Kevin W Bowman

JPL Engineering and Science Directorate Principal

Research

My research focuses on the processes driving atmospheric composition and their consequences for climate, air quality, and public health. I lead interdisciplinary teams in developing comprehensive observational and modeling systems that integrate satellite measurements with advanced Earth system models through data assimilation and inverse modeling. This includes pioneering multi-instrument retrieval techniques for hyperspectral sensors, yielding high-accuracy estimates of trace gases like ozone and methane. These products feed into chemical data assimilation frameworks to distinguish between local and transported emissions, improving air quality assessments and climate model validation. As Deputy Project Scientist for the US GHG Center and Principal Investigator of NASA's Carbon Monitoring System Flux (CMS-Flux), I oversee the integration of diverse carbon measurements across the land, ocean, atmosphere, and anthropogenic sectors to attribute CO fluxes to spatially explicit sources and sinks. These systems are critical for understanding carbon-climate interactions, diagnosing responses to variability such as El Niño, and informing global policy assessments like the UNFCCC Global Stocktake. Collectively, my work links observational innovation with quantitative attribution to enhance our capacity to monitor and manage Earth's changing atmosphere.

Experience

2016–Present **Engineering and Science Directorate Principal**, *Jet Propulsion Laboratory, California Institute of Technology*, Pasadena

2023–Present **Deputy Project Scientist, US Greenhouse Gas Center**, *Jet Propulsion Laboratory, California Institute of Technology*, Pasadena

2023–2024 **JPL lead, Earth Information System, Greenhouse Gas (EIS-GHG)**, *Jet Propulsion Laboratory, California Institute of Technology*, Pasadena

2020–Present **Project Scientist, Tropospheric Ozone and its Precursors from Earth System Sounding (TROPESS)**, *Jet Propulsion Laboratory, California Institute of Technology*, Pasadena

2010–Present **Principal Investigator, Carbon Monitoring System Flux Pilot Project**, *Jet Propulsion Laboratory, California Institute of Technology*, Pasadena

2014–2020 **Principal Investigator, Tropospheric Emission Spectrometer (TES)**, *Jet Propulsion Laboratory, California Institute of Technology*, Pasadena

2010–2014 **Deputy Principal Investigator, Tropospheric Emission Spectrometer (TES)**, *Jet Propulsion Laboratory, California Institute of Technology*, Pasadena

2009–Present **Visiting Associate Researcher**, *Joint-Institute for Regional Earth System Science and Engineering (JIFRESSE)*, University of California, Los Angeles

1997 **NASA Graduate Student Researcher's Program Fellow**, *Georgia Institute of Technology*, Atlanta, Georgia

Education

4800 Oak Grove Dr, MS 233-200 – Pasadena, CA 91109
(818) 237 0893 • *(818) 354 2995* • *kevin.w.bowman@jpl.nasa.gov*
science.jpl.nasa.gov/people/Bowman/

1997 **Phd in Electrical Engineering**, *Georgia Institute of Technology*, Altanta, Georgia

1993 **Masters of Science in Electrical Engineering**, *Georgia Institute of Technology*, Atlanta, Georgia

1992 **Diplôme de Spécialisation en Traitement et Transmission des Informations**, *Ecole Supérieure d'Electricité (SUPELEC)*, Metz, France

1991 **Bachelor of Electrical Engineering**, *Auburn University*, Auburn, Alabama

Awards

2023 Voyager Award

2020 NASA Group Achievement Award-ACT-America

2020 NASA Group Achievement Award-FIREX-AQ

2020 NASA Group Achievement Award-MUSES Algorithm Team

2019 NASA Exceptional Public Service Medal

2015 NASA JPL Voyager Award

2015 NASA Langley, Henry J. Reid Award

2015 NASA Group Achievement Award-Observations for Climate Model Intercomparison

2014 NASA Group Achievement Award-Aura Tropospheric Emission Spectrometer Team

2013 NASA Group Achievement Award-Carbon Monitoring System Flux Project

2009 NASA Group Achievement Award-Aura Science Team Proposal Group

2007 NASA Group Achievement Award-TES Level 2 Algorithm Team

2005 NASA Group Achievement Award-Aura Project

2005 NASA Group Achievement Award–Aura Tropospheric Emission Spectrometer instrument team and the ground data system development teams

2005 Goddard Space Flight Center Group Achievement Award as a member of the Aura Team

Field Campaigns

2023 AEROMMA (NOAA/NASA) satellite team member

2019 FIREX-AQ (NOAA/NASA) satellite team member

2016 KORUS-AQ (NASA/Korea) satellite team member

2016 ACT-America (NASA) science team member

2006 INTEX-B/MILAGRO (NASA/NSF) satellite team member

2006 TexAQS/GoMACCS (Texas Air Quality Study/Gulf of Mexico Atmospheric Composition and Climate Study) (NOAA/NASA/Texas) Rapid Science Synthesis (RSS) panel member

Professional Activities

2024 Roadmap for a Coordinated Implementation of Carbon Dioxide and Methane Monitoring from Space, CEOS-CGMS report

2024 Space & Climate collaboration: United States of America and the Netherlands, White Paper

2023 WMO Global Greenhouse Gas Watch, Implementation Review Team

2023 RFI Review Team for OSTP, US Greenhouse Gas Monitoring and Measurement Information System

2023	Satellite Needs Working Group (SNWG) Subject Matter Export–Atmospheric Composition
2020–Present	JPL Science Understanding through Data Science (SUDS) member
2017–Present	External Experts Group European Union–CO2 Human Emissions (CHE) Project
2017–Present	Atmospheric Composition Constellation–Committee on Earth Observing Systems, AQ/Carbon Synergies Session Chair
2018–Present	GEOS-Chem Steering Committee: Carbon Cycle Co-Chair
2010–2018	Carbon Monitoring System Science-Frameworks Working Group Team Leader
2011	NASA Science Community Workshop on Polar Orbiting IR and MW Sounders Co-Chair
2009–2018	GEOS-Chem Steering Committee: Adjoint Model and Data Assimilation Co-Chair
2007–2008	JPL Earth system assimilation working group lead (ESAWG)

Pedagogy

2008-2017	**Guest Lecturer**, *Inverse Methods*, ESE/GE 152 ATMOSPHERIC RADIATION, Division of Geological and Planetary Sciences, California Institute of Technology
2016	**Lecturer**, *Global Carbon Cycle*, JPL Summer Climate School
2011	**Lecturer**, *Inverse Methods and Data Assimilation*, JPL Summer Climate School

Mentorship

Postdoctoral Advisor	**Paul Hamer, Adetutu Aghedo, Min Huang, Nicolas Parazoo, Thomas Walker, Yi Yin, Ed Malina, Hannah Nesser**
Thesis Committee	**Edwin Sarkission (CalState LA), Kumaresh Singh (Virginia Tech), Amir Souri (University of Houston),Oscar Nazarret (UCLA)**
Intern	**Nadia Colombi (UCLA), Mackenzie Arnold (UCLA)**

Media

2018	A tale of three continents: record carbon dioxide growth during the 2015 El Niño
2016	ACT-America Science
2015	Pollution transport seen from TES

Selected Seminars and Presentations

Invited	K. Bowman, "Carbon Emissions from the 2023 Canadian Wildfires", MOPITT 25th Anniversary, Montreal, Canada, 2025
Invited	K. Bowman, "Towards Seemless Carbon Cycle Prediction: from data assimilation to emergent constraints", NASA GMAO, 2024
Invited	K. Bowman, "Inverse Modeling and ClimateTRACE",*ClimateTRACE Annual Meeting*, New York, US, 2024
	K. Bowman, "Tropospheric ozone trends from Tropospheric Ozone From Earth System Sounding (TROPESS) in support of the Satellite Ozone Working Group (SOWG)",*TOAR*, Darmstadt, Germany, 2023
	K. Bowman, "Flux Inversion Modeling Across Scales: The Carbon Monitoring System Multiresolution Flux (CMS-MFlux)",*IWGGMS*, Paris, France, 2023
Invited	K. Bowman, "Towards long-term strategic deliverables to UNFCCC Parties",*WMO GGGW Modeling Study Group*, Bonn, Germany, 2023

K. Bowman, "Towards a New Synthesis of Atmospheric Composition from Space: The NASA TROPESS project",*EGU*, Vienna, Austria, 2023

K. Bowman, "Inverse Modeling Contribution to the US GHG Center",*CEOS*, Brussels, Belgium, 2023

Invited K. Bowman, "CEOS Pilot Top-Down CO2 Budget: Implications for an international GHG system",*WMO*, Geneva, Switzerland, 2023

Invited K. Bowman, "GHG Monitoring From Space: Prospects and Challenges",*Conference of Parties (COP27)*, Sharm El-Sheik, Egypt, 2022

Dynamic Publications

Publications: 191, Citations: 10 355, H-index: 58

Google Scholar

Publons

Publications

Anne Boynard, Catherine Wespes, Juliette Hadji-Lazaro, Selviga Sinnathamby, Daniel Hurtmans, Pierre-François Coheur, Marie Doutriaux-Boucher, Jacobus Onderwaater, Wolfgang Steinbrecht, Elyse A. Pennington, Kevin Bowman, and Cathy Clerbaux. Tropospheric Ozone Assessment Report (TOAR): 16-year ozone trends from the IASI Climate Data Record. *EGUsphere*, 2025:1–48, 2025.

Marcos Longo, Michael Keller, Lara M Kueppers, Kevin W Bowman, Ovidiu Csillik, António Ferraz, Paul R Moorcroft, Jean Pierre Ometto, Britaldo S Soares-Filho, Xiangtao Xu, Mauro L R de Assis, Eric B Görgens, Erik J L Larson, Jessica F Needham, Elsa M Ordway, Francisca R S Pereira, Ekena Rangel Pinagé, Luciane Sato, Liang Xu, and Sassan Saatchi. Degradation and deforestation increase the sensitivity of the amazon forest to climate extremes. *Environmental Research Letters*, 20(5):054024, 2025.

B. Byrne, J. Liu, K. W. Bowman, Y. Yin, J. Yun, G. D. Ferreira, S. M. Ogle, L. Baskaran, L. He, X. Li, J. Xiao, and K. J. Davis. Regional Inversion Shows Promise in Capturing Extreme-Event-Driven CO2 Flux Anomalies but Is Limited by Atmospheric CO2 Observational Coverage. *Journal of Geophysical Research: Atmospheres*, 129(6), 2024.

Brendan Byrne, Junjie Liu, Kevin W. Bowman, Madeleine Pascolini-Campbell, Abhishek Chatterjee, Sudhanshu Pandey, Kazuyuki Miyazaki, Guido R. van der Werf, Debra Wunch, Paul O. Wennberg, Coleen M. Roehl, and Saptarshi Sinha. Carbon emissions from the 2023 Canadian wildfires. *Nature*, pages 1–5, 2024.

Owen R. Cooper, Kai-Lan Chang, Kelvin Bates, Steven S. Brown, Wyndom S. Chace, Matthew M. Coggon, Alan M. Gorchov Negron, Ann M. Middlebrook, Jeff Peischl, Alison Piasecki, Nell Schafer, Chelsea E. Stockwell, Siyuan Wang, Carsten Warneke, Kristen Zuraski, Kazuyuki Miyazaki, Vivienne H. Payne, Elyse A. Pennington, John R. Worden, Kevin W. Bowman, and Brian C. McDonald. Early Season 2023 Wildfires Generated Record-Breaking Surface Ozone Anomalies Across the U.S. Upper Midwest. *Geophysical Research Letters*, 51(22), 2024.

Lucas A. Estrada, Daniel J. Varon, Melissa Sulprizio, Hannah Nesser, Zichong Chen, Nicholas Balasus, Sarah E. Hancock, Megan He, James D. East, Todd A. Mooring, Alexander Oort Alonso, Joannes D. Maasakkers, Ilse Aben, Sabour Baray, Kevin W. Bowman, John R. Worden, Felipe J. Cardoso-Saldaña, Emily Reidy, and Daniel J. Jacob.

Integrated Methane Inversion (IMI) 2.0: an improved research and stakeholder tool for monitoring total methane emissions with high resolution worldwide using TROPOMI satellite observations. *EGUsphere*, 2024:1–31, 2024.

Junjie Liu, Kevin Bowman, Paul I. Palmer, Joanna Joiner, Paul Levine, A. Anthony Bloom, Liang Feng, Sassan Saatchi, Michael Keller, Marcos Longo, David Schimel, and Paul O. Wennberg. Enhanced Carbon Flux Response to Atmospheric Aridity and Water Storage Deficit During the 2015–2016 El Niño Compromised Carbon Balance Recovery in Tropical South America. *AGU Advances*, 5(4), 2024.

Junjie Liu, David Baker, Sourish Basu, Kevin Bowman, Brendan Byrne, Frederic Chevallier, Wei He, Fei Jiang, Matthew S. Johnson, Terence L. Kubar, Xing Li, Zhiqiang Liu, Scot M. Miller, Sajeev Philip, Jingfeng Xiao, Jeongmin Yun, and Ning Zeng. The reduced net carbon uptake over Northern Hemisphere land causes the close-to-normal CO2 growth rate in 2021 La Niña. *Science Advances*, 10(23):eadl2201, 2024.

Edward Malina, Kevin W. Bowman, Valentin Kantchev, Le Kuai, Thomas P. Kurosu, Kazuyuki Miyazaki, Vijay Natraj, Gregory B. Osterman, Fabiano Oyafuso, and Matthew D. Thill. Joint spectral retrievals of ozone with Suomi NPP CrIS augmented by S5P/TROPOMI. *Atmospheric Measurement Techniques*, 17(17):5341–5371, 2024.

Sudhanshu Pandey, John B. Miller, Sourish Basu, Junjie Liu, Brad Weir, Brendan Byrne, Frédéric Chevallier, Kevin W. Bowman, Zhiqiang Liu, Feng Deng, Christopher W. O'Dell, and Abhishek Chatterjee. Toward Low-Latency Estimation of Atmospheric CO2 Growth Rates Using Satellite Observations: Evaluating Sampling Errors of Satellite and In Situ Observing Approaches. *AGU Advances*, 5(4), 2024.

Brendan Byrne, David F. Baker, Sourish Basu, Michael Bertolacci, Kevin W. Bowman, Dustin Carroll, Abhishek Chatterjee, Frédéric Chevallier, Philippe Ciais, Noel Cressie, David Crisp, Sean Crowell, Feng Deng, Zhu Deng, Nicholas M. Deutscher, Manvendra K. Dubey, Sha Feng, Omaira E. García, David W. T. Griffith, Benedikt Herkommer, Lei Hu, Andrew R. Jacobson, Rajesh Janardanan, Sujong Jeong, Matthew S. Johnson, Dylan B. A. Jones, Rigel Kivi, Junjie Liu, Zhiqiang Liu, Shamil Maksyutov, John B. Miller, Scot M. Miller, Isamu Morino, Justus Notholt, Tomohiro Oda, Christopher W. O'Dell, Young-Suk Oh, Hirofumi Ohyama, Prabir K. Patra, Hélène Peiro, Christof Petri, Sajeev Philip, David F. Pollard, Benjamin Poulter, Marine Remaud, Andrew Schuh, Mahesh K. Sha, Kei Shiomi, Kimberly Strong, Colm Sweeney, Yao Té, Hanqin Tian, Voltaire A. Velazco, Mihalis Vrekoussis, Thorsten Warneke, John R. Worden, Debra Wunch, Yuanzhi Yao, Jeongmin Yun, Andrew Zammit-Mangion, and Ning Zeng. National CO2 budgets (2015–2020) inferred from atmospheric CO2 observations in support of the global stocktake. *Earth System Science Data*, 15(2):963–1004, 2023.

Christian A. DiMaria, Dylan B. A. Jones, Helen Worden, A. Anthony Bloom, Kevin Bowman, Trissevgeni Stavrakou, Kazuyuki Miyazaki, John Worden, Alex Guenther, Chinmoy Sarkar, Roger Seco, Jeong-Hoo Park, Julio Tota, Eliane Gomes Alves, and Valerio Ferracci. Optimizing the Isoprene Emission Model MEGAN With Satellite and Ground-Based Observational Constraints. *Journal of Geophysical Research: Atmospheres*, 128(4), 2023.

Paul A. Levine, A. Anthony Bloom, Kevin W. Bowman, John T. Reager, John R. Worden, Junjie Liu, Nicholas C. Parazoo, Victoria Meyer, Alexandra G. Konings, and Marcos Longo. Water Stress Dominates 21st-Century Tropical Land Carbon Uptake. *Global Biogeochemical Cycles*, 37(12), 2023.

Kazuyuki Miyazaki and Kevin Bowman. Predictability of fossil fuel CO2 from air quality emissions. *Nature Communications*, 14(1):1604, 2023.

Gregory R. Quetin, Caroline A. Famiglietti, Nathan C. Dadap, A. Anthony Bloom, Kevin W. Bowman, Noah S. Diffenbaugh, Junjie Liu, Anna T. Trugman, and Alexandra G. Konings. Attributing Past Carbon Fluxes to CO2 and Climate Change: Respiration Response to CO2 Fertilization Shifts Regional Distribution of the Carbon Sink. *Global Biogeochemical Cycles*, 37(2), 2023.

Takashi Sekiya, Kazuyuki Miyazaki, Henk Eskes, Kevin Bowman, Kengo Sudo, Yugo Kanaya, and Masayuki Takigawa. The worldwide COVID-19 lockdown impacts on global secondary inorganic aerosols and radiative budget. *Science Advances*, 9(30):eadh2688, 2023.

Brendan Byrne, Junjie Liu, Yonghong Yi, Abhishek Chatterjee, Sourish Basu, Rui Cheng, Russell Doughty, Frédéric Chevallier, Kevin W. Bowman, Nicholas C. Parazoo, David Crisp, Xing Li, Jingfeng Xiao, Stephen Sitch, Bertrand Guenet, Feng Deng, Matthew S. Johnson, Sajeev Philip, Patrick C. McGuire, and Charles E. Miller. Multi-year observations reveal a larger than expected autumn respiration signal across northeast Eurasia. *Biogeosciences*, 19(19):4779–4799, 2022.

Brendan Byrne, Junjie Liu, Yonghong Yi, Abhishek Chatterjee, Sourish Basu, Rui Cheng, Russell Doughty, Frédéric Chevallier, Kevin W. Bowman, Nicholas C. Parazoo, David Crisp, Xing Li, Jingfeng Xiao, Stephen Sitch, Bertrand Guenet, Feng Deng, Matthew S. Johnson, Sajeev Philip, Patrick C. McGuire, and Charles E. Miller. Multi-year observations reveal a larger than expected autumn respiration signal across northeast Eurasia. *Biogeosciences Discussions*, 2022:1–28, 2022.

Brendan Byrne, David F. Baker, Sourish Basu, Michael Bertolacci, Kevin W. Bowman, Dustin Carroll, Abhishek Chatterjee, Frédéric Chevallier, Philippe Ciais, Noel Cressie, David Crisp, Sean Crowell, Feng Deng, Zhu Deng, Nicholas M. Deutscher, Manvendra Dubey, Sha Feng, Omaira García, David W. T. Griffith, Benedikt Herkommer, Lei Hu, Andrew R. Jacobson, Rajesh Janardanan, Sujong Jeong, Matthew S. Johnson, Dylan B. A. Jones, Rigel Kivi, Junjie Liu, Zhiqiang Liu, Shamil Maksyutov, John B. Miller, Scot M. Miller, Isamu Morino, Justus Notholt, Tomohiro Oda, Christopher W. O'Dell, Young-Suk Oh, Hirofumi Ohyama, Prabir K. Patra, Hélène Peiro, Christof Petri, Sajeev Philip, David F. Pollard, Benjamin Poulter, Marine Remaud, Andrew Schuh, Mahesh K. Sha, Kei Shiomi, Kimberly Strong, Colm Sweeney, Yao Té, Hanqin Tian, Voltaire A. Velazco, Mihalis Vrekoussis, Thorsten Warneke, John R. Worden, Debra Wunch, Yuanzhi Yao, Jeongmin Yun, Andrew Zammit-Mangion, and Ning Zeng. National CO¡sub¿2¡/sub¿ budgets (2015–2020) inferred from atmospheric CO¡sub¿2¡/sub¿ observations in support of the Global Stocktake. *Earth System Science Data Discussions*, 2022:1–59, 2022.

Dustin Carroll, Dimitris Menemenlis, Stephanie Dutkiewicz, Jonathan M. Lauderdale, Jess F. Adkins, Kevin W. Bowman, Holger Brix, Ian Fenty, Michelle M. Gierach, Chris Hill, Oliver Jahn, Peter Landschützer, Manfredi Manizza, Matt R. Mazloff, Charles E. Miller, David S. Schimel, Ariane Verdy, Daniel B. Whitt, and Hong Zhang. Attribution of space-time variability in global-ocean dissolved inorganic carbon. *Global Biogeochemical Cycles*, 2022.

Tai-Long He, Dylan B. A. Jones, Kazuyuki Miyazaki, Kevin W. Bowman, Zhe Jiang, Xiaokang Chen, Rui Li, Yuxiang Zhang, and Kunna Li. Inverse modelling of Chinese

NOx emissions using deep learning: integrating in situ observations with a satellite-based chemical reanalysis. *Atmospheric Chemistry and Physics*, 22(21):14059–14074, 2022.

Min Huang, James H. Crawford, Gregory R. Carmichael, Kevin W. Bowman, Sujay V. Kumar, and Colm Sweeney. Satellite soil moisture data assimilation impacts on modeling weather variables and ozone in the southeastern US – Part 2: Sensitivity to dry-deposition parameterizations. *Atmospheric Chemistry and Physics*, 22(11):7461–7487, 2022.

George C Hurtt, Arlyn Andrews, Kevin Bowman, Molly E Brown, Abhishek Chatterjee, Vanessa Escobar, Lola Fatoyinbo, Peter Griffith, Maddie Guy, Sean P Healey, Daniel J Jacob, Robert Kennedy, Steven Lohrenz, Megan E McGroddy, Valeria Morales, Thomas Nehrkorn, Lesley Ott, Sassan Saatchi, Edil Sepulveda Carlo, Shawn P Serbin, and Hanqin Tian. The NASA Carbon Monitoring System Phase 2 synthesis: scope, findings, gaps and recommended next steps. *Environmental Research Letters*, 17(6):063010, 2022.

Le Kuai, Nicholas C. Parazoo, Mingjie Shi, Charles E. Miller, Ian Baker, Anthony A. Bloom, Kevin Bowman, Meemong Lee, Zhao-Cheng Zeng, Roisin Commane, Stephen A. Montzka, Joe Berry, Colm Sweeney, John B. Miller, and Yuk L. Yung. Quantifying Northern High Latitude Gross Primary Productivity (GPP) Using Carbonyl Sulfide (OCS). *Global Biogeochemical Cycles*, 36(9), 2022.

Edward Malina, Kevin W Bowman, Valentin Kantchev, Le Kuai, Thomas P Kurosu, Kazuyuki Miyazaki, Vijay Natraj, Gregory B Osterman, and Matthew D Thill. Joint spectral retrievals of ozone with Suomi NPP CrIS augmented by S5P/TROPOMI. *EGUsphere*, 2022:1–59, 2022.

Kazuyuki Miyazaki, Jessica L Neu, Greg Osterman, and Kevin Bowman. Changes in US background ozone associated with the 2011 turnaround in Chinese NOx emissions. *Environmental Research Communications*, 4(4):045003, 2022.

Kazuyuki Miyazaki and Kevin Bowman. Predictability of fossil fuel CO2 from air quality emissions. *Nature Communication in review*, 2022.

Vivienne H. Payne, Susan S. Kulawik, Emily V. Fischer, Jared F. Brewer, L. Gregory Huey, Kazuyuki Miyazaki, John R. Worden, Kevin W. Bowman, Eric J. Hintsa, Fred Moore, James W. Elkins, and Julieta Juncosa Calahorrano. Satellite measurements of peroxyacetyl nitrate from the Cross-Track Infrared Sounder: comparison with ATom aircraft measurements. *Atmospheric Measurement Techniques*, 15(11):3497–3511, 2022.

Mingjie Shi, John R. Worden, Adriana Bailey, David Noone, Camille Risi, Rong Fu, Sarah Worden, Robert Herman, Vivienne Payne, Thomas Pagano, Kevin Bowman, A. Anthony Bloom, Sassan Saatchi, Junjie Liu, and Joshua B. Fisher. Amazonian terrestrial water balance inferred from satellite-observed water vapor isotopes. *Nature Communications*, 13(1):2686, 2022.

James R. Stinecipher, Philip Cameron-Smith, Le Kuai, Norbert Glatthor, Michael Höpfner, Ian Baker, Christian Beer, Kevin Bowman, Meemong Lee, Scot M. Miller, Nicholas Parazoo, and J. Elliott Campbell. Remotely Sensed Carbonyl Sulfide Constrains Model Estimates of Amazon Primary Productivity. *Geophysical Research Letters*, 49(9), 2022.

Helen M. Worden, Gene L. Francis, Susan S. Kulawik, Kevin W. Bowman, Karen Cady-Pereira, Dejian Fu, Jennifer D. Hegarty, Valentin Kantchev, Ming Luo, Vivienne H. Payne, John R. Worden, Róisín Commane, and Kathryn McKain. TROPESS/CrIS carbon monoxide

profile validation with NOAA GML and ATom in situ aircraft observations. *Atmospheric Measurement Techniques*, 15(18):5383–5398, 2022.

Armineh Barkhordarian, Kevin W Bowman, Noel Cressie, Jeffrey Jewell, and Junjie Liu. Emergent constraints on tropical atmospheric aridity—carbon feedbacks and the future of carbon sequestration. *Environmental Research Letters*, 16(11):114008, 2021.

Rebecca R. Buchholz, Helen M. Worden, Mijeong Park, Gene Francis, Merritt N. Deeter, David P. Edwards, Louisa K. Emmons, Benjamin Gaubert, John Gille, Sara Martínez-Alonso, Wenfu Tang, Rajesh Kumar, James R. Drummond, Cathy Clerbaux, Maya George, Pierre-François Coheur, Daniel Hurtmans, Kevin W. Bowman, Ming Luo, Vivienne H. Payne, John R. Worden, Mian Chin, Robert C. Levy, Juying Warner, Zigang Wei, and Susan S. Kulawik. Air pollution trends measured from Terra: CO and AOD over industrial, fire-prone, and background regions. *Remote Sensing of Environment*, 256:112275, 2021.

B. Byrne, J. Liu, M. Lee, Y. Yin, K. W. Bowman, K. Miyazaki, A. J. Norton, J. Joiner, D. F. Pollard, D. W. T. Griffith, V. A. Velazco, N. M. Deutscher, N. B. Jones, and C. Paton-Walsh. The Carbon Cycle of Southeast Australia During 2019–2020: Drought, Fires, and Subsequent Recovery. *AGU Advances*, 2(4), 2021.

Hansen Cao, Daven K. Henze, Karen Cady-Pereira, Brian C. McDonald, Colin Harkins, Kang Sun, Kevin W. Bowman, Tzung-May Fu, and Muhammad O. Nawaz. COVID-19 Lockdowns Afford the First Satellite-Based Confirmation That Vehicles Are an Under-recognized Source of Urban NH3 Pollution in Los Angeles. *Environmental Science & Technology Letters*, 2021.

Nadia K Colombi, Kazuyuki Miyazaki, Kevin W Bowman, Jessica L Neu, and Daniel J Jacob. A new methodology for inferring surface ozone from mutltispectral satellite measurements. *Environmental Research Letters*, 2021.

Daniel H. Cusworth, A. Anthony Bloom, Shuang Ma, Charles E. Miller, Kevin Bowman, Yi Yin, Joannes D. Maasakkers, Yuzhong Zhang, Tia R. Scarpelli, Zhen Qu, Daniel J. Jacob, and John R. Worden. A Bayesian framework for deriving sector-based methane emissions from top-down fluxes. *Communications Earth & Environment*, 2(1):242, 2021.

Kenneth J Davis, Edward V Browell, Sha Feng, Thomas Lauvaux, Michael D Obland, Sandip Pal, Bianca C Baier, David F Baker, Ian T Baker, Zachary R Barkley, Kevin W Bowman, Yu Yan Cui, A Scott Denning, Joshua P DiGangi, Jeremy T Dobler, Alan Fried, Tobias Gerken, Klaus Keller, Bing Lin, Amin R Nehrir, Caroline P Normile, Christopher W O'Dell, Lesley E Ott, Anke Roiger, Andrew E Schuh, Colm Sweeney, Yaxing Wei, Brad Weir, Ming Xue, and Christopher A Williams. The Atmospheric Carbon and Transport (ACT) – America Mission. *Bulletin of the American Meteorological Society*, pages 1–54, 2021.

Min Huang, James H. Crawford, Joshua P. DiGangi, Gregory R. Carmichael, Kevin W. Bowman, Sujay V. Kumar, and Xiwu Zhan. Satellite soil moisture data assimilation impacts on modeling weather variables and ozone in the southeastern US – Part 1: An overview. *Atmospheric Chemistry and Physics*, 21(14):11013–11040, 2021.

Zhe Jiang, Hongrong Shi, Bin Zhao, Yu Gu, Yifang Zhu, Kazuyuki Miyazaki, Xin Lu, Yuqiang Zhang, Kevin W. Bowman, Takashi Sekiya, and Kuo-Nan Liou. Modeling the impact of COVID-19 on air quality in southern California: implications for future control policies. *Atmospheric Chemistry and Physics*, 21(11):8693–8708, 2021.

Joshua L. Laughner, Jessica L. Neu, David Schimel, Paul O. Wennberg, Kelley Barsanti, Kevin W. Bowman, Abhishek Chatterjee, Bart E. Croes, Helen L. Fitzmaurice, Daven K. Henze, Jinsol Kim, Eric A. Kort, Zhu Liu, Kazuyuki Miyazaki, Alexander J. Turner, Susan Anenberg, Jeremy Avise, Hansen Cao, David Crisp, Joost de Gouw, Annmarie Eldering, John C. Fyfe, Daniel L. Goldberg, Kevin R. Gurney, Sina Hasheminassab, Francesca Hopkins, Cesunica E. Ivey, Dylan B. A. Jones, Junjie Liu, Nicole S. Lovenduski, Randall V. Martin, Galen A. McKinley, Lesley Ott, Benjamin Poulter, Muye Ru, Stanley P. Sander, Neil Swart, Yuk L. Yung, and Zhao-Cheng Zeng. Societal shifts due to COVID-19 reveal large-scale complexities and feedbacks between atmospheric chemistry and climate change. *Proceedings of the National Academy of Sciences*, 118(46):e2109481118, 2021.

Enhui Liao, Laure Resplandy, Junjie Liu, and Kevin W. Bowman. Future Weakening of the ENSO Ocean Carbon Buffer Under Anthropogenic Forcing. *Geophysical Research Letters*, 48(18), 2021.

Joannes D. Maasakkers, Daniel J. Jacob, Melissa P. Sulprizio, Tia R. Scarpelli, Hannah Nesser, Jianxiong Sheng, Yuzhong Zhang, Xiao Lu, A. Anthony Bloom, Kevin W. Bowman, John R. Worden, and Robert J. Parker. 2010–2015 North American methane emissions, sectoral contributions, and trends: a high-resolution inversion of GOSAT observations of atmospheric methane. *Atmospheric Chemistry and Physics*, 21(6):4339–4356, 2021.

Kazuyuki Miyazaki, Kevin Bowman, Takashi Sekiya, Masayuki Takigawa, Jessica L. Neu, Kengo Sudo, Greg Osterman, and Henk Eskes. Global tropospheric ozone responses to reduced NOx emissions linked to the COVID-19 worldwide lockdowns. *Science Advances*, 7(24):eabf7460, 2021.

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4800 Oak Grove Dr, MS 233-200 – Pasadena, CA 91109
(818) 237 0893 • *(818) 354 2995* • *kevin.w.bowman@jpl.nasa.gov*
science.jpl.nasa.gov/people/Bowman/