

# **Brendan M Fisher**

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Brendan Fisher is a member of the Tropospheric Composition Group in the Earth Science Section at the Jet Propulsion Laboratory. He is member of the OCO-2 and OCO-3 science and validation teams. As part of the OCO-2 project, he is intimately involved in the atmospheric retrieval of XCO<sub>2</sub> algorithm and validation of the product. For OCO-3, Brendan is the Science Operations Lead and is the primary interface between the mission operations team and the science implementation team. Additionally, Brendan is responsible for maintaining the OCO-3 SAM/TG list, implementing new observation sites and adjusting strategies to assist coordination with community science, validation, and calibration activities. Brendan is also a member of the science implementation team and is involved in nearly all aspects of the algorithm development. Brendan has extensive experience with flight projects from early build to on-orbit operations, instrument calibration and validation, remote sensing, and atmospheric retrieval algorithms.

## **Research Interests**

- Atmospheric carbon cycles
- Validation & Calibration of remote sensing instruments
- Mission design & planning
- Infrared instrumentation for ground and spacecraft application: design, development and use.
- Data science: algorithm and numerical methods, particularly atmospheric sounding, data visualization, user interfaces, hardware control.
- Planetary Atmospheres: thermal structure, dynamics, composition of the earth and gas giants

## **Professional Experience**

- Jet Propulsion Laboratory (1996 - Present)
  - OCO-3 Science Operations Lead (2018-present)
  - OCO-3 Science Implementation Team (2017-present)

- TES Instrument Scientist (2016-2021)
- OCO-2 Science Implementation Team (2009-present)
- Orbiting Carbon Observatory (OCO) Calibration, Validation, and Science Teams (2006-2009)
- Tropospheric Emission Spectrometer (TES) project (2000 - 2021)
- Mars 98 Orbiter and Mars Polar Lander (1999-2000)
- Caltech Postdoctoral Scholar (1998 - 1999)
- NASA/NRC Resident Research Associate (1996 - 1998)
- University of Rochester, Instructor/Fellow (1995 - 1996)

## Awards

- JPL Team Award as a member of the OCO-3 science Team (2021)
- JPL Team Award as a member of the TES project team (2021)
- JPL Team Award as a member of the OCO-2 science Team (2020)
- JPL Voyager Award for leadership during OCO-3 IOC (2019)
- NASA Honors Award as a member of the OCO-2 Science Team (2018)
- JPL Team Bonus Award for Completion of the TES mission Team (2018)
- JPL Team Bonus Award as a member of the OCO-2 Science Team (2017)
- NASA Honors Award as a member of the OCO-2 validation team (2016)
- NASA Honors Award as a member of the OCO-2 L2 algorithm team (2016)
- JPL Team Bonus Award as a member of the TES instrument recovery team (2016)
- JPL Team Bonus Award as a member of the OCO-2 L2 algorithm development team (2016)
- JPL Discovery Award relating to OCO-2 L2 algorithms (2016)
- JPL Team Bonus Award as a member of the OCO-2 project (2015)
- NASA Honors Award as a member of the TES team (2014)
- JPL Team Bonus Award as a member of the OCO-2 project (2014)
- NASA Honors Award as a member of the Aura Project (2005)
- NASA Honors Award as a member of the Aura Tropospheric Emission Spectrometer instrument and ground data system development teams (2005)
- Goddard Space Flight Center Group Achievement Award as a member of the Aura Team (2005)
- Fellow, National Research Council Research Associates Program (1996 - 1998)
- Fellow, National Aeronautics and Space Administration Graduate Student Researchers Program, Office of Space Science, NASA Headquarters (1991 - 1994)
- Fellow, National Aeronautics and Space Administration Space Grant Program, California Space Institute, Scripps Institute of Oceanography (1990)
- Studentship Award, American Astronomical Society, Solar Physics Division (1990)
- 1st Place, Senior Physics Lab Project, University of California, San Diego (1986)

## Publications:

Thomas E. T., O'Dell, C.W., Baker, D., Bruege, C, Chang, A., Chapsky, L., Chatterjee, A., Cheng, C., Chevallier, F., Crisp, D., Dang, L., Drouin, B., Eldering, A., Feng, L., **Fisher, B.**, Fu, D., Gunson, M., Haemmerle, V., Keller, G., Kiel, M., Kuai, L., Kurosu, T., Lambert, A., Laughner, J., Lee, R., Liu, J., Mandrake, L., Marchetti, Y., McGarragh, G., Merrelli, A., Nelson, R.R., Osterman, G., Oyafuso, F., Palmer, P.I., Payne, V.H., Rosenberg, R., Somkuti, P., Spiers, G., To, C., Wennberg, P.O., Yu, S., Zong, J. Atmos. Meas. Tech. Discuss., <https://doi.org/10.5194/amt-2022-329>, 2023

Bell, E., O'Dell, C. W., Taylor, T.E., Merrelli, A., Nelson, R.R., Kiel, M., Eldering, A., Rosenberg, R., **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. DOI:10.5194/amt-16-109-2023

Taylor, T.E., O'Dell, C. W., Crisp, D., Kuze, A., Lindqvist, H. Wennberg, P.P., Chatterjee, A., Gunson, M., Eldering, A., **Fisher, B.** 2022. An 11-year record of XCO<sub>2</sub> estimates derived from GOSAT measurements using the NASA ACOS version 9 retrieval algorithm. Earth System Science Data, 15, 325-360. DOI: 10.5194/essd-14-325-2022

Taylor, T.E., Eldering, A., Merrelli, A., Kiel, M., Somkuti, P., Cheng, C., Rosenberg, R., **Fisher, B.**, Crisp, D., Basilio, R., 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., ; Yu, S.S. 2020. OCO-3 early mission operations and initial (vEarly) XCO<sub>2</sub> and SIF retrievals. Remote Sensing of Environment, 251, 112032. DOI: 10.1016/j.rse.2020.112032

Payne, V.H., Drouin, B.J., Oyafuso, F., Kuai, L. **Fisher, B.M.**, Sunk, 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., O'Dell, C.W. 2020. Absorption coefficient (ABSCO) tables for the Orbiting Carbon Observatories: Version 5.1 (vol 255, 107217, 2020). *J. of Quantitative Spectroscopy & Radiative Transfer.* 257, 10733. DOI: 10.1016/j.jqsrt.2020.107333

O'Dell, C. W., Eldering, A., Wennberg, P. O., Crisp, D., Gunson, M. R., **Fisher, B.**, Frankenberg, C., Kiel, M., Lindqvist, H., Mandrake, L., Merrelli, A., Natraj, V., Nelson, R. R., Osterman, G. B., Payne, V. H., Taylor, T. E., Wunch, D., Drouin, B. J., Oyafuso, F., Chang, A., McDuffie, J., Smyth, M., Baker, D. F., Basu, S., Chevallier, F., Crowell, S. M. R., Feng, L., Palmer, P. I., Dubey, M., Garcia, O. E., Griffith, D. W. T., Hase, F., Iraci, L. T., Kivi, R., Morino, I., Notholt, J., Ohyama, H., Petri, C., Roehl, C. M., Sha, M. K., Strong, K. and Sussmann, R., Te, Y., Uchino, O., Velazco, V. A. 2018. Improved retrievals of carbon dioxide from Orbiting Carbon Observatory-2 with the version 8 ACOS algorithm, *Atmos. Meas. Tech.*, 11, 6539-6576. DOI: 10.5194/amt-11-6539-2018

Kiel, M., O'Dell, C. W., **Fisher, B.**, Eldering, A., Nassar, R., MacDonald, C. G., Wennberg, P. O., 2018. How bias correction goes wrong: Measurement of XCO<sub>2</sub> affected by erroneous surface pressure estimates. *Atmos. Meas. Tech.*, 2019, 1-38. DOI: 10.5194/amt-2018-353

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Eldering, A., O'Dell, C.W., Wennberg, P.O., Crisp, D., Gunson, M.R., Viatte, C., Avis, C., Braverman, A., Castano, R., Chang, A., Chapsky, L., Cheng, C., ; Connor, B., Dang, L., Doran, G., **Fisher, B.**, Frankenberg, C., Fu, D.J., Granat, R., Hobbs, J., Lee, R.A.M., Mandrake, L., McDuffie, J., Miller, C.E., Myers, V., Natraj, V., O'Brien, D., Osterman, G.B., Oyafuso, F., Payne, V.H., Pollock, H.R., Polonsky, I., Roehl, C.M., Rosenberg, R., Schwandner, F., Smyth, M., Tang, V.V., Taylor, T.E., To, C., Wunch, D., Yoshimizu, J. 2017. The Orbiting Carbon Observatory-2: first 18 months of science data products. *Atmos. Meas. Tech.*, 10, 2, 549-563. DOI: 10.5194/amt-10-549-2017

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