

**ABHISHEK CHATTERJEE**

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**EDUCATION**

University of Michigan, Ann Arbor, MI	Environmental Engineering	PhD 2012
University of Michigan, Ann Arbor, MI	Environmental and Water Resources Engineering	MSE 2007
Delhi College of Engineering, New Delhi	Civil and Environmental Engineering	BE 2006

**POSITIONS HELD**

NASA Jet Propulsion Laboratory, California Institute of Technology, Pasadena, California, US

<b>Project Scientist</b> , Orbiting Carbon Observatory-3	01/2022 – present
<b>Deputy Project Scientist</b> , Orbiting Carbon Observatory-2	01/2022 – present
<b>Scientist</b> , Carbon Cycle and Ecosystems Group	10/2021 – present

- Leading OCO-2 and OCO-3 project and mission teams, including calibration, algorithm, validation, mission planning and science groups and effective communications of project achievements internally and externally to JPL, NASA, and international space agency partners
- Understanding the interactions between climate and the carbon cycle, with specific focus on the response of the carbon cycle to extreme events and disturbances
- Improving accounting of local and urban greenhouse gas emission estimates using space-based observations to support national and sub-national policy and decision-making process
- Developing and implementing Observing System Simulation Experiments (OSSE) to define NASA's next generation of missions for observing greenhouse gases from space

Universities Space Research Association, NASA Goddard Space Flight Center, Maryland, US

<b>Senior Scientist and Group Lead</b>	03/2019 – 09/2021
<b>Scientist</b>	01/2017 – 03/2019
<b>Associate Scientist</b>	01/2015 – 12/2016

- Group lead and managerial duties included enabling interaction between USRA scientists, GMAO and NASA Goddard Earth Sciences division, monitoring compliance and managing resources on the GESTAR cooperative agreement, fostering and mentoring early-career scientists
- Developed and implemented carbon cycle assimilation and predictive modeling capabilities within NASA's GEOS modeling framework to constrain global and regional carbon cycle dynamics
- Studied the linkages between the carbon and the water cycle over 'tipping-point' regions by exploiting the synergy between NASA's remote-sensing missions and field campaigns

- Postdoctoral Fellow**, NOAA Climate and Global Change Program,  
National Center for Atmospheric Research, Colorado, US 01/2013 – 12/2014
- Developed a coupled ocean-atmosphere data assimilation system based on the NCAR Community Earth System Model (CESM)
  - Developed a framework to evaluate the skill of coupled systems for seasonal-to-interannual MJO predictions
- Visiting Investigator**, Department of Global Ecology,  
Carnegie Institution for Science, California, US 07/2011 – 12/2012
- Developed prototype of a large-scale parallel geostatistical CO<sub>2</sub> data assimilation system for real-time integration of *in situ* and remote sensing CO<sub>2</sub> concentrations (CO2DAAD)
- Graduate Student Research Assistant**, Environmental and Water Resources,  
Department of Civil and Environmental Engineering, University of Michigan,  
Ann Arbor, Michigan, US 01/2008 – 12/2012
- Developed geostatistical tools for integrating multi-scale remote sensing data at high spatiotemporal scales
- Summer Fellow**, Great Lakes Environmental Research Laboratory,  
The National Oceanic and Atmospheric Administration (NOAA),  
Ann Arbor, Michigan, US 05/2007 - 08/2007
- Developed improved data fusion methods for estimating over-lake precipitation
- Intern**, Environmental Division, National Productivity Council,  
New Delhi, IN 12/2005 - 02/2006
- Developed waste minimization techniques for a medium scale textile processing plant; Carried out water and ETP audit for the same.
- Intern**, Environmental Internship Program, Environmental Management  
Centre, Mumbai, IN 06/2005 - 07/2005
- Developed strategies and a comprehensive toolbox to facilitate waste management and air quality control in industries.
- Intern**, Biomedical Waste Management, Jaipur Golden Hospital,  
New Delhi, IN 06/2004 - 07/2004
- Helped analyze and implement technologies for proper handling and disposal of biomedical waste in the hospital premises.

## PROFESSIONAL SERVICE AND MEMBERSHIP

### *National and International Service*

- *Committee Chair and/or Committee Member Roles for AGU and AMS*

- Member, Atmospheric Sciences Fall Committee Meeting, Student Travel Grants, American Geophysical Union (AGU), 2024–*present*
  - Chair, Charles S. Falkenberg Award Selection Committee, American Geophysical Union (AGU), 2019–2023
  - Conference Co-Chair, Conference on Atmospheric Chemistry, AMS Annual Meeting, 2021–2024
  - Member, Committee on Atmospheric Chemistry, Science and Technology Advisory Committee (STAC) to the American Meteorological Society (AMS), 2018–2024
  - Member, Atmospheric Sciences Early Career Committee, American Geophysical Union (AGU), 2019–2020
- *North American Carbon Program (NACP) and U.S. Global Change Research Program (USGCRP)*
- Co-lead, Third Decadal U.S. Carbon Cycle Science Plan
  - Co-chair, NACP Science Leadership Group
  - Carbon Cycle Interagency Working Group, U.S. Global Change Research Program
  - Principal Investigators Planning Committee, North American Carbon Program, 2015-2017
  - Chapter co-lead, 2<sup>nd</sup> State of the Carbon Cycle Report (SOCCR-2), “Chapter 19 - *Future of the North American Carbon Cycle*”
  - Chapter coauthor, 2<sup>nd</sup> State of the Carbon Cycle Report (SOCCR-2), “Chapter 8 – *Atmosphere*”
  - Chapter coauthor, Fifth National Climate Assessment (NCA5), “Chapter 2 – *Climate Trends*”
- *World Meteorological Organization (WMO) and World Climate Research Programme (WCRP)*
- Member, Expert Team on the Atmospheric Composition Network Design and Evolution, Environmental Pollution and Atmospheric Chemistry Scientific Steering Committee (EPAC SSC), WMO
  - Member, Global Emissions Initiative (GEIA), Near Real Time (NRT) Emissions Expert Workgroup
  - Affiliate Member, Safe Landing Climates Lighthouse Activity – Understanding High-Risk Events and Perturbed Carbon Cycle, WCRP
- *NASA Arctic-Boreal Vulnerability Experiment Program (ABOVE)*
- Chair, Carbon Dynamics Working Group, 2017 - 2022
  - Guest Editor, ERL Special Issue/Collection on *Resiliency and Vulnerability of Arctic and Boreal Ecosystems to Environmental Change: Advances and Outcomes of ABOVE*
  - Member, Science Team Planning Committee, 2018 - 2022
- *NASA Carbon Monitoring System (CMS)*
- Chair, Flux and Atmospheric Validation Working Group, 2019 - 2022
  - Guest Editor, ERL Special Issue/Collection on *Carbon Monitoring Systems Research and Applications*

- *Scientific Research Proposal Review Panel Member*
  - Department of Energy Office of Science, Office of Biological & Environmental Research (BER) - BGC-Feedbacks Scientific Focus Area and Earth System Model Development and Analysis programs
  - European Research Council (ERC) Consolidator Grant
  - NOAA Modeling, Analysis, Predictions, and Projections Program, Atmospheric Chemistry, Carbon Cycle and Climate (AC4) Program
  - NASA ROSES Carbon Cycle Science Solicitation, Carbon Monitoring System, Terrestrial Ecology and New Investigator Programs
  - NASA Earth and Space Science (graduate student) Fellowships
  
- *Journal Editorial Roles*
  - Editor, Atmospheric Chemistry and Physics (ACP), Copernicus GmbH
  - Associate Editor, Atmospheric Measurement Techniques (AMT), Copernicus GmbH
  - Associate Editor, Data-driven Climate Sciences, Frontiers in Big Data, Frontiers
  
- *Journal Reviewer*
  - Nature Climate Change, Journal of Geophysical Research (Atmospheres), Journal of Geophysical Research (Biogeosciences), Biogeosciences, Atmospheric Chemistry and Physics, Monthly Weather Review, Atmospheric Measurement Techniques, Geoscientific Model Development, Journal of Applied Meteorology and Climatology, Water Resources Research, Remote Sensing of Environment, IEEE Trans. on Geoscience and Remote Sensing, and Practical Uses of Math and Science (online journal for pre-college education)
  
- *Session Convener and Chair Duties*
  - American Geophysical Union Fall Meeting
    - *The Resilience and Vulnerability of Arctic and Boreal Ecosystems to Climate Change*, 2017 - present
    - *Constraining Biosphere-Atmosphere Exchange Processes using Remote-sensing and In Situ Observations*, 2011 – present
  - American Meteorological Society Annual Meeting
    - *Greenhouse Gases*, 2015 – present
  - International Boreal Forest Research Association (IBFRA)
    - *Changing Carbon Cycle Dynamics of Boreal Ecosystems*, 2021
  - 17<sup>th</sup> International Workshop on Greenhouse Gas Measurements from Space, Virtual Meeting, Planning Committee Member, 2021
  - Asia-Oceania Geosciences Annual Meeting
    - *From GHG Observations to Fluxes: Top-Down Measurements of the Carbon Cycle*, 2018
  - North American Carbon Program Meetings
    - 6<sup>th</sup> NACP Meeting, chaired 3 different sessions - ‘Critical Regions’, ‘Diagnosis of the Carbon Cycle’, & ‘Linking Carbon Cycle Science to Decision Making’, 2017

- World Weather Open Science Conference
  - Session “*Data Assimilation Methodology and Diagnostic Tools*”, 2014
- *Judge*
  - *Outstanding Student Paper Awards (OSPA) Program*, AGU Fall Meeting
  - *Annual AMS Student Conference*, AMS Annual Meeting

#### **Universities Space Research Association Service**

- *GESTAR People Committee*, 2015 – 2016
- *Panel Member, Science Career Panel, Mosaics in Science Career Workshop*, National Park Service, 2016

#### **University Corporation for Atmospheric Research Service**

- *Research Mentor*, Significant Opportunities in Atmospheric Research and Science (SOARS) Program, Summer 2014

#### **University of Michigan Service**

- *Co-chair*, Engineering Graduate Symposium 2009, College of Engineering.
- *Co-chair*, Engineering Departmental Visitation 2009, College of Engineering.
- *Organizing Committee Member*, New Graduate Student Welcome Day 2009, College of Engineering.
- *I-Connect Graduate Volunteer*, Rackham I-Connect Program, 2009-2010, Rackham Graduate School.
- *Organizer*, ASEE Summer Seminar Series 2009 and 2008, U-M chapter of American Society for Engineering and Education (ASEE).
- *Session Co- Chair*, Civil, Environmental and Atmospheric Sciences Session, Engineering Graduate Symposium 2008, College of Engineering.
- *Member*, Student Award (Hugh Rumler Prize) Committee 2008, College of Engineering.
- *Member*, Engineering Departmental Visitation Committee 2008, College of Engineering.
- *Session Moderator and Organizing Committee Member*, New Graduate Student Welcome Day 2008, College of Engineering.
- *Member*, Planning Committee, Energy Day 2007, Michigan Memorial Phoenix Energy Institute.
- *International Student Mentor*, 2007-2009, Rackham Graduate School.
- *Department of Civil and Environmental Engineering Representative*, 2006-2010, College of Engineering Graduate Student Advisory Committee (GSAC), under the Associate Dean for Graduate Education.
- *Student Leader*, Deans’ Forum Luncheon 2009, College of Engineering
- *Student Leader*, Communicating with your Advisor Workshop 2008, College of Engineering.
- *Student Leader*, Academic Career in Engineering and Science (ACES) Workshop 2007, College of Engineering.
- *Student Leader*, Fellowship Application Workshop 2007, College of Engineering.
- *Student Leader*, Effective Presentations Workshop 2007, College of Engineering.

#### **Delhi College of Engineering Service**

- *Editor*, ‘Reverie-the continuum’, Delhi College of Engineering Magazine, 2005-2006
- *Chief Organizer*, ‘TECHNODROME 2004’, Annual Technical Festival of the Department of Civil and Environmental Engineering, 2004
- *Co-Editor*, ‘Epicenter’, Souvenir of TECHNODROME 2004
- *Member*, Organizing Committee, National Conference on Innovative Approaches in the Management of Environment (IAME), 2003

### Community Service

- *Volunteer and Donor*, American Red Cross, 2010-present
- *Volunteer*, Humane Society of Boulder Valley, 2013
- *Volunteer*, Humane Society of Huron Valley, 2009-2011
- *Volunteer*, United Nation Development Programs (UNDP), 2004-2005

### Member

- American Association for the Advancement of Science (AAAS)
- American Geophysical Union (AGU)
- European Geosciences Union (EGU)
- Asia-Oceania Geosciences Society (AOGS)
- American Meteorological Society (AMS)
- Society of Industrial and Applied Mathematics (SIAM)

### HONORS AND AWARDS

- Team Award, Earth Sciences Section, *Jet Propulsion Laboratory*, 2024
- Voyager Award, Earth Sciences Section, *Jet Propulsion Laboratory*, 2022
- NASA Group Achievement Award, ABoVE Airborne Science Campaign, *NASA*, 2018
- NASA Group Achievement Award, OCO-2 Core Science Team, *NASA*, 2018
- GESTAR Excellence Award, *Universities Space Research Association*, 2018
- Outstanding Scientific Contribution by a new GMAO member, *NASA Goddard Global Modeling and Assimilation Office*, 2017
- NOAA Postdoctoral Program in Climate and Global Change Fellowship, *University Corporation for Atmospheric Research*, 2012 – 2014
- AAAS/Science Program for Excellence in Science Recipient, 2012-2014
- NASA Earth and Space Science Fellowship, *NASA*, 2009-2012
- Rackham International Student Fellowship, *University of Michigan*, 2009
- Distinguished Leadership Award, College of Engineering, *University of Michigan*, 2008
- Great Lakes Summer Student Fellowship, *University of Michigan*, 2007
- College of Engineering Fellowship, *University of Michigan*, 2006-2007
- Lieutenant Governor’s Gold Medal, *Delhi University*, 2006.
- Pandit C. L. Shukla Gold Medal, *Delhi University*, 2006.
- Merit cum Means Scholarship, *Delhi College of Engineering*, 2003- 2005.
- First Place in Life Cycle Analysis Student Paper Competition, ‘Vivre-2005’, *Delhi College of Engineering*, 2005
- Third Place in National Level Student Technical Paper Competition, ‘Tryst-2005’, *Indian Institute of Technology*, 2005

- Third Place in National Level Student Technical Paper Competition, ‘Papyrus-2004’, *Delhi College of Engineering*, 2004

## RESEARCHERS AND STUDENTS SUPERVISED

### Research Advisor

- Dr. Dustin Roten, Postdoctoral Fellow, NASA Jet Propulsion Laboratory, 2023 – *present*
- Dr. Nima Madani, UCLA / JPL JIFRESSE Fellow, 2023 - *present*
- Dr. Zoe Pierrat, NASA Jet Propulsion Laboratory, 2023 – *present*
- Dr. Le (Elva) Kuai, NASA Jet Propulsion Laboratory, 2022 – *present*
- Dr. Sudhanshu Pandey, Research Scientist, NASA Jet Propulsion Laboratory, 2022 - 2023
- Dr. Andrew Feldman, NASA Postdoctoral Program Fellow, Goddard Space Flight Center, co-advisor with Dr. Benjamin Poulter, 2021 - 2023
- Dr. Zhen Zhang, University of Maryland, Goddard Space Flight Center, co-advisor with Dr. Benjamin Poulter, 2017 – 2021 (now scientist at National Tibetan Plateau Data Center, State Key Laboratory of Tibetan Plateau Earth System, Environment and Resource, Institute of Tibetan Plateau Research, Chinese Academy of Sciences, Beijing, China)
- Dr. Alka Singh, Goddard Space Flight Center, 2019 – 2020 (now faculty at Amrita VV University, India)
- Dr. Tian Yao, Goddard Space Flight Center (now scientist with the Terrestrial Information Systems Laboratory, NASA Goddard Space Flight Center), 2018

### Student Research Co-Advisor/Supervisor

- Chiranjit Das, 2024 – 2025 Fulbright-Kalam Climate Fellow, Ph. D. Candidate, Indian Institute of Technology, Delhi, Thesis Advisor – Dr. Ravi Kunchala
- Martijn Pallandt, Ph.D. Candidate, Max Planck Institute for Biogeochemistry, Jena, Germany, Thesis Advisor – Dr. Mathias Göckede, 2020 – 2021
- Jeralyn Poe, Ph.D. Candidate, Northern Arizona University, Thesis Advisor – Dr. Deborah N. Huntzinger, Summer 2020, 2024 – *present*
- Shannon Reault, MS Graduate Student, Clark University, Summer 2020
- Eugene Cody, Undergraduate Student, Haskell Indian Nations University, Summer 2014
- Christopher Baik, Undergraduate Student, University of Michigan, Ann Arbor, Summer 2010

## TEACHING EXPERIENCE

### Short Courses Taught

#### *JPL Center for Climate Sciences and The Keck Institute for Space Studies Climate Science Summer School*

Location: California Institute of Technology, Pasadena, CA  
 Dates: July 31–August 9, 2024  
 Role: Lecturer for carbon cycle and greenhouse gases  
 Enrollment: 30 graduate students

#### *Summer School for Inverse Modeling of Greenhouse Gases (SSIM-GHG)*

Location: Colorado State University, Fort Collins, CO  
 Dates: June 11-21, 2024

Role: Lecturer for atmospheric greenhouse gas inversions, Ensemble Kalman Filter applications and diagnostic tools for evaluating atmospheric inversions  
 Enrollment: 30 students, including graduate students, postdoctoral scholars

***Application of Carbon Dioxide Measurements for Climate Related Studies***

Location: Virtual, NASA Applied Remote Sensing Training Program (ARSET)  
 Dates: July 9–16, 2024  
 Role: Lecturer for fundamentals of remote-sensing, urban CO<sub>2</sub> measurements  
 Enrollment: 738 virtual participants from 365 organizations across 87 countries and 31 U.S. states

***Frontiers in Ensemble Data Assimilation for Geophysical Application***

Location: National Center for Atmospheric Research, Boulder, CO  
 Dates: August 3-7, 2015  
 Role: Lecturer for coupled data assimilation  
 Enrollment: 24 graduate students

***Data Assimilation in Biogeochemical Cycles***

Location: Abdus Salam International Center for Theoretical Physics, Trieste, Italy  
 Dates: September 21-27, 2014  
 Role: Lecturer for atmospheric greenhouse gas inversion and measurement network design using spatial statistics  
 Enrollment: 42 graduate students

***ASP Summer Colloquium on Carbon-Climate Connections in the Earth System***

Location: National Center for Atmospheric Research, Boulder, Colorado  
 Dates: August 2, 2013  
 Role: Co-Instructor with David Schimel (JPL), Matthew Long (NCAR) and Britton Stephens (NCAR) for tutorial session on atmospheric flux constraints  
 Enrollment: 25 graduate students

***Workshop on Geostatistical Inverse Modeling***

Location: University of Michigan, Ann Arbor, Michigan  
 Dates: August 3-6, 2009  
 Role: Co-Instructor with Anna Michalak (now at Carnegie/Stanford Univ.) for hands-on session on inverse modeling and geostatistics  
 Enrollment: 12 researchers, postdoctoral fellows, and graduate students

**Courses Taught at the University of Michigan**

**CEE 270: Statistical Methods for Data Analysis and Uncertainty Modeling**

Location: University of Michigan, Ann Arbor, Michigan  
 Dates: Fall 2008  
 Role: Graduate Student Instructor - responsibilities included developing assignments and teaching MINITAB for the laboratory section, holding office hours, grading midterm and final examination papers  
 Enrollment: 54 undergraduate students



**FUNDING HISTORY*****CMS-Urban: A CMS prototype framework to deliver urban sectoral emission estimates using space- and activity-based data***

Principal Investigator, NASA Research Announcement NNH23ZDA001N-CMS: Carbon Monitoring System, July 1, 2024, to June 30, 2027

***Diagnosing and attributing Arctic-Boreal carbon fluxes using in situ and satellite CO<sub>2</sub> monitoring network***

Principal Investigator, NASA Research Announcement NNH20ZDA001N - OCOST: Science Team for the OCO mission, May 2022 – May 2025

***Synthesis, Reconciliation and Assessment of CMS Prototype Products***

Principal Investigator, NASA Research Announcement NNH18ZDA001N - Carbon Monitoring System (CMS): Continuing Prototype Product Development, November 1, 2019, to October 31, 2023

***GEOS-5 Forecasting and Modeling in support of ABoVE airborne research***

Principal Investigator, NASA Research Announcement NNH16ZDA001N-TE Terrestrial Ecology: An Airborne Campaign for the Arctic-Boreal Vulnerability Experiment (ABoVE), January 1, 2017, to December 31, 2022

***Observing and validating carbon-climate feedbacks with OCO-2***

Co-Investigator (PI David Schimel, JPL), NASA Research Announcement NNH17ZDA001N – OCO<sub>2</sub> Science Team for the OCO Missions, April 1, 2018, to March 31, 2021

***Integrating remote sensing observations with NASA's GEOS-5 modeling framework in support of retrospective analyses and seasonal prediction of biosphere-atmosphere CO<sub>2</sub> flux***

Co-Investigator (PI Lesley Ott, GSFC), NASA Research Announcement NNH16ZDA001N-IDS: Interdisciplinary Science, September 1, 2017, to August 31, 2021

***Use of SMAP observations in Conjunction with OCO-2 data to Improve Understanding of Coupled Carbon and Water Cycle within the GEOS-5 Modeling System***

Principal Investigator, NASA Research Announcement NNH15ZDA001N-SUSMAP - Science Utilization of the Soil Moisture Active Passive Mission, September 1, 2016, to August 31, 2020

***GEOS-Carb III: Delivering mature carbon flux and concentration datasets in support of NASA's Carbon Monitoring System***

Co-Investigator (PI Lesley Ott, GSFC), NASA Research Announcement NNH16ZDA001N-CMS: Carbon Monitoring System, September 1, 2017, to August 31, 2020

***Operations and data products for carbon-climate feedbacks using OCO-2***

Co-Investigator (PI Dave Schimel, JPL), NASA Research Announcement NNH14ZDA001N - Science Team for the OCO-2 Mission, April 1, 2015, to March 31, 2018

***Carbon Flux Attribution through an Innovative Multi-Species Carbon Data Assimilation System***

Principal Investigator, UCAR Visiting Scientist Programs, NOAA Postdoctoral Program in Climate & Global Change, University Corporation for Atmospheric Research (UCAR), January 1, 2013, to December 31, 2014

***Geostatistical Data Assimilation for Atmospheric CO<sub>2</sub>***

Student Principal Investigator, with N. G. Love (PI, U. Michigan), A. M. Michalak (Science PI, CIS/Stanford Univ.), NASA Earth and Space Science Fellowship Program, National Aeronautics and Space Administration (NASA), September 1, 2009, to August 31, 2012

***Spatiotemporal Mapping of Global CO<sub>2</sub> from the Orbiting Carbon Observatory***

Student Principal Investigator, with A. M. Michalak (PI, U. Michigan/CIS/Stanford Univ.), Rackham International Student Fellowship, Rackham Graduate School, University of Michigan, May 1, 2008, to August 31, 2008

***Improving Estimation of Overlake Precipitation in Lake Erie***

Student Principal Investigator, with C. DeMarchi (PI, NOAA-GLERL/Case Western Univ.), A. M. Michalak (Co-I, U. Michigan/CIS/Stanford Univ.), Great Lakes Summer Student Fellowship, Cooperative Institute for Limnology and Ecosystems Research (CILER), University of Michigan, May 1, 2007, to August 31, 2007

## PUBLICATIONS

***In Review or In Preparation for submission by Summer 2025 (copies available upon request)***

1. Poulter, B. *et al.* (*in review*) The North American Greenhouse Gas Budget: emissions, removals, and integration for CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O (2010–2019): Results from the Second REgional Carbon Cycle and Processes Study (RECCAP2), ***Global Biogeochemical Cycles***
2. Das, S. *et al.* (*in review*) Comparisons of the v11.1 Orbiting Carbon Observatory-2 (OCO-2) XCO<sub>2</sub> Measurements with GGG2020 TCCON, ***Earth and Space Science***
3. Pandey, S. *et al.* (*in review*) Reduction in Earth's Carbon Budget Imbalance, ***Nature Communications***
4. Goetz, S. *et al.* (*in review*) An overview of NASA's Arctic Boreal Vulnerability Experiment (ABoVE): Development, implementation, advances and knowledge gaps, ***Environmental Research Letters ABoVE Special Collection***
5. Roten, D. and A. Chatterjee (*in review*) Observing Anthropogenic Carbon Dioxide Emissions with Space-Based Platforms and Their Implications for Carbon-Reduction Policies, ***AGU Advances***
6. Pallandt, M. *et al.* (*in review*) If the Yedoma thaws, will we notice? Quantifying detection limits of top-down methane monitoring infrastructures in the Arctic, ***Atmospheric Chemistry and Physics***

7. Keller Rodrigues, G. *et al.* (in review) New Inflight Calibration of OCO-3's A-Band for Version 11 Products, *IEEE Trans. on Geoscience and Remote Sensing*
8. Ahn, D. *et al.* (in preparation) Regional and Socioeconomic Characteristics in C40 cities' CO<sub>2</sub> Emissions Revealed from Space
9. You, H. *et al.* (in preparation) Greening Antarctica
10. Madani, N. *et al.* (in preparation) Accelerated warming may inhibit Arctic land carbon uptake
11. Mauceri, S. *et al.* (in preparation) Uncertainty-aware Machine Learning Bias Correction and Filter for OCO-2: Part 1
12. Mauceri, S. *et al.* (in preparation) Uncertainty-aware Machine Learning Bias Correction and Filter for OCO-2: Part 2
13. Chatterjee, A. *et al.* (in preparation) Decadal Carbon Budget of the North American Arctic and Boreal Ecosystems

### Published

1. Moeni, O. *et al.* (2025) Quantifying CO<sub>2</sub> emissions from smaller anthropogenic point sources using OCO-2 Target and OCO-3 Snapshot Area Mapping mode observations, *Journal of Geophysical Research – Atmospheres*, doi: 10.1029/2024JD042333
2. Virkkala, A. *et al.* (2025) Wildfires offset the increasing but spatially heterogeneous Arctic-boreal CO<sub>2</sub> uptake, *Nature Climate Change*, doi: 10.1038/s41558-024-02234-5
3. Feldman, A. *et al.* (2024) Large global scale vegetation sensitivity to daily rainfall variability, *Nature*, doi: 10.1038/s41586-024-08232-z
4. Madani, N. *et al.* (2024) A machine learning approach to produce a continuous solar-induced chlorophyll fluorescence dataset for understanding ocean productivity, *Journal of Geophysical Research - Machine Learning and Computation*, 1 (4), e2024JH000215, doi: 10.1029/2024JH000215
5. Liu, Z. *et al.* (2024) Seasonal CO<sub>2</sub> amplitude in northern high latitudes, *Nature Reviews Earth & Environment*, 5, 802–817, doi:10.1038/s43017-024-00600-7
6. Hugelius, G. *et al.* (2024) Two decades of permafrost region CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O budgets suggest a small net greenhouse gas source to the atmosphere, *Global Biogeochemical Cycles*, 38, e2023GB007969, doi: 10.1029/2023GB007969
7. Byrne, B. *et al.* (2024) Carbon emissions from the 2023 Canadian wildfires, *Nature*, 633, 835–839, doi: 10.1038/s41586-024-07878-z
8. Zhu, X. *et al.* (2024) A synthesized field survey database of vegetation and active-layer properties for the Alaskan tundra (1972–2020), *Earth System Science Data*, 16, 3687–3703, doi:10.5194/essd-16-3687-2024
9. Pandey, S. *et al.* (2024) Toward Low-Latency Estimation of Atmospheric CO<sub>2</sub> Growth Rates Using Satellite Observations: Evaluating Sampling Errors of Satellite and In Situ Observing Approaches, *AGU Advances*, 5, e2023AV001145, doi:10.1029/2023AV001145
10. Treat, C. *et al.* (2024) Permafrost carbon: progress on understanding controls, stocks, and fluxes across northern terrestrial ecosystems, *Journal of Geophysical Research – Biogeosciences*, doi: 10.1029/2023JG007638
11. Jacobs, N. *et al.* (2024) The importance of digital elevation model accuracy in XCO<sub>2</sub> retrievals: improving the OCO-2 ACOS v11 product, *Atmospheric Measurement Techniques*, doi: 10.5194/amt-17-1375-2024

12. Murray-Tortarolo, G. *et al.* (2024) A Greenhouse Gas Budget for Mexico during 2000-2019, *Journal of Geophysical Research – Biogeosciences*, doi: 10.1029/2023JG007667
13. Gaubert, B. *et al.* (2023) Neutral tropical African CO<sub>2</sub> exchange estimated from aircraft and satellite observations, *Global Biogeochemical Cycles*, doi: 10.1029/2023GB007804
14. Marvel, K. *et al.* (2023) Ch. 2. Climate trends. In: *Fifth National Climate Assessment*. Crimmins, A.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, B.C. Stewart, and T.K. Maycock, Eds. U.S. Global Change Research Program, Washington, DC, USA. doi:10.7930/NCA5.2023.CH2
15. Taylor, T. E. *et al.* (2023) Evaluating the consistency between OCO-2 and OCO-3 XCO<sub>2</sub> estimates derived from the NASA ACOS version 10 retrieval algorithm, *Atmospheric Measurement Techniques*, 16, 3173–3209, doi:10.5194/amt-16-3173-2023
16. Feldman, A. *et al.* (2023) A multi-satellite framework to rapidly evaluate extreme biosphere cascades: The Western US 2021 drought and heatwave, *Global Change Biology*, doi: 10.1111/gcb.16725
17. Ramonet, M., A. Chatterjee, *et al.* (2023), CO<sub>2</sub> in the Atmosphere, Growth and Trends Since 1850, *Oxford Research Encyclopedia of Climate Science*, Oxford University Press, doi:10.1093/acrefore/9780190228620.013.863
18. Feldman, A. *et al.* (2023) Remotely sensed soil moisture can capture dynamics relevant to plant water uptake, *Water Resources Research*, doi:10.1029/2022WR033814
19. Byrne, B. *et al.* (2023) 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*, doi: 10.5194/essd-2022-213
20. Feldman, A. *et al.* (2023) Using OCO-2 column CO<sub>2</sub> retrievals to rapidly detect and estimate biospheric surface carbon flux anomalies, *Atmospheric Chemistry and Physics*, doi: 10.5194/acp-23-1545-2023
21. Nassar, R. *et al.* (2022) Tracking CO<sub>2</sub> emission reductions from space: A case study at Europe’s largest fossil fuel power plant, *Frontiers in Remote Sensing*, doi: 10.3389/frsen.2022.1028240
22. Hurtt, G. *et al.* (2022) The NASA Carbon Monitoring System Phase 2 Synthesis: Scope, Findings, Gaps and Recommended Next Steps, *Environmental Research Letters*, doi: 10.1088/1748-9326/ac7407
23. Keller, G. R. *et al.* (2022) Inflight Radiometric Calibration and Performance of the Orbiting Carbon Observatory 3 (OCO-3) for Version 10 Products, *IEEE Transactions on Geoscience and Remote Sensing*, vol. 60, pp. 1-18, 2022, Art no. 5413518, doi: 10.1109/TGRS.2022.3216825
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### Book Chapters, Non-Peer Reviewed Technical Reports & White Papers and Op-Eds

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### Conference Presentations

1. Feldman, A. *et al.* (2024) Quantifying plant responses to changing rainfall frequency and intensity from field to global scales, AGU Fall Meeting, Washington DC, December 9<sup>th</sup> – 13<sup>th</sup>, 2024
2. Kuai, L. *et al.* (2024) Observing Water Stress Impacts on Terrestrial Ecosystems from the International Space Station, AGU Fall Meeting, Washington DC, December 9<sup>th</sup> – 13<sup>th</sup>, 2024
3. Carroll, D. *et al.* (2024) Taking Stock of Stocks: A Community-driven Roadmap for More Effective Assessment of Carbon Stocks, AGU Fall Meeting, Washington DC, December 9<sup>th</sup> – 13<sup>th</sup>, 2024
4. Sanghavi, S. *et al.* (2024) Correcting the impact of Raman scattering on SIF retrievals from OCO-2/3 and other hyperspectral satellite observations, AGU Fall Meeting, Washington DC, December 9<sup>th</sup> – 13<sup>th</sup>, 2024
5. Wen, J. *et al.* (2024) Terrestrial Biosphere Models Overestimate Seasonal Duration of Net Carbon Uptake in the ABoVE Domain, AGU Fall Meeting, Washington DC, December 9<sup>th</sup> – 13<sup>th</sup>, 2024

6. Madani, N. *et al.* (2024) SIF opens new Frontiers for Quantifying the Phytoplankton Response to Climate-driven Arctic Ocean Transformations, AGU Fall Meeting, Washington DC, December 9<sup>th</sup> – 13<sup>th</sup>, 2024
7. Liu, J. *et al.* (2024) A decade of progress in carbon cycle science from NASA's Orbiting Carbon Observatories (OCO-2 and OCO-3), AGU Fall Meeting, Washington DC, December 9<sup>th</sup> – 13<sup>th</sup>, 2024
8. Nelson, R. *et al.* (2024) OCO-3 B11 Snapshot Area Mapping Mode Observations, AGU Fall Meeting, Washington DC, December 9<sup>th</sup> – 13<sup>th</sup>, 2024
9. Roten, D. *et al.* (2024) Physical and Environmental Factors Limiting the Measurement of Anthropogenic CO<sub>2</sub> Emissions from Space-based Platforms: Considerations for Future Monitoring Requirements, AGU Fall Meeting, Washington DC, December 9<sup>th</sup> – 13<sup>th</sup>, 2024
10. Byrne, B. *et al.* (2024) Top-Down Estimates of Carbon Emissions from Fires, AGU Fall Meeting, Washington DC, December 9<sup>th</sup> – 13<sup>th</sup>, 2024
11. Thorpe, A. *et al.* (2024) Identifying, quantifying, and attributing methane and carbon dioxide point source emissions from space with EMIT, AGU Fall Meeting, Washington DC, December 9<sup>th</sup> – 13<sup>th</sup>, 2024
12. Ahn, D. *et al.* (2024) Regional and Socioeconomic Characteristics in C40 Cities' CO<sub>2</sub> Emissions Revealed from Space, AGU Fall Meeting, Washington DC, December 9<sup>th</sup> – 13<sup>th</sup>, 2024
13. Bowman, K. *et al.* (2024) A Multiscale Greenhouse Gas System in Support of the U.S. GHG Center, AGU Fall Meeting, Washington DC, December 9<sup>th</sup> – 13<sup>th</sup>, 2024
14. Pandey, S. *et al.* (2024) Towards Low-Latency Estimation of Atmospheric CO<sub>2</sub> Growth Rates using Satellite. Observations: Evaluating Sampling Errors of Satellite and In Situ Observing Approaches, AGU Fall Meeting, Washington DC, December 9<sup>th</sup> – 13<sup>th</sup>, 2024
15. Basu, S. *et al.* (2024) Training a Future Workforce to Use Current and Future Atmospheric Greenhouse Gas Observing Systems, AGU Fall Meeting, Washington DC, December 9<sup>th</sup> – 13<sup>th</sup>, 2024
16. Chatterjee, A. (2024) Observing the Global Carbon Cycle from Space, U.S. CLIVAR Phenomena, Observations, and Synthesis Panel, Pasadena, California, September 30 – October 1, 2024
17. Chatterjee, A. *et al.* (2024) Towards an observationally-constrained understanding of Northern high-latitude carbon cycle dynamics, 11<sup>th</sup> International Carbon Dioxide Conference, Manaus, Brazil, July 29 – August 2, 2024.
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19. Chatterjee, A. *et al.* (2024) Monitoring the global carbon cycle with the Orbiting Carbon Observatory (OCO-2 & OCO-3) missions, 52nd Global Monitoring Annual Conference (GMAC), Boulder, Colorado, May 21- May 22, 2024
20. Marvel, K. *et al.* (2024) Fifth National Climate Assessment – Climate Trends, NCA5 Webinar, March 5, 2024, <https://globalchange.gov/resources/nca5-webinar-climate-trends>
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22. Pierrat, Z. *et al.* (2023) Exploring Diurnal and Seasonal Dynamics of Water Use Efficiency Using Solar Induced Chlorophyll Fluorescence and Thermal Infrared Radiation, AGU Fall Meeting, San Francisco, December 11<sup>th</sup> – 15<sup>th</sup>, 2023

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28. Pandey, S. *et al.* (2023) Harnessing CNNs for Automated Monitoring of CO<sub>2</sub> Point Sources: A Study Using OCO-3, TROPOMI, GEMS, and Bottom-Up Data to Estimate Emissions from an Indian Power Plant Cluster, AGU Fall Meeting, San Francisco, December 11<sup>th</sup> – 15<sup>th</sup>, 2023
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55. Byrne, B. *et al.* (2021) Top-down estimate of carbon stock changes in support of the Global Stocktake, AGU Fall Meeting, New Orleans, LA, December 13<sup>th</sup> – 17<sup>th</sup>, 2021
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83. Singh, A. *et al.* (2019), Improved understanding of terrestrial water-carbon linkages using satellite soil moisture and a dynamic global vegetation model, 2019 AGU Fall Meeting, San Francisco, CA, December 9<sup>th</sup> - 13<sup>th</sup>
84. Crowell, S. *et al.* (2019), Improved Regional CO<sub>2</sub> Flux Estimates from OCO-2 v9 Retrievals, 2019 AGU Fall Meeting, San Francisco, CA, December 9<sup>th</sup> - 13<sup>th</sup>
85. Ott, L. *et al.* (2019), A prototype for monitoring carbon flux anomalies in near real time using NASA's GEOS system, 2019 AGU Fall Meeting, San Francisco, CA, December 9<sup>th</sup> - 13<sup>th</sup>
86. Balashov, N. *et al.* (2019), Novel Application of NASA's GEOS-CF CO<sub>2</sub> Forecasting System to ACT-America Airborne Campaign, 2019 AGU Fall Meeting, San Francisco, CA, December 9<sup>th</sup> - 13<sup>th</sup>
87. Chatterjee, A. *et al.* (2019), Observing carbon-climate feedbacks in the Arctic: an OSSE initiative to inform current and future greenhouse gas monitoring strategies, AGU Chapman Conference, San Diego, CA, August 26<sup>th</sup> - 29<sup>th</sup>.
88. Chatterjee, A. *et al.* (2018), Future of the North American Carbon Cycle, Abstract B43C-19, presented at 2018 AGU Fall Meeting, Washington, D.C., December 10<sup>th</sup> – 15<sup>th</sup>.
89. Weir, B. *et al.* (2018), Improving GEOS atmospheric carbon dioxide simulations by calibrating CASA surface fluxes with an empirical sink, Abstract B21J-2471, presented at 2018 AGU Fall Meeting, Washington, D.C., December 10<sup>th</sup> – 15<sup>th</sup>.
90. Ott, L. *et al.* (2018), Toward integrated seasonal predictions of land and ocean carbon flux: lessons from the 2015-16 El Niño, Abstract B51E-1990, presented at 2018 AGU Fall Meeting, Washington, D.C., December 10<sup>th</sup> – 15<sup>th</sup>.
91. Chatterjee, A. *et al.* (2018), The 2015-2016 El Niño and the response of the carbon cycle: Findings from the Orbiting Carbon Observatory-2 (OCO-2) mission, 15<sup>th</sup> Annual Meeting of Asia Oceanic Geosciences Society, Honolulu, HI, June 3<sup>rd</sup> – 8<sup>th</sup>.
92. Kawa, S. R. *et al.* (2018), The Potential for CO<sub>2</sub> Measurements from Space Using Lidar, 15<sup>th</sup> Annual Meeting of Asia Oceanic Geosciences Society, Honolulu, HI, June 3<sup>rd</sup> – 8<sup>th</sup>.
93. McKain, K. *et al.* (2018), Constraints on Southern Ocean CO<sub>2</sub> Fluxes and Seasonality from Atmospheric Vertical Gradients Observed on Multiple Airborne Campaigns, Abstract 11.4, 20<sup>th</sup> Conference on Atmospheric Chemistry, American Meteorological Society 98<sup>th</sup> Annual Meeting, Austin, TX, January 6<sup>th</sup> – 11<sup>th</sup>.
94. Pawson, S. *et al.* (2018), Year-to-Year Changes in the Earth System: A Study of the Carbon Cycle using NASA Observations and the GEOS Model, Abstract 14C.2, Piers Sellers' Legacy – Part I, American Meteorological Society 98<sup>th</sup> Annual Meeting, Austin, TX, January 6<sup>th</sup> – 11<sup>th</sup>.
95. Ott, L. *et al.* (2017), NASA's Carbon Cycle OSSE Initiative - Informing future space-based observing strategies through advanced modeling and data assimilations, Abstract GC51C-0817, presented at 2017 Fall Meeting, AGU, New Orleans, LA, December 11<sup>th</sup> -15<sup>th</sup>.
96. Chatterjee, A. *et al.* (2017), The 2015-2016 El Niño and the response of the carbon cycle, Abstract GC14A-03, presented at 2017 Fall Meeting, AGU, New Orleans, LA, December 11<sup>th</sup> -15<sup>th</sup>.

97. Weir, B. *et al.* (2017), An 8-year, high-resolution reanalysis of atmospheric carbon dioxide mixing ratios based on OCO-2 and GOSAT-ACOS retrievals, Abstract A33G-2451, presented at 2017 Fall Meeting, AGU, New Orleans, LA, December 11<sup>th</sup> -15<sup>th</sup>.
98. Poulter, B. *et al.* (2017), Enabling teleconnection-based seasonal forecasts of global terrestrial carbon cycle dynamics, 10th International Carbon Dioxide Conference (ICDC), Interlaken, Switzerland, August 21<sup>st</sup>-25<sup>th</sup>.
99. Feely, R. A. *et al.* (2017), Large-scale changes in sea-air CO<sub>2</sub> fluxes in the tropical and subtropical Pacific during the strong 2015-2016 El Niño event, 10th International Carbon Dioxide Conference (ICDC), Interlaken, Switzerland, August 21<sup>st</sup>-25<sup>th</sup>.
100. Davis, K. *et al.* (2017), A sustained airborne campaign to improve inverse flux estimates of greenhouse gas sources and sinks: Results from the Atmospheric Carbon and Transport (ACT) – America mission, 10th International Carbon Dioxide Conference (ICDC), Interlaken, Switzerland, August 21<sup>st</sup>-25<sup>th</sup>.
101. Schimel, D. *et al.* (2017) Observing carbon cycle climate feedbacks from space, 10th International Carbon Dioxide Conference (ICDC), Interlaken, Switzerland, August 21<sup>st</sup>-25<sup>th</sup>.
102. Chatterjee, A. *et al.* (2017), Influence of El Niño on atmospheric CO<sub>2</sub> over the tropical Pacific Ocean, 10th International Carbon Dioxide Conference (ICDC), Interlaken, Switzerland, August 21<sup>st</sup>-25<sup>th</sup>.
103. Ott, L. *et al.* (2017), Closing the budget on uncertainty in atmospheric CO<sub>2</sub> simulations using NASA's GEOS modeling system, 10th International Carbon Dioxide Conference (ICDC), Interlaken, Switzerland, August 21<sup>st</sup>-25<sup>th</sup>.
104. Patra, P. *et al.* (2017), Anomalies in terrestrial carbon fluxes as derived from the Orbiting Carbon Observatory (OCO-2) in near-real time, 10th International Carbon Dioxide Conference (ICDC), Interlaken, Switzerland, August 21<sup>st</sup>-25<sup>th</sup>.
105. Crisp, D. *et al.* (2017), Space-based observations of XCO<sub>2</sub> and SIF from the NASA OCO-2 Mission: A Progress Report, 10th International Carbon Dioxide Conference (ICDC), Interlaken, Switzerland, August 21<sup>st</sup>-25<sup>th</sup>.
106. Lauvaux, T. *et al.* (2017), Catching butterflies with fishing nets: Are atmospheric greenhouse gas models adapted to current and future observing systems? 10th International Carbon Dioxide Conference (ICDC), Interlaken, Switzerland, August 21<sup>st</sup>-25<sup>th</sup>.
107. Kawa, S. R. *et al.* (2017), Updated Global Error Characterization for a CO<sub>2</sub> Lidar Space Mission, 13th International Workshop on Greenhouse Gas Measurements from Space (IWGGMS), Helsinki, Finland, June 6<sup>th</sup>-8<sup>th</sup>.
108. Weir, B. *et al.* (2017), Disentangling GEOS model biases from those of retrieved column carbon dioxide, 13th International Workshop on Greenhouse Gas Measurements from Space (IWGGMS), Helsinki, Finland, June 6<sup>th</sup>-8<sup>th</sup>.
109. Ott, L. *et al.* (2017), NASA's Carbon Cycle OSSE Initiative – Informing future space-based observing strategies through advanced modeling and data assimilation, 13th International Workshop on Greenhouse Gas Measurements from Space (IWGGMS), Helsinki, Finland, June 6<sup>th</sup>-8<sup>th</sup>.
110. Chatterjee, A. *et al.* (2017), NASA's GEOS-Carb modeling and assimilation system in support of the OCO-2 mission, American Meteorological Society 97<sup>th</sup> Annual Meeting, Seattle, Washington, January 22<sup>nd</sup> -26<sup>th</sup>.
111. Keller, C. *et al.* (2017), Improved Air Quality Modeling in the NASA GEOS-5 Model Using a Multispecies Data Assimilation System of Tropospheric Constituents, American Meteorological Society 97<sup>th</sup> Annual Meeting, Seattle, Washington, January 22<sup>nd</sup> -26<sup>th</sup>.

112. Chatterjee, A. *et al.* (2017), Investigating Regional Carbon Flux Estimates from the GEOS-Carb system using GOSAT-ACOS and OCO-2 total column CO<sub>2</sub> observations, American Meteorological Society 97<sup>th</sup> Annual Meeting, Seattle, Washington, January 22<sup>nd</sup> -26<sup>th</sup>.
113. Chatterjee, A. *et al.* (2016), Influence of El Nino on atmospheric CO<sub>2</sub>: Findings from the Orbiting Carbon Observatory-2 (OCO-2) Mission, AGU Fall Meeting, San Francisco, California, December 12<sup>th</sup> -16<sup>th</sup>.
114. Weir, B. *et al.* (2016), Intercomparison of Level 3 fields estimated from OCO-2 and GOSAT-ACOS measurements of XCO<sub>2</sub>, AGU Fall Meeting, San Francisco, California, December 12<sup>th</sup> -16<sup>th</sup>.
115. Kawa, R. *et al.* (2016), Space-based Lidar Measurements of Greenhouse Gases and Their Projected Impact on Quantification of Surface Sources and Sinks, AGU Fall Meeting, San Francisco, California, December 12<sup>th</sup> -16<sup>th</sup>.
116. Schimel, D. *et al.* (2016), Diver down: Remote sensing of carbon climate feedbacks, AGU Fall Meeting, San Francisco, California, December 12<sup>th</sup> -16<sup>th</sup>.
117. Feely, R. *et al.* (2016), Large-scale changes in sea-air CO<sub>2</sub> fluxes in the tropical and subtropical Pacific during the strong 2015-2016 El Niño event, AGU Fall Meeting, San Francisco, California, December 12<sup>th</sup> -16<sup>th</sup>.
118. Davis, K. *et al.* (2016), Atmospheric Greenhouse Gas Distributions Across Weather Systems: Results from the Summer 2016 ACT-America Field Campaign, AGU Fall Meeting, San Francisco, California, December 12<sup>th</sup> -16<sup>th</sup>.
119. Lee, E. *et al.* (2016), The effect of different time scales of atmospheric CO<sub>2</sub> variability on the estimation of the global terrestrial carbon cycle, AGU Fall Meeting, San Francisco, California, December 12<sup>th</sup> -16<sup>th</sup>.
120. Patra, P. *et al.* (2016), Orbiting carbon observatory (OCO-2) tracks increase of carbon release to the atmosphere during the 2014-2016 El Niño, AGU Fall Meeting, San Francisco, California, December 12<sup>th</sup> -16<sup>th</sup>.
121. Ott, L. *et al.* (2016), Reconciling bottom-up and top-down carbon flux estimates using NASA's GEOS-Carb modeling system, AGU Fall Meeting, San Francisco, California, December 12<sup>th</sup> -16<sup>th</sup>.
122. Chatterjee, A. (2016), Carbon Cycle Data Assimilation –what have we learned and where are we going, SIAM conference on Mathematics of Planet Earth, Philadelphia, Sep 30<sup>th</sup> – Oct 2<sup>nd</sup>, *invited talk*
123. Chatterjee, A. *et al.* (2016), Influence of El Nino on atmospheric CO<sub>2</sub>: Findings from the Orbiting Carbon Observatory-2 (OCO-2) Mission, 12<sup>th</sup> International Workshop on Greenhouse Gas Measurements from Space, Kyoto, Japan, June 7<sup>th</sup> - 9<sup>th</sup>.
124. Ott, L. *et al.* (2016), “Tracer-based Estimates of Transport Uncertainty from NASA's GEOS-5 AGCM: Implications for Inversion Flux Estimates”, American Meteorological Society 96<sup>th</sup> Annual Meeting, New Orleans, Louisiana, January 10<sup>th</sup> – 14<sup>th</sup>.
125. Chatterjee, A. *et al.* (2016), “Development and Implementation of a Carbon Data Assimilation System for the Orbiting Carbon Observatory-2 (OCO-2) Mission”, American Meteorological Society 96<sup>th</sup> Annual Meeting, New Orleans, Louisiana, January 10<sup>th</sup> – 14<sup>th</sup>.
126. Chatterjee, A. *et al.* (2015), “Spatial and temporal variability of column-integrated CO<sub>2</sub>: identifying drivers and variations from high-resolution model simulations and OCO-2 observations”, AGU Fall Meeting, San Francisco, California, December 14<sup>th</sup> -18<sup>th</sup>.

127. Crisp, D. *et al.* (2015), “Preliminary Results from the First Year of Operations of the NASA Orbiting Carbon Observatory-2 (OCO-2)”, AGU Fall Meeting, San Francisco, California, December 14<sup>th</sup> -18<sup>th</sup>.
128. Weir, B. *et al.* (2015), “Inflation factors for satellite XCO<sub>2</sub> retrieval errors”, AGU Fall Meeting, San Francisco, California, December 14<sup>th</sup> -18<sup>th</sup>.
129. Chatterjee, A. *et al.* (2015), “Development and implementation of the GEOS-Carb System for the OCO-2 Mission”, 11<sup>th</sup> International Workshop on Greenhouse Gas Measurements from Space, Pasadena, CA, June 16<sup>th</sup>-18<sup>th</sup>.
130. Ott, L. *et al.* (2015), “An Analysis of the Influence of GEOS-5 Transport Uncertainty on OCO-2 Model-Data Comparisons”, 11<sup>th</sup> International Workshop on Greenhouse Gas Measurements from Space, Pasadena, CA, June 16<sup>th</sup>-18<sup>th</sup>.
131. Arellano, A.F. *et al.* (2015), “Constraints on local-to-regional anthropogenic combustion from satellite retrievals of combustion-related trace gases: Implications to verifying sources of anthropogenic CO<sub>2</sub>”, American Meteorological Society 95<sup>th</sup> Annual Meeting, Phoenix, Arizona, January 4<sup>th</sup> – 8<sup>th</sup>.
132. Chatterjee, A. *et al.* (2015), “The Madden-Julian Oscillation in the NCAR Community Earth System Model Coupled Data Assimilation System”, American Meteorological Society 95<sup>th</sup> Annual Meeting, Phoenix, Arizona, January 4<sup>th</sup> – 8<sup>th</sup>.
133. Chatterjee, A. *et al.* (2015), “Quantifying the benefit of total column CO<sub>2</sub> observations for constraining the global carbon budget: An inter-comparison study top-down flux estimates based on GOSAT observations with bottom-up flux estimates from MsTMIP”, American Meteorological Society 95<sup>th</sup> Annual Meeting, Phoenix, Arizona, January 4<sup>th</sup> – 8<sup>th</sup>.
134. Anderson, J. L. *et al.* (2015), “DART: Tools and Support for Ensemble Data Assimilation Research, Operations, and Education”, AGU Fall Meeting, San Francisco, California, December 15<sup>th</sup> -19<sup>th</sup>.
135. Chatterjee, A. *et al.* (2015), “The Madden-Julian Oscillation in the NCAR Community Earth System Model Coupled Data Assimilation System”, AGU Fall Meeting, San Francisco, California, December 15<sup>th</sup> -19<sup>th</sup>.
136. Chatterjee, A. *et al.* (2014), “The NCAR Coupled Data Assimilation System”, The World Weather Open Science Conference, Montreal, Canada, August 16<sup>th</sup> - 21<sup>st</sup>.
137. Chatterjee, A. *et al.* (2014), “Dynamics of the Madden-Julian Oscillation in the NCAR CESM Coupled Data Assimilation System”, The World Weather Open Science Conference, Montreal, Canada, August 16<sup>th</sup>-21<sup>st</sup>.
138. Chatterjee, A. *et al.* (2014), “Depiction of the Madden-Julian Oscillation in the NCAR Community Earth System Model Coupled Data Assimilation System”, 18<sup>th</sup> Conference on Integrated Observing and Assimilation Systems for Atmosphere, Oceans, and Land Surface (IOAS-AOLS), American Meteorological Society 94<sup>th</sup> Annual Meeting, Atlanta, Georgia, February 2<sup>nd</sup> -6<sup>th</sup>.
139. Chatterjee, A. *et al.* (2013), “Quantifying the benefit of GOSAT total column CO<sub>2</sub> observations for constraining the global carbon budget: An inter-comparison study with bottom-up CO<sub>2</sub> flux estimates from MsTMIP”, Abstract A13K-01, *Invited Talk* at 2013 Fall Meeting, American Geophysical Union, San Francisco, California, December 9<sup>th</sup> - 13<sup>th</sup>.
140. Anderson, J. L. *et al.* (2013), “DART: Tools and Support for Ensemble Data Assimilation Research, Operations, and Education”, Abstract GC23A-0880, presented at 2013 Fall Meeting, American Geophysical Union, San Francisco, California, December 9<sup>th</sup> - 13<sup>th</sup>.

141. Chatterjee, A. *et al.* (2013), "Evaluating the fidelity of a community coupled ocean-atmosphere data assimilation system", 6<sup>th</sup> WMO Symposium on Data Assimilation, College Park, Maryland, October 7<sup>th</sup>-11<sup>th</sup>.
142. Chatterjee, A. *et al.* (2013), "Role of GOSAT total column CO<sub>2</sub> observations in the estimation of CO<sub>2</sub> surface fluxes", 9<sup>th</sup> International Workshop on Greenhouse Gas Measurements from Space, Yokohama, Japan, May 29<sup>th</sup>-31<sup>st</sup>.
143. Chatterjee, A. *et al.* (2013), "Role of GOSAT total column CO<sub>2</sub> observations for the estimation of CO<sub>2</sub> surface fluxes", OCO<sub>2</sub> Science Team Meeting, Pasadena, California, March 25<sup>th</sup>-27<sup>th</sup>.
144. Chatterjee, A. *et al.* (2013), "Background error statistics for assimilation of atmospheric CO<sub>2</sub>", 4<sup>th</sup> North American Carbon Program - All Investigators Meeting, Albuquerque, New Mexico, February 4<sup>th</sup> - 7<sup>th</sup>.
145. Shiga, Y. P. *et al.* (2012), "*In Situ* CO<sub>2</sub> Monitoring Network Evaluation and Design: A Criterion Based on Atmospheric CO<sub>2</sub> Variability", Global Monitoring Annual Conference, NOAA-ESRL, Boulder, Colorado, May 15<sup>th</sup> - 17<sup>th</sup>.
146. Chatterjee, A. *et al.* (2012), "Background error statistics for assimilation of atmospheric CO<sub>2</sub>", Abstract A11E-0093, 2012 Fall American Geophysical Union Meeting, San Francisco, California, December 3<sup>rd</sup>-7<sup>th</sup>.
147. Chatterjee, A. *et al.* (2011), "Sensitivity Tests for an ensemble square root filter for CO<sub>2</sub> assimilation", Abstract A43H-04, presented at the 2011 Fall American Geophysical Union Meeting, San Francisco, California, December 5<sup>th</sup>-9<sup>th</sup>.
148. Shiga, Y. P. *et al.* (2011), "A monitoring network design tool for atmospheric carbon dioxide: Validation over North America", Abstract A31B-0073, presented at the 2011 Fall American Geophysical Union Meeting, San Francisco, California, December 5<sup>th</sup>-9<sup>th</sup>.
149. Mueller, K. L. *et al.* (2011), "Assessing the impact of the expanding continuous measurement network in North America on carbon budgeting with an atmospheric inversion", Abstract A31B-0077, presented at the 2011 Fall American Geophysical Union Meeting, San Francisco, California, December 5<sup>th</sup>-9<sup>th</sup>.
150. Chatterjee, A. *et al.* (2011), "Background error statistics for assimilation of atmospheric CO<sub>2</sub>", Abstract A33A-0175, presented at the 2011 Fall American Geophysical Union Meeting, San Francisco, California, December 5<sup>th</sup>-9<sup>th</sup>.
151. Chatterjee, A. *et al.* (2011), "A geostatistical ensemble square root filter for estimating surface fluxes of CO<sub>2</sub>", SIAM Conference on Mathematical and Computational Issues in the Geosciences, Long Beach, California, March 21<sup>st</sup>-24<sup>th</sup>.
152. Gourdj, S. M. *et al.* (2011), "What can we learn about fossil fuel emissions across North America from a Geostatistical atmospheric CO<sub>2</sub> inversion using ground-based continuous measurement data?", SIAM Conference on Mathematical and Computational Issues in the Geosciences, Long Beach, California, March 21<sup>st</sup>-24<sup>th</sup>.
153. Mueller, K. L. *et al.* (2011), "Impact of the expanding measurement network on top-down budgeting of CO<sub>2</sub> surface fluxes in North America", AmeriFlux Science Meeting and 3<sup>rd</sup> NACP All-Investigators Meeting, New Orleans, LA, Jan 31<sup>st</sup> - Feb 4<sup>th</sup>.
154. Shiga, Y. P. *et al.* (2010), "Evaluating the North American in-situ carbon dioxide monitoring network", Abstract GC13D-0726, presented at 2010 Fall Meeting, AGU, San Francisco, Calif., December 13<sup>th</sup> - 17<sup>th</sup>.

155. Yadav, V. *et al.* (2010), "Design Framework for a Real-Time Large-Scale, Parallel, Intelligent, CO<sub>2</sub> Data Assimilation System", Computational Discovery and Cyber-Infrastructure at University of Michigan, Ann Arbor, Michigan.
156. Gourdj, S. M. *et al.* (2010), "Estimating regional-scale CO<sub>2</sub> fluxes over North America within a geostatistical atmospheric inversion framework", *Eos Transactions, American Geophysical Union*, 91(26), Meeting of the Americas Supplement, Abstract A13H-05.
157. Michalak, A. M. *et al.* (2010), "Geostatistical Analyses for XCO<sub>2</sub>: Mapping and Modeling Global CO<sub>2</sub>," Invited Talk at OCO<sub>2</sub>-ACOS Science Team Meeting, California Institute of Technology, Pasadena, California.
158. Michalak, A. M. *et al.* (2009), "A Geostatistical Data Fusion Technique for Merging Remote-sensing and Ground-based Observations of Aerosol Optical Thickness," *Eos Transactions, American Geophysical Union*, 90(52), Fall Meeting Supplement, *Invited Talk*.
159. Hammerling, D.M. *et al.* (2009), "Mapping Global CO<sub>2</sub>: Impact of Temporal Variability on Geostatistical Gap-filling for the Orbiting Carbon Observatory," *Geophysical Research Abstracts*, 11, EGU2009-11407.
160. Chatterjee, A. *et al.* (2008), "A geostatistical data fusion technique for merging MISR and MODIS Aerosol Optical Thickness (AOT) retrievals with AERONET AOT measurement," *Eos Transactions, American Geophysical Union*, 89(53), Fall Meeting Supplement, Abstract A23B-0286.
161. Michalak, A.M. *et al.* (2008), "Mapping Global CO<sub>2</sub>: Geostatistical Gap Filling and Uncertainty Assessment for the Orbiting Carbon Observatory," *Eos Transactions, American Geophysical Union*, 89(53), Fall Meeting Supplement, Abstract A43F-05.
162. Chatterjee, A. *et al.* (2008), "Improving Estimation of over Lake Precipitation-An Application to Lake Erie", International Association for Great Lakes Research's 51st Annual Conference, May 2008, Peterborough, Ontario.
163. Chatterjee, A. *et al.* (2007), "Improving Estimation of Over Lake Precipitation-An Application to Lake Erie", *Eos Transactions, American Geophysical Union*, 88(52), Fall Meeting Supplement, Abstract H33A-0972.
164. Chatterjee, A. *et al.* (2007), "Spatial and Temporal Analysis of Sea Surface Temperature (SST) in the Great Lakes," Poster presented at the Challenges of Climate Change in the Great Lakes Region Summit, U M Biological Station, Pellston, Michigan.
165. Chatterjee, A. and Y. Zhou (2007), "Spatial Analysis of Sea Surface Temperature (SST) Distribution in Lake Ontario," Poster presented at the Michigan Geophysical Union (MGU) Conference, The University of Michigan, Ann Arbor, Michigan.

### Seminar Presentations

1. Chatterjee, A. (2024), Constraining carbon cycle dynamics using space-based observations: plans, updates and highlights from NASA's OCO missions, Department of Forest and Wildlife Ecology, University of Wisconsin-Madison, Madison, Wisconsin
2. Chatterjee, A. (2023), Observing the global carbon cycle, JPL Center for Climate Sciences and The Keck Institute for Space Studies Climate Science Summer School: Using Satellite Observations to Advance Climate Models, Pasadena, California
3. Chatterjee, A. (2021), From diagnosis to attribution: constraining carbon cycle dynamics using remote-sensing missions, School of Informatics, Computing, and Cyber Systems Seminar Series, Northern Arizona University, Flagstaff, Arizona



4. Chatterjee, A. (2019), El Niño 2015-2016 and its impact on the carbon cycle, Atmospheric and Oceanic Science Departmental Seminar Series, University of Maryland, College Park, Maryland
5. Chatterjee, A. and D. Crisp (2018), Satellite based Ocean Carbon Observations, Synthesis and intercomparison of ocean carbon uptake in CMIP6 models Working Group and Workshop, Washington, D.C.
6. Chatterjee, A. (2018), Constraining carbon cycle dynamics using contemporary observations: achievements, challenges and opportunities, Earth Science Colloquium Series, Lamont Doherty Earth Observatory, Columbia University, New York
7. Chatterjee, A. *et al.* (2018), Carbon cycle OSSEs: from informing future space-based observing strategies to reducing fundamental carbon cycle process uncertainties, Piers Sellers IDS Colloquium and Summer Fest, Fort Collins, Colorado
8. Chatterjee, A. *et al.* (2017), Arctic Carbon Cycle Modeling in ABoVE, presentation at the Terrestrial Ecosystems, Permafrost and Environmental Intelligence Collaboration Meeting, Interagency Arctic Research Policy Committee (IARPC) Collaborations Webinar
9. Chatterjee, A. *et al.* (2015), Development and Implementation of GEOCAS (Goddard Earth Observing Carbon Assimilation System) for the Orbiting Carbon Observatory-2 Mission, NASA Goddard Earth Sciences Young Scientist Forum, Greenbelt, Maryland
10. Chatterjee, A. (2014), Carbon Cycle Data Assimilation: what have we learned and where are we going? Department of Atmospheric, Oceanic and Space Sciences Fall Seminar Series, The University of Michigan, Ann Arbor, Michigan
11. Cody, E.D. and A. Chatterjee (2014), Three-dimensional Variation of Atmospheric CO<sub>2</sub>: A Comparison of Aircraft Measurements with Inverse Model Simulations, SOARS Colloquium, University Corporation for Atmospheric Research, Boulder, Colorado
12. Chatterjee, A. (2014), A Perspective on the Role of Data Assimilation in the Geosciences: combining complex models with uncertain data, 14<sup>th</sup> NOAA Visiting Scientists Program Summer Institute, Steamboat Springs, Colorado
13. Chatterjee, A. (2014), Tropical Intraseasonal Oscillations in the NCAR coupled data assimilation system, Atmospheric Modeling & Predictability Section Meeting, NESL's Climate and Global Dynamics Division, National Center for Atmospheric Research, Boulder, Colorado
14. Chatterjee, A. (2013), Role of GOSAT total column CO<sub>2</sub> observations in the estimation of CO<sub>2</sub> surface fluxes, National Center for Atmospheric Research Annual Meeting, Breckenridge, Colorado
15. Chatterjee, A. (2011), Quantifying CO<sub>2</sub> flux variability using geostatistical ensemble filters: current challenges and future potential, CGD 2011-2012 CGD Seminar Series, National Center for Atmospheric Research, Boulder, Colorado
16. Chatterjee, A. and A. M. Michalak (2010), Data Assimilation for Atmospheric CO<sub>2</sub> Estimation, Internal Seminar Series at the NOAA-ESRL, Global Monitoring Division, Boulder, Colorado.
17. Chatterjee, A. (2007), Improving Estimation of Over Lake Precipitation-An Application to Lake Erie, Technical Report Submitted to the Great Lakes Environmental Research Laboratory (GLERL), Ann Arbor, Michigan
18. Chatterjee, A. *et al.* (2007), Over Lake Precipitation Estimation, Summer Fellow Presentation at the Great Lakes Environmental Research Laboratory (GLERL), Ann Arbor, Michigan

### Thesis

1. Chatterjee, A. (2012), "Data Assimilation for Atmospheric CO<sub>2</sub>: Towards Improved Estimates of CO<sub>2</sub> Concentrations and Fluxes", PhD Thesis, The University of Michigan, Ann Arbor, Available at - <http://deepblue.lib.umich.edu/handle/2027.42/96172>

**Outreach Activities / Press Articles**

I consider talking to the press an important outreach activity as they play a critical role in disseminating scientific information to the public. Here are a few examples of my recent interactions with the press:

1. "[NASA Helps Find Thawing Permafrost Adds to Near-Term Global Warming](#)" (JPL News)
2. "[Heat Trapping Pollution](#)" (Climate Central)
3. "[From Monitoring to Action](#)" (Aerospace America)
4. "[NCA5 Webinar – Climate Trends](#)" (U.S. Global Change Research Program)
5. "[The Global Carbon Budget](#)" (Climate Central)
6. "[Carbon From Space](#)" (The Week on Earth Podcast)
7. "[How We Can Better Predict Weather Catastrophes](#)" (The New York Times Opinion)
8. "[New 3D View of Methane Tracks Sources and Movement around the Globe](#)" (NASA Earth Science)
9. "[New Findings in Carbon Cycle Science](#)" (AGU Fall Meeting Press Conference)
10. "[Global Warming's Frozen Giant](#)" (Inside Science)
11. "[Watching the Carbon Cycle from Space](#)" (NUSci)
12. "[NASA Satellite Reveals Source of El Niño–Fueled Carbon Dioxide Spike](#)" (Scientific American)
13. "[A NASA satellite that monitors CO<sub>2</sub> is revealing the inner workings of our planet](#)" (The Verge)
14. "[NASA satellites show our 'breathing' planet in action](#)" (CarbonBrief.org)
15. Also interviews with Bloomberg News, Vice, NASA Science Communications Office, Press Trust of India.