

Curriculum Vitae. Anthony P. Walker

Education and Training:

University of Sheffield, Sheffield, UK, Ph.D., Computational Ecosystem Science, 2012
Imperial College, London, UK, M.Sc. (distinction), Sustainable Agriculture & Rural Development, 2004
University of Sheffield, Sheffield, UK, B.Sc., Plant Science, 1999

Research and Professional Experience:

2014 – present Associate Staff Scientist, Oak Ridge National Laboratory, Oak Ridge, TN, USA.
2012 – 2014 Post-Doctoral Research Associate, Oak Ridge National Laboratory, Oak Ridge, TN, USA.
2011 Policy Fellowship, UK Parliament, London, UK.
2008 – 2012 Director & Treasurer, Friends of Lynwood Gardens, Sheffield, UK.
2007 Data Analyst, UN Millennium Villages Project, Columbia University, Sauri, Kenya.
2005 – 2006 Environmental Project Manager, Green Estates Ltd, Sheffield, UK.
2004 Post-Masters Research Associate, Universität Hohenheim, Stuttgart, Germany.

Funding Awards:

FACE Model Data Synthesis project, \$700k over 2 years, awarded 2014, Co-PI (renewal in prep)
NGEE-Tropics, \$26M over 3 years, awarded 2015, contributed to proposal
ORNL TES-SFA renewal, \$30M over 3 years, awarded 2015, contributed to proposal
Economic and environment model fusion, \$10k, awarded 2016, CCSI Project Development

Selected Publications (chronological):

Walker, A. P., et al., (in review) The impact of alternative trait-based V_{max} spatial-scaling hypotheses on global gross primary production. *New Phytologist*

Ye, Ming., ..., **Walker, A. P.**, et al., (in review) A New Process Sensitivity Index to Identify Important System Processes under Process Model and Parametric Uncertainty. *Water Resources Research*

De Kauwe, M.G., Medlyn, B.E., **Walker, A.P.**, Zaehle, S., Asao, S., Guenet, B., Harper, A.B., Hickler, T., Jain, A., Luo, Y., Lu, X., Luus, K., Parton, W.J., Shu, S., Wang, Y.-P., Werner, C., Xia, J., Pendall, E., Morgan, J.A., Ryan, E.M., Carrillo, Y., Dijkstra, F.A., Zelikova, T.J., Norby, R.J., 2017. Challenging terrestrial biosphere models with data from the long-term multi-factor Prairie Heating and CO₂ Enrichment experiment. *Global Change Biology* n/a-n/a.

Norby, R.J., Kauwe, M.G.D., **Walker, A.P.**, Werner, C., Zaehle, S., Zak, D.R., 2017. Comment on “Mycorrhizal association as a primary control of the CO₂ fertilization effect.” *Science* 355, 358–358

Ryan, E.M., Ogle, K., Peltier, D., **Walker, A.P.**, De Kauwe, M.G., Medlyn, B.E., Williams, D.G., Parton, W., Asao, S., Guenet, B., Harper, A., Lu, X., Luus, K.A., Zaehle, S., Shu, S., Werner, C., Xia, J., Pendall, E., 2016. Gross primary production responses to warming, elevated CO₂, and irrigation: quantifying the drivers of ecosystem physiology in a semiarid grassland. *Glob Change Biology* n/a-n/a.

Le Quéré, C., Andrew, R.M., Canadell, J.G., Sitch, S., Korsbakken, J.I., Peters, G.P., Manning, A.C., Boden, T.A., Tans, P.P., Houghton, R.A., Keeling, R.F., Alin, S., Andrews, O.D., Anthoni, P., Barbero, L., Bopp, L., Chevallier, F., Chini, L.P., Ciais, P., Currie, K., Delire, C., Doney, S.C., Friedlingstein, P., Gkritzalis, T., Harris, I., Hauck, J., Haverd, V., Hoppema, M., Klein Goldewijk, K., Jain, A.K., Kato, E., Körtzinger, A., Landschützer, P., Lefèvre, N., Lenton, A., Lienert, S., Lombardozi, D., Melton, J.R., Metzl, N., Millero, F., Monteiro, P.M.S., Munro, D.R., Nabel, J.E.M.S., Nakaoka, S., O'Brien, K., Olsen, A., Omar, A.M., Ono, T., Pierrot, D., Poulter, B., Rödenbeck, C., Salisbury, J., Schuster, U., Schwinger, J., Séférian, R., Skjelvan, I., Stocker, B.D., Sutton, A.J., Takahashi, T., Tian, H., Tilbrook, B., van der Laan-Luijkx, I.T., van der Werf, G.R., Viovy, N., **Walker, A.P.**, Wiltshire, A.J., Zaehle, S., 2016. Global Carbon Budget 2016. *Earth System Science Data* 8, 605-649

Norby, R.J., De Kauwe, M.G., Domingues, T.F., Duursma, R.A., Ellsworth, D.S., Goll, D.S., Lapola, D.M., Luus, K.A., MacKenzie, A.R., Medlyn, B.E., Pavlick, R., Rammig, A., Smith, B., Thomas, R., Thonicke, K., **Walker, A.P.**, Yang, X., Zaehle, S., 2016. Model–data synthesis for the next generation of forest free-air CO₂ enrichment (FACE) experiments. *New Phytologist* 209, 17–28.

Medlyn, B.E., Zaehle, S., De Kauwe, M.G., **Walker, A.P.**, Dietze, M.C., Hanson, P.J., Hickler, T., Jain, A.K.,

- Luo, Y., Parton, W., Prentice, I.C., Thornton, P.E., Wang, S., Wang, Y.-P., Weng, E., Iversen, C.M., McCarthy, H.R., Warren, J.M., Oren, R., Norby, R.J., 2015. Using ecosystem experiments to improve vegetation models. *Nature Climate Change* 5, 528–534.
- Walker, A.P.**, Zaehle, S., Medlyn, B.E., De Kauwe, M.G., Asao, S., Hickler, T., Parton, W., Ricciuto, D.M., Wang, Y.-P., Wårlind, D., Norby, R.J., 2015. Predicting long-term carbon sequestration in response to CO₂ enrichment: How and why do current ecosystem models differ? *Global Biogeochem. Cycles* 2014GB004995.
- Walker, A.P.**, Beckerman, A.P., Gu, L., Kattge, J., Cernusak, L.A., Domingues, T.F., Scales, J.C., Wohlfahrt, G., Wullschlegel, S.D., Woodward, F.I., 2014. The relationship of leaf photosynthetic traits – V_{cmax} and J_{max} – to leaf nitrogen, leaf phosphorus, and specific leaf area: a meta-analysis and modeling study. *Ecology & Evolution* 4, 3218–3235.
- Walker, A.P.**, Hanson, P.J., De Kauwe, M.G., Medlyn, B.E., Zaehle, S., Asao, S., Dietze, M., Hickler, T., Huntingford, C., Iversen, C.M., Jain, A., Lomas, M., Luo, Y., Mccarthy, H., Parton, W.J., Prentice, I.C., Thornton, P.E., Wang, S., Wang, Y.-P., Wårlind, D., Weng, E., Warren, J.M., Woodward, F.I., Oren, R., Norby, R.J., 2014. Comprehensive ecosystem model-data synthesis using multiple data sets at two temperate forest free-air CO₂ enrichment experiments: Model performance at ambient CO₂ concentration. *J. Geophys. Res. Biogeosci.* 119, 937–964.
- De Kauwe, M.G., Medlyn, B.E., Zaehle, S., **Walker, A.P.**, Dietze, M.C., Wang, Y.-P., Luo, Y., Jain, A.K., El-Masri, B., Hickler, T., Wårlind, D., Weng, E., Parton, W.J., Thornton, P.E., Wang, S., Prentice, I.C., Asao, S., Smith, B., McCarthy, H.R., Iversen, C.M., Hanson, P.J., Warren, J.M., Oren, R., Norby, R.J., 2014. Where does the carbon go? A model–data intercomparison of vegetation carbon allocation and turnover processes at two temperate forest free-air CO₂ enrichment sites. *New Phytologist* 203, 883–899.
- Zaehle, S., Medlyn, B.E., De Kauwe, M.G., **Walker, A.P.**, Dietze, M.C., Hickler, T., Luo, Y., Wang, Y.-P., El-Masri, B., Thornton, P., Jain, A., Wang, S., Wårlind, D., Weng, E., Parton, W., Iversen, C.M., Gallet-Budynek, A., Mccarthy, H., Finzi, A., Hanson, P.J., Prentice, I.C., Oren, R., Norby, R.J., 2014. Evaluation of 11 terrestrial carbon–nitrogen cycle models against observations from two temperate Free-Air CO₂ Enrichment studies. *New Phytologist* 202, 803–822.
- De Kauwe, M.G., Medlyn, B.E., Zaehle, S., **Walker, A.P.**, Dietze, M.C., Hickler, T., Jain, A.K., Luo, Y., Parton, W.J., Prentice, I.C., Smith, B., Thornton, P.E., Wang, S., Wang, Y.-P., Wårlind, D., Weng, E., Crous, K.Y., Ellsworth, D.S., Hanson, P.J., Seok Kim, H.-, Warren, J.M., Oren, R., Norby, R.J., 2013. Forest water use and water use efficiency at elevated CO₂: a model-data intercomparison at two contrasting temperate forest FACE sites. *Glob. Change Biol.* 19, 1759–1779.
- Weston, D.J., Timm, C.M., **Walker, A.P.**, Gu, L., Muchero, W., Schmutz, J., Shaw, A.J., Tuskan, G.A., Warren, J.M., Wullschlegel, S.D., 2014. Sphagnum physiology in the context of changing climate: Emergent influences of genomics, modeling and host-microbiome interactions on understanding ecosystem function. *Plant Cell Environment* 38, 1737-1751.
- Huntingford, C., Zelazowski, P., Galbraith, D., Mercado, L.M., Sitch, S., Fisher, R., Lomas, M., **Walker, A.P.**, Jones, C.D., Booth, B.B.B., Malhi, Y., Hemming, D., Kay, G., Good, P., Lewis, S.L., Phillips, O.L., Atkin, O.K., Lloyd, J., Gloor, E., Zaragoza-Castells, J., Meir, P., Betts, R., Harris, P.P., Nobre, C., Marengo, J., Cox, P.M., 2013. Simulated resilience of tropical rainforests to CO₂-induced climate change. *Nature Geoscience* 6, 268–273.

Datasets (chronological):

- Norby, R.J., Oren, R., Boden, T.A., De Kauwe, M.G., Kim, D., Medlyn, B.E., Riggs, J.S., Tharp, M.L., **Walker, A.P.**, Yang, B., Zaehle, S., 2015. Phase 1 Free Air CO₂ Enrichment Model-Data Synthesis (FACE-MDS): Meteorological Data.
- Walker, A.P.**, De Kauwe, M.G., Medlyn, B.E., Zaehle, S., Asao, S., Dietze, M., El-Masri, B., Hanson, P.J., Hickler, T., Jain, A., Luo, Y., Parton, W.J., Prentice, I.C., Ricciuto, D.M., Thornton, P.E., Wang, S., Wang, Y.-P., Warlind, D., Weng, E., Oren, R., Norby, R.J., 2015. Phase 1 Free Air CO₂ Enrichment Model-Data Synthesis (FACE-MDS): Model Output Data.
- Walker, A.P.**, I. Aranda, A.P. Beckerman, H. Bown, L.A. Cernusak, Q.L. Dang, T.F. Domingues, L. Gu, S. Guo, Q. Han, J. Kattge, M. Kubiske, D. Manter, E. Merilo, G. Midgley, A. Porte, J.C. Scales, D. Tissue, T. Turnbull, C. Warren, G. Wohlfahrt, F.I. Woodward, and S.D. Wullschlegel. 2014. A Global Data Set of

Leaf Photosynthetic Rates, Leaf N and P, and Specific Leaf Area. Data set. Available on-line [<http://daac.ornl.gov>] from Oak Ridge National Laboratory Distributed Active Archive Center, Oak Ridge, Tennessee, USA. [doi:10.3334/ORNLDAAC/1224](https://doi.org/10.3334/ORNLDAAC/1224)

Synergistic Activities:

Invited talks & workshops:

AmazonFACE Model-Experiment Integration meeting, Manaus, Brazil, October 2016.

Phosphorus Modelling meeting, Townsend, TN, June 2016.

Multi-Scale Economics Methodologies and Scenarios Workshop, College Park, DC, April 2016.

Running before we can walk. Ignite talk. ESA annual meeting, Baltimore, MD, August, 2015.

Model-data synthesis of ecosystem responses to elevated CO₂: From deserts to temperate forests of the US. Joint TES & SBR PI meeting, Washington, May, 2014.

Model-experiment synthesis at two FACE sites in the southeastern US: Forest ecosystem responses to elevated CO₂. AGU Fall Meeting, San Francisco, CA, December, 2013, B13M-01.

A model-data synthesis of ecosystem responses to elevated CO₂ at two FACE sites in the south eastern US.

NACP All Investigators Meeting, Albuquerque, NM, February, 2013.

Reviewer for:

DOE funding proposals, Nature Climate Change, New Phytologist, Geophysical Research Letters, Global Change Biology, Geoscientific Model Development, JGR-Biogeosciences, Biogeosciences, Ecological Modelling, Ecology

Membership:

User Working Group for NASA's ORNL DAAC, American Geophysical Union, Ecological Society of America

Collaborators and Co-authors:

Martin De Kauwe (Macquarie University, Australia), Lianhong Gu (ORNL), Colleen Iversen (ORNL), Paul Hanson (ORNL), Mark Lomas (University of Sheffield, UK), Dan Lu (ORNL), Belinda Medlyn (University of Western Sydney, Australia), Richard Norby (ORNL), Daniel Ricciuto (ORNL), Alistair Rogers (BNL), Edmund Ryan (University of Lancaster), Shawn Serbin (BNL), Peter van Bodegom (Vrije Universiteit, Netherlands), Jeff Warren (ORNL), David Weston (ORNL), Ming Ye (Florida State) Sönke Zaehle (Max Planck Institute for Biogeochemistry, Germany).

Graduate and Postdoctoral Advisors and Advisees:

Georg Cadisch (Universität Hohenheim, Germany, MSc Advisor)

Chris Huntingford (CEH, UK, PhD Co-Advisor)

Richard Norby (ORNL, USA, Post-Doctoral Advisor)

Ian Woodward (University of Sheffield, UK, PhD Advisor)