/article/pii/S1364815211002763

14. **Wu Y** and Liu S, 2012. Impacts of biofuels production alternatives on water quantity and quality in the Iowa River Basin, ***Biomass & Bioenergy***, 36:182–191. DOI: 10.1016/j.biombioe.2011.10.030. http://www.sciencedirect.com/science/article/pii/S0961953411005459
15. **Wu Y** and Chen J, 2012. An operation-based scheme for a multiyear and multipurpose reservoir to enhance macro-scale hydrologic models, ***Journal of Hydrometeorology***, 13(1): 270–283. DOI: 10.1175/JHM-D-10-05028.1. http://journals.ametsoc.org/doi/abs/10.1175/JHM-D-10-05028.1
16. Zhou G, Wei X, **Wu Y**, Liu S, Huang Y, Yan J, Zhang D, Zhang Q, Liu J, Meng Z, Wang C, Chu G, Liu SZ, Tang X, and Liu X, 2011. Quantifying the hydrological responses to climate change using an intact forested small watershed in Southern China, ***Global Change Biology***, 17(12): 3736–3746. DOI: 10.1111/j.1365-2486.2011.02499.x. http://onlinelibrary.wiley.com/doi/10.1111/j.1365-2486.2011.02499.x/full
17. **Wu Y**, Liu S, and Abdul-Aziz OI, 2012. Hydrological effects of the increased CO_2 and climate change in the Upper Mississippi River Basin Using a modified SWAT, ***Climatic Change***, 110(3–4), 977–1003. DOI: 10.1007/s10584-011-0087-8. http://www.springerlink.com/content/u62201666257xr95/
18. **Wu Y** and Chen J, 2009. Simulation of nitrogen and phosphorus Loads in the Dongjiang River Basin in South China using SWAT, ***Frontiers of Earth Science in China***, 3(3): 273–278. DOI: 10.1007/s11707-009-0032-6. http://www.springerlink.com/content/64j4577440310134/
19. Cui W, Chen J, **Wu YP**, and Wu YD, 2007. An overview of water resources management of the Pearl River, ***Water Science and Technology: Water Supply***, 7(2): 101–113. DOI: 10.2166/ws.2007.045. http://www.iwaponline.com/ws/00702/ws007020101.htm

PEER-REVIEWED USGS PUBLICATION (OPEN ACCESS)

1. Liu S, **Wu Y**, Young C, Dahal D, Werner JM, Liu J, Li Z, Tan Z, Schmidt GL, Oeding J, Sohl TL, Hawbaker TJ, and Sleeter BM, 2012. Chapter 9: Projected Future Carbon Storage and Greenhouse-Gas Fluxes of Terrestrial Ecosystems in the Western United States, ***U.S. Geological Survey Professional Paper 1797***. Reston, Virginia. http://pubs.usgs.gov/pp/1797/pdf/pp1797_Chapter9.pdf
2. Liu S, Liu J, Young C, Werner JM, **Wu Y**, Li Z, Dahal D, Oeding J, Schmidt GL, Sohl TL, Hawbaker TJ, and Sleeter BM, 2012. Chapter 5: Baseline Carbon Storage, Carbon Sequestration, and Greenhouse-Gas Fluxes in Terrestrial Ecosystems of the Western United States, ***U.S. Geological Survey Professional Paper 1797***. Reston, Virginia. http://pubs.usgs.gov/pp/1797/pdf/pp1797_Chapter5.pdf
3. Zhu Z, Bergamaschi B, Butman D, Clow D, Hawbaker T, Liu J, Liu S, McDonald C, Sleeter B, Smith R, Sohl T, Stackpoole S, Wein A, and **Wu Y**, 2012. Executive Summary: Baseline and Projected Future Carbon Storage and Greenhouse-Gas Fluxes in Ecosystems of the Western United States, ***U.S. Geological Survey Professional Paper 1797***. Reston, Virginia. http://pubs.usgs.gov/pp/1797/pdf/PP1797_ExecutiveSummary.pdf
   *The full report of **U.S. Geological Survey Professional Paper 1797** (Baseline and Projected Future Carbon Storage and Greenhouse-Gas Fluxes in Ecosystems of the Western United*

States) is available at http://pubs.usgs.gov/pp/1797/pdf/PP1797.

4. **Wu Y** and Liu S, 2012. R-SWAT-FME User's Guide, ***U.S. Geological Survey Open-File Report 2012-1071***.
   http://pubs.usgs.gov/of/2012/1071/

MANUSCRIPTS IN PROGRESS

1. Liu S, Liu J, **Wu Y**, Young C, Werner JM, Dahal D, Oeding J, Schmidt GL, 2013. Chapter 5: Baseline and Projected Future Carbon Storage, Carbon Sequestration, and Greenhouse-Gas Fluxes in Terrestrial Ecosystems of the Eastern United States, ***U.S. Geological Survey Professional Paper***. Reston, Virginia. (under review of the revised version)
2. **Wu Y**, Liu S, Li Z, Dahal D, Young C, Schmidt GL, etc., 2013. Development of a generic auto-calibration package for regional ecological modeling and application in the Central Plains of the United States, *Ecological Informatics*. (under review)
3. **Wu Y**, Cheng D, Yan W, Liu S, Xiang W, Chen J, etc., 2013. Diagnosing climate change and hydrological responses in the past decades for the headwater area of the East River (Dongjiang) Basin in South China, *Environmental Research Letters*. (under review)
4. **Wu Y**, Liu S, Huang Z, Yan W, 2013. Multi-objective parameter optimization, sensitivity and uncertainty analysis of an ecosystem model: a case study at a forest flux tower site in the United States, *Environmental Science & Technology*. (under review)

SCIENTIFIC SOFTWARE PACKAGE

1. **R-SWAT-FME** (Fortran & R): comprehensive modeling framework that provides the SWAT model with the functionalities of parameter identifiability, model calibration, and sensitivity and uncertainty analysis with instant visualization. The software (including **Version 1.0** and **Version 2.0**) and the user's guide have been released for public access at the following links (May 2012 – present).

   http://pubs.usgs.gov/of/2012/1071/

   http://lca.usgs.gov/lca/nasabioenergy/links.php
2. **SWAT-TOP**: an integration of the SWAT model and the TOPMODEL features for enhancing the physical representation of the four hydrologic processes: surface runoff, baseflow, groundwater re-evaporation, and deep aquifer percolation.
3. **P-SWAT**: a parallelized SWAT model using a parallel programming technology (MPI) to enhance the execution efficiency on the Microsoft Windows platform.
4. **GEMS-EDCM-Auto**: an auto-calibration framework for the biogeochemical model GEMS-EDCM using the R package FME and the global optimization algorithm SCE.
5. **R-Convertor**: a universal tool for converting any particular model to an R function to utilize various modeling analysis functions (e.g., parameter optimization, sensitivity and uncertainty analysis) in the R environment.

PEER-REVIEWED CONFERENCE PAPER

1. Chen J and **Wu Y**, 2011. Enhancement of physical representation in a basin-scale hydrologic model, SWAT, ***Advances in Geosciences, Hydrological Science (HS)***, 23: 121–132. DOI: 10.1142/9789814355339_0010.
   http://ebooks.worldscinet.com/ISBN/9789814355339/9789814355339_0010.html
2. **Wu Y**, Chen J, and Sivakumar B, 2007. Numerical modeling of operation and hydrologic effects of Xinfengjiang reservoir in Southern China, *In Oxley, L. and Kulasiri, D. (eds)* ***MODSIM 2007 International Congress on Modeling and Simulation***. Modeling and Simulation Society of Australia and New Zealand, 1561-1567.
   http://www.mssanz.org.au/MODSIM07/papers/24_s17/NumericalModeling_s17_Wu_.pdf
3. **Wu Y**, Chen J, and Jayawardena AW, 2007. Establishing a physically-based representation of groundwater re-evaporation parameter in SWAT, *In Oxley, L. and Kulasiri, D. (eds)* ***MODSIM 2007 International Congress on Modeling and Simulation***. Modeling and Simulation Society of Australia and New Zealand, 1423-1428.
   http://www.mssanz.org.au/MODSIM07/papers/23_s31/EstablishingAPhysically_s31_Wu_.pdf
4. Chen J and **Wu Y**, 2008. Exploring hydrologic process features of the East River (Dongjiang) Basin in South China using VIC and SWAT, ***IAHS-AISH Publication*** **319**: 116–123. ISSN: 0144-7815.
   http://iahs.info/redbooks/a319/iahs_319_0116.htm

CONFERENCE PRESENTATION

1. **Wu Y**, Liu S, Li Z, Young C, Dahal D, Liu J., Schmidt G, and Oeding J, Projection of carbon dynamics in the Marine West Coast Forests under climate and land cover changes using General Ensemble Biogeochemical Modeling System (GEMS). AGU (American Geophysical Union) Annual Meeting, San Francisco, California, USA, Dec. 2012.
2. **Wu Y** and Liu S, Application of SWAT in Quantifying Impacts of Land Use and Climate Change on Water Resources in the Midwestern United States, presentation at Western South Dakota Hydrology Conference by U.S. Geological Survey, South Dakota Water Science Center, Rapid City, South Dakota, USA, April 2012.
3. **Wu Y**, Liu S, and Sohl T, Hydrological Responses to Projected Land Cover Change: a Case Study of the Iowa River Basin in the Midwestern United States. AGU (American Geophysical Union) Annual Meeting, San Francisco, California, USA, Dec. 2011.
4. **Wu Y** and Liu S, Effects of land management change on water quantity and quality in the James River Basin, presentation at Western South Dakota Hydrology Conference by U.S. Geological Survey, South Dakota Water Science Center, Rapid City, South Dakota, USA, April 2011.
5. **Wu Y**, Liu S, and Young C, Different Effects of Corn Ethanol and Switchgrass-Based Biofuels on Soil Erosion and Nutrient Loads in the Iowa River Basin. AGU (American Geophysical Union) Annual Meeting, San Francisco, California, USA, Dec. 2010.
6. **Wu Y**, Liu S, and Young C, Predicting Climate Change Effects on Water, Sediment, and Nutrients in the Iowa River Basin. The 3rd USGS Modeling Conference, Denver, Colorado, USA, Jun. 2010.
7. **Wu Y**, Liu S, and Young C, Assessment of Hydrological Sensitivity to Atmospheric CO_2 Increase and Climate Change in the Upper Mississippi River Basin. NASA Land Cover Land Use Change Program Meeting, Washington D.C., Apr. 2010.
8. **Wu Y**, Chen J, and Sivakumar B, Simulation of streamflow, sediment and nitrogen processes

using SWAT over the East River basin in South China. AGU (American Geophysical Union) Annual Meeting, San Francisco, California, U.S.A., Dec. 2008.

9. **Wu Y** and Chen J, Simulation of point source and nonpoint source nutrient loads in the East River basin in South China. International SWAT Conference, Beijing, China, Oct. 2008 (Oral presentation).
10. **Wu Y**, Chen J, and Sivakumar B, Numerical modelling of operation and hydrological effects of Xinfengjiang reservoir in South China, MODSIM 2007 International Congress on Modeling and Simulation. Modeling and Simulation Society of Australia and New Zealand. University of Canterbury, Christchurch, New Zealand, Dec. 2007.
11. **Wu Y**, Chen J, and Jayawardena AW, Establishing a physically-based representation of groundwater re-evaporation parameter in SWAT, MODSIM 2007 International Congress on Modeling and Simulation. Modeling and Simulation Society of Australia and New Zealand. University of Canterbury, Christchurch, New Zealand, Dec. 2007.
12. Chen J and **Wu Y**, Application of SWAT and VIC to simulate hydrologic processes of the East River in South China. Hydrological Sciences for Managing Water Resources in the Asian Developing World, IAHS, Guangzhou, China, Jun. 2006.

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