

Housen Chu

Research Scientist

Lawrence Berkeley National Lab (LBNL), USA
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EDUCATION

PhD	University of Toledo (U Toledo), USA Department of Environmental Sciences	2010-2014
	Dissertation: Response and biophysical regulation of carbon fluxes to climate variability and anomaly in contrasting ecosystems Advisors: Jiquan Chen and Johan Gottgens	
MS	National Dong-Hwa University (NDHU), Taiwan Graduate Institute of Natural Resources	2006-2008
	Thesis: Flux measurement in the complex terrain - Chi-Lan Mountain Site Advisor: Yue-Joe Hsia	
BE	National Taiwan University (NTU), Taiwan Department of Civil Engineering	1996-2001

HONOR AND AWARD

Editors' Citation for Excellence in Refereeing , AGU: Journal of Geophysical Research: Biogeosciences (EOS (2016), 97, DOI:10.1029/2016EO050325)	2016
Highlighted Alumni , U Toledo	2016
Best Student Research Paper Award , U Toledo	2015
Research/Teaching Assistantship , U Toledo	2010-2014
Travel Grant to AGU, ESA conference, sponsored by U Toledo	2012-2013
Studying Abroad Scholarship , Bureau of International Cultural and Educational Relations, Ministry of Education, Taiwan	2010-2011
Short-Term Visiting Scholarship to University of Münster, Germany, sponsored by National Science Council, Taiwan	2010
Short-Term Visiting Scholarship to Changbai Mountain LTER site, China, sponsored by Environmental Protection Administration, Taiwan	2007
Presidential Award , NDHU	2007-2008

Research Assistantship, NDHU 2007-2008

PROFESSIONAL APPOINTMENT

Research Scientist (Career-track)	LBNL, Climate and Ecosystem Sciences Division	2019-present
Data Processing Team	AmeriFlux and FLUXNET synthesis database	2015-present
Postdoctoral Researcher	LBNL, Project: AmeriFlux Carbon Flux Data Processing	2017-2019
	UC Berkeley, Project: Connecting AmeriFlux to the Globe, Extending the partnership with the Global Flux Network, FLUXNET.	2015-2017
Research Collaborator	Michigan State University, Project: LULCC Synthesis: Ecosystem-Society Interactions on a Changing Mongolian Plateau (voluntary)	2014-2017
Research Assistant	U Toledo, Project: Lake Erie Sensor Network (voluntary)	2012-2014
	U Toledo, Project: Ecosystem responses and societal adaptation of West Lake Erie Basin to climate change	2010-2013
	NDHU, Project: The fog droplet distribution and dynamics in a subtropical mountain cloud forest (voluntary)	2009-2011
Research Technician	NDHU, Project: Carbon dioxide flux station operation and data analysis	2009-2010
Lab Instructor	U Toledo, Environmental Problem Lab (EEES 1140)	2011-2014
	U Toledo, Biodiversity Lab (EEES 2160)	2014
Lab Coordinator	U Toledo, Environmental Problem Lab (EEES 1140)	2014
Teaching Assistant	U Toledo, Introduction of Environmental Sciences (EEES 2010)	2011
	NDHU, Environmental Measurement and Instrumentation (NR 55000)	2008-2009

ACADAMIC SERVICE

Journal Reviewer	Nature, New Phytologist, Earth System Science Data, Global Ecology and Biogeography, Agricultural and Forest Meteorology, Journal of Geophysical Research: Biogeosciences, Journal of Hydrology, Journal of Environmental Quality, iForest, International Journal of Biometeorology, Forests, Weather and Climate Extremes, Wetlands Ecology and Management, Atmosphere, Écoscience, San Francisco Estuary and Watershed Science	2012-present
Book Proofreader & Language Editor	Chinese version of “Eddy Covariance: A Practical Guide to Measurement and Data Analysis (by Aubinet, M., T. Vesala, and D. Papale)”, Higher Education Publication, Beijing, China, translated by Guo, H., G. Dong, and C. Shao	2016
QA/QC Team	FLUXNET and AmeriFlux data products (i.e., FLUXNET2015, AmeriFlux BASE)	2015-present

	AmeriFlux site visit of side-by-side eddy covariance system comparison	2018-present
Organizing Committee	AmeriFlux 2018 PI Meeting (co-organized with Margaret Torn (LBNL), Trevor Keenan (LBNL), Russell Scott (USDA), Kim Novick (IU), Altaf Arain (McMaster University))	2018
	LBNL-EESA Climate Brownbag Seminar (co-organized with Alan Rhoades (LBNL), Kuang-Yu Chang (LBNL))	2018
	FLUXNET 2017 Workshop (co-organized with Dario Papale (U Tuscia), Markus Reichstein (MPI), Margaret Torn (LBNL), Deb Agarwal (LBNL), Dennis Baldocchi (UC Berkeley))	2017
Conference Convener	AGU Annual Meeting , B074 Surface-Atmosphere Interactions: From Single Flux Measurements to Integrated Synthesis (co-chaired with Stefan Metzger (NEON), David Durden (NEON), Dario Papale (U Tuscia))	2018
	FLUXNET 2017 Workshop , Plenary Discussion: Whither Fluxnet? – Summary and Outlook of FLUXNET (co-chaired with Dennis Baldocchi (UC Berkeley))	2017
	AGU Annual Meeting , B067 Surface-atmosphere interactions: from single flux measurements to integrated synthesis (co-chaired with Stefan Metzger (NEON), Dario Papale (U Tuscia), Sebastien Biraud (LBNL))	2017
Student Award Judge	AGU Annual Meeting – Biogeosciences Section	2015-present
Organizer	FLUXNET Young Scientist Network (co-organized with Sebastian Wolf (ETH), Felix Spielmann (U Innsbruck))	2015-present
Graduate Mentor	California State University—East Bay, Student: Jennie Bahramian (co-mentored with Patricia Oikawa), Thesis: Tidal effects on ecosystem exchange of carbon dioxide and methane in restored tidal marshes of San Francisco Bay, supported by Berkeley Lab CSUEB Intern Pilot Program	2018-2019
Undergraduate Mentor	UC Berkeley, Student: Brian Su, Project: Applying machine learning techniques in deriving the functional response curves from flux tower data.	2017
	UC Berkeley, Student: Brian Su (co-mentored with Patricia Oikawa), Project: Applying machine learning techniques in predicting region-wide CO ₂ , CH ₄ and energy fluxes in San Joaquin River Delta, California	2016

PUBLICATION

- 25) **Chu, H.**, D. D. Baldocchi, C. Poindexter, M. Abraha, A. R. Desai, G. Bohrer, M. A. Arain, T. Griffis, P. D. Blanken, T. L. O'Halloran, R. Q. Thomas, Q. Zhang, S. Burns, J. M. Frank, D. Christian, S. Brown, T. A. Black, C. M. Gough, B. E. Law, X. Lee, J. Chen, D. E. Reed, W. J. Massman, K. Clark, J. Hatfield, J. Prueger, R. Bracho, T. A. Martin, and J. M. Baker. (2018) Temporal dynamics of aerodynamic canopy height derived from eddy covariance momentum flux data across North American Flux Networks. *Geophysical Research Letters*. DOI: 10.1029/2018GL079306
- 24) Gao, Y., Z. Ouyang, C. Shao, **H. Chu**, Y.-J. Su, H. Guo, J. Chen and B. Zhao. (2018) Field observation

- of lateral detritus carbon flux in a coastal wetland. *Wetlands*. DOI: 10.1007/s13157-018-1005-x
- 23) Qiu, C., D. Zhu, P. Ciais, B. Guenet, G. Krinner, S. Peng, M. Aurela, C. Bernhofer, C. Brümmer, S. Bret-Harte, **H. Chu**, J. Chen, A.R. Desai, J. Dušek, E. Euskirchen, K. Fortuniak, L. Flanagan, T. Friborg, M. Grygoruk, S. Gogo, T. Grünwald, E. Humphreys, J. Hommeltenberg, M. Hurkuck, G. Kiely, C. Langeron, M. Lund, P.M. Lafleur, L. Merbold, M.B. Nilsson, J. Olejnik, W. Oechel, W. Pawlak, M. Peichl, N. Pirk, C. Rebmann, J. Rinne, G Shaver, H.P. Schmid, M. Sottocornola, R. Steinbrecher, T. Sachs, M. Urbaniak, and D. Zona. (2018) ORCHIDEE-PEAT (revision 4596), a model for northern peatland CO₂, water, and energy fluxes on daily to annual scales. *Geoscientific Model Development*. 11: 497-519. DOI: 10.5194/gmd-11-497-2018
 - 22) Baldocchi, D.D., **H. Chu**, and M. Reichstein. (2018) Inter-Annual Variability of Net and Gross Ecosystem Carbon Fluxes: A Review. *Agricultural and Forest Meteorology*. 249: 520-533, DOI: 10.1016/j.agrformet.2017.05.015
 - 21) Shao, C., J. Chen, **H. Chu**, R. Laforcezza, G. Dong, M. Abraha, O. Batkhishig, R. John, Z. Ouyang, Y Zhang and J. Qi. (2017) Grassland productivity and carbon sequestration in Mongolian grasslands: The underlying mechanisms and nomadic implications. *Environmental Research*. 159: 124–134
 - 20) Pastorello, G.Z., D. Papale, **H. Chu**, C. Trotta, D. A. Agarwal, E. Canfora, D. D. Baldocchi, and M. S. Torn. (2017) A new data set to keep a sharper eye on land-air exchanges. *EOS*, 98, DOI: 10.1029/2017EO071597
 - 19) **Chu, H.**, D. D. Baldocchi, R. John, S. Wolf, and M. Reichstein. (2017) Fluxes All of the Time? A Primer on the Temporal Representativeness of FLUXNET Network. *Journal of Geophysical Research: Biogeosciences*, 122(2): 289-307, DOI: 10.1002/2016JG003576
 - 18) Ouyang, Z., C. Shao, **H. Chu**, R. Becker, T. Bridgeman, C. Stepien, R. John, and J. Chen. (2017) The effect of algal blooms on carbon emissions in western Lake Erie: An integration of remote sensing and eddy covariance measurements. *Remote Sensing*, 9(1): 44
 - 17) **Chu, H.**, J. Chen, J. F. Gottgens, A. R. Desai, Z. Ouyang, and S. Qian. (2016) Response and biophysical regulation of carbon dioxide fluxes to climate variability and anomaly in contrasting ecosystems in northwestern Ohio, USA. *Agricultural and Forest Meteorology*, 220: 50-68
 - 16) Xie, J., J. Chen, G. Sun, T. Zha, B. Yang, **H. Chu**, J. Liu, S. Wan, C. Zhou, H. Ma, C. P.-A. Bourque, C. Shao, R. John, and Z. Ouyang. (2016) Ten-year variability in ecosystem water use efficiency in an oak-dominated temperate forest under a warming climate. *Agricultural and Forest Meteorology*, 218-219: 209-217
 - 15) Han, J., L. Li, **H. Chu**, Y. Miao, J. Chen, and S. Chen. (2015) The Effects of grazing and watering on ecosystem CO₂ fluxes vary by community phenology. *Environmental Research*, 144: 64-71
 - 14) Shao, C., J. Chen, C. A. Stepien, **H. Chu**, T. Bridgeman, K. Czajkowski, R. Becker, Z. Ouyang, and R. John. (2015) Diurnal to annual changes in latent, sensible heat and CO₂ fluxes over a Laurentian Great Lake: A case study in western Lake Erie. *Journal of Geophysical Research: Biogeosciences*, 120(8): 1587-1604 (**AGU EOS Research Spotlight** (2015), 96, DOI:10.1029/2015EO037667)
 - 13) Abraha, M. J. Chen, **H. Chu**, T. Zenone, J. Ranjeet, Y.-J. Su, S. K. Hamilton, and P. Robertson. (2015) Evapotranspiration of annual and perennial biofuel crops in a variable climate. *Global Change Biology: Bioenergy*, 7(6): 1344-1356
 - 12) **Chu, H.**, J. F. Gottgens, J. Chen, G. Sun, A. R. Desai, Z. Ouyang, C. Shao, and K. Czajkowski. (2015) Climatic variability, hydrologic anomaly, and methane emission can turn productive freshwater marches into net carbon sources. *Global Change Biology*, 21(3): 1165-1181.
 - 11) Ouyang, Z., J. Chen, R. Becker, **H. Chu**, J. Xie, C. Shao, and R. John. (2014) Disentangling the confounding effects of PAR and air temperature on net ecosystem exchange in time and scale. *Ecological Complexity*, 19: 46-58.

- 10) **Chu, H.**, J. Chen, J. F. Gottgens, Z. Ouyang, R. John, K. Czajkowski, and R. Becker. (2014) Net ecosystem methane and carbon dioxide exchanges in a Lake Erie coastal marsh and a nearby cropland. *Journal of Geophysical Research: Biogeosciences*, 119(5): 722-740.
- 9) Xie, J., J. Chen, G. Sun, **H. Chu**, A. Noormets, Z. Ouyang, R. John, S. Wan, and W. Guan. (2014). Long-term variability and environmental control of the carbon cycle in an oak-dominated temperate forest. *Forest Ecology and Management*, 313: 319-328.
- 8) Xie, J., G. Sun, **H. Chu**, J. Liu, S. G. McNulty, A. Noormets, R. John, Z. Ouyang, T. Zha, H. Li, W. Guan, and J. Chen. (2014). Long-term variability in water budget and its controls in an oak-dominated temperate forest. *Hydrological Processes*, 28(25): 6054-6066.
- 7) **Chu, H.**, S.-C. Chang, O. Klemm, C.-W. Lai, Y.-J. Lin, C.-C. Wu, J.-Y. Lin, J.-Y. Jiang, J. Chen, J. F. Gottgens, and Y.-J. Hsia. (2014). Does canopy wetness matter? Evapotranspiration from a subtropical montane cloud forest in Taiwan. *Hydrological Processes*, 28(3): 1190-1214.
- 6) Deal, M.W., J. Xu, R. John, T. Zenone, J. Chen, P. Jasrotia, K. Kahmark, **H. Chu**, J. Bossenbroek, and C. Mayer. (2013). Net primary production in three bioenergy crop systems following land conversion. *Journal of Plant Ecology*, 7(6): 1-10.
- 5) **Chu, H.**, N. Liang, C.-W. Lai, C.-C. Wu, S.-C. Chang, and Y.-J. Hsia. (2013). Topographic Effects on CO₂ Flux Measurement at the Chi-Lan Mountain Forest Site. *Taiwan Journal of Forest Science*, 28(1): 1-16.
- 4) Tan, Z.-H., Y.-P. Zhang, N. Liang, Y.-J. Hsia, Y.-J. Zhang, G.-Y. Zhou, Y.-L. Li, J.-Y. Juang, **H. Chu**, J.-H. Yan, G.-R. Yu, X.-M. Sun, Q.-H. Song, K.-F. Cao, D. A. Schaefer, and Y.-H. Liu. (2012). An observational study of the carbon-sink strength of East Asian subtropical evergreen forests. *Environmental Research Letter* 7(4): 044017.
- 3) Gonser, S., O. Klemm, F. Griessbaum, S.-C. Chang, **H. Chu**, and Y.-J. Hsia. (2011). The relation between humidity and liquid water content in fog: an experimental approach. *Pure and Applied Geophysics*, 169(5-6): 821-833.
- 2) Lin, C.-C., C.-H. Hsu, Y.-J. Hsia, **H. Chu**, and S.-S. Lu. (2009). Scientific workflow system (kepler) for carbon dioxide flux computing. *Quarterly Journal of Chinese Forestry*, 42: 75-88.
- 1) Wang, S.-H., C.-K. Chiang, B.-R. Chiang, Y.-C. Li, S.-L. Xu, J.-H. Cheng, J.-N. Cheng, **H. Chu**, W.-C. Chang, Q.-J. Zeng, Y.-L. Zheng, and J.-F. Cai. (2000). A story of space participatory writing of spatial scenarios: Shop house reconstruction in Kuo-Hsin Township after the 921 Earthquake. *Cities and Design*, 11&12, 295-312.

CONFERENCE PRESENTATION (Selected)

- 26) **Chu, H.**, S. Chan, S. C. Biraud, S. Dengel, D. Billesbach, C. Hanson, and D. D. Baldocchi. (2018) Network at a glance: Probing the turbulent statistics across AmeriFlux sites by using the roving Eddy Covariance system. AGU Fall Meeting 2018, 10-14 December, Washington, DC, USA. (poster)
- 25) **Chu, H.**, S. Chan, S. C. Biraud, S. Dengel, D. Billesbach, C. Hanson, and D. D. Baldocchi. (2018) Network at a glance: Probing the turbulent statistics and spectral characteristics across AmeriFlux sites by using the roving Eddy Covariance system. 33rd Conference on Agricultural and Forest Meteorology, 14–18 May, Boise, ID, USA (oral presentation)
- 24) Keenan, T. and **H. Chu**. (2018) Update of methane flux measurements in AmeriFlux. Fluxnet CH₄ synthesis workshop, 7-8 May, Washington DC, NW, USA (oral presentation)
- 23) **Chu, H.** (2018) Flux everywhere, and all the time? EESA Climate Brownbag Seminar, 26 March, Berkeley, CA, USA (invited talk)

- 22) **Chu, H.**, and D. D. Baldocchi. (2017). Aerodynamic roughness: A simple and alternative metric to detect the seasonality of canopy structure using flux-tower data. AGU Fall Meeting 2017, 11-15 December, New Orleans, LA, USA. (poster)
- 21) **Chu, H.**, D. D. Baldocchi, and FLUXNET contributors (2017). Flux everywhere, all the time: What have we learned and what can be learned from FLUXNET. FLUXNET 2017 Workshop, 7-9 June, Berkeley, CA, USA. (keynote presentation)
- 20) **Chu, H.**, D. D. Baldocchi, C. Poindexter, and M. Abraha (2017). Aerodynamic canopy height: A simple metric of canopy dynamics derived from AmeriFlux tower data. FLUXNET 2017 Workshop, 7-9 June, Berkeley, CA, USA. (poster)
- 19) **Chu, H.**, D. D. Baldocchi, C. Poindexter, and M. Abraha (2017). Aerodynamic canopy height: A simple metric of canopy dynamics derived from AmeriFlux tower data. 2017 Joint NACP and AmeriFlux Principal Investigators Meeting, 27-30 March, North Bethesda, MD, USA. (poster)
- 18) **Chu, H.** (2017) Fluxes and their biophysical regulation in contrasting ecosystems – Insights from clusters and networks of flux towers. LBNL Trr-BGC Seminar, 30 January, Berkeley, CA, USA. (invited presentation)
- 17) **Chu, H.**, D. D. Baldocchi, C. Poindexter, and M. Abraha (2016). Cross-site evaluation of methods for the estimation of aerodynamic roughness parameters from flux-tower data. AGU Fall Meeting 2016, 12-16 December, San Francisco, CA, USA. (poster)
- 16) **Chu, H.**, C. Poindexter, G. Pastorello, C. Trotta, E. Canfora, D. Agarwal, and D. Papale (2016). Eyes on data: Secondary QA/QC in the AmeriFlux/FLUXNET data processing system. AmeriFlux Data and Tech Workshop, 21 September, Mountain Research Station, CO, USA. (oral presentation)
- 15) **Chu, H.**, D. D. Baldocchi, C. Poindexter, and M. Abraha (2016). Cross-site evaluation of methods for the estimation of aerodynamic roughness parameters from flux-tower data. AmeriFlux PI Meeting, 21-23 September, Golden, CO, USA. (poster)
- 14) **Chu, H.**, D. D. Baldocchi, C. Poindexter, and M. Abraha (2016). Cross-site evaluation of methods for the estimation of aerodynamic roughness parameters from flux-tower data. 32nd Conference on Agricultural and Forest Meteorology, 20-24 June, Salt Lake City, UT, USA. (oral presentation)
- 13) **Chu, H.**, D. D. Baldocchi, R. John, and FLUXNET contributors (2015). Flux everywhere, all of the time: What can be learned from FLUXNET. AGU Fall Meeting 2015, 14-18 December, San Francisco, CA, USA. (oral presentation)
- 12) **Chu, H.**, D. D. Baldocchi, and FLUXNET contributors (2015). Flux everywhere, all of the times: What have we learned and what can be learned from FLUXNET. FLUXNET Synthesis Workshop 2015, 14-16, July, Beijing, China. (invited presentation)
- 11) **Chu, H.**, J. Chen, J. F. Gottgens, G. Sun., and C. Shao (2014). Contrasting the interannual variability of evapotranspiration in a temperate oak woodland, a freshwater marsh and a conventional cropland. 2014 Symposium on “Evapotranspiration: Challenges in Measurement and Modeling from Leaf to the Landscape Scale and Beyond”, 7-11 April, Raleigh, NC, USA. (oral presentation)
- 10) **Chu, H.**, J. Chen, and J. F. Gottgens. (2013). Contribution of methane and lateral carbon fluxes in a temperate marsh carbon budget. 2013 ESA Meeting, 4-9 August, Minneapolis, MN, USA. (oral presentation)
- 9) **Chu, H.**, J. Chen, and J. F. Gottgens. (2013). Contribution of methane and lateral carbon fluxes in a temperate marsh carbon budget. 4th Midwest Graduate Research Symposium, 20 April, Toledo, OH, USA. (oral presentation)
- 8) **Chu, H.**, J. Chen, Z. Ouyang, M. Deal, R. John, and J. F. Gottgens. (2012). CO₂ and H₂O fluxes in different ecosystems altered uniquely by similar climatic extremes. AGU Fall Meeting 2012, 3-7 December, San Francisco, CA, USA. (poster)

- 7) **Chu, H.**, S.-C. Chang, Y.-Z. Lin, and Y.-J. Hsia. (2010). How does canopy wetness shape evapotranspiration in a mountain cloud forest? 5th International Conference on Fog, Fog Collection and Dew, 25-30 July, Münster, Germany. (poster)
- 6) **Chu, H.**, S.-C. Chang, Y.-Z. Lin, and Y.-J. Hsia. (2010). How does canopy wetness shape evapotranspiration in a mountain cloud forest? 2010 Western Pacific Geophysics Meeting, 22-25 June, Taipei, Taiwan. (oral presentation)
- 5) **Chu, H.**, S.-C. Chang, Y.-Z. Lin, and Y.-J. Hsia. (2009). Wet canopy evapotranspiration in a mountain cloud forest. AisaFlux Workshop 2009, Integrating Cross-scale Ecosystem Knowledge: Bridges and Barriers, 27-29 October, Sapporo, Japan. (poster)
- 4) **Chu, H.**, C.-W. Lai, C.-C. Wu, and Y.-J. Hsia. (2008). Does the fog matter? The seasonal and diurnal patterns of net ecosystem CO₂ exchange in a subtropical montane cloud forest. AGU Fall Meeting 2008, 15-19 December. San Francisco, CA, USA. (poster)
- 3) **Chu, H.**, C.-W. Lai, C.-C. Wu, J.-Y. Lin, and Y.-J. Hsia. (2008). The seasonal and diurnal patterns of net ecosystem CO₂ exchange in a subtropical montane cloud forest. AisaFlux Workshop 2008, Re-Thinking Global Change Science: From Knowledge to Policy, 17-19 November, Seoul, Korea. (oral presentation)
- 2) **Chu, H.**, N. Liang, C.-W. Lai, C.-C. Wu, and Y.-J. Hsia. (2008). A preliminary study of topographic effect on CO₂ flux measurement at Chi-Lan Mountain site. AisaFlux Workshop 2008, Re-Thinking Global Change Science: From Knowledge to Policy, 17-19 November, Seoul, Korea. (poster)
- 1) **Chu, H.**, C.-W. Lai, C.-C. Wu, and Y.-J. Hsia. (2007). A preliminary study of topographic effect on flux measurement at Chi-Lan Mountain site. AisaFlux Workshop 2007, 19-22 October, Taoyuan, Taiwan. (poster)

RESEARCH EXPERTISE

Field	eddy covariance, trace greenhouse gas measurement, micrometeorology, soil and aquatic sensor installation, maintenance, data handling, and QA/QC, logger programming (CRBasic, Edlog), tower construction and climbing, forest/wetland ecology measurements, ground-based multispectral measurement (FIELD SPEC3 Portable Spectroradiometer, ASD), Webcam-based phenology measurement (PhenoCam)
Laboratory	radionuclide dating of sediments by gamma counting, trace greenhouse gas calibration and measurement, inorganic carbon analysis in aquatic samples
Analytical	spatiotemporal and statistical data analysis (time series analysis, hierarchical model, cluster, wavelet analysis) and scientific programming (R, Matlab), Bayesian model-data assimilation (Markov Chain Monte Carlo, BUGS, JAGS), machine-learning technique, remote sensing (MODIS and <i>in situ</i> multispectral data product), eddy covariance flux calculation (EdiRe workflow), reanalysis data product (CRU, GIMMS, ERA-Interim)

RESEARCH EXPERIENCE

Postdoctoral Researcher	LBNL, Funded by Department of Energy (DOE), USA. Project: AmeriFlux Management Project: Data Processing and QA/QC. Task: Development and coding of new and existing carbon flux data processing methods for quality assurance, data corrections, and product generation. Creation and validation of uncertainty and sensitivity quantification methods. Evaluation of processing techniques and results.	2017-2019
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	Collaboration with tower teams to identify site specific conditions requiring attention in data processing methods and models. Working in a multidisciplinary team environment, including backgrounds in biology, ecology, earth sciences, statistics, and computer science.	
Postdoctoral Researcher	UC Berkeley, Funded by Department of Energy (DOE), USA, under National Aeronautics and Space Administration (NASA) Research Opportunity in Space and Earth Sciences (ROSES). Project: Connecting AmeriFlux to the Globe, Extending the partnership with the Global Flux Network, FLUXNET. Task: Analyzing and manipulating long-term and comprehensive datasets on carbon, water and energy exchange between vegetation and the atmosphere, assisting organizing workshops for data synthesis and model testing activities; assisting investigators and the data-archive scientists in the submission and documentation of data for the project website and the production of updated, gap-filled datasets; producing peer-reviewed research papers, newsletters and reports on FLUXNET activities.	2015-2017
Graduate Research Assistant	U Toledo, Funded by National Oceanic and Atmospheric Administration (NOAA), USA Project: Ecosystem responses and societal adaptation of West Lake Erie Basin to climate change: A new initiative based on land-water interactions (NA10OAR4170224). Task: Installation, maintenance and data analysis of three eddy covariance and micrometeorology towers at a freshwater marsh, a conventional cropland, and an oak forest (also collaborate with an urban high tower).	2010-2013
Research Technician	NDHU, Funded by Environmental Protection Administration (EPA), Taiwan. Project: Carbon dioxide flux station operation and data analysis (EPA-98-FA11-03-A009). Task: Field instrumentation, maintenance and data analyses of two eddy covariance and micrometeorological towers at the Chi-Lan Mountain long-term ecological research site, Taiwan. Design, build and construct two subcanopy eddy covariance and micrometeorological towers.	2008-2010
Graduate Research Assistant	NDHU, Funded by Environmental Protection Administration (EPA), Taiwan. Project: Carbon dioxide flux station operation and data analysis (EPA-96-FA11-03-A027-2). Task: Field instrumentation, maintenance and data analyses of two eddy covariance and micrometeorological towers at the Chi-Lan Mountain long-term ecological research site, Taiwan.	2007-2008
Associate Project Manager	National Taiwan University Building and Planning Research Foundation, Funded by Hualien County Government, Taiwan. Projects: The urban and rural landscape guidelines for the Hualien region; The old Eastern Railway site and architecture survey; Local cultural museum planning and establishment. Task: Urban and community planning, historic architecture investigation and preservation.	2004-2005

TEACHING EXPERIENCE

Discussion Leading	UC Berkeley, Course: Seminar on Biomet Classic Papers (ESPM298). Student: graduate, 12 Task: Lead seminar discussion among graduate and upper-level students on classic papers	2015
Lab Instructor	U Toledo, Course: Biodiversity Lab (EEES 2160, 1 credit). Students: undergraduate, 11	2014

	Task: Sole responsible for the instruction, mentoring, and grading for the undergraduate-level lab course for the entire semester. Lab activities include introductory lecture, lab or filed experiments, and discussions.	
Lab Coordinator	U Toledo, USA	2014
	Task: Coordination, communication, and preparation for the teaching labs -- Environmental Problem Labs (10 sections, 8 Lab Instructors, 230 undergraduates).	
Lab Instructor	U Toledo, Course: Environmental Problem Lab (EEES 1140, 1 credit). Students: undergraduate, 20 (Fall 2014), 9 and 21 (Spring 2012), 11 (Fall 2011)	2011-2014
	Task: Sole responsible for the instruction, mentoring, and grading for the undergraduate-level lab course for the entire semester. Lab activities include introductory lecture, lab or filed experiments, and discussions.	
Invited Lecture	U Toledo, Course: Special Topics - Mathematical and Environmental/Bio Sciences (EEES 6980). Presentation: An introduction to time series analysis by the R language Students: graduate, 15	2012
Teaching Assistant	U Toledo, Course: Introduction to Environmental Studies (EEES 2010, 2 credits). Instructor: Stacy Philpott. Students: undergraduate, 72	2011
Invited Lecture	U Toledo, Course: Directed Research (GEPL 5910). Presentation: Eddy Covariance Method: A micrometeorological approach to measure the net energy/scalar exchange between atmosphere and ecosystem Students: graduate, 30	2011
Teaching Assistant	NDHU, Course: Environmental Measurement and Instrumentation (NR 55000, 3 credits). Instructors: Yue-Joe Hsia, Shih-Chieh Chang. Students: graduate, 7	2008

OTHER EDUCATIONAL PROGRAM

- eddy4R-Docker demo workshop: New Orleans, LA, USA, 12 December, 2017
- Python Boot Camp: University of California, Berkeley, CA, USA, 22-23 August, 2016
- AmeriFlux Data Workshop: Lawrence Berkeley National Lab, Berkeley, CA, USA, 18-20 March, 2015.
- Spatial Accuracy 2014 short course: Hierarchical Models for Spatio-Temporal Data, East Lansing, MI, USA, 8 July, 2014.
- Freshwater Advanced Aquatic Sensor Workshop: Sensors, Platforms and Data Management. University of Michigan Biological Station, MI, USA, 11-13 September, 2011.
- Vaisala HydroMet Data Collection Platform Training Workshop. Hualien, Taiwan, 13 January, 2010.
- EAP-ILTER Ecological Information Management Workshop. Kaohsiung, Taiwan, 9-13 July, 2007.
- Campbell Scientific, Inc. Open- and closed-path Eddy Covariance System Training Workshop. Hualien, Taiwan, 11-15 June, 2007.

EXTRACURRICULAR AND OUTREACH ACTIVITY

- Blog writer/editor for FLUXNET-Fluxdata website (2015-)
- Member of American Meteorological Society (2016-)
- Organizer of FLUXNET-Young Scientist Network (YSN) (2015-)

- Design and construct the exhibition cases and program posters for the research highlights and undergraduate programs, Department of Environmental Sciences, U Toledo (2014)
- Member of American Society of Agricultural and Biological Engineers (ASABE) (2014-2015)
- Member of Ecological Society of America (ESA) (2013-)
- Member of AmeriFlux network (2012-)
- Member of American Geophysical Union (AGU) (2008-)
- Member of AsiaFlux network (2007-)
- Member of Taiwan Long-Term-Ecological-Research Network (TERN) (2006-)
- Ecotourism interpreter and instructor on whale/dolphin-watching boats (2004-2010), Kuroshio Ocean Culture Education Foundation, Hualien, Taiwan (NGO volunteer)
- Mountaineering and ecotourism instructor (2004-2010), Taiwan Wilderness Education Association, Taiwan (NGO volunteer)

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