

Britton B. Stephens

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1. EDUCATION

- 9/95 - 9/99 **Scripps Institution of Oceanography, UCSD** La Jolla, CA
Ph.D. in Oceanography. Dissertation: "Field-based Atmospheric Oxygen Measurements and the Global Carbon Cycle."
- 9/89 - 6/93 **Harvard University** Cambridge, MA
A.B. Magna Cum Laude degree in Earth and Planetary Sciences.
Senior Honors Thesis: "An Investigation of Natural and Anthropogenic Influences on Stratospheric Ozone Trends."

2. PROFESSIONAL EXPERIENCE

- 7/18 - present **National Center for Atmospheric Research** Boulder, CO
Senior Scientist in EOL.
- 7/09 – 6/18 **National Center for Atmospheric Research** Boulder, CO
Scientist III in EOL.
- 7/05 – 6/09 **National Center for Atmospheric Research** Boulder, CO
Scientist II in EOL/TIIMES.
- 1/02 – 7/05 **National Center for Atmospheric Research** Boulder, CO
Scientist I in ATD/EOL/TIIMES.
- 2/09 - 8/10 **National Institute for Water and Atmospheric Research**
Visiting Scientist. Wellington, New Zealand
- 11/99 - 10/01 **Coop. Inst. for Res. in Environmental Sciences** Boulder, CO
Visiting Fellow at NOAA CMDL.
- 7/99 - 10/99 **Scripps Institution of Oceanography, UCSD** La Jolla, CA
Postdoctoral Research Chemist in the Marine Research Division.
- 7/93 - 1/95 **United States Geological Survey** Woods Hole, MA
ECO Associate for the Geochemical Carbon Fluxes Project.
- Summer '92 **Harvard University** Cambridge, MA
Research assistant in a carbon-isotope laboratory.
- Summer '91 **Juneau Icefield Research Program** AK and BC
Research assistant on an 8-week field expedition.

3. PUBLICATION LIST

Thesis

- 3.1) Stephens, B. B., 1999: Field-based atmospheric oxygen measurements and the ocean carbon cycle. Ph.D. thesis, Scripps Institution of Oceanography, University of California, San Diego, 221 pp, https://archive.eol.ucar.edu/homes/stephens/papers/stephens_dissertation.pdf.

Refereed Journal Articles

- 3.2) Winston, G. C., E. T. Sundquist, B. B. Stephens, and S. E. Trumbore, 1997: Winter CO₂ fluxes in a boreal forest. *J. Geophys. Res.*, **102**, 28795–28804, <https://doi.org/10.1029/97JD01115>.
- 3.3) Keeling, R. F., B. B. Stephens, R. G. Najjar, S. C. Doney, D. Archer, and M. Heimann, 1998: Seasonal variations in the atmospheric O₂/N₂ ratio in relation to the kinetics of air-sea gas exchange. *Global Biogeochem. Cycles*, **12**, 141–163, <https://doi.org/10.1029/97GB02339>.
- 3.4) Stephens, B. B., R. F. Keeling, M. Heimann, K. D. Six, R. Murnane, and K. Caldeira, 1998: Testing global ocean carbon cycle models using measurements of atmospheric O₂ and CO₂ concentration. *Global Biogeochem. Cycles*, **12**, 213–230, <https://doi.org/10.1029/97GB03500>.
- 3.5) Stephens, B. B. and R. F. Keeling, 2000: The influence of Antarctic sea ice on glacial-interglacial CO₂ variations. *Nature*, **404**, 171–174, <https://doi.org/10.1038/35004556>.
- 3.6) Keeling, R. F. and B. B. Stephens, 2001: Antarctic sea ice and the control of Pleistocene climate instability. *Paleoceanography*, **16**, 112–131, <https://doi.org/10.1029/2000PA000529>, plus typesetting correction, *Paleoceanography*, **16**, 330–334, <https://doi.org/10.1029/2001PA000648>.
- 3.7) Stephens, B. B., R. F. Keeling, and W. J. Paplawsky, 2003: Shipboard measurements of atmospheric oxygen using a vacuum-ultraviolet absorption technique. *Tellus B*, **55**, 857–878, <http://doi.org/10.3402/tellusb.v55i4.16386>.
- 3.8) Bakwin, P. S., P. P. Tans, B. B. Stephens, S. C. Wofsy, C. H. Gerbig, and A. Grainger, 2003: Strategies for measurement of atmospheric column means of carbon dioxide from aircraft using discrete sampling. *J. Geophys. Res.*, **108** (D16), 4514, <https://doi.org/10.1029/2002JD003306>.
- 3.9) Dilling, L., S. C. Doney, J. Edmonds, K. R. Gurney, R. Harriss, D. Schimel, B. Stephens, and G. Stokes, 2003: The role of carbon cycle observations and

- knowledge in carbon management. *Ann. Rev. Environ. Resources*, **28**, 521-558, <https://doi.org/10.1146/annurev.energy.28.011503.163443>.
- 3.10) Gerbig, C., J. C. Lin, S. C. Wofsy, B. C. Daube, A. E. Andrews, B. B. Stephens, P. S. Bakwin, and C. A. Grainger, 2003: Toward constraining regional-scale fluxes of CO₂ with atmospheric observations over a continent: 1. Observed spatial variability from airborne platforms. *J. Geophys. Res.*, **108** (D24), 4756, <https://doi.org/10.1029/2002JD003018>.
- 3.11) Gerbig, C., J. C. Lin, S. C. Wofsy, B. C. Daube, A. E. Andrews, B. B. Stephens, P. S. Bakwin, and C. A. Grainger, 2003: Toward constraining regional-scale fluxes of CO₂ with atmospheric observations over a continent: 2. Analysis of COBRA data using a receptor-oriented framework. *J. Geophys. Res.*, **108** (D24), 4757, <https://doi.org/10.1029/2003JD003770>.
- 3.12) Lin, J. C., C. Gerbig, S. C. Wofsy, A. E. Andrews, B. C. Daube, C. A. Grainger, B. B. Stephens, P. S. Bakwin, and D. Y. Hollinger, 2004: Measuring fluxes of trace gases at regional scales by Lagrangian observations: Application to the CO₂ Budget and Rectification Airborne (COBRA) study. *J. Geophys. Res.*, **109**, D15304, <https://doi.org/10.1029/2004JD004754>.
- 3.13) Stephens, B. B., P. S. Bakwin, P. P. Tans, R. M. Teclaw, and D. D. Baumann, 2007: Application of a differential fuel-cell analyzer for measuring atmospheric oxygen variations. *J. Atmos. Oceanic Technol.*, **24**, 82–94, <https://doi.org/10.1175/JTECH1959.1>.
- 3.14) Sun, J., S. P. Burns, A. C. Delany, S. P. Oncley, A. A. Turnipseed, B. B. Stephens, D. H. Lenschow, M. A. LeMone, R. K. Monson, and D. E. Anderson, 2007: CO₂ transport over complex terrain. *Agric. For. Meteorol.*, **145**, 1–21, <https://doi.org/10.1016/j.agrformet.2007.02.007>.
- 3.15) Stephens, B. B., K. R. Gurney, P. P. Tans, C. Sweeney, W. Peters, L. Bruhwiler, P. Ciais, M. Ramonet, P. Bousquet, T. Nakazawa, S. Aoki, T. Machida, G. Inoue, N. Vinnichenko, J. Lloyd, A. Jordan, M. Heimann, O. Shibistova, R. L. Langenfelds, L. P. Steele, R. J. Francey, and A. S. Denning, 2007: Weak northern and strong tropical land carbon uptake from vertical profiles of atmospheric CO₂. *Science*, **316**, 1732-1735, <https://doi.org/10.1126/science.1137004> [UCAR Outstanding Publication award, 2008].
- 3.16) Obrist, D., A. G. Hallar, I. McCubbin, B. B. Stephens, and T. Rahn, 2008: Atmospheric mercury concentrations at Storm Peak Laboratory in the Rocky Mountains: Evidence for long-range transport from Asia, boundary layer contributions, and plant mercury uptake. *Atmos. Environ.*, **42**, 7579-7589, <https://doi.org/10.1016/j.atmosenv.2008.06.051>.
- 3.17) Kort, E. A., J. Eluszkiewicz, B. B. Stephens, J. B. Miller, C. Gerbig, T. Nehrkorn, B. C. Daube, J. O. Kaplan, S. Houweling, and S. C. Wofsy, 2008:

- Emissions of CH₄ and N₂O over the United States and Canada based on a receptor-oriented modeling framework and COBRA-NA atmospheric observations. *Geophys. Res. Lett.*, **35**, L18808, <https://doi.org/10.1029/2008GL034031>.
- 3.18) Graven, H. D., B. B. Stephens, T. P. Guilderson, T. L. Campos, D. S. Schimel, and J. E. Campbell, 2008: Vertical profiles of biospheric and fossil fuel-derived CO₂ and fossil fuel CO₂:CO ratios from airborne measurements of $\Delta^{14}\text{C}$, CO₂, and CO above Colorado, USA. *Tellus B*, **61**, 536, <https://doi.org/10.1111/j.1600-0889.2009.00421.x>.
- 3.19) Burns, S. P., A. C. Delany, J. Sun, B. B. Stephens, S. P. Oncley, G. D. Maclean, S. R. Semmer, J. Schröter, and J. Ruppert, 2009: An evaluation of calibration techniques for in situ carbon dioxide measurements using a programmable portable trace-gas measuring system. *J. Atmos. Oceanic Technol.*, **26**, 291, <https://doi.org/10.1175/2008JTECHA1080.1>.
- 3.20) De Wekker, S. F. J., A. Ameen, G. Song, B. B. Stephens, A. G. Hallar, and I. B. McCubbin, 2009: A preliminary investigation of boundary layer effects on daytime atmospheric CO₂ concentrations at a mountaintop location in the Rocky Mountains. *Acta Geophys.*, **57**, 904, <https://doi.org/10.2478/s11600-009-0033-6>.
- 3.21) Kort, E. A., Andrews, A. E., Dlugokencky, E., Sweeney, C., Hirsch, A., Eluszkiewicz, J., Nehrkorn, T., Michalak, A., Stephens, B., Gerbig, C., Miller, J., Kaplan, J., Houweling, S., Daube, B. C., Tans, P., and Wofsy, S. C., 2010: Atmospheric constraints on 2004 emissions of methane and nitrous oxide in North America from atmospheric measurements and a receptor-oriented modelling framework. *J. Integrative Env. Sci.*, **7**, 125, <https://doi.org/10.1080/19438151003767483>.
- 3.22) Sun, J., S. Oncley, S. Burns, B. Stephens, A. Watt, T. Campos, D. Lenschow, R. Monson, J. Hu, M. Tschudi, D. Schimel, S. Aulenbach, W. Sacks, S. de Wekker, C.-T. Lai, B. Lamb, E. Allwine, T. Coons, D. Ojima, P. Ellsworth, L. Sternberg, S. Zhong, C. Clements, and D. Anderson, 2010: A multi-scale and multi-disciplinary investigation of ecosystem-atmosphere CO₂ exchange over the rocky mountains of Colorado. *Bull. Amer. Meteor. Soc.*, **91**, 209-230, <https://doi.org/10.1175/2009BAMS2733.1>.
- 3.23) Subramanian, R., G. L. Kok, D. Baumgardner, A. Clarke, Y. Shinozuka, T. L. Campos, C. G. Heizer, B. B. Stephens, B. de Foy, P. B. Voss, R. and A. Zaveri, 2010: Black carbon over Mexico: the effect of atmospheric transport on mixing state, mass absorption cross-section, and BC/CO ratios. *Atm. Chem. Phys.*, **10**, 219-237, <https://doi.org/10.5194/acp-10-219-2010>.
- 3.24) Wunch, D., G. C. Toon, P. O., Wennberg, S. C. Wofsy, B. B. Stephens, and Coauthors, 2010: Calibration of the Total Carbon Column Observing Network

- using aircraft profile data. *Atmos. Meas. Tech.*, **3**, 1351-1362, <https://doi.org/10.5194/amt-3-1351-2010>.
- 3.25) Burns, S. P., J. Sun, D. H. Lenschow, S. P. Oncley, B. B. Stephens, C. Yi, D. E. Anderson, J. Hu, and R. K. Monson, 2011: Atmospheric stability effects on wind fields and scalar mixing within and just above a subalpine forest in sloping terrain. *Bound. Layer. Meteor.*, **138**, 231–262, <https://doi.org/10.1007/s10546-010-9560-6>.
- 3.26) Wofsy, S. C., the HIPPO Science Team and Cooperating Modellers and Satellite Teams, 2011: HIAPER Pole-to-Pole Observations (HIPPO): Fine grained, global scale measurements for determining rates for transport, surface emissions, and removal of climatically important atmospheric gases and aerosols. *Proc. Roy. Soc. A*, **369** (1943) 2073-2086, <https://doi.org/10.1098/rsta.2010.0313>.
- 3.27) Desai, A. R., D. J. P. Moore, W. K. M. Ahue, P. J. Wilkes, S. F. J. De Wekker, B.-G. Brooks, T. L. Campos, B. B. Stephens, R.K. Monson, S. Burns, T. Quaife, S. Aulenbach, and D. S. Schimel, 2011: Seasonal pattern of regional carbon balance in the Central Rocky Mountains from the Airborne Carbon in the Mountains Experiment 2007. *J. Geophys. Res.*, **116**, G04009, <https://doi.org/10.1029/2011JG001655>.
- 3.28) Strong, C., C. Stwertka, D. R. Bowling, B. B. Stephens, and J. R. Ehleringer, 2011: Urban carbon dioxide cycles within the Salt Lake Valley: a multiple box model validated by observations. *J. Geophys. Res.*, **116**, D15307, <https://doi.org/10.1029/2011JD015693>.
- 3.29) Stephens, B. B., N. L. Miles, S. J. Richardson, A. S. Watt, and K. J. Davis, 2011: Atmospheric CO₂ monitoring with single-cell NDIR-based analyzers. *Atmos. Meas. Tech.*, **4**, 2737-2748, <https://doi.org/10.5194/amt-4-2737-2011>.
- 3.30) Keppel-Aleks, G., P. O. Wennberg, R. A. Washenfelder, D. Wunch, T. Schneider, G. C. Toon, R. Andres, J.-F. Blavier, B. Connor, K. A. Davis, A. R. Desai, J. Messerschmidt, J. Notholt, C. M. Roehl, V. Sherlock, B. B. Stephens, S. A. Vay, and S.C. Wofsy, 2012: The imprint of surface fluxes and transport on variations in total column carbon dioxide. *Biogeosciences*, **9**, 875-891, <https://doi.org/10.5194/bg-9-875-2012>.
- 3.31) Brooks, B.-G. J., A. R. Desai, B. B. Stephens, D. R. Bowling, S. P. Burns, A. S. Watt, S. L. Heck, and C. Sweeney, 2012: Assessing filtering of mountaintop CO₂ mole fractions for application to inverse models of biosphere-atmosphere carbon exchange. *Atmos. Chem. Phys.*, **12**, 2099-2115, <https://doi.org/10.5194/acp-12-2099-2012>.
- 3.32) McKain, K., S. C. Wofsy, T. Nehrkorn, J. Eluszkiewicz, J. R. Ehleringer, and B. B. Stephens, 2012: Assessment of ground-based atmospheric observations for verification of greenhouse gas emissions from an urban region. *Proc. Nat. Acad. Sci.*, **109**, 8423-8428, <https://doi.org/10.1073/pnas.1116645109>.

- 3.33) Brailsford, G., B. B. Stephens, A. J. Gomez, K. Riedel, S. Nichol, and M. Manning, 2012: Long term continuous atmospheric CO₂ measurements at Baring Head, New Zealand. *Atmos. Meas. Tech.*, **5**, 3109-3117, <https://doi.org/10.5194/amt-5-3109-2012>.
- 3.34) Moore, D. J. P., N. A. Trahan, P. Wilkes, T. Quaife, B. B. Stephens, K. Elder, A. R. Desai, J. Negron, and R. K. Monson, 2013: Persistent reduced ecosystem respiration after insect disturbance in high elevation forests. *Ecol. Lett.*, **16**, 731–737, <https://doi.org/10.1111/ele.12097>.
- 3.35) Keppel-Aleks, G., J. T. Randerson, K. Lindsay, B. B. Stephens, J. K. Moore, S. C. Doney, P. E. Thornton, N. M. Mahowald, F. M. Hoffman, C. Sweeney, P. P. Tans, P. O. Wennberg, and S. C. Wofsy, 2013: Atmospheric carbon dioxide variability in the Community Earth System Model: Evaluation and transient dynamic during the 20th and 21st centuries. *J. Climate*, **26**, 4447-4475, <https://doi.org/10.1175/JCLI-D-12-00589.1>.
- 3.36) Stephens, B. B., G. Brailsford, A. J. Gomez, K. Riedel, S. Nichol, and M. Manning, 2013: Analysis of a 39-year continuous atmospheric CO₂ record from Baring Head, New Zealand. *Biogeosciences*, **10**, 2683-2697, <https://doi.org/10.5194/bg-10-2683-2013>.
- 3.37) Kulawik, S. S., J. R. Worden, S. C. Wofsy, S. C. Biraud, R. Nassar, D. B. A. Jones, E. T. Olsen, R. Jimenez, S. Park, G. W. Santoni, B. C. Daube, J. V. Pittman, B. B. Stephens, E. A. Kort, G. B. Osterman, and TES team, 2013: Comparison of improved Aura Tropospheric Emission Spectrometer CO₂ with HIPPO and SGP aircraft profile measurements. *Atmos. Chem. Phys.*, **13**, 3205-3225, <https://doi.org/10.5194/acp-13-3205-2013>.
- 3.38) Graven, H. D., R. F. Keeling, S. C. Piper, P. K. Patra, B. B. Stephens, S. C. Wofsy, L. R. Welp, C. Sweeney, P. P. Tans, J. J. Kelley, B. C. Daube, E. A. Kort, G. W. Santoni, and J. D. Bent, 2013: Enhanced seasonal exchange of CO₂ by northern ecosystems since 1960. *Science*, **341**, 1085-1089, <https://doi.org/10.1126/science.1239207>.
- 3.39) Basu, S., S. Guerlet, A. Butz, S. Houweling, O. Hasekamp, I. Aben, P. Krümmel, P. Steele, R. Langenfelds, M. Torn, S. Biraud, B. Stephens, A. Andrews, and D. Worthy, 2013: Global CO₂ fluxes estimated from GOSAT retrievals of total column CO₂. *Atmos. Chem. Phys.*, **13**, 8695-8717, <https://doi.org/10.5194/acp-13-8695-2013>.
- 3.40) Bowling, D. R., A. P. Ballantyne, J. B. Miller, S. P. Burns, T. J. Conway, O. Menzer, B. B. Stephens, and B. H. Vaughn, 2014: Ecological processes dominate the ¹³C land disequilibrium in a Rocky Mountain subalpine forest. *Global Biogeochem. Cycles*, **28**, 352–370, <https://doi.org/10.1002/2013GB004686>.
- 3.41) Santoni, G. W., B. C. Daube, E. A. Kort, R. Jiménez, S. Park, J. V. Pittman, E. Gottlieb, B. Xiang, M. S. Zahniser, D. D. Nelson, J. B. McManus, J. Peischl, T.

- B. Ryerson, J. S. Holloway, A. E. Andrews, C. Sweeney, B. Hall, E. J. Hints, F. L. Moore, J. W. Elkins, D. F. Hurst, B. B. Stephens, J. Bent, and S. C. Wofsy, 2014: Evaluation of the airborne quantum cascade laser spectrometer (QCLS) measurements of the carbon and greenhouse gas suite – CO₂, CH₄, N₂O, and CO – during the CalNex and HIPPO campaigns. *Atmos. Meas. Tech.*, **7**, 1509-1526, <https://doi.org/10.5194/amt-7-1509-2014>.
- 3.42) Patra, P. K., M. C. Krol, S. A. Montzka, T. Arnold, E. L. Atlas, B. R. Lintner, B. B. Stephens, and Coauthors, 2014: Observational evidence for interhemispheric hydroxyl-radical parity. *Nature*, **513**, 219-223, <https://doi.org/10.1038/nature13721>.
- 3.43) Schimel, D., B. B. Stephens, and J. B. Fisher, 2015: Effect of increasing CO₂ on the terrestrial carbon cycle. *Proc. Nat. Acad. Sci.*, **112**, 441-446, <https://doi.org/10.1073/pnas.1407302112> [lead author received the JPL Ed Stone Award for Outstanding Research Publication, 2015].
- 3.44) Munro, D. R., N. S. Lovenduski, B. B. Stephens, C. Sweeney, K. R. Arrigo, T. Newberger, T. Takahashi, and P. D. Quay, 2015: Estimates of net community production in the Southern Ocean determined from time series observations of nutrients and dissolved inorganic carbon in Drake Passage. *Deep Sea Res. II*, **114**, 49-63, <https://doi.org/10.1016/j.dsr2.2014.12.014>.
- 3.45) Munro, D. R., N. S. Lovenduski, T. Takahashi, B. B. Stephens, T. Newberger, and C. Sweeney, 2015: Recent evidence for a strengthening CO₂ sink in the Southern Ocean from carbonate system measurements in the Drake Passage (2002-2015). *Geophys. Res. Lett.*, **42**, 7623–7630, <https://doi.org/10.1002/2015GL065194>.
- 3.46) Resplandy, L., R. F. Keeling, B. B. Stephens, J. D. Bent, A. Jacobson, C. Rödenbeck, and S. Khatiwala, 2016: Constraints on oceanic meridional heat transport from combined measurements of oxygen and carbon. *Clim. Dyn.*, **47**, 3335–3357, <https://doi.org/10.1007/s00382-016-3029-3>, plus erratum *Clim. Dyn.*, 49, 4317, <https://doi.org/10.1007/s00382-017-3839-y>.
- 3.47) Nevison, C. D., M. Manizza, R. F. Keeling, B. B. Stephens, J. D. Bent, J. Dunne, T. Ilyina, M. Long, L. Resplandy, J. Tjiputra, and S. Yukimoto, 2016: Evaluating CMIP5 ocean biogeochemistry and Southern Ocean carbon uptake using atmospheric potential oxygen: Present-day performance and future projection. *Geophys. Res. Lett.*, **43**, 2077–2085, <https://doi.org/10.1002/2015GL067584>.
- 3.48) Steinkamp, K., S. E. Mikaloff Fletcher, G. Brailsford, D. Smale, S. Moore, E. D. Keller, W. T. Baisden, H. Mukai, and B. B. Stephens, 2017: Atmospheric CO₂ observations and models suggest strong carbon uptake by forests in New Zealand. *Atmos. Chem. Phys.*, **17**, 47-76, <https://doi.org/10.5194/acp-17-47-2017>.

- 3.49) Kulawik, S. S., C. O'Dell, V. H. Payne, L. Kuai, H. Worden, S. C. Biraud, C. Sweeney, B. Stephens, L. Iraci, E. Yates, and T. Tanaka, 2017: Lower-tropospheric CO₂ from near-infrared ACOS-GOSAT observations. *Atmos. Chem. Phys.*, **17**, 5407-5438, <https://doi.org/10.5194/acp-17-5407-2017>.
- 3.50) Lin, J. C., D. Mallia, D. Wu, and B. B. Stephens, 2017: How can mountaintop CO₂ observations be used to constrain regional carbon fluxes? *Atmos. Chem. Phys.*, **17**, 5561-5581, <https://doi.org/10.5194/acp-17-5561-2017>.
- 3.51) Stephens, B. B., and Coauthors, 2018: The O₂/N₂ Ratio and CO₂ Airborne Southern Ocean (ORCAS) Study. *Bull. Amer. Meteor. Soc.*, <https://doi.org/10.1175/BAMS-D-16-0206.1>.
- 3.52) Chatterjee, A., M. M. Gierach, A. J. Sutton, R. A. Feely, D. Crisp, A. Eldering, M. R. Gunson, C. W. O'Dell, B. B. Stephens, and D. S. Schimel, 2017: Influence of El Niño on atmospheric CO₂ over the tropical Pacific Ocean: Findings from NASA's OCO-2 mission. *Science*, **358**, <https://doi.org/10.1126/science.aam5776>.
- 3.53) Mitchell, L. E., J. C. Lin, D. R. Bowling, D. E. Pataki, C. Strong, A. J. Schauer, R. Bares, S. E. Bush, B. B. Stephens, D. Mendoza, D. Mallia, L. Holland, K. R. Gurney, and J. R. Ehleringer, 2018: Long-term urban carbon dioxide observations reveal spatial and temporal dynamics related to urban characteristics and growth, *PNAS*, **115**, 2912-2917, <https://doi.org/10.1073/pnas.1702393115>.
- 3.54) Bares, R., J. C., Lin, S. W. Hoch, M. Baasandorj, D. L. Mendoza, B. Fasoli, L. Mitchell, D. Catharine, and B. B. Stephens, 2018: The wintertime co-variation of CO₂ and criteria pollutants in an urban valley of the Western United States, *J. Geophys. Res.*, **123**, 2684–2703, <https://doi.org/10.1002/2017JD027917>.
- 3.55) Resplandy, L., R. F. Keeling, C. Rödenbeck, B. B. Stephens, S. Khatiwala, K. B. Rodgers, M. C. Long, L. Bopp, and P.P. Tans, 2018: Revision of global carbon fluxes based on a reassessment of oceanic and riverine carbon transport, *Nature Geosciences*, **11**, 504–509, <https://doi.org/10.1038/s41561-018-0151-3>.
- 3.56) 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, <https://doi.org/10.5194/bg-15-3841-2018>.
- 3.57) Gaubert, B., B. B. Stephens, S. Basu, F. Chevallier, F. Deng, E. A. Kort, P. K. Patra, W. Peters, C. Rödenbeck, T. Saeki, D. Schimel, I. Van der Laan-Luijkx, S. Wofsy, and Y. Yin, 2019: Global atmospheric CO₂ inverse models converging on neutral tropical land exchange but disagreeing on fossil fuel and atmospheric growth rate, *Biogeosciences*, **16**, 117-134, <https://doi.org/10.5194/bg-16-117-2019>.

Other Refereed Publications

- 3.58) Winston, G. C., B. B. Stephens, E. T. Sundquist, J. P. Hardy, and R. E. Davis, 1995: Seasonal variability in CO₂ transport through snow in a boreal forest. In *Biogeochemistry of Seasonally Snow-Covered Catchments*, K. A. Tonnessen, M. W. Williams, and M. Tranter, Eds., IAHS publ. no. 228, 61-70, https://iahs.info/uploads/dms/iahs_228_0061.pdf.
- 3.59) Stephens, B. B., S. C. Wofsy, R. F. Keeling, P. P. Tans, and M. J. Potosnak, 2000: The CO₂ Budget and Rectification Airborne Study: Strategies for measuring rectifiers and regional fluxes. *Inverse Methods in Global Biogeochemical Cycles, Geophys. Monogr. Ser.*, **114**, Amer. Geophys. Union, 311–324, <https://doi.org/10.1029/GM114p0311>.

Non-refereed Publications

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4. PRESENTATIONS

Invited Presentations

- 4.1) “Evaluating emergent carbon cycle model properties with observations,” NCAR ASP Colloquium on Synthesis of Observations and Models in Studies of Shallow and Deep Clouds, June, 2018.
- 4.2) “Southern Ocean CO₂ exchange inferred from airborne, shipboard, and surface station measurements of atmospheric O₂ and CO₂,” NOAA ESRL Global Monitoring Division Seminar, Boulder, CO, September, 2017.
- 4.3) “Atmospheric oxygen constraints on Southern Ocean air-sea CO₂ flux seasonality,” NCAR Southern Ocean Workshop, Boulder, CO, April, 2017.
- 4.4) “The O₂/N₂ Ratio and CO₂ Airborne Southern Ocean (ORCAS) Study,” CLIVAR Process Study Webinar, January, 2017.
- 4.5) “Oceanography at 460 knots: The O₂/N₂ Ratio and CO₂ Airborne Southern Ocean Study (ORCAS),” SOCCOM Webinar Series, April, 2016.

- 4.6) **Keynote:** “Atmospheric oxygen measurements over the Southern Ocean,” Atmospheric Composition and Chemistry Observations and Modelling Conference / Cape Grim Annual Science Meeting, Murraramang, Australia, November, 2015.
- 4.7) “The latitudinal distribution of terrestrial carbon sinks,” CSIRO Marine and Atmospheric Research Seminar, Aspendale, Australia, November, 2015.
- 4.8) “The O₂/N₂ Ratio and CO₂ Airborne Southern Ocean Study (ORCAS),” CU ATOC 5300: The Global Carbon Cycle, Boulder, CO, September, 2015.
- 4.9) **Keynote:** "Airborne measurements of oxygen concentration from the surface to the lower stratosphere," 18th WMO/IAEA Meeting on Carbon Dioxide, Other Greenhouse Gases, and Related Measurement Techniques (GGMT-2015), La Jolla, CA, September, 2015.
- 4.10) “An atmospheric view of the global carbon cycle,” CU ATOC 5300: The Global Carbon Cycle, Boulder, CO, November, 2013.
- 4.11) “The global carbon cycle as seen by the atmosphere,” NCAR ASP Colloquium on Carbon-climate Connections in the Earth System, Boulder, CO, July, 2013.
- 4.12) “Southern Ocean O₂/CO₂ observations,” NCAR Southern Hemisphere Climate System Workshop, Boulder, CO, May, 2013.
- 4.13) “Atmospheric carbon cycle observations from Colorado to the globe,” Chautauqua Science Forum, Boulder, CO, January, 2013.
- 4.14) “Attacking CO₂ from land, sea, and air,” National Institute of Water and Atmospheric Research TROPAC Meeting, Wellington, New Zealand, April, 2013.
- 4.15) “Atmospheric carbon dioxide measurements from the Navajo Nation to the globe,” Diné College Climate Change course, Tsaile, AZ, February, 2013.
- 4.16) “Carbon dioxide measurements,” Geoscience Research at Storm Peak Laboratory (GRASP) summer school, Steamboat Springs, CO, August, 2011.
- 4.17) “HIPPO: Toward rigid seasonal hemispheric flux constraints,” IRWG/TCCON Meeting, Boulder, CO, May, 2011.
- 4.18) “Connecting atmospheric measurements and global carbon cycle fluxes,” NOAA Carbon Cycle and Greenhouse Gases group meeting, Boulder, CO, April, 2011.
- 4.19) “Atmospheric carbon dioxide observations and climate change on local to global scales,” University of Victoria, Wellington, New Zealand, July, 2010.

- 4.20) “Global observations of climatically important atmospheric gases and aerosols during HIPPO,” Kidson Seminar Series, NIWA, Wellington, New Zealand, May, 2010.
- 4.21) “Constraining New Zealand carbon fluxes using atmospheric CO₂ data,” Managing Climate Change (MC2) Conference, Palmerston North, New Zealand, November, 2009.
- 4.22) “Atmospheric CO₂ and O₂ observations and the global carbon cycle,” National Institute of Water and Atmospheric Research, Lauder, New Zealand, May, 2009.
- 4.23) “Climate change and carbon on local to global scales,” Wallowa Mountain Institute, Joseph, OR, November, 2008.
- 4.24) “Challenging global carbon cycle models with observations,” National Institute of Water and Atmospheric Research, Wellington, New Zealand, November, 2008.
- 4.25) “Carbon cycle observations, modeling, and analyses,” Drivers and Mitigation of Global Change Programme Meeting, Wellington, New Zealand, October, 2008.
- 4.26) **Keynote:** “Comparing global carbon cycle models to observations is hard, but better than the alternative,” Berkeley Atmospheric Sciences Symposium, Berkeley, CA, October, 2008.
- 4.27) "Aircraft CO₂ observations and global carbon budgeting," NCAR IMAGE/MSRI Summer Graduate Workshop on Data Assimilation for the Carbon Cycle, Boulder, CO, July, 2007.
- 4.28) "Regional needs and instrumentation for CO₂ observations," NCAR ASP Colloquium: Regional Biogeochemistry, Boulder, CO, June, 2007.
- 4.29) "An Autonomous Inexpensive Robust CO₂ Analyzer (AIRCOA)," CarboEurope Activity 2.7 Meeting, Hyytiälä, Finland, January, 2006.
- 4.30) **Panelist:** “Fate of Fossil Fuel Emissions,” 7th International Carbon Dioxide Conference, Broomfield, CO, September, 2005.
- 4.31) "An Autonomous Inexpensive Robust CO₂ Analyzer (AIRCOA)," NOAA CMDL Carbon Cycle Greenhouse Gases Group weekly meeting, Boulder, CO, July, 2005.
- 4.32) "Regional scale carbon flux estimates over complex terrain and the Airborne Carbon in the Mountains Experiment," NOAA CMDL Carbon Cycle Greenhouse Gases Group weekly meeting, Boulder, CO, January, 2005.
- 4.33) "The vertical distribution of atmospheric CO₂," NOAA CMDL Carbon Cycle Greenhouse Gases Group weekly meeting, Boulder, CO, August, 2003.

- 4.34) "Atmospheric carbon observations," Carbon Data Assimilation Workshop, College Park, MD, October, 2002.
- 4.35) "Carbon model-data fusion," North American Carbon Program Methane Workshop, Durham, NH, September, 2002.
- 4.36) "CO₂ and O₂ concentration measurements: Global carbon cycle," and "CO₂ and O₂ concentration measurements: Results from the WLEF O₂ measurement program," Chequamegon Ecosystem-Atmosphere Study Workshop, Woodruff, WI, August, 2002.
- 4.37) "What atmospheric oxygen measurements can tell us about ocean circulation and carbon cycling," NOAA Climate Monitoring and Diagnostics Laboratory Seminar Series, Boulder, CO, March, 2000.
- 4.38) "Field-based atmospheric O₂ measurements and the ocean carbon cycle," Pennsylvania State University, College Station, PA, September, 1999.
- 4.39) "Carbon cycle constraints from recent field-based atmospheric O₂ measurements," UCI Earth System Science Seminar Series, Irvine, CA, November, 1998.

NCAR Seminars

- 4.40) "Oceanography among the clouds and terrestrial ecology a thousand miles from land: The power of global-scale airborne observations," NCAR EOL Seminar Series, Boulder, CO, February, 2018.
- 4.41) "Oxygen and carbon above the Southern Ocean," NCAR Day of Networking and Discovery, Boulder, CO, April, 2017.
- 4.42) "Tropical vs. extratropical terrestrial CO₂ uptake and implications for carbon-climate feedbacks," NCAR Day of Networking and Discovery, Boulder, CO, April, 2015.
- 4.43) "The global distribution of atmospheric oxygen," EOL Seminar Series, Boulder, CO, April, 2015.
- 4.44) "Observational constraints on global carbon cycle models: Atmospheric measurements of emergent model properties," NCAR CGD/EOL Joint Seminar, Boulder, CO, December, 2013.
- 4.45) "Atmospheric perspectives on Southern Ocean carbon cycling," EOL Seminar Series, Boulder, CO, February, 2011.
- 4.46) "Global carbon cycle model-data fusion," NCAR Earth Observing Laboratory Seminar Series, Boulder, CO, March, 2009.

- 4.47) "Light aircraft CO₂ observations and the global carbon cycle," NCAR TIIMES and EOL Seminar Series, Boulder, CO, April, 2007.
- 4.48) "The potential role of NCAR in the future carbon observing network," NCAR Atmospheric Technology Division Seminar Series, Boulder, CO, May, 2002.
- 4.49) "The first measurements of atmospheric oxygen variations in forests: what they say about plant physiology, industrial emissions, continental boundary-layer mixing, and the global carbon cycle," NCAR Biogeochemistry Seminar Series, Boulder, CO, April, 2001.

Submitted Conference and Workshop Presentations

- 4.50) "Atmospheric perspectives on northern land carbon exchange, 1981-present," Inez Fung Symposium - 2019 AMS Annual Meeting, Phoenix, AZ, January, 2019.
- 4.51) "Measuring the metabolism of planet Earth," Atmospheric Tomography Mission (ATom) Science Team Meeting, Boulder, CO, November, 2018.
- 4.52) "OCO-2 Monthly Zonal XCO₂ Gradients and Planned ATom / HIPPO Comparisons," Orbiting Carbon Observatory 2 (OCO-2) Science Team Meeting, Boulder, CO, October, 2018.
- 4.53) "OCO-2 Monthly Zonal XCO₂ Gradients," Orbiting Carbon Observatory 2 (OCO-2) Science Team Meeting, Boulder, CO, October, 2017.
- 4.54) "Atmospheric oxygen constraints on Southern Ocean air-sea CO₂ flux seasonality," 10th International Carbon Dioxide Conference, Interlaken, Switzerland, August, 2017.
- 4.55) "Fractionation of O₂/N₂, Ar/N₂, and CO₂ at aircraft sampling inlets," 19th WMO/IAEA Meeting on Carbon Dioxide, Other Greenhouse Gases, and Related Measurement Techniques (GGMT-2017), Dubendorf, Switzerland, August, 2017.
- 4.56) "Global scale airborne and ship based observations of atmospheric potential oxygen," Atmospheric Potential Oxygen Meeting, La Jolla, CA, September, 2015.
- 4.57) "The diurnal cycle of atmospheric CO₂ at mountain locations," Symposium on Atmospheric Chemistry and Physics at Mountain Sites, Steamboat, CO, August, 2014.
- 4.58) "The NCAR O₂ / CO₂ Calibration Facility," 17th WMO/IAEA Meeting on Carbon Dioxide, Other Greenhouse Gases, and Related Measurement Techniques (GGMT-2013), Beijing, China, June, 2013.

- 4.59) "Strong observational constraints on seasonal northern extratropical CO₂ exchange," 9th International Carbon Dioxide Conference, Beijing, China, June, 2013.
- 4.60) "Long-term observations of atmospheric O₂:CO₂ ratios over the Southern Ocean," AGU Ocean Sciences Meeting, Salt Lake City, UT, February, 2012.
- 4.61) "What happens when you measure CO₂ five different ways on a single aircraft: Intercomparison results from the HIPPO project," 16th WMO/IAEA Meeting on Carbon Dioxide, Other Greenhouse Gases, and Related Measurement Techniques (GGMT-2011), Wellington, New Zealand, October, 2011.
- 4.62) "Airborne observations of atmospheric O₂ and CO₂ on regional to global scales," 8th International Carbon Dioxide Conference, Jena, Germany, September, 2009.
- 4.63) "Closing in on the missing carbon sink: Implications for climate research and mitigation," U.N. Climate Change Conference, Bali, Indonesia, December, 2007.
- 4.64) "There's a rectifier in my closet: Vertical CO₂ transport and latitudinal flux partitioning," TransCom Meeting, Purdue, IN, April, 2007.
- 4.65) "Preliminary data, reproducibility metrics, and representivity from Rocky RACCOON," Workshop on Data Assimilation Techniques and the North American Carbon Budget, Boulder, CO, February, 2006.
- 4.66) "Preliminary data and reproducibility metrics from Rocky RACCOON," North American Carbon Program Mid-Continent Intensive (MCI) Campaign 1st Science Team Meeting, Boulder, CO, February, 2006.
- 4.67) "An Autonomous Inexpensive Robust CO₂ Analyzer (AIRCOA)," 13th WMO/IAEA Meeting of Experts on Carbon Dioxide Concentration and Related Tracer Measurement Techniques, Boulder, CO, September, 2005.
- 4.68) "Southern Ocean carbon fluxes and air-sea gas-exchange from past and future atmospheric O₂ measurements," Ocean Carbon and Climate Change (OCCC) Workshop, Woods Hole, MA, August, 2005.
- 4.69) "Regional scale carbon flux estimates over complex terrain and the Airborne Carbon in the Mountains Experiment," American Geophysical Union Fall Meeting, San Francisco, CA, December, 2004.
- 4.70) "CME, ACME, and regional carbon fluxes in the Mountain West," NOAA CMDL Modeling and Data Analysis Workshop, Boulder, CO, September, 2004.
- 4.71) "Atmospheric oxygen in and above forests," Atmospheric Potential Oxygen Workshop, Jena, Germany, July, 2004.

- 4.72) "Tradeoffs between measurement accuracy and cost, vertical and horizontal sampling density, and signal strength and variability in an expanded CO₂ observing network," American Meteorological Society Annual Meeting, Long Beach, CA, February, 2003.
- 4.73) "Using airborne and continental data to evaluate global atmospheric CO₂ inverse models," TransCom 3 Science Meeting, Ft. Collins, CO, February, 2002.
- 4.74) "Using airborne and continental data to evaluate global atmospheric CO₂ inverse models," Sixth International Carbon Dioxide Conference, Sendai, Japan, October, 2001.
- 4.75) "Results from the first year of atmospheric O₂ measurements at the WLEF tall-tower site," NOAA Climate Monitoring and Diagnostics Laboratory Annual Meeting, Boulder, CO, May, 2001.
- 4.76) "Including atmospheric O₂ in a fully coupled carbon system model," 5th Annual Community Climate System Model Workshop, Breckenridge, CO, June, 2000.
- 4.77) "Planned WLEF atmospheric O₂ measurements and COBRA summer campaign," 3rd Chequamegon Ecosystem-Atmosphere Study Annual Meeting, St. Paul, MN, June, 2000.
- 4.78) "Atmospheric O₂ measurements in temperate forests," NOAA Climate Monitoring and Diagnostics Laboratory Annual Meeting, Boulder, CO, May, 2000.
- 4.79) "The influence of Antarctic sea ice on glacial-interglacial CO₂ variations," American Geophysical Union Fall Meeting, San Francisco, CA, December, 1999.
- 4.80) "CO₂ Budget and Rectification Airborne Study - North America (COBRA-NA)," Workshop on Inverse Methods in Global Biogeochemical Cycles, Heraklion, Greece, March, 1998.
- 4.81) "Testing global ocean carbon cycle models using measurements of atmospheric O₂ and CO₂ concentrations," Fifth International Carbon Dioxide Conference, Cairns, Australia, September, 1997.
- 4.82) "Strategies for measuring rectifiers," Third Carbon Modelers Consortium Meeting, Princeton, NJ, July, 1997.
- 4.83) "Seasonal variations in the atmospheric O₂/N₂ ratio in relation to the kinetics of air-sea gas exchange," American Geophysical Union Spring Meeting, Baltimore, MD, May, 1997.

- 4.84) "Remote continuous CO₂ measurements from commercial aircraft," Commercial Aviation Atmospheric Measurement Program (CAAMP) Meeting, Boulder, CO, October, 1996.
- 4.85) "Measurement of soil surface gas fluxes using closed-chamber techniques: Are they accurate and scalable?" American Geophysical Union Fall Meeting, San Francisco, CA, December, 1995.

Poster Presentations

- 4.86) "Slicing the tomato skin: Global scale airborne atmospheric tomography," Orbiting Carbon Observatory 2 (OCO-2) Science Team Meeting, Boulder, CO, October, 2018.
- 4.87) "Slicing the tomato skin: Global scale airborne atmospheric tomography," Celebration of Science and Times of Professor Steven C. Wofsy, Cambridge, MA, June, 2018.
- 4.88) **Session Chair:** "Southern Ocean zonal scale summertime oxygen outgassing and carbon dioxide ingassing," American Geophysical Union Fall Meeting, San Francisco, CA, December, 2016.
- 4.89) "Seasonal Northern Hemisphere CO₂ exchange as observed by HIPPO," North American Carbon Project Meeting, Albuquerque, NM, February, 2013.
- 4.90) **Session Chair:** "Seasonal Northern Hemisphere CO₂ exchange as observed by HIPPO," American Geophysical Union Fall Meeting, San Francisco, CA, December, 2012.
- 4.91) "The Rocky Mountain Regional Atmospheric Continuous CO₂ Network," 15th WMO/IAEA Meeting of Experts on Carbon Dioxide Concentration and Related Tracer Measurement Techniques, Jena, Germany, September, 2009.
- 4.92) "Atmospheric CO₂ measurements in mountainous terrain to monitor regional fluxes and local disturbance," 2nd Integrated Land Ecosystem-Atmosphere Study (iLEAPS) Science Conference, Melbourne, Australia, August, 2009.
- 4.93) "Vertical profiles of CO₂ and the latitudinal partitioning of carbon fluxes," 50th Anniversary of the Global Carbon Dioxide Record Symposium, Kona, HI, November, 2007.
- 4.94) "A Regional Atmospheric Continuous CO₂ Network in the Rocky Mountains (Rocky RACCOON)," AmeriFlux Annual Science Team Meeting, Boulder, CO, October, 2005.
- 4.95) "An Autonomous Inexpensive Robust CO₂ Analyzer (AIRCOA)," AmeriFlux Annual Science Team Meeting, Boulder, CO, October, 2005.

- 4.96) "A Regional Atmospheric Continuous CO₂ Network in the Rocky Mountains (Rocky RACCOON)," 7th International Carbon Dioxide Conference, Broomfield, CO, September, 2005.
- 4.97) "An Autonomous Inexpensive Robust CO₂ Analyzer (AIRCOA)," 7th International Carbon Dioxide Conference, Broomfield, CO, September, 2005.
- 4.98) "Biologically driven southern ocean carbon fluxes as observed by atmospheric O₂ and CO₂ concentrations," 7th International Carbon Dioxide Conference, Broomfield, CO, September, 2005.
- 4.99) "A Regional Atmospheric Continuous CO₂ Network in the Rocky Mountains (Rocky RACCOON)," 13th WMO/IAEA Meeting of Experts on Carbon Dioxide Concentration and Related Tracer Measurement Techniques, Boulder, CO, September, 2005.
- 4.100) "An Autonomous Inexpensive Robust CO₂ Analyzer (AIRCOA)," 13th WMO/IAEA Meeting of Experts on Carbon Dioxide Concentration and Related Tracer Measurement Techniques, Boulder, CO, September, 2005.
- 4.101) "Measurements of atmospheric O₂ variations at the WLEF tall-tower site," 6th International Carbon Dioxide Conference, Sendai, Japan, October, 2001.
- 4.102) "Seasonal variations in the atmospheric O₂/N₂ ratio in relation to the kinetics of air-sea gas exchange," 5th International Carbon Dioxide Conference, Cairns, Australia, September, 1997.

5. COMMITTEES

- 5.1) Orbiting Carbon Observatory 2 (OCO-2) Science Team member, 2015-present.
- 5.2) Organizing Committee, 2nd Decadal Atmospheric Potential Oxygen Workshop, La Jolla, CA, 2015.
- 5.3) Scientific Steering Committee, 17th WMO/IAEA Meeting on Carbon Dioxide, other Greenhouse Gases, and Related Measurement Techniques (GGMT-2013), Beijing, China, 2013.
- 5.4) Co-chair, Scientific Steering Committee, 16th WMO/IAEA Meeting on Carbon Dioxide, other Greenhouse Gases, and Related Measurement Techniques (GGMT-2011), Wellington, New Zealand, 2010 – 2011.
- 5.5) Editorial Advisory Board, Carbon Management, 2009 – present.
- 5.6) CarbonTracker Data Group, 2010 – present.
- 5.7) Scientific Steering Committee, 8th International Carbon Dioxide Conference (ICDC8), 2008 - 2009.

- 5.8) Advisory Board, Wallowa Mountain Institute, 2008 – 2009.
- 5.9) U.S. National Ecological Observatory Network (NEON) Fundamental Instrument Unit Tiger Team, 2007.
- 5.10) North American Carbon Program (NACP) Mid-Continent Intensive (MCI) working groups: MCI Science Team, MCI Coordination, MCI Topic 2 Region-wide Inversion Analyses, 2006 – 2008.
- 5.11) The Surface Ocean - Lower Atmosphere Study (SOLAS) Implementation Group 3, Air-Sea Flux of CO₂ and Other Long-Lived Radiatively-Active Gases, 2003 - 2005.
- 5.12) SOLAS/Integrated Marine Biogeochemistry and Ecosystem Research (IMBER) Carbon Working Group (SIC), 2005 – 2017.
- 5.13) Organizing Committee, 13th WMO/IAEA Meeting of Experts on Carbon Dioxide Concentration and Related Tracer Measurement Techniques, 2004 - 2005.
- 5.14) Local Organizing Committee, 7th International Carbon Dioxide Conference (ICDC7), 2004 - 2005.
- 5.15) U.S. Carbon Cycle Science Ocean Interim Implementation Group (OCCC), including co-authoring the group report, 2002 - 2004.
- 5.16) U.S. In Situ Large-Scale CO₂ Observations Working Group (LSCOP), including co-lead authoring the Atmospheric Observations chapter of the group report, 1999 - 2002.

6. HONORS AND AWARDS

- 6.1) NASA Group Achievement Award, OCO-2 Science Team, 2018.
- 6.2) Invited Keynote Presentation: "Airborne measurements of oxygen concentration from the surface to the lower stratosphere," 18th WMO/IAEA Meeting on Carbon Dioxide, Other Greenhouse Gases, and Related Measurement Techniques (GGMT-2015), La Jolla, CA, 2015.
- 6.3) Invited Keynote Presentation: "Atmospheric oxygen measurements over the Southern Ocean," Atmospheric Composition and Chemistry Observations and Modelling Conference / Cape Grim Annual Science Meeting, Murraramarang, Australia, 2015.
- 6.4) UCAR Outstanding Scientific and Technical Advancement Award, 2013.
- 6.5) UCAR Outstanding Publication Award, 2008.

- 6.6) Invited Keynote Presentation: “Comparing global carbon cycle models to observations is hard, but better than the alternative,” Berkeley Atmospheric Sciences Symposium, Berkeley, CA, 2008.
- 6.7) Invited Panelist: “Fate of Fossil Fuel Emissions,” 7th International Carbon Dioxide Conference, Broomfield, CO, 2005.
- 6.8) Cooperative Institute for Research in Environmental Sciences Visiting Fellowship, 1999-2001.
- 6.9) Offered NCAR Advanced Studies Program post-doctoral fellowship, 1999.
- 6.10) Achievement Rewards for College Scientists Scholar, 1998-1999.
- 6.11) NSF Graduate Research Fellowship, 1995-1998.