Quick Facts of scholarly contributions
Dr. Hanqin Tian

Research:

- Publications: 436 (total) including **400** peer-reviewed journal articles, 30+ papers in highly impact journals: *Nature/Science/PNAS and their sister journals (e.g., Nature Climate Change, Nature Geoscience, Nature Communication, Nature Food, Science Advance)*.
- IMPACT: Total Citations: **55K+**; H-index of **112** (Google Scholar). (09/01/2024)
- Ranked among the world's most influential climate scientists by the **Reuters List** (2020)
- Research Grants: 41 grants totaling over $**30** million dollars (Funding Sources: NSF, NASA, DOE, NOAA, USDA, EPA, USGS, etc).

Teaching and Advising:

- Taught 21 courses (16 graduate and 5 undergraduate level) and developed a sequence course of Climate Science (I & II) for undergraduates at Auburn.
- Served as major/co-major professor for 30 Ph.D. graduate students (20 completed).
- Trained 15 postdoctoral fellows and 36 visiting scholars.
- Over 50 of former Ph. D. students, postdoctoral fellows and research associates are now faculty members at various universities in US and other countries.
- Three former Ph.D. students received the NSF CAREER awards.

Selected Awards and Honors:

- **Highly Cited Researcher** (2022 -), ranking in the top 1% by citations of cross-fields globally (Web of Science).
- **Fellow**, Ecological Society of America (ESA), 2022
- **Fellow**, American Geophysical Union (AGU), 2020.
- **Andrew Carnegie Fellow (Brainy Award)**, 2019.
- **Fellow**, American Association for the Advancement of Science (AAAS), 2016.
- **Southeastern Conference (SEC) Faculty Achievement Award, 2016** (SEC consists of 14 universities in the southeastern US).
- **Creative Research and Scholarship Award** (2011) in Sciences, Medical Sciences, Engineering, & Agriculture (the highest recognitions for scholars at Auburn University).
- **Solon and Martha Dixon Endowed Professorship (2010-present)**, **A.U. Alumni Professorship (2007-2012)**, Auburn University.

Selected Leadership and Services:

- **Inaugural Director,** Center for Earth Suystem Science and Global Sustainability (CES^3), Boston College (Established 12/05/2023)
- **Co-Chair,** International Scientific Committee for Global N_2O Budget Assessment, co-sponsored by Global Carbon Project and International Nitrogen Initiative (since 2016).
- **Coordinating Lead Author** for the International Nitrogen Assessment, UNEP/GEF/INMS.
- **Founding Director** of International Center for Climate and Global Change research at Auburn University (since 2010).
- Editorial Services: **Chief Editor** for *Earth System Science Data* (2022-Present).

Hanqin Tian

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Department of Earth and Environmental Sciences,
Boston College, Chestnut Hill, MA 02467, USA.
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EDUCATION

- **Postdoctoral Fellow** in Ecosystem Science and Modeling, The Ecosystems Center of Marine Biological Laboratory in Woods Hole, Massachusetts (1996-1998).
- **Ph.D**. in Environmental Biology (Systems Ecology), State University of New York, College of Environmental Science and Forestry and Syracuse University (1996).
- **M.S**. in Agricultural Science, Chinese Academy of Agricultural Sciences (1986).
- **B.S.** in Agricultural Science, Zhejiang University (Former Zhejiang Agricultural University) (1982).

PROFESSIONAL EXPERIENCE

- **Inaugural Dirrector** (2023 -), Center for Earth System Science and Global Sustainability (CES^3), Boston College in Partnership with Global Carbon Project (GCP)
- **Institute Professor of Global Sustainability (**9/2022 -), Schiller Institute of Integrated Science and Society, Department of Earth and Environmental Sciences, Boston College, Chestnut Hill, MA 02467, USA.
- **Chair and Leader** (1/2016 – 8/2022)**,** The Auburn University's Interdisciplinary Cluster of Climate-Human-Earth System Sciences (CHESS), A University Initiative under both Office of Provost and Office of Vice President for Research, Auburn, AL 36849.
- **Director** (1/2010 – 8/2022), International Center for Climate and Global Change Research, Auburn University, Auburn, AL 36849, USA.
- **Solon and Martha Dixon Endowed Professorship** (10/2010 – 8/2022), College of Forestry, Wildlife and Environment, and Interdisciplinary Graduate Program in *Earth System Science* (ESS), Auburn University, Auburn, AL 36849.
- **Visiting Scientist/Visiting Professor** (2020-2021), MIT Center for Global Change Science and MIT Joint Program on Science and Policy of Global Change, Cambridge.
- **Adjunct Professor of Computational Science** (2008- 2022), Department of Computer Science and Software Engineering, Auburn University, Auburn, AL 36849.
- **Alumni Professorship** (8/2007 –7/2012), College of Forestry, Wildlife and Environment, Auburn University, Auburn, AL 36849, USA.
- **Professor** (6/2003 - 8/2022), College of Forestry, Wildlife and Environment, Auburn University, Auburn, AL 36849, USA

- **Associate Professor** (8/2001 – 5/2003), Department of Ecology and Evolutionary Biology, The University of Kansas, Lawrence, KS 66045, USA.
- **Staff Scientist** (5/1998–7/2001), The Ecosystems Center, Marine Biological Laboratory, Woods Hole, Massachusetts.
- **Research Associate** (10/1988 - 12/1991), College of Forest Resources, Beijing Forestry University.
- **Assistant Research Professor** (7/1986 - 8/1988), Department of Agronomy and Meteorology, China National Rice Research Institute, Hangzhou.
- **Research Associate** (8/1982 - 8/1983), Institute of Agricultural Science, Jinyun, Zhejiang.
- **Research Assistant** (1/1992 - 8/1995), College of Environmental Science and Forestry, State University of New York, Syracuse.

HONORS AND AWARDS:

- **Highly Cited Researcher** (2022 -), ranking in the top 1% by citations of cross-fields globally, Clarivate Web of Science.
- **Fellow,** Ecological Society of America (ESA), 2022
- **Fellow**, American Geophysical Union (AGU), 2020
- **Andrew Carnegie Fellow (Brainy Award)**, 2019
- **Fellow**, American Association for the Advancement of Science (AAAS), 2016
- **Southeastern Conference (SEC) Faculty Achievement Awards, 2016** (SEC consists of 14 universities in the southeastern US).
- **The world's most influential climate scientists** (2021) (ranked 118th out of 1,000 international scientists by the international news agency Reuters).
- **Harry Murphy Award for Excellence in Research, Auburn University, 2015.**
- **Recognition of Contribution to National Climate Assessment** by White House Office of Science and Technology Policy, 2012
- **Creative Research and Scholarship Award (**2011) in the Sciences, Medical Sciences, Engineering, and Agriculture category, Auburn University (one of highest recognitions for scholars at Auburn University).
- **Solon and Martha Dixon Endowed Professorship (2010-present)**, School of Forestry and Wildlife Science, Auburn University, 2010.
- **Global Change Science Award (2008)**, Ye Duzheng Global Change Science Foundation and Chinese Academy of Sciences (International Level)
- **A.U. Alumni Professorship (2007-2012)**, Auburn University (one of 5 distinguished professors at university level selected each year)
- **Pao Yu-Kong Chaired Professorship (Visiting in year 2008)**, Zhejiang University, Hangzhou, China
- **National Outstanding Young Scientist Award** *(B) (Equivalent to NSF CAREER Award)*, National Science Foundation of China, 2001.

TEACHING, ADVISING AND TRAINING:

Developed three courses and taught 21 courses (16 graduate and 5 undergraduate level)

Boston College (2022 -)

EESC3311/5311 Earth System Science and Global Sustainability
SCHI3020 Integrating Science and Society: A Tale of Four Nobels

EESC5565 Terrestrial Biosphere Modeling
SCHI5020 Exploring the Climate-Energy-Sustainability-Policy Nexus

Auburn University (2003 -2022)

Undergraduate level

FOWS 1040/1050 **Climate Science (I & II)** (I led the development of a sequence of courses for undergraduates as a team-teaching model).

Graduate Level

FORY 7970b – **Climate Change: Science and Policy**
ESSI 8000 **Earth System Science and Global Change** (team-teaching model)
ESSI 8100 **Earth System Observation and Analysis**
FORY 7250 **– Advanced Terrestrial Ecosystem Modeling**
FORY 7930 **- Remote Sensing of Terrestrial Ecosystems**
FORY 8970b **– Biogeochemical System Modeling**
FORY 8970a **- Global Biogeochemical Cycles**
FORY 8930 **- Global Change Ecology**
FORY 7210 **- Ecosystem Ecology**
FORY 7970a **- The Art of Interdisciplinary Research in Global Change and Earth System**

The University of Kansa (2001-2003)

Undergraduate level

BIOL 414 – **Principle of Ecology**
BIOL 415 – **Field and Laboratory Methods in Ecology**
BIOL 656 – **Ecosystem Ecology**

Graduate Level

FORY 8930 **- Global Change Ecology**
BIOL 701 **- Terrestrial Ecology**
BIOL 714 **– Community and Ecosystem Ecology**

- Teaching evaluation by students ranges from 5.0 to 6.0 on a 6-point scale.
- Served as major/co-major professor for 30 Ph.D. graduate students (20 completed)
- Trained 15 postdoctoral fellows and 35 visiting scholars.
- over 50 of former Ph. D. students, postdoctoral fellows and research associates are now faculty members at various universities in US and other countries.
- Three former graduate students (Chaoqun Lu, Wei Ren, Xiaofeng Xu) received Early Career Ecologist Award, and one graduate student (Kamaljit) received Outstanding Graduate Student Award from Ecological Society of America
- Three former Ph.D. students (Wei Ren, Chaoqun Lu, Xiaofeng Xu) received the NSF CAREER awards.
- Key Contributor for the development of new Undergraduate Degree in Geospatial and Environmental Informatics (GSEI) and interdisciplinary Ph.D. Program in Earth System Science (ESSI).

RESEARCH PROJECTS (***Total funded - $30 million including $24 million extramural funds and $6 million internal funds***)

1. Project Title: Enhancing crop productivity and reducing nitrous oxide emissions in corn and soybean cropping systems (**Co-PI**), funded by US Department of Agriculture, project period: 2022-2025, $502,853.
2. Project Title: "INFEWS U.S.-China: Integrated systems modeling for sustainable FEW nexus under multi-factor global changes: Innovative comparison between the Yellow River and Mississippi River Basins" (**PI**), joint supported by NSF (USA) and NSFC (China), project period: 2019-2024, ~1 million contributing from $500K (from NSF) + about $500K (from NSFC).
3. Project Title: "Integrating multi-scale observations, machine learning and systems modeling for coastal Monitoring, Assessment, and Prediction (Coast-MAP) in the context of multiple stresses" (**Co-PI**), NOAA and AL Center of Excellence, project period: 2021-2025, $450K
4. Project Title: "CHRP2016: Predicted impacts of climate change on the success of alternative management actions in the Chesapeake Bay: Using multiple community models in support of hypoxia management decision-making", (Auburn **PI**), funded by NOAA, project period: 2017-2023 (Total award: $2 million).
5. "An Integrated Terrestrial-Coastal Ocean Observation and Modeling Framework for Carbon Management Decision Support" (Auburn PI: Hanqin Tian, Lead PI: Steven Lohrenz, UMass), funded by NASA Carbon Monitoring System (CMS), Project period: 2014-2018, Total amont: $1,211,331, Subaward to Auburn: $455,646,
6. Project Title: Can Asia feed its people? – Constraints from resources, technology and economy in the context of global climate change (PI), Andrew Carnegie Fellow Program, Carnegie Corporation of New York, 2019-2022, $200K.

7. Project Title: From Planning to Adaptive Management: Natural Resources Decision Making in Response to the Allocation of Riverine Inflows in the Northern Gulf of Mexico (Auburn **PI**), project period: 2021-2022, funded by NOAA, $124,926.
8. Project Title: "NGOMEX 2016: Using Linked Models to Predict the Impacts of Hypoxia on Gulf Coast Fisheries Under Scenarios of Watershed and River Management" (Auburn **PI**), funded by NOAA, project period: 2017-2022 (Total award: $1.2 million)
9. Project Title: "U.S. Southeast Climate Science Center" (Co-PI), funded by USGS, Project Period: 2017-2022, Subaward to Auburn 75K.
10. "Wildfires and regional climate variability: Mechanisms, modeling, and prediction" (Auburn PI: Hanqin Tian; Lead PI: Yuhang Wang, Georgia Tech), funded by NSF EaSM program (Decadal and Regional Climate Prediction using Earth System Models), Project period: 2013-2018, Total amount: $2,500,000, Subaward to Auburn: $455,983.
11. "Synergistic impacts of population growth, urbanization, and climate change on watersheds and coastal ecology of the northeastern United States" (Auburn PI: Hanqin Tian with PI- R. Najjar, and co-PIs: M. Friedrichs, E. E. Hofmann, J. Wilkin, B. Cahill, C. Lee, A. Mannino, K. Hyde, C. McClain, S. Signorini), supported by NASA Interdisciplinary Science Program, Project period: 2014-2018, Total amount: $1,401,697 subcontract to Auburn: $300,000).
12. "CNH: Pluvials, Droughts, Energetics and the Mongol Empire" (Auburn PI: Hanqin Tian with Amy Hessl (PI), Pederson (coPI), Nicola Di Cosmo (coPI)), supported by NSF Dynamics of Coupled Natural and Human Systems (CNH), project period: 2012-2017, Total amount: $1,394,398.
13. Land Cover and Land Use Changes and Their Effects on Carbon Dynamics in South and Southeast Asia: A Synthesis Study, Project Period: 2014-2017. NASA LCLUC. Co-PI Hanqin Tian with PI: Atul Jain at University of Illinois.
14. "Land Use-Ecosystem-Climate Interactions in Monsoon Asia: Evaluating the impacts of current and projected LCLUC on climate, water and carbon cycling in the first half of 21st century (PI: Hanqin Tian with co-PIs: R. Dickinson, J. Melillo, J. Reilly and H. Virji), supported by NASA Land Cover/Land Use Change (LCLUC) Program, Project period: 2008-2012, Total amount: $1,054,757.
15. "Estimation of land-ocean-atmosphere carbon fluxes and exchanges in the Mississippi River watershed and northern Gulf of Mexico" (co-PI-Tian with S. Lohrenz (PI) and WJ Cai (co-PI), supported by NASA Carbon Monitoring System Program, project period: 2011-2012, Total amount: $50,000
16. "Impacts of Changing Climate and Land Use on Carbon Cycling and Budgets of the Coastal Ocean Margin: Observations, Analysis, and Modeling" (Co-PI: Hanqin Tian with PI- M. Friedrichs and co-PIS: E. E. Hofmann, J. Wilkin, B. Cahill, C. Lee, A. Mannino, R. Najjar, J. O'Reilly, K. Hyde, C. McClain, S. Signorini and M. Liu), supported by NASA Interdisciplinary Science Program, Project period: 2010-2015, Total amount: $1,770,383, subcontract to Auburn: $250,000).
17. "Development of observational products and coupled models of land-ocean-atmospheric fluxes in the Mississippi River watershed and Gulf of Mexico in support of carbon monitoring" (Co-PI: H. Tian with S. Lohrenz (PI) and WJ Cai (co-PI), R. He (Co-PI), supported by NASA Carbon Monitoring System Program, Project Period: 2012-2015, Total amount: $404,026.

18. II-NEW: A compute and storage cluster for multidisciplinary research on computer systems and scientific simulations (Co-PI: Hanqin Tian with Yu, W.-PI), supported by NSF, Project period: 2011-2014, Total amount: $399,647

19. "Assessing Impacts of Climate and Land Use Change on Terrestrial-Ocean Fluxes of Carbon and Nutrients and Their Cycling in Coastal Ecosystems" (Co-PI: Hanqin Tian with S. Lohrenz-PI and Co-PIs: W. Cai, R. He, C. Hopkinson and C. Sabine), supported by NASA Interdisciplinary Science Program, Project period: 2010-2013, Total amount: $1,881,831, subcontract to Auburn: $345,126).

20. "Constraints on Regional Methane Fluxes Through Integration of Satellite, Aircraft and Ground-Based Observations with Models (Co-PI: Tian with V. Payne (PI) and co_PIs: J. Galantowicz, S. Wofsy), supported by NASA ACMAP Program, Project period: 2010-2013, Total amount: $574,837, subcontract to Auburn: $92,436.

21. "Use of SMAP Seasonal Inundation and Soil Moisture Estimates in the Quantification of Global Biogenic Gas Fluxes" (J. Galantowicz (PI), H. Tian (co-PI)), supported by NASA ACMAP Program, Project period: 2010-2013, Total amount: $532,210, subcontract to Auburn: $74,998).

22. "Impacts of Mega-fires on Large U.S. Urban Area Air Quality under Changing climate" (PI: Hanqin Tian), supported by USDA Forest Service, Project period: 2011-2013, Total amount: $134,195

23. "Assessing and predicting impacts of climate change and land management practices on productivity, carbon sequestration capacity, and GHG emission in agricultural and forest systems" (PI: Hanqin Tian, with Sufen Pan (co-PI), supported by AAES, project period: 2011-2013, Total amount: $95,025.

24. The North American Carbon Program (NACP) Multi-Scale Synthesis and Terrestrial Model Intercomparison (MsTMIP) Project (PI: Hanqin Tian), supported by NASA, project period: 2012-2013, Total amount: $35,000.

25. "*Effects of Multiple Changes in Climate and Atmospheric Composition on Terrestrial Ecosystem Structure and Functioning in the Southeastern United States: A Regional Synthesis with Data-Model Assimilation*" (Tian (PI) with co-PIs: A. Chappelka, G. Sun, H. Chen, S. Pan), supported by US Department of Energy, NICCR Program, Project period: 2006-2009. Total amount: $392,498.

26. "*Linking Multi-scale Remotely Sensed Data, Field Observations and Biogeochemistry Models to Evaluate Changes in the Terrestrial Ecosystems of China*" (Tian (PI) with co-PIS: J. Melillo, S. Running, R. Myneni), Supported by NASA Interdisciplinary Science Program. Project Period: 2004-2008, Total Amount: $1,650,000.

27. Interaction of ecosystems, fires, air quality and climate change in the Southeast, EPA 2004-STAR-L1; (Tian (co-PI) with Yuhang Wang-PI, A. Russell and Y. Liu), Project Period: 2005-2009, Total Amount: $749,047.

28. "Impact of land-use change on carbon sequestration in Alabama: Interdisciplinary research linking ecosystem processes with economic development" (Tian (PI) with Zhang, Chen), Supported by AAES, Project Period: 2005-2008, Total Amount: $108,000.

29. "*Global Effects of Human and Terrestrial Interactions*" supported by NSF Biocomplexity Program, (Tian-co-PI with John Reilly-PI, J. Melillo), Project Period: 2004-2008, Total Amount: $400,000.
30. "Effects of Intensive Management on Carbon Sequestration in Pine Forests in the Southeastern United States", Southern Forestry Research Partnership. Total Amount: $50,000, Project Period: 2008-2009 (Tian –PI)
31. "*Regional Forest Productivity and Carbon Storage in Southern United States: Roles of Land-use/cover Change, Intensive Management and Disturbances", supported by USDA CSREES, Total Amount: $150,000, Project Period: 2007-2010 (Tian –PI)*
32. "Development of the Wetland Ecosystem Model for evaluation of ecosystem response to prescribed fires in Water Conservation Area-2A" South Florida Water Management District, Total Amount: $175,000, Project Period: 2008-2009.
33. "*Modeling the short-term effects of prescribed burning for accelerated recovery of a eutrophied wetland in the Northern Everglades"*, South Florida Water Management District, Total Amount: $49,500, Project Period: 2007 (Tian-PI).
34. "*Develop an Agro-ecosystem model for assessing agricultural sustainability at regional and global scales"*. Subcontract to MIT through Marine Biological Laboratory. Total amount: $100,000, Project period: 2001-2003. (Tian –PI with co-PI: J. Melillo).
35. *"Predicting changes in biogeochemical cycles at regional and global scales"*, supported by NASA Earth Observing System, Interdisciplinary Science Program (Tian co-PI with B. Moore III – PI, C. Vorosmarty, Braswell, X. Xiao, J. Melillo, B. Peterson). Total amount: $2,525,000, Project Period: 2001-2003.
36. "*Biocomplexity: Feedbacks between ecosystems and the climate system"*. NSF Biocomplexity Program, Total amount: $2,600,000, Project period: 2001-2006 (Tian-co-I With R. Prinn-**PI and Co-PIs:** J. Reilly, J. Melillo, D. McGuire, etc).
37. "*Modeling the biogeochemical system of the terrestrial Amazon: Issues for sustainability"*, supported by NASA Large-scale Biosphere-Atmosphere (LBA) Experiment in Amozon Basin (co-PI-Tian with B. Moore III-PI, Braswell, Xiao, J. Melillo). Total amount: $995,028, project period: 1998-2002.
38. "*Linking remote sensing, land use, and carbon sequestration: insights from leaf to landscape scales in America's heartland"*. NASA Carbon Cycle Program. Total amount : $997,800. Project period : 2001-2003 (coPI-Tian with Price, K. P - PI).
39. "Agricultural ecosystem modeling and analysis in the context of global change (1999-2001)", subcontracted to MIT (P.I. - J. M. Melillo, co-PI - Tian). Total amount: $150,000, project period: 1999-2001.
40. The interdisciplinary Cluster of Climate, Human, and Earth System Sciences (CHESS), supported by the University's Offices of the Provost and Vice President for Research, total funding amount: $5 million, Project period: 2015-2020.
41. "Impacts of human activities and climate change on water resources and ecosystem health in Wolf Bay Basin: A Coastal Diagnostic and Forecast System (CDFS) for integrated assessment (Tian (PI) with co-PIs: L. Kalin, X. Fang, D. Laband , P. Clement, J. Feminella, K. Flynn, M. Dougherty, C. Anderson, S. Pan), supported by AU Water Resource Center Grant Program, Project period: 2008-2011, Total Amount: $750,000.

PUBLICATIONS:

Total: **436**, including Peer-reviewed Journal Papers (**400**), Book Chapters/Conference Papers/Data Products (**35**), and Book (**1**)

Nature (7), *Science* (3), *PNAS* (2), *Nature Climate Change* (4), *Nature Food* (4), *Nature Geoscience* (3), *Nature Communication* (6), *Science Advances* (3)

Google Scholar Citations: Citations: **55K+**; h-index: **112** (until 09/01/2024)

Peer-reviewed Journal Papers (400)

400. Chen J., G.K. Li, M. Lin, J.A. Nghiem, Z. Yu, T. Kong, H. Donnelly, N.P. Snyder, H. Tian, M.P. Lamb, X. Wang (2024) Isotopic evidence for hydrological control of fertilizer-nitrogen input into the Gulf of Mexico, Communication Earth and Environment (accepted)

399. Cui, J., O. Deng, M. Zheng, X. Zhang, Z. Bian3, N. Pan, H. Tian, J. Xu, B. Gu (2024) Warming exacerbates global inequality in forest carbon and nitrogen cycles, Nature Communications (accepted)

398. Lin, Z., Huang, L., Tian, H., Chen, A., and Wang, X. (2024) China Wildfire Emission (ChinaWED v1) for the period 2012–2022, Geosci. Model Dev. Discuss. [preprint], https://doi.org/10.5194/gmd-2024-170, in review, 2024.

397. Zhu, Q. K Yuan, F. Li, W. Riley, A Hoyt, R Jackson, G McNicol, Min Chen, S Knox, O Briner, David J. Beerling, Nicola Gedney, Peter Hopcroft, A Ito, Atul Jain, K Jensen, T. Kleinen, T. Li, X. Liu, K McDonaldJ. R. Melton, P. Miller, J Muller, C. Peng, B. Poulter, Z Qin, S. Peng, H. Tian, X Xu, Y Yao, X Yi, Z. Zhang, W Zhang, Q. Zhu, Q Zhuang (2024) Critical Needs to Close Monitoring Gaps in Pan-Tropical Wetland CH4 Emissions, Environmental Research Letters (accepted).

396. Masayuki Kondo, Prabir K. Patra, Josep G. Canadell, Philippe Ciais, Richard A. Houghton, Akihiko Ito, Chandra S. Deshmukh, Tomo'omi Kumagai, Xiangzhong Luo, Umakant Mishra, Atul K. Jain, Wei Li, Gerbrand Koren, Stephen Sitch, Ben Poulter, Hanqin Tian, Ana Bastos, Ronny Lauerwald, Judith A. Rosentreter, Naveen Chandra, Tazu Saeki, Mariella Sounois, Ingrid T. Luijkx, Takashi Maki, Takashi Nakamura, Takeshi Hirano, Nobuko Saigusa (2024) The greenhouse gas budget of Southeast Asia for the 2000s−2010s and progress toward achieving carbon neutrality, Global Biogeochemical Cycles (accepted)

395. Saunois, M., Martinez, A., Poulter, B., Zhang, Z., Raymond, P., Regnier, P., Canadell, J. G., Jackson, R. B., Patra, P. K., Bousquet, P., Ciais, P., Dlugokencky, E. J., Lan, X., Allen, G. H., Bastviken, D., Beerling, D. J., Belikov, D. A., Blake, D. R., Castaldi, S., Crippa, M., Deemer, B. R., Dennison, F., Etiope, G., Gedney, N., Höglund-Isaksson, L., Holgerson, M. A., Hopcroft, P. O., Hugelius, G., Ito, A., Jain, A. K., Janardanan, R., Johnson, M. S., Kleinen, T., Krummel, P., Lauerwald, R., Li, T., Liu, X., McDonald, K. C., Melton, J. R., Mühle, J., Müller, J., Murguia-Flores, F., Niwa, Y., Noce, S., Pan, S., Parker, R. J., Peng, C., Ramonet, M., Riley, W. J., Rocher-Ros, G., Rosentreter, J. A., Sasakawa, M., Segers, A., Smith, S. J., Stanley, E. H., Thanwerdas, J., Tian, H., Tsuruta, A., Tubiello, F. N., Weber, T.

S., van der Werf, G., Worthy, D. E., Xi, Y., Yoshida, Y., Zhang, W., Zheng, B., Zhu, Q., Zhu, Q., and Zhuang, Q. (2024) Global Methane Budget 2000–2020, Earth Syst. Sci. Data Discuss. [preprint], https://doi.org/10.5194/essd-2024-115, 2024.

394. Zhang, Z., Poulter, B., Melton, J. R., Riley, W. J., Allen, G. H., Beerling, D. J., Bousquet, P., Canadell, J. G., Fluet-Chouinard, E., Ciais, P., Gedney, N., Hopcroft, P. O., Ito, A., Jackson, R. B., Jain, A. K., Jensen, K., Joos, F., Kleinen, T., Knox, S., Li, T., Li, X., Liu, X., McDonald, K., McNicol, G., Miller, P. A., Müller, J., Patra, P. K., Peng, C., Peng, S., Qin, Z., Riggs, R. M., Saunois, M., Sun, Q., Tian, H., Xu, X., Yao, Y., Yi, X., Zhang, W., Zhu, Q., Zhu, Q., and Zhuang, Q.: Ensemble estimates of global wetland methane emissions over 2000–2020, EGUsphere [preprint], https://doi.org/10.5194/egusphere-2024-1584, 2024.

393. Deng, Z., Ciais, P., Hu, L., Martinez, A., Saunois, M., Thompson, R. L., Tibrewal, K., Peters, W., Byrne, B., Grassi, G., Palmer, P. I., Luijkx, I. T., Liu, Z., Liu, J., Fang, X., Wang, T., Tian, H., Tanaka, K., Bastos, A., Sitch, S., Poulter, B., Albergel, C., Tsuruta, A., Maksyutov, S., Janardanan, R., Niwa, Y., Zheng, B., Thanwerdas, J., Belikov, D., Segers, A., and Chevallier, F. (2024) Global Greenhouse Gas Reconciliation 2022, Earth Syst. Sci. Data Discuss. [preprint], https://doi.org/10.5194/essd-2024-103, 2024.

392. Liu, M., P. Raymond, R. Lauerwald, Q. Zhang, G. Trapp-Müller, K. Davis, N. Moosdorf, C. Xiao, J. Middelburg, A. Bouwman, A. Beusen, C. Peng, F. Lacroix, H. Tian, J. Wang, M. Li, Q. Zhu, S. Cohen, W. van Hoek, Y. Li, Y. Li, Y. Yao, P. Regnier (2024) Global riverine land-to-ocean carbon export constrained by observations and multi-model assessment. *Nat. Geosci.* (2024). https://doi.org/10.1038/s41561-024-01524-z

391. Cui, J., M. Zheng, Z. Bian, N. Pan, H. Tian, X. Zhang, Z. Qiu, J. Xu, and B. Gu. (2024). Elevated CO2 levels promote both carbon and nitrogen cycling in global forests. Nature Climate Change, 14(5), 511-517. https: //doi.org/10.1038/s41558-024-01973-9.

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***Refereed Proceedings and Professionally Reviewed Publications* (26)**

26. Thompson, R. and **H. Tian** (2024) Nitrous Oxide Sources and Trends, in Global Nitrous Oxide Assessment, Climate and Clean Air Coalition (CCAC), United Nations Environment Programme
25. Canadell, J.G. PMS Monteiro, MH Costa, LC Da Cunha, PM Cox, V Alexey, ...**H. Tian** (2021) IPCC AR6 WGI, Final Government Distribution, chapter 5 Global Carbon and other Biogeochemical Cycles and Feedbacks.
24. Hui, D., Q. Deng, **H. Tian**, and Y. Luo (2021) Global Climate Change and Greenhouse Gases Emissions in Terrestrial Ecosystems, Handbook of Climate Change Mitigation and Adaptation.
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15. Peterson, A. T., **H. Tian**, E. Martínez-Meyer, J. Soberón, V. Sánchez-Cordero. Modeling Ecosystem Shifts and Individual Species' Distributional Shifts. In: Lovejoy T. and Hannah, L. (eds). *Climate Change and Biodiversity*. Yale University Press.

14. Prentice, I.C., G.D. Farquhar, M.J.R. Fasham, M.L. Goulden, M. Heimann, V.J. Jaramillo, H.S. Kheshgi, C. Le Quéré, R.J. Scholes, D.W.R. Wallace, D. Archer, M.R. Ashmore, O. Aumont, D. Baker, M. Battle, M. Bender, L.P. Bopp, P.Bousquet, K. Caldeira, P.Ciais, W. Cramer, F. Dentener, I.G. Enting, C.B. Field, E.A. Holland, R.A. Houghton, J.I. House, A. Ishida, A.K. Jain, I.A. Janssens, F. Joos, T. Kaminski, C.D. Keeling, R.F. Keeling, D.W. Kicklighter, K.E. Kohfeld, W. Knorr, R. Law, T. Lenton, K. Lindsay, E. Maier-Reimer, A.Manning, R. J. Matear, A.D. McGuire, J.M. Melillo, R. Meyer, M. Mund, J.C. Orr, S. Piper, K. Plattner, P.J. Rayner, S. Sitch, R. Slater, S. Taguchi, P.P. Tans, **H. Tian**, M.F. Weirig, T. Whorf, A. Yool. 2001. The Carbon Cycle and Atmospheric CO_2, Chapter 3, The Third Assessment Report of Intergovernmental Panel on Climate Change (IPCC), Cambridge University Press.

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10. Tian, H. 1993. Identification and classification of forest landscape pattern: fuzzy modeling and processing of remote sensing image. *Ground Sensing, SPIE*, Vol. 1941:61-67.

9. Qi, Y., **H. Tian** and C. A. S. Hall. 1992. Study of a boreal forest landscape with remote sensing and GIS: I. Background and methodology. Proceedings of ASPRS/ACSM/RT 92 convention on "Monitoring and Mapping Global Change", *Resource Technology,* Vol. 5:417-427.

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5. Tian, H. and S. Pan. 1991. Stability and design of landscape organization. in Xiao, D. (eds), *Landscape Ecology: Theory, Methods and Application*, pp. 47-51, Chinese Forestry Press, Beijing (in Chinese).

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2. Qi, Y. and **H. Tian**. 1988. Some views on ecosystem design. In Ma Shijun, at al (eds), Proceedings of the International Symposium on Agro-ecological Engineering. August 1988. Beijing: Ecological Society of China.

1. Tian, H. and W. Jin. 1987. Fuzzy mathematical treatment of crop growth and development. In: Proceedings of the International Symposium on Fuzzy Systems and knowledge Engineering, China.

***Non-Referenced Publications and Data Products* (9)**

9. Tian, H., E. Davidson, P. Canadell and R. Thompson (2024) **Food has a climate problem: Nitrous oxide emissions are accelerating with growing demand for fertilizer and meat – but there are solutions**, The Conversion.

8. Ricciuto, D.M., K. Schaefer, P.E. Thornton, R.B. Cook, R. Anderson, M.A. Arain, I. Baker, J.M. Chen, M. Dietze, R. Grant, C. Izaurralde, A.K. Jain, A.W. King, C. Kucharik, S. Liu, E. Lokupitiya, Y. Luo, C. Peng, B. Poulter, D. Price, W. Riley, A. Sahoo, **H. Tian**, C. Tonitto, and H. Verbeeck. 2013. *Terrestrial Biosphere Model Output Data in Original Format.* NACP Site: Terrestrial Biosphere Model Output Data in Original Format. Data set. Available on-line [http://daac.ornl.gov] from Oak Ridge National Laboratory Distributed Active Archive Center, Oak Ridge, Tennessee, USA. http://dx.doi.org/10.3334/ORNLDAAC/1192

7. Ricciuto, D.M., K. Schaefer, P.E. Thornton, K. Davis, R.B. Cook, Shishi Liu, R. Anderson, M.A. Arain, I. Baker, J.M. Chen, M. Dietze, R. Grant, C. Izaurralde, A.K. Jain, A.W. King, C. Kucharik, Shuguang Liu, E. Lokupitiya, Y. Luo, C. Peng, B. Poulter, D. Price, W. Riley, A. Sahoo, **H. Tian**, C. Tonitto, and H. Verbeeck. 2013. *NACP Site: Terrestrial Biosphere Model and Aggregated Flux Data in Standard Format. Data set.* Available on-line [http://daac.ornl.gov] from Oak Ridge National Laboratory Distributed Active Archive Center, Oak Ridge, Tennessee, USA. DOI: 10.3334/ORNLDAAC/1183 http://dx.doi.org/10.3334/ORNLDAAC/1183

6. Cook, R.B., W.M. Post, P.E. Thornton, A. Jacobson, D.N. Huntzinger, Y. Wei, I. Baker, J. Chen, F. Chevallier, F. Hoffman, A. Jain, S. Liu, R. Lokupitiya, D.A. McGuire, A. Michalak, G.G. Moisen, R.P. Neilson, P. Peylin, C. Potter, B. Poulter, D. Price, J. Randerson, C. Rodenbeck, A. Schuh, C. Schwalm, **H. Tian**, E. Tomelleri, D. Turner, G. van der Werf, N. Viovy, T.O. West, J. Xiao, N. Zeng, and M. Zhao. 2013. Original Observation Data and Biosphere and Inverse Model Outputs NACP Regional: Original Observation Data and Biosphere and Inverse Model Outputs. Data set. Available on-line [http://daac.ornl.gov] from Oak Ridge National Laboratory Distributed Active Archive Center, Oak Ridge, Tennessee, USA. http://dx.doi.org/10.3334/ORNLDAAC/1193

5. Wei, Y., S. Liu, D. Huntzinger, A.M. Michalak, N. Viovy, W.M. Post, C. Schwalm, K. Schaefer, A.R. Jacobson, C. Lu, **H. Tian**, D.M. Ricciuto, R.B. Cook, J. Mao, and X. Shi. 2014. Global and North American Driver Data for Multi-Model Intercomparison NACP MsTMIP: Global and North American Driver Data for Multi-Model Intercomparison. Data set. Available on-line [http://daac.ornl.gov] from Oak Ridge National Laboratory Distributed Active Archive

Center, Oak Ridge, Tennessee, USA. http://dx.doi.org/10.3334/ORNLDAAC/1220

4. Kittel, T.G.F., N.A. Rosenbloom, C. Kaufman, J.A. Royle, C. Daly, H.H. Fisher, W.P. Gibson, S. Aulenbach, R. McKeown, D.S. Schimel, and VEMAP2 Participants (2000). VEMAP Phase 2 Historical and Future Scenario Climate Database. Available online from the VEMAP Data Group, National Center for Atmospheric Research, (Boulder, Colorado).

3. VEMAP2 Participants (2000) VEMAP 2 Ecosystem Model Results database: VEMAP Phase 2 Biogeochemistry and Dynamic Vegetation Modelling Results. Available online at [http://www.cgd.ucar.edu/vemap] from the VEMAP Data Group, National Center for Atmospheric Research, Boulder, Colorado.

2. Tian, H., Liu, M.L., Zhang, C., Ren, W., Chen, G.S., Xu, X.F., Lu, C.Q., 2010. DLEM—The Dynamic Land Ecosystem Model, User Manual. Technical Report Series No. 1, International Center for Climate and Global Change Research, Auburn University, AL, USA. 200pp.

1. Canadell, J.G. and **Tian, H**. (2016) Global food production threatens to overwhelm efforts to combat climate change, *The Conversation*, March 9, 2016.

Books (1)

1. **Tian, H**. (Eds) 2006. *Environmental Modeling and Simulation*. ACTA Press, Anaheim/ Calgary/ Zurich. ISBN: 0-88986-617-1. p.144.

INVITED SEMINAR (Total: 100+) and Past five years (10+)

2023

Tian, H. (2023) The global N2O budget: 1980-2020, WMO International Greenhouse gas monitoring symposium, Geneva, Switzerland, Jan. 30-Feb. 1, 2023.

Tian, H. (2023) "From Land Carbon Sink to Net Zero Emissions: How can Land be Part of the Climate Solution?", MIT Department of Civil and Environmental Engineering, March 3, 2023.

Tian, H. (2023) "Global GHG Budget: Toward a global integration of multiple greenhouse gases (CO_2, CH_4 and N_2O), Symposium on the Global Carbon Budget, University of Exeter, UK, July 2-6, 2023.

2022

Tian, H. (2022) What strategies could increase climate resilience and food security in N. Korea?: informed from a comparative study among N. Korea, S. Korea and China, Department of Political and Peacebuilding Affairs, Unted Nations, Geneva, Switzerland, 7-9 December 2022.

Tian, H. (2022) Nature Climate Solution (NCS): How can ecosystems be a part of the climate solution?, Schiller Convening Room 501. Boston College, October 12, 2022

Tian, H. (2022) Agricultural modeling within the Dynamic Land Ecosystem Modeling Framework, MIT Joint Program on Science and Policy of Global Change, September 30, 2022

Tian, H. (2022) How can the terrestrial biosphere be a part of the climate solution? Toward a predictive understanding of the global carbon cycle and GHG budgets, Department of Atmospheric and Ocean Science, University of Maryland, April 21, 2022.

2021

Tian, H. (2021) The role of terrestrial biosphere in the Earth's atmosphere: Toward a full accounting of the greenhouse gas budget, Atmospheric & Environmental Chemistry Seminars, John A. Paulson School of engineering and Applied Sciences, Harvard University, February 19, 2021.

Tian, H. (2021) How can the land biosphere be a part of the climate solution? A wake-up call for the global climate community, Soil & Crop Sciences Seminars, Cornell University, October 21, 2021.

Tian, H. (2021) The terrestrial biosphere contributes to current climate warming: an unexpected role resulting from anthropogenic perturbation, Department of Atmospheric Science, University of Hawaii, Manoa, October 13, 2021.

2020

Tian, H. (2020) Predicting climate change impacts on agricultural ecosystems, MIT Joint Program on the Science and Policy of Global Change, March 3, 2020

2019

Tian, H. "Climate warming of 1.5^0 and 2.0^0 impacts on terrestrial productivity and carbon cycling", Workshop for the ISIMIP Biome & Permafrost sectors: *From Model Evaluation to Climate Feedbacks, 21-23, January 2019, Paris France*

2018

Tian, H. "Global soil nitrous oxide emissions since the pre-industrial era estimated by an ensemble of Terrestrial Biosphere Models: Magnitude, attribution and uncertainty", Workshop on Emerging challenges in large scale soil carbon sequestration: *From Process Understanding to Large Scale Deployment, 8-10 October 2018, Paris, France.*

Tian, H., "Global N2O budget synthesis: State of Data and Methods", Global Carbon Project Meeting in Royal Swedish Academy of Sciences, Stockholm, May 25-17, 2018.

Tian, H., "NMIP: N2O Model Intercomparison Project and GCP/INI Global N2O Budget", Conference on International Nitrogen Management System, Edinburgh, Scotland, April 16-19, 2018.

CONFERENCE PRESENTATIONS (since 2000): 300+

RESEARCH ADMINISTRATION AND SERVICE:

- Inaugural Dirrector, Center for Earth System Science and Global Sustainability (CES^3), Boston College in Partnership with Global Carbon Project (GCP) (Established on December 5th, 2023)

- Director of International center for Climate and Global Change Research:
  - Inspired, mentored, and facilitated extramural research funding of the Center. Since it was established in 2010, the Center received extramural funds totaling over $20 million dollars.
  - Facilitated program and team building. I have played key leadership role for interdisciplinary team building in the areas of Climate change and water security, Climate change and global food security, Coastal water resources, Earth system modeling and integration, Satellite observation.
  - Established research partnership with over 10 universities in United States
  - Facilitated the collaborations and exchange programs with several universities in China and Chinese Academy of Sciences.
  - Promoted and assisted young scientists to reach their career goals. Two of research fellows in the Center received Early Career Ecologist Award from Ecological Society of America (ESA). One formal graduate student received Early Career Ecologist Award and another one received outstanding graduate student award from ESA.
  - Developed and supported research infrastructure. I have played key leadership roles for the acquisition of several major pieces of equipment with funds from NIST, NSF and the university including high-performance computer clusters that is the largest in the state of Alabama.

- Chair of the Climate, Human, and Earth System Sciences (CHESS) Cluster:
  - Led the CHESS Cluster, which is one of 5 clusters selected and funded by the University's offices of Provost and Vice President for Research. The CHESS Cluster consists of over 30 existing faculty members from 5 colleges/School and 7 new faculty hires with a total budget of over $5 million dollars.
  - Coordinated interdisciplinary research in the Climate, Human, and Earth System Sciences.
  - Co-lead and major contributor to the establishment of an interdisciplinary PhD program in Earth System Science
  - One of core faculty to establish a new undergraduate degree program of Geospatial and Environmental Informatics.

- **National and International Leadership Achievements:**

  - Co-Chair (2016-present) for an international consortium of scientists from 50 research institutions in 15 countries under the umbrella of the Global Carbon Project (GCP) and the International Nitrogen Initiative (INI) to produce the most comprehensive assessment to date of all sources and sinks of the potent greenhouse gas nitrous oxide.

- Steering Scientific Committee member of Global Carbon Project (GCP) (2016-present)
- Coordinating Lead Author for the International Nitrogen Assessment Chapter 13 ***GREENHOUSE GASES: Impacts of anthropogenic nitrogen use on global radiation balance*****,** UN Environment Programme/GEF/INMS.
- Contributing author for IPCC AR6 WGI Chapter 5 ***Global carbon and other biogeochemical cycles and feedback***
- Contributing Author for IPCC WGIII Chapter 2 ***Emissions Trends and Drivers***
- Leader author for one of Technical Chapters in the US National Climate Assessment Report (2014).
- Leader author of Chapter 11 of the SCOPE/START Rapid Assessment: Changes in the Human-Monsoon System of East Asia in the context of global change.
- Chief Editor, *Earth System Science Data*-Land Data (2022 -)
- Associate Editor, *Ecosystem Health and Sustainability*, Joint Journal of Ecological Society of America and Ecological Society of China (2014 – present).
- Science Team Member of NASA Carbon Monitoring System (2014-present)
- Served on the Board on Oceans, Atmosphere, and Climate, Association of Public and Land-grant Universities (2014-present).
- Chaired the Asian Ecology Section, Ecological Society of America (2011-2012).
- Organized and chaired numerous professional meetings in the US and around the World.
- Developed gridded, time-series data sets of land use history in China (1700-2005) and India (1880-2010), regional climate in China (1960-2010), nitrogen deposition in China (1950-2008) and nitrogen fertilizer use in China and india (1950-2010) for climate change and ecosystem modeling studies.
- Member of Earth System Science Partnership (ESSP) Initiative - Monsoon Asia Integrated Regional Studies (MAIRS).
- Review Panelist for grants and programs (DOE, NASA, EPA, NSF)

➢ **Extension, Outreach and International Achievements:**

- Extensive experience in working with stakeholders, federal and state agencies.
- Experience in setting up numerous international collaborations.
- Provided key leadership for international organizations and research programs.
- Contributed to national climate assessment and IPCC climate change assessment.