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DEGREES:

- June, 1994 Ph.D. in Physical Chemistry, Harvard University, Cambridge, MA
Thesis: "In Situ Measurements of Stratospheric Hydroxyl and Hydroperoxyl Radicals" Research Advisor: James G. Anderson
- June, 1985 B.A. in Chemistry, Oberlin College, Oberlin, OH.

PROFESSIONAL APPOINTMENTS:

- 2008 – 2011 Director, Linde Center for Global Environmental Science, California Institute of Technology.
- 2005 Visiting Prof., Dept. of Chem., Univ. Otago, New Zealand
- 2005 – 2006 Secretary of the Atmospheric Sciences Section, American Geophysical Union.
- 2004 – R. Stanton Avery Professor of Atmospheric Chemistry and Environmental Science and Engineering, California Institute of Technology.
- 2001 – 2004 Professor of Atmospheric Chemistry and Environmental Science and Engineering, California Institute of Technology.
- 1998 – 2001 Associate Professor of Atmospheric Chemistry and Environmental Engineering Science, California Institute of Technology.
- 1994 – 1997 Postdoctoral Research Fellow, Department of Chemistry, Harvard University.

HONORS AND AWARDS:

- 2002 MacArthur Fellow
- 1999 – 2003 Presidential Early Career Award for Scientists and Engineers (PECASE)
- 1992 – 1993 Hughes Corp., Graduate Fellowship.
- 1986 – 1988 National Science Foundation Graduate Fellowship.

LARGE PROJECTS:

- 2000 – Founding science team member Orbiting Carbon Observatory (OCO, OCO-2)
- 2002 – Chair, Total Carbon Column Observing Network (TCCON)
- 2010 – 2012 PI, Mars Atmospheric Trace Molecule Occultation Spectrometer (MATMOS)

PUBLICATIONS:

1. Kwan, AJ, Chan, AWH, Ng, NL, Kjaergaard, HG, Seinfeld, JH, Wennberg, PO, "Peroxy radical chemistry and OH radical production during the NO₃-initiated oxidation of isoprene" *Atmos. Chem. Phys.*, 12, 7499-7515, 2012.
2. Wennberg, PO, Mui, W, Wunch, D, Kort, EA, Blake, DR, Atlas, EL, Santoni, GW, Wofsy, SC, Diskin, GS, Jeong, S, Fischer, ML, "On the sources of methane to the Los Angeles atmosphere", *Environ. Sci. Technol.*, 46, 9282-9289, 2012.
3. Olson, JR, Crawford, JH, Brune, W, Mao, J, Ren, X, Fried, A, Anderson, B, Apel, E, Beaver, M, Blake, D, Chen, G, Crouse, J, Dibb, J, Diskin, G, Hall, SR, Huey, JG, Knapp, D, Richter, D, Riemer, D, St. Clair, J, Ullmann, K, Walega, J, Weibring, P, Weinheimer, A, Wennberg, P, Wisthaler, A, "An analysis of fast photochemistry over high northern latitudes during spring and summer using in-situ observations from ARCTAS and TOPSE", *Atmos. Chem. Phys.*, 12, 6799-6825, 2012.
4. Eddingsaas, NC, Loza, CL, Yee, LD, Chan, M, Schilling, KA, Chhabra, PS, Seinfeld, JH, Wennberg, PO, "α-pinene photooxidation under controlled chemical conditions – Part 2: SOA yield and composition in low- and high-NO_x environments", *Atmos. Chem. Phys.*, 12, 7413-7427, 2012.
5. Eddingsaas, NC, Loza, CL, Yee, LD, Seinfeld, JH, Wennberg, PO "α-pinene photooxidation under controlled chemical conditions – Part 1: Gas-phase composition in low- and high-NO_x environments", *Atmos. Chem. Phys.*, 12, 6489-6504, 2012.
6. Oshchepkov, S, Bril, A, Yokota, T, Morino, I, Yoshida, Y, Matsunaga, T, Belikov, D, Wunch, D, Wennberg, P, Toon, G, O'Dell, C, Butz, A, Guerlet, S, Cogan, A, Boesch, H, Eguchi, N, Deutscher, N, Griffith, D, Macatangay, R, Notholt, J, Sussmann, R, Rettinger, M, Sherlock, V, Robinson, J, Kyro, E, Heikkinen, P, Feist, DG, Nagahama, T, Kadygrov, N, Maksyutov, S, Uchino, O, Watanabe, H, "Effects of atmospheric light scattering on spectroscopic observations of greenhouse gases from space: Validation of PPDF-based CO₂ retrievals from GOSAT", *J. Geophys. Res.*, 117, D12305, 2012.
7. Crouse, JD, Knap, HC, Ornsø, KB, Jørgensen, S, Paulot, F, Kjaergaard, HG, Wennberg, PO, "Atmospheric Fate of Methacrolein. 1. Peroxy Radical Isomerization Following Addition of OH and O₂", *J. Phys. Chem.*, 116, 5756-5762, 2012.
8. Kjaergaard, HG, Knap, HC, Ornsø, KB, Jørgensen, S, Crouse, JD, Paulot, F, Wennberg, PO, "Atmospheric Fate of Methacrolein. 2. Formation of Lactone and Implications for Organic Aerosol Production", *J. Phys. Chem.*, 116, 5763-5768, 2012.
9. Risi, C, Noone, D, Worden, J, Frankenberg, C, Stiller, G, Kiefer, M, Funke, B, Walker, K, Bernath, P, Schneider, M, Wunch, D, Sherlock, V, Deutscher, N, Griffith, D, Wennberg, PO, Strong, K, Smale, D, Mahieu, E, Barthlott, S, Hase, F, Garcia, O, Notholt, J, Warneke, T, Toon, G, Sayres, D, Bony, S, Lee, J, Brown, D, Uemura, R, Sturm, C, "Process-evaluation of tropospheric humidity simulated by general circulation models using water vapor isotopologues: 1. Comparison between models and observations", *J. Geophys. Res.*, 117, D05303, 2012.
10. Beaver, MR, St Clair, JM, Paulot, F, Spencer, KM, Crouse, JD, LaFranchi, BW, Min, KE, Pusede, SE, Wooldridge, PJ, Schade, GW, Park, C, Cohen, RC, Wennberg, PO, "Importance of biogenic precursors to the budget of organic nitrates: observations of multifunctional organic nitrates by CIMS and TD-LIF during BEARPEX 2009", *Atmos. Chem. Phys.*, 12, 5773-5785, 2012.

11. Galli, A, Butz, A, Scheepmaker, RA, Hasekamp, O, Landgraf, J, Tol, P, Wunch, D, Deutscher, NM, Toon, GC, Wennberg, PO, Griffith, DWT, Aben, I, "CH₄, CO, and H₂O spectroscopy for the Sentinel-5 Precursor mission: an assessment with the Total Carbon Column Observing Network measurements", *Atm. Meas. Tech.*, 5, 1387-1398, 2012.
12. Crisp, D, Fisher, BM, O'Dell, C, Frankenberg, C, Basilio, R, Bosch, H, Brown, LR, Castano, R, Connor, B, Deutscher, NM, Eldering, A, Griffith, D, Gunson, M, Kuze, A, Mandrake, L, McDuffie, J, Messerschmidt, J, Miller, CE, Morino, I, Natraj, V, Notholt, J, O'Brien, DM, Oyafuso, F, Polonsky, I, Robinson, J, Salawitch, R, Sherlock, V, Smyth, M, Suto, H, Taylor, TE, Thompson, DR, Wennberg, PO, Wunch, D, Yung, YL, "The ACOS CO₂ retrieval algorithm - Part II: Global X-CO₂ data characterization", *Atm. Meas. Tech.*, 5, 687-707, 2012.
13. Wolfe, GM, Crouse, JD, Parrish, JD, St Clair, JM, Beaver, MR, Paulot, F, Yoon, TP, Wennberg, PO, Keutsch, FN, "Photolysis, OH reactivity and ozone reactivity of a proxy for isoprene-derived hydroperoxyenals (HPALDs)", *Phys. Chem. Chem. Phys.*, 14, 7276-7286, 2012.
14. Keppel-Aleks, G, Wennberg, PO, Washenfelder, RA, Wunch, D, Schneider, T, Toon, GC, Andres, RJ, Blavier, J-F, Connor, B, Davis, KJ, Desai, AR, Messerschmidt, J, Notholt, J, Roehl, CM, Sherlock, V, Stephens, BB, Vay, SA, Wofsy, SC, "The imprint of surface fluxes and transport on variations in total column carbon dioxide", *Biogeosciences*, 9, 875-891, 2012.
15. Apel, EC, Olson, JR, Crawford, JH, Hornbrook, RS, Hills, AJ, Cantrell, CA, Emmons, LK, Knapp, DJ, Hall, S, Mauldin, RL, Weinheimer, AJ, Fried, A, Blake, DR, Crouse, JD, St Clair, JM, Wennberg, PO, Diskin, GS, Fuelberg, HE, Wisthaler, A, Mikoviny, T, Brune, W, Riemer, DD, "Impact of the deep convection of isoprene and other reactive trace species on radicals and ozone in the upper troposphere", *Atmos. Chem. Phys.*, 12, 1307-1325, 2012.
16. Paulot, F, Henze, DK, Wennberg, PO, "Impact of the isoprene photochemical cascade on tropical ozone", *Atmos. Chem. Phys.*, 12, 1135-1150, 2012.
17. Schneising, O, Bergamaschi, P, Bovensmann, H, Buchwitz, M, Burrows, JP, Deutscher, NM, Griffith, DWT, Heymann, J, Macatangay, R, Messerschmidt, J, Notholt, J, Rettinger, M, Reuter, M, Sussmann, R, Velasco, VA, Warneke, T, Wennberg, PO, Wunch, D, "Atmospheric greenhouse gases retrieved from SCIAMACHY: comparison to ground-based FTS measurements and model results", *Atmos. Chem. Phys.*, 12, 1527-1540, 2012.
18. O'Dell, CW, Connor, B, Bosch, H, O'Brien, D, Frankenberg, C, Castano, R, Christi, M, Crisp, D, Eldering, A, Fisher, B, Gunson, M, McDuffie, J, Miller, CE, Natraj, V, Oyafuso, F, Polonsky, I, Smyth, M, Taylor, T, Toon, GC, Wennberg, PO, Wunch, D, "The ACOS CO₂ retrieval algorithm - Part 1: Description and validation against synthetic observations", *Atm. Meas. Tech.*, 5, 99-120, 2012.
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20. Chevallier, F, Deutscher, NM, Conway, TJ, Ciais, P, Ciattaglia, L, Dohe, S, Frohlich, M, Gomez-Pelaez, AJ, Griffith, D, Hase, F, Haszpra, L, Krummel, P, Kyro, E, Labuschagne, C, Langenfelds, R, Machida, T, Maignan, F, Matsueda, H, Morino, I, Notholt, J, Ramonet, M, Sawa, Y, Schmidt, M, Sherlock, V, Steele, P, Strong, K, Sussmann, R, Wennberg, P, Wofsy,

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 22. Barkley, MP, Palmer, PI, Ganzeveld, L, Arneth, A, Hagberg, D, Karl, T, Guenther, A, Paulot, F, Wennberg, PO, Mao, JQ, Kurosu, TP, Chance, K, Muller, JF, De Smedt, I, Van Roozendael, M, Chen, D, Wang, YX, Yantosca, RM, "Can a "state of the art" chemistry transport model simulate Amazonian tropospheric chemistry?", *J. Geophys. Res.*, 116, D16302, 2011.
 23. Parker, R, Boesch, H, Cogan, A, Fraser, A, Feng, L, Palmer, PI, Messerschmidt, J, Deutscher, N, Griffith, DWT, Notholt, J, Wennberg, PO, Wunch, D, "Methane observations from the Greenhouse Gases Observing SATellite: Comparison to ground-based TCCON data and model calculations", *Geophys. Res. Lett.*, 38, L15807, 2011.
 24. Butz, A, Guerlet, S, Hasekamp, O, Schepers, D, Galli, A, Aben, I, Frankenberg, C, Hartmann, JM, Tran, H, Kuze, A, Keppel-Aleks, G, Toon, G, Wunch, D, Wennberg, P, Deutscher, N, Griffith, D, Macatangay, R, Messerschmidt, J, Notholt, J, Warneke, T, "Toward accurate CO₂ and CH₄ observations from GOSAT", *Geophys. Res. Lett.*, 38 AR L14812, 2011.
 25. Crounse, JD, Paulot, F, Kjaergaard, HG, Wennberg, PO, "Peroxy radical isomerization in the oxidation of isoprene", *Phys. Chem. Chem. Phys.*, 13, 13607-13613, 2011.
 26. Morino, I, Uchino, O, Inoue, M, Yoshida, Y, Yokota, T, Wennberg, PO, Toon, GC, Wunch, D, Roehl, CM, Notholt, J, Warneke, T, Messerschmidt, J, Griffith, DWT, Deutscher, NM, Sherlock, V, Connor, B, Robinson, J, Sussmann, R, Rettinger, M, "Preliminary validation of column-averaged volume mixing ratios of carbon dioxide and methane retrieved from GOSAT short-wavelength infrared spectra", *Atm. Meas. Tech.*, 4, 1061-1076, 2011.
 27. Vay, SA, Choi, Y, Vadrevu, KP, Blake, DR, Tyler, SC, Wisthaler, A, Hecobian, A, Kondo, Y, Diskin, GS, Sachse, GW, Woo, J-H, Weinheimer, AJ, Burkhardt, JF, Stohl, A, Wennberg, PO, "Patterns of CO₂ and radiocarbon across high northern latitudes during International Polar Year 2008", *J. Geophys. Res.*, 116, D14301, 2011.
 28. Huang, M, Carmichael, GR, Spak, SN, Adhikary, B, Kulkarni, S, Cheng, Y, Wei, C, Tang, Y, D'Allura, A, Wennberg, PO, Huey, GL, Dibb, JE, Jimenez, JL, Cubison, MJ, Weinheimer, AJ, Kaduwela, A, Cai, C, Wong, M, Pierce, RB, Al-Saadi, JA, Streets, DG, Zhang, Q, "Multi-scale modeling study of the source contributions to near-surface ozone and sulfur oxides levels over California during the ARCTAS-CARB period", *Atmos. Chem. Phys.*, 11, 3173-3194, 2011.
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 30. Keppel-Aleks, G, Wennberg, PO, Schneider, T, "Sources of variations in total column carbon dioxide" *Atmos. Chem. Phys.*, 11, 3581-3593, 2011.
 31. Wunch, D, Toon, GC, Blavier, JFL, Washenfelder, RA, Notholt, J, Connor, BJ, Griffith, DWT, Sherlock, V, Wennberg, PO, "The Total Carbon Column Observing Network", *Phil. Trans. Royal Soc. A*, 369, 2087-2112, 2011.
 32. Paulot, F, Wunch, D, Crounse, JD, Toon, GC, Millet, DB, DeCarlo, PF, Vigouroux, C,

- Deutscher, NM, Abad, GG, Notholt, J, Warneke, T, Hannigan, JW, Warneke, C, de Gouw, JA, Dunlea, EJ, De Maziere, M, Griffith, DWT, Bernath, P, Jimenez, JL, Wennberg, PO, “Importance of secondary sources in the atmospheric budgets of formic and acetic acids”, *Atmos. Chem. Phys.*, 11, 1989-2013, 2011.
33. Reuter, M, Bovensmann, H, Buchwitz, M, Burrows, JP, Connor, BJ, Deutscher, NM, Griffith, DWT, Heymann, J, Keppel-Aleks, G, Messerschmidt, J, Notholt, J, Petri, C, Robinson, J, Schneising, O, Sherlock, V, Velazco, V, Warneke, T, Wennberg, PO, Wunch, D, “Retrieval of atmospheric CO₂ with enhanced accuracy and precision from SCIAMACHY: Validation with FTS measurements and comparison with model results”, *J. Geophys. Res.*, 116, 10.1029/2010JD015047, 2011.
 34. Froyd, KD, Murphy, SM, Murphy, DM, de Gouw, JA, Eddingsaas, NC, Wennberg, PO, “Contribution of isoprene-derived organosulfates to free tropospheric aerosol mass”, *Proc. Nat. Acad.*, 107, 21360-21365, 2011.
 35. Eddingsaas, NC, VanderVelde, DG, Wennberg, PO, “Kinetics and Products of the Acid-Catalyzed Ring-Opening of Atmospherically Relevant Butyl Epoxy Alcohols”, *J. Phys. Chem., A*, 10.1021/jp103907c, 2010.
 36. Alvarado, MJ, Logan, JA, Mao, J, Apel, E, Riemer, D, Blake, D, Cohen, RC, Min, KE, Perring, AE, Browne, EC, Wooldridge, PJ, Diskin, GS, Sachse, GW, Fuelberg, H, Sessions, WR, Harrigan, DL, Huey, G, Liao, J, Case-Hanks, A, Jimenez, JL, Cubison, MJ, Vay, SA, Weinheimer, AJ, Knapp, DJ, Montzka, DD, Flocke, FM, Pollack, IB, Wennberg, PO, Kurten, A, Crouse, J, St Clair, JM, Wisthaler, A, Mikoviny, T, Yantosca, RM, Carouge, CC, Le Sager, P, “Nitrogen oxides and PAN in plumes from boreal fires during ARCTAS-B and their impact on ozone: an integrated analysis of aircraft and satellite observations”, *Atmos. Chem. Phys.*, 11, 9739-9760, 2010.
 37. Avery, M, Twohy, C, McCabe, D, Joiner, J, Severance, K, Atlas, E, Blake, D, Bui, TP, Crouse, J, Dibb, J, Diskin, G, Lawson, P, McGill, M, Rogers, D, Sachse, G, Scheuer, E, Thompson, AM, Trepte, C, Wennberg, P, Ziemke, J, “Convective distribution of tropospheric ozone and tracers in the Central American ITCZ region: Evidence from observations during TC4”, *J. Geophys. Res.-Atmos.*, 115, D00J21, 10.1029/2009JD013450, 2010.
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- Weinheimer, AJ, Campos, T, Wennberg, PO, Jimenez, JL, "Investigation of the sources and processing of organic aerosol over the Central Mexican Plateau from aircraft measurements during MILAGRO", *Atmos. Chem. Phys.*, 10, 5257-5280 2010.
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