Taochun SUN

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Peer Feedback Tags: Strong analytical *problem-solving* | Clear *communicator* & *team-oriented* | Curious, exploratory | Strong responsibility

Role Fit

【Experience】: 2+ years' experience supporting **international projects** during studies, with deep exposure to **ESG and environmental research** (carbon neutrality and biodiversity monitoring); adept at **data analysis**, cross-cultural communication, and coordinating **ESG/environmental projects (e.g., high-level conference)**.

【Professional Software】: ArcMap / ENVI / ERDAS (geospatial industries related), Microsoft Office, etc..

【Project Management】: led small teams through efficient planing, resource integration, and issue-resolving.

【Computer Language】: Python, (AI-assisted) R/Matlab/C/C++, with data-driven decision-making capability.

- **Python:** built-in functions, **data analysis libraries** (Numpy, Pandas, Xarray, Matplotlib, Cartopy, Seaborn, Scikit-Learn, Statsmodel, etc.), deep learning libraries (TensorFlow, Pytorch, etc.), with source-code learning experience.
- **R/Matlab/C/C++ (AI-assisted):** ggplot2, matlab image processing, C/C++ fundamentals (boost library).
- **Google Earth Engine: satellite big-data analyses, with API documentation learning experience.**

【Data Application】: leveraged **strong data analysis and problem-solving skills** to publish multiple influential, peer-reviewed papers as corresponding author, first author, and co-author (see **Publications**). Work involved extensive **big-data processing and computation**, including collecting/cleaning structured/unstructured data and geospatial big-data workflows on Google Earth Engine.

Education & Qualifications

2020.09–2026.06	**Tsinghua University**	**DESS (ecology)**	**master student**
2016.09-2020.06	**Capital Normal University**	**remote sensing (1/20+) & English**	**dual-bachelor degree**

【Awards】: outstanding graduates in Beijing, second-class Tsinghua university-level scholarship (comprehensive excellence, student work), outstanding members of Tsinghua Summer League School for Graduate Students, high-impact journal reviewer with reviewer certificates and ORCID records (Geophysical Research Letters, Carbon Balance and Management, Atmospheric Pollution Research).

【Mentorship】: Zihan QIU, Han WANG (2023, Tsinghua artificial intelligence class), Jinpyo Hong (2022, Tsinghua computer science undergraduate, Brown university master student of data analytics), Zhongyan Li (2022, Tsinghua Weiyang College, Stanford university master student of atmosphere/energy program).

Student Work

【Summary】: Actively participated in student organizations and social work practice; collaborated with supervisors and multiple partner stakeholders to drive task delivery and achieve objectives.

- **International Support:** Xiaoyan Online (proofreading), DataPi THU (proofreading, cover article), etc.
- **Teaching Assistant:** Climate X Leadership program in the Institute of Climate Change and Sustainable Development, Tsinghua University (2022), Schwarzman College (Internship, Key Topics in Green Finance) (2021), etc.
- **ESG Consulting:** contributed to a confidential ministry-level project, tracking domestic and international ESG developments, industry trends, and research progress, and systematically collecting and curating the information.
- **Law:** study experience of international environment law, energy law in China and finance law in China, with program certificate awarded. Familiar with international corporate-sustainability principles and standards, and with methodologies for drafting thematic reports for regulatory landscape reviews.
- **Student Organizations:** Committee member of Global Youth Summit on Net-Zero Future (outreach with allied schools and receive thank letters from Columbia, Yale and Oxford universities, official website design, personal web publicization retweeted by Philippe Ciais, the foreign academian of CAS) (2021). Group Leader in the department of international communications in Graduate Union of Tsinghua (one of the departmental candidates of the star of Graduate Union of Tsinghua) (2021).

Publications

【Conference Abstract】: 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)

【 Publications 】 : 17 publications overall, including 1 conference abstract, 1 co-corresponding-author paper, 1 co-first-author paper, 1 second-author paper and 6 high-impact papers (with *noted citations*).

Publication Details

- **Corresponding authorship (*: Co-corresponding authorship) :**
  - ✓ **Sun T**#*, Hughes, A.C#*, He K, Yu L*. Ecological Integrity Index, timely annual tracking of biodiversity change[J]. Scientific Data (accepted)

- **First-authorship (#: Co-first-authorship) :**
  - ✓ **Sun T**#*, Hughes, A.C#*, He K, Yu L*. Ecological Integrity Index, timely annual tracking of biodiversity change[J]. Scientific Data (accepted)

- **Second-authorship:**
  - ✓ Liu Z, **Sun T**, Yu Y, et al. Near-real-time carbon emission accounting technology toward carbon neutrality[J]. Engineering, 2022. (70 citations)

- **Co-authorship**:
  - ✓ 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)
  - ✓ 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)
  - ✓ 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)
  - ✓ 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)
  - ✓ Liu Z, **Sun T**, Yu Y, et al. Near-real-time carbon emission accounting technology toward carbon neutrality[J]. Engineering, 2022.
  - ✓ 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)
  - ✓ 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.
  - ✓ Dou X, Deng Z, **Sun T**, et al. Global and local carbon footprints of city of Hong Kong and Macao from 2000 to 2015[J]. Resources, Conservation and Recycling, 164: 105167.
  - ✓ Dou X, Liao C, Wang H, et al. Estimates of daily ground-level NO2 concentrations in China based on Random Forest model integrated K-means[J]. Advances in Applied Energy, 2021, 2: 100017.
  - ✓ Liu Z, Cui D, Deng Z, et al. Impact on China's CO2 emissions from COVID-19 pandemic[J]. Kexue Tongbao/Chinese Science Bulletin, 2021: 1912-1922.
  - ✓ Dou X, Wang Y, Ciais P, et al. Near-real-time global gridded daily CO2 emissions[J]. The Innovation, 2021: 100182.
  - ✓ Cui D, Liu Z, Duan C C, et al. Daily CO 2 emission for China's provinces in 2019 and 2020[J]. Earth System Science Data Discussions, 2021: 1-31.
  - ✓ Lu C, Zhang S, Tan C, et al. Reduced health burden and economic benefits of cleaner fuel usage from household energy consumption across rural and urban China[J]. Environmental Research Letters, 2022, 17(1): 014039.
  - ✓ Li T, Wang L, Qiu Z, ..., **Sun T**, et al. Global daily CO2 emissions from 1970 to 2024. Scientific Data (accepted)
  - ✓ Wang L, Sha Z, Li T, **Sun T**. Fine-resolution Carbon Dynamics Mapping Reveals Unequal Contributions to Carbon Neutrality within Chinese Cities. Carbonsphere (under review)