Publications and Patents

Jia Chen

Underline denotes advisee; Star * denotes that I am a corresponding author.
h-index: 34, i10-index: 75 (Google Scholar, 04/2025)

Most Important Publications (Last 10 years)

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. 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.

5. F. Toja-Silva, **J. Chen**, S. Hachinger, F. Hase, "CFD simulation of CO_2 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_2 dispersion from an urban power plant: mapping column concentrations with unprecedented high spatial resolution.

6. A. Shekhar, **J. Chen***, J. C. Paetzold, F. Dietrich, X. Zhao, S. Bhattacharjee, V. Ruisinger, S. C. Wofsy, "Anthropogenic CO_2 emissions assessment of Nile Delta using XCO_2 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_2 emissions from the Nile Delta account for 1% of global anthropogenic emissions, which is significantly more than estimated hitherto.

7. 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.

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. Rißmann, **J. Chen***, G. Osterman, F. Dietrich, M. Makowski, X. Zhao, F. Hase, M. Kiel, Validation of OCO-2 target observations using MUCCnet - Is it possible to capture urban XCO2 gradients from space?, Atmospheric Measurement Techniques, 15, 6605–6623, doi: 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_2 and O_3 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, 2021
Description: We showed German cities are at a NOx saturated regime. Future NOx reduction will likely increase O_3, unless the emissions are reduced enough to reach NOx limited conditions.

11. S. Bhattacharjee and **J. Chen***, "Prediction of satellite-based column CO_2 concentration by combining emission inventory and LULC information", IEEE Transactions on Geoscience and Remote Sensing, 58, 8285–8300, doi: 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

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

1. 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

2. 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

3. 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

4. **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

5. **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

6. 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

Peer Reviewed Journal Publications

1. 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.

2. 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., Gribanov, 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.

3. 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 CO2 flux models in four urban parks in the city of Zurich, https://doi.org/10.5194/egusphere-2024-2475, in press, 2024.

4. 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 floating car data, Environmental Research Letters, https://doi.org/10.1088/1748-9326/ad984d, 2024

5. Vigneshkumar Balamurugan, **Jia Chen***, Fossil fuel CO_2 emission signatures over India captured by OCO-2 satellite measurements, Earth's Future, 12, e2023EF004411, https://doi.org/10.1029/2023EF004411.

6. 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.

7. Abu-Hani, A., **Chen, J.***, Balamurugan, V., Wenzel, A., and Bigi, A.: Transferability of ML-based Global Calibration Models for NO2 and NO Low-Cost Sensors, Atmos. Meas. Tech., 17, 3917–3931, https://doi.org/10.5194/amt-17-3917-2024, 2024.

8. 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.

9. S. M. Pais, S. Bhattacharjee, A. K. Madasamy and **J. Chen**, Downscaled XCO_2 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.

10. F. Vogel, S. Ars, D. Wunch, J. Lavoie, L. Gillespie, H. Maazallahi, T. Röckmann, J. Nęcki, 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

11. Zhao, X., **Chen, J.***, Marschall, J., Gałkowski, M., Hachinger, S., Dietrich, F., Shekhar, A., Gensheimer, J., Wenzel, A., and Gerbig, C.: Understanding greenhouse gas (GHG) column concentrations in Munich using the Weather Research and Forecasting (WRF) model: Atmos. Chem. Phys., 23, 14325–14347, https://doi.org/10.5194/acp-23-14325-2023, 2023.

12. Balamurugan, V., **Chen, J***., Wenzel, A., and Keutsch, F. N.: Spatiotemporal modeling of air pollutant concentrations in Germany using machine learning, Atmos. Chem. Phys., 23, 10267–10285, doi: 10.5194/acp-23-10267-2023, 2023.

13. 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.

14. Patrick Aigner, Moritz Makowski, Andreas Luther, Florian Dietrich, and **Jia Chen***: Pyra: Automated EM27/SUN Greenhouse Gas Measurement Software, Journal of Open Source Software, 8, 5131, doi: 10.21105/joss.05131, 2023

15. Florian Dietrich, **Jia Chen***, Ankit Shekhar, Sebastian Lober, Konstantin Krämer, Graham Leggett, Carina van der Veen, Ilona Velzeboer, Hugo Denier van der Gon, Thomas Roeckmann, "Climate impact comparison of electric and gas-powered end-user appliances", doi: 10.1002/essoar.10509970.1, Earth's Future, 11, e2022EF002877, doi: https://doi.org/10.1029/2022EF002877

16. M. Rißmann, **J. Chen***, G. Osterman, F. Dietrich, M. Makowski, X. Zhao, F. Hase, M. Kiel, Validation of OCO-2 target observations using MUCCnet - Is it possible to capture urban XCO2 gradients from space?, Atmospheric Measurement Techniques, 15, 6605–6623, doi: 10.5194/amt-15-6605-2022, 2022

17. 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.

18. Balamurugan, V., **Chen, J.***, Qu, Z., **Bi, X.**, and Keutsch, F. N.: Secondary PM decreases significantly less than NO2 emission reductions during COVID lockdown in Germany, Atmos. Chem. Phys., 22, 7105–7129, doi: 10.5194/acp-22-7105-2022, 2022.

19. Wenwen Zhang, Hongtao Xiang, Yuanxi Wang, Xiao Bi, Yanzhe Zhang, Pengju Zhang, **Jia Chen**, Lei Wang, Yuanjin Zheng, A Signal Response Visualization Gas Recognition Algorithm Based on a Wavelet Transform Coefficient Map-Capsule Network for Artificial Olfaction, IEEE sensors journal, doi: 10.1109/JSEN.2022.3184963, 2022.

20. Alberti, C., Hase, F., Frey, M., Dubravica, D., Blumenstock, T., Dehn, A., Castracane, P., Surawicz, G.,

Harig, R., Baier, B. C., Bès, C., Bi, J., Boesch, H., Butz, A., Cai, Z., **Chen, J.**, Crowell, S. M., Deutscher, N. M., Ene, D., Franklin, J. E., García, O., Griffith, D., Grouiez, B., Grutter, M., Hamdouni, A., Houweling, S., Humpage, N., Jacobs, N., Jeong, S., Joly, L., Jones, N. B., Jouglet, D., Kivi, R., Kleinschek, R., Lopez, M., Medeiros, D. J., Morino, I., Mostafavipak, N., Müller, A., Ohyama, H., Palmer, P. I., Pathakoti, M., Pollard, D. F., Raffalski, U., Ramonet, M., Ramsay, R., Sha, M. K., Shiomi, K., Simpson, W., Stremme, W., Sun, Y., Tanimoto, H., Té, Y., Tsidu, G. M., Velazco, V. A., Vogel, F., Watanabe, M., Wei, C., Wunch, D., Yamasoe, M., Zhang, L., and Orphal, J.: Improved calibration procedures for the EM27/SUN spectrometers of the COllaborative Carbon Column Observing Network (COCCON), Atmos. Meas. Tech., 15, 2433–2463, doi: 10.5194/amt-15-2433-2022, 2022.

21. Luther, A., Kostinek, J., Kleinschek, R., Defratyka, S., Stanisavljevic, M., Forstmaier, A., Dandocsi, A., Scheidweiler, L., Dubravica, D., Wildmann, N., Hase, F., Frey, M. M., **Chen, J.**, Dietrich, F., Necki, J., Swolkien, J., Knote, C., Vardag, S. N., Roiger, A., and Butz, A.: Observational constraints on methane emissions from Polish coal mines using a ground-based remote sensing network, 22, 5859–5876, doi: 10.5194/acp-22-5859-2022, 2022.

22. 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.

23. V. Balamurugan, V. Balamurugan, and **J. Chen***, "Importance of ozone precursors information in modelling urban surface ozone variability using machine learning model", Scientific reports, 12, 5646, doi: 10.1038/s41598-022-09619-6, 2022

24. Xiangwei Cheng, Wenwen Zhang, Adrian Wenzel, **Jia Chen***, "Stacked ResNet-LSTM and CORAL model for multi-site air quality prediction", Neural Computing and Applications, doi: 10.1007/s00521-022-07175-8, 2022.

25. Kuhlmann, G., Chan, K. L., Donner, S., Zhu, Y., Schwaerzel, M., Dörner, S., **Chen, J.**, Hueni, A., Nguyen, D. H., Damm, A., Schütt, A., Dietrich, F., Brunner, D., Liu, C., Buchmann, B., Wagner, T., and Wenig, M.: Mapping the spatial distribution of NO2 with in situ and remote sensing instruments during the Munich NO2 imaging campaign, Atmos. Meas. Tech., doi: 10.5194/10.5194/amt-15-1609-2022, 2021.

26. V. Balamurugan, **J. Chen***, X. Bi, Z. Qu, J. Gensheimer, A. Shekhar, S. Bhattacharjee, F. Keutsch, "Tropospheric NO_2 and O_3 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, 2021

27. Taylor S. Jones, Jonathan E. Franklin, **Jia Chen**, Florian Dietrich, Kristian D. Hajny, Johannes C. Paetzold, Adrian Wenzel, Conor Gately, Elaine Gottlieb, Harrison Parker, Manvendra Dubey, Frank Hase, Paul B. Shepson, Levi H. Mielke, and Steven C. Wofsy, "Assessing Urban Methane Emissions using Column Observing Portable FTIR Spectrometers and a Novel Bayesian Inversion Framework", Atmos. Chem. Phys., 21, 13131–13147, doi: 10.5194/acp-21-13131-2021, 2021

28. Jose Vargas Rivero, Thiemo Gerbich, Boris Buschardt, **Jia Chen***, "Data Augmentation of Automotive LIDAR Point Clouds under Adverse Weather Situations", Sensors, doi: 10.3390/s21134503, 2021

29. Wenwen Zhang, Lei Wang, **Jia Chen***, Xiao Bi, Chenshen Chen, Jun Zhang, Volker Hans, "A Novel Gas Recognition and Concentration Estimation Model for an Artificial Olfactory System with a Gas Sensor Array", IEEE Sensors Journal, doi: 10.1109/JSEN.2021.3091582, 2021

30. Johannes Gensheimer, Alex Turner, Ankit Shekhar, Adrian Wenzel, Frank N. Keutsch, **Jia Chen***, "What are different measures of mobility changes telling us about emission reductions during the COVID-19 pandemic?", Journal of Geophysical Research: Atmospheres, doi: 10.1029/2021JD034664, 2021

31. Wenwen Zhang, Wenxin Xiao, **Jia Chen***, Lei Wang, Xiao Bi, "A Novel Gas Recognition and Concentration Detection Algorithm for Artificial Olfaction", IEEE Transactions on Instrumentation &

Measurement, doi: 10.1109/TIM.2021.3071313, 2021

32. Jose Vargas Rivero, Thiemo Gerbich, Boris Buschardt, **Jia Chen***, "The Effect of Spray Water on an Automotive LIDAR Sensor: A Real-Time Simulation Study", IEEE Transactions on Intelligent Vehicles, doi: 10.1109/TIV.2021.3067892, 2021

33. Florian Dietrich, **Jia Chen***, Benno Voggenreiter, Patrick Aigner, Nico Nachtigall, Björn 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)

34. A. Shekhar, **J. Chen***, S. Bhattacharjee, A. Buras, A. O. Castro, C. Zang, A. Rammig, "Capturing the impact of the 2018 European drought and heat across different vegetation types using OCO-2 solar-induced fluorescence", Remote Sensing, 12(19), 3249, doi: 10.3390/rs12193249, 2020.

35. Q. Tu, F. Hase, T. Blumenstock, R. Kivi, P. Heikkinen, M. K. Sha, U. Raffalski, J. Landgraf, A. Lorente, T. Borsdorff, H. Chen, F. Dietrich, **J. Chen**: "Intercomparison of atmospheric CO_2 and CH_4 abundances on regional scales in boreal areas using Copernicus Atmosphere Monitoring Service (CAMS) analysis, COllaborative Carbon Column Observing Network (COCCON) spectrometers, and Sentinel-5 Precursor satellite observations, Atmospheric Measurement Techniques, 13, 4751–4771, doi: 10.5194/amt-13-4751-2020, 2020.

36. A. Forstmaier, A. Shekhar, **J. Chen***, "Mapping of Eucalyptus in Natura 2000 areas using Sentinel 2 imagery and artificial neural networks", Remote Sensing, 12(14), 2176, doi: 10.3390/rs12142176, 2020.

37. A. O. Castro, **J. Chen**, C. S. Zang, A. Shekhar, J. C. Jimenez, S. Bhattacharjee, M. Kindu, V. H. Morales, A. Rammig, "OCO-2 solar-induced chlorophyll fluorescence variability across ecoregions of the Amazon basin and the extreme drought effects of El Niño (2015–2016)", Remote Sensing, 12(7), 1202, doi: 10.3390/rs12071202, 2020.

38. L. Lan, H. Ghasemifard, Y. Yuan, S. Hachinger, X. Zhao, S. Bhattacharjee, X. Bi, Y. Bai, A. Menzel, **J. Chen***, "Assessment of urban CO_2 measurement and source attribution in Munich based on TDLAS-WMS and trajectory analysis", Atmosphere, 11(1), 58, doi: 10.3390/atmos11010058, 2020.

39. Jose Roberto Vargas Rivero, Thiemo Gerbich, Valentina Teiluf, Boris Buschardt, **Jia Chen***, "Weather classification using an automotive LIDAR sensor based on detections on asphalt and atmosphere", Sensors, 20(15), 4306, doi: 10.3390/s20154306, 2020

40. A. Shekhar, **J. Chen***, J. C. Paetzold, F. Dietrich, X. Zhao, S. Bhattacharjee, V. Ruisinger, S. Wofsy, "Anthropogenic CO_2 emissions assessment of Nile Delta using XCO_2 and SIF data from OCO-2 satellite", Environmental Research Letters, 15, 095010, doi: 10.1088/1748-9326/ab9cfe, 2020.

41. **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)

42. S. Bhattacharjee and **J. Chen***, "Prediction of satellite-based column CO_2 concentration by combining emission inventory and LULC information", IEEE Transactions on Geoscience and Remote Sensing, 58, 8285–8300, doi: 10.1109/TGRS.2020.2985047, 2020

43. Ying Zhu, **Jia Chen***, Xiao Bi, Gerrit Kuhlmann, Ka Lok Chan, Florian Dietrich, Dominik Brunner, Sheng Ye, Mark Wenig, "Spatial and temporal representativeness of point measurements for nitrogen dioxide pollution levels in cities", Atmospheric Chemistry and Physics, 20, 13241–13251, doi: 10.5194/acp-20-13241-2020, 2020

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Conference Contributions

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Chen, Matthias Mauder, Nina Buchmann, Markus Kalberer "Assessing the biogenic CO_2 fluxes in urban green areas using an observation-constrained modelling approach", 12th International Conference on Urban Climate, Rotterdam, July 2025

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7. Li, J., **Chen, J.**, 2025. Biogenic in-situ observations (L2), Munich Soil respiration, 2024-03-26–2024-11-27. https://doi.org/10.18160/XJAR-DNRX

8. Holst, C., Jahn, C., Völksch, I., Sellmaier, S., Luther, A., **Chen, J.**, Mauder, M., 2025. Doppler Wind Lidar vertical wind profiles at Oberpostdirektion Munich, Germany (DE-OPD). https://doi.org/10.18160/9T81-C19T

9. Holst, C., Jahn, C., Völksch, I., Sellmaier, S., Luther, A., **Chen, J.**, Mauder, M., 2025. Doppler Wind Lidar vertical wind profiles at Feldkirchen Munich, Germany (FEL). https://doi.org/10.18160/6TVP-TX2B

10. Makowski, M., Luther, A., Bettinelli, J., Li, J., Kürzinger, K., **Chen, J.**, 2023. ICOS Cities Total Column CO2/CO observations using EM27/SUN FTIR Spectrometers at 5 locations in Munich, Germany (2022-12-01 - 2023-11-30, Level 1). https://doi.org/10.18160/RKFP-D18C

11. Löw, B., Makowski, M., Feld, L., Grosch, L. **Chen, J.**, Hase, F., Warneke, T., Butz, A. et al., ITMS-B-FTIR Dataset (Version 1): COCCON observations in support of ITMS (Version 1) [Dataset]. COCCON - Central Facility / EVDC - ESA Atmospheric Validation Data Centre. https://doi.org/10.48477/COCCON.ITMS-B-FTIR.R01

12. Karvonen, A., Järvi, L., Havu, M., Kaltiainen, A., Li, J., **Chen, J.**, 2025. Biogenic model results for Munich. https://doi.org/10.18160/XZV0-AX4F

13. Karvonen, A., Järvi, L., Havu, M., Li, J., **Chen, J.**, Ponomarev, N., Brunner, D., 2025. Biogenic model results for Zurich. https://doi.org/10.18160/R44Z-DPDB

14. Dietrich, Florian; **Chen, Jia**; Forstmaier, Andreas; Bi, Xiao; Reger, Björn; Luther, Andreas; Matzke, Jared; Ramezani, Mohammad; Hase, Frank; Butz, André (2023): Column-averaged dry-air mole frac-

tions of CO2, CH4 and CO recorded during an urban measurement campaign in Munich in August 2018 with five solar-tracking Fourier transform spectrometers (EM27/SUN). PANGAEA, doi: 10.1594/PANGAEA.962966, 2023

15. **Chen, J.**, Wofsy, S. C., Franklin, J. E., Jones, T., Gottlieb, E. W., Parker, H., Dubey, M. K., Hedelius, J. K., Viatte, C., and Wennberg, P. O.: Replication Data for "Differential Column Measurements Using Compact Solar-Tracking Spectrometers",doi:10.7910/DVN/J2YPX3, 2016.

Selected Invited and Keynote Talks

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