
Christopher William O'Dell

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EDUCATION

<i>University of Wisconsin-Madison</i>	<i>Madison, WI</i>	<i>Ph.D. Physics, 12/2001</i>
<i>University of Wisconsin-Madison</i>	<i>Madison, WI</i>	<i>M.A. Physics, 3/2001</i>
<i>University of Dayton</i>	<i>Dayton, OH</i>	<i>B.A. Physics, 5/1995</i>

PAST RESEARCH AND PROFESSIONAL EXPERIENCE

Assistant Professor ***Colorado State University,*** ***8/2012-6/2015***
Dept. of Atmospheric Science

As an assistant professor, I taught classes, advised students, conducted scholarly research, and performed service to the university. I primarily taught classes on atmospheric radiation and remote sensing. I advised several students and one postdoctoral research, in addition to supervising several research scientists. I continued my research on the remote sensing of greenhouse gases and their associated surface-based sources and sinks, in addition to research on long-term changes in clouds as determined from passive microwave remote sensing.

Research Scientist ***Colorado State University,*** ***6/2009-7/2012***
(II/III) ***CIRA***

Research primarily involving remote sensing of greenhouse gases using passive near infrared measurements, such as from the Greenhouse gases Observing SATellite (GOSAT), and the upcoming OCO-2 mission (expected launch in 2013). Assessment of climate feedbacks from satellite measurements, in particular from cloud and energy flux observations. Team leader of the Orbiting Carbon Observatory Level-2 carbon dioxide retrieval algorithm, in partnership with the Jet Propulsion Laboratory.

Research Scientist II ***Colorado State University,*** ***5/2007-6/2009***
Dept. of Atmospheric Science

Remote sensing and data assimilation of weather and climate variables. Worked extensively with space-based passive microwave retrievals of water vapor, cloud water, and rainfall. Also interested in radiative transfer related to variational data assimilation and retrieval theory in the microwave, infrared, and solar parts of the electromagnetic spectrum.

Visiting Scientist ***European Centre for Medium-*** ***10/2006-3/2007***
Range Weather Forecasts

Investigations of the feasibility and implementation of data assimilation of precipitation-affected microwave radiances over land into the ECMWF model, as well as implementation of assimilation of microwave radiances over ocean from several new sensors, including the TRMM Microwave Imager (TMI) and the Advanced Microwave Scanning Radiometer for EOS (AMSR-E). This work involved employing advanced radiative transfer methods, variational retrieval theory, adjoint methods, the analysis of passive microwave satellite data, and working with a complex, global NWP model.

Assistant Scientist **University of Wisconsin-Madison,** **2003-9/2006**
Atmospheric and Oceanic Sciences Dept.

Development and utilization of accurate atmospheric radiative transfer algorithms to aid in a variety of applications, including remote sensing of trace gases, clouds and precipitation, as well as satellite data assimilation for NWP models. A spin-off of this work was the development of a new radiative transfer algorithm, the Successive Order of Scattering (SOI) model, which because of its speed and accuracy is now in use by a number of research groups world-wide.

Postdoctoral Scientist **University of Massachusetts-Amherst,** **2002-2003**
Department of Astronomy

Design and development of bolometric cameras for use in high-resolution millimeter-wave astronomy, ultimately for use on the Large Millimeter Telescope (LMT) in Mexico.

Graduate Student **University of Wisconsin-Madison,** **1997-2001**
Department of Physics

Studies of the Cosmic Microwave Background radiation (CMB) through the design, construction, and operation of customized microwave telescopes. My Ph.D. work led to the most restrictive upper limit on the polarization of the CMB on large angular scales at that time.

AWARDS & HONORS

- NASA group award for OCO-3, 2019
- CIRA (CSU) Director's Award, 2017
- CSU Distinguished Administrative Professional Award, 2012.
- ECMWF Hydrology Satellite Application Facility Grant Recipient, 2006.
- NASA Graduate Student Research Fellow, 1998-2001.
- National Science Foundation Graduate Student Fellow, 1995-1998.
- Society of Physics Students Outstanding Leadership Scholarship Winner, 1995.
- Full scholarship recipient at the University of Dayton, 1991-1995.
- U.S. National Merit Scholar, 1991.

TEACHING/OUTREACH

- AT652, Atmospheric Remote Sensing (Fall 2016, Co-Taught).

- AT622, Atmospheric Radiation (Spring 2013 and Spring 2015), <http://reef.atmos.colostate.edu/~odell/AT622/>.
- AT786, Discussion of the IPCC's 5th Assessment Report (Fall 2014), <http://reef.atmos.colostate.edu/~odell/at786/>.
- AT721, Advanced Topics in Radiative Transfer (Spring 2014), <http://reef.atmos.colostate.edu/~odell/at786/>.
- AT652. Atmospheric Remote Sensing (Fall 2013), <http://reef.atmos.colostate.edu/~odell/at786/>.
- Co-taught AT652 (graduate-level class), Remote Sensing, Colorado State University, Fall 2010.
- Taught 3 weeks of AOS-740, Advanced Topics in Atmospheric Radiation, UW-Madison, AOS Dept., 2005 (graduate-level class). In addition to usual topics, much time was spent teaching modern retrieval theory.
- Taught 5 weeks of AOS-640, Atmospheric Radiation, UW-Madison, AOS Dept., 2004 (graduate-level class).
- Taught 4 weeks of AOS-340, Atmospheric Radiation, UW-Madison, AOS Dept., 2005 (undergraduate-level class).
- Production and hosting of the "Perpetual Notion Machine," a bi-weekly science radio program on station WORT, <http://www.perpetualnotionmachine.org/>, Madison, WI., 2000-2002.
- Tutored several disadvantaged students in introductory physics for the TRIO-SSS program at the UW-Madison, <http://www.education.wisc.edu/trio>, 2000-2001.
- Teaching assistant for introductory Electricity and Magnetism at the UW-Madison, 1997.
- Teaching assistant for mechanics and electrodynamics laboratory course at the University of Dayton, 1994-1995.
- Teaching assistant for summer intensive physics course at the University of Dayton, 1992.

PUBLICATIONS

In Prep

Jacobs, N., O'Dell, C.W., Chatterjee, A., Logan, T., and Taylor, T.E., 2023: "The importance of digital elevation model accuracy on XCO₂ retrievals," target AMT, in prep.

Mendonca, J., Nassar, R., O'Dell, C.W., Chatterjee, A., and Wunch, D., 2023: "A Neural Network Approach to Filtering OCO-2 Retrievals over Snow," target AMT, in prep.

Keely, W., Mauceri, S., Crowell, S., and O'Dell, C.W., 2023: "A non-linear data driven approach to bias correction of XCO₂ for OCO-2 ACOS B10," target AMT, in prep.

Submitted/In Review

McGarragh, G.R., O'Dell, C.W., Somkuti, P., Crowell, S., Burgh, E., and Moore, B., 2023: "The GeoCarb greenhouse gas retrieval algorithm: Simulations and sensitivity to sources of uncertainty", submitted to *Atmos. Meas. Tech.*

Byrne, B., Baker, D. F., Basu, S., ..., **O'Dell, C. W.**, et al., 2023: National CO₂ budgets (2015–2020) inferred from atmospheric CO₂ observations in support of the Global Stocktake, *Earth Syst. Sci. Data Discuss.* [preprint], <https://doi.org/10.5194/essd-2022-213>, in review.

2023

Hakkarainen, J., Ialongo, I., Oda, T., Szelaq, M.E., **O'Dell, C.W.**, Eldering, A. and Crisp, D., 2023. Building a bridge: Characterizing major anthropogenic point sources in the South African Highveld region using OCO-3 carbon dioxide Snapshot Area Maps and Sentinel-5P/TROPOMI nitrogen dioxide columns. *Environmental Research Letters*.
<https://doi.org/10.1088/1748-9326/acb837>.

Bell, E., **O'Dell, C. W.**, Taylor, T. E., Merrelli, A., Nelson, R. R., Kiel, M., Eldering, A., Rosenberg, R., and Fisher, B., 2023: "Exploring bias in the OCO-3 snapshot area mapping mode via geometry, surface, and aerosol effects." *Atmos. Meas. Tech.*, 16, 109–133,
<https://doi.org/10.5194/amt-16-109-2023>.

2022

Walley, S., Pal, S., Campbell, J.F., Dobler, J., Bell, E., Weir, B., Feng, S., Lauvaux, T., Baker, D., Blume, N., Erxleben, W., Fan, T., Lin, B., McGregor, D., Obland, M.D., **O'Dell, C.W.**, and Davis, K.J., 2022: "Airborne lidar measurements of XCO₂ in synoptically active environment and associated comparisons with numerical simulations." *Journal of Geophysical Research: Atmospheres*, 127(16),
<https://doi.org/10.1029/2021JD035664>.

Keller, G.R., Rosenberg, R.A., Spiers, G.D., Yu, S., Merrelli, A., **O'Dell, C.W.**, Lee, R.A., Crisp, D., Eldering, A. and Chatterjee, A., 2022. Inflight Radiometric Calibration and Performance of the Orbiting Carbon Observatory 3 for Version 10 Products. *IEEE Transactions on Geoscience and Remote Sensing*, 60, pp.1-18.

Nassar, R., Moeini, O., Mastrogiacomo, J.P., **O'Dell, C.W.**, Nelson, R.R., Kiel, M., Chatterjee, A., Eldering, A. and Crisp, D., 2022: "Tracking CO₂ emission reductions from space: A case study at Europe's largest fossil fuel power plant." *Frontiers in Remote Sensing*, 3, p.98.

Taylor, T.E., **O'Dell, C.W.**, Crisp, D., Kuze, A., Lindqvist, H., Wennberg, P.O., Chatterjee, A., Gunson, M., Eldering, A., Fisher, B. and Kiel, M., 2022: "An 11-year record of XCO₂ estimates derived from GOSAT measurements using the NASA ACOS version 9 retrieval algorithm." *Earth System Science Data*, 14(1), pp.325-360. <https://doi.org/10.5194/essd-14-325-2022>.

Peiro, H., Crowell, S., Schuh, A., Baker, D. F., **O'Dell, C.W.**, Jacobson, A. R., Chevallier, F., Liu, J., Eldering, A., Crisp, D., Deng, F., Weir, B., Basu, S., Johnson, M. S., Philip, S., and Baker, I., 2022: “Four years of global carbon cycle observed from the Orbiting Carbon Observatory 2 (OCO-2) version 9 and in situ data and comparison to OCO-2 version 7”, *Atmos. Chem. Phys.*, 22, 1097–1130, <https://doi.org/10.5194/acp-22-1097-2022>.

Baker, D.F., Bell, E., Basu, S., Kulawik, S., **O'Dell, C.W.**, Davis, K.J., Campbell, J.F., Lin, B., and Dobler, J., 2022: Calculating an error correlation length scale from MFL-OCO2 column-average CO₂ differences and using it to average OCO-2 data. *Geosci. Model Dev.*, 15(2), 649–668, <https://doi.org/10.5194/gmd-15-649-2022>.

2021

Weir, B., Crisp, D., **O'Dell, C.W.**, Basu, S., Chatterjee, A., Kolassa, J., Oda, T., Pawson, S., Poulter, B., Zhang, Z. and Ciais, P., 2021: “Regional impacts of COVID-19 on carbon dioxide detected worldwide from space”, *Science advances*, 7(45), p.eabf9415. <https://doi.org/10.1126/sciadv.abf9415>

Mendonca J., Nassar R., **O'Dell C.W.**, Kivi R., Morino I., Notholt J., Petri C., Strong K., Wunch D., 2021: “Assessing the feasibility of using a neural network to filter Orbiting Carbon Observatory 2 (OCO-2) retrievals at northern high latitudes”, *Atmos. Meas. Tech.*, 3;14(12):7511-24. <https://doi.org/10.5194/amt-14-7511-2021>.

Lei, R., Feng, S., Danjou, A., Broquet, G., Wu, D., Lin, J.C., **O'Dell, C.W.** and Lauvaux, T., 2021: “Fossil fuel CO₂ emissions over metropolitan areas from space: A multi-model analysis of OCO-2 data over Lahore, Pakistan”, *Rem. Sens. Env.*, 264, p.112625, <https://doi.org/10.1016/j.rse.2021.112625>.

Nassar, R., Mastrogiacomo, J.P., Bateman-Hemphill, W., McCracken, C., MacDonald, C.G., Hill, T., **O'Dell, C.W.**, Kiel, M. and Crisp, D., 2021. Advances in quantifying power plant CO₂ emissions with OCO-2. *Rem. Sens. Env.*, 264, p.112579, <https://doi.org/10.1016/j.rse.2021.112579>.

Somkuti, P., **O'Dell, C.W.**, Crowell, S., Köhler, P., McGarragh, G.R., Cronk, H.Q. and Burgh, E.B., 2021 : Solar-induced chlorophyll fluorescence from the Geostationary Carbon Cycle Observatory (GeoCarb): An extensive simulation study. *Rem. Sens. Env.*, 263, p.112565, <https://doi.org/10.1016/j.rse.2021.112565>.

Buchwitz, M., Reuter, M., Noël, S., Bramstedt, K., Schneising, O., Hilker, M., Fuentes Andrade, B., Bovensmann, H., Burrows, J. P., Di Noia, A., Boesch, H., Wu, L., Landgraf, J., Aben, I., Retscher, C., **O'Dell, C. W.**, and Crisp, D., 2021: “Can a regional-scale reduction of atmospheric CO₂ during the COVID-19 pandemic be detected from space? A case study for East China using satellite XCO₂ retrievals”, *Atmos. Meas. Tech.*, 14(3), pp.2141-2166. <https://doi.org/10.5194/amt-14-2141-2021>.

Massie, S. T., Cronk, H., Merrelli, A., **O'Dell, C.W.**, Schmidt, K. S., Chen, H., and Baker, D., 2021: “Analysis of 3D cloud effects in OCO-2 XCO₂ retrievals”, *Atmos. Meas. Tech.*, 14, 1475–1499, <https://doi.org/10.5194/amt-14-1475-2021>.

Davis, K. J., Browell, E.V., Feng, S., Lauvaux, T., Obland, M.D., Pal, S., Baier, B.C., Baker, D.F., Baker, I.T., Barkley, Z.R., Bowman, K.W., Cui, Y.Y., Denning, A.S.,

DiGangi, J.P., Dobler, J.T., Fried, A., Gerken, T., Keller, K., Lin, B., Nehrir, A.R., Normile, C.P., **O'Dell, C.W.**, Ott, L.E., Roiger, A., Schuh, A.S., Sweeney, C., Wei, Y., Weir, B., Xue, M., and Williams, C.A., 2021: The Atmospheric Carbon and Transport (ACT) – America Mission. *Bulletin of the American Meteorological Society* 102.9 (2021): E1714-E1734. <https://doi.org/10.1175/BAMS-D-20-0300.1>.

2020

Wang, J., Feng, L., Palmer, P.I., Liu, Y., Fang, S., Bösch, H., **O'Dell, C.W.**, Tang, X., Yang, D., Liu, L. and Xia, C., 2020. Large Chinese land carbon sink estimated from atmospheric carbon dioxide data. *Nature*, 586(7831), pp.720-723, <https://doi.org/10.1038/s41586-020-2849-9>.

Payne, V.H., Drouin, B.J., Oyafuso, F., Kuai, L., Fisher, B.M., Sung, K., Nemchick, D., Crawford, T.J., Smyth, M., Crisp, D. Adkins, E., Hodges, J.T., Long, D.A., Mlawer, E.J., Merrelli, A., Lunny, E., and **O'Dell, C.W.**, 2020: Absorption coefficient (ABSCO) tables for the Orbiting Carbon Observatories: Version 5.1. *Journal of Quantitative Spectroscopy and Radiative Transfer*, 255, p.107217, <https://doi.org/10.1016/j.jqsrt.2020.107217>.

Bell, E., **O'Dell, C.W.**, Davis, K.J., Campbell, J., Browell, E., Scott Denning, A., Dobler, J., Erxleben, W., Fan, T.F., Kooi, S. and Lin, B., 2020. Evaluation of OCO-2 X Variability at Local and Synoptic Scales using Lidar and In Situ Observations from the ACT-America Campaigns. *Journal of Geophysical Research: Atmospheres*, 125(10), p.e2019JD031400, <https://doi.org/10.1029/2019JD031400>.

Campbell, J.F., Lin, B., Dobler, J., Pal, S., Davis, K., Obland, M.D., Erxleben, W., McGregor, D., **O'Dell, C.W.**, Bell, E. and Weir, B., 2020. Field Evaluation of Column CO₂ Retrievals From Intensity-Modulated Continuous-Wave Differential Absorption Lidar Measurements During the ACT-America Campaign. *Earth and Space Science*, 7(12), p.e2019EA000847, <https://doi.org/10.1029/2019EA000847>.

Johnson, M.S., Schwandner, F.M., Potter, C.S., Nguyen, H.M., Bell, E., Nelson, R.R., Philip, S. and **O'Dell, C.W.**, 2020. Carbon dioxide emissions during the 2018 Kilauea volcano eruption estimated using OCO-2 satellite retrievals. *Geophysical Research Letters*, p.e2020GL090507, <https://doi.org/10.1029/2020GL090507>.

Chevallier, F., Zheng, B., Broquet, G., Ciais, P., Liu, Z., Davis, S.J., Deng, Z., Wang, Y., Bréon, F.M. and **O'Dell, C.W.**, 2020. Local anomalies in the column-averaged dry air mole fractions of carbon dioxide across the globe during the first months of the coronavirus recession. *Geophysical Research Letters*, 47(22), p.e2020GL090244, <https://doi.org/10.1029/2020GL090244>.

Taylor, T.E., Eldering, A., Merrelli, A., Kiel, M., Somkuti, P., Cheng, C., Rosenberg, R., Fisher, B., Crisp, D., Basilio, R. and Bennett, M., Cervantes, D., Chang, A., Dang, L., Frankenberg, C., Haemmerle, V.R., Keller, G.R., Kurosu, T., Laughner, J.L., Lee, R., Marchetti, Y., Nelson, R.R., **O'Dell, C.W.**, Osterman, G., Pavlick, R., Roehl, C., Schneider, R., Spiers, G., To, C., Wells, C., Wennberg, P.O., Yelamanchili, A., and Yu, S., 2020: OCO-3 early mission operations and initial (vEarly) XCO₂ and SIF retrievals. *Remote Sensing of Environment*, 251, p.112032, <https://doi.org/10.1016/j.rse.2020.112032>.

Yu, S., Rosenberg, R., Bruegge, C., Chapsky, L., Fu, D., Lee, R., Taylor, T., Cronk, H., **O'Dell, C.W.**, Angal, A., Xiong, J., Crisp, D., and Eldering, A., 2020. Stability assessment of OCO-2 radiometric calibration using aqua MODIS as a reference. *Remote Sensing*, 12(8), p.1269, <https://doi.org/10.3390/rs12081269>.

Nelson, R. R., Eldering, A., Crisp, D., Merrelli, A. J., and **O'Dell, C.W.**, 2020: Retrieved wind speed from the Orbiting Carbon Observatory-2, *Atmos. Meas. Tech.*, 13, 6889–6899, <https://doi.org/10.5194/amt-13-6889-2020>.

Jacobs, N., Simpson, W. R., Wunch, D., **O'Dell, C. W.**, Osterman, G. B., Hase, F., Blumenstock, T., Tu, Q., Frey, M., Dubey, M. K., Parker, H. A., Kivi, R., and Heikkinen, P., 2020: Quality controls, bias, and seasonality of CO₂ columns in the boreal forest with Orbiting Carbon Observatory-2, Total Carbon Column Observing Network, and EM27/SUN measurements, *Atmos. Meas. Tech.*, 13, 5033–5063, <https://doi.org/10.5194/amt-13-5033-2020>.

Reuter, M., Buchwitz, M., Schneising, O., Noël, S., Bovensmann, H., Burrows, J. P., Boesch, H., Di Noia, A., Anand, J., Parker, R. J., Somkuti, P., Wu, L., Hasekamp, O. P., Aben, I., Kuze, A., Suto, H., Shiomi, K., Yoshida, Y., Morino, I., Crisp, D., **O'Dell, C. W.**, Notholt, J., Petri, C., Warneke, T., Velazco, V. A., Deutscher, N. M., Griffith, D. W. T., Kivi, R., Pollard, D. F., Hase, F., Sussmann, R., Té, Y. V., Strong, K., Roche, S., Sha, M. K., De Mazière, M., Feist, D. G., Iraci, L. T., Roehl, C. M., Retscher, C., and Schepers, D., 2020: Ensemble-based satellite-derived carbon dioxide and methane column-averaged dry-air mole fraction data sets (2003–2018) for carbon and climate applications, *Atmos. Meas. Tech.*, 13, 789–819, <https://doi.org/10.5194/amt-13-789-2020>.

2019

Reuter, M., Buchwitz, M., Schneising, O., Krautwurst, S., **O'Dell, C.W.**, Richter, A., Bovensmann, H. and Burrows, J.P., 2019: Towards monitoring localized CO₂ emissions from space: co-located regional CO₂ and NO₂ enhancements observed by the OCO-2 and S5P satellites, *Atmos. Chem. Phys.*, 19, 9371-9383, <https://doi.org/10.5194/acp-19-9371-2019>.

Crowell, S., Baker, D., Schuh, A., Basu, S., Jacobson, A. R., Chevallier, F., Liu, J., Deng, F., Feng, L., Chatterjee, A., Crisp, D., Eldering, A., Jones, D. B., McKain, K., Miller, J., Nassar, R., Oda, T., **O'Dell, C.W.**, Palmer, P. I., Schimel, D., Stephens, B., and Sweeney, C., 2019: The 2015–2016 Carbon Cycle As Seen from OCO-2 and the Global *In Situ* Network, *Atmos. Chem. Phys.*, 19, 9797-9831, <https://www.atmos-chem-phys.net/19/9797/2019/>.

Kulawik, S. S., **O'Dell, C.W.**, Nelson, R. R., and Taylor, T. E., 2019: Validation of OCO-2 error analysis using simulated retrievals, *Atmos. Meas. Tech.*, 12, 5317-5334, <https://doi.org/10.5194/amt-12-5317-2019>.

Chevallier, F., Remaud, M., O'Dell, C.W., Baker, D., and Cozic, A., 2019: Objective evaluation of surface- and satellite-driven carbon dioxide atmospheric inversions. *Atmos. Chem. Phys.*, 19, 14233-14251, <https://doi.org/10.5194/acp-19-14233-2019>.

Nelson, R.R., and **O'Dell, C.W.**, 2019: The impact of improved aerosol priors on near-infrared measurements of carbon dioxide. *Atmospheric Measurement Techniques*, 12(3), 1495-1512, <https://doi.org/10.5194/amt-12-1495-2019>.

Kiel, M., **O'Dell, C.W.**, Fisher, B., Eldering, A., Nassar, R., MacDonald, C. G., and Wennberg, P. O., 2019: How bias correction goes wrong: Measurement of X_{CO2} affected by erroneous surface pressure estimates, *Atmos. Meas. Tech.*, 12, 2241-2259, <https://doi.org/10.5194/amt-12-2241-2019>.

Eldering, A., Taylor, T. E., **O'Dell, C. W.**, and Pavlick, R., 2019: The OCO-3 mission; measurement objectives and expected performance based on one year of simulated data, *Atmos. Meas. Tech.*, 12, 2341-2370, <https://doi.org/10.5194/amt-12-2341-2019>.

2018

Buchwitz, M., Reuter, M., Schneising, O., Noël, S., Gier, B., Bovensmann, H., Burrows, J. P., Boesch, H., Anand, J., Parker, R. J., Somkuti, P., Detmers, R. G., Hasekamp, O. P., Aben, I., Butz, A., Kuze, A., Suto, H., Yoshida, Y., Cosp, D., and **O'Dell, C.W.**, 2018: Computation and analysis of atmospheric carbon dioxide annual mean growth rates from satellite observations during 2003–2016, *Atmos. Chem. Phys.*, <https://doi.org/10.5194/acp-17355-2018>.

Grasso, L., Lindsey, D. T., Noh, Y. J., **O'Dell, C.W.**, Wu, T. C., & Kong, F., 2018: Improvements to Cloud-Top Brightness Temperatures Computed from the CRTM at 3.9 μ m. *Monthly Weather Review*, 146(11), 3927-3944.

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2017

Kataoka, F., Crisp, D., Taylor, T., **O'Dell, C.W.**, Kuze, A., Shiomi, K., Suto, H., Bruegge, C., Schwandner, F., Rosenberg, R. and Chapsky, L., 2017: The Cross-Calibration of Spectral Radiances and Cross-Validation of CO₂ Estimates from GOSAT and OCO-2. *Remote Sensing*, 9(11), p.1158.

Kulawik, S. S., **O'Dell, C.**, Payne, V. H., Kuai, L., Worden, H. M., Biraud, S. C., Sweeney, C., Stephens, B., Iraci, L. T., Yates, E. L., and Tanaka, T., 2017: Lower-tropospheric CO₂ from near-infrared ACOS-GOSAT observations, *Atmos. Chem. Phys. (online)*, 17(8).

Wunch, D., Wennberg, P. O., Osterman, G., Fisher, B., Naylor, B., Roehl, C. M., **O'Dell, C.W.**, Mandrake, L., et al., 2017: Comparisons of the Orbiting Carbon Observatory-2 (OCO-2) X_{CO2} measurements with TCCON, *Atmos. Meas. Tech.*, 10, 2209-2238, <https://doi.org/10.5194/amt-10-2209-2017>.

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B.G. Keating, **C.W. O'Dell**, J.O. Gundersen, N. Stebor, L. Piccirillo, and P.T. Timbie, 2003: [An Instrument for Investigating the Large Angular Scale Polarization of the Cosmic Microwave Background](#). *Astrophys. J. Suppl.*, 144(1), pp. 1-20.

C.W. O'Dell, D. Swetz, and P.T. Timbie, 2002: [Calibration of Millimeter-Wave Polarimeters Using a Thin Dielectric Sheet](#). *IEEE Trans. Micr. Theory and Tech.*, 50(9), pp. 2135-2141.

B.G. Keating, **C.W. O'Dell**, A. de Oliveira-Costa, S. Klawikowski, N. Stebor, L. Piccirillo, M. Tegmark, and P.T. Timbie, 2001: [A Limit on the Large Angular Scale Polarization of the Cosmic Microwave Background](#). *Astrophys. J.*, 560(1), pp. L1-L4.

PRESENTATIONS

“Evaluation of OCO-2 XCO₂ from the ACOS version 11 algorithm,” AGU Fall Meeting, Chicago, IL, USA, December 2022.

“Is GOSAT XCO₂ still useful in the OCO-2 era?” [IWGGMS-18](#), Hybrid, 13 July 2022.

“Improvements to CO₂ Retrievals,” with L. Ott, [CEOS Atmospheric Composition Virtual Constellation AC-VC-18 Workshop](#), Virtual, 14-18 March 2022.

“Use of a Pessimistic End-to-End OSSE Simulation to Assess Potential Impacts of OCO-2 XCO₂ Observations on Quantifying Global Carbon Fluxes”, [IWGGMS-17](#), Virtual, June 15, 2021.

“Improvements in XCO₂ accuracy from OCO-2 with the latest ACOS v10 product”, EGU 2021, Virtual, April 30, 2021.

“Improvements in XCO₂ accuracy from OCO-2 with the latest ACOS v10 product”, AGU Fall Meeting, Virtual, December, 2020.

“The latest ACOS XCO₂ datasets are the best yet: The 10-year GOSAT v9 record, its comparison to OCO-2, and a first look at OCO-2 v10”, [IGWWMS-16](#), Virtual, June 3, 2020.

“Impact of ACT-America research on XCO₂”, ACT-America Science Team Meeting, Virtual, April 27, 2020.

“First retrievals of XCO₂ and SIF from the Orbiting Carbon Observatory-3”, AGU Fall Meeting, San Francisco, CA, December 13, 2019.

“OCO-2 B10 Algorithm Status update”, Fall 2019 OCO-2 Science Team Meeting, Boulder, CO, October 2019.

“Geocarb Level-2 Retrieval Algorithms”, Geostationary Working Group Meeting, Harvard CFA, Boston, MA, Sep 26-27, 2019.

“Updates to OCO-2 X_{CO2}, data products, new science, and future perspectives,” IWGGMS-15, Sapporo, Japan, 4 June 2019.

“OCO-2 B10 Algorithm Status update”, Spring 2019 OCO-2 Science Team Meeting, Cocoa Beach, FL, April 2019.

“Space-based measurements of CO₂: past, present and future,” Noble Seminar Series, Atmospheric Physics Group, Dept. of Earth, Atmosphere, and Planetary Physics, January 28th, 2019 (invited). <https://www.physics.utoronto.ca/research/eapp/atmosp-monday-seminars/tba-49>

“Updates to OCO-2 XCO₂ data products, new science, and future perspectives,” AGU Meeting, Washington, D.C., December 13, 2018.

OCO-2 Algorithm Status update, Fall 2018 OCO-2 Science Team Meeting, Boulder, CO.

OCO-2 Algorithm Status update, Spring 2018 OCO-2 Science Team Meeting, Pasadena, CA.

“Are we there yet? A look at the status and prospects of inferring top-down carbon fluxes from passive CO₂ remote sensing”, 14th international workshop of greenhouse gas measurements from space (IWGGMS), University of Toronto, Toronto, CA, May 9, 2018.

“How good are CO₂ measurements from space? And are they good enough”, Carbon and Human Emissions (CHE) 1st general assembly, Reading, UK, February 6, 2018 (invited).

Unlisted: AGU 2017, 2016. EGU 2016 (invited). IWGGMS 2016, 2017. GMAC 2017, A. Andrews meeting (NOAA) 2017. OCO₂ meetings (multiple), ACT-America STM (July 2017), ECMWF CHE Meeting (2/2018). Invited Talk GSFC May 2016.

[“The First Year of OCO-2 XCO₂ Observations: Bias Correction and Comparison to Models.”](#) AGU Fall Meeting, Dec 14-18, 2015 (Talk).

“Evaluation of OCO-2 Measurement Spatial Variability with CO₂ LIDAR,” ACT-America Team Meeting, Newport News, CA, Aug 12-13, 2015 (Invited Talk).

“OCO-2 XCO₂ Retrievals: Status Report and Bias Correction,” 11th International Workshop on Greenhouse Gas Measurements from Space (IWGGMS 11), Pasadena, CA, Jun 16-18, 2015 (Talk).

“The OCO-2 Level-2 Full-Physics Retrieval,” OCO-2 Science Team Meeting, Pasadena, CA, Feb 24-26, 2015 (Talk).

“Evaluation of land-surface models with GOSAT carbon dioxide measurements,” 5th North American Carbon Program meeting, Washington, DC, Jan 26-29, 2015 (Poster).

“Evaluation of land-surface models with GOSAT carbon dioxide measurements,” AGU Fall meeting, San Francisco, CA, Dec 15-19, 2014 (Talk).

“The Ability of Satellite-based CO₂ Measurements to Constrain Carbon Cycle Science: From Greenhouse Gases (GHG) Observing SATellite (GOSAT) to Orbiting Carbon Observatory (OCO-2),” NOAA Earth System Research Laboratory Global Monitoring Division Annual Conference (GMAC), Boulder, CO, May 20-21, 2014 (Talk).

“The Potential of GOSAT Column CO₂ to Constrain Carbon Inversion Systems,” 10th International Workshop on Greenhouse Gas Measurements from Space, (IWGGMS 10), Noordwijk, Netherlands, May 5-7, 2014 (Talk).

“Preliminary Tests of the Launch Ready Version of OCO-2, XCO₂ Retrieval Algorithm,” 10th International Workshop on Greenhouse Gas Measurements from Space (IWGGMS 10), Noordwijk, Netherlands, May 5-7, 2014 (Talk).

“Overview of the OCO-2 XCO₂ Retrieval Algorithm,” OCO-2 Science Team Meeting, Pasadena, CA, January 28-30, 2014.

“The Why and How of Satellite Measurements of Carbon Dioxide and other Greenhouse Gases,” presentation to CMMAP summer interns, 26 July 2013.

“Towards a better understanding of climate and climate change through satellite remote sensing,” presentation to the Northern Colorado Astronomical Society, 2 May 2013.

“An overview of ACOS Build 3.3 XCO₂ retrievals from GOSAT and first validation results,” 9th International Workshop on Greenhouse Gas Measurements from Space, Yokohama, Japan, 29 May – 1 June 2013 (Talk).

“Overview of the OCO-2/GOSAT B3.3 Product,” OCO-2 Science Team Meeting, Pasadena, CA, 27-29 March 2013 (Talk).

“Ground-based assessment of retrieved aerosol properties from GOSAT observations in multiple carbon dioxide retrieval algorithms,” in Session A41N, American Geophysical Union 2012 Fall Meeting, San Francisco, CA, 5-9 Dec 2012, Non-Referred. (Invited Talk)

“Aerosol information content analysis of multi-angle high spectral resolution measurements and its benefit for high accuracy greenhouse gas retrievals,” in Session

A33I, American Geophysical Union 2012 Fall Meeting, San Francisco, CA, 5-9 Dec 2012, Non-Referred. (Poster)

"Assessment of errors in the ACOS/GOSAT B2.10 XCO₂ retrievals using a combination of methods," 8th International Workshop on Greenhouse Gas Measurements from Space, Pasadena, CA, 18-20 June 2012 (Invited Talk).

"The ACOS XCO₂ retrieval: Lessons learned from GOSAT," The GOSAT Workshop 2012: Towards GOSAT-2 Mission, Tokyo, Japan, 29 Feb – 1 March, <http://www.primco.com/gosat2012/index.html>. (Invited Talk).

"Evaluation of the ACOS XCO₂ retrieval algorithm with the OCO Orbit Simulator," 7th International Workshop on Greenhouse Gas Measurements from Space, Edinburgh, Scotland, 16-18 May, 2011.

"Measuring carbon dioxide concentrations from the Orbiting Carbon Observatory: radiative transfer challenges & solutions," 13th AMS Conference on Atmospheric Radiation, Portland, OR, 28 June – 2 July 2010.

"The OCO 'Full-Physics' Retrieval Algorithm," OCO Science Team Meeting, Pasadena, CA, 14 April 2010.

"Surface Pressure Retrievals from GOSAT over the Australian Desert: First Results from the ACOS Algorithm," with D. O'Brien and R. Mitchell, Sixth International Workshop on Greenhouse Gas Measurements from Space, Kyoto, Japan, 26-27 January 2010.

"The Atmospheric CO₂ Observations from Space (ACOS) Full Physics retrieval algorithm," with the ACOS team, 2009 Fall AGU Meeting, San Francisco, CA, 14-18 December 2009.

"ACOS Level-2 retrievals from Greenhouse Gases Observing SATellite (GOSAT) data," 2nd ACOS/GOSAT Technical Interface Meeting, Tsukuba, Japan, 10-12 November 2009.

"A Reexamination of 'On the Determination of Climate Feedbacks from ERBE Data'," T. Wong and C.W. O'Dell, 12th CERES Science Team Meeting, Fort Collins, CO, 3-5 November 2009.

"Orbiting Carbon Observatory Full-Physics Algorithm Overview," OCO Science Team Meeting, Buellton, CA, 23 February 2009.

"Activities towards assimilation of precipitation-affected microwave radiances over land at ECMWF," with P. Bauer, P. Lopez, and A. Geer, invited presentation at ECWMF, Reading, United Kingdom, 26 February 2007.

"Trends and variability of cloud liquid water path from satellite-based passive microwave observations," with F.J. Wentz and R. Bennartz, 12th AMS Conference on Atmospheric Radiation, Madison, WI, 9-14 July 2006.

"A fast and accurate cloud overlap parameterization for microwave data assimilation," with R. Bennartz and P. Bauer, 12th AMS Conference on Atmospheric Radiation, Madison, WI, 9-14 July 2006.

“Climate studies with the SSM/I microwave sensors, 1987-2004,” invited presentation at Environment Canada, Dorval QC, 13 February 2006.

“Satellite-based microwave remote sensing of snowfall at the surface: Precipitation Phase Discrimination & Radar / Satellite Comparisons of Light Frozen Precipitation in Baltic Sea Region,” 8th International Conference on Precipitation. 8-11 August 2004.

“Fast passive microwave radiative transfer in precipitating clouds: Towards direct radiance assimilation,” 8th International TOVS Study Conference, Sainte Adèle, Canada, 29 October - 4 November 2003.

“CMB polarization observations with the POLAR and COMPASS experiments,” APC Polarization Workshop, Paris College de France, March 2002.

“Observations of Polarization in the Cosmic Microwave Background: A Progress Report for the POLAR Experiment”, 197th meeting of the American Astronomical Society, San Diego, CA, December 2000.

FUNDING PROFILE

Proposer Name	Award/Project Title	Program Name/ Sponsoring Agency	Period of Performance, Total Budget	Commitment (Person-Months per Year)
Chris O'Dell (CSU)	GeoCarb Level-2 Algorithms	Univ of Oklahoma subcontract	3/2017 – 9/2023; \$?	4.0
Chris O'Dell (CSU)	OCO-2 Extended Mission Task	NASA JPL Subcontract	10/2021-9/2023; \$450K	2.0
Chris O'Dell (CSU)	OCO-3 Phase E Task	NASA JPL Subcontract	10/2021 – 12/2023; \$600K	2.0
Chris O'Dell (CSU)	Reducing geometry-dependent OCO XCO ₂ biases to better inform SAM-based fossil fuel flux inversions	NASA ROSES 2020 Award (Earth Science)	10/2021 – 9/2024; \$309K §	1.0
Susan Kulawik (NASA Ames)	Reducing OCO-2 regional biases through novel 3d-cloud and meteorology retrievals.	NASA ROSES 2020 Award (Earth Science), Subcontract to BAER	10/2021 – 9/2024; \$99K §	1.2
Abhishek Chatterjee (NASA JPL)	Diagnosing and attributing Arctic-Boreal carbon fluxes using in situ and satellite CO ₂ monitoring network	NASA ROSES 2020 Award (Earth Science), Subcontract to NASA JPL	10/2021 – 9/2024; \$255K §	1.0 (year 1), 0.75 (years 2-3)
Junjie Liu (JPL)	Revealing the mystery of the African carbon cycle	NASA ROSES 2020 Award (Earth Science), Subcontract to NASA JPL	8/1/2021 – 7/31/2023; \$51K §	0.9

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