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Climate Change Science Institute
Building 4500N, F107-B, MS-6301
Oak Ridge National Laboratory
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Oak Ridge, TN 37831-6301, USA

EDUCATION

Civil and Environmental Engineering, University of Tennessee, Knoxville, United States
Ph.D., Civil and Environmental Engineering, May 2012 - present

Marine and Atmospheric Science, Stony Brook University, New York, United States
M.S., Marine and Atmospheric Science, December 2011

- Master's Thesis: *Cloud-resolving Modeling of Aerosol Indirect Effects in Idealized Radiative-convective Equilibrium with Interactive and Fixed Sea Surface Temperature*

Atmospheric Sciences, **National Taiwan University,** Taipei, Taiwan
M.S., Atmospheric Sciences, January 2007

- Master's Thesis: "*The Mechanisms of Ozone Variation in Taiwan*"

B.S., Atmospheric Sciences, June 2003; GPA: 3.54/4.0; Class rank: 2/25

- Independent Study: "*Long-Term Trend of Surface Ozone in Taiwan*"

PROFESSIONAL/WORK EXPERIENCE

Oak Ridge National Laboratory, Oak Ridge, Tennessee, USA
Graduate research assistant, June 2013 – present

- Implementation of stochastic parameterizations of sub-grid scale land heterogeneity on convection in Community Earth System Model (CESM) to improve the model performance of capturing climate extremes
- Evaluation of the vegetation biomass compartments in the CMIP5 models over the northern high-latitudes

University of Tennessee, Knoxville, Tennessee, USA
Graduate research assistant, June 2012 – present

- Air quality simulation with emission control in Yangtze River Delta, China via Community Multi-scale Air Quality (CMAQ) model
- Improvement of secondary organic aerosols in CMAQ
- Air quality simulation with mobile VOCs emission control in Beijing, China
- Improvement of the Input/Output Applications Programming Interface (I/O API) in CMAQ

Stony Brook University, Stony Brook, New York, USA
Graduate research assistant, September 2009 – August 2011

- Three-dimensional cloud-resolving modeling for aerosol indirect effects and CO_2 effect on climate change with interactive and fixed sea surface temperature framework.

Republic of China Army Aviation 601 Brigade, Lungtan, Taoyuan, Taiwan
Weather Officer, Second Lieutenant, July 2007 – June 2008

- Provided real-time weather information and weather forecasts

National Taiwan University, Taipei, Taiwan
Research Assistant, July 2008 – July 2009

- Data analysis of Central Weather Bureau and Taiwan Air Quality Monitoring Network
- Local and regional impact ratio of pollutants in Taiwan with a revised area-weighting method and three-dimensional models simulation
- Contribute to the project of "Database of Atmospheric Chemistry and Environment" to establish an integrated database for providing easy access to researchers

Graduate Research Assistant, July 2005 – July 2007

- Estimation of local and regional impact ratio of pollutants in Taiwan
- Simulation of the correlation between surface ozone concentration, the emission of ozone precursors, and various meteorological parameters

Teaching Assistant, September 2003 – June 2004

- Instructed and evaluated students' ability in General Chemistry Laboratory Experiments

Part-time Research Assistant, September 2001 – January 2002

- Reproduced and photographed a series of bubble experiments (Fu, T.-M., and J. -P. Chen, 2001: The intricate beauty of bubbles. National Science Council Monthly, 29(11), 788-796. (In Chinese))

Institute of Earth Sciences, Academia Sinica, Taipei, Taiwan
Summer Research Internship, July 2002 – August 2002

- Investigation of the ratio of aerosols from burning candles, cigarettes and incense inhaled by human body

PUBLICATION

Chen, J.-P., **C.-E. Yang**, and I-C. Tsai, 2015: Estimation of foreign versus domestic contributions to Taiwan's air pollution. *Atmospheric Environment*, Available online 13 April 2015, ISSN 1352-2310, http://dx.doi.org/10.1016/j.atmosenv.2015.04.022.

Wong, D. C.[**], **Yang, C. E.**[**], Fu, J. S., Wong, K., and Gao, Y., 2015: An approach to enhance pnetCDF performance in environmental modeling applications, *Geosci. Model Dev.,* **8**, 1033-1046, doi:10.5194/gmd-8-1033-2015. ([**] Equal contribution to this work.)

Langan, R., R. Archibald, M. Plumlee, S. Mahajan, D. Ricciuto, **C.-E. Yang**, R. Mei, J. Mao, X. Shi, J. S. Fu, 2014. Stochastic Parameterization to Represent Variability and Extremes in Climate Modeling, *Procedia Computer Science*, **29**, 1146-1155. ISSN 1877-0509, http://dx.doi.org/10.1016/j.procs.2014.05.103.

Khairoutdinov, M. F. and **Yang, C.-E.**, 2013: Cloud-resolving modelling of aerosol indirect effects in idealised radiative-convective equilibrium with interactive and fixed sea surface temperature, *Atmos. Chem. Phys.*, **13**, 4133-4144, doi:10.5194/acp-13-4133-2013.

Current project

Biogeochemistry (BGC) Feedbacks Science Focus Area (SFA): Quantifying Feedbacks and Uncertainties of Biogeochemical Processes in Earth System Models

Brief bio

I am a graduate research assistant with Oak Ridge National Laboratory and University of Tennessee. I am my PhD in Civil and Environmental Engineering. I joined CCSI since 2013 and participated in a Laboratory Directed Research and Development (LDRD) project titled "Stochastic parameterization of the influence of subgrid scale land heterogeneity on convection in a climate model." This project focuses on improving the underestimated extreme events and precipitation in the Community Earth System Model (CESM) through implementing a stochastic framework CESM. A paper was published in 2014 (listed in my CV). The current project I participate in is the BGC-SFA led by Forrest. I am analyzing the biomass compartments (aboveground, roots, total biomass, leaves, wood and biomass ratio), through the comparisons of different observational data sets and the model outputs from the Coupled Model Intercomparison Project Phase 5 (CMIP5), to evaluate the uncertainties over the northern high-latitudes (>30ºN) and their correlations with main climate variables and their impacts on future climate changes.

I received my M.Sc. degree in Atmospheric Sciences from National Taiwan University focusing on a long-term trend of the long-range transport and local contributions of air pollutants concentrations during 1994-2010 over Taiwan. The results were published in 2015 (listed in my CV). I received another M.Sc. degree in Marine and Atmospheric Science from State University of New York at Stony Brook studying the impacts of aerosol indirect effects and CO_2 on regional climate via a three-dimensional cloud-resolving model with interactive and fixed sea surface temperature frameworks. The work was published in 2013 (listed in my CV).