

# CURRICULUM VITAE



## Dr Matthias Cuntz

Department Computational Hydrosystems  
Helmholtz Centre for Environmental Research – UFZ  
Permoserstr. 15  
04318 Leipzig, Germany

Date of birth 16 February 1971  
Nationality German

## Professional Experience

- From 05/2009 Group leader: Biosphere-Atmosphere Exchange – Department Computational Hydrosystems – **Helmholtz Centre for Environmental Research – UFZ**, Leipzig, Germany; Department head: Prof S Attinger
- 2008 Visiting Scientist – **Max Planck Institute for Meteorology**, Hamburg, Germany; Collaborators: Dr C Reick and Dr V Brovkin
- 2007-2009 Scientist – **Max Planck Institute for Biogeochemistry**, Jena, Germany; Advisor: Prof M Heimann
- 2005-2006 Visiting Fellow – **Research School of Biological Sciences**, The Australian National University, Canberra, Australia; Advisor: Prof GD Farquhar
- 2005 Visiting Scientist – **Lawrence Berkeley National Laboratory**, Berkeley, California; Collaborator: Dr WJ Riley
- 2003-2004 Postdoctoral Fellow – **Research School of Biological Sciences**, The Australian National University, Canberra, Australia; Advisor: Prof GD Farquhar
- 2003 Postdoctoral Research Scientist – **Laboratoire des Sciences du Climat et de l'Environnement**, Gif-sur-Yvette, France; Advisor: Dr P Ciais
- 1998-2002 Dissertation – **Laboratoire des Sciences du Climat et de l'Environnement**, Gif-sur-Yvette, France; Advisors: Dr P Ciais and Dr I Levin
- 1998 Research Assistant – **Institute for Environmental Physics**, Heidelberg University, Germany; Advisor: Dr I Levin
- 1997-1998 Diploma Thesis – **Institute for Environmental Physics**, Heidelberg University, Germany; Advisor: Dr I Levin
- 1996-1998 Research Assistant – **Radiocarbon Facility**, Heidelberg Academy of Sciences and Humanities, Heidelberg, Germany; Advisor: Dr B Kromer
- 1995-1996 Management Assistant Internship – Management Systems Department, **Procter & Gamble**, Eastern Europe Division, Frankfurt, Germany; Advisor: W Safarzynski
- 1994-1997 Scientific Consultant – **Institute for Energy and Environmental Research Heidelberg GmbH**, Germany; Advisor: H Hertle

## Education

- 1998-2002 Dissertation, 20.11.2002, **Heidelberg University**, Germany. Conducted at **Laboratoire des Sciences du Climat et de l'Environnement**, Gif-sur-Yvette, France
- 1996-1997 Diploma, **Institute for Environmental Physics**, Heidelberg University, Germany
- 1993-1994 Graduate research student in Physics, **Heriot-Watt University Edinburgh**, Scotland
- 1990-1998 Diploma in Physics, 19.01.1998, **Heidelberg University**, Germany
- 1977-1990 Abitur, 31.05.1990, **Gymnasium Bad Bergzabern**, Germany

## Research Project Participations

Since 2010	Disentangling seasonal vegetation effects on ecosystem evapotranspiration and water use efficiency of a Mediterranean savannah-type oak forest, <b>German Research Foundation (DFG) project</b>
Since 2010	Water & Earth System Science research institute (WESS): the impact of changing environmental conditions on the water cycle and on the fate of pollutants and nutrients in water, soil and aquifers at the catchment scale, <b>Joint project of Universities Tübingen, Hohenheim and Stuttgart and Helmholtz Centre for Environmental Research – UFZ, Leipzig, Germany</b>
Since 2009	Terrestrial Environmental Observatories (TERENO), <b>Helmholtz Association Integrated Project</b>
Since 2009	Regional Climate Change: From observations and modelling to decision support for mitigation and adaptation (REKLIM), <b>Helmholtz Association Climate-Initiative</b>
Since 2008	Earth System Network of Integrated Modelling and Assessment (ENIGMA), <b>Max Planck Society Integrated Project</b>
Since 2008	Stable isotopes in precipitation, model & data (GNIP-Dynscape), <b>International Atomic Energy Agency (IAEA) Project</b>
2005-2008	Constraining carbon gross fluxes with oxygen isotopes (COCO), <b>EU Marie Curie Outgoing International Fellowship</b>
2005-2007	Oxygen-18 in water, carbon dioxide, and organic matter: a tool for linking plant biological processes, hydrology and climate change, <b>Australian Research Council (ARC) Discovery Grant</b>
2005-2006	Isotopes in Project for Intercomparison of Land-surface Parameterization Schemes (iPILPS), <b>International Geosphere-Biosphere Program (IGBP) Project</b>
2004-2006	Moisture Isotopes in the Biosphere and Atmosphere (MIBA), <b>IAEA Project</b>
2002-2007	Stable Isotopes in Biosphere-Atmosphere Exchange (SIBAE), <b>European Science Foundation (ESF) Project</b>
2000-2003	Airborne European Regional Observations of the Carbon Balance (AEROCARB), <b>EU Project</b>
Since 2000	Biosphere-Atmosphere Stable Isotope Network (BASIN), <b>US National Science Foundation (NSF) Project</b>
1998-2000	Eurosiberian Carbonflux, <b>EU Project</b>
1997-1999	Zeitliche Entwicklung des anthropogenen CO <sub>2</sub> - und CH <sub>4</sub> -Anteils in Deutschland und dessen Bedeutung für den globalen atmosphärischen Kohlenstoffkreislauf, <b>Umweltbundesamt (UBA) Forschungsvorhaben 295 43 173</b>

## Scientific Services

Reviewer	Annals of Botany; Biogeosciences; Climate Dynamics; Earth & Planetary Science Letters; Functional Plant Biology; Geophysical Research Letters; Global Change Biology; Journal of Geophysical Research – Atmosphere; Journal of Geophysical Research – Biogeosciences; Journal of Hydrology; Nature; New Phytologist; Oecologia; Plant, Cell & Environment; Plant Physiology; Tellus Natural Environment Research Council, UK (NERC)
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## Other Skills

Languages	German – mother tongue, English and French – fluent Fortran, IDL, Bash, Python and C – fluent
Sports	Fencing (international competitions), Squash, Ultimate
Music	Trumpet

## Publications

- Haverd V, Lovell JL, **Cuntz M**, Jupp DLB, Newnham GJ, Sea W, The Canopy Semi-analytic Pgap And Radiative Transfer (CanSPART) model: Formulation and application, *Agricultural and Forest Meteorology* 160, 14-35, 2012
- Ciais P, Tagliabue A, **Cuntz M**, Bopp L, Scholze M, Hoffmann G, Lourantou A, Harrison SP, Prentice IC, Kelley DI, Koven C & Piao SL, Large inert carbon pool in the terrestrial biosphere during the Last Glacial Maximum, *Nature Geoscience* 5, 74-79, 2012
- Cuntz M**, A dent in the carbon's gold standard, *Nature* 477, 547-548, 2011
- Werner C, Schnyder H, **Cuntz M**, Badeck F, Brugnoli E, Cohn B, Dawson T, Ghashghaie J, Grams TEE, Kayler Z, Keitel C, Lakatos M, Lee X, Máguas C, Ogée J, Rascher KG, Siegwolf R, Unger S, Welker J, Wingate L, Zeeman MJ & Gessler A, Linking carbon and water cycles using stable isotopes across scales: progress and challenges, *Biogeosciences Discussions* 8, 2659-2719, 2011
- Haverd V, **Cuntz M**, Griffith DW, Keitel C, Tadros C & Twining J, Measured deuterium in water vapour concentration does not improve the constraint on the partitioning of evapotranspiration in a tall forest canopy, as estimated using a soil vegetation atmosphere transfer model, *Agricultural and Forest Meteorology* 151, 645-654, 2011
- Haverd VE & **Cuntz M**, Soil-Litter-Iso: A one-dimensional model for coupled transport of heat, water and stable isotopes in soil with a litter layer and root extraction, *Journal of Hydrology* 388(3-4), 438-455, 2010
- Wingate L\*, Ogée J\*, **Cuntz M\***, Genty B, Reiter I, Seibt U, Yakir D, Peylin P, Miller JB, Burrell R, Maseyk K, Mencuccini M, Pendall EG, Shim JH, Barbour MM, Hunt J, Mortazavi B & Grace J, The impact of soil micro-organisms on the global budget of  $\delta^{18}\text{O}$  in atmospheric  $\text{CO}_2$ , *Proceedings of the National Academy of Sciences* 106(52), 22411-22415, 2009
- Hartard B, **Cuntz M**, Máguas C & Lakatos M, Water isotopes in desiccating lichens, *Planta* 231, 179-193, 2009
- Ferrio JP, **Cuntz M**, Offermann C, Siegwolf R, Saurer M & Gessler A, Effect of water availability on leaf water isotopic enrichment in beech seedlings shows limitations of current fractionation models, *Plant, Cell & Environment* 32, 1285-1296, 2009
- Haverd VE, Leuning R, Griffith D, van Gorsel E & **Cuntz M**, The turbulent Lagrangian time scale in forest canopies constrained by fluxes, concentrations and source distributions, *Boundary-Layer Meteorology* 130, 209-228, 2009
- McDowell NG, Baldocchi DD, Barbour MM, Bickford C, **Cuntz M**, Hanson D, Knohl A, Powers H, Rahn T, Randerson JT, Riley WJ, Still CJ, Tu K & Walkroft A, Measuring and modeling the stable isotope composition of biosphere-atmosphere  $\text{CO}_2$  exchange: where are we and where are we going? *Eos, Transactions, American Geophysical Union* 89(10), 2008
- Haverd VE, **Cuntz M**, Leuning R & Keith H, Air and biomass heat storage fluxes in a forest canopy: calculation within a Soil Vegetation Atmosphere Transfer model, *Agricultural and Forest Meteorology* 147(3-4), 125-139, 2007
- Paltridge GW, Farquhar GD & **Cuntz M**, Maximum entropy production, cloud feedback and global warming, *Geophysical Research Letters* 34, L14708, 2007
- Cuntz M**, Ogée J, Farquhar GD, Peylin P & Cernusak LA, Modelling advection and diffusion of water isotopologues in leaves, *Plant, Cell & Environment* 30, 829-909, 2007
- Ogée J, **Cuntz M**, Peylin P & Bariac T, Non-steady-state, non-uniform transpiration rate and leaf anatomy effects on the progressive stable isotope enrichment of leaf water along monocot leaves, *Plant, Cell & Environment* 30, 367-387, 2007

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\* These authors contributed equally to the work

- Hoffmann G, **Cuntz M**, Jouzel J & Werner M, A systematic comparison between the IAEA/GNIP isotope network and Atmospheric General Circulation Models: How much climate information is in the water isotopes?, in Aggarwal PK, Gat JR and Froehlich KFO (eds.), *Isotopes in the Water Cycle - Past, Present and Future of a Developing Science*, Springer Verlag, Dordrecht, The Netherlands, 2006
- Ciais P, **Cuntz M**, Scholze M, Mouillot F, Peylin P & Gitz V, Remarks on the use of  $^{13}\text{C}$  and  $^{18}\text{O}$  isotopes in atmospheric  $\text{CO}_2$  to quantify biospheric carbon fluxes, in Flanagan LB, Ehleringer JR and Pataki DE (eds.) *Stable Isotopes and Biosphere-Atmosphere Interactions*, Academic Press, San Diego, 235-267, 2005
- Ogée J, Peylin P, **Cuntz M**, Bariac T, Brunet Y, Berbigier P, Richard P & Ciais P, Partitioning net ecosystem carbon exchange into net assimilation and respiration with canopy-scale isotopic measurements: an error propagation analysis with  $^{13}\text{CO}_2$  and  $\text{CO}^{18}\text{O}$  data, *Global Biogeochemical Cycles* 18, GB2019, 2004
- Hoffmann G, **Cuntz M**, Weber C, Ciais P, Friedlingstein P, Heimann M, Jouzel J, Kaduk J, Maier-Reimer E, Seibt U & Six K, A model of the Earth's Dole Effect, *Global Biogeochemical Cycles* 18, GB1008, 2004
- Cuntz M**, Ciais P, Hoffmann G & Knorr W, A comprehensive global three-dimensional model of  $\delta^{18}\text{O}$  in atmospheric  $\text{CO}_2$ , 1. Validation of surface processes, *Journal of Geophysical Research* 108(D17), 4527, 2003
- Cuntz M**, Ciais P, Hoffmann G, Allison CE, Francey RJ, Knorr W, Tans PP, White JWC & Levin I, A comprehensive global three-dimensional model of  $\delta^{18}\text{O}$  in atmospheric  $\text{CO}_2$ , 2. Mapping the atmospheric signal, *Journal of Geophysical Research* 108(D17), 4528, 2003
- Cuntz M**, A comprehensive global three-dimensional model of  $\delta^{18}\text{O}$  in atmospheric  $\text{CO}_2$ , *Dissertation*, University of Heidelberg, Germany, 2002
- Cuntz M**, Ciais P & Hoffmann G, Modelling the continental effect of oxygen isotopes over Eurasia, *Tellus* 54B(5), 895-909, 2002
- Langendörfer U, **Cuntz M**, Ciais P, Peylin P, Bariac T, Milukova I, Kolle O & Levin I, Modelling of biospheric  $\text{CO}_2$  gross fluxes via oxygen isotopes in a spruce forest canopy: a  $^{222}\text{Rn}$  calibrated box model approach, *Tellus* 54B(5), 476-496, 2002
- Levin I, Born M, **Cuntz M**, Langendörfer U, Mantsch S, Naegler T, Schmidt M, Varlagin A, Verclas S & Wagenbach D, Observations of atmospheric variability and soil exhalation rate of Radon-222 at a Russian forest site: Technical approach and deployment for boundary layer studies, *Tellus* 54B(5), 462-475, 2002
- Levin I, Glatzel-Mattheier H, Marik T, **Cuntz M**, Schmidt M & Worthy D, Verification of German methane emission inventories and their recent changes based on atmospheric observations, *Journal of Geophysical Research* 104(D3), 3447-3456, 1999

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