

Sébastien C. Biraud

Earth and Environmental Sciences Area
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EDUCATION

- Ph.D. "Towards the Regionalization of Sources and Sinks of Greenhouse Gases: Analysis of the Synoptic Variability at Mace Head observatory, Ireland", University Paris VII, France, 2000.
Summa Cum Laude
- M.S. Physical Methods in Remote Sensing, University of Paris 7, France, 1995
- B.S. Physics, University of Paris 7, France, 1994

PROFESSIONAL EXPERIENCE

2015-present: **Climate Sciences Department Head**, Lawrence Berkeley National Laboratory, USA (Supervisor: Susan Hubbard).

2013-present: **Research Scientist**, Lawrence Berkeley National Laboratory, USA (Supervisor: Margaret Torn).
- AmeriFlux Management Project Tech team lead (<http://ameriflux.lbl.gov>).
- ARM Carbon project lead (airborne- & ground- based, <https://eesa.lbl.gov/projects/atmospheric-radiation-measurement-carbon-project-arm-carbon/>)

2003-2013: **Research Associate**, Lawrence Berkeley National Laboratory, USA (Supervisor: Margaret Torn).
- Precise measurements of trace gas species (CO₂, CH₄, CO, N₂O) and isotopes (¹³CO₂).

2001 - 2003: **Post-Doctoral Fellow**, University of California, Berkeley, USA (Supervisor: Prof. Inez Fung).
- Modeling of atmospheric transport using NCAR MATCH model.
- Impact of climate change on commercial flights in North America.

2000 - 2001: **Post-Doctoral Fellow**, University of Galway, Ireland, Ireland (Supervisor: Prof. Gerard Jennings).
- Measurements of radon-222 efflux in Ireland.
- Regionalization of the Irish greenhouse gas emissions.
- Back trajectory model at LSCE (HYSPLIT4).

1997 - 2000: **Ph.D.** at Commissariat à l'Energie Atomique/Laboratoire des Sciences du Climat et de l'Environnement (Supervisors: Philippe Ciais and Patrick Monfray).
- Management of field campaigns.
- Monitoring of atmospheric concentrations of greenhouse gases at Mace Head observatory.
- Estimation of greenhouse gas emission fluxes.

1996 - 1997: High frequency measurements campaign of CO₂ and isotopes ¹³C and ¹⁸O at the Mace Head atmospheric field research station (Ireland), in co-operation with **Galway University College** (Ireland) and **Centre des Faibles Radioactivités** (France) as part of the ESCOBA European project (European Study of Carbon in Ocean, Biosphere and Atmosphere).

FELLOWSHIPS

Irish Environmental Protection Agency Post-Doctoral Fellowship, 2000-2001
Commissariat à l'Energie Atomique Doctoral Fellowship, 1996-2000

CURRENT GRANT, PI or Co-PI

SUMMATION project, 2019-2023 (\$6M, 2 month/yr)
AmeriFlux Management Project, 2021-2025 (\$5M/yr, 3 month/yr)
ARM infrastructure, 2020-2021 (\$620k/yr, 3 month/yr)
Rice'N Grits, 2020-2023 (\$2.9M, 1 month/yr)

SYNERGISTIC ACTIVITIES (2013-present)

U.S. Department of Energy Service

ARM Program User Executive Committee (UEC) chair (2019-2020), vice-chair (2016 - 2018)

ARM/ASR Coordination Team (AACT), member (2019-2020)

ARM Program Instrument mentor (2007-present)

Responded to requests from Program managers for input to SBIR solicitations and proposal reviews.

Lawrence Berkeley National Laboratory Service

Climate Sciences Department Head (2015 - present)

Earth and Environmental Sciences Area mentorship program (2018-present)

Building Emergency Team leader (2018-present)

Earth and Environmental Sciences Area Council member and Division Council member (2015 - present)

Earth and Environmental Sciences Area Safety Committee member (2015 - present)

Building Emergency Team member (2010 - 2018)

Corrective Action Plan for Fall Protection Program Assessment Committee member (2015-present)

UCOP Unmanned Aircraft Systems advisory board member <https://www.ucop.edu/safety-and-loss-prevention/environmental/groups/uasab.html> (2019 - present)

Professional Service

Invited panelist, Carbon Footprint and Emission Monitoring, SpaceCom 2021, (October 25, 2021)

Organizer, AmeriFlux webinar series: Best Practices panel discussion, Berkeley, California (Sep. 25, 2020)

Invited participant, Ameriflux webinar series: Orientation, Berkeley, California (Aug. 17, 2020)

Co-organizer, SUMMATION Project Community Advisory Board meeting, Bakersfield, California (May 18, 2020)

Invited participant, NEON Field Instrument Science meeting, Boulder, Colorado (May 11, 2020)

Invited participant, ARM Aerial Instrumentation workshop, Richland, Washington (Mar. 2-3, 2020)

Co-organizer, SUMMATION Project Technical Advisory Board meeting, Sacramento, California (Jan. 13, 2020)

Co-organizer, Western Petroleum Association, Bakersfield, California (Feb. 28, 2020)

Co-Chair, AmeriFlux Network Townhall, American Geophysical Union, San Francisco, California (Dec. 9-13, 2019)

Invited participant, VAPHER II conference, Yosemite National Park, California (November 6, 2019)

Co-organizer, AmeriFlux Data/Tech workshop, Berkeley, California (Oct. 28-30, 2019)

Co-organizer, Brazilian Flux Networks Collaboration Workshop, Manaus, Brazil (Feb. 11-15, 2019)

Co-Chair, AmeriFlux Network Townhall, American Geophysical Union, Washington DC (Dec. 10-14, 2018)

Convener, Unmanned Aircraft Systems (UAS) in Geosciences: Research and Development, American Geophysical Union, Washington DC (Dec. 10-14, 2018)

Co-organizer, AmeriFlux Data/Tech workshop, Bloomington, Indiana (Oct. 22-23, 2018)

Invited participant, ARM Mobile Facility priorities workshop, Gaithersburg, Maryland (Aug. 15-16, 2018)

Co-Chair, UAV session, European Geosciences Union, Vienna, Austria (April 9-13, 2018)

Invited participant, ICOS/AmeriFlux/LICOR Data summit workshop, Lincoln, Nebraska (Feb. 26-27, 2018)

Co-Chair, AmeriFlux Network Townhall, American Geophysical Union, New Orleans, Louisiana (Dec. 11-15, 2017)

Invited participant, ICOS/AmeriFlux/LICOR Data summit workshop, Lincoln, Nebraska (Mar. 7-8, 2017)

Invited participant, Optimizing NEON Science Workshop, Boulder, Colorado (Feb. 14-16, 2017)

Chair of AmeriFlux Network Townhall, American Geophysical Union, San Francisco, California (Dec. 12-16, 2016)

Co-organizer, AmeriFlux Data/Tech workshop, Netherlands, Colorado (Sep. 19-21, 2016)

Invited participant, ARM mentors workshop, Argonne, Illinois (Mar. 8-10, 2016)

Invited participant, University of California college of Agriculture and Natural Resources / LBNL workshop, Berkeley, California (Mar. 15, 2016)

Invited participant, DOE Big Ideas Summit III, Arlington, Virginia (Apr. 21, 2016)

Invited participant, DOE/BER/CESD Aerial Observation Needs for Climate and Environmental Sciences, Gaithersburg, Maryland (May 13-14, 2015)

Co-Chair, AmeriFlux Principal Investigators meeting, Albuquerque, New Mexico (Jan. 29-30, 2015)

Invited participant, DOE/BER/CESD North Slope of Alaska Priorities workshop, Gaithersburg, Maryland (Sep. 12-14, 2014)

Invited participant, ICOS Ecosystem Working Groups, Bordeaux, France, (Mar. 26-28, 2014)

Invited participant, DOE/BER/CESD/ASR Working Group workshop, Potomac, Maryland (Nov. 5-6, 2013)

COLLABORATORS AND OTHER AFFILIATES

- Student and staff: Noah Amme (U. of Washington), Jennie Bahramian (CSU-EB), Dave Billesbach (UNL), Stephen Chan (LBNL), Housen Chu (LBNL), Laura Cunningham (UCB), Brian Curtis (LBNL), Steven Demartini (UCB), Sigrid Dengel (LBNL), Salil Goyal (UCB), Chad Hanson (OSU), Don Herman (UCB), Andrew Moyes (LBNL), Pascal Polonik (UCB, LBNL), Naama Raz-Yaseef (LBNL), Ken Reichl (LBNL), Eric Rubin (UCB), Jovan Tadic (LBNL).

- Collaborators and co-authors: J. Abshire (NASA/GSFC), A. Angert (The Hebrew University of Jerusalem), A. Turner (Harvard University), S. Basu (SRON), C. Bonfils (LLNL), P. Ciais (LSCE), R. Derwent (U.K. Met Office), D. Feldman (LBNL), M. Fischer (LBNL), M. Helbig (University of Montreal), F. Hopkins (UCR), L. Hu (NOAA/ESRL), M. Inoue (NIES), R. Jackson (Stanford University), D. Jacob (Harvard University), L. Kuai (JPL), S. Kulawik (NASA/JPL), A. Milller (Harvard University), C. Miller (NASA/JPL), S. Miller (Harvard University), W. McMillan (University of Maryland), Y. Miyamoto (NIES), M. Ramonet (LSCE), W. Riley (LBNL), B. Schmidt (PNNL), B. Schmid (PNNL), C. Still (Oregon State University), C. Sweeney (NOAA/ESRL), J. Tadic (Carnegie Institute for Science), P. Tans (NOAA/ESRL), M. Toomey (Harvard University), A. Turner (Harvard University), I. Williams (LBNL), S. Wharton (LLNL), S. Wofsy (Harvard University), D. Wunch (CalTech), L. Yurganov (University of Maryland).

PUBLICATIONS: 66 peer-reviewed journal papers, with 2050 citations and h-index of 22 in Thomson Reuters Institute for Scientific Information (ISI) Web of Science Core Collection, and Google Scholar h-index of 27 with 3700 citations, and 5 papers submitted to peer-reviewed journals pending decision.

1. Tadić, J., S. Miller, V. Yadav, and **S.C. Biraud**. Greenhouse gas fluxes from Alaska's North Slope estimated inferred from the Airborne Carbon Measurements Campaign (ACME-V), Submitted to *Atmos. Env.*, 2020.
2. Housen C., X. Luo, Z. Ouyang, S. Chan, S. Dengel, **S.C. Biraud**, M.S. Torn et al. Footprint Representativeness of Eddy-Covariance Flux Measurements Across AmeriFlux Sites. Submitted to *Agricultural and Forest Meteorology*, 2020.
3. Zhou H., J. Shao, H. Liu, Z. Du, L. Zhou, R. Liu, **S.C. Biraud**, and X. Zhou. Relative importance of climate, soil and plant traits to spatial variation in net CO₂ exchange across global forests and grasslands. Submitted to *Agricultural and Forest Meteorology*, 2020.
4. Helbig M., T. Gerken, E. Beamesderfer, D.D. Baldocchi, T. Banerjee, **S.C. Biraud**, W.O.J. Brown, N.A. Brunzell, E.A. Burakowski, S.P. Burns, B.J. Butterworth, W.S. Chan, K.J. Davis, A.R. Desai, J.D. Fuentes, D.Y. Hollinger, N. Kljun, M. Mauder, K.A. Novick, J.M. Perkins, D.A. Rahn, C. Rey-Sanchez, J. Santanello, R.L. Scott, B. Seyednasrollah, P.C. Stoy, R.C. Sullivan, J. Vilà-Guerau de Arellano, S. Wharton, C. Yi, A.D. Richardson. Integrating continuous atmospheric boundary layer and tower-based flux measurements to advance understanding of land-atmosphere interactions. Submitted to *Agricultural and Forest Meteorology*, 2020.
5. Mekonnen Z.A., W.J. Riley, R.F. Grant, V.G. Salmon, C.M. Iversen, **S.C. Biraud**, A.L. Breen, M.J. Lara. Topographical Controls on Hillslope-Scale Hydrology Drive Shrub Distributions on the Seward Peninsula, Alaska. Accepted for publication in *Journal of Biogeography*, 2020.
6. Phillips C.L., K.M. Meyer, C.V. Hanson, **S.C. Biraud**, and K.M. Trippe. Manipulating rangeland soil microclimate with juniper biochar for improved native seedling establishment. *Soil Science Society of America Journal*, <https://doi.org/10.1002/saj2.20207>, 2020.
7. Roche S., K. Strong, D. Wunch, J. Mendonca, C. Sweeney, B. Baier, **S.C. Biraud**, J. Laughner, G. Toon, and B. Connor. Retrieval of CO₂ vertical profiles from ground-based near-infrared spectra. *Atmos. Meas. Tech.*, <https://doi.org/10.5194/amt-2020-429>, 2020.
8. Tadic J. and **S.C. Biraud**. Identification of bias in satellite measurements using inconsistencies in spatio-temporal autocorrelations and geospatial properties of the field of bias. *GeoScience and Remote Sensing Letters*, <https://doi.org/10.1109/LGRS.2020.3015174>, 2020.
9. Kulawik S.S., S. Crowell, D. Baker, J. Liu, K. McKain, C. Sweeney, **S.C. Biraud**, S. Wofsy, C.W. O'Dell, P.O. Wennberg, D. Wunch, C.M. Roehl, N.M. Deutscher, M. Kiel, D.W.T. Griffith, V.A. Velazco, J. Notholt, T. Warneke, C. Petri, M. De Maziere, M.K. Sha, R. Sussmann, M. Rettinger, D. Pollard, I. Morino, O. Uchino, F. Hase, D.G. Feist, K. Strong, R. Kivi, L. Iraci, K. Shiomi, M.K. Dubey, E. Sepulveda, O.E. Garcia Rodriguez, Y. Te, P. Jeseck, P. Heikkinen, E.J. Dlugokencky, M.R. Gunson, A. Eldering, D. Crisp, B. Fisher, G.B. Osterman. Characterization of OCO-2 biases and errors for flux estimates. Accepted for publication in *Atmos. Meas. Tech.*, <https://doi.org/10.5194/amt-2019-257>, 2020.
10. Pastorello, G., Trotta, C., Canfora, E., Chu, H., Christianson, D., **S.C. Biraud** et al. (2020). The FLUXNET2015 dataset and the ONEFlux processing pipeline for eddy covariance data. *Sci Data* 7, 225 (2020). <https://doi.org/10.1038/s41597-020-0534-3>, 2020.

11. Wagle P., P. Gowda, D. Billesbach, B. Northup, M. Torn, J. Neel, **S. C. Biraud**, Dynamics of CO₂ and H₂O fluxes in Johnson grass in the U.S. Southern Great Plains. *Science of The Total Environment*, <https://doi.org/10.1016/j.scitotenv.2020.140077>, 2020.
12. Berg L.K., C.N. Long, E.I. Kassianov, D. Chand, S.L. Tai, Z. Yang, L.D. Riihimaki, **S.C. Biraud**, J. Tagestad, A. Matthews, A. Mendoza, F. Mei, J. Tomlinson, and J.D. Fast. Fine Scale Variability of Observed and Simulated Surface Albedo Over the Southern Great Plains. *Journal of Geophysical Research-Atmospheres*, <https://doi.org/10.1029/2019JD030559>, 2020.
13. Fisher, J.B., B. Lee, A.J. Purdy, G.H. Halverson, K. Cawse-Nicholson, A. Wang, R.G. Anderson, B. Aragon, M.A. Arain, D.D. Baldocchi, J.M. Baker, H. Barral, C.J. Bernacchi, C. Bernhofer, **S.C. Biraud**, G. Bohrer, N. Brunsell, B. Cappelaere, S. Castro-Contreras, J. Chun, B.J. Conrad, E. Cremonese, J. Demarty, A.R. Desai, A. De Ligne, L. Foltynova, M.L. Goulden, T.J. Griffis, T. Grunwald, M.S. Johnson, M. Kang, D. Kelbe, N. Kowalska, J.H. Lim, I. Mainassara, M.F. McCabe, J. E.C. Missik, B.P. Mohanty, C.E. Moore, L. Morillas, R. Morrison, J.W. Munger, G. Posse, A.D. Richardson, E.S. Russell, Y. Ryu, A. Sanchez-Azofeifa, M. Schmidt, E. Schwartz, I. Sharp, L. Sigut, Y. Tang, G. Hulley, M. Anderson, C. Hain, A. French, E. Wood, S. Hook. ECOSTRESS: NASA's next generation mission to measure evapotranspiration from the International Space Station. *Water Resources Research*, <https://doi.org/10.1029/2019WR026058>, 2020.
14. J. Tadic and **S.C. Biraud**, Effects of Climate Change on Precipitation and the Maximum Daily Temperature (T_{max}) at Two US Military Bases with Different Present-Day Climates. *Climate*, 8 (2), 18, <https://doi.org/10.3390/cli8020018>, 2020.
15. Floerchinger, C., McKain, T., Bonin, J. Peischl; **S.C. Biraud**, C. Miller, T. Ryerson, S.C. Wofsy, C. Sweeney. Methane emissions from oil and gas production on the North Slope of Alaska. *Atmospheric Environment*, <https://doi.org/10.1016/j.atmosenv.2019.116985>, 2019.
16. Leger, E.B., Dafflon, Y. Robert, C. Ulrich, J. E. Peterson, **S.C. Biraud**, V. E. Romanovsky and S. S. Hubbard: Distributed Temperature Profiling System Provides Spatially Dense Measurements and Insights about Permafrost Distribution in an Arctic Watershed. *The Cryosphere*, 13, 2019, Pages 2853–2867, <https://doi.org/10.5194/tc-13-2853-2019>
17. Hu, L., A.E. Andrews, K.W. Thoning, C. Sweeney, J.B. Miller, E. Dlugokencky, P.P. Tans, A. Michalak, M. Mountain, T. Nehrkorn, S.A. Montzka, D.E.J. Worthy, K. McKain, S. Michel, B. Vaughn, J. White, M.L. Fischer, **S.C. Biraud**, S. Basu, I.R. van der Velde: Water is the dominant control on interannual variability of North American carbon uptake. *Science Advances*, <http://doi.org/10.1126/sciadv.aaw0076>, 2019.
18. Lan, X., P. Tans, C. Sweeney, A. Andrews, E. Dlugokencky, S. Schwietzke, J. Kofler, K. McKain, K. Thoning, M. Crotwell, S. Montzka, B.R. Miller, **S.C. Biraud**: Long-term measurements show little evidence for large increases in total U.S. methane emissions over the past decade. *Geophys. Res. Lett.*, <http://dx.doi.org/10.1029/2018GL081731>, 2019.
19. Polonik, P., W.S. Chan, D.P. Bilesbach, G. Burba, J. Li, A. Nottrot, I. Bogojev, B. Conrad, and **S.C. Biraud**. Comparison of gas analyzers for eddy covariance: Effects of analyzer type and spectral corrections on fluxes. *Agricultural and Forest Meteorology*, Volume 272-273, 2019, Pages 128-142, <https://doi.org/10.1016/j.agrformet.2019.02.010>
20. Tadic, J., I. Williams, V. Tadić, **S.C. Biraud**. Towards hyper-dimensional variography using product-sum covariance model. *Atmosphere*, 10(3), 148; <http://doi.org/10.3390/atmos10030148>, 2019.
21. Billesbach, D.P., S.W. Chan, D.R. Cook, D. Papale, R. Bracho-Garrillo, J. Verfallie, R. Vargas, **S.C. Biraud**, Effects of the Gill-Solent WindMaster-Pro “w-boost” firmware bug on eddy covariance fluxes and some simple recovery strategies, *Agricultural and Forest Meteorology*, Volume 265, 2019, Pages 145-151, <https://doi.org/10.1016/j.agrformet.2018.11.010>.
22. Franz D., M. Acoste, N. Altimir, N. Arriga, D. Arrouays, **S.C. Biraud** et al. Towards long-term standardised carbon and greenhouse gas observations for monitoring Europe's terrestrial ecosystems: a review, *International Agrophysics*, 32, <http://doi.org/10.1515/intag-2017-0039>, 2018.
23. Carrara, A., P. Kolari, M. Op de Beeck, N. Arriga, D. Berveiller, S. Dengel, A. Ibrom, L. Merboldt, C. Rebmann, S. Sabbatini, P. Serrano-Ortíz, **S.C. Biraud**. Radiation measurements at ICOS terrestrial ecosystem stations. *International Agrophysics*, <http://doi.org/10.1515/intag-2017-0049>, 2018.
24. Tadic, J. and **S.C. Biraud**: An approach to estimate atmospheric greenhouse gas total columns mole fraction from partial column sampling. *Atmosphere*, 9, 247, <http://doi.org/10.3390/atmos9070247>, 2018.
25. D.R. Feldman D.R., W.D. Collins, **S.C. Biraud**, M.D. Risser, D.D. Turner, P.J. Gero, J. Tadić, D. Helmig, S. Xie, E.J. Mlawer, T.R. Shippert, and M.S. Torn. Observationally derived rise in methane surface forcing mediated by water vapour trends. *Nature Geoscience*, <http://dx.doi.org/10.1038/s41561-018-0085-9>, 2018.

26. McCombs A., A. Hiscox; C. Wang; A. Desai, A. E. Suyker, and **S.C. Biraud**: Carbon flux phenology from the sky: Evaluation for maize and soybean. *Journal of Atmospheric and Oceanic Technology*, <https://doi.org/10.1175/JTECH-D-17-0004.1>, 2018.
27. Baker I.T., P.J. Sellers, A.S. Denning, I. Medina, P. Kraus, K.D. Haynes, and **S.C. Biraud**: Closing the scale gap between land surface parameterizations and GCMs with a new scheme, SiB3-Bins., *Journal of Advances in Modeling Earth Systems*, 9, <http://doi.org/10.1002/2016MS000764>, 2017.
28. Hu L., S.A. Montzka, D.S. Godwin, Arlyn E. Andrews, B.R. Miller, K. Thoning, J.B. Miller, S.J. Lehmand, C. Sweeney, C. Siso, J.W. Elkins, B.D. Hall, D.J. Mondeel, D. Nance, M.L. Fischer, **S.C. Biraud**, H. Chen, and P.P. Tans: Considerable Contribution of the Montreal Protocol to Declining Greenhouse Gas Emissions from the United States, *Geophysical Research Letters*, 44, <http://doi.org/10.1002/2017GL074388>, 2017.
29. Raczka, B., **S.C. Biraud**, J. R. Ehleringer, C. Lai, J.B. Miller, D.E. Pataki, S. Saleska, M.S. Torn, B.H. Vaughn, R. Wehr, D.R. Bowling: Does vapor pressure deficit drive the seasonality of $\delta^{13}\text{C}$ of the net land-atmosphere CO_2 exchange across the United States? *J. Geophys. Res. Biogeosciences*, 122, <https://doi.org/10.1002/2017JG003795>, 2017.
30. Tadic, J., A.M. Michalak, L. Iraci, V. Ilić, **S.C. Biraud**, D. R. Feldman, T. Bui, M. S. Johnson, M. Loewenstein, S. Jeong, M. L. Fischer, E. L. Yates, and J. Ryoo: Elliptic cylinder airborne sampling and geostatistical mass balance approach for quantifying local greenhouse gas emissions, *Environmental Science & Technology*, 51, <http://doi.org/10.1021/acs.est.7b03100>, 2017.
31. Kulawik, S.S., C. O'Dell, V.H. Payne, L. Kuai, H.M. Worden, **S.C. Biraud**, C. Sweeney, B. Stephens, L.T. Iraci, E.L. Yates, and T. Tanaka: Lower-tropospheric CO_2 from near-infrared ACOS-GOSAT observations, *Atmos. Chem. Phys.*, <http://doi.org/10.5194/acp-17-5407-2017>.
32. Bagley, J. E., L. M. Kueppers, D. P. Billesbach, I. N. Williams, **S. C. Biraud**, and M. S. Torn, The influence of land cover on surface energy partitioning and evaporative fraction regimes in the U.S. Southern Great Plains, *J. Geophys. Res. Atmos.*, 122, 5793–5807, <http://doi.org/10.1002/2017JD026740>, 2017.
33. Turner, A.J., D.J. Jacob, J. Benmergui, S.C. Wofsy, J.D. Maasackers, A. Butz, O. Hasekamp, and **S.C. Biraud**. A large increase in U.S. methane emissions over the past decade inferred from satellite data and surface observations, *Geophys. Res. Lett.*, 43, 2218–2224, <http://doi.org/10.1002/2016GL067987>, 2016.
34. Helbig, M., K. Wischnewski, G.H. Gosselin, **S.C. Biraud**, I. Bogoev, W. S. Chan; E. S. Euskirchen, A.J. Glenn, P.M. Marsh, W.L. Quinton, O. Sonnentag. Addressing a systematic bias in carbon dioxide flux measurements with the EC150 and the IRGASON open-path gas analyzers. *Agricultural and Forest Meteorology*, <http://doi.org/10.1016/j.agrformet.2016.07.018>, 2016.
35. Inoue, M., I. Morino, O. Uchino, Y. Yoshida, T. Yokota, D. Wunch, P.O. Wennberg, C.M. Roehl, D.W.T. Griffith, V.A. Velasco, N.M. Deutscher, T. Warneke, J. Notholt, J. Robinson, V. Sherlock, F. Hase, T. Blumenstock, M. Rettinger, R. Sussmann, E. Kyrö, R. Kivi, S. Kawakami, M. De Mazière, D. G. Feist, T. Machida, Y. Sawa, K. Tsuboi, H. Matsueda, C. Sweeney, P.P. Tans, A.E. Andrews, **S.C. Biraud**, Y. Fukuyama, J.V. Pittman, E.A. Kort, S.C. Wofsy, and T. Tanaka. Bias corrections of GOSAT SWIR XCO_2 and XCH_4 with TCCON data and their evaluation using aircraft measurement data. *Atmos. Meas. Tech.*, <http://doi.org/10.5194/amt-9-3491-2016>.
36. Hu, L., S.A. Montzka, B.R. Miller, A.E. Andrews, J.B. Miller, S.J. Lehman, C. Sweeney, S. Miller, K. Thoning, C. Siso, E. Atlas, D. Blake, J.A. de Gouw, J.B. Gilman, G. Dutton, J.W. Elkins, B.D. Hall, H. Chen, M.L. Fischer, M. Mountain, T. Nehrkorn, **S.C. Biraud**, F. Moore, and P.P. Tans. Continued emissions of carbon tetrachloride from the U.S. nearly two decades after its phase-out for dispersive uses. *Proceedings of the National Academy of Sciences*, <http://doi.org/10.1073/pnas.1522284113>, 2016.
37. Williams, I.N., Y. Lu, L.M. Kueppers, W.J. Riley, **S.C. Biraud**, J.E. Bagley, M.S. Torn. Land-atmosphere coupling and climate prediction over the U.S. Southern Great Plains. *J. Geophys. Res. Atmosphere*, 121, <https://doi.org/10.1002/2016JD025223>.
38. Williams, I.N., W.J. Riley, L.M. Kueppers, **S.C. Biraud**, and M.S. Torn, Separating the effects of phenology and diffuse radiation on gross primary productivity in winter wheat, *J. Geophys. Res. Biogeosciences*, 121, 1903–1915, <http://doi.org/10.1002/2015JG003317>, 2016.
39. Turner, A.J., D.J. Jacob, K.J. Wecht, J.D. Maasackers, **S.C. Biraud**, H. Boesch, K.W. Bowman, N.M. Deutscher, M.K. Dubey, D.W.T. Griffith, F. Hase, A. Kuze, J. Notholt, H. Ohyama, R. Parker, V.H. Payne, R. Sussmann, V.A. Velasco, T. Warneke, P.O. Wennberg, and D. Wunch. Estimating global and North American methane emissions with high spatial resolution using GOSAT satellite data. *Atmos. Chem. Phys.*, 15, 7049–7069, <http://doi.org/10.5194/acp-15-7049-2015>.

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- **Biraud S.C.** The Ameriflux Management Network. *Brazilian Institute for Amazon Research (INPA)* (oral communication), **Manaus**, Brazil, February 11, 2019.
- **Biraud S.C.** Detecting and Quantifying Methane Emissions. *Fukuda Geological Institute*, (oral communication), **Tokyo**, Japan, October 2, 2018.
- **Biraud S.C.** AmeriFlux Management Project: Outreach/Data/Tech Teams updates. *ICOS Science Meeting*, Prague (poster presentation), **Czech Republic**, September 9-12, 2018.
- **Biraud S.C.** Technical Support Program for Eddy covariance measurements: Lessons learned from AmeriFlux. *National Academy of Agrarian Sciences of Ukraine* (oral communication), **Kiev** Ukraine, September 13, 2018.
- **Biraud S.C.** Measuring and Mitigating Methane Emissions in California. *Fukuda Geological Institute* (oral communication), **Tokyo**, Japan, June 6, 2018.
- **Biraud S.C.**, S.W. Chan, S. Dengel, D. Billesbach, C. Hanson, P. Polonik, and M.S. Torn. Updates from the AmeriFlux Management Project Tech Team, *American Geophysical Union meeting* (poster presentation), **New Orleans**, Mississippi, December 11-15, 2017.
- **Biraud S.C.** Challenges towards quantification of CO₂ and CH₄ emissions by using ground-based and airborne-based techniques. *Fukuda Geological Institute* (oral communication), **Tokyo**, Japan, October 5, 2017.
- **Biraud S.C.**, S.W. Chan, K. Reichl, A. Moyes, and M.S. Torn. Trace gas mixing ratios, carbon, water, and energy exchanges measurements at ARM facilities. *19th WMO/IAEA meeting on Carbon Dioxide, Other Greenhouse Gases, and Related Measurement Techniques (GGMT-16)* (poster presentation), **Zurich**, Switzerland, August 28-31, 2017.
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