

# YONGJIANG ZHANG

## Post-doctoral Research Fellow

Department of Organismic and Evolutionary Biology, Harvard University  
& Sustainability Science Program, J. F. Kennedy School of Government, Harvard University  
16 Divinity Ave., Room 3107, Cambridge, MA 02138 USA  
Tel: (1) 617-496-3580 Email: [zhangyj.um@gmail.com](mailto:zhangyj.um@gmail.com)

---

Research Gate: [http://www.researchgate.net/profile/Yong-jiang\\_Zhang](http://www.researchgate.net/profile/Yong-jiang_Zhang)

Google Scholar: <https://scholar.google.com/citations?user=yb5am78AAAAJ&hl=en>

## EDUCATION

- 2012**     **Ph.D. Biology. University of Miami**  
Advisor: Dr. Guillermo Goldstein
- 2011**     **Ph.D. Ecology. Xishuangbanna Tropical Botanical Garden, Chinese Academy of Sciences** Advisor: Dr. Kun-Fang Cao
- 2004**     **B.S. Biological Science and Forest Ecology. Sichuan University**  
Advisor: Dr. Cong Guo
- 02-03**     **Exchange Study. Botany and Forestry. University of Washington**  
Advisor: Dr. Thomas M. Hinckley

## ACADEMIC APPOINTMENTS

- 2016-**     Giorgio Ruffolo Post-doctoral Research Fellow, **Harvard University**  
John F. Kennedy School of Government  
Sustainability Science Program
- 2013-**     Post-doctoral Research Fellow, **Harvard University**  
Department of Organismic and Evolutionary Biology  
Faculty host: Dr. Noel Michele Holbrook
- 12-13**     Giorgio Ruffolo Post-doctoral Research Fellow, **Harvard University**  
John F. Kennedy School of Government  
Sustainability Science Program

## RESEARCH INTERESTS

Plant ecology, tree physiology, physiological ecology, plant hydraulics, ecosystem water balance and carbon economy, regional hydrology, environmental change, climate extremes, and sustainability science. Linking plant physiology with population dynamics, community assembly, and conservation. Water use and drought tolerance of different crop varieties.

## PUBLICATION-JOURNAL ARTICLES

- **Zhang YJ**, Bucci SJ, Arias, NS, Scholz FG, Hao GY, Cao KF, Goldstein G. (2016) Freezing resistance in Patagonian woody shrubs: the role of cell wall elasticity and stem vessel size. *Tree Physiology* In Press.

- **Zhang YJ**, Sack L, Goldstein G, Cao KF. (2016) Hydraulic determination of leaf nutrient concentrations in cycads. *Botanical Review* In Press.
- Yang SJ, **Zhang YJ**, Goldstein G, Sun M, Ma RY, Cao KF. (2015) Determinants of water circulation in a woody bamboo species: afternoon use and nighttime recharge of culm water storages. *Tree Physiology* 35, 964-974.
- **Zhang YJ**, Sack L, Li N, Wei XM, Cao KF, Goldstein G. (2015) Extending the generality of leaf economic design principles in the cycads, an ancient lineage. *New Phytologist* 203, 96-106.
- Song L, **Zhang YJ**, Chen X, Li S, Lu HZ, Wu CS, Tan ZH, Liu WY, Shi XM. (2015) Water relations and gas exchange of fan bryophytes and their adaptations to microhabitats in an Asian subtropical montane cloud forest. *Journal of Plant Research* 128, 573-84.
- Cristiano PM, Campanello PI, Bucci SJ, Rodríguez SA, Lezcano OA, Scholze FG, Madanes N, Francescantonio DD, Carrasco LO, **Zhang YJ**, Goldstein G. (2015) Evapotranspiration of subtropical forests and tree plantations: a comparative analysis at different temporal and spatial scales. *Agricultural and Forest Meteorology* 203, 96-106.
- **Zhang YJ**, Holbrook NM, Cao KF. (2014) Seasonal dynamics in photosynthesis of woody plants at the northern limit of the Asian tropics: potential role of fog in maintaining tropical rainforests and agriculture in Southwest China. *Tree Physiology* 34, 1069-1078.
- **Zhang YJ**, Holbrook NM. (2014) The stability of xylem water under tension: A long, slow spin proves illuminating (Commentary). *Plant Cell & Environment* 37, 2652-2653.
- **Zhang YJ**, Rockwell FE, Wheeler JK, Holbrook NM. (2014) Reversible deformation of transfusion tracheids in *Taxus baccata* is associated with a reversible decrease in leaf hydraulic conductance. *Plant Physiology* 165, 1557-1565.
- Cristiano PM, Madanes N, Campanello PI, Francescantonio DD, Rodríguez SA, **Zhang YJ**, Carrasco LO, Goldstein G. (2014) High NDVI and potential canopy photosynthesis of South American subtropical forests despite seasonal changes in leaf area index and air temperature. *Forests* 5, 287-308.
- Song L, Liu W, **Zhang YJ**, Tan ZH, Li S, Qi JH, Yao Y. (2014) Assessing the potential impacts of elevated temperature and CO<sub>2</sub> on growth and health of nine non-vascular epiphytes: A manipulation experiment. *American Journal of Plant Sciences* 5, 1587-1598.
- Yang SJ, Sun M, **Zhang YJ**, Cochard H, Cao KF. (2014) Strong leaf morphological, anatomical and physiological responses of a subtropical woody bamboo (*Sinarundinaria nitida*) to contrasting light environments. *Plant Ecology* 215, 97-109.
- Sun SW, **Zhang YJ**, Cao Kf. (2014) Correlations among leaf structure, drought tolerance and photosynthetic capacity in saplings of Euphorbiaceae from different micro-habitats in a seasonal tropical rainforest. *Chinese Journal of Plant Ecology* 38, 311-324. (In Chinese with English Abstract).
- Qi JH, **Zhang YJ**, Zhang YP, Liu YH, Lu ZY, Wu CS, Wen HD. (2014) The influence of changes in water availability on seedling mortality of a subtropical evergreen broadleaf forest on Ailao Mountain. *Acta Ecologica Sinica* 35, 2521-2528. (In Chinese with English Abstract).

- **Zhang YJ**, Meinzer FC, Qi JH, Goldstein G, Cao KF. (2013) Midday stomatal conductance is more related to stem rather than leaf water status in subtropical deciduous and evergreen broadleaf trees. *Plant Cell & Environment* 36, 149-158.
- **Zhang YJ**, Yang QY, Lee DW, Goldstein G, Cao KF. (2013) Extended leaf senescence promotes carbon gain and nutrient resorption: importance of maintaining winter photosynthesis in subtropical forests. *Oecologia* 173, 721-730.
- Li S, **Zhang YJ**, Ishida A, Sack L, Scoffoni C, Chen YJ, Cao KF. (2013) The heterogeneity of structure and function and thermal stress related to hydraulic design of giant leaves of *Alocasia macrorrhiza*. *PLoS ONE* 8, e66016.
- Mo XX, Shi LL, **Zhang YJ**, Zhu H, Slik JWF. (2013) Change in phylogenetic community structure during succession of traditionally managed tropical rainforest in Southwest China. *PLoS ONE* 8, e71464.
- Fang Q, **Zhang YJ**, Cao KF. (2013) A study on leaf structures of *Castanopsis wattii* at different crown height and the influencing factors. *Journal of Yunnan University* 35, 114-120. (In Chinese with English Abstract).
- Qi JH, **Zhang YJ**, Zhang YP, Liu YH, Lu ZY, Wu CS, Wen HD. (2013) The impacts of the Southwest China drought on the litterfall and leaf area index of an evergreen broadleaf forest on Ailao Mountain. *Acta Ecologica Sinica* 33, 2877-2885. (In Chinese with English Abstract).
- Yang SJ, **Zhang YJ**, Sun M, Goldstein G, Cao KF. (2012) Recovery of diurnal depression of leaf hydraulic conductance in a subtropical woody bamboo species: embolism refilling by nocturnal root pressure. *Tree Physiology* 32, 414-422.
- Cao KF, Yang SJ, **Zhang YJ**, Brodribb TJ. (2012) The maximum height of grasses is determined by roots. *Ecology Letters* 15, 666-672.
- Tan ZH, Zhang YP, Liang N, Hsia YJ, **Zhang YJ**, Zhou GY, Li YL, Juang JY, Chu HS, Yan JH, Yu GR, Sun XM, Song QH, Cao KF, Schaefer DA, Liu YH. (2012) An observational study of the carbon-sink strength of East Asian subtropical evergreen forests. *Environmental Research Letters* 7, 044017.
- Qi JH, **Zhang YJ**, Zhang YP, Liu YH, Yang QY, Song L, Gong HD, Lu ZY. (2012) Water-holding capacity of an evergreen broadleaf forest in Ailao Mountain and its functions in mitigating the effects of SW China drought. *Acta Ecologica Sinica* 32, 1692-1702. (In Chinese with English Abstract).
- Mo XX, Zhu H, **Zhang YJ**, Slik JWF, Liu JX. (2011) Traditional forest management has limited impact on plant diversity and composition in a tropical seasonal rainforest in SW China. *Biological Conservation* 144, 1832-1840.
- **Zhang YJ**, Meinzer FC, Hao GY, Scholz FG, Bucci SJ, Takahashi FS, Villalobos-Vega R, Giraldo JP, Cao KF, Hoffmann WA, Goldstein G. (2009) Size-dependent mortality in a Neotropical savanna tree: the role of height-related adjustments in hydraulic architecture and carbon allocation. *Plant Cell & Environment* 32, 1456-1466.
- Hao GY, Jones TJ, Luton C, **Zhang YJ**, Manzano E, Scholz FG, Bucci SJ, Cao KF, Goldstein G. (2009) Hydraulic redistribution in dwarf *Rhizophora mangle* trees driven by interstitial soil water salinity gradients: impacts on hydraulic architecture and gas exchange. *Tree Physiology* 29, 697-705.

- Bucci SJ, Scholz FG, Goldstein G, Meinzer FC, Franco AC, **Zhang YJ**, Hao GY. (2008) Water relations and hydraulic architecture in Cerrado trees: adjustments to seasonal changes in water availability and evaporative demand. *Brazilian Journal of Plant Physiology* 20, 233-245.

### PUBLICATION-BOOK CHAPTERS

- **Zhang YJ**, Cristiano PM, Zhang YF, Campanello PI, Tan ZH, Zhang YP, Cao KF, Goldstein G. (2016) Carbon economy of subtropical forests. In: *Tropical Tree Physiology*. Springer. pp. 337-355.
- Goldstein G, Santiago LS, Campanello P, Avalos G, **Zhang YJ**, Villagra M. (2016) Facing shortage or excessive light: How tropical and subtropical trees adjust their photosynthetic behavior and life history traits to a dynamic forest environment. In: *Tropical Tree Physiology*. Springer. pp. 319-336.
- Campanello PI, Manzan éE, Villagra M, **Zhang YJ**, Panizza MA, Francescantonio di D, Rodriguez SA, Chen YJ, Santiago LS, Goldstein G. (2016) Carbon allocation and water relations of lianas versus trees. In: *Tropical Tree Physiology*. Springer. pp. 103-124.
- **Zhang YJ**, Cao KF, Goldstein G. (2013) Winter photosynthesis of evergreen broadleaf trees from a montane cloud forest in subtropical China. In: *Photosynthesis Research for Food, Fuel and the Future*. Springer. pp. 812-817.

### PUBLICATION -POPULAR SCIENCE ARTICLE

- **Zhang YJ**, Mo XX, Liu YH. (2011) A cloud forest in the clouds. *China Nature* 162, 04-09.

### FELLOWSHIPS AND AWARDS

2016	Postdoctoral Award for Professional Development, Faculty of Arts and Sciences, Harvard University
2016	Giorgio Ruffolo Post-doctoral Research Fellowship, Harvard Kennedy School of Government
2013	Shiu-Ying Hu Student/Post-Doctoral Exchange Award, Harvard University
2012	Outstanding Graduate Student Paper Award, Department of Biology, University of Miami
12-13	Giorgio Ruffolo Post-doctoral Research Fellowship, Harvard Kennedy School of Government
2009	Best Student Poster Award, ATBC (Association for Tropical Biology and Conservation) Asia Pacific Chapter
2009	Libo Graduate Research Award
07-08	Anness Fellowship, University of Miami

### CONFERENCE PRESENTATIONS

- Botany 2014-New Frontiers in Botany, 2014, Boise, Idaho, USA. *Reversible collapse of transfusion tracheids in conifer leaves* (Oral)

- Harvard Plant Biology Symposium, 2014, Arnold Arboretum, Jamaica Plain, MA, USA. *Reversible collapse of leaf transfusion tracheids in Taxus baccata* (Poster)
- The 3<sup>rd</sup> Symposium on Tropical Forest Ecology, 2011, Xishuangbanna, China. *A subtropical cloud forest in the 2010 SW China drought* (Oral)
- The 9<sup>th</sup> International Conference on Cycad Biology, 2011, Shenzhen, China. *The physiology of cycads: leaf structure, hydraulics, nutrition, and photosynthesis* (Oral)
- The 15<sup>th</sup> International Congress of Photosynthesis, 2010, Beijing, China. *Winter photosynthesis of evergreen broadleaf trees from a montane cloud forest in subtropical SW China* (Oral)
- ATBC (Association for Tropical Biology and Conservation) Annual Meeting, 2010, Bali, Indonesia. *Winter carbon assimilation of evergreen broadleaf trees from a montane forest in the tropical-subtropical transition zone of SW China* (Poster)
- ATBC (Association for Tropical Biology and Conservation) Annual Meeting, 2009 Aisa Pacific Chapter, Chiang Mai, Thailand. *Assessing chilling resistance of tropical plants* (Poster)
- 5<sup>th</sup> International Symposium on Modern Ecology, 2009, Lanzhou, China. *Size-dependent mortality in a Neotropical savanna tree: linking adjustments in hydraulic architecture and carbon balance with population dynamics* (Poster)
- 5<sup>th</sup> International Canopy Conference, 2009, Bangalore India. *Size-dependent mortality in a Neotropical savanna tree: the role of height-related adjustments in hydraulic architecture and carbon allocation* (Oral)
- National Annual Conference of Photosynthesis, 2008, Jingangshan, China. *Different light protection mechanisms of a shade tolerant species in different high light regimes* (Poster)
- ATBC (Association for Tropical Biology and Conservation) Annual Meeting, 2007, Morelia, Mexico. *Are leaf and stem hydraulics determinants of dieback of Sclerolobium Paniculatum?* (Poster)

### **INVITED SEMINARS**

- February, 2015** Harvard University Herbarium Seminar, Cambridge, USA  
**September, 2011** Jingdong Vocational High School, Yunnan, China (Popular Science)  
**May, 2010** Wangjiachun Primary School, Yunnan, China (Popular Science)

### **REVIEW FOR ACADEMIC JOURNALS**

Plant Ecology, Forest Ecology and Management, PlosONE, Conservation Physiology, New Phytologist, Plant Cell & Environment, Scientific Reports, Australian Journal of Botany, Botanical Review, Acta Oecologica, Chinese Journal of Plant Ecology, Acta Ecologica Sinica, Scandinavian Journal of Forest Research, Turkish Journal of Agriculture and Forestry

### **RESEARCH EXPERIENCE**

#### **Post-doc (Harvard University)**

**2016-** Water use and drought tolerance of high productivity crop varieties

- 2013-2015** Stem vulnerability to embolism and the validity of different methods  
**2012-2014** Vulnerability of conifer needles to embolism  
**2012-2013** Importance of fog in maintaining tropical rainforests and agriculture in Southwest China

**Ph. D. (Chinese Academy of Sciences, University of Miami)**

- 2009-2011** Cycad physiology: water transport, photosynthesis, and nutrient uptake  
**2009-2010** Physiological responses of invasive and native plants to global warming  
**2008-2011** Water and carbon balances of deciduous and evergreen broadleaf trees from a subtropical cloud forest in Southwest China  
**2007** Freezing resistance of Patagonian shrubs  
**2006-2007** Water use strategies of mangroves and hydraulic redistribution  
**2006** Size-dependent mortality in a Neotropical savanna tree  
**2003-2004** Chilling resistance of tropical plants

**Undergraduate (University of Washington)**

- 2003** Influence of blister rust on the growth of western white pine  
**2002** Effects of stand density on the growth of young Douglas-fir trees  
**2002-2003** Influence of snow cover on the growth of conifers  
**2002-2003** Physiological and genetic adaptations of plants to serpentine soils

**EXPERIENCE IN FIELD STATIONS AND BOTANICAL GARDENS**

- 2013-2014** Arnold Arboretum, Jamaica Plain, MA, USA  
**2011 (Oct-Nov)** Fairy Lake Botanical Garden, Guangdong, China  
**2011 (Jun-Jul)** Lijiang Alpine Botanical Garden, Yunnan, China  
**2008-2011** Ailaoshan Station for Subtropical Forest Ecosystem Studies, Yunnan, China  
**2008-2011** Xishuangbanna Tropical Botanical Garden, Yunnan, China  
**2007 (May-Jul)** National University of Patagonia San Juan Bosco and Patagonian Steppe Research Site, Comodoro Rivadavia, Argentina  
**2006-2007** Fairchild Tropical Botanical Garden, FL, USA  
**2006-2008** Biscayne National Park, FL, USA  
**2006 (Jul-Aug)** Nature Reserve at the Brazilian Institute of Geography and Statistics, Brasilia, Brazil

**TEACHING EXPERIENCE**

- Spring 2014:** OEB 52 Biology of Plants, Harvard University  
 (Teaching Fellow)  
**Spring 2012:** BIO 161 Evolution and Biodiversity Laboratory, University of Miami  
 (Teaching Assistant)  
**Spring 2007:** BIO 161 Evolution and Biodiversity Laboratory, University of Miami  
 (Teaching Assistant)

**TEACHING OUTREACH**

- Summer 2015:** Boston Wise Summer Camp for Chinese Exchange Students  
**Fall 2014:** Plant Physiology Laboratory for High School Teachers, Life Sciences Outreach at Harvard University