

Cheng-Wei Huang

Curriculum Vitae

Biology Department, University of New Mexico
Albuquerque, NM, USA

Tel: +1 919-536-8252
Email: chengwei Huang1206@gmail.com

EDUCATION

Ph.D.

Jan, 2012– Aug, 2016

Duke University, Durham, North Carolina
Nicholas School of the Environment

Advisor: Gabriel Katul (gaby@duke.edu)

Exam committee: Gabriel Katul; Amilcare Porporato; Andrey Khlystov; Sari Palmroth;
Markus Petters

Thesis title: Bridging the scale gap from leaf to canopy in biosphere-atmosphere gas and particle exchanges

M.S. National Taiwan University, Taipei, Taiwan
Bioenvironmental System Engineering

Sep, 2006 – June, 2008

Advisor: Cheng-I Hsieh (hsieh@ntu.edu.tw)

Thesis Title: The study of soil heat flux and evapotranspiration at the surface

B.E. National Taiwan University, Taipei, Taiwan
Bioenvironmental System Engineering

Sep, 2002 – June, 2006

RESEARCH INTERESTS

Aerosol Particle Deposition, Eco-hydrology, Environmental Fluid Dynamics, Environmental Biophysics and Micrometeorology, Plant Drought Resilience/Mortality

EXPERIENCE

Postdoctoral Researcher (full time)

Nov, 2016 – present

Biology Department, University of New Mexico, Albuquerque, NM, USA

This postdoc position is supported by NSF project titled “Hydrological tipping points and desertification of semi-arid woodlands”. This project is aiming at exploring how and why mortality events in semi-arid biomes may trigger further aridification. It will advance our understanding of the links between tree mortality and hydrology in semi-arid systems, and of the role hydraulic distribution may play on the ecosystem scale.

Research Assistant (full time)

Jan, 2016 – Sept, 2016

Nicholas School of the Environment, Duke University, Durham, NC 27708-0328, USA

This RA is supported by GOAmazon project titled “*Bridging Land-surface Fluxes and Aerosol Concentrations to Triggering Convective Rainfall*”. The objective of this project is to explore what are the vegetation and the atmospheric controls on the turbulent fluxes of mass and energy between forests and the atmosphere, and to what extent do the resulting energy fluxes trigger convection initiation and govern the growth rates of the convective boundary layer in the GoAmazon study region.

Research Assistant (full time)

Jan, 2012 – Aug, 2015

Nicholas School of the Environment, Duke University, Durham, NC 27708-0328, USA

This RA is supported by an NSF project titled “*Collaborative Research: Up-scaling from Leaf to Canopy the Aerosol-sized Particle Collection Mechanism within a Non-uniform Canopy Medium*”. The project is in collaboration with Indiana University and deals with the relative importance of, the correct descriptions of, and the foliage particle collection mechanisms at the leaf scale, deposition flux partitioning between foliar and non-foliar elements (including forest floor), and up-scaling results from these goals to the entire ecosystem. Duties include develop models, conduct laboratory experiments supporting these goals, and use existing data collected by our international partners at University of Helsinki to test the models.

Research Assistant (full time)

Nov, 2009 – Nov, 2011

Dept. of Bioenvironmental Systems Engineering, National Taiwan University, Taipei, Taiwan

Duties include:

- Monitoring and simulation of carbon dioxide and heat flux in urban area
- Measuring fluxes of heat, water vapor, and CO₂ above a rice paddy (cooperated with remote sensing group)
- Maintaining experimental equipment and coordinating laboratory safety

Teaching Assistant

Fall, 2015

Nicholas School of the Environment, Duke University, Durham, NC 27708-0328, USA

Courses: Watershed Hydrology (ENV734L)

- Invited lectures
- Preparing homework solution and grading homework
- Supervising students with data analysis, homework questions and projects

Teaching Assistant

July, 2008 – Dec, 2008

Dept. of Bioenvironmental Systems Engineering, National Taiwan University, Taipei, Taiwan

Courses: Environmental Biophysics, Environmental Monitoring and Instrumentation, Microclimate

- Preparing homework solution and grading homework
- Supervising students with experiment theory, data analysis, procedure and operation

HONORS AND AWARDS

- **Presidential Award – (Sep, 2002 – Jan, 2003)**
National Taiwan University, Taipei, Taiwan
- **Presidential Award – (Sep, 2004 – Jan, 2005)**
National Taiwan University, Taipei, Taiwan
- **Sinotech Engineering Research Scholarship, 2006**
Sinotech Engineering Consultants, Inc., Taiwan
- **Archilife Research Foundation Master Thesis Scholarship, 2007**
Archilife Research Foundation, Taiwan
- **Studying Abroad Scholarship, 2011**
Ministry of education, Taiwan

JOURNAL PUBLICATIONS

1. Hsieh, C. I., **C. W. Huang**, and G. Kiely (2009), Long-term estimation of soil heat flux by single layer soil temperature, *International Journal of Biometeorology*, 53, 113-123.

2. **Huang, C. W.**, M. Y. Lin, A. Khlystov, and G. G. Katul (2013), The effects of leaf area density variation on the particle collection efficiency in the size range of ultra-fine particles (UFP), *Environmental Science and Technology*, 47, 11607-11615.
3. **Huang, C. W.**, S. Launiainen, T. Grönholm, and G. G. Katul (2014), Particle deposition to forests: an alternative to K-theory, *Atmospheric Environment*, 94, 593-605.
4. **Huang, C. W.**, M. Y., Lin, A. Klystov, and G. G., Katul (2015), The effects of leaf size and micro-roughness on the branch-scale collection efficiency of ultrafine particle, *Journal of Geophysical Research (Atmospheres)*.
5. **Huang, C. W.**, C. R. Chu, C. I. Hsieh, S. Palmroth, and G. G. Katul (2015), Wind-induced leaf transpiration, *Advances in Water Resources*, 86, 240-255.
6. **Huang, C. W.**, J.-C. Domec, T. Duman, G. Manolia, A. J. Parolari, G. G. Katul (2016), The effect of plant water storage on water fluxes within the coupled soil-plant system, *New Phytologist*, 213(3), 1093-1106.
7. **Huang, C. W.**, G. G. Katul (2017), Transport and coordination in the coupled soil-root-xylem-phloem leaf system (submitted).
8. Liu, Y. L., A. J. Parolari, **C. W. Huang**, G. G. Katul and M. Kumar (2017), Increasing atmospheric humidity and CO₂ concentration alleviate forest mortality risk (submitted).
9. Manoli, G., **C. W. Huang**, S. Bonettic, J.-C. Domec, M. Marani, G. G. Katul (2017), Competition for Light and Water in a Coupled Soil-Plant System (submitted).
10. Berghoff, H., R. Oren, J.-C. Domec, M. Moshelion, D. Way, S. Palmroth, K. Kets, **C. W. Huang**, Leaf water use exceeds modeled supply rate in the climbing vine kudzu (*Pueraria lobata*) (In preparation).

CONFERENCE POSTER PRESENTATIONS

1. **Huang, C. W.**, and C. I. Hsieh, Long-term estimation of soil heat flux using single layer time series data of soil temperature, 2007 AGU Fall Meeting, San Francisco, USA, December 10-14, 2007
2. **Huang, C. W.**, M. Y. Lin, A. Khlystov, and G. G. Katul, The effects of leaf area density variation on the collection efficiency of ultrafine particles (UFP), AAAR 31st Annual Conference, Minneapolis, USA, October 8-12, 2012
3. **Huang, C. W.**, M. Y. Lin, A. Khlystov, and G. G. Katul, The effects of leaf area density variation on the collection efficiency of black carbon in the size range of ultrafine particles (UFP), 2012 AGU Fall Meeting, San Francisco, USA, December 3-7, 2012
4. **Huang, C. W.**, S. Launiainen, T. Grönholm, and G. G. Katul, Predicting the dry deposition of atmospheric aerosol particles onto forest using a size-resolved multi-layer second-order closure model, 2013 AGU Fall Meeting, San Francisco, USA, December 9-13, 2013
5. **Huang, C. W.**, M. Y. Lin, A. Khlystov, and G. G. Katul, The effects of leaf size and micro-roughness on the collection efficiency of ultrafine particles (UFP), 2014 AGU Fall Meeting, San Francisco, USA, December 15-19, 2014
6. Banerjee, T., **C. W. Huang**, and G. G. Katul, Turbulence driven deposition of aerosol sized particles over forest edges and gaps situated over complex terrain, 2014 AGU Fall Meeting, San Francisco, USA, December 15-19, 2014
7. **Huang, C. W.**, J.-C. Domec, T. Duman, G. Manolia, A. J. Parolari, G. G. Katul, The role of plant water storage on water fluxes within the coupled soil-plant-atmosphere System, 2015 AGU Fall Meeting, San Francisco, USA, December 14-18, 2015

8. Duman, T., J. Walker, J. Bash, K. Ghannam, **C. W. Huang**, A. Khlystov, and G. G. Katul, Estimating sources, sinks and fluxes of reactive atmospheric compounds within a forest canopy, 2015 AGU Fall Meeting, San Francisco, USA, December 14-18, 2015

PROFESSIONAL AFFILIATION

American Geophysical Union