**Colm Sweeney, Ph.D.**

NOAA

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**EDUCATION:**

Ph.D. 2000 Chemical Oceanography, **Columbia University**, New York, NY

M. S. 1996 Geology, **Columbia University**, New York, NY

B. A. 1988 Chemistry, **Bowdoin College,** Brunswick, ME

**AREAS OF INTEREST:**

* Atmospheric and ocean measurement technology development
* Feedbacks of high latitude ocean and land biosphere on climate change
* Emission verification using atmospheric measurements at global, regional and local scales
* Constraining the changes in natural carbon cycle through atmospheric and ocean observations of CO2, CH4 and other trace gases
* Air-sea gas exchange of CO2

**PROFESSIONAL ACTIVITY:**

2/2020 – Present **Associate Director,** Global Monitoring Laboratory (GML), National Oceanic and Atmospheric Administration (NOAA), Earth System Research Laboratory (ESRL)**,** Boulder, CO

8/2019 – 12/2019 **Acting Deputy Director,** Global Ocean Monitoring and Observation (GOMO) Program, NOAA,Silver Spring, CO

1/2018 – Present **Physical Scientist,** GML, NOAA,Boulder, CO

6/2016 – 1/2018 **Senior Research Scientist**, Cooperative Institute for Research in Earth Sciences (CIRES), University of Colorado, Boulder, CO

6/2010 – 6/2016 **Research Scientist III**, CIRES, University of Colorado, Boulder, CO

4/2005 – 6/2010 **Research Scientist II,** CIRES, University of Colorado, Boulder, CO

4/2002 – 4/2005 **Research Staff Member**, Princeton University,Princeton, NJ

4/2002 – Present **Adjunct Assistant Research Scientist,** Lamont-Doherty Earth Observatory of Columbia University, Palisades, NY

9/2000 – 4/2002 **Postdoctoral Research Scientist,** Lamont-Doherty Earth Observatory of Columbia University, Palisades, NY

9/2000 – 12/2000 **Lecturer**, Barnard College, New York, NY

9/1994 – 9/2000 **Doctoral Student,** Lamont-Doherty Earth Observatory of Columbia University, Palisades, NY

6/1992 – 7/1994 **Research Assistant**, Woods Hole Oceanographic Institute, Woods Hole, MA.

9/1989 – 1/1992 **Peace Corps Volunteer**, Peace Corps Nepal, Bardia District, Nepal

9/1988 – 6/1989 **Chemistry Teacher,** Proctor Academy, Andover, NH

# AWARDS

2018 – 2020 Top 10 most highly cited (top 0.1% in field) NOAA researchers by *Clarivate Analytics*

2015 CIRES Technology Transfer award for AirCore measurements.

2012 CIRES Science and Engineering award for AirCore development.

2008 NOAA Outstanding Paper Award

2002 **National Research Council Fellowship** (Declined award)

1999 **Bruce Heezen Award.** Awarded for excellence in graduate student research by the Earth and Environmental Science Department, Columbia University.

1998 – 2000 **NASA Global Change Fellowship.** Three-year fellowship awarded by NASA for graduate student research in global climate change.

1997 **The Sarah Langer Prize.**  Book award for the student who contributes most to student life.

1994 – 1998 **Columbia University Graduate School Fellowship.** Five-year fellowship awarded for the study of Chemical Oceanography.

# PROFESSIONAL ACTIVITIES

2021 – Present NOAA/OAR Earth System Science and Modeling Council– Member

2021 – Present Carbon Dioxide Removal Task Force – Co Chair

2020 – Present Carbon Cycle Interagency Working Group - Member

2018 – 2020 MEthane goes MObile – MEasurements and Modelling (MEMO2) Advisor

2018 IPCC reviewer

2000 – Present Journal reviewer (Nature, Science, AGU atmosphere and ocean journals, Deep Sea Research)

2000 – Present NSF, NOAA, NASA Proposal Review Panel Member

2013-2015 NASA Arctic Boreal Vulnerability Experiment (ABOVE)

2010 U.S. National Academy of Sciences advisor for “Frontiers in Understanding Climate Change and Polar Ecosystems”

2007 IPCC contributing author

2003 – 2008 Antarctic Research Vessel Oversight Committee

2003 – 2017 NSF, NOAA, NASA Proposal Review Panel Member

2000 – 2001 NOAA Carbon Observations Planning Group

1997 – 2000 Columbia University Senate Education Committee member

# PUBLICATIONS as of May 2021 (Total papers = 201, H-index = 70, citations = 21,500 Google Scholar)

**2021**

Davis, K. J., E. V. Browell, S. Feng, T. Lauvaux, M. D. Obland, S. Pal, B. C. Baier, et al. (2021), The Atmospheric Carbon and Transport (ACT) – America Mission, *Bulletin of the American Meteorological Society*, 1-54, doi:10.1175/bams-d-20-0300.1.

Eckl, M., A. Roiger, J. Kostinek, A. Fiehn, H. Huntrieser, C. Knote, Z. R. Barkley, S. M. Ogle, B. C. Baier, C. Sweeney, and K. J. Davis (2021), Quantifying Nitrous Oxide Emissions in the U.S. Midwest: A Top-Down Study Using High Resolution Airborne In-Situ Observations, *Geophysical Research Letters*, *48*(5), e2020GL091266, <doi:https://doi.org/10.1029/2020GL091266.>

Floerchinger, C., P. B. Shepson, K. Hajny, B. C. Daube, B. H. Stirm, C. Sweeney, and S. C. Wofsy (2021), Relative flux measurements of biogenic and natural gas-derived methane for seven U.S. cities, *Elementa: Science of the Anthropocene*, *9*(1), doi:10.1525/elementa.2021.000119.

Kulawik, S. S., J. R. Worden, V. H. Payne, D. Fu, S. C. Wofsy, K. McKain, C. Sweeney, B. C. Daube Jr, A. Lipton, I. Polonsky, Y. He, K. E. Cady-Pereira, E. J. Dlugokencky, D. J. Jacob, and Y. Yin (2021), Evaluation of single-footprint AIRS CH4 profile retrieval uncertainties using aircraft profile measurements, Atmos. Meas. Tech., 14(1), 335-354, doi:10.5194/amt-14-335-2021.

Liu, J., L. Baskaran, K. Bowman, D. Schimel, A. A. Bloom, N. C. Parazoo, T. Oda, D. Carroll, D. Menemenlis, J. Joiner, R. Commane, B. Daube, L. V. Gatti, K. McKain, J. Miller, B. B. Stephens, C. Sweeney, and S. Wofsy (2021), Carbon Monitoring System Flux Net Biosphere Exchange 2020 (CMS-Flux NBE 2020), Earth Syst. Sci. Data, 13(2), 299-330, doi:10.5194/essd-13-299-2021.

Maksyutov, S., T. Oda, M. Saito, R. Janardanan, D. Belikov, J. W. Kaiser, R. Zhuravlev, A. Ganshin, V. K. Valsala, A. Andrews, L. Chmura, E. Dlugokencky, L. Haszpra, R. L. Langenfelds, T. Machida, T. Nakazawa, M. Ramonet, C. Sweeney, and D. Worthy (2021), Technical note: A high-resolution inverse modelling technique for estimating surface CO2 fluxes based on the NIES-TM–FLEXPART coupled transport model and its adjoint, Atmos. Ch*em. Phys.*, *21*(2), 1245-1266, doi:10.5194/acp-21-1245-2021.

Roche, S., K. Strong, D. Wunch, J. Mendonca, C. Sweeney, B. Baier, S. C. Biraud, J. L. Laughner, G. C. Toon, and B. J. Connor (2021), Retrieval of atmospheric CO2 vertical profiles from ground-based near-infrared spectra, Atmos. Meas. Tech., 14(4), 3087-3118, doi:10.5194/amt-14-3087-2021.

**2020**

Baier, B. C., C. Sweeney, Y. Choi, K. J. Davis, J. P. DiGangi, S. Feng, A. Fried, H. Halliday, J. Higgs, T. Lauvaux, B. R. Miller, S. A. Montzka, T. Newberger, J. B. Nowak, P. Patra, D. Richter, J. Walega, and P. Weibring (2020), Multispecies Assessment of Factors Influencing Regional CO2 and CH4 Enhancements During the Winter 2017 ACT-America Campaign, Journal of Geophysical Research-Atmospheres, 125(2), doi:10.1029/2019jd031339.

Basu, S., Lehman, S. J., Miller, J. B., Andrews, A. E., Sweeney, C., Gurney, K. R., Xu, X., Southon, J., and Tans, P. P.: Estimating US fossil fuel CO2 emissions from measurements of 14C in atmospheric CO2, Proceedings of the National Academy of Sciences, 117, 13300-13307, 10.1073/pnas.1919032117, 2020.

Bourgeois, I., Peischl, J., Thompson, C. R., Aikin, K. C., Campos, T., Clark, H., Commane, R., Daube, B., Diskin, G. W., Elkins, J. W., Gao, R. S., Gaudel, A., Hintsa, E. J., Johnson, B. J., Kivi, R., McKain, K., Moore, F. L., Parrish, D. D., Querel, R., Ray, E., Sánchez, R., Sweeney, C., Tarasick, D. W., Thompson, A. M., Thouret, V., Witte, J. C., Wofsy, S. C., and Ryerson, T. B.: Global-scale distribution of ozone in the remote troposphere from ATom and HIPPO airborne field missions, Atmos. Chem. Phys. Discuss., 2020, 1-52, 10.5194/acp-2020-315, 2020.

Brune, W. H., D. O. Miller, A. B. Thames, H. M. Allen, E. C. Apel, D. R. Blake, T. P. Bui, et al. (2020), Exploring Oxidation in the Remote Free Troposphere: Insights From Atmospheric Tomography (ATom), Journal of Geophysical Research-Atmospheres, 125(1), doi:10.1029/2019jd031685.

Kulawik, S. S., Worden, J. R., Payne, V. H., Fu, D., Wofsy, S. C., McKain, K., Sweeney, C., Daube Jr, B. C., Lipton, A., Polonsky, I., He, Y., Cady-Pereira, K. E., Dlugokencky, E. J., Jacob, D. J., and Yin, Y.: Evaluation of single-footprint AIRS CH4 Profile Retrieval Uncertainties Using Aircraft Profile Measurements, Atmos. Meas. Tech. Discuss., 2020, 1-36, 10.5194/amt-2020-145, 2020.

Liu, J., Baskaran, L., Bowman, K., Schimel, D., Bloom, A. A., Parazoo, N. C., Oda, T., Carroll, D., Menemenlis, D., Joiner, J., Commane, R., Daube, B., Gatii, L. V., McKain, K., Miller, J., Stephens, B. B., Sweeney, C., and Wofsy, S.: Carbon Monitoring System Flux Net Biosphere Exchange 2020 (CMS-Flux NBE 2020), Earth Syst. Sci. Data Discuss., 2020, 1-53, 10.5194/essd-2020-123, 2020.

Lin, X., Rogers, B. M., Sweeney, C., Chevallier, F., Arshinov, M., Dlugokencky, E., Machida, T., Sasakawa, M., Tans, P., and Keppel-Aleks, G.: Siberian and temperate ecosystems shape Northern Hemisphere atmospheric CO2 seasonal amplification, Proceedings of the National Academy of Sciences, 117, 21079-21087, 10.1073/pnas.1914135117, 2020.

Laube, J. C., Elvidge, E. C. L., Adcock, K. E., Baier, B., Brenninkmeijer, C. A. M., Chen, H., Droste, E. S., Grooß, J. U., Heikkinen, P., Hind, A. J., Kivi, R., Lojko, A., Montzka, S. A., Oram, D. E., Randall, S., Röckmann, T., Sturges, W. T., Sweeney, C., Thomas, M., Tuffnell, E., and Ploeger, F.: Investigating stratospheric changes between 2009 and 2018 with halogenated trace gas data from aircraft, AirCores, and a global model focusing on CFC-11, Atmos. Chem. Phys., 20, 9771-9782, 10.5194/acp-20-9771-2020, 2020.

Maksyutov, S., Oda, T., Saito, M., Janardanan, R., Belikov, D., Kaiser, J. W., Zhuravlev, R., Ganshin, A., Valsala, V. K., Andrews, A., Chmura, L., Dlugokencky, E., Haszpra, L., Langenfelds, R. L., Machida, T., Nakazawa, T., Ramonet, M., Sweeney, C., and Worthy, D.: Technical note: A high-resolution inverse modelling technique for estimating surface CO2 fluxes based on the NIES-TM - FLEXPART coupled transport model and its adjoint, Atmos. Chem. Phys. Discuss., 2020, 1-33, 10.5194/acp-2020-251, 2020.

Pétron, G., B. Miller, B. Vaughn, E. Thorley, J. Kofler, I. Mielke-Maday, O. Sherwood, et al. (2020), Investigating large methane enhancements in the U.S. San Juan Basin, Elementa: Science of the Anthropocene, 8(1), doi:10.1525/elementa.038.

Sweeney, C., R. Bogue, A. Chatterjee, S. Wolter, K. McKain, T. Newberger, L. Ott, B. Poulter, B. Weir, Z. Zhang, and C. E. Miller (2020), Atmospheric carbon cycle dynamics over the ABoVE domain: an integrated analysis using aircraft observations (Arctic-CAP) and model simulations (GEOS), Environmental Research Letters. Submitted

Thames, A. B., Brune, W. H., Miller, D. O., Allen, H. M., Apel, E. C., Blake, D. R., Bui, T. P., Commane, R., Crounse, J. D., Daube, B. C., Diskin, G. S., DiGangi, J. P., Elkins, J. W., Hall, S. R., Hanisco, T. F., Hannun, R. A., Hintsa, E., Hornbrook, R. S., Kim, M. J., McKain, K., Moore, F. L., Nicely, J. M., Peischl, J., Ryerson, T. B., St. Clair, J. M., Sweeney, C., Teng, A., Thompson, C. R., Ullmann, K., Wennberg, P. O., and Wolfe, G. M.: Missing OH reactivity in the global marine boundary layer, Atmos. Chem. Phys., 20, 4013-4029, 10.5194/acp-20-4013-2020, 2020..

Wang, S., Apel, E. C., Schwantes, R. H., Bates, K. H., Jacob, D. J., Fischer, E. V., Hornbrook, R. S., Hills, A. J., Emmons, L. K., Pan, L. L., Honomichl, S., Tilmes, S., Lamarque, J.-F., Yang, M., Marandino, C. A., Saltzman, E. S., de Bruyn, W., Kameyama, S., Tanimoto, H., Omori, Y., Hall, S. R., Ullmann, K., Ryerson, T. B., Thompson, C. R., Peischl, J., Daube, B. C., Commane, R., McKain, K., Sweeney, C., Thames, A. B., Miller, D. O., Brune, W. H., Diskin, G. S., DiGangi, J. P., and Wofsy, S. C.: Global Atmospheric Budget of Acetone: Air-Sea Exchange and the Contribution to Hydroxyl Radicals, Journal of Geophysical Research: Atmospheres, 125, e2020JD032553, 10.1029/2020jd032553, 2020.

Weibring, P., D. Richter, J. G. Walega, A. Fried, J. DiGangi, H. Halliday, Y. Choi, B. Baier, C. Sweeney, B. Miller, K. J. Davis, Z. Barkley, and M. D. Obland (2020), Autonomous airborne mid-infrared spectrometer for high-precision measurements of ethane during the NASA ACT-America studies, *Atmos. Meas. Tech.*, *13*(11), 6095-6112, doi:10.5194/amt-13-6095-2020.

Wiggins, E. B., Andrews, A., Sweeney, C., Miller, J. B., Miller, C. E., Veraverbeke, S., Commane, R., Wofsy, S., Henderson, J. M., and Randerson, J. T.: Evidence for a larger contribution of smoldering combustion to boreal forest fire emissions from tower observations in Alaska, Atmos. Chem. Phys. Discuss., 2020, 1-26, 10.5194/acp-2019-1067, 2020.

**2019**

Asher, E., R. S. Hornbrook, B. B. Stephens, D. Kinnison, E. J. Morgan, R. F. Keeling, E. L. Atlas, S. M. Schauffler, S. Tilmes, E. A. Kort, M. S. Hoecker-Martínez, M. C. Long, J. F. Lamarque, A. Saiz-Lopez, K. McKain, C. Sweeney, A. J. Hills, and E. C. Apel (2019), Novel approaches to improve estimates of short-lived halocarbon emissions during summer from the Southern Ocean using airborne observations, *Atmos. Chem. Phys.*, *19*(22), 14071-14090, doi:10.5194/acp-19-14071-2019.

Arndt, K. A., W. C. Oechel, J. P. Goodrich, B. A. Bailey, A. Kalhori, J. Hashemi, C. Sweeney, and D. Zona (2019), Sensitivity of methane emissions to later soil freezing in Arctic tundra ecosystems, Journal of Geophysical Research: Biogeosciences.

Brown, M. S., D. R. Munro, C. J. Feehan, C. Sweeney, H. W. Ducklow, and O. M. Schofield (2019), Enhanced oceanic CO 2 uptake along the rapidly changing West Antarctic Peninsula, Nature, Revision.

Crowell, S., D. Baker, A. Schuh, S. Basu, A. R. Jacobson, F. Chevallier, J. Liu, F. Deng, L. Feng, and K. McKain (2019), The 2015–2016 carbon cycle as seen from OCO-2 and the global in situ network, Atmospheric Chemistry and Physics, 19(15), 9797-9831.

Floerchinger, C., K. McKain, T. Bonin, J. Peischl, S. C. Biraud, C. Miller, T. B. Ryerson, S. C. Wofsy, and C. Sweeney (2019), Methane emissions from oil and gas production on the North Slope of Alaska, *Atmospheric Environment*, *218*, 116985, <doi:https://doi.org/10.1016/j.atmosenv.2019.116985.>

Freeman, N. M., D. R. Munro, J. Sprintall, M. R. Mazloff, S. Purkey, I. Rosso, C. A. DeRanek, and C. Sweeney (2019), The observed seasonal cycle of macronutrients in Drake Passage: relationship to fronts and utility as a model metric, Journal of Geophysical Research: Oceans, 124(7), 4763-4783.

Hedelius, J. K., T.-L. He, D. Jones, R. R. Buchholz, M. D. Mazière, N. M. Deutscher, M. K. Dubey, D. G. Feist, D. W. Griffith, and F. Hase (2019), Evaluation of MOPITT version 7 joint TIR-NIR XCO retrievals with TCCON, Atmospheric Measurement Techniques Discussions.

Hu, L., A. E. Andrews, K. W. Thoning, C. Sweeney, J. B. Miller, A. M. Michalak, E. Dlugokencky, P. P. Tans, Y. P. Shiga, and M. Mountain (2019), Enhanced North American carbon uptake associated with El Niño, Science advances, 5(6), eaaw0076.

Karion, A., T. Lauvaux, I. Lopez Coto, C. Sweeney, K. Mueller, S. Gourdji, W. Angevine, Z. Barkley, A. Deng, and A. Andrews (2019), Intercomparison of atmospheric trace gas dispersion models: Barnett Shale case study, Atmospheric Chemistry and Physics, 19(4), 2561-2576

Kostinek, J., A. Roiger, K. J. Davis, C. Sweeney, J. P. DiGangi, Y. Choi, B. Baier, F. Hase, J. Groß, and M. Eckl (2019), Adaptation and performance assessment of a quantum and interband cascade laser spectrometer for simultaneous airborne in situ observation of CH 4, C2H6, CO2, CO and N2O, Atmospheric Measurement Techniques, 12(3), 1767-1783.

Kulawik, S. S., S. Crowell, D. Baker, J. Liu, K. McKain, C. Sweeney, S. C. Biraud, et al. (2019), Characterization of OCO-2 and ACOS-GOSAT biases and errors for CO2 flux estimates, *Atmos. Meas. Tech. Discuss.*, *2019*, 1-61, doi:10.5194/

Lan, X., P. Tans, C. Sweeney, A. Andrews, E. Dlugokencky, S. Schwietzke, J. Kofler, K. McKain, K. Thoning, and M. Crotwell (2019), Long‐Term Measurements Show Little Evidence for Large Increases in Total US Methane Emissions Over the Past Decade, Geophysical Research Letters, 46(9), 4991-4999.

Morgan, E. J., B. B. Stephens, M. C. Long, R. F. Keeling, J. D. Bent, K. McKain, C. Sweeney, M. S. Hoecker-Martínez, and E. A. Kort (2019), Summertime Atmospheric Boundary Layer Gradients of O2 and CO2 over the Southern Ocean, *Journal of Geophysical Research: Atmospheres*, *n/a*(n/a), doi:10.1029/2019jd031479.

Plant, G., E. A. Kort, C. Floerchinger, A. Gvakharia, I. Vimont, and C. Sweeney (2019), Large fugitive methane emissions from urban centers along the US East Coast, Geophysical Research Letters, 46(14), 8500-8507.

Vimont, I. J., J. C. Turnbull, V. V. Petrenko, P. F. Place, C. Sweeney, N. Miles, S. Richardson, B. H. Vaughn, and J. W. White (2019), An improved estimate for the δ 13 C and δ 18 O signatures of carbon monoxide produced from atmospheric oxidation of volatile organic compounds, Atmospheric Chemistry and Physics, 19(13), 8547-8562.

Wiggins, E. B., A. Andrews, C. Sweeney, J. B. Miller, C. E. Miller, S. Veraverbeke, and J. T. Randerson (2019), Evidence for a larger contribution of smoldering combustion to boreal forest fire emissions from tower observations in Alaska, Revision.

Wang, S., D. Kinnison, S. A. Montzka, E. C. Apel, R. S. Hornbrook, A. J. Hills, D. R. Blake, B. Barletta, S. Meinardi, C. Sweeney, F. Moore, M. Long, A. Saiz-Lopez, R. P. Fernandez, S. Tilmes, L. K. Emmons, and J.-F. Lamarque (2019), Ocean Biogeochemistry Control on the Marine Emissions of Brominated Very Short-Lived Ozone-Depleting Substances: A Machine-Learning Approach, *Journal of Geophysical Research: Atmospheres*, *n/a*(n/a), doi:10.1029/2019jd031288.

Wolfe, G. M., J. M. Nicely, J. M. S. Clair, T. F. Hanisco, J. Liao, L. D. Oman, W. B. Brune, D. Miller, A. Thames, and G. G. Abad (2019), Mapping hydroxyl variability throughout the global remote troposphere via synthesis of airborne and satellite formaldehyde observations, Proceedings of the National Academy of Sciences, 116(23), 11171-11180.

**2018**

Alden, C. B., S. Ghosh, S. Coburn, C. Sweeney, A. Karion, R. Wright, I. Coddington, G. B. Rieker, and K. Prasad (2018), Bootstrap inversion technique for atmospheric trace gas source detection and quantification using long open-path laser measurements, *Atmos. Meas. Tech.*, *11*(3), 1565-1582, doi:10.5194/amt-11-1565-2018.

Alvarez, R. A., D. Zavala-Araiza, D. R. Lyon, D. T. Allen, Z. R. Barkley, A. R. Brandt, K. J. Davis, S. C. Herndon, D. J. Jacob, A. Karion, E. A. Kort, B. K. Lamb, T. Lauvaux, J. D. Maasakkers, A. J. Marchese, M. Omara, S. W. Pacala, J. Peischl, A. L. Robinson, P. B. Shepson, C. Sweeney, A. Townsend-Small, S. C. Wofsy, and S. P. Hamburg (2018), Assessment of methane emissions from the U.S. oil and gas supply chain, *Science*, *361*(6398), 186-188, doi:10.1126/science.aar7204.

Chen, Z., T. J. Griffis, J. M. Baker, D. B. Millet, J. D. Wood, E. J. Dlugokencky, A. E. Andrews, C. Sweeney, C. Hu, and R. K. Kolka (2018), Source Partitioning of Methane Emissions and its Seasonality in the U.S. Midwest, *Journal of Geophysical Research: Biogeosciences*, *123*(2), 646-659, doi:doi:10.1002/2017JG004356.

Coburn, S., C. B. Alden, R. Wright, K. Cossel, E. Baumann, G.-W. Truong, F. Giorgetta, C. Sweeney, N. R. Newbury, K. Prasad, I. Coddington, and G. B. Rieker (2018), Regional trace-gas source attribution using a field-deployed dual frequency comb spectrometer, *Optica*, *5*(4), 320-327, doi:10.1364/OPTICA.5.000320.

Desjardins, R. L., D. E. Worth, E. Pattey, A. VanderZaag, R. Srinivasan, M. Mauder, D. Worthy, C. Sweeney, and S. Metzger (2018), The challenge of reconciling bottom-up agricultural methane emissions inventories with top-down measurements, Agric. For. Meteorol., 248(Supplement C), 48-59.doi: 10.1016/j.agrformet.2017.09.003

Fay, A. R., N. S. Lovenduski, G. A. McKinley, D. R. Munro, C. Sweeney, A. R. Gray, P. Landschützer, B. B. Stephens, T. Takahashi, and N. Williams (2018), Utilizing the Drake Passage Time-series to understand variability and change in subpolar Southern Ocean pCO2, *Biogeosciences*, *15*, 3841 - 3855, doi:10.5194/bg-15-3841-2018.

Groot Zwaaftink, C. D., S. Henne, R. L. Thompson, E. J. Dlugokencky, T. Machida, J. D. Paris, M. Sasakawa, A. Segers, C. Sweeney, and A. Stohl (2018), Three-dimensional methane distribution simulated with FLEXPART 8-CTM-1.1 constrained with observation data, *Geosci. Model Dev.*, *11*(11), 4469-4487, doi:10.5194/gmd-11-4469-2018.

Hartery, S., R. Commane, J. Lindaas, C. Sweeney, J. Henderson, M. Mountain, N. Steiner, K. McDonald, S. J. Dinardo, C. E. Miller, S. C. Wofsy, and R. Y. W. Chang (2018), Estimating regional-scale methane flux and budgets using CARVE aircraft measurements over Alaska, *Atmos. Chem. Phys.*, *18*(1), 185-202, doi:10.5194/acp-18-185-2018.

He, W., I. R. Velde, A. E. Andrews, C. Sweeney, J. Miller, P. Tans, I. T. Laan-Luijkx, T. Nehrkorn, M. Mountain, W. Ju, W. Peters, and H. Chen (2018), CTDAS-Lagrange v1. 0: A high-resolution data assimilation system for regional carbon dioxide observations, *Geoscientific Model Development*, *11*(8), 3515-3536, doi:10.5194/gmd-11-3515-2018.

Jeong, S.-J., A. A. Bloom, D. Schimel, C. Sweeney, N. C. Parazoo, D. Medvigy, G. Schaepman-Strub, C. Zheng, C. R. Schwalm, D. N. Huntzinger, A. M. Michalak, and C. E. Miller (2018), Accelerating rates of Arctic carbon cycling revealed by long-term atmospheric CO<sub>2</sub> measurements, *Science Advances*, *4*(7), doi:10.1126/sciadv.aao1167.

Miles, N. L., D. K. Martins, S. J. Richardson, C. W. Rella, C. Arata, T. Lauvaux, K. J. Davis, Z. R. Barkley, K. McKain, and C. Sweeney (2018), Calibration and field testing of cavity ring-down laser spectrometers measuring CH4, CO2, and δ13CH4 deployed on towers in the Marcellus Shale region, *Atmos. Meas. Tech.*, *11*(3), 1273-1295, doi:10.5194/amt-11-1273-2018.

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