

# Publications and Patents

Jia Chen

Underline denotes advisee; Star \* denotes that I am a corresponding author.

h-index: 37, i10-index: 87 (Google Scholar, 05/2026)

## Most Important Publications (Last 10 years)

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1. **J. Chen\***, C. Viatte, J. K. Hedelius, T. Jones, J. E. Franklin, H. Parker, E. W. Gottlieb, P. O. Wennberg, M. K. Dubey, S. C. Wofsy, “Differential column measurements using compact solar-tracking spectrometers”, *Atmospheric Chemistry and Physics*, 16, 8479–8498, doi: 10.5194/acp-16-8479-2016, 2016.  
*Description: Novel measurement concept that creates a foundation for monitoring urban greenhouse gases.*
2. **J. Chen\***, F. Dietrich, H. Maazallahi, A. Forstmaier, D. Winkler, M. E. G. Hofmann, H. Denier van der Gon, T. Röckmann: “Methane emissions from the Munich Oktoberfest”, *Atmospheric Chemistry and Physics*, 20, 3683–3696, highlight article, doi: 10.5194/acp-20-3683-2020, 2020.  
**Research highlight** in *Nature* (Nature, 580(7802), 169, doi: 10.1038/d41586-020-00987-5) and featured in *Science* (doi: 10.1126/science.aaz9918)  
*Description: Worldwide first study that quantifies the methane emission of a large festival. It provides a basis for developing reduction policies for such events and new pathways to mitigate fossil fuel methane emissions.*
3. F. Dietrich, **J. Chen\***, B. Voggenreiter, P. Aigner, N. Nachtigall, B. Reger, “MUCCnet: Munich Urban Carbon Column network”, *Atmospheric Measurement Techniques*, 14, 1111–1126, doi: 10.5194/amt-14-1111-2021, 2021.  
Featured in *Physics Today* (doi: 10.1063/PT.6.1.20210311a)  
*Description: World’s first urban sensor network that has been permanently measuring greenhouse gases based on the principle of differential column measurements; Website and open-data platform: atmosphere.ei.tum.de.*
4. F. Toja-Silva, **J. Chen**, S. Hachinger, F. Hase, “CFD simulation of CO<sub>2</sub> dispersion from urban thermal power plant: Analysis of turbulent Schmidt number and comparison with Gaussian plume model and measurements”, *Journal of Wind Engineering and Industrial Aerodynamics*, 169, 177–193, doi: 10.1016/j.jweia.2017.07.015, 2017.  
*Description: Emission assessment using CFD simulation of CO<sub>2</sub> dispersion from an urban power plant: mapping column concentrations with unprecedented high spatial resolution.*
5. A. Shekhar, **J. Chen\***, J. C. Paetzold, F. Dietrich, X. Zhao, S. Bhattacharjee, V. Ruisinger, S. C. Wofsy, “Anthropogenic CO<sub>2</sub> emissions assessment of Nile Delta using XCO<sub>2</sub> and SIF data from OCO-2 satellite”, *Environmental Research Letters*, 15, 095010, doi: 10.1088/1748-9326/ab9cfe, 2020.  
*Description: Using novel satellite data, we reveal that CO<sub>2</sub> emissions from the Nile Delta account for 1% of global anthropogenic emissions, which is significantly more than estimated hitherto.*
6. Gensheimer, J., Turner, A. J., Köhler, P., Frankenberg, C., and **Chen, J.\***: “A convolutional neural network for spatial downscaling of satellite-based solar-induced chlorophyll fluorescence (SIFnet)”, *Biogeosciences*, 19, 1777–1793, doi: 10.5194/bg-19-1777-2022, 2022.  
*Description: We developed a machine learning based super-resolution approach, which enables high resolution mapping of urban biosphere based on novel satellite products.*
7. Forstmaier, A., **Chen, J.\***, Dietrich, F., Bettinelli, J., Maazallahi, H., Schneider, C., Winkler, D., Zhao, X., Jones, T., van der Veen, C., Wildmann, N., Makowski, M., Uzun, A., Klappenbach, F., Denier van der Gon, H., Schwietzke, S., and Röckmann, T.: Quantification of methane emissions in Hamburg using a network of FTIR spectrometers and an inverse modeling approach, *Atmos. Chem. Phys.*, 23, 6897–6922, <https://doi.org/10.5194/acp-23-6897-2023>, 2023.  
*Description: Using our novel measurement methods, we quantified emissions in Hamburg and detected unaccounted methane sources. A refinery has closed its leakage as a result of our investigation.*

8. [Zanger, B.](#), [Chen, J.\\*](#), [Sun, M.](#), and [Dietrich, F.](#): Recovery of sparse urban greenhouse gas emissions, *Geoscientific Model Development*, 15, 7533–7556, doi: <https://doi.org/10.5194/gmd-15-7533-2022>, 2022.  
*Description: Based on the powerful mathematical theory of compressed sensing, we developed a novel atmospheric inversion method which is more accurate, needs less data, and is able to detect unknown sources with an accuracy that conventional approaches cannot achieve.*
9. [M. Reißmann](#), [J. Chen\\*](#), [G. Osterman](#), [F. Dietrich](#), [M. Makowski](#), [X. Zhao](#), [F. Hase](#), [M. Kiel](#), Validation of OCO-2 target observations using MUCNet - Is it possible to capture urban XCO<sub>2</sub> gradients from space?, *Atmospheric Measurement Techniques*, 15, 6605–6623, doi: [10.5194/amt-15-6605-2022](https://doi.org/10.5194/amt-15-6605-2022), 2022  
*Description: We showed the satellite's capability to detect urban spatial concentration gradients, which demonstrates the great potential of urban emission assessment from space.*
10. [V. Balamurugan](#), [J. Chen\\*](#), [X. Bi](#), [Z. Qu](#), [J. Gensheimer](#), [A. Shekhar](#), [S. Bhattacharjee](#), [F. Keutsch](#), "Tropospheric NO<sub>2</sub> and O<sub>3</sub> response to COVID-19 lockdown restrictions at the national and urban scales in Germany", *Journal of Geophysical Research: Atmospheres*, 126, e2021JD035440, doi: [10.1029/2021JD035440](https://doi.org/10.1029/2021JD035440), 2021  
*Description: We showed German cities are at a NO<sub>x</sub> saturated regime. Future NO<sub>x</sub> reduction will likely increase O<sub>3</sub>, unless the emissions are reduced enough to reach NO<sub>x</sub> limited conditions.*
11. [S. Bhattacharjee](#) and [J. Chen\\*](#), "Prediction of satellite-based column CO<sub>2</sub> concentration by combining emission inventory and LULC information", *IEEE Transactions on Geoscience and Remote Sensing*, 58, 8285–8300, doi: [10.1109/TGRS.2020.2985047](https://doi.org/10.1109/TGRS.2020.2985047), 2020.  
*Description: Novel geostatistical interpolation method for data fusion and spatiotemporal prediction, and its first application for satellite measurements of greenhouse gases.*

## Patents

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- 2016 [Jia Chen](#), Jenna Samra, Steven Wofsy, John Budney. Diffuser-Based Solar-Tracking with Camera for Atmospheric Measurements (WO2016187502A1)
- 2016 [Jia Chen](#), Ludwig Heinle, Andreas Meichelböck, Gerold Wunsch. Automatisches, kompaktes Wetterschutzgehäuse für atmosphärische Messgeräte (DE102016005465A1)
- 2012 [Jia Chen](#), Maximilian Fleischer, Andreas Hangauer, Rainer Strzoda. Measuring Arrangement for Optical Absorption Spectroscopy in Hot Environments (WO2012069510A1, EP2619531B1)
- 2011 [Jia Chen](#), Andreas Hangauer, Rainer Strzoda. Arrangement for Measuring the Concentration of Oxygen in the Exhaust Gas Region of a Furnace (WO2011092274A1)
- 2011 [Jia Chen](#), Andreas Hangauer, Rainer Strzoda. Measuring Method and Measuring Device for Optical Gas Measurement (WO2011026924A1, EP2473836A1, US2013162979A1, CN102483377A)
- 2010 [Jia Chen](#), Andreas Hangauer, Rainer Strzoda. Non-Linear Wavelength Modulation in Laser Spectroscopy (WO2010106064A1)
- 2009 [Jia Chen](#), Andreas Hangauer, Rainer Strzoda. Anordnung zur Durchführung spektroskopischer Verfahren sowie Verwendung bei spektroskopischen Verfahren (WO2010092108A1, DE102009008624B4)
- 2009 [Jia Chen](#), Andreas Hangauer, Hans Link, Rainer Strzoda. Method and Device for Controlling or Monitoring Firing Systems and for Monitoring Building Having Gas Burners (WO2010003890A3, EP2304320A2, DE102009009314A1, CN102077028A)
- 2008 [Jia Chen](#), Andreas Hangauer, Rainer Strzoda. Method for Detection of Gases by Laser Spectroscopy (WO2010003857A1, EP2307876B1, US8830469B2, CN102105779B)
- 2007 [Jia Chen](#), Andreas Hangauer, Rainer Strzoda. Laser Light Source with at Least Two Individual Lasers (WO2009024504A1, DE102007038943A1)
- 2006 [Jia Chen](#), Oliver Hennig, Rainer Strzoda. Gas analysis with laser spectroscopy (EP1873513B1)
- 2005 [Jia Chen](#), Klaus Dostert, Thorsten Huck, Juergen Schirmer. Verfahren und Vorrichtung zum Generieren stochastischer Zufallsvariablen (DE102005063273B4)

## Books, Book Chapters and Guidelines

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1. Super, I., Denier van der Gon, H., Dröge, R., Schoenmakers, E., [Kühbacher, D.](#), [Aigner, P.](#), **Chen, J.**, 2025. [Guidelines for European cities: a flexible and efficient approach for creating city emission inventories](#). ICOS ERIC - Carbon Portal. <https://doi.org/10.18160/NK88-49TY>
2. Turnbull, J. C., Curras, T., Gurney, K. R., Hilton, T. W., Mueller, K. L., Vogel, F., Yao, B., Albarus, I., Ars, S., Baidar, S., Chatterjee, A., Chen, H., **Chen, J.**, Christen, A., Davis, K. J., Hajny, K., Han, P., Karion, A., Kim, J., Lopez Coto, I., Papale, D., Ramonet, M., Sperlich, P., Vardag, S. N., Vermeulen, A., Vimont, I. J., Wu, D., Zhang, W., Augusti-Panareda, A., Ahlgren, K., Ahn, D., Boyle, T., Brewer, A., Brunner, D., Cai, Q., Chambers, S., Chen, Z., Dadheech, N., D'Onofrio, C., Dunse, B. L., Engelen, R., Fathi, S., Gioli, B., Hammer, S., Hase, F., Hong, J., Hutyra, L. R., Järvi, L., Jeong, S., Karstens, U., Kenion, H. C., Kljun, N., Laurent, O., Lauvaux, T., Lin, J. C., Liu, Z., Loh, Z., Maier, F., Matthews, B., Mauder, M., Miles, N., Mitchell, L., Monteiro, V. C., Mostafavi Pak, N., Röckmann, T., Roiger, A., Roten, D., Scheutz, C., Shahrokh, N., Shepson, P. B., Stagakis, S., Tong, X., Trudinger, C. M., Velasco, E., Whetstone, J. R., Winbourne, J. B., Wu, J., Xueref-Remy, I., Yadav, V., Yu, L., Zazzeri, G., Zeng, N., and Zhou, M.: [IG3IS Urban Greenhouse Gas Emission Observation and Monitoring Good Research Practice Guidelines](#), WMO GAW Report 314, World Meteorological Organisation, 2025
3. Hossein Maazallahi, **Jia Chen**, Julianne M. Fernandez, [Methane Emissions from Natural Gas Systems: A Synthesized Review and Insights into Mitigation Gaps and Pathways](#). In: [Natural Gas in the 21st Century](#), doi: 10.5772/intechopen.1008894, 2025
4. [Shrutilipi Bhattacharjee](#), [Johannes Madl](#), **Jia Chen**, [Varad Kshirsagar](#), [Spatiotemporal Analysis](#). In: [Encyclopedia of Mathematical Geosciences](#). Encyclopedia of Earth Sciences Series. Springer, Cham. doi: 10.1007/978-3-030-26050-7\_305-1, ISBN: 978-3-030-26050-7, 2022
5. [Shrutilipi Bhattacharjee](#), [Johannes Madl](#), **Jia Chen**, [Varad Kshirsagar](#), [Spatiotemporal Modeling](#). In: [Encyclopedia of Mathematical Geosciences](#). Encyclopedia of Earth Sciences Series. Springer, Cham. doi: 10.1007/978-3-030-26050-7\_418-1, ISBN: 978-3-030-26050-7, 2022
6. **Jia Chen**, [Florian Dietrich](#) and Frank Hase, Chapter "Ground-based remote sensing", in [IG3IS Urban Greenhouse Gas Emission Observation and Monitoring Best Research Practices Guidelines](#), World Meteorological Organization (WMO) GAW IG3IS Report 2021
7. Anna Karion, **Jia Chen**, Kenneth J Davis, Irene Xueref-Remy, Chapter "Choice of background", in [IG3IS Urban Greenhouse Gas Emission Observation and Monitoring Best Research Practices Guidelines](#), World Meteorological Organization (WMO) GAW IG3IS Report 2021
8. [Shrutilipi Bhattacharjee](#), Soumya K. Ghosh, **Jia Chen**, [Semantic Kriging for Spatio-temporal Prediction](#), Studies in Computational Intelligence book series, Springer Nature, doi: 10.1007/978-981-13-8664-0, ISBN: 978-981-13-8663-3, 2019
9. **Jia Chen**, [Compact Laser-Spectroscopic Gas Sensors using Vertical-Cavity Surface-Emitting Lasers](#), Dissertation, Selected topics of semiconductor physics and technology, Walter Schottky Institut, 150 pages, ISBN: 978-3-941650-30-5, 2011

## Journal Publications (in Review)

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1. van Es, J., [Bettinelli, J.](#), **Chen, J.\***, van der Veen, C., Henne, S., and Röckmann, T.: [Isotope-based investigation of methane sources in Hamburg, Germany](#), EGU sphere [preprint], <https://doi.org/10.5194/egusphere-2026-1813>, 2026.
2. [Klappenbach, F.](#), **Chen, J.**, [Makowski, M.](#), [Luther, A.](#), Cohen, R. C., Franklin, J. E., Wofsy, S., and Jones, T.: [Novel method to locate and quantify point-source methane emissions using time series of ground-based column observations](#), EGU sphere [preprint], <https://doi.org/10.5194/egusphere-2026-204>, 2026.

3. [Ayah Abu-Hani](#), [Jia Chen\\*](#), [Vigneshkumar Balamurugan](#), Gregory Osterman, Matthäus Kiel: *From Gaps to Generalization: Predicting CO<sub>2</sub> over European Urban Areas from Targeted Satellite Observations Using Machine Learning*, submitted to Earth and Space Science, ESS Open Archive. 2025. <https://doi.org/10.22541/essoar.176442466.66381971/v1>
4. Manuel Pérez-Carrasco, Maya Nasr, Zhan Zhang, [Apisada Chulakadabba](#), Javier Roger, Raia Ottenheimer, Sébastien Roche, Maryann Sargent, Chris Chan Miller, Daniel Varon, Jack Warren, Luis Guanter, Kang Sun, Jonathan Franklin, [Jia Chen](#), Cecilia Garraffo, Xiong Liu, Ritesh Gautam, Steven Wofsy, "Plume Segmentation from MethaneSAT with Cross-Sensor Transfer Learning and Physics-Informed Postprocessing", Submitted to IEEE Transactions on Geoscience & Remote Sensing, Preprint, <https://doi.org/10.48550/arXiv.2605.24273>
5. Kathiravan Meeran, Simon Leitner, Bradley Matthews, [Jia Chen](#), Andrea Watzinger, Tall-tower isotope measurements to infer urban CO<sub>2</sub> sources: a case study of Vienna, Austria, Atmospheric Environment, in review, 2025
6. Molinier, Betty; [Aigner, Patrick](#); Brunner, Dominik; [Chen, Jia](#); Christen, Andreas; Constantin, Lionel; Denier van der Gon, Hugo; Hilland, Rainer; [Kühbacher, Daniel](#); [Li, Junwei](#); Maiwald, Robert; Super, Ingrid; Vardag, Sanam; Kljun, Natascha: Insights from the Convolution of Emission Inventories with Flux Footprints from Tall Eddy Covariance Towers at Three European Cities, in review, ACS ES&T Air, 2025
7. Lijuan Lan, Xiaoyu Han, Xinyi He, Yonggang Li, Haoyang Yu, Chunhua Yang, Weihua Gui, [Jia Chen](#): CO<sub>2</sub> Emission Inversion for Metropolis Area Based on Single-Site Monitoring using WRF-FLEXPART, submitted to Fundamental Research, 2025
8. [Sebastian Lober](#), [Florian Dietrich](#), [Jia Chen\\*](#), "Computational Fluid Dynamics Model to Simulate Methane Dispersion at Oktoberfest", ESS Open Archive, doi: 10.1002/essoar.10506185.1

## Peer Reviewed Journal Publications

99. B. Molinier, [P. Aigner](#), D. Brunner, [J. Chen](#), A. Christen, L. Constantin, H. Denier van der Gon, R. Hilland, [D. Kühbacher](#), [J. Li](#), R. Maiwald, I. Super, S. N. Vardag, and Natascha Kljun, "Insights from the Convolution of Emission Inventories with Flux Footprints from Tall EC Towers at Three European Cities", ACS ES&T Air, 2026. <https://doi.org/10.1021/acsestair.6c00148>.
98. Kheder, A., Toropainen, H., Peng, W., Antão, S., [Chen, J.](#), Boy, M., Liu Z., TopoFlow: topography-aware pollutant Flow learning for high-resolution air quality prediction. npj Clim Atmos Sci (2026). <https://doi.org/10.1038/s41612-026-01417-5>
97. Li, Y., Zhang, H., Shi, X., Li, Y., Abou-Rizk, S., Smith, J., An, Z., [Wenzel, A.](#), Song, J., Leisner, T., Keutsch, F., [Chen, J.](#), and Saathoff, H.: Sources, concentrations, and seasonal variations of VOC and aerosol particles in downtown Munich in 2023/2024, Atmos. Chem. Phys., 26, 5813–5837, <https://doi.org/10.5194/acp-26-5813-2026>, 2026.
96. Kunz, A.-K., Hammer, S., [Aigner, P.](#), Bignotti, L., Borchardt, L., [Chen, J.](#), Della Coletta, J., Emmenegger, L., Eritt, M., Gutiérrez, X., Hashemi, J., Hilland, R., Holst, C., Jordan, A., Kljun, N., Kneißl, R., Lan, C., Legendre, V., Levin, I., Loubet, B., Mauder, M., Molinier, B., Preunkert, S., Ramonet, M., Stagakis, S., and Christen, A.: 14C-based separation of fossil and non-fossil CO<sub>2</sub> fluxes in cities using relaxed eddy accumulation: results from tall-tower measurements in Zurich, Paris, and Munich, Atmos. Chem. Phys., 26, 4967–5003, <https://doi.org/10.5194/acp-26-4967-2026>, 2026.
95. [Li, J.](#), [Chen, J.\\*](#), Glauch, T., Brunner, D., Marshall, J., Ponomarev, N., et al. (2026). Fine-scale estimation of urban biogenic CO<sub>2</sub> fluxes: A novel framework integrating multiple versions of vegetation photosynthesis and respiration models and in situ measurements. Earth's Future, 14, e2025EF007458. <https://doi.org/10.1029/2025EF007458>
94. Rebecca Miller, Jonas Olbrich, Wierer Manuel, [Jia Chen](#), Michael Wurm, Cesar Ivan Alvarez, Satellite-driven modelling of NO<sub>2</sub> and PM<sub>2.5</sub> across Germany (2019–2024): A multi-sensor

machine-learning approach, *Environmental Pollution*, Volume 396, 2026, 127898, ISSN 0269-7491, <https://doi.org/10.1016/j.envpol.2026.127898>.

93. [Aigner, P.](#), [Chen, J.\\*](#), [Böhm, F.](#), Chariot, M., Emmenegger, L., [Frölich, L.](#), Grange, S., [Kühbacher, D.](#), [Kürzinger, K.](#), Laurent, O., [Makowski, M.](#), Rubli, P., [Schmitt, A.](#), and [Wenzel, A.](#): ACROPOLIS: Munich urban CO<sub>2</sub> sensor network, *Atmos. Meas. Tech.*, 19, 745–773, <https://doi.org/10.5194/amt-19-745-2026>, 2026.
92. [Kühbacher, D.](#), [Chen, J.\\*](#), [Aigner, P.](#), Ilic, M., Super, I., and Denier van der Gon, H.: DRIVE v1.0: a data-driven framework to estimate road transport emissions and temporal profiles, *Geosci. Model Dev.*, 18, 9967–9990, <https://doi.org/10.5194/gmd-18-9967-2025>, 2025.
91. Zongze Jiang, [Xiao Bi](#), Alexander W. Koch, [Jia Chen](#), Feng Yuan, Marcel Hoffmann, Membraneless optical microphone based photoacoustic spectroscopy for trace gas detection, *Sensors and Actuators B: Chemical*, Volume 449, 2026, 139160, ISSN 0925-4005, <https://doi.org/10.1016/j.snb.2025.139160>.
90. Brunner, D., Suter, I., Bernet, L., Constantin, L., Grange, S. K., Rubli, P., [Li, J.](#), [Chen, J.](#), Bigi, A., and Emmenegger, L.: Building-resolving simulations of anthropogenic and biospheric CO<sub>2</sub> in the city of Zurich with GRAMM/GRAL, *Atmos. Chem. Phys.*, 25, 14387–14410, <https://doi.org/10.5194/acp-25-14387-2025>, 2025.
89. Pais, S.M.; Bhattacharjee, S.; Madasamy, A.K.; [Balamurugan, V.](#); [Chen, J.\\*](#) High-Spatial-Resolution Estimation of XCO<sub>2</sub> Using a Stacked Ensemble Model. *Remote Sens.* 2025, 17, 3415. <https://doi.org/10.3390/rs17203415>, 2025
88. [Moritz Makowski](#) and [Jia Chen\\*](#), Ivy: A Data Acquisition System for Distributed Sensor Networks Supporting Remote Configuration and Software Updates. *Journal of Open Source Software*, 10(114), 8862. <https://doi.org/10.21105/joss.08862>, 2025
87. [Jun Zhang](#), [Jia Chen\\*](#), Sanam N. Vardag, [Haoyue Tang](#): Inverse Estimation of Urban Methane Emissions Using Both Column and Surface Observations: an OSSE Study, *Journal of Geophysical Research: Atmospheres*, 130, e2025JD043939. <https://doi.org/10.1029/2025JD043939>
86. [Jun Zhang](#), [Jia Chen\\*](#), Kai Wu, [Haoyue Tang](#): [Analyzing the Inversion Performance of a Permanent Urban Column GHG Network: An OSSE Perspective](#), *Earth and Space Science*, Earth and Space Science, 12, e2024EA004175. <https://doi.org/10.1029/2024EA004175>
85. Yang Li, Ethan Manninen, Jonathan E. Franklin, Shannon Brown, Joshua Simon Benmergui, Maryann Sargent, Apisada Chulakadabba, Taylor Jones, Ian Smith, Lucy R. Hutyrá, Conor K. Gately, [Jia Chen](#), Steven C. Wofsy, [Diurnal and seasonal dynamics of regional CO<sub>2</sub> drawdown at Harvard Forest: Integrating remote sensing and modeling perspectives](#), *Science of the Total Environment*, 981, 15 June 2025, 179580, doi: 10.1016/j.scitotenv.2025.179580, 2025
84. [Felix Böhm](#), [Moritz Makowski](#), [Patrick Aigner](#), and [Jia Chen\\*](#), "Tenta: Remote and Real-Time Sensor Network Management". *Journal of Open Source Software*, 10(105), 7311, <https://doi.org/10.21105/joss.07311>.
83. Stagakis, S., Brunner, D., [Li, J.](#), Backman, L., Karvonen, A., Constantin, L., Järvi, L., Havu, M., [Chen, J.](#), Emberger, S., and Kulmala, L.: [Intercomparison of biogenic CO<sub>2</sub> flux models in four urban parks in the city of Zurich](#), *Biogeosciences*, 22, 2133–2161, <https://doi.org/10.5194/bg-22-2133-2025>, 2025.
82. Sha, M. K., Das, S., Frey, M. M., Dubravica, D., Alberti, C., Baier, B. C., Balis, D., Bezanilla, A., Blumenstock, T., Boesch, H., Cai, Z., [Chen, J.](#), Dandocsi, A., Mazière, M. D., Foka, S., García, O., Gillespie, L. D., Griбанov, K., Gross, J., ... Zhou, M. (2025). Fiducial Reference Measurements for Greenhouse Gases (FRM4GHG): Validation of Satellite (Sentinel-5 Precursor, OCO-2, and GOSAT) Missions Using the Collaborative Carbon Column Observing Network (COCCON). *Remote Sensing*, 17(5), 734. <https://doi.org/10.3390/rs17050734>.
81. Pak Lun Fung, Omar Al-Jaghbeer, [Jia Chen](#), Ville-Veikko Paunu, Shaghayegh Vosough, Claudio Roncoli, and Leena Järvi: [A geospatial approach for dynamic on-road emission through open-access float-](#)

ing car data, *Environmental Research Letters*, <https://doi.org/10.1088/1748-9326/ad984d>, 2024

80. Vigneshkumar Balamurugan, **Jia Chen\***, Fossil fuel CO<sub>2</sub> emission signatures over India captured by OCO-2 satellite measurements, *Earth's Future*, 12, e2023EF004411, <https://doi.org/10.1029/2023EF004411>.
79. Humpage, N., Boesch, H., Okello, W., **Chen, J.**, Dietrich, F., Lunt, M. F., Feng, L., Palmer, P. I., and Hase, F.: Greenhouse gas column observations from a portable spectrometer in Uganda, *Atmos. Meas. Tech.*, 17, 5679–5707, <https://doi.org/10.5194/amt-17-5679-2024>, 2024.
78. Abu-Hani, A., **Chen, J.\***, Balamurugan, V., Wenzel, A., and Bigi, A.: Transferability of ML-based Global Calibration Models for NO<sub>2</sub> and NO Low-Cost Sensors, *Atmos. Meas. Tech.*, 17, 3917–3931, <https://doi.org/10.5194/amt-17-3917-2024>, 2024.
77. Herkommer, B., Alberti, C., Castracane, P., **Chen, J.**, Dehn, A., Dietrich, F., Deutscher, N. M., Frey, M. M., Groß, J., Gillespie, L., Hase, F., Morino, I., Pak, N. M., Walker, B., and Wunch, D.: Using a portable FTIR spectrometer to evaluate the consistency of Total Carbon Column Observing Network (TCCON) measurements on a global scale: the Collaborative Carbon Column Observing Network (COCCON) travel standard, *Atmos. Meas. Tech.*, 17, 3467–3494, <https://doi.org/10.5194/amt-17-3467-2024>, 2024.
76. S. M. Pais, S. Bhattacharjee, A. K. Madasamy and **J. Chen**, Downscaled XCO<sub>2</sub> Estimation Using Data Fusion and AI-Based Spatio-Temporal Models, in *IEEE Geoscience and Remote Sensing Letters*, vol. 21, pp. 1-5, 2024, Art no. 1001705, doi: 10.1109/LGRS.2024.3379204.
75. F. Vogel, S. Ars, D. Wunch, J. Lavoie, L. Gillespie, H. Maazallahi, T. Röckmann, J. Necki, J. Bartyzel, P. Jagoda, D. Lowry, J. France, J. Fernandez, S. Bakkaloglu, R. Fisher, M. Lanoiselle, H. Chen, M. Oudshoorn, C. Yver-Kwok, S. Defratyka, J. A. Morgui, C. Estruch, R. Curcoll, C. Grossi, **J. Chen**, F. Dietrich, A. Forstmaier, H. A. C. Denier van der Gon, S. N. C. Dellaert, J. Salo, M. Corbu, S. S. Iancu, A. S. Tudor, A. I. Scarlat, and A. Calcan, Ground-Based Mobile Measurements to Track Urban Methane Emissions from Natural Gas in 12 Cities across Eight Countries, *Environ. Sci. Technol.*, <https://doi.org/10.1021/acs.est.3c03160>, 2024
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## Dataset Publication

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## Selected Invited and Keynote Talks

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- 01/2025 [Sensor Networks and Modeling Tools for Monitoring City Emissions and Detecting UnaccountedSources](#), International Urban GHG Seminar (organized by Penn State University)
- 06/2024 [Advances in Monitoring UrbanGreenhouse Gases and Air Pollutants](#), **German Aerospace Center (DLR)**
- 04/2024 [Urban Methane Emissions: Discover the Unknown with Measurements and Modeling](#), 2024 **International Workshop on Methane Observation and Quantification**, Xuzhou, China
- 03/2024 [Monitoring Urban Greenhouse Gases and Air Quality with Sensor Network](#), Noble Seminars, Department of Physics, **University of Toronto**
- 04/2023 [Novel Sensor Networks and Methods for Urban Greenhouse Gas Monitoring](#), **EGU General Assembly 2023**, Vienna, Austria (session highlight)
- 06/2022 [Novel approaches to identify and quantify urban sources and sinks of greenhouse gases](#), 25 year anniversary symposium, **Max Planck Institute** for Biogeochemistry, Jena, Germany
- 05/2022 [Sensing and Modeling of Greenhouse Gases and Air Pollutants in Urban Environments](#), International Conference Society and Sustainability, Bucharest, Romania.
- 04/2022 [Novel methods for quantifying greenhouse gases and air pollutants in cities](#), **Leibniz Institute** for Agricultural Engineering and Bioeconomy
- 03/2022 [Greenhouse Gases and Air Pollutants in the Urban Environment: Uncovering the Unknown](#), Department of Earth and Planetary Sciences Colloquium, **Harvard University**
- 07/2021 [FTS Open Path Measurements Around Munich](#), **OSA Optical Sensors and Sensing Congress**
- 12/2020 [Stories about the Munich Urban greenhouse gas Column network \(MUCnet\) and the Oktoberfest](#), Atmospheric & Environmental Chemistry Seminar, **Harvard University**
- 06/2020 [“Ground-based Remote Sensing”](#), **World Meteorological Organization (WMO) IG3IS** workshop “Towards an International standard for Urban GHG Monitoring and assessment”
- 08/2018 [“Differential Column Network for Monitoring Urban Greenhouse Gas and Pollutant Emissions”](#), Leibniz-Institut für Troposphärenforschung (**TROPOS**), Leipzig, Germany

- 06/2018 "Here comes the sun: A new carbon detective story", Symposium Celebration of Science and Times for Steven C. Wofsy, **Harvard University**, Cambridge, USA
- 11/2016 "Atmospheric Measurements for Urban Emission Estimates of Greenhouse Gases", **UC Berkeley**, California, USA
- 02/2015 "Compact Ground-based Solar-tracking Spectrometers for Column Gradient Measurements", *Atomic and Molecular Physics Division (AMP) seminar*, **Harvard-Smithsonian Center** for Astrophysics, Cambridge, USA
- 06/2014 "Boston Column Network: Solar-Tracking Spectrometers for Urban Air Quality", *IEEE International Conference on Universal Village*, Massachusetts Institute of Technology (**MIT**), Cambridge, USA
- 04/2014 "Boston Column Network: Compact Solar-Tracking Spectrometer and Eulerian Modeling", *Colloquia*, **Max-Planck-Institute** for Biogeochemistry, Jena, Germany
- 10/2013 "Mobilität der Zukunft – ein internationaler Diskurs", *VDE MINT Symposium Mobilität der Zukunft*, Munich, Germany
- 11/2012 "Compact Gas Sensors for Household, Industrial and Environmental Applications", **Universität Potsdam**, Potsdam, Germany
- 05/2008 "Overview on Siemens CT Research Activities in Laser Based Gas Sensing", **Princeton University**, Princeton, USA