

Taochun Sun

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Education

2020–2025	Master Degree	Department of Earth System Science	Tsinghua University
2016–2020	B.E.(3.69/5.0, 1/20+)	CGIST	Capital Normal University
2016–2020	Minor	College English Department	Capital Normal University

Publications (citation: 1800+)

Selected Journal Articles:

1. Liu, Z., Ciais, P., Deng, Z., ..., **Sun T**, *et al.* Near-real-time monitoring of global CO₂ emissions reveals the effects of the COVID-19 pandemic. *Nat Commun* 11, 5172 (2020). **(1071 citations)**
2. Lu C, Adger W, Morrissey K, Zhang S, Venevsky S, Yin H, **Sun T**, *et al.* Scenarios of distributional dimensions of health co-benefits from decarbonizing urban transport. *The Lancet Planetary Health*, 2022, 6(6): e461-e474. **(13 citations)**
3. Liu Z, Deng Z, Zhu B, ..., **Sun T**, *et al.* Global patterns of daily CO₂ emissions reductions in the first year of COVID-19[J]. *Nature Geoscience*, 2022: 1-6. **(78 citations)**
4. Davis, S.J., Liu, Z., Deng, Z., ..., **Sun T**, *et al.* Emissions rebound from the COVID-19 pandemic. *Nature Climate Change* (2022). <https://doi.org/10.1038/s41558-022-01332-6> **(71 citations)**
5. Liu Z, **Sun T**, Yu Y, *et al.* Near-real-time carbon emission accounting technology toward carbon neutrality[J]. *Engineering*, 2022. **(70 citations)**
6. Deng Z, Ciais P, Tzompa-Sosa Z A, ..., **Sun T**, *et al.* Comparing national greenhouse gas budgets reported in UNFCCC inventories against atmospheric inversions[J]. *Earth System Science Data*, 2022, 14(4): 1639-1675. **(115 citations)**
7. Mittakola R T, Ciais P, Schubert J E, ..., **Sun T**, *et al.* Drivers of natural gas use in US residential buildings[J]. *Science Advances*, 2024, 10(14): eadh5543.
8. **Sun T***, He K, Yu L, Hughes, A.C*. Ecological Integrity Index, timely annual tracking of biodiversity change[J]. *Scientific Data* (under review)

Selected Conference Abstracts & Papers:

1. **Sun T**, Geng Y, Rohith T, *et al.*, Carbon Monitor AutoForecast-Asia: a real-time emission estimates of the residential sector for Asian major emitters with an automatic machine learning framework. EGU General Assembly 2023 (**oral presentation**)

Books:

1. Climate change strategy: China's road to carbon neutrality (participant of the editorial committee)
2. [Global daily carbon emissions report 2023](#) (participant of the editorial committee)

Mentorship

- ✓ **2023: Advisor of the historical daily emission reconstruction project for: Zihan Qiu (artificial intelligence class, Tsinghua University)**

I help Zihan understand the scientific question of this project (e.g., significance, methodology, etc.). I use case studies of coding in Python to make Zihan familiar with basic use of Python in the field of carbon emissions. Details of this project are published in preprint: <https://arxiv.org/abs/2407.20057>

- ✓ **2022: Advisor of the city emission inventories project for: Jinpyo Hong (now master student in Brown University), Zhongyan Li (now master student in Stanford University)**

This project focuses on accurately inventorying city-level emissions. I help Jinpyo and Zhongyan understand how to match urban data by geo-coding in Python using the Google API service, and basic knowledge of how to compile the inventories. In addition, city-level emissions data need to be crawled, and I help them finish via requests and beautiful soup libraries in Python. I also revise and provide suggestions for the personal statement of Zhongyan when she is applying for graduate school.

Honors and awards

- ✓ 2022: Scholarship of **comprehensive excellence** in Tsinghua University (second class)
- ✓ 2021: Scholarship of **excellent student work** in Tsinghua University (second class)
- ✓ 2020: [Outstanding members of Tsinghua Summer League School for Graduate Students](#) (36/250+)
- ✓ 2020: Outstanding graduates in Beijing

Selected Student Work

- ✓ **Author of the [submission to inputs of the UNFCCC first global stocktake](#) by the Carbon Monitor team (2022)**

I write the entire submission document by understanding text of the Paris Agreement and integrating materials from the team, referring to previous submissions archived in the United Nations global stocktake submission system.

- ✓ **Teaching Assistant (internship certificate awarded) of the course *Key Topics in Green Finance* in the [Schwarzman College](#) (2021)**

Specific works: I contact each student via email before and during the course, and report issues to the professor per lecture. I coordinate the IT and administration issues with administration in the college. I organize the sign-in procedure and assignments in the official Blackboard system of the college. I help professor calculate final scores and grade and inform students, and provide course feedback to the college per lecture.

College feedback: This course is highly appreciated and have many auditor students inside the college. I'm acknowledged by the staffs in the college either.

- ✓ **Committee member of the [Sino-US Youth Dialogue on Climate Change](#), and the [Global Youth Summit on Net-Zero Future](#). (2021)**

Specific works: I'm responsible for foundation liaison, outreach, preface writing of the official conference handbook, and some bilingual work of official videos, contributing as the role of deputy minister of international communication department in Graduate Union of Tsinghua that honors me the scholarship of excellent student work.

Widespread impacts: I receive thank letters from the allied schools of Columbia, Yale and Oxford in outreach. The official website design, and the personal web publicization are retweeted by Philippe Ciais, the foreign academian of CAS.

Miscellaneous

Language: Chinese (native), English (proficient), Deutsch (amateur), Latin (amateur)

Techs: Python (numpy, pandas, matplotlib, cartopy, scikit-learn, pytorch), JavaScript (Google Earth Engine), R, ArcGIS, Shell, LaTeX

Reviewer: Geophysical Research Letters, Carbon Balance and Management, Atmospheric Pollution Research

Legal Science (program certificate awarded): introduction to legal science (A-), international environmental law (in English, undergrad level) (B), energy law (B+), finance and financial law (B), international environmental law (graduate level) (B)

Hobbies: [photography](#), [astronomy](#), basketball (department team), [volunteer](#) (Datapi THU translation group cover 2000+ read)