GMAC 2026: Final Program Agenda

Tuesday, 19 May

Session 1: Welcome and Keynote Session

(Gary Morris and Youmi Oh, Chairs)

- **8:30** – **Vanda Grubišić** (GML Director): Welcome from the Global Monitoring Laboratory
- **8:45** – **Jennifer Mahoney** (NOAA OAR - Deputy Assistant Administrator for Science): Overview from NOAA Oceanic & Atmospheric Research
- **9:15** – **Jennifer Balch** (CU Boulder): **Keynote Address –** From Ember to Exabyte: Extreme Fires Across Scales

10:00 – Break

Session 2: Decoding Drivers: Assessing Wildfire, Biosphere, and Transport Impacts on the Atmosphere

(Gary Morris, Chair)

- **10:30** – John Miller (NOAA - GML): Understanding the Causes of the Unprecedented Growth of Atmospheric CO_2 in 2024
- **10:45** – Dan Jaffe (University of Washington): Smokeless Smoke? Investigating Aerosol Removal in Smoke Plumes
- **11:00** – Youmi Oh (CU Boulder - CIRES; GML): Integrating Satellite and Isotopic Observations in CarbonTracker-CH_4 for Improved Methane Emission Estimates During 2019-2024
- **11:15** – Steve Montzka (NOAA - GML): Insights Into Atmospheric Sources, Sinks, and Transport Processes from Globally-Distributed Measurements of Long-Lived Gases
- **11:30** – Jeff Peischl (CU Boulder - CIRES; GML): A Comparison of CO_2, CH_4, and CO Measurements from the National Observations of GHGs Using Aircraft Profiles (NOGAP) Campaign with Three Global Models
- **11:45** – Xin Lan (CU Boulder - CIRES; GML): Updates on Global CO_2, CH_4, N_2O, and SF_6 Measurements from NOAA's Global Greenhouse Gas Reference Network

LUNCH & POSTER SESSION

- **12:00** – Lunch
- **12:15** – Early Career Lunch & Panel Discussion
- **13:30** – **Poster Session** (See Poster Program for details)

15:30 – Break

Session 3: The Carbon Pulse: Ocean Sinks & Terrestrial Feedbacks

(Aleya Kaushik, Chair)

- **16:00** – **Britton Stephens** (NCAR): Zonal-Mean Southern Ocean Air-Sea CO_2 Exchange Measured from Operational Military Transport Aircraft
- **16:15** – **Eric Morgan** (Scripps): Atmospheric O_2 Measurements Show a Strengthening Ocean Carbon Sink and a Stagnant Terrestrial Carbon Sink Since 1990
- **16:30** – **Lei Hu** (NOAA - GML): Evaluation of Uncertainties in Lagrangian Particle Dispersion Models Using Atmospheric Radiocarbon Measurements
- **16:45** – **Madat Sardarli** (Scripps): Advances in Interpreting Atmospheric CO_2 Variability at Mauna Loa and Maunakea Observatories with Covarying Records
- **17:00** – **Haeyoung Lee** (Earth Science NZ): A 20-Year Inter-Laboratory Comparison of Atmospheric $\delta^{13}C$-CO_2 in the Southern Hemisphere: Co-Located Measurements at Baring Head Observatory Demonstrate Improved Compatibility
- **17:15** – **Issy Borley** (CSIRO): Kennaook Cape Grim 50 Year Record of Atmospheric Observations and Recent Trends

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Wednesday, 20 May

Session 4: Ozone, Particulate Matter, and Air Quality

(Elizabeth Asher, Chair)

- **8:30** – **Anne Thompson** (UMBC; NASA GSFC): Free Tropospheric Ozone Trends: New Insights from 25 Years of Ground-Based Observations
- **8:45** – **Joshua Richards** (UMBC): Influence of ENSO Teleconnection on Surface Ozone Exceedances (1980–2024)
- **9:00** – **Peter Effertz** (CU Boulder - CIRES; GML): An Ensemble Kalman Filter Approach to the Dobson Umkehr Ozone Retrievals
- **9:15** – **James Sherman** (Appalachian State): Changing SE U.S. Air Quality and Aerosol Radiative Effects
- **9:30** – **Minsu Choi** (CU Boulder - CIRES; GSL): Change in surface radiation budget due to smoke from the wildfires during 2018 and 2019 fire seasons in the US: Insight from high-resolution WRF-Chem modeling and ground-based radiation observations
- **9:45** – **Erin Boedicker** (CU Boulder - CIRES; GML): Evaluating Long-Term Seasonal Variability of Aerosol Optical Properties in Colorado

10:00 – Break

Session 5: Methane & Trace Species: Sources, Sinks, and Isotopes

(Bianca Baier, Chair)

- **10:30** – **Benjamin Gaubert** (NCAR): Modelling OH Radicals' Impacts on the CO and CH_4 Budget During 2003-2022
- **10:45** – **Vasilii Petrenko** (University of Rochester): Measurements of ^{14}CO and $^{14}CH_4$ in the FETCH4 Project Global Network to Constrain [OH] Variability and the CH_4 Fossil Source
- **11:00** – **Michael Dyonisius** (CU Boulder - INSTAAR): Atmospheric $\Delta^{14}CH_4$ Supports High Baseline Fossil Methane Emissions of ~140 Tg/yr in 2010-2020 Consistent with Dual-Tracer (CH_4 + $\delta^{13}CH_4$) Inversion
- **11:15** – **Ryan Stauffer** (NASA GSFC): SCOAPE-II: A 2024 Multiplatform Measurement Campaign to Assess Oil and Gas Emissions on the Outer Continental Shelf
- **11:30** – **Pedro de Melo** (CU Boulder - CIRES; GML): Machine Learning-Based Analysis of Oil and Gas Methane Emissions in the Gulf of Mexico Using Publicly Available Satellite Data
- **11:45** – **Detlev Helmig** (Boulder A.I.R., LLC): Underestimation of Oil and Gas Industry Emissions in Inventories

LUNCH

- **12:00** – Lunch

Session 6: Atmospheric Dynamics, Clouds, and Radiation

(Laura Riihimaki, Chair)

- **13:30** – **David Clemens-Sewall** (CU Boulder): Potential Impacts of Marine Cloud Brightening in the Arctic
- **13:45** – **Tom Dror** (CU Boulder - CIRES; CSL): Deforestation-Driven Clouds Amplify Top-of-Atmosphere Cooling in the Amazon
- **14:00** – **Eshkol Eytan** (CU Boulder - CIRES; CSL): On the Effect of Clouds on the Aerosol Radiative Effect Across Cloud Regimes
- **14:15** – **Joseph Sedler** (CU Boulder - CIRES; GML): Applying NOAA GML's Radiation, Aerosol, and Clouds (G-RAD) Division Observations and Products to Evaluate and Inform NOAA's NWP
- **14:30** – **Jessica Lyons** (CSU): Using NOAA's SF6 Measurement Network to Characterize Atmospheric Transport Uncertainty and its Effect on Large Scale CO_2 Emissions Estimates
- **14:45** – **Eric Ray** (CU Boulder - CIRES; CSL): The Critical Role of AirCore in Stratospheric Circulation Monitoring

15:00 – Break

Session 7: Integrated Networks: Satellites, Aircraft, and Scale-Bridging

(Sara Morris and Christy Smith, co-Chairs)

- **15:30** – **Arlyn Andrews** (Silver Lining): A New Approach for Leveraging the Complementarity of Diverse Satellite and In Situ Observations for Greenhouse Gas Tracking and other Atmospheric Composition Applications
- **15:45** – **Christopher O'Dell** (CSU - CIRA): The Scientific and Societal Importance of the Orbiting Carbon Observatories
- **16:00** – **Kathryn McKain** (NOAA - GML): Evaluation of Carbon Fluxes in East Tropical Africa from OCO-2 Satellite Retrievals and Global Inversion Models with In Situ Vertical Profile Measurements
- **16:15** – **Temple Lee** (NOAA - ARL): The Chestnut Ridge Supersite: A Revamped Observing System for Studying Land-Atmosphere Interactions and Feedbacks in a Southern Appalachian Forest
- **16:30** – **Katie Smith** (CU Boulder - CIRES; CSL): The NOAA Balloon Baseline Stratospheric Aerosol Profiles (B2SAP) Dataset for In Situ Measurements of Stratospheric Aerosol
- **16:45** – **Colm Sweeney** (NOAA - GML): Using Commercial Aircraft to Monitor Urban Carbon Reservoirs

Poster Sessions

(Christine Smith & Eric Hintsa, Chairs)

13:30 - 15:30 Tuesday, 19 May

Session P1: The Carbon Pulse: Ocean Sinks & Terrestrial Feedbacks

1. **Kerstin Braun** (CU Boulder - INSTAAR): $\delta^{18}O$ of Atmospheric CO_2 from the NOAA Global Monitoring Network
2. **Leslie Morales** (Sao Paulo University): Characterizing CO_2 Emissions with $\Delta^{14}C$-CO_2, CO_2, and CO in Urban, Suburban, and Background Sites of São Paulo
3. **Aleya Kaushik** (CU Boulder - CIRES; GML): Advancing Fire Modeling Capabilities for Understanding Terrestrial Carbon Exchange
4. **Yanxiao Liu** (CU Boulder): Preliminary Sensitivity Tests of X-STILT Parameters for Tropical Ecosystem Applications in the Amazon Region
5. **Ximeng Huang** (CU Boulder): What Drove the Response of Ecosystem Photosynthesis to 2023/24 Drought in the Amazon Tropical Forest
6. **Ajay Devda** (Colorado State University): Hydrodynamics-informed Carbon Monitoring in Tropical Coastal Wetlands Using Harmonized Landsat-Sentinel (HLS) Product
7. **David Munro** (CU Boulder - CIRES; GML): On the Utility of Ship-Based Atmospheric CO_2 Measurements for Constraining Air–Sea CO_2 Fluxes
8. **Ashley Pera** (CU Boulder - CIRES; GML): Toward a Unified CarbonTracker: Consolidating NOAA GML's CO_2 and CH_4 Flux Estimates

Session P2: Ozone, Particulate Matter, and Air Quality

9. **Lori Bruhwiler** (NOAA - GML): NH Air Quality and Methane Emissions from Tropical Africa
10. **Dylan Gaeta** (CU Boulder - CIRES; GML): A Decline But No Cessation of Methyl Bromide Emissions from the United States Over 2007-2018
11. **Behrooz Roozitalab** (NCAR): Airborne Measurements of Bromoform and Dibromomethane and the Potential Impact of Changing Oceans on Their Future Emissions
12. **Eric Hintsa** (CU Boulder - CIRES; GML): Halogen Compounds in the Northern Hemisphere Stratosphere: from Summer Midlatitudes to the Polar Vortex
13. **Mark Kutchenreiter** (CU Boulder - CIRES; GML): Global Monitoring Laboratory-Wildfire Research Mobile Monitoring Systems
14. **Thomas Batalia** (Appalachian State University): The Influence of Local Meteorology and Air Mass Source Region on Aerosol Light Scattering and Absorption Measurements at Appalachian State University

15. **Gary Morris** (NOAA - GML): Optimizing Ozone Profile Sampling Frequency for Trend Calculations

Session P3: Methane & Trace Species: Sources, Sinks, and Isotopes

16. **Gabrielle Petron** (CU Boulder - CIRES; GML): First Look at the NOAA GML CO Flask Measurements on the X2025 Calibration Scale
17. **Santanu Halder** (CU Boulder - CIRES; GML): Investigating the Capability of Atmospheric δD-CH_4 in Reducing the Uncertainty in the Global Methane Budget
18. **Ben Riddell-Young** (CU Boulder - CIRES; GML): Trend in Atmospheric $\delta^{13}C$-CH_4 Suggests Methane Growth in 2024 and 2025 Was Driven by Increased Fire and Fossil Fuel Emissions
19. **John Ortega** (CU Boulder - INSTAAR): Deuterium Measurements of Atmospheric Methane from the NOAA Global Flask Network and Inter-Laboratory Intercomparisons
20. **Betsy Farris** (CU Boulder): Towards Mitigation Scale: Supporting Methane Emissions Management by Connecting Spatial Scales with Satellites
21. **Jianghanyang Li** (CU Boulder - INSTAAR): Application of Oxidation Flow Reactors to Methane Isotopes
22. **Ivan Ortega** (NCAR): Global Monitoring Capabilities with NDACC HR-FTIR: From Retrieval Optimization to Model Evaluation and Extreme Events

Session P4: Atmospheric Dynamics, Clouds, and Radiation

23. **Vanessa Caicedo** (CU Boulder - CIRES; GML): A Machine Learning Derived Integrated Dataset of SURFRAD Radiation, Cloud, and Boundary Layer Height Observations for Land-Atmosphere-Cloud Interactions
24. **Jung-Sub Lim** (CU Boulder - CIRES; CSL): Cloud-Driven Stochastic Variability Sustains Radiative Bimodality in the Arctic Winter: Insights from Long-Term Arctic Observations
25. **Ben Sykes** (Appalachian State University): Initial Characterization Of Cloud Condensation Nuclei Activity In The Southeastern United States

Session P5: Integrated Networks: Satellites, Aircraft, & Scale-Bridging

26. **Eric Moglia** (CU Boulder - CIRES; GML): NOAA GML's Greenhouse Gas Reference Network Management, Logistics, and Importance
27. **Joshua Mauss** (CU Boulder - CIRES; GML): Quantifying the Effects of Long-Term Storage on Measurements of Carbon Dioxide from Air Samples in Flasks
28. **Emily Kaiser** (CU Boulder - CIRES; GML): Statistical Flagging of Longterm Records of Multiple Gases from Flask Samples Collected at Continental Tall Tower Sites

29. **Janae Csavina** (National Ecological Observatory Network): Sensor Life Cycle Management for Traceable Measurements in National Ecological Observatory Network (NEON)
30. **Sara Morris** (NOAA - GML): CAO Tower Meteorological Deployment and Opportunities
31. **Christine Smith** (NOAA - GML): NOAA's Mauna Loa Atmospheric Baseline Observatory – Site Status and Redevelopment Project Updates
32. **Janelle Hakala** (CU Boulder - CIRES; GML): Deploying and Testing a Next Generation In-Situ Measurement System at NOAA's South Pole Atmospheric Baseline Observatory
33. **Debra Kollonige** (ADNET Systems, Inc.; NASA GSFC): Southern Hemisphere Additional Ozonesondes (SHADOZ) Network Updates and Tropospheric Ozone Trends for the TOAR-II Activity
34. **Peter Effertz** (CU Boulder - CIRES; GML): Design and Implementation of a Relational SQL Database for Ozone and Water Vapor Measurements
35. **Glen McConville** (CU Boulder - CIRES; GML): Global Calibration Activities of the Dobson Network Based on the World Primary Standard Spectrophotometer D083
36. **Irina Petropavlovskikh** (CU Boulder - CIRES; GML): Ground-Based Validation of the Operational Satellite Ozone Products: An Assessment of Ozone Recovery and Processes Impacting Its Short-Term Variability
37. **Elizabeth Asher** (CU Boulder - CIRES; GML): Improving Sulfuric Acid Percent Weight A Priori Assumptions for Satellite Retrievals: Insights from Boulder, Hilo, and Lauder NOAA FPH Records
38. **Alexis Badder** (Picarro): An Improved Analyzer for High-Precision and Low-Drift N_2O, CO, and $^{13}CO_2$ Ambient Monitoring