

# Dr Huanyuan Zhang-Zheng

St Catherine's College, Manor Road, Oxford, OX1 3UJ; Email: hyzhang1996@gmail.com

**ACADEMIC INTEREST:** African forests ecology; Carbon cycle modelling; Plant functional traits;

## WORK

### Research Associate, University of Oxford & UC Berkeley

- ✧ Global Ecosystem Monitoring (GEM) Forests carbon cycle database Oxford, UK
- ✧ Report to: Prof Yadvinder Malhi CBE FRS, Dr Jesus Aguirre-Gutierrez, Prof Lara M. Kueppers Sept.2023-Sept.2024
- ✧ Main Research: Compile GEM forests carbon cycle database, conduct data-model comparison of forests gross primary productivity, and meta-analysis of forests productivity across many tropical sites using random-forest

### Research Associate, University of Oxford

- ✧ Ghana Kwahu nature recovery site, historical forest cover assessment Oxford, UK
- ✧ Report to: Prof Constance McDermott June.2023-Sept.2023
- ✧ Main Research: We digitize Royal Air Force 1946 aerial photos taken in Ghana and 1953 land use maps. Using deep learning, we map the forests cover of Ghana in the 1950s.

## EDUCATION

### University of Oxford

Oxford, UK

- ✧ *DPhil Geography and the Environment* Sept.2019-April.2023
  - ✧ *Principle supervisor: Prof Yadvinder Malhi CBE FRS*
  - ✧ *Co-supervisors: Prof Iain Colin Prentice FRS; Dr Imma Oliveras*
- Thesis title: Gross primary production of West African tropical forests

### Imperial College London

London, UK

- ✧ *MRes Ecosystem and Environmental Change (71.6%, Distinction)* Sept.2018-Sept.2019
- ✧ **Core Modules:** Spatial Analysis and GIS; Biological Computing in R; Biogeochemistry
- ✧ **Current Research:** Incorporating factors of soil fertility and mycorrhizal type in land CO<sub>2</sub> uptake prediction model, utilizing data from both FACE and chamber experiments.

### University of Birmingham

Birmingham, UK

- ✧ *BSc Environmental Science, first class honor, 74.17%, Rank 2/27* Sept.2016-Jul.2018
- ✧ **Core Modules:** Undergraduate Dissertation (76%), Modelling wetland environment (90%), Geomatics for Geographers (95%), Ecological Systems (76%), Advanced Research Methods (74%), Environmental Science Field Course (71%), Professional Placement (78%)

### Sun Yat-sen University

Guangzhou, China

- ✧ *BSc in Environmental Science, 3.6/4.0* Sept.2014-Jul.2016
- ✧ **Modules:** Environmental Chemistry (94%, rank 1st), GIS and Environmental Information System (91%, rank 1st), Environmental Sociology and Ethics (98%, rank 1st), Computer language (93%, rank 1st), Resources of the Earth (92%), Digital Video Technology (93%), System Innovation and Application (94%), Linear Algebra (97%), Essential Biology (94%)

## PUBLICATIONS

1. Zhang-Zheng, H., Malhi, Y., Gvozdevaite, A., Peprah, T., Boackye, M., Ziemska, K., ... & Oliveras, I. (2023). Photosynthetic and water transport strategies of plants along a tropical forest aridity gradient: a test of optimality theory. bioRxiv, 2023-01. <https://doi.org/10.1101/2023.01.10.523419> (Under review at New Phytologist)
2. Zhang-Zheng, H., Adu-Bredu, S., Duah-Gyamfi, A., Moore, S., Addo-Danso, S. D., Ibrahim, F., ... & Malhi, Y. (2023). Contrasting carbon cycle along tropical forest aridity gradients in W Africa and Amazonia. bioRxiv, 2023-07. <https://doi.org/10.1101/2023.07.02.547401> (Under review at Nature Geoscience)
3. Zhang, Z., Wang, W., Qi, J., Zhang, H., Tao, F., & Zhang, R. (2018). Priming effects of soil organic matter decomposition with addition of different carbon substrates. Journal of Soils and Sediments. <https://doi.org/10.1007/s11368-018-2103-3>

# Dr Huanyuan Zhang-Zheng

St Catherine's College, Manor Road, Oxford, OX1 3UJ; Email: hyzhang1996@gmail.com

4. Zhang, Z., Zhang, R., Zhou, Y., Cescatti, A., Wohlfahrt, G., Sun, M., ... Chen, G. (2018). A temperature threshold to identify the driving climate forces of the respiratory process in terrestrial ecosystems. *European Journal of Soil Biology*, 89, 1–8. <https://doi.org/https://doi.org/10.1016/j.ejsobi.2018.08.001>
5. Terrer, C., Phillips, R., Hungate, B., Rosende, J., Pett-Ridge, J., Craig, M., van Groenigen, K., Keenan, T., Sulman, B., Stocker, B., Reich, P., Pellegrini, A., Pendall, E., Zhang, H., Evans, R., Carrillo, Y., Fisher, J., Van Sundert, K., Vicca, S. and Jackson, R. (2021) A trade-off between plant and soil carbon storage under elevated CO<sub>2</sub>. *Nature*, 591(7851): 599-603.
6. Xin, H., Jackson, T., Cao, Y. et al. Spatial pattern analysis of forest trees based on the vectorial mark. *J. For. Res.* (2021). <https://doi.org/10.1007/s11676-021-01417-6>
7. Zeeshan, M., Zhang, H., Sha, L., Palingamoorthy, G., Phyto, Z., Chen, Z., Quadros, G. and Azeez, P. (2021) Environmental change perception and engagement of mountainous people in Western Himalayas, at Rajouri District, Jammu and Kashmir, India. *Weather, Climate, and Society*, 13(4): 847-857.
8. Zhang, Z., Zhang, H., Cui, Z., Tao, F., Chen, Z., Chang, Y., Magliulo, V., Wohlfahrt, G. and Zhao, D. (2021) Global consistency in response of terrestrial ecosystem respiration to temperature. *Agricultural and Forest Meteorology*, 308-309. 108576.
9. Zhang, H., Prentice, I.C., Terrer, C., Keenan, T. and Franklin, O. (2020) Can elevated CO<sub>2</sub> experiments explain the magnitude of the land carbon sink? EGU General Assembly 2020, Online, 4-8 May 2020, EGU2020-11589.
10. Zhang, H. (2021) ARTofR: make pretty comments and headers. R package version 0.2.

## INVITED TALK

**How does carbon fertilization on primary productivity propagate into biomass and soil carbon: A data-model comparison** **Zurich, Switzerland**  
*16<sup>th</sup> August 2022*

Invited by: Prof Benjamin D. Stocker

Spoke at: Department of Environmental System Science, ETH Zurich

**How does carbon fertilization on primary productivity propagate into biomass and soil carbon: A data-model comparison** **Leeds, UK**  
*24<sup>th</sup> May 2022*

Invited by: Prof Simon Lewis

Spoke at: School of Geography, University of Leeds

**Carbon allocation of N-stressed plants under elevated CO<sub>2</sub>** **Yunnan, China**  
*30<sup>th</sup> October 2020*

Invited by: Prof Zexin Fan

Spoke at: Xishuangbanna Tropical Botanic Garden, Chinese Academy of Science

**Why Models Underestimate Tropical Forest Productivity: A Case Study In West Africa** **Coimbatore, India**  
*6<sup>th</sup> July 2023*

Invited by: Dr Barbara Bomfim

Symposium talk at the Association of Tropical Biological Conservation Conference (ATBC)

## CONFERENCE

**Can elevated CO<sub>2</sub> experiments explain the magnitude of the land carbon sink?** **Online**  
*May 2020*

Conference talk, European Geosciences Union, 2020

**Comprehensive carbon cycle assessment along a rainfall gradient in West Africa** **Liverpool, UK**  
*December 2021*

Conference talk, British Ecology Society, 2021

**Plant photosynthesis and water transportation strategies along an aridity gradient explained with optimality theory** **Cartagena, Colombia**  
*July 2022*

Conference talk, Association of Tropical Biological Conservation

**Indent and Comment Are Critical for Readability and Reproducibility** **Cambridge, UK**  
*July 2023*

Conference poster, Institute of Computing for Climate Science Summer School

## TEACHING

**Data workshop on climate time series** **Yunnan, China**  
*October 2020*

Venue: Xishuangbanna Tropical Botanic Garden, Chinese Academy of Science

I taught a one-day data workshop on using R and google earth engine to retrieve

climate data for given study sites, as a module in a month-long field course

(AFECX). Dr Mohd Zeeshan participated in the workshop and I subsequently

worked with him on one of his PhD manuscripts, resulting in a journal publication

# Dr Huanyuan Zhang-Zheng

St Catherine's College, Manor Road, Oxford, OX1 3UJ; Email: hyzhang1996@gmail.com

(see above)

## **Data workshop on systematic field data collection using iPhone APP EpicCollect 5**

**Yunnan, China**  
*October 2020*

Venue: Xishuangbanna Tropical Botanic Garden, Chinese Academy of Science  
I taught another one-day data workshop to about 10 students with mixed backgrounds, from undergraduate to PhD.

## **Global Ecosystem Monitoring (GEM) Carbon cycle quantification workshop**

**Oxford, UK**  
*June.2021-Nov.2021*

Venue: Online

Together with Dr Guillaume Delhay and Dr Terhi Ruita, we taught 8 African PhD students, from the Republic of the Congo, Gabon, and South Africa. The students have conducted fieldwork following a carbon budget protocol that I am working on. I provided instructions on data analysis.

## **Global Ecosystem Monitoring (GEM) Carbon cycle quantification workshop**

**Kumasi, Ghana**  
*February 2022*

Venue: CSIR-Forestry Research Institute of Ghana

The same workshop as above, I taught 4 master students from Ghana.

## **Co-supervisor, MSc course Biological conservation and management, University of Oxford.**

**Oxford, UK**  
*July.2022-September.2022*

Venue: University of Oxford

I am a co-supervisor for Mr Francisco Navarro Rosales's MSc dissertation, working on the carbon budget of Brazilian Cerrado. I remained as a co-supervisor in his DPhil project, working on the same topic, at the Department of Biology, Oxford.

## **Co-supervisor, MRes Ecosystem and Environmental Change, Imperial College London**

**Ascot, UK**  
*Sept.2020-Sept.2022*

Venue: Silwood Park, Imperial College London

The mentorship with Miss MingXue Tang started with her undergraduate at The University of Bristol. I encouraged her to apply for the MRes at Imperial College London and act as a co-supervisor in her dissertation, focusing on European tree migrations during the Holocene. She earned a distinction from her Master course and moved to the University of Reading for a PhD.

## **Undergraduate Methods in Physical Geography (Ecology)**

**Oxford, UK**  
*Jan.2020-Mar.2020*

Venue: University of Oxford

Teaching assistants, where we facilitate group discussions after lectures.

## **Geographical Techniques: Statistics for Geographers (1<sup>st</sup>-year Undergraduate module)**

**Oxford, UK**  
*Oct.2022-Dec.2022*

Venue: University of Oxford

Teaching assistants, where we lead practical sessions and prepared students for examinations.

## **Physical Geography taster lectures for Year 12 students visiting St Catherine's College**

**Oxford, UK**  
**May 2023**

Venue: University of Oxford

I delivered taster lectures to several groups of Year 12 students visiting St Catherine's College on forests' roles in taking up atmospheric carbon

## **Fieldwork and Research Grant**

### **Understanding Symbiosis Between Transplanted Coral (*Acropora Cervicornis*) and Herbivores in Akumal, Mexico**

**Akumal, Mexico**  
*July.2017-Sept.2017*

Supervisor: Dr Mark Ledger, Dr Ian Hendy, Jenny Mallon

Originally brought up the concept of coral-herbivores-algae positive feedback, a new and possible coral reef

restoration method under "coral-macroalgae" phase shift.

Designed the transplantation experiment device and conducted an underwater in-situ experiment

t in Mexico after systematic investigation in previous research and on-the-spot information.

### **Influences of Climate Extremes on Avian Communities in Urban Areas**

**Birmingham, UK**  
*Aug.2017-Aug.2018*

Supervisor: Prof John Sadler

Collected blue tit nest boxes and recorded hatch and fledging data in many parks around Birmingham; analyzed the correlation between extreme climate and hatch success.

### **Leaf to stem biomass partitioning from seedlings to adults**

**Yunnan, China**  
*Oct.2019-Dec.2019*

Supervisor: Prof Kyle Tomlinson

# Dr Huanyuan Zhang-Zheng

St Catherine's College, Manor Road, Oxford, OX1 3UJ; Email: [hyzhang1996@gmail.com](mailto:hyzhang1996@gmail.com)

Collect shoot samples from trees in Xishuangbanna Tropical Botanic Garden and measure several key leaf traits.

## Remote sensing of Ghana forests structure and dynamics

Ghana

Supervisor: Dr Jesus Aguirre-Gutierrez

Jan.2022-Feb.2022

Fly drones equipped with LiDAR and multi-spectral sensors, and collect soil samples for eDNA sequencing.

## 2020 Xishuangbanna Tropical Botanical Garden Open Funding, 100,000 CNY

Yunnan, China

Project: Ailaoshan station elevated carbon dioxide greenhouse experiment

Oct.2020-Oct.2022

Collaborator: Prof Zexin Fan, Dr Peili Fu

Apply for funding and design greenhouse elevated CO<sub>2</sub> experiments, train field personnel on plants productivity measurements, manage field data collection

## African-Oxford Catalyst Grant, awarded by African-Oxford Initiative, 5000 GBP

Ghana

Nov.2022-Dec.2023

Project: The impact of El-Nino drought on West African forests carbon budget

Collaborator: Dr Akwasi Dgyamfi

Apply for funding, design field experiments, train field personnels on quantifying forests carbon budget, analyze data and paper writing

## INTERNSHIP and PLACEMENT

### The Equality, Diversity and Inclusion (EDI) committee at Department of Geography and the Environment, University of Oxford

Oxford, UK

Oct.2022-Present

DPhil representative

### Ailaoshan Field Station, at Xishuangbanna Tropical Botanic Garden

Yunnan, China

Visiting scholar

Sept.2020-Sept.2021

Designed a greenhouse elevated carbon dioxide experiment

### Public Health England

Birmingham, UK

Internship, conducting a project on the health effect of odour masking agents.

June - Sept.2018

### Birmingham and Black Country Mammal Society

Birmingham, UK

Publicity Secretary, Propaganda and maintaining the official website:

Sept.2017-Sept.2018

[bbcmammals.org](http://bbcmammals.org); Also, being a coordinator in events organizing.

### The Love League of Sun Yat-sen University

Guangdong, China

Vice-president, arranged expedition and summer schools to support education in needy areas (east Guangdong Province) in China, the summer school in NanAo

Dec.2014-Sept.2016

County enrolled more than 40 teachers and benefitted more than 300 children in most of the events.

## SCHOLARSHIP and HONORS

- ✧ Environmental Change Institute travel fund, University of Oxford, 1000 GBP
- ✧ Tang scholarships (Awarded by China Oxford Scholarship Fund), 7000 GBP
- ✧ Henfrey scholarship on Chinese studies (Awarded by St Catherine's College, Oxford), 150000 GBP
- ✧ Highly recommended entry by the [Global Undergraduate Award](#)
- ✧ Awarded Gold Level BIFoR Volunteer, Birmingham Institute of Forest Research
- ✧ National 3rd Class and Enterprise Scholarship
- ✧ Awarded 'Best Newcomer' in Rep Academy, the University of Birmingham

## ADDITIONAL INFORMATION

**Core Skills:** Proficiency in Matlab and SPSS; R; ArcGIS; QGIS; Python; Excel; Adobe Photoshop; Illustration; Audition; After Effect; ENVI; JMP (Based on SAS); HTML; CSS; VBA; Familiar with Linux and High-performance computer (HPC).

**Qualification:** PADI Dive Master; PADI Freediver

**GRE:** Quantitative 168/170; Verbal 150/170; Analytical Writing 3.0/6.0

**Language Skills:** English (Living in the UK for 8 years); Chinese Mandarin (native);