Curriculum Vitae

Graham Douglas FARQUHAR

AO, FAA, FRS, NAS

Address: 702 Burra Road Burra NSW 2620 | **Date of Birth**: 8 December 1947

Research School of Biology | College of Science | Australian National University

Present Position

Distinguished Professor at The Australian National University (ANU) since 2003

Academic Qualifications

1968	BSc Australian National University
1969	BSc University of Queensland Honours in Biophysics
1973	PhD Australian National University
	- Supervisors: IR Cowan and RO Slatyer
2006	Doctor Honoris Causa, Universiteit Antwerpen
2013	Doctor Honoris Causa, University of Wageningen

Academic Awards and Distinctions

1968	Biophysics Scholarship
1970 -73	Commonwealth Post-graduate Scholarship
1980	P.L. Goldacre Award from the Australian Society of Plant Physiologists
1981	Senior Scientist Award under the Japan/Australia Science and Technology Agreement for collaborative research at RIKEN
1982	Australian American Educational Foundation (FULBRIGHT) Senior Scientist Fellowship for research at Carnegie Institution of Washington, Stanford
1983	Gottschalk Medal from the Australian Academy of Science
1984	British Council Academic Links and Interchange Scheme Award
1986	Australia - Royal Society Exchange Award
1987	Bourse de haut niveau du Ministère de la Recherche et de l'Enseignement Superieur de France
1988	Elected to Fellowship of the Australian Academy of Science
1991	Elected to Corresponding Membership of the American Society of Plant Physiologists
1991	CSIRO Medal for research achievement
1995	Elected to Fellowship of Royal Society (of London)
2001	Leading Australian Citation Laureate
2001	CSIRO Medal for team research

2004	Top100 Award
2005	JG Wood Lecturer (Australian Society of Plant Scientists)
2005	Gary Comer Climate Change Mentor Award
2006	Honorary Doctorate, Universiteit Antwerpen
2009	Land & Water Senior Research Fellowship
2011	Alexander von Humboldt Research Award
2013	Einstein Professor of Chinese Academy of Sciences
2013	Honorary Doctorate, University of Wageningen
2013	Elected Foreign Associate of the U.S. National Academy of Sciences
2013	Honorary Professorship, Centre for Agricultural Resources Research Shijiazhuang, Chinese Academy of Sciences
2015	Carnegie Centenary Professorship (Universities of Scotland)
2015	Elected to Life Membership of the Australian Society of Plant Scientists
2016	Macfarlane Burnet Medal and Lecture

Other Awards and Distinctions

2003	Centenary Medal: Citation 'For service to Australian society and science in plant physiology'.
2006	Royal Society of Tasmania R.M. Johnston Memorial Medal. Awarded to "a scholar of great distinction in any field within the Society's purview."
2007	Shared Nobel Prize: Inter-governmental Panel on Climate Change
2011	Peter Baume Award: The Australian National University's highest award
2013	Order of Australia Officer (AO) in the General Division
2014	Rank Prize (U.K.) (Nutrition, animal & crop husbandry - shared with RA Richards)
2015	Prime Minister's Prize for Science
2017	Kyoto Prize for Basic Sciences
2018	A.C.T. Senior Australian of the Year
2018	Senior Australian of the Year
2025	Royal Medal of Royal Society, shared with Susanne von Caemmerer

Membership of Learned Societies

- Australian Society of Plant Scientists
- Australian Academy of Science
- American Society of Plant Biologists
- Royal Society of London
- American Geophysical Union
- European Geosciences Union

- U.S. National Academy of Sciences

Fields of Interest

- Integration of photosynthesis and growth with nitrogen and water use of plants
- Stomatal physiology
- Isotopic composition of plants
- Global change science

Other Posts

1973 - 75	Research Associate, DOE Plant Research Laboratory, MSU
1975 - 76	Research Specialist, DOE Plant Research Laboratory, MSU
1976 - 80	Research Fellow, ANU
1980	Senior Research Fellow, ANU
1980 - 83	Fellow, ANU
1983 - 88	Senior Fellow, ANU
1988 - 2003	Professor, ANU
1988 - 89	Group Leader of Plant Environmental Biology, RSBS, ANU
1988 - 2001	Deputy CEO and Program Leader, CRC for Greenhouse Accounting
1994 - 2009	Group Leader of Environmental Biology Group, RSBS, ANU
2005 - 2008	Associate Director, Research School of Biological Sciences (RSBS)

Other Activities

The Australian National University

1980 - 90	Member, ANU Arts Centre Committee of Management
1994 - 97	Chairman, ANU Global Change Confederation
1998 - 99	Member, Board of the Institute of Advanced Studies, ANU
2001	Member, Steering Committee for the National Institute of Bioscience
2002 – 05	Member, Academic Board, ANU
2002 – 05	Member, National Institute for the Environment
2002	Member, Advisory Board of the ANU Centre for Complex Systems
2003 – 04	Chair, Board of Institute of Advanced Studies [from Sept 2003]
2004 – 05	Chair, Institute of Advanced Studies Forum
2005	Member, Board of the Faculties
2005	Member ANU-CSIRO Alliance Steering Committee and ANU Focus Group for Changing Research Practices

2005	Member, ANU Relationships and Funding Planning Groups
2005	Member, ANU Research Development Working Group
2005 – 08	Board Member, Australian National University Institute for Environment
2006 – 09	ANU Person Designated to Receive Formal Complaints in Science
2007 – 09	Member, Senior Advisory Board, BioSolar Project
2009 – 10	Member, Institute of Advanced Studies sub-committee of the University Research Committee
2010 - Current	ANU Research Misconduct Assessor for Science
2013 - Current	Member Selection Committee for JG Crawford Prize

Australian Academy of Science

1990 – 94	Member, Sectional Committee 5,
1993	Member, National Primary School Project Advisory Committee
1993	Chairman, Gottschalk Award Committee
1994 – 97	Member, Council
1996 – 97	Chairman, AAS National Committee on Climate and Global Change
1996 – 97	Vice President
2007 – 11	Member, Video Histories Committee
2007 – 11	Vice President and Secretary (Biological), member of Executive Committee and of Council

Royal Society

2007 – 11	Member, Theo Murphy Fund Advisory Board
2010 – 11	Member, Organising Committee, Reducing Greenhouse Gas Emissions from Agriculture: Meeting the Challenges of Food Security and Climate Change. *London 28 Feb-1 Mar 2011*
2014 - 16	Member of Sectional Committee 9

Journal Editorial and Advisory Board

1984 – 89	Member, Advisory Committee for the *Australian Journal of Plant Physiology*
1985 – 93	Member, Editorial Board of *Planta*
1986 – 89	Member, Editorial Advisory Panel of *Tree Physiology*
1986 – 95	Member, Editorial Board of *Functional Ecology* (British Ecological Society)
1987 – 01	Member, Review Board of *Plant, Cell and Environment*
1990 – 94	Chairman, Advisory Committee for the *Australian Journal of Plant Physiology* Member, Board of the Australian Journals of Scientific Research
1993 – 96	Member, Editorial Board, *Plant and Soil*
1993 – 99	Member, Editorial Review Board, *Tree Physiology*

1994 – 05	Member, Editorial Board, *Oecologia*
1997 - 05	Subject Editor, *Plant, Cell and Environment*
2002	Editorial Board – *Mitigation and Adaptation Strategies for Global Change*
2005 – 13	Associate Editor, *Plant Cell & Environment*
2005 – 08	Chair, *Functional Plant Biology* Editorial Advisory Committee
2005 – 08	Member Board of Standards for CSIRO/AAS Journals
2008 – 13	Associate Editor, *Ecohydrology*
2008 – 20	Associate Editor – *Water Resources Research*
2011	Member Advisory Board *Environment Control in Biology* (Japan)
2013 – Current	Associate Editor *Plant Physiology*

Other Professional Bodies Activities

2003 – 2008	Board Member, Federation of Australian Scientific and Technological Societies.
2004 – 2010	Board Member, Australian Society of Plant Biologists

Institute/Organisation Reviews and Scientific Advisory Boards

1992	Member, INRE Review Committee on CSIRO Division of Atmospheric ResearchBoard
1998	Reviewer, with Ray Walker, of Australian Biological Resources
2002	Study (ABRS) for Environment Australia
	Reviewer, University of Western Australia's Institute of Advanced Studies
2004 – 2017	Member, Scientific Advisory Board for the Max-Planck-Institute for Biogeochemistry
2005 – 2007	Member of Review Panel, Australian Nuclear Science and Technology Organisation
	(ANSTO) "Isotopic Tracers in Atmospheric Transport" (IsoTrans) project
2005	Member Expert Advisory Board of Impacts Centre for Southeast Asia (ICSEA)
2008	Reviewer UK Biotechnology and Biological Research Council (BBSRC) Climate
	Change Strategic Review of Climate Change Research
2009	Panellist for NSF/Gates Foundation BREAD Program
2010	Mentor for NSF/BBSRC Photosynthesis Ideas Lab
2012 – 2017	Member, Max Planck Research Field Commission
2013 – 2015	Member, Singapore National Research Foundation Competitive Research Program
	Panel
2015	Member, Griffith University Environmental Futures Research Institute Advisory
	Committee

Co-founder Cooperative Research Centre for Greenhouse Accounting

1998 - 2000	Deputy CEO and Program Leader
2001 - 2006	Board alternate
2002 – 2006	Member, Management Team

Government Service

1994 – 1998	Chairman, National Greenhouse Gases Inventory Working Group on Carbon Dioxide from the Biosphere
1997	Science adviser and Australian delegate to Framework Convention on Climate Change, Conference of Parties, Kyoto
1997 – 2000	Member, Greenhouse Science Advisory Committee
1997 – 1999	Member, Reference Group for Greenhouse Challenge Sinks Workbook
1998 – 2000	Member, High Level Steering Committee, National Carbon Accounting System, Australian Greenhouse Office
2002	Member, Minister's Consultative Panel on National Research Priorities
2002	Member of Minister's Reference Group on Mapping Australia's Science and Innovation System
2007 – 2008	Member, Climate Change Research Strategy for Primary Industries. Joint Federal, State & Territory governments, CSIRO, Rural Research & Development Corporation; managed by Land & Water Australia

Australian Research Council

1990 – 1993	Member, Biological Panel, Research Grants Committee
2005 – 2008	Australian Reader
2014 – current	PI ARC Centre of Excellence on Translational Photosynthesis

International Committees

1983	Australian organiser of US/Australia Science and Technology Agreement Workshop on Stomatal Function
1986 – 93	Elected to International Photosynthesis Committee
1986 – 96	Member, Australian Committee for International Geosphere - Biosphere Programme (IGBP)
1989 – 90	Member, International Coordinating Panel on Biospheric Aspects of the Hydrological Cycle (IGBP)
1990 – 93	Member, Scientific Steering Committee, International Global Atmospheric Chemistry Project (IGAC/IGBP)
1994 – 96	Member, South-East Asian Regional Committee for START
1994 – 96	Chairman, Australian Committee for IGBP

2006 – 2007	Member, Scientific Advisory Committee for Isotopes 2007 conference, Benicassim, Spain
2008 – 2011	Member, Scientific Committee for International Botanical Congress, Melbourne 2011
2009	Member, Scientific Steering Committee for the International Carbon Dioxide Conference 2009, Jena, Germany
2010 – 2013	Member International Organizing Committee for the fourth InterDrought congress (ID4), Perth (Australia) in September 2013
2010 – 2012	Member of the International Scientific Board (ISB) of the joint FESPB/EPSO Plant Biology Congress (July 29th to August 3rd, 2012. Freiburg, Germany)

Inter-governmental Panel on Climate Change

1994 - 96	Lead Author on Second Assessment Report
1994	Member, Australian Academy of Technology Sciences and Engineering Steering Committee on Climate Change
1998 – 2001	Lead Author on Third Assessment Report
1988 – 2000	Convening Lead Author on Special Report on Land Use, Land Use Change and Forestry
2006 - 2007	Reviewer for Fourth Assessment Report

Patents

Masle J, Gilmore SR and Farquhar GD. "The use of the ERECTA gene to control water use efficiency in plants": International Patent Application, number WO 2004/005555 A1 (priority date 02 July 2002). Granted Aug 7, 2008 in Australia AU 2003/236580 B2, in Germany DE 60336328 D1 Apr 21, 2011, in Spain ES 2362903 T3 Jul 14, 2011.

Books

- Stomatal Function. 1987. EF Zeiger, GD Farquhar, IR Cowan (eds). Stanford University Press. Stanford, California
- Perspectives of Plant Carbon and Water Relations from Stable Isotopes. 1993. J Ehleringer, AE Hall, GD Farquhar (eds). Academic Press, NY

Lectures

Invited lectures given at the following International and Australian Symposia

2020

- Carbon isotope discrimination and water-use efficiency. Stable Isotopes in the Biosphere 2020. ANU Canberra. *January 20.*

2019

- Using simple mathematics to explore the plant-atmosphere exchange of carbon dioxide, oxygen and water vapour. Shandong University, Weihai, China. *November 29.*

- Using simple mathematics to explore the plant-atmosphere exchange of carbon dioxide, oxygen and water vapour. Czech Society of Experimental Plant Biology. České Budějovice, Czech Republic, *August 27.*

- The magical mystery tour from physics and applied mathematics to plant physiology. My life as an EMCR. ARC Centre of Excellence for Translational Photosynthesis, Brisbane, *July 2.*

- A plant physiologist's view of the Dole Effect OR The role of vegetation in the atmospheric sink or carbon dioxide. Symposium "The Northern Hemisphere Carbon Sink". Jena Germany, *May 30.*

- Climate & optimal water use. Bengaluru University India, *Feb 27.*

- Climate & optimal water use. Interdrought V. Hyderabad India, *February 22*.

2018

As Senior Australian of the Year for 2018 I gave many lectures to different groups including schools in Melbourne, Tasmania and New South Wales, Legacy in Melbourne, an old people's home in Wollongong, and groups of retirees and other interests in Canberra. The following are scientific talks:

- My earliest and latest modeling studies (optimal water use and the intersection of photorespiration and N metabolism) UC Davis CA. *September 23*.

- Science presentation, ICOFEST (Integrating CO_2 Fertilisation Evidence Streams and Theory: Global Terrestrial Carbon Sink), Biosphere 2, Arizona. *September 20.*

- Carbon gain in relation to water loss in the face of global change. Invited Lecture. International Horticultural Congress. Istanbul*, August 12.*

- My earliest and latest modelling studies (optimal water use and the intersection of photorespiration and N metabolism). Department of Plant Sciences, Oxford University, *May 9.*

- Adventures across disciplines: studying biophysics and observing the shaping of policies. Kyoto Laureate Commemorative Lecture, Blavatnik School of Government, Oxford University, *May 8*.

- My latest modelling studies. Stanford University, California, *March 28*.

- Terrestrial land surfaces- a pot pourri. JPL Center for Climate Sciences, CALTECH, Pasadena, CA. March 26

- My latest modelling studies. University of California, San Diego. *March 23.*

- The magical mystery tour from physics and applied mathematics to plant physiology. Commemorative Lecture for the Kyoto Prize for Basic Sciences, University of California, San Diego. *March 21.*

2017

- My latest modeling studies. Keynote talk. Commemorative workshop for Professor Graham Farquhar, 2017 Kyoto Prize laureate: Modelling Plant Responses to Environmental Factors. University of Tokyo, *November 17*

- The Magical Mystery Tour from Physics and Applied Mathematics to Plant Physiology. Commemorative Lecture for Kyoto Prize in Basic Sciences, Kagoshima Japan, *November 16.*

- The Magical Mystery Tour from Physics and Applied Mathematics to Plant Physiology. Commemorative Lecture for Kyoto Prize in Basic Sciences, Kyoto, *November 11*.

- On the plant-atmosphere exchange of carbon dioxide, oxygen and water vapour Plenary Lecture Japan Society for the Promotion of Science Alumni Association in Australia. Australian Academy of Science, *9 October.*

- Photosynthetic eco-physiology. International Workshop on Crop Photosynthetic Ecophysiology. Wuhan, China, *21 – 26 August*.

- Scaling photosynthesis from chloroplasts to leaves. Workshop on 3D Leaf Imaging and Modeling. University of Sydney. *19-21 July.*

- A plant physiologist's view of the Dole Effect OR The role of vegetation in the atmospheric sink or carbon dioxide. Symposium "The Northern Hemisphere Carbon Sink". Jena Germany *May 30*

- Climate & optimal water use. Bengaluru University India *Feb 27*

- Climate & optimal water use. Interdrought V. Hyderabad, India *February 22*

2016

- Applications of ^{18}O in carbon dioxide, water and plant leaves. Shenzhen, China, *30 November.*

- Water-use efficiency and water use effectiveness, a stomatal perspective using stable isotopes. Shenzhen, China, *28 November*.

- Plant water use and carbon gain and the isotopologues of carbon dioxide (in the context of climate change). ISI 2016, Nantes France, *6 October*.

- Plant growth in a changing climate: multi-decadal changes particularly related to eCO_2, precipitation and crop demand for water. Friends of Australian National Botanic Gardens. Canberra *August 25*.

2015

- Water-use efficiency and water use effectiveness, a stomatal perspective using stable isotopes. University of Edinburgh, Scotland, *July 23*.

- Predicted and observed multi-decadal changes in climate, with particular reference to precipitation and crop demand for water. University of Aberdeen, Scotland. *July 15.*

- Water-use efficiency and water use effectiveness, a stomatal perspective using stable isotopes. Glasgow University, Scotland, *June 15.*

- Predicted and observed multi-decadal changes in climate, with particular reference to precipitation and crop demand for water. Institute of Geographic Sciences and Natural Resources Research, Chinese Academy of Sciences, *June 6*.

- Predicted and observed multi-decadal changes in climate, with particular reference to precipitation and crop demand for water. Opening address to Water and Food Security under Changing Environments Center for Agricultural Water Research in China, China Agricultural University (CAU) Beijing *June 1 – 7*.

- Climate Change Effects on Vegetation, and Vice Versa. From leaves to ecosystems: Plants in a changing world. 10th Annual Harvard Plant Biology Symposium. Harvard University, *May 6*.

- Water-use efficiency and water use effectiveness, a stomatal perspective using stable isotopes. Umeå University, Sweden, *22 January.*

2014

- Global dimming, stilling, evaporative demand and transpiration. American Society of Agronomy AGM. Long Beach, CA, USA *4 November.*

- Heavy water fractionation during transpiration. Daintree meeting, James Cook University *15 September.*

- Water-use efficiency and water use effectiveness, a stomatal perspective using stable isotopes. Princeton University *12 August.*

- High VPD & rapid transpiration rate: a direct source of stress. Salt & Water Stress in Plants. Gordon Research Conference, Newry, Maine *5 August.*

- Predicted and observed multi-decadal changes in climate, with particular reference to precipitation and crop demand for water Breeding Plants to Cope with Future Climate Change University of Leeds *17 June.*

- Some Effects of Atmospheric and Climate Change on Photosynthesis and Transpiration at Various Scales, (and vice versa). Gordon Research Conference. CO_2 Assimilation in Plants: Genome to Biome. Waterville Valley, NH *9 June.*

- Modeling carbon uptake and water use by plants: Evaluation of the assumptions included in gas exchange measurements (Ubierna et al.) Gordon Research Conference. CO_2 Assimilation in Plants: Genome to Biome. Waterville Valley, NH *12 June.*

- Scaling leaf level photosynthetic models from the leaf to the canopy. Joint CAS-CSIRO Workshop "Improving Photosynthesis and Yield Potential in Cereal Crops : Modelling, Mechanisms and Methods" *1 June.*

- Water-use efficiency and water use effectiveness, a stomatal perspective using stable isotopes. University of South Australia, Mawson Lakes *19 May.*

- Wheat and climate change. Borlaug Summit on Wheat for Food Security. CIMMYT, Obregon, Mexico, *27 March.*

- Water-use efficiency and water use effectiveness, a stomatal perspective using stable isotopes. East Malling Research February 11; Plant Sciences, Cambridge University Feb 12; Plant Science, Glasgow University Feb 14; WSL ETH Zürich Switzerland *April 3.*

- Water-use efficiency in wheat (with Richard Richards). 2014 Rank Prize Presentation, London, *February 10.*

2013

- Water-use efficiency and water use effectiveness, a stomatal perspective using stable isotopes. Opening Address: Water & Agriculture Forum. Chinese Academy of Sciences, Shijiazhuang. *June 17.*
- Opportunities for improving plant water-use efficiency PIARN Symposium – Farm Profitability in a Food Insecure World. University of Melbourne*, June 3.*
- Relating variations in runoff to variations in climatic conditions and catchment properties. Opening hydrological talk. European Geophysical Union*, April 8*, Vienna, Austria.

- Climate change and some likely effects on photosynthesis, evaporation and food production. Dies Natalis. *March 15*. University of Wageningen.
- Integrating photosynthetic carbon assimilation from the leaf to the canopy. *March 13*. University of Wageningen.
- Some thoughts on responses of vegetation to increased [CO_2]. *March 13*. University of Wageningen.

2012

- Concepts and models of stomatal function and functioning. Opening address. Stomatal conductance through time: towards accurate estimates of physiological CO_2 –forcing of the climate. *September 17*. Royal Netherlands Academy of Science, Amsterdam.
- Several lectures, July-August. Chinese Academy of Science, Beijing & Xinjiang, China From Guard Cell to Globe. INRA Nancy*, June 22*, France.
- From Guard Cell to Globe. Universiteit Würzburg, *June 4*, Germany.
- Linking plant physiology to landscape issues using stable isotope technology. *January 5*, ZALF, Berlin, Germany.

2011

- Some Thoughts on Isoscapes. Keynote address. Isoscapes 2011. *September 26*, Purdue, USA.
- Modelling of photosynthesis and stomatal conductance; global isotope modeling. Workshop on Forest sensitivity to CO_2. *August 1*. Sydney University.
- Integrating photosynthetic carbon assimilation from the leaf to the canopy in the context of global change. Major Speaker, Annual General Meeting, American Society of Plant Biology *August 9*, Minneapolis, USA.
- Water-use efficiency and Water-use effectiveness. Australia-US Science and Technology Joint Commission Meeting. *February 14*, Washington, USA.

2010

- Global change, soil water content, stomatal behavior and the statistics of rainfall. American Geophysical Union AGM. December, San Francisco, USA.
- Climate change and its likely effects on photosynthesis, evaporation and food production. International Photosynthesis Congress *August 27,* Beijing, China.
- Photosynthesis: a litany of limitations NSF Photosynthesis Ideas Lab Planning Meeting *June 30*, Washington, USA.

2009

- Plant Water Use Effectiveness. Keynote Address, 10th Australasian Environmental Isotope Conference & 3rd Australasian Hydrogeology Research Conference *1-3 December 2009*, Perth, WA.
- Climate change and its likely effects on food production. Opening Plenary Address, the 3rd International Conference on Integrated Approaches to Improve Crop Production Under Drought Prone Environments (Interdrought III), *October 12*, Shanghai, China.
- Evaporative demand, transpiration, and photosynthesis: How are they changing? Atmosphere and Climate Colloquium*, April 27*, IACETH (Institute for Atmospheric and Climate Science, Swiss Federal Institute of Technology), Zurich, Switzerland.
- Evaporative demand, transpiration, and photosynthesis: How are they changing? EGU (European Geosciences Union) General Assembly, Land-climate interactions from models and observations: Implications from past to future climate session, *April 19-24*, Vienna, Austria.

2008

- Carbon isotope discrimination, water-use efficiency and water-use effectiveness. Resource Capture by Crops: Integrated Approaches, *September 10-12*, University of Nottingham, Sutton Bonington, United Kingdom.
- Carbon Isotope discrimination by leaves.
  Joint European Stable Isotopes User Group (JESIUM) *August 31 – September 5*, Presqu'île de Giens, France.
- Carbon isotope discrimination, water-use efficiency and water-use effectiveness. International Workshop on Soil-Plant Interactions and Sustainable Agriculture in Arid Environments, *July 11-18*, Shihezi University, Xinjiang, China.
- Pan Evaporation – wind speed.
  Miniconference on Relative Humidity, Earth Temperature and Climate Change, *June 23- 24*; Lamont-Doherty Earth Observatory of Columbia University, New York USA.
- Opening Address - Uni Sydney Faculty of Agriculture, Food and Natural Resources Symposium Facing climate change: Research on adaption of agro-ecosystems, *June 13*, University of Sydney.
- CO_2, climate change, and agriculture: it's more or less about water. and, Carbon isotope discrimination and plant water-use effectiveness. Distinguished Ecologist Lecture Series, *April 11-15*, University of Wyoming, Laramie, US.

2007

- PenPan: A general tool for the attribution of changing pan evaporation. AGU Meeting, San Francisco, USA.
- The economics of plant water loss and photosynthetic carbon gain. Guangzhou, China
- The economics of plant water loss and carbon gain.
- Evaporative demand and the hydrological cycle.
  Université Paris Sud XI, Paris, France.
- Implications of climate change for water use by agriculture and natural ecosystems. Treasury Seminar Series, Canberra.
- Carbon isotope discrimination and water-use effectiveness. LaTrobe University, Melbourne.
- C02 climate change, and agriculture: it's more or less about water. LaTrobe University, Melbourne.
- Terrestrial carbon sequestration and impacts on global greenhouse gas emissions. Australian Bureau of Agricultural and Resource Economics (ABARE) Boathouse IV Meeting “Climate Change Impacts: Adaption and Mitigation Policy Responses”.
- The evaporation paradox, and the roles of global dimming and stilling.
  Comer Science and Education Foundation “Gary C. Comer Abrupt Climate Change Fellowship Conference”, New York, US.
- Climate change, temperature changes and plant responses.
  International Rice Research Institute (IRRI) workshop on "Cool rice for a warmer world", Wuhan, China.
- CO_2, climate change, and agriculture: it's more or less about water.
  Australian Bureau of Agricultural and Resource Economics (ABARE) Outlook 2007 Conference, Canberra.
- Plant physiological responses to environmental forcing - How do stable isotopes behave? European Science Foundation (ESF) Stable Isotopes in Biospheric-Atmospheric Exchange (SIBAE) Workshop on: “Stable Isotopes in Dendroclimatology - Current Status and Future Prospects.” GeoForschungszentrum Potsdam (GFZ), Germany.

2006

- Revisiting optimisation theory and transpiration efficiency. The Biology of Transpiration: From Guard Cells To Globe. American Society of Plant Biologists Conference, Snowbird, Utah, US.
- Carbon isotope discrimination by Rubisco and diffusion in leaves: applications to plant water-use efficiency and finding a gene. The 5th International Conference on Applications of Stable Isotope Techniques to Ecological Studies, Queens University, Belfast, Ireland.
- Plant water-use efficiency and carbon isotope discrimination Monash University, Melbourne.

- The ACCESS Initiative: Understanding the Future Functioning of Australia's Landscapes. Australian Academy of Science, Canberra.
- Carbon isotope discrimination and plant water-use efficiency: ideas, agricultural uptake and now a gene. Royal Society of Tasmania, Tasmania.
- Increasing Atmospheric C02 and its Implications,
  Global Change And The Earth System Symposium on ANU Research, Canberra
- Worldwide Changes in Atmospheric Composition and Evaporative Demand and their Effects on Plant Growth and Water Use.
- Carbon isotope discrimination and plant water-use efficiency: ideas, agricultural uptake and now a gene. Peking University, Beijing, China.
- Carbon isotope discrimination and plant water-use efficiency. Universiteit Antwerpen, Belgium.
- Plant water-use efficiency and carbon isotope discrimination. South African Plant Breeders Association 6th Annual Symposium, Langebaan, South Africa.
- Climate change and the carbon cycle: Nonlinearities & uncertainties. British Council Workshop International Networking for Young Scientists. Australian National University.

2005

- Carbon isotope discrimination and water-use effectiveness. Melbourne University, Melbourne.
- Worldwide Changes in Evaporative Demand. Working Group on 'Water and the Environment'. Vatican City.
- Evaporative Demand and Climate Change. Abrupt Climate Change Fellowship Roundtable 2005. Palisades, New York.
- Carbon isotope discrimination and water-use efficiency. J G Wood Lecture, ComBio2005. Adelaide
- From Pan Evaporation to Pinatubo.
  Energy Modelling Forum, Climate Change Impacts and Integrated Assessment Meeting, Snowmass, Colorado, USA
- From the chloroplast via stomata to the atmosphere and back. Isotopes 2005 Bath. University of Bath, UK.
- Trends in Pan Evaporation, Global Dimming and Brightening: Theory, Observations and Implications for the Terrestrial Water Balance.
- Carbon Gain and Water use by Plants, and Their Interpretation Using Stable Isotopes.
- Are Estimates of the Terrestrial Water Balance All Wet? 2005 Distinguished Ecologist Lecture Series. Colorado State University, USA.

- Trends in Pan Evaporation, Global Dimming and Brightening: Theory, Observations and Implications for the Terrestrial Water Balance. Institute for Multi-disciplinary Earth Studies, National Centre for Atmospheric Research. Boulder, USA
- Drier or Wetter Under Climate Change? Science Meets Parliament Forum "Climate Change: what is the scientific consensus?", Canberra, ACT.

2004

- The pan evaporation paradox – an overview of the scope of the problem. Australian Academy of Science Pan Evaporation Workshop. Canberra, ACT.
- Trends in Pan Evaporation: Theory, Observations and Implications for the Terrestrial Water Balance. 16th Australian and New Zealand Climate Forum, Lorne, Victoria.
- Modelling leaf water enrichment. Biosphere-Atmosphere Stable Isotope Network (BASIN) and Stable Isotopes in Biospheric-Atmospheric Exchange (SIBAE) "Oxygen isotopes as a tracer linking global O2, CO_2, and H_2O cycles" joint meeting. Marshall, USA.
- Carbon Gain and Water Use by Plants. Gordon Research Conference, The Metabolic Basis of Ecology, Maine, USA
- Pan Evaporation in the Southern Hemisphere: What is Happening? AGU-CGU Union Joint Assembly, Magnitudes and causes of declining solar radiation at the surface: Montreal, Canada.
- Oxygen isotopes in leaf water, and CO_2 – remember the gross fluxes. Stable Isotopes in Biospheric-Atmospheric Exchange (SIBAE) and Biosphere-Atmosphere Stable Isotope Network (BASIN) joint conference. Interlaken, Switzerland.
- Entropy production during plant gas exchange. Maximum Entropy Production Workshop: INRA Bordeaux-Aquitaine, France.

2003

- Oxygen isotope enrichment of leaf water and organic matter. SIBAE BASIN Workshop: Orvieto, Italy.
- Why is pan evaporation rate going down in the northern hemisphere if there is global warming? The Climate Centre Fall 2003 Lecturer : Columbia University, USA LDEO Campus.
- Pan evaporation rate in the southern hemisphere: implications for greenhouse vs aerosols. The Climate Centre Fall 2003 Lecturer: Columbia University, USA NASA/GISS Campus.
- Oxygen isotopes in leaf organic material. NETCARB Third Summer School: Germany.
- The cause of decreased pan evaporation over the past 50 years. EGS-AGU-EU6 Joint Assembly: Nice, France.
- The cause of decreased pan evaporation over the past 50 years. MEP Workshop: Bordeaux, France.

- Incorporating the effects of diffuse light in simple models of photosynthesis and evaporation: implications for a canopy and the globe. Monsi & Saeki Symposium: Kyoto, Japan.

2002

- Processes affecting the ^{18}O composition of leaf water. Stable Isotopes and Biosphere- Atmosphere Interactions. Banff, Canada.
- On the spatial variation of the isotopic composition of leaf water. Stable isotope Techniques for the Analysis of Plant Metabolism, Nantes, France.

2001

- Unanswered questions about stomatal functioning. Forests at the Land-Atmosphere Interface, Edinburgh.
- Biological questions on the Dole effect. Fourth International Symposium on Inorganic Carbon Utilization, Cairns.
- Role of terrestrial sequestration in meeting Kyoto targets. Australian Petroleum Production and Exploration Association Ltd Conference, Hobart.
- Honouring research in Australia: A Scientists Perspective. ISI Honouring Research in Australia, Canberra.
- Applications of stable isotopes in palaeoecology. Spring Meeting American Geophysical Union, Boston.
- Forests, Forest Industry and Greenhouse Effect. 14th Convocation of the International Council of Academics of Engineering and Technological Sciences – World Forests and Technology, Finland.

2000

- Forest, forest industry and greenhouse effect. Fourteenth CAETS Convocation, World Forests and Technology, Espoo, Finland.
- Transpiration efficiency and carbon isotope discrimination. Water and Plants in the Landscape, CSIRO, Canberra.

1999

- Carbon dynamics: a major driver of global change. The Global Change Transects Workshop, Darwin. Oxygen isotope composition of organic matter. International Conference on Stable Isotopes and Isotope Effects, Carry le Rouet, France.
- Oxygen isotope composition of organic matter. Fifth European Symposium on Food Authenticity, La Baule, France. Global change: a plant perspective using carbon and oxygen isotope ratios. Australian and New Zealand Society for Mass Spectrometry Conference, Thredbo.

- Global change: a plant perspective using carbon and oxygen isotope ratios. Stable Isotope Techniques Workshop, University of Western Australia, Perth.

1998

- Kyoto – The Impact on Australia, APEC Centre, Melbourne.
- Where could Australia's forests move with change in atmospheric composition: some ideas from plant physiology and the paleo-record. CSIRO and Bureau of Resource Science, Canberra.
- Global change: a plant perspective. Yale University, Connecticut, USA.
- Australian Quaternary Palaeoecology and Palaeoclimatology Workshop, Academy of Science, Canberra.
- National Association of Forest Industries (NAFI), presentation at Greenhouse Stakeholders meeting, Canberra.

1997

- What are Stomates For? Journal of Experimental Botany Symposium, University of Kent, Canterbury, UK.
- Vegetation-Climate-Atmospheric Interactions: Past, Present and Future. Royal Society Symposium, London, UK.

1996

- Design of a Carbon Cycle Observing System, Boulder, Colorado, USA.
- Stable Isotopes and the Integration of Biological, Ecological and Geochemical Processes Conference, Newcastle, UK.
- NCAR Summer Colloquium, Terrestrial Ecosystems and the Atmosphere, Boulder, Colorado, USA.

1995

- Global Change: a plant perspective, IGBP/ICSU Forum on Earth System Research, Beijing, China.
- Plant response to CO_2: Is plant growth being stimulated by increasing atmospheric CO_2? US National Academy of Sciences, Colloquium on Carbon Dioxide and Climate Change, Irvine, California, USA.

1994

- Signals from plants seen in atmospheric CO_2 and its isotopes, 5th Australian Environmental Isotopes Conference, Brisbane.
- Biosphere 2 - a plant perspective, Space Biosphere Ventures, Oracle, Arizona, USA. The global carbon budget, Greenhouse '94, Wellington, New Zealand.

1993

- Ecophysiology and Genetics of Trees and Forests in a Changing Environment, Viterbo, Italy.
- Genetic and environmental effects on carbon and oxygen isotope discrimination during CO_2 assimilation, International Botanical Congress, Yokohama, Japan.
- Optimisation of stomatal behaviour and water-use efficiency at elevated CO_2 concentration and temperature, International Botanical Congress, Yokohama.
- ^{18}O effects during CO_2 assimilation, International CO_2 Conference, Carqueiranne, France.

1992

- International Symposium on Perspectives of Plant Carbon and Water Relations from Stable Isotopes, Riverside, California, USA.
- Photosynthetic Responses to the Environment, Kona, Hawaii.
- IPCC meeting on Biotic Feedbacks in the Global Carbon Cycle, Wood'sHole, Massachusetts, USA.

1991

- International Global Atmospheric Chemistry, San Jose dos Campos, Brazil.
- International Symposium: Physiology and Determination of Crop Yield, Gainesville, Florida, USA.

1990

- Degradation of Vegetation in Semi-Arid Regions: Climate Impact and Implications, Sydney.
- Mathematical and Statistical Modelling of Global Change Processes, Canberra.
- Water and Life: Comparative Analysis of Water Relationships at the organismic, Cellular and Molecular Levels, Crans- sur-Sierre, Switzerland.
- Trends in Photosynthetic Research, Palma de Mallorca, Spain.
- FAO/IAEA International Symposium on the Use of Stable Isotopes in Plant Nutrition, Soil Fertility and Environmental Studies, Vienna, Austria.

1989

- International Geosphere-Biosphere Workshop: Global Change - A Plant Perspective, Brisbane.
- Symposium on Perspectives in Biochemical and Genetic Regulation of Photosynthesis, New Haven, USA.
- Symposium on Stomatal Resistance, University Park, Pa, USA.
- Rockefeller Foundation Meeting on the Potentials of Biotechnology for Improving Grain Yield of Rice under Water Limited Conditions, Bellagio, Italy.

1988

- International Geosphere-Biosphere Programme on Global Change, Canberra.
- Society for Experimental Biology, Symposium on Plants under Stress, Lancaster, UK.
- Royal Society meeting on Measurement of Photosynthesis, London, UK. Photosynthesis Symposium, Stanford, USA.
- US-Australia Workshop on Remote Sensing of Biosphere Functioning, Honolulu, USA.

1987

- 6th Annual Plant Biochemistry and Physiology Symposium, Columbia, Missouri, USA.
- Rubisco 87, Tucson, USA.
- Vth International Conference on Mediterranean-Climate Ecosystems, Montpellier, France.
- XIV International Botanical Congress, Berlin, West Germany.
- Society for Experimental Biology Meeting on Plants and Temperature, Colchester, UK.
- Second German-French Colloquium on advances in research and use of stable isotopes, Maria Laach, West Germany.
- NATO Advanced Research Workshop, Forest Biomass for Fiber and Energy, Obidos, Portugal.
- International Symposium on Improving Winter Cereals Affected by Temperature and Salinity Stresses, Cordoba, Spain.

1986

- NASA Conference on Climate-Vegetation Interactions, Goddard Space.
- Applications of Stable Isotope Ratios to Ecological Research, UCLA Lake.
- Arrowhead Conference Center, USA.
- VII International Congress on Photosynthesis, Brown University, Providence, RI, USA.

1985

- The Changing Earth: an Australian Perspective, Canberra.
- Regulation of CO_2 assimilation, Gordon Conference on CO_2 fixation by green plants, New Hampshire, USA.
- BP Venture Research Conference, London, UK.

1984

- British Plant Growth Regulator Group Meeting, York, UK.
- Conference on Coasts and Tidal Wetlands of the Australian Monsoon Region, Darwin.

1983

- Gordon Conference on the Chemistry and Physics of Isotopes, Santa Barbara, California, USA.
- US-Australia Workshop on Stomatal Function, Honolulu, USA.
- International Congress on Photosynthesis, Brussels, Belgium.
- Symposium on the Kinetics of C_3 Photosynthesis, Tallinn, Estonia, USSR.

1982

- AAAS Conference on Plant Responses to Rising CO_2 concentration, Athens, Ga, USA.
- Ewing Symposium. Climate Processes: Sensitivity to Solar Irradiance and CO_2, New York, USA.

PhD Students supervised

1979	SC Wong
1981	MC Ball
	S von Caemmerer
	G Constable
1984	SF Ledgard
	JR Evans
1986	A Brooks
	MUF Kirschbaum
1988	AG Condon
1990	D Bagnall
1992	S Henderson
	J Virgona
	C López-Castañeda
1993	H Gomez-Macpherson
1996	D de Pury
	G Beemster
	A van Herwaarden
1997	P J Franks
1998	M Barbour
2001	J Yong
	M Böhm
2002	T June
2003	J Styles

	K Gan
	J Miller
	I Tremmel
2004	L Cernusak
2005	Y Zhou
2006	S Gilmore [co-supervisor with Dr J. Masle]
2007	X Sirault
2019	R Deans
2020	D Marquez Antivilo
2023	X Hu

Bibliography

★ *Most significant publications*

1. Farquhar GD and Field CD (1971) Transpiration linked short-circuit currents in the xylem of a liana. **J. Exp. Bot.** 22(73):818-829.
2. Farquhar GD (1973) A study of the responses of stomata to perturbations of environment. PhD Thesis, ANU.
3. Farquhar GD and Cowan IR (1974) Oscillations in stomatal conductance. The influence of environmental gain. **Plant Physiol.** 54:769-772.
4. ★ Cowan IR and Farquhar GD (1977) Stomatal function in relation to leaf metabolism and environment. DH Jennings (ed). **Soc. Exp. Biol. Symp.** 31:471-505.
5. Berry JA and Farquhar GD (1978) The CO_2 concentrating function of C4 photosynthesis. A biochemical model. *In* Proc. 4th International Congress on Photosynthesis, Reading, England, 1977, pp 119-131, Hall, D, Coombs, J, Goodwin, T (eds). The Biochemical Society, London.
6. Farquhar GD and Raschke K (1978) On the resistance to transpiration of the sites of evaporation within the leaf. **Plant Physiol.** 61:1000-1005.
7. Raschke K, Hanebuth WF and Farquhar GD (1978) Relationship between stomatal conductance and light intensity in leaves of *Zea mays* L., derived from experiments using the mesophyll as

shade. **Planta** 139:73-77.

8. Farquhar GD, Dubbe DR and Raschke K (1978) Gain of the feedback loop involving carbon dioxide and stomata. Theory and measurement. **Plant Physiol.** 62:406-412.

9. Dubbe D, Farquhar GD and Raschke K (1978) Effect of abscisic acid on the gain of the feedback loop involving carbon dioxide and stomata. **Plant Physiol.** 62:413-417.

10. Wong SC, Cowan IR and Farquhar GD (1978) Leaf conductance in relation to assimilation in *Eucalyptus pauciflora* Sieb. ex Spring. Influence of irradiance and partial pressure of carbon dioxide. **Plant Physiol.** 62: 670-674.

11. Farquhar GD (1978) Feedforward responses of stomata to humidity. **Aust. J. Plant Physiol.** 5:787-800.

12. Farquhar GD (1979) Models describing the kinetics of ribulose biphosphate carboxylase- oxygenase. **Arch. Biochm. Biophys.** 193(1):456-468.

13. Farquhar GD, Wetselaar R and Firth PM (1979) Ammonia volatilization from senescing leaves of maize. **Science** 103:1257-1258.

14. Farquhar GD (1979) Carbon assimilation in relation to transpiration and fluxes of ammonia. *In* Photosynthesis and Plant Development. R Marcelle, H Clijsters and M van Poucke (eds). Junk, The Hague, pp 321-328.

15. ★ Wong SC, Cowan IR and Farquhar GD (1979) Stomatal conductance correlates with photosynthetic capacity. **Nature** 282:424-426.

16. ★ Farquhar GD, von Caemmerer S and Berry JA (1980) A biochemical model of photosynthetic CO_2 assimilation in leaves of C_3 species. **Planta** 149:78-90.

17. Farquhar GD, Schulze E-D and Kuppers M (1980) Responses to humidity by stomata of *Nicotiana glauca* L. and *Corylus avellana* L. are consistent with the optimisation of carbon dioxide uptake with respect to water loss. **Aust. J. Plant Physiol.** 7:315-327.

18. Farquhar GD, Firth PM, Wetselaar R and Weir B (1980) On the gaseous exchange of ammonia between leaves and the environment: measurements of the ammonia compensation point. **Plant Physiol.** 66:710-714.

19. Wetselaar R and Farquhar GD (1980) Losses of nitrogen from the tops of plants. **Advances in Agronomy** 33:263-302.

20. Raven JA and Farquhar GD (1980) Methylammonium transport in *Phaseolus vulgaris* leaf slices. **Plant Physiol.** 67:859-863.

21. Farquhar GD and von Caemmerer S (1981) Electron transport limitations on the CO_2 assimilation rate of leaves: a model and some observations in *Phaseolus vulgaris* L. *In* Proceedings of Fifth International Congress on Photosynthesis. G Akoyunoglou (ed). Balaban, Philadelphia, Vol. 4, pp 163-175.

22. Farquhar GD (1980) Carbon isotope discrimination by plants and the ratio of intercellular and atmospheric CO_2 concentrations. *In* Carbon dioxide and climate: Australian research. GI Pearman (ed), Australian Academy of Science, Canberra, pp 105-110.

23. Farquhar, GD and von Caemmerer, S (1982) Modelling of photosynthetic response to environmental conditions. *In* Encyclopedia of Plant Physiology, New Series Vol. 12B, OL Lange, PS Nobel, CB Osmond and H Ziegler (eds). Springer-Verlag, Heidelberg, pp 549-587.

24. Azcon-Bieto J, Farquhar GD and Caballero A (1981) Effects of temperature, oxygen concentration, leaf age and seasonal variations on the CO_2 compensation point of *Lolium perenne* L.: Comparison with a mathematical model including non- photorespiratory CO_2 production in the light. **Planta** 152:497-504.

25. ★ von Caemmerer S and Farquhar GD (1981) Some relationships between the biochemistry of photosynthesis and the gas exchange of leaves. **Planta** 153:376-387.

26. Farquhar GD, Ball MC, von Caemmerer S and Roksandic Z (1982) Effect of salinity and humidity on $\delta^{13}C$ values of halophytes - evidence of diffusional isotope fractionation determined by the ratio of intercellular/atmospheric partial pressure of CO_2 under different environmental conditions. **Oecologia** 52:121-124.

27. Sharkey TD, Imai K, Farquhar GD and Cowan IR (1982) A direct confirmation of the standard method of estimating intercellular partial pressure of carbon dioxide. **Plant Physiol.** 69:657-659.

28. ★ Farquhar GD, O'Leary MH and Berry JA (1982) On the relationship between carbon isotope discrimination and the intercellular carbon dioxide concentration in leaves. **Aust. J. Plant Physiol.** 9:121-137.

29. Galbally IE, Farquhar GD and Ayers GP (1982) Interactions in the atmosphere of the biogeochemical cycles of carbon, nitrogen and sulfur. *In* The cycling of carbon, nitrogen, sulfur and phosphorus in terrestrial and aquatic ecosystems. IE Galbally, JR Freney (eds). Australian Academy of Science and Springer-Verlag, Canberra, pp 1-9.

30. ★ Farquhar GD and Sharkey TD (1982) Stomatal conductance and photosynthesis. **Ann. Rev. Plant Physiol.** 33:317- 345.

31. Comins HN and Farquhar GD (1982) Stomatal regulation and water economy in Crassulacean Acid Metabolism plants; an optimisation model. **J. Theor. Biol.** 99:263- 284.

32. Francey RJ and Farquhar GD (1982) An explanation of $^{13}C/^{12}C$ variations in tree rings. **Nature** 297: 28-31.

33. Cowan IR, Raven JA, Hartung W and Farquhar GD (1982) A possible role for abscisic acid in coupling stomatal conductance and photosynthetic carbon metabolism in leaves. **Aust. J. Plant Physiol.** 9:489-498.

34. Farquhar GD, Wetselaar R and Weir B (1983) Gaseous nitrogen losses from plants. *In* Gaseous loss of nitrogen from plant-soil systems. JR Freney, JR Simpson (eds). Martinus Nijhoff/Dr W. Junk, The Hague, Dev. Plant Soil Sci. 9:159-180.

35. Farquhar GD (1983) On the nature of carbon isotope discrimination in C4 species. **Aust. J. Plant Physiol.** 10:205-226.

36. Bradford KJ, Sharkey TD and Farquhar GD (1983) Gas exchange, stomatal behaviour and $\delta^{13}C$ values of the flacca tomato mutant in relation to abscisic acid. **Plant Physiol.** 72:245-250.

37. Terry N and Farquhar GD (1984). Photochemical Capacity and Photosynthesis. *In* Control of crop productivity. CJ Pearson (ed), Academic Press, Sydney, pp 43-57.

38. von Caemmerer S and Farquhar GD (1984) Effects of partial defoliation, changes of irradiance during growth, short-term- water-stress, and growth at enhanced $p(CO_2)$ on the photosynthetic capacity of leaves of *Phaseolus vulgaris* L. **Planta** 160:320-329.

39. Ball, MC and Farquhar, GD (1984) Photosynthetic and stomatal responses of two mangrove species, *Aegiceras corniculatum* and *Avicennia marina* to long term salinity and humidity conditions. **Plant Physiol.** 74:1-6.

40. Ball, MC and Farquhar, GD (1984) Photosynthetic and stomatal responses of the grey mangrove, *Avicennia marina*, to transient salinity conditions. **Plant Physiol.** 74:7- 11.

41. von Caemmerer S and Farquhar GD (1985) Kinetics and activation of Rubisco and some preliminary modelling of RuP_2 pool sizes. *In* Kinetics of photosynthetic carbon metabolism in C_3-plants. Proceedings of the 1983 Conference at Tallinn. J Viil, G Grishina, A Laisk (eds). Estonian Academy of Sciences.

42. Farquhar GD and Wong SC (1984) An empirical model of stomatal conductance. **Aust. J. Plant Physiol.**

11:191-210.

43. Francey RJ, Barbetti M, Bird T, Beardsmore D, Coupland W, Dolezal JE, Farquhar GD, Flynn RG, Fraser PM, Gifford RM, Goodman HS, Kunda B, McPhail S, Nanson G, Pearman GI, Richards NG, Sharkey TD, Temple RB and Weir B (1984) Isotopes in Tree Rings. **CSIRO Aust. Div. Atmos. Res. Techn. Pap.** 4:1-86.

44. Kirschbaum MUF and Farquhar GD (1984) Temperature dependence of whole leaf photosynthesis in *Eucalyptus pauciflora*. **Aust. J. Plant Physiol.** 11:519-538.

45. ★Farquhar GD and Richards RA (1984) Isotopic composition of plant carbon correlates with water-use efficiency of wheat genotypes. **Aust. J. Plant Physiol.** 11:539-552.

46. Farquhar GD and Kirschbaum MUF (1985) Environmental constraints on carbon assimilation. *In* Regulation of sources and sinks in crop plants. BF Jeffcoat, AF Hawkins and AD Stead (eds). British Plant Growth Regulator Group Monograph No.12, pp 87-97.

47. Brooks A and Farquhar GD (1985) Effect of temperature on the CO_2/O_2 specificity of ribulose- 1,5-bisphosphate carboxylase/oxygenase and the rate of respiration in the light. Estimates from gas-exchange measurements on spinach. **Planta** 165:397-406.

48. Ehleringer JR, Schulze E-D, Ziegler H, Lange OL, Farquhar GD and Cowan IR (1985) Xylem- tapping mistletoes: water or nutrient parasites? **Science** 227:1479-1481.

49. Wong SC, Cowan IR and Farquhar GD (1985) Leaf conductance in relation to rate of CO_2 assimilation. I. Influence of nitrogen nutrition, phosphorus nutrition, photon flux density and ambient partial pressure of CO_2 during ontogeny. **Plant Physiol.** 78:821- 825.

50. Wong SC, Cowan IR and Farquhar GD (1985) Leaf conductance in relation to rate of CO_2 assimilation. II. Effects of short-term exposures to different photon flux densities. **Plant Physiol.** 78:826-829.

51. Wong SC, Cowan IR and Farquhar GD (1985) Leaf conductance in relation to rate of CO_2 assimilation. III. Influences of water stress and photoinhibition. **Plant Physiol.** 78:830- 834.

52. ★Evans JR, Sharkey TD, Berry JA and Farquhar GD (1986) Carbon isotope discrimination measured concurrently with gas exchange to investigate CO_2 diffusion in leaves of higher plants. **Aust. J. Plant Physiol.** 13:281-292.

53. Küppers M, Wheeler A, Kuppers BIL, Kirschbaum MUF and Farquhar GD (1986) Carbon fixation in eucalypts in the field. Analysis of diurnal variations in photosynthetic capacity. **Oecologia** 70:273-282.

54. Farquhar GD, Hubick KT, Condon AG and Richards RA (1989) Carbon isotope fractionation and plant water-use efficiency. *In* Stable Isotopes in Ecological Research. PW Rundel, JR Ehleringer and KA Nagy (eds). Springer Verlag, New York, pp 21-40.

55. Farquhar GD (1986) Climate-vegetation interactions: stomatal conductance and photosynthetic capacity. *In* Climate-Vegetation Interactions. C Rosenzweig and R Dickinson (eds). NASA Conference Publication 2440, pp 18-27.

56. Hubick KT, Farquhar GD and Shorter R (1986) Correlation between water-use efficiency and carbon isotope discrimination in diverse peanut (*Arachis*) germplasm. **Aust. J. Plant Physiol.** 13:803-816.

57. Farquhar GD, Hubick KT, Terashima I, Condon AG and Richards RA (1986) Genetic variation in the relationship between photosynthetic CO_2 assimilation and stomatal conductance to water loss. *In* Progress in Photosynthesis. Biggins, J (ed). Vol. IV (5):209-212.

58. Kirschbaum MUF and Farquhar GD (1987) Investigation of the CO_2 dependence of quantum yield and respiration in Eucalyptus pauciflora. **Plant Physiol.** 83:1032-1036.

59. Ehleringer JR, Ullmann I, Lange OL, Farquhar GD, Cowan IR, Schulze E-D and Ziegler H (1986) Mistletoes: a hypothesis concerning morphological and chemical avoidance of herbivory. **Oecologia** 70:234-237.

60. Condon AG, Richards RA and Farquhar GD (1987) Carbon isotope discrimination is positively correlated with grain yield and dry matter production in field-grown wheat. **Crop Science** 27:996-1001.

61. Pate JS and Farquhar GD (1988) Role of the crop plant in cycling of nitrogen. *In* Advances in Nitrogen Cycling in Agricultural Ecosystems. JR Wilson (ed). CAB International, Aberystwyth, pp 23-45.

62. Farquhar GD, Masle J, Hubick KT, von Caemmerer S and Terashima I (1987) Effects of drought, salinity and soil strength on photosynthesis, transpiration and carbon isotope composition of plants. **Current Topics in Plant Biochem. Physiol.** 6:147-155.

63. Masle J, Farquhar GD (1988) Effects of soil strength on the relation of water-use efficiency and growth to carbon isotope discrimination in wheat seedlings. **Plant Physiol.** 86:32-38.

64. Farquhar GD (1988) Models relating subcellular effects of temperature to whole plant responses. *In* Plants and Temperature. SP Long and FI Woodward (eds). **Soc. Exp. Biol. Symp.** 42:395-409.

65. Ball MC, Cowan IR and Farquhar GD (1988) Maintenance of leaf temperature and the optimisation of carbon gain in relation to water loss in a tropical rain forest. **Aust. J. Plant Physiol.** 15:263-276.

66. Körner C, Farquhar GD and Roksandik Z (1988) A global survey of carbon isotope discrimination in plants from high altitude. **Oecologia** 74:623-632.

67. Terashima I, Wong SC, Osmond CB and Farquhar GD (1988) Characterisation of non- uniform photosynthesis induced by abscisic acid in leaves having different mesophyll anatomies. **Plant Cell Physiol.** 29(3):385-394.

68. Parkhurst DF, Wong SC, Farquhar GD and Cowan IR (1988) Gradients of intercellular CO_2 levels across the leaf mesophyll. **Plant Physiol.** 86:1032-1037.

69. Bagnall DJ, King RW and Farquhar GD (1988) Temperature-dependent feedback inhibition of photosynthesis in peanut. **Planta** 175:348-354.

70. Brugnoli E, Hubick KT, von Caemmerer S, Wong SC and Farquhar GD (1988) Correlation between the carbon isotope discrimination in leaf starch and sugars of C_3 plants and the ratio of intercellular and atmospheric partial pressures of carbon dioxide. **Plant Physiol.** 88:1418-1424.

71. Farquhar GD, Wong SC, Evans JR and Hubick KT (1989) Photosynthesis and gas exchange. *In* Plants under stress: physiology and ecology and their application to plant improvement. HG Jones, TJ Flowers, MB Jones (eds). Cambridge University Press, pp 47-69.

72. Farquhar GD (1988) Atmosphere - land plant interactions. *In* Proceedings of the Elizabeth and Frederick White Symposium on Global Change. Australian Academy of Science, Canberra, pp 110-113.

73. Hubick KT and Farquhar GD (1987) Carbon isotope discrimination - selecting for water-use efficiency. **Australian Cotton Grower** 8(3):66-68.

74. Farquhar GD and Sharkey TD. Citation Classic (1988) **Commentary on Ann. Rev. Plant Physiol.** 33:317-345. Current Contents ISI Press, Philadelphia.

75. Masle J, Doussinault G, Farquhar GD and Sun B (1989). Foliar stage in wheat correlates better to photothermal time than to thermal time. **Plant, Cell & Env.** 12:235-247.

76. Farquhar GD (1989) Models of integrated photosynthesis of cells and leaves. **Phil. Trans. Roy. Soc.** (Ser. B) 323 (1216):357-368.

77. Hubick KT, Shorter R and Farquhar GD (1988) Heritability and genotype x environment interactions of carbon isotope discrimination and transpiration efficiency in peanut. **Aust. J. Plant Physiol.** 15:799-813.

78. Wright GC, Hubick KT and Farquhar GD (1988) Discrimination in carbon isotopes of leaves correlates with water-use efficiency of field grown peanut cultivars. **Aust. J. Plant Physiol.** 15:815-825.

79. Hubick KT and Farquhar GD (1989) Carbon isotope discrimination and the ratio of carbon gained to water lost in barley cultivars. **Plant, Cell & Env.** 12:795-804.

80. ★ Farquhar GD, Ehleringer JR and Hubick KT (1989) Carbon isotope discrimination and photosynthesis. **Ann. Rev. Plant Physiol. Mol. Biol.** 40:503-537.

81. Evans JR and Farquhar GD (1991) Modelling canopy photosynthesis from the biochemistry of the C_3 chloroplast. *In* Modelling crop photosynthesis - from biochemistry to canopy. KJ Boote (ed). CSSA Special Publication Number 19, Chap 1. CCSA ASA, Madison, pp 1- 15.

82. Turner NC, Nicolas ME, Hubick KT and Farquhar GD (1989) Evaluation of traits for the improvement of water-use efficiency and harvest index. *In* Drought Resistance in Cereals. FWG Baker (ed). ICSU Press, Miami. Chapter 13, pp 177-189.

83. Bowman WD, Hubick KT, von Caemmerer S and Farquhar GD (1989) Short-term changes in leaf carbon isotope discrimination in salt and water stressed C4 grasses. **Plant Physiol.** 90:162-166.

84. Hall AE, Mutters RG, Hubick KT and Farquhar GD (1990) Genotypic differences in carbon isotope discrimination by cowpea under wet and dry field conditions. **Crop Science** 30:300-305.

85. Hubick KT, Hammer GL, Farquhar GD, Wade LJ, von Caemmerer S and Henderson SA (1990) Carbon isotope discrimination varies genetically in C4 species. **Plant Physiol.** 91:534-7.

86. Raven JA and Farquhar GD (1989) Leaf apoplast pH estimation in Phaseolus vulgaris. *In* Plant Membrane Transport: the Current Position. J Dainty, MI De Michelis, E Marre and F Rasi-Caldogno (eds). Elsevier, pp 607-610.

87. Raven JA and Farquhar GD (1989) The greater ^{13}C natural abundance in nitrate-grown than in ammonium-grown *Ricinus communis* is mainly a function of the lower ratio of CO_2- transport limitation to biochemical limitation of photosynthesis in nitrate-grown plants, with their higher organic onion content as a less significant factor. *In* Proceedings of the Second Advanced Course on Inorganic Nitrogen Metabolism. WR Ullrich (ed) Springer (1989).

88. Condon AG, Farquhar GD and Richards RA (1990) Genotypic variation in carbon isotope discrimination and water-use efficiency in wheat. Leaf gas-exchange and whole plant studies. **Aust. J. Plant Physiol.** 17:9-22.

89. Collatz GJ, Berry JA, Farquhar GD and Pierce J (1990) The relationship between the Rubisco reaction

mechanism and models of photosynthesis. **Plant, Cell & Env.** 13:219-225.

90. Giersch C, Lammel D and Farquhar GD (1990) Control analysis of photosynthetic CO_2 fixation. **Photosynth. Res.** 24:151-165.

91. Hammer GL, Donatelli M, Farquhar GD, Hubick KT and Wade LJ (1989) Radiation-use efficiency, water-use efficiency and crop improvement in grain sorghum. Proc. Aust. Sorghum Workshop, Toowoomba, pp 184-91.

92. Raven JA and Farquhar GD (1990) The influence of N metabolism and organic acid synthesis on the natural abundance of C isotopes in plants. **New Phytol.** 116:505-529.

93. Virgona JM, Hubick KT, Rawson HM, Farquhar GD and Downes RW (1990) Genotypic variation in transpiration efficiency and carbon allocation during early growth in sunflower. **Aust. J. Plant Physiol.** 17:207-214.

94. Masle J, Farquhar GD and Gifford RM (1990) Growth and carbon economy of wheat seedlings as affected by soil resistance to penetration and ambient partial pressure of CO_2. **Aust. J. Plant Physiol.** 17:465-487.

95. Virgona JM, Farquhar GD and Hubick KT (1990) Improving transpiration efficiency of sunflower using carbon isotope discrimination. Proc. 8th Workshop, The Australian Sunflower Association, pp 87-89.

96. Farquhar GD (1991) Use of stable isotopes in evaluating plant water-use efficiency. Proc. International Symposium on the Use of Stable Isotopes in Plant Nutrition, Soil Fertility and Environmental Studies. IAEA/FAO, Vienna, pp 475-488.

97. Ehdaie B, Hall AE, Farquhar GD, Nguyen HT and Waines JG (1991) Water-use efficiency and carbon isotope discrimination in wheat. **Crop Science** 31:1282-1288.

98. Wright GC, Hubick KT and Farquhar GD (1991) Physiological analysis of peanut cultivar response to timing and duration of drought stress. **Aust. J. Agric. Res.** 42:453-70.

99. Read J and Farquhar GD (1991) Comparative studies in *Nothofagus* (Fagaceae). I. Leaf carbon isotope discrimination. **Functional Ecology** 5:684-695.

100. Hall AE, Mutters RG, Farquhar GD (1992) Genotypic and drought- induced differences in carbon isotope discrimination and gas exchange of cowpea. **Crop Science** 32:1-6.

101. Dingkuhn M, Farquhar GD, De Datta SK and O'Toole JC (1991) Discrimination of ^{13}C among upland rices having different water use efficiencies. **Aust. J. Agric. Res.** 42:1123-31.

102. Körner C, Farquhar GD, Wong SC (1991) Carbon isotope discrimination by plants follows latitudinal and altitudinal trends. **Oecologia** 88:30-40.

103. Henderson SA, von Caemmerer S and Farquhar GD (1992) Short term measurements of carbon isotope discrimination in several C4 species. **Aust. J. Plant Physiol.** 19:263- 285.

104. Condon AG, Richards RA and Farquhar GD (1992) The effect of variation in soil water availability, vapour pressure deficit and nitrogen nutrition on carbon isotope discrimination in wheat. **Aust. J. Agric. Res.** 43:935-947.

105. Farquhar GD and Sharkey TD (1994) Photosynthesis and carbon assimilation. *In* Physiology and determination of crop yield. KJ Boote, JM Bennett, TR Sinclair, GM Paulsen (eds). ASA, CSSA, SSSA Madison, WI. Chapter 8A, pp 187-210.

106. Lloyd J, Syvertsen JP, Kriedemann PE and Farquhar GD (1992) Low conductances for CO_2 diffusion from stomata to the sites of carboxylation in leaves of woody species. **Plant, Cell & Env.**15:873-900.

107. Farquhar GD and Lloyd J (1993) Carbon and oxygen isotope effects on the exchange of carbon dioxide between plants and the atmosphere. *In* Stable Isotopes and Plant Carbon/Water Relations. JR Ehleringer, AE Hall and GD Farquhar (eds). Academic Press, San Diego, pp 47-70.

108. Masle J, Shin JS and Farquhar GD (1993) Analysis of restriction fragment length polymorphisms associated with variation of carbon isotope discrimination among ecotypes of *Arabidopsis thaliana*. *In* Stable Isotopes and Plant Carbon/Water Relations. JR Ehleringer, AE Hall and GD Farquhar (eds). Academic Press, San Diego, pp 371- 386.

109. Wright GC, Hubick KT, Farquhar GD and Rao RCN (1993) Genetic and environmental variation in transpiration efficiency and its correlation with carbon isotope discrimination and specific leaf area in peanut. *In* Stable Isotopes and Plant Carbon/Water Relations. JR Ehleringer, AE Hall and GD Farquhar (eds). Academic Press, San Diego, pp 247-267.

110. Farquhar GD (1993) Plants for the Future. *In* Drought-Water-Flood. D Tier (ed). **ANZAAS**. 110a. van Herwaarden AF, Farquhar GD and Richards RA (1993) Grain yield, nitrogen uptake and sustainable wheat production: are varieties equal? *In* Proceedings of the Seventh Australian Agronomy Conference, Adelaide, p 366.

111. Masle J, Farquhar GD and Wong SC (1992) Transpiration ratio and plant mineral content are related among genotypes of a range of species. **Aust. J. Plant Physiol.** 19:709-21.

112. Wong SC, Kriedemann PE and Farquhar GD (1992) CO_2 x nitrogen interaction on seedling growth of four species of Eucalypt. **Aust. J. Bot.** 40:457-472.

113. ★ Farquhar GD, Lloyd J, Taylor JA, Flanagan LB, Syvertsen JP, Hubick KT, Wong SC and Ehleringer JR (1993) Vegetation effects on the isotopic composition of oxygen in atmospheric CO_2. **Nature** 363:439-443.

114. White J, Molfino B, Labeyrie L, Stauffer B and Farquhar GD (1993) How Reliable and Consistent Are Paleodata from Continents, Oceans, and Ice? *In* Global changes in the Perspective of the Past. JA Eddy and H Oeschger (eds). John Wiley, pp 73-102.

115. Condon AG, Richards RA and Farquhar GD (1993) Relationships between carbon isotope discrimination, water-use efficiency and transpiration efficiency for dryland wheat. **Aust. J. Agric. Res.** 44(2):1693-1711.

116. Marshall JD, Ehleringer JR, Schulze E-D and Farquhar GD (1994) Carbon isotope composition, gas exchange, and heterotrophy in Australian mistletoes. **Functional Ecology** 8:237- 241.

117. Nageswara Rao RC, Williams JH, Wadia KDR, Hubick KT and Farquhar GD (1993) Crop growth, water-use efficiency and carbon isotope discrimination in groundnut (*Arachis hypogaea* L.) genotypes under end-of-season drought conditions. **Ann. Appl. Biol.** 122:357-367.

118. Wright GC, Rao RCN and Farquhar GD (1994) Water-use efficiency and carbon isotope discrimination in peanut under water deficit conditions. **Crop Science** 34:92-97.

119. Flanagan LB, Phillips SL, Ehleringer JR, Lloyd J and Farquhar GD (1994) Effect of changes in leaf water oxygen isotopic composition on discrimination against $C^{18}O^{16}O$ during photosynthetic gas exchange. **Aust. J. Plant Physiol.** 21:221-234.

120. Hall AE, Richards RA, Condon AG, Wright GC and Farquhar GD (1994) Carbon isotope discrimination and plant breeding. **Plant Breeding Reviews** 4:81-113.

121. Poorter H and Farquhar GD (1994) Transpiration, intercellular carbon dioxide concentration and carbon-isotope discrimination of 24 wild species differing in relative growth rate. **Aust. J. Plant Physiol.** 21:507-516.

122. Farquhar GD, Condon AG and Masle J (1994) On the use of carbon and oxygen isotope composition and mineral ash content in breeding for improved rice production under favourable, irrigated conditions. *In* Breaking the Yield Barrier. KG Cassman (ed). International Rice Research Institute, pp 95-101.

123. Lloyd JJ and Farquhar GD (1994) ^{13}C Discrimination during CO_2 assimilation by the terrestrial biosphere. **Oecologia** 99:201-215.

124. López-Castañeda C, Richards RA and Farquhar GD (1995) Variation in early vigour between wheat

and barley. **Crop Science** 35(2):472-479.

125. Bird MJ, Lloyd JJ and Farquha, GD (1994) Terrestrial carbon storage at the last glacial maximum. **Nature** 371:566.

126. Nageswara Rao RC, Udaykumar M, Farquhar GD, Talwar HS and Prasad TG (1995) Variation in carbon isotope discrimination and its relation with specific leaf area and ribulose-1-5 bisphosphate carboxylase content in groundnut genotypes. **Aust. J. Plant Physiol.** 22(4):545-551.

127. Franks PJ, Cowan IR, Tyerman SD, Cleary AL, Lloyd JJ and Farquhar GD (1995) Guard cell pressure/aperture characteristics measured with the pressure probe. **Plant, Cell & Env.** 18:795-800.

128. Syvertsen JP, Lloyd JJ, McConchie C, Kriedemann PE and Farquhar GD (1995) On the relationship between leaf anatomy and CO_2 diffusion through the mesophyll of hypostomatous leaves. **Plant, Cell & Env.** 18:149-157.

129. Barson M, Lloyd J and Farquhar GD (1995) Land use changes: a surprise in the National Greenhouse Gas Inventory. **Search** 26(4).

130. Kruijt B, Lloyd JJ, Grace J, McIntyre J, Farquhar GD, Miranda AC and McCracken P (1996) Sources and sinks of CO_2 in Rondonia tropical rainforest. *In* Amazonian Deforestation and Climate. JHC Gash, CA Nobre, JM Roberts, RL Victoria (eds). Wiley, Chichester, UK, pp 331-351.

131. Lloyd JJ and Farquhar GD (1996) The CO_2 dependence of photosynthesis, plant growth responses to elevated atmospheric CO_2 concentrations, and their interaction with soil nutrient status. I. General principles and forest ecosystems. **Functional Ecology** 10(1):4-32.

132. Melillo J, Prentice IC, Schulze E-D, Farquhar GD and Sala OE (1996) Terrestrial ecosystems: Biotic feedbacks to climate. *In* IPCC WG I Report, Climate Change 1995, Chap 9, pp 449-481.

133. Virgona JM and Farquhar GD (1996) Genotypic variation in relative growth rate and carbon isotope discrimination in sunflower is related to variation in photosynthetic capacity. **Aust. J. Plant Physiol.** 23(2):227-36.

134. Anderson JE, Williams J, Kriedemann P, Austin M and Farquhar GD (1996) Correlations between carbon isotope discrimination and climate of native habitats for diverse eucalypt taxa growing in a common garden. **Aust. J. Plant Physiol.** 23(3):311-320.

135. López-Castañeda C, Richards RA, Farquhar GD and Williamson RE (1996) Seed and seedling characteristics contributing to variation in early vigour among temperate cereals. **Crop Science** 36:1257-1266.

136. Lloyd J, Kruijt B, Hollinger DY, Grace J, Francey RJ, Wong S-C, Kelliher FM, Miranda AC, Farquhar GD, Gash JHC, Vygodskaya NN, Wright IR, Miranda HS and Schulze E-D (1996) Vegetation effects on the isotopic composition of atmospheric CO_2 local and regional scales: theoretical aspects and a comparison between rain forest in Amazonia and a boreal forest in Siberia. **Aust. J. Plant Physiol.** 23(3):371-399.

137. Beemster GTS, Masle J, Williamson RW and Farquhar GD (1996) Effects of soil resistance to root penetration on leaf expansion in wheat (*Triticum aestivum* L.): Kinematic analysis of leaf elongation. **J. Exp. Bot.** 47:1663-1678.

137a. van Herwaarden AF, Angus JF, Farquhar GD and Richards RA (1996) Physiological responses of six Australian spring wheats to nitrogen fertiliser. *In* Proceedings of the Eight Australian Agronomy Conference, Toowoomba, pp 570-573.

138. Franks PJ, Cowan IR and Farquhar GD (1997) The apparent feedforward response of stomata to air vapour pressure deficit: Information revealed by different experimental procedures with two rainforest trees. **Plant, Cell & Env.** 20:142-145.

139. von Caemmerer S, Millgate A, Farquhar GD and Furbank RT (1997) Reduction of Ribulose- 1,5-bisphosphate carboxylase/oxygenase by antisense RNA in the C4 plant, *Flaveria bidentis*, leads to reduced assimilation rates and increased carbon isotope discrimination. **Plant Physiol.** 113:469-477.

140. Syvertsen JP, Smith ML, Lloyd J and Farquhar GD (1997) Net CO_2 assimilation, carbon isotope discrimination, growth and water use efficiency of citrus trees in response to nitrogen status. **J. Amer. Soc. Hort. Sci.** 122:226-232.

141. Hammer GL, Farquhar GD and Broad I (1997) On the extent of genetic variation for transpiration efficiency in Sorghum. **Aust. J. Agric. Res.** 48:649-655.

142. ★ de Pury DGG and Farquhar GD (1997) Simple scaling of photosynthesis from leaves to canopies without the errors of big-leaf models. **Plant, Cell & Env.** 20(5):537-557.

143. Bird MI, Lloyd J and Farquhar GD (1996) Terrestrial carbon-storage from the last glacial maximum to the present. **Chemosphere** 33(9):1675-1685.

144. Boyer JS, Wong SC and Farquhar GD (1997) Carbon dioxide and water vapor exchange across leaf cuticle (epidermis) at various water potentials. **Plant Physiol.** 114(1):185- 191.

145. Buckley TN, Farquhar GD and Mott KA (1997) The effects of patchy stomatal conductance distributions on gas-exchange calculations. **Plant, Cell & Env.** 20(7):867-880.

146. von Caemmerer S, Ludwig M, Millgate A, Farquhar GD, Price D, Badger M and Furbank RT (1997) Isotope discrimination during C4 photosynthesis: Insights from transgenic plants. **Aust. J. Plant Physiol.** 24:487-494.

147. Yong JWH, Wong SC and Farquhar GD (1997) Stomatal responses to changes in vapour pressure difference between leaf and air. **Plant, Cell & Env.** 20(10):1213-1216.

148. ★ Farquhar GD, Henry BK and Styles JM (1997) A rapid on-line technique for determination of oxygen isotope composition of nitrogen-containing organic matter and water. **Rapid Communications in Mass Spectrometry** 11(14): 1554-1560.

149. Lloyd J, Kruijt B, Hollinger DY, Grace J, Francey RJ, Wong S-C, Kelliher FM, Miranda AC, Farquhar GD, Gash JHC, Vygodskaya NN, Wright IR, Miranda HS and Schulze E-D (1997) A response to the comment 'Interpretation of Recycling Indexes' by Leonel da Silveira Lobo Sternberg on 'Vegetation effects on the isotopic composition of atmospheric CO_2 local and regional scales: theoretical aspects and a comparison between rain forest in Amazonia and a boreal forest in Siberia'. **Aust. J. Plant Physiol.** 24:399-405.

150. Franks PJ, Cowan IR and Farquhar GD (1998) A study of stomatal mechanics using the cell pressure probe. **Plant, Cell & Env.** 21(1):94-100.

151. Noble IR, Gifford RM and Farquhar GD (1997) What do we know about impacts of action or no action? "A perspective from the biological sciences". *In* Summary of Proceedings of "The Challenge for Australia on Global Climate Change" 29-30 April 1997, Canberra. Published by The National Academies Forum, pp. 15-22.

152. Henderson S, von Caemmerer S, Farquhar GD, Wade L and Hammer G (1998) Correlations between carbon isotope discrimination and transpiration efficiency in lines of the C4 species *Sorghum bicolor* in the glasshouse and the field. **Aust. J. Plant Phys.** 25(1):111-123.

153. Farquhar GD, Barbour MM and Henry BK (1998) Interpretation of oxygen isotope composition of leaf material. Chapter 3 *in* Stable Isotopes: integration of biological, ecological and geochemical processes. H Griffiths (ed), BIOS Scientific Publishers Ltd, Oxford, pp 27- 62.

154. Farquhar GD (1997) Carbon dioxide and vegetation. **Science** 278:1411.

155. Millar AH, Atkin,OK, Menz RI, Henry BK, Farquhar GD and Day DA. (1998) Analysis of respiratory chain regulation in roots of soybean seedlings. **Plant Physiology** 117:1083- 1093.

156. von Caemmerer S and Farquhar GD. (1999) Leaf gas exchange: a case study on development of A:pi curves. *In* 'Plants in Action'. BJ Atwell *et al*. (eds), Macmillan Press, Melbourne. Chapter 1.

157. Farquhar GD (1998) The significance of land clearing. Presented at APEC Study Centre's conference 'Kyoto - The Impact on Australia', Melbourne, 12-13 February.

158. van Herwaarden AF, Farquhar GD, Angus JF, Richards RA and Howe GN (1998) 'Haying-off', the negative grain yield response of dryland wheat to nitrogen fertiliser. I. Biomass, grain yield and water use. **Aust. J. Agricultural Research** 49: 1067-1081.

159. van Herwaarden AF, Angus JF, Richards RA and Farquhar GD. (1998) 'Haying-off', the negative grain yield response of dryland wheat to nitrogen fertiliser. II. Carbohydrate and protein dynamics. **Aust. J. Agricultural Research** 49:1083-1093.

160. van Herwaarden AF, Richards RA, Farquhar GD and Angus JF (1998) 'Haying-off', the negative grain yield response of dryland wheat to nitrogen fertiliser. III. The influence of water deficit and heat shock. **Aust. J. Agricultural Research** 49: 1095-1110.

161. Schulze E-D, Williams RJ, Farquhar GD, Schulze W, Langridge J, Miller JM and Walker BH. (1998) Carbon and nitrogen isotope discrimination and nitrogen nutrition of trees along a rainfall gradient in northern Australia. **Aust. J. Plant Physiol**. 25:413-425.

162. Steffen W *et al*. IGBP Terrestrial Carbon Working Group (1998) The terrestrial carbon cycle: Implications for the Kyoto Protocol. **Science** 280: 1393-1394.

163. Buckley TN, Farquhar GD and Mott KA. (1999) Carbon-water balance and patchy stomatal conductance. **Oecologia** 118:132-143.

164. Brugnoli E. and Farquhar GD. (2000) Photosynthetic fractionation of carbon isotopes. *In* Photosynthesis: Physiology and Metabolism (Advances in Photosynthesis volume 9). RC Leegood, TD Sharkey, S von Caemmerer (eds). Kluwer Academic Publishers. Chapter 17, pp 399-434.

165. Korol RL, Kirschbaum MUF, Farquhar GD and Jeffreys M. (1999) The effect of water status and soil fertility on the C-isotope signature in *Pinus radiata*. **Tree Physiology** 19:551- 562.

166. Franks PJ and Farquhar GD. (1999) A relationship between humidity response, growth form and photosynthetic operating point in C_3 plants. **Plant, Cell & Env.** 22:1337-1349.

167. Schulze E-D, Farquhar GD, Miller JM, Schulze W, Walker BH and Williams RJ. (1999) Interpretation of increased foliar $\delta^{15}N$ in woody species along a rainfall gradient in northern Australia. **Australian Journal of Plant Physiology** 26:296-298.

168. dePury DGG and Farquhar GD. (1999) A commentary on the use of a sun/shade model to scale from the leaf to a canopy. **Agricultural and Forest Meteorology** 95:257-260.

169. Roderick ML, Berry SL, Noble IR and Farquhar GD. (1999) A theoretical approach to linking the composition and morphology with the function of leaves. **Functional Ecology** 13:683- 695.

170. Lloyd J and Farquhar GD. (2000) Do slow-growing species and nutrient-stressed plants consistently respond less to elevated CO_2? A clarification of some issues raised issues raised by Poorter (1998). **Global Change Biology** 6:871-876.

171. Henry BK, Atkin OK, Day DA, Millar AH, Menz RI and Farquhar GD. (1999) Calculation of the oxygen isotope discrimination factor for studying plant respiration. **Australian Journal of Plant Physiology** 26:773-780.

172. ★Barbour MM and Farquhar GD. (2000) Relative humidity- and ABA-induced variation in carbon and oxygen isotope ratios of cotton leaves. **Plant, Cell & Environment** 23:473- 485.

173. Barbour MM, Schurr U, Henry BK, Wong SC and Farquhar GD. (2000) Variation in the oxygen isotope ratio of phloem sap sucrose from castor bean: Evidence in support of the Péclet effect. **Plant Physiology** 123:671-679.

174. Prasolova NV, Xu ZH, Farquhar GD, Saffigna PG, and Dieters MJ. (2000) Variation in branchlet $\delta^{13}C$ of 8-year-old hoop pine families (*Araucaria cunninghamii*) in relation to branchlet nitrogen concentration and tree growth in subtropical Australia. **Tree Physiology** 20:1049-1055.

175. ★ Barbour MM, Fischer RA, Sayre KD and Farquhar GD. (2000) Oxygen isotope ratio of leaf and grain material correlates with stomatal conductance and grain yield in irrigated wheat. **Aust. J. Plant Physiol** 27:625-637.

176. Lim B, Farquhar GD, and Ravindranath NH (2000) Implications of the Kyoto Protocol for the Reporting Guidelines. Chapter 6 *in* RT Watson, IR Noble *et al.* eds. Land Use, Land- Use Change and Forestry. Intergovernmental Panel on Climate Change, Cambridge University Press. pp 341-362.

177. Prentice IC, Farquhar GD, Fasham M, Goulden M, Jaramillo V, Kheshgi H, Quere C, Scholes R and Wallace D (2001). The Carbon Cycle and Atmospheric CO_2. Pp 183-237 *in* "Climate Change 2001: The Scientific Basis. Contribution of Working Group 1 to the Third Assessment Report of the Intergovernmental Panel on Climate Change" (Houghton, J. T., Y. Ding, D. J. Griggs, M. Noguer, P. J. van der Linden, X. Dai, K. Maskell, and C. A. Johnson eds). Cambridge University Press, Cambridge, United Kingdom and New York.

178. Anderson JE, Kriedemann PE, Austin MP and Farquhar GD. (2000) Eucalypts forming a canopy functional type in dry sclerophyll forests respond differentially to environment. **Aust. J. Botany** 48:759-775.

179. Yong JWH, Wong SC, Letham DS, Hocart CH and Farquhar GD (2000) Effects of elevated [CO_2] and nitrogen nutrition on cytokinins in the xylem sap and leaves of cotton. **Plant Physiology** 124:767-780.

180. Xu ZH, Saffigna PG, Farquhar GD, Simpson JA, Haines RJ, Walker S, Osborne DO and Guinto D. (2000) Carbon isotope discrimination and oxygen isotope composition in clones of the F1 hybrid between slash pine and Caribbean pine in relation to tree growth, water- use efficiency and foliar nutrient concentration. **Tree Physiology** 20(18):1209-1217.

181. Franks PJ and Farquhar GD (2001) The effect of exogenous abscisic acid on stomatal development, stomatal mechanics and leaf gas exchange in *Tradescantia virginiana* L. **Plant Physiology** 125:935-942.

182. Miller JM, Williams RJ and Farquhar GD. (2001) Carbon isotope discrimination by a sequence of *Eucalyptus* species along a sub-continental rainfall gradient in Australia. **Functional Ecology** 15:222-232.

183. Farquhar GD, von Caemmerer S and Berry JA. (2001) Models of photosynthesis. **Plant Physiology** 125: 42-45.

184. Prasolova NV, Xu Z, Farquhar GD, Saffigna PG and Dieters MJ (2001) Canopy carbon and oxygen isotope composition of 9-year-old hoop pine families in relation to seedling carbon isotope composition and growth, field growth performance and canopy nitrogen concentration. **Canadian Journal of Forest Research** 31:673-681.

185. ★ Rebetzke GJ, Condon AG, Richards RA and Farquhar GD (2002) Selection for reduced carbon isotope discrimination increases aerial biomass and grain yield of rainfed bread wheat. **Crop Science** 42:739-745.

186. Roderick ML, Farquhar GD, Berry SL, and. Noble IR. (2001) On the direct effect of clouds and atmospheric particles on the productivity and structure of vegetation. **Oecologia** 129:21- 30.

187. Barbour MM, Andrews TJ and Farquhar GD. (2001) Correlations between oxygen isotope ratios of wood constituents of *Quercus* and *Pinus* samples from around the world. **Australian Journal of Plant Physiology** 28:335-348.

188. Condon AG, Richards RA, Rebetzke GJ and Farquhar GD (2002) Improving intrinsic water- use efficiency and crop yield. **Crop Science** 42:122-131.

189. Gan KS, Wong SC and Farquhar GD (2004). Oxygen isotope analysis of plant water without extraction procedure. *In* Handbook of Stable Isotope Analytical Techniques, Volume I, Chapter 21 (ed Pier A. de Groot), Elsevier. pp 473-481. ISBN: 0-444-51114-8.

190. Prasolova NV, Xu ZH, Lundkvist K, Farquhar GD, Dieters MJ, Walker S, and Saffigna PG (2003) Genetic variation in foliar carbon isotope composition in relation to tree growth and foliar nitrogen concentrations in clones of F1 hybrid between slash pine and Caribbean pine. **Forest Ecology and Management** 172 (2-3):145-160.

191. Cernusak LA, Pate JA, Farquhar GD, (2002) Diurnal variation in the stable isotope composition of water and dry matter in fruiting *Lupinus angustifolius* under field conditions. **Plant, Cell and Environment** 25:893-907.

192. Farquhar GD, Buckley TN, Miller JM (2002) Optimal stomatal control in relation to leaf area and nitrogen content. **Silva Fennica** 36(3):625-637.

193. Buckley TN, Farquhar GD, Miller JM (2002) The mathematics of linked optimisation for water and nitrogen use in a canopy. **Silva Fennica** 36(3):639-669.

194. Mäkelä A, Givnish TJ, Berninger F, Buckley TN, Farquhar GD, Hari P (2002). Challenges and

opportunities of the optimality approach in plant ecology. **Silva Fennica** 36(3):605- 614.

195. Barbour MM, Walcroft AS, Farquhar GD (2002). Seasonal variation in $\delta^{13}C$ and $\delta^{18}O$ of cellulose from growth rings of *Pinus radiata*. **Plant, Cell and Environment** 25 (11):1483-1499.

196. Gan KS, Wong SC, Yong JW H, Farquhar GD (2002). ^{18}O Spatial patterns of vein xylem water, leaf water and dry matter in cotton leaves. **Plant Physiology** 130:1008-1021.

197. Styles JM, Raupach MR, Farquhar GD, Kolle O, Lawton KA, Brand WA, Werner RA, Jordan A, Schulze E-D, Shibistova O and Lloyd J (2002), Soil and canopy CO_2, $^{13}CO_2$, H_2O and sensible heat flux partitions in a forest canopy inferred from concentration measurements. **Tellus** B 54 (5):655-676.

198. Barbour MM, Cernusak LA, Farquhar GD (2004) Factors affecting the oxygen isotope ratio of plant organic material. *In* LB Flanagan, JR Ehleringer and DE Pataki eds. *Stable Isotopes and Biosphere Atmosphere Interactions* Elsevier Academic Press. Chapter 2, pp 9-28.

199. ★ Roderick ML and Farquhar GD (2002) The cause of decreased pan evaporation over the last 50 years. **Science** 298:1410-1411.

200. ★ Farquhar GD and Gan KS (2003) On the progressive enrichment of the oxygen isotopic composition of water along a leaf. **Plant, Cell & Environment** 26 (9):1579-1597.

201. Rebetzke GJ, Condon AG, Richards RA and Farquhar GD (2003) Inheritance of leaf conductance in three wheat crosses. **Aust J Agric Res** 54:381-387.

202. Cernusak LA, Arthur DJ, Pate JA, Farquhar GD (2003) Water relations link carbon and oxygen isotope discrimination to phloem sap sugar concentration in *Eucalyptus globulus*. **Plant Physiology** 131:1544-1554.

203. Buckley TN, Mott KA, and Farquhar GD. (2003) A hydromechanical and biochemical model of stomatal conductance. **Plant, Cell & Environment** 26:1767-1785.

204. Farquhar GD and Roderick ML (2003) Pinatubo, diffuse light, and the carbon cycle. **Science** 299: 5615.

205. Gan KS, Wong SC, Yong JW and Farquhar GD (2003) Evaluation of models of leaf water ^{18}O enrichment using measurements of spatial patterns of vein xylem, leaf water and dry matter in maize leaves **Plant, Cell & Environment** 26 (9):1479-1495. (Reprinted from **Plant, Cell & Environment** 26(6):801-819).

206. Roderick ML, Farquhar GD (2003) The pan evaporation paradox. In: Steffen W, Sanderson A, Tyson P, Jäger J, Matson P, Moore III B, Oldfield F, Richardson K, Schellnhuber H-J, Turner II BL, Wasson R (eds) Global Change and the Earth System: A Planet Under Pressure. IGBP Global Change Series.Springer-Verlag, Berlin Heidelberg New York, p167.

207. Cernusak LA, Wong SC, and Farquhar GD (2003) Oxygen isotope composition of phloem sap in relation to leaf water in *Ricinus communis*. **Functional Plant Biology** 30:1059- 1070.

208. Tremmel IG, Kirchhoff H, Weis E, and Farquhar GD (2003) Dependence of plastoquinol diffusion on the shape, size, and density of integral thylakoid proteins. **Biochimica et Biophysica Acta** 1607:97-109.

209. Barbour MM, Roden JS, Farquhar GD and Ehleringer JR (2004) Expressing leaf water and cellulose oxygen isotope ratios as enrichment above source water reveals evidence of a Péclet effect. **Oecologia** 138:426-435.

210. Barbour MM and Farquhar GD (2003) Do pathways of water movement and leaf anatomical dimensions allow development of gradients in $H_2{}^{18}O$ between veins and the sites of evaporation within leaves? **Plant, Cell & Environment** 27(1):107-121.

211. Barnes B, Farquhar GD and Gan KS (2004) Modelling the isotope enrichment of leaf water, **Journal of Mathematical Biology** 48:672-702.

212. Cernusak LA, Pate JS, Farquhar GD (2004) Oxygen and carbon isotope composition of parasitic plants and their hosts in southwestern Australia. **Oecologia** 139(2):199-213.

213. ★June T, Evans JR and Farquhar GD (2004) A simple new equation for the reversible temperature dependence of photosynthetic electron transport: a study on soybean

leaf. **Functional Plant Biology** 31(3):275-83.

214. Roderick ML and Farquhar GD (2004) Changes in Australian Pan Evaporation from 1970 to 2002. **International Journal of Climatology** 24(9):1077-1090.

215. Cernusak LA, Farquhar GD, Wong SC and Stuart-Williams HLeQ (2004) Measurement and interpretation of the oxygen isotope composition of carbon dioxide respired by leaves in the dark. **Plant Physiology** 136:3350–3363.

216. Buckley TN and Farquhar GD (2004) A new analytical model for whole-leaf potential electron transport rate. **Plant, Cell and Environment** 27:12 1487-1502.

217. Tcherkez G, Farquhar GD, Badeck F and Ghashghaie J (2004) Theoretical considerations about carbon isotope distribution in glucose of C_3 plants. **Functional Plant Biology** 31:857-877.

218. Barbour MM, Hunt JE, Dungan RJ, Turnbull MH, Brailsford GW, Farquhar GD, Whitehead D (2004) Variation in the degree of coupling between $\delta^{13}C$ of phloem sap and ecosystem respiration in two mature *Nothofagus* forests. **New Phytologist** 166 (2) 497-512.

219. Cernusak LA, Farquhar GD, Pate JS (2004) Environmental and physiological controls over oxygen and carbon isotope composition of Tasmanian blue gum, *Eucalyptus globulus.* **Tree Physiology** 25:129-146.

220. Guehl J-M, Bonal D, Ferhi A, Barigah TS, Farquhar GD, Granier A (2004) Community-level diversity of carbon-water relations in rainforest trees. *In* Ecology and Management of a Neotropical Rainforest (Lessons drawn for Paracou, a long-term experimental research site in French Guiana). S Gourlet-Fleury, J-M Guehl and O Laroussinie (eds). Elsevier SAS. Chapter 2, pp 75–94.

221. Condon AG, Richards RA, Rebetzke GJ and Farquhar GD (2004) Breeding for high water-use efficiency. **Journal of Experimental Botany** 55(407):2447-2459.

222. Tremmel IG, Weis E and Farquhar GD (2005) The influence of protein-protein interactions on the organisation of proteins within thylakoid membranes. **Biophysical Journal** 88:2650–2660 .

223. ★Farquhar GD and Cernusak LA (2005) On the isotopic composition of leaf water in the non-steady state. **Functional Plant Biology** 32(4):293-303.

224. Tcherkez G and Farquhar GD (2005) Carbon isotope effect predictions for enzymes involved in the primary carbon metabolism of plant leaves. **Functional Plant Biology** 32(4):277-291.

225. ★ Masle J, Gilmore S R and Farquhar GD (2005) The *ERECTA* gene regulates plant transpiration efficiency in *Arabidopsis*. **Nature** 436, 866-870.

226. Condon AG, Farquhar GD, Rebetzke GJ, Richards RA (2006) The application of carbon isotope discrimination in cereal improvement for water-limited environments. In Drought Tolerance in Cereals. Ed J-M Ribaut. Haworth Press, Binghamton NY Chap 6 pp 171-219.

227. Berry SL, Farquhar GD and Roderick ML (2005) Co-evolution of climate, vegetation, soil and air. In: Encyclopedia of Hydrological Sciences Vol. 1, 177-192.

228. Roderick M and Farquhar GD (2005) Changes in New Zealand pan evaporation since the 1970s. **International Journal of Climatology 25**:2031–2039.

229. Powles JE, Buckley TN, Nicotra AB and Farquhar GD (2006). Dynamics of stomatal water relations following leaf excision. **Plant, Cell and Environment** 29:981-992.

230. Barbour MM, Cernusak LA, Whitehead D, Griffin KL, Turnbull MH, Tissue DT and Farquhar GD (2005). Nocturnal stomatal conductance and implications for modeling $\delta^{18}O$ of leaf-respired CO_2 in temperate tree species. **Functional Plant Biology** 32:1107-1121.

231. Rebetzke GJ, Richards RA, Condon AG and Farquhar GD (2006) Inheritance of carbon isotope discrimination in bread wheat (*Triticum aestivum* L.). **Euphytica** 150:97-106.

232. Tcherkez G and Farquhar GD (2006). Isotopic fractionation by plant nitrate reductase, twenty years later. **Functional Plant Biology** 33:531-537.

233. ★ Tcherkez G, Farquhar GD and Andrews TJ (2006). Despite slow catalysis and confused substrate specificity, all ribulose bisphosphate carboxylases may be nearly perfectly

optimized. **Proceedings of the National Academy of Sciences of the USA** 103(19):7246-7251.

see also Commentaries in PNAS and Nature:

Gutteridge S and Pierce J (2006) A unified theory for the basis of the limitations of the primary reaction of photosynthetic CO_2 fixation: Was Dr. Pangloss right? **Proceedings of the National Academy of Sciences of the USA** 103 (19) 7203-7204

Griffiths, H (2006) Designs on Rubisco. **Nature** 441:940-941.

234. Kirschbaum MUF, Bruhn D, Etheridge DM, Evans JR, Farquhar GD, Gifford RM, Paul KI and Winters AJ (2006). A comment on the quantitative significance of aerobic methane released by plants. **Functional Plant Biology** 33:521-530.

235. Rotstayn LD, Roderick ML and Farquhar GD (2006). A simple pan-evaporation model for analysis of climate simulations: Evaluation over Australia. **Geophysical Research Letters** 33: L17715.

236. McNevin DB, von Caemmerer S and Farquhar GD (2006). Determining RuBisCO activation kinetics and other rate and equilibrium constants by simultaneous multiple non-linear regression of a kinetic model. **Journal of Experimental Botany** 27(14):3883-3900.

237. Marenco RA, Siebke K, Farquhar GD, Ball MC (2006) Hydraulically based stomatal oscillations and stomatal patchiness in *Gossypium hirsutum*. **Functional Plant Biology** 33:1103–1113.

238. McNevin DB, Badger MMR, Kane HJ, and Farquhar GD (2006). Measurement of (carbon) kinetic isotope effect by Rayleigh fractionation using membrane inlet mass spectrometry for CO_2 consuming reactions. **Functional Plant Biology** 33:1115–1128.

239. Rotstayn LD Cai W, Dix MR, Farquhar GD, Feng Y, Ginoux P, Herzog M, Ito A, Penner JE, Roderick ML, and Wang M (2007) Have Australian rainfall and cloudiness increased due to the remote effects of Asian anthropogenic aerosols? **Journal of Geophysical Research - Atmospheres** Vol. 112 D09202:1-28.

240. Franks PJ and Farquhar GD (2007) The mechanical diversity of stomata and its significance in gas exchange control. **Plant Physiology** 143:77-87.

241. ★Farquhar GD, Cernusak LA, Barnes B (2007) Heavy water fractionation during transpiration. **Plant Physiology** 143: 11–18.

242. Barbour MM, Farquhar GD, Hanson DT, Bickford CP, Powers H, McDowell NG (2007). A new measurement technique reveals temporal variation in $\delta^{18}O$ of leaf-respired CO_2. **Plant, Cell and Environment** 30:456-468.

243. Lloyd J, Bird MI, Vellen L, Miranda AC, Veenendaal EM, Djagbletey G, Miranda HS, Cook G, Farquhar GD (2008) Contributions of woody and herbaceous vegetation to tropical savanna ecosystem productivity: A quasi-global estimate. **Tree Physiology** 28:451- 468.

244. Gessler A, Peuke AD, Keitel C, Farquhar GD (2007) Oxygen isotope enrichment of organic matter in *Ricinus communis* during the diel course and as affected by assimilate transport. **New Phytologist** doi: 10.1111/j.14698137.2007.02007.x

245. Farquhar GD and Roderick ML (2007) Worldwide Changes in Evaporative Demand. *In* The Proceedings of the Working Group 12-14 November 2005 "Water and the Environment", Pontifica Academia Scientiarvm 108. Prof I Rodriguez-Iturbe and H.E. Msgr. MS Sorondo (eds). Pontificia Academia Scientiarvm. pp81-103.

246. Thompson AJ, Andrews J, Mulholland BJ, McKee JMT, Hilton HW, Horridge JS, Farquhar GD, Smeeton RC, Smillie IRA, Black CR and Taylor IB (2007) Over-production of abscisic acid in *Solanum lycopersicum* l. increases transpiration efficiency and root hydraulic conductivity and influences leaf expansion. **Plant Physiology** 143:1905- 1917.

247. Beer C, Reichstein M, Ciais P, Farquhar GD, and Papale D (2007) Mean annual GPP of Europe derived from its water balance. **Geophysical Research Letters** VOL. 34, L05401, doi:10.1029/2006GL029006.

248. Stork NE, Balston J, Farquhar GD, Franks PJ, Holtum JAM and Liddell MJ (2007) Commentary. Tropical rainforest canopies and climate change **Austral Ecology** 32:80–86.

249. Krull E, Bray S, Harms B, Baxter N, Bol R, Farquhar G (2007) Development of a stable isotope index

to assess decadal-scale vegetation change and application to woodlands of the Burdekin catchment, Australia. **Global Change Biology** 13:1-14.

250. Tremmel IG, Weis E, and Farquhar GD (2007) Macromolecular crowding and its influence on possible reaction mechanisms in photosynthetic electron flow **Biochimica et Biophysica Acta** 1767:353-361.

251. Gessler A, Keitel C, Kodama N, Weston C, Winters AJ, Keith H, Grice K, Leuning R, Farquhar GD (2007) **δ**^{13}C of organic matter transported from the leaves to the roots in *Eucalyptus delegatensis* : short-term variations and relation to respired CO_2. **Functional Plant Biology** 34:692-706.

252. Cuntz M, Ogée J, Farquhar GD, Peylin P and Cernusak LA (2007) Modelling advection and diffusion of water isotopologues in leaves. **Plant, Cell and Environment** 30:892-909.

253. Paltridge GW, Farquhar GD and Cuntz M. (2007) Maximum entropy production, cloud feedback and climate change. **Geophysical Research Letters** 34, L14708, doi:10.1029/2007GL029925.

254. Sharkey TD, Bernacchi CJ, Farquhar GD and Singaas EL (2007) Fitting photosynthetic carbon dioxide response curves for C_3 leaves. **Plant, Cell and Environment** 30:1035- 1040.

255. ★Roderick ML, Rotstayn LD, Farquhar GD and Hobbins MT. (2007) On the attribution of changing pan evaporation. **Geophysical Research Letters** VOL. 34, L17403.

256. Condon AG, Reynolds MP, Rebetzke GJ, Van Ginkel M, Richards RR and Farquhar GD. (2007) Using stomatal aperture-related traits to select for high yield potential in bread wheat. **In** Developments in Plant Breeding 11 - Wheat Production in Stressed Environments. HT Buck, JE Nisi and N Salomón (eds). Springer Netherlands. Volume 12, pp 617-624.

257. Tcherkez G and Farquhar GD (2007) On the ^{16}O/^{18}O isotope effect associated with photosynthetic O_2 production. **Functional Plant Biology** 34:1049–1052.

258. McNevin DB, Badger MR, Whitney SM, von Caemmerer S, Tcherkez GGB and Farquhar GD (2007)

Differences in carbon isotope discrimination of three variants of D-Ribulose-1,5-bisphosphate Carboxylase/Oxygenase reflect differences in their catalytic mechanism. **J Biol Chem** 282:36068-36076.

259. Rebetzke GJ, Condon AG, Farquhar GD, Appels R, and Richards RA (2008) Location of quantitative trait loci for carbon isotope discrimination: Repeatability across multiple wheat (*Triticum aestivum* L.) populations. **Theoretical and Applied Genetics** 118:123-137.

260. Ripullone F, Matsuo N, Stuart-Williams H, Wong SC, Borghetti M, Tani M and Farquhar GD (2008) Environmental effects on oxygen isotope enrichment of leaf water in cotton leaves. **Plant Physiology** 146:729-736.

261. Lloyd J and Farquhar GD. (2008). Effects of rising temperatures and [CO_2] on the physiology of tropical forest trees. **Phil. Trans. R. Soc. B** 363:1811-1817.

262. Stuart-Williams H, Wong S C, Farquhar GD, Keitel C and Clayton S (2008) An innovative molybdenum column liner for oxygen and hydrogen stable isotope analysis by pyrolysis. **Rapid Communications in Mass Spectrometry** 22:1117-1126.

263. Tcherkez G and Farquhar GD (2008) On the effect of heavy water (D_2O) on carbon isotope fractionation in photosynthesis. **Functional Plant Biology** 35:201-212.

264. Gessler A, Tcherkez G, Peuke AD, Ghashghaie J, Farquhar GD (2008). Experimental evidence for diel variations of the carbon isotope composition in leaf, stem and phloem sap organic matter in *Ricinus communis*. **Plant, Cell and Environment** 31:941-953.

265. Hobbins MT, Dai A, Roderick ML, and Farquhar GD (2008). Revisiting the parameterization of potential evaporation as a driver of long-term water balance trends. **Geophysical Research Letters** 35(L12403):1-6.

266. Grice K, Lu H, Zhou Y, Stuart-Williams H, Farquhar GD (2008) Biosynthetic and environmental effects on the stable carbon isotopic compositions of anteiso- (3-methyl) and iso- (2-methyl) alkanes in tobacco leaves. **Phytochemistry** 69:2807–2814.

267. Ainsworth EA, Beier C, Calfapietra C, Ceulemans R, Durand-Tardif M, Farquhar GD, Godbold DL, Hendry TH, Kaduk J, Karnosky DF, Kimball BA, Körner C, Koorneef M, Lafarge T, Leakey ADB, Lewin KF, Long SP, Manderscheid R, McNeil DL, Mies TA, Miglietta F, Morgan JA, Nagy J, Norby RJ, Norton RM, Percy KE, Rogers A, Soussana J-F, Stitt M, Weigel H-J and White JW. (2008) Next generation of elevated [CO_2] experiments with crops: A critical investment for feeding the future world. **Plant Cell and Environment** 31:1317-1324.

268. Gessler A, Tcherkez G, Karyanto O, Keitel C, Ferrio JP, Ghashghaie J, Kreuzwieser J, Farquhar GD (2008) On the metabolic origin of the carbon isotope composition of CO_2 evolved from darkened light-adapted leaves in *Ricinus communis*. **New Phytologist** 181:374-386.

269 Harrison MT, Edwards EJ, Farquhar GD, Nicotra AB and Evans JR. (2009) Nitrogen in cell walls of sclerophyllous leaves accounts for little of the variation in photosynthetic nitrogen use efficiency. **Plant Cell and Environment** 32(3):259-271.

270 Still CJ, Riley WJ, Biraud SC, Noone DC, Buenning NH, Randerson JT, Torn MS, Welker J, White JWC, Vachon R, Farquhar GD, and Berry JA. (2009) The influence of clouds and diffuse radiation on ecosystem-atmosphere CO_2 and $CO^{18}O$ exchanges. **Journal of Geophysical Research - Biogeosciences** 114(GO1018):1-17.

271 Roderick ML, Hobbins MT Farquhar GD (2009). Pan Evaporation Trends and the Terrestrial Water Balance. I. Principles and Observations **Geography Compass** 3:746-760.

272 Roderick ML, Hobbins MT Farquhar GD (2009). Pan Evaporation Trends and the Terrestrial Water Balance. II. Energy Balance and Interpretation **Geography Compass** 3: 761– 780.

273 Cernusak LA, Tcherkez G, Keitel C, Cornwell WK, Santiago LS, Knohl A, Barbour MM, Williams DG, Reich, Ellsworth DS, Dawson TE, Griffiths HG, Farquhar GD, Wright IJ, and Westoby M (2009) Why are non-photosynthetic tissues generally ^{13}C enriched compared to leaves in C_3 plants? Review and synthesis of current hypotheses. **Functional Plant Biology** 36:199-2131.

274 von Caemmerer S, Farquhar G and Berry J. (2009) Biochemical Model of C_3 Photosynthesis. ***In*** Photosynthesis in silico: Understanding Complexity from Molecules to Ecosystems. A Laisk,

L Nedbal and Govindjee (eds). Springer-Netherlands. Volume 29, pp 209-230.

275 Bernacchi CJ, Rosenthal DM, Pimentel C, Long SP, and Farquhar GD. (2009) Modeling the Temperature Dependence of C_3 Photosynthesis. ***In*** Photosynthesis in silico: Understanding Complexity from Molecules to Ecosystems. A Laisk, L Nedbal and Govindjee (eds). Springer-Netherlands. Volume 29, pp 231-246.

276 Tao G-Q, Letham SDS, Yong JWH, Zhang K, John PCL, Schwartz OOM, Wong SC, Farquhar GD (2010) Promotion of shoot development and tuberisation in potato by expression of a chimaeric cytokinin synthesis gene at normal and elevated CO_2 levels. **Functional Plant Biology** 37:43-54.

277 Zhou Y, Grice K, Stuart-Williams H, Farquhar GD, Hocart CH, Lu H, Liu W (2010) Biosynthetic origin of the saw-toothed profile in $\delta^{13}C$ and $\delta^{2}H$ of *n*-alkanes and systematic isotopic differences between *n*-, *iso*- & *anteiso*-alkanes in leaf waxes of land plants. **Phytochemistry** 71:388-403.

278 Barbour MM, Warren CR, Farquhar GD, Forrester G, Brown H (2010) Variability in mesophyll conductance between barley genotypes, and effects on transpiration efficiency and carbon isotope discrimination. **Plant Cell & Environment** 33:1176-1185.

279 Zhou YP, Stuart-Williams H, Farquhar GD, Hocart CH (2010) The use of natural abundance stable isotopic ratios to indicate the presence of oxygen-containing chemical linkages between cellulose and lignin in plant cell walls. **Phytochemistry** 71:982-993.

280 Sun F, Roderick ML, Farquhar GD, Lim W-H, Zhang Y, Bennett N, Roxburgh SH (2010) Partitioning the variance between space and time. **Geophysical Research Letters** 37(L12704):982-993.

281 Yong JWH, Letham DS, Wong SC, Farquhar GD (2010) Effects of root restriction on growth and associated cytokinin levels in cotton. **Functional Plant Biology** 37:974-984.

282 Vicca S, Janssens IA, Wong SC, Cernusak LA, Farquhar GD (2010) *Zea mays* rhizosphere respiration, but not soil organic matter decomposition was stable across a temperature gradient. **Soil Biology & Biochemistry** 42:2030-2033.

283 Zhou Y, Grice K, Chikaraishi Y, Stuart-Williams H, Farquhar GD, Ohkouchi N (2011) Temperature effect on leaf water deuterium enrichment and isotopic fractionation during leaf lipid biosynthesis: results from controlled growth of C_3 and C4 land plants. **Phytochemistry** 72:207-213.

284 Sun F, Roderick ML, Lim WH, Farquhar GD (2011) Hydro-climatic projections for the Murray- Darling Basin based on an ensemble derived from IPCC AR4 climate models. **Water Resources Research** 47(W00G02):1-14.

285 Roderick ML, Farquhar GD (2011) A simple framework for relating variations in runoff to variations in climatic conditions and catchment properties. **Water Resources Research** 47(W00407):1-11.

286 Lim WH, Roderick ML, Hobbins MT, Wong SC, Groeneveld PJ, Sun F, Farquhar GD (2012) The aerodynamics of pan evaporation. **Agricultural and Forest Meteorology** 152:31- 43.

287 Roderick ML, Farquhar GD (2012) Geoengineering: Hazy, cool and well fed? **Nature Clim. Change** 2(2):76-77.

288 ★Farquhar GD, Cernusak LA (2012) Ternary effects on the gas exchange of isotopologues of carbon dioxide. **Plant Cell and Environment** 35:1221-31.

289 Roden J, Farquhar G (2012) A controlled test of the dual isotope approach for interpretation of stable carbon and oxygen isotope ratio variation in tree rings. **Tree Physiology** 32(4):490-503.

290 Roderick ML, Sun F, Farquhar GD (2012) Water cycle varies over land and sea. **Science** 336(6086):1230-1231.

291 Sun F, Roderick ML, Farquhar GD (2012) Changes in the variability of global land precipitation. **Geophysical Research Letters** 39(L19402):1-6.

292 Rebetzke GJ, Rattey AR, Farquhar GD, Richards RA, Condon AG (2013) Genomic regions for canopy temperature and their genetic association with stomatal conductance and grain

yield in wheat. **Functional Plant Biology** 40:14-33.

293 Franks PJ, Adams MA, Amthor JS, Barbour MM , Berry JA, Ellsworth DS , Farquhar GD, Ghannoum O, Lloyd J, McDowell N, Norby RJ, Tissue DT, von Caemmerer S (2013) Sensitivity of plants to changing atmospheric CO_2 concentration: From the geological past to the next century. **New Phytologist** 197(4):1077-1094.

294 Song X, Barbour MM, Farquhar GD, Vann DR, Helliker BR (2013) Transpiration rate relates to within- and across- species variations in effective pathlength in a leaf water model of oxygen isotope enrichment. **Plant Cell and Environment** 36(7):1338-1351.

295 Tcherkez GGB, Bathellier C, Stuart-Williams H, Whitney SM, Gout E, Bligny R, Badger M, Farquhar GD (2013) D2O solvent isotope effects suggest uniform energy barriers in ribulose-1,5-bisphosphate carboxylase/oxygenase catalysis. **Biochemistry** 52(5):869- 877.

296 Lloyd J, Bloomfield K, Domingues T, Farquhar GD (2013) Photosynthetically relevant foliar traits correlating better on a mass versus an area basis: Of ecophysiological relevance or just a case of mathematical imperatives and statistical quicksand?" **New Phytologist** 199(2):311-21.

297 Buckley TN, Cescatti A, Farquhar GD (2013) What does optimisation theory actually predict about crown profiles of photosynthetic capacity, when models incorporate greater realism? **Plant, Cell and Environment** 36(8):1547-1563.

298 Flexas J, Niinemets Ü, Gallé A, Barbour MM, Centritto M, Diaz-Espejo A, Douthe C, Galmés J, Ribas-Carbo M, Rodriguez PL, Rosselló F, Soolanayakanahally R, Tomas M, Wright IJ, Farquhar GD, Medrano H (2013) Diffusional conductances to CO_2 as a target for increasing photosynthesis and photosynthetic water-use efficiency. **Photosynthesis Research** 117:445-59.

299 Gessler A, Brandes E, Keitel C, Boda S, Kayler ZE, Granier A, Barbour M, Farquhar GD, Treydte K (2013) The oxygen isotope enrichment of leaf-exported assimilates - does it always reflect lamina leaf water enrichment? **New Phytologist** 1:144-157.

300 ★Donohue RJ, Roderick ML, McVicar TR, Farquhar GD (2013) Impact of CO_2 fertilization on maximum foliage cover across the globe's warm, arid environments. **Geophysical Research**

Letters 40:3031-3035.

301 Brookhouse MT, Farquhar GD, Roderick ML (2013) The impact of bushfires on water yield from south-east Australia's ash forests **Water Resources Research** 49:4493-4505.

302 Cernusak LA, Ubierna N, Winter K, Holtum JAM, Marshall JD, Farquhar GD (2013) Environmental and physiological determinants of carbon isotope discrimination in terrestrial plants. **New Phytologist** 200(4):950-965.

303 Lim WH, Roderick ML, Hobbins MT, Wong SC, Farquhar GD (2013) The energy balance of a US Class A evaporation pan. **Agricultural and Forest Meteorology** 182:314-331.

304 Flanagan LB, Farquhar GD (2014) Variation in the carbon and oxygen isotope composition of plant biomass and its relationship to water-use efficiency at the leaf- and ecosystem- scales in a northern Great Plains grassland. **Plant, Cell and Environment** 37(2):425- 438.

305 Roderick ML, Sun F, Lim WH, Farquhar GD (2014) A general framework for understanding the response of the water cycle to global warming over land and ocean. **Hydrology and Earth System Sciences** 18:1575–1589.

306 Hommel R, Siegwolf R, Saurer M, Farquhar GD, Kayler Z, Ferrio JP, Gessler A (2014) Drought response of mesophyll conductance in forest understory species - impacts on water- use efficiency and interactions with leaf water movement. **Physiologia Plantarum** 152(1):98–114.

307 Jahan E, Amthor JS, Farquhar GD, Trethowan R, Barbour MM (2014) Variation in mesophyll conductance among Australian wheat genotypes. **Functional Plant Biology** 41(6):568-580.

308 Song X, Farquhar GD, Gessler A, Barbour MM (2014). Turnover time of the non-structural carbohydrate pool influences $\delta^{18}O$ of leaf cellulose. **Plant, Cell and Environment** 37(11):2500-2507.

309 Bloomfield KJ, Farquhar GD, Lloyd J (2014) Photosynthesis-nitrogen relationships in tropical forest tree species as affected by soil phosphorus availability: a controlled-environment study. **Functional Plant Biology** 41(8):820-832.

310 Ubierna N, Farquhar GD (2014) Advances in measurements and models of photosynthetic carbon isotope discrimination in C_3 plants. **Plant, Cell and Environment** 37(7):1494- 1498.

311 Givnish TJ, Wong SC, Stuart-Williams H, Holloway-Phillips M, Farquhar GD (2014) Determinants of maximum tree height in *Eucalyptus* species along a rainfall gradient in Victoria, Australia. **Ecology** 95(11):2991–3007.

312 Yong JWH, Letham DS, Wong SC, Farquhar GD (2014) Rhizobium-induced elevation in xylem cytokinin delivery in pigeonpea induces changes in shoot development and leaf physiology. **Functional Plant Biology** 41(12):1323-1335.

313 Nguyen HT, Stanton DE, Schmitz N, Farquhar GD, Ball MC (2015) Growth responses of the mangrove, *Avicennia marina*, to salinity: development and function of shoot hydraulic systems require saline conditions. **Annals of Botany** 115:397-407.

314 Atkin O, Bloomfield K, Reich PB, Tjoelker M, Asner G, Bonal D, Bönisch G, Bradford M, Cernusak L, Cosio E, Creek D, Crous K, Domingues T, Dukes J, Egerton J, Evans J, Farquhar G, Fyllas N, Gauthier P, Gloor E, Gimeno T, Griffin K, Guerrieri R, Heskel M, Huntingford C, Ishida F, Kattge J, Lambers H, Liddell M, Lloyd J, Lusk C, Martin R, Maximov T, Maksimov A, Malhi Y, Medlyn B, Meir P, Mercado L, Mirotchnick N, Ng D, Niinemets Ü, O'Sullivan O, Phillips O, Poorter L, Poot P, Prentice I, Salinas Revilla N, Rowland L, Ryan M, Sitch S, Slot M, Smith N, Vanderwel M, Turnbull M, Valladares F, Veneklaas E, Weerasinghe W, Wirth C, Wright I, Wythers KR, Xiang J, Xiang S, Zaragoza-Castells J (2015) Global variability in leaf respiration among plant functional types in relation to climate and leaf traits. **New Phytologist** 206(2):614-636.

315 Zhou Y, Stuart-Williams H, Grice K, Kayler ZE, Zavadlav S, Vogts A, Rommerskirchen F, Farquhar G, Gessler A (2015) Allocate carbon for a reason: priorities are reflected in the $^{13}C/^{12}C$ ratios of plant lipids synthesized via three independent biosynthetic pathways. **Phytochemistry** 111:14-20.

316 Song X, Loucos K, Simonin K, Farquhar G, Barbour M (2015) Measurements of transpiration isotopologues and leaf water to assess enrichment models in cotton. **New Phytologist** 206:637–646.

317 Bloomfield KJ, Domingues TF, Saiz G, Bird MI, Crayn DM, Ford A, Metcalfe DJ, Farquhar GD, Lloyd JJ (2014) Contrasting photosynthetic characteristics of forest versus savanna species (Far North Queensland, Australia). **Biogeosciences** 11:7331-7347.

318 Ho QT, Berghuijs H, Watté R, Verboven P, Herremans E, Yin X, Retta MA, Aernouts B, Saeys W, Helfen L, Farquhar GD, Struik PC, Nicolai B (2016) Three-dimensional microscale modeling of CO_2 transport and light propagation in tomato leaves enlightens photosynthesis. **Plant, Cell & Environment** 39:50-61.

319 Roderick ML, Greve P, Farquhar GD (2015) On the assessment of aridity with changes in atmospheric CO_2. **Water Resources Research** 51:5450-5463..

320 Sirault XRR, Condon AG, Wood JT, Farquhar GD, Rebetzke GJ (2015) "Rolled-upness": phenotyping leaf rolling in cereals using computer vision and functional data analysis approaches. **Plant Methods** 11(52):1-11.

321 Cernusak LA, Barbour MM, Arndt SK, Cheesman AW, English NB, Field TS, Helliker BR, Holloway-Phillips MM, Holtum JAM, Kahmen A, McInerney FA, Munksgaard NC, Simonin KA, Song X, Stuart-Williams H, West JB, Farquhar GD (2016) Stable isotope enrichment in leaf water of terrestrial plants. **Plant, Cell & Environment** 39:1087- 1102.

322 Holloway-Phillips M, Cernusak L, Barbour MM, Song X, Cheesman A, Munksgaard N, Stuart- Williams H, Farquhar GD (2016) Leaf vein fraction influences the Péclet effect and ^{18}O enrichment in leaf water. **Plant, Cell & Environment** 39:2414-2427.

323 Lim WH, Roderick ML, Farquhar GD (2016) A mathematical model of pan evaporation under steady state conditions. **Journal of Hydrology** 540:641-658.

324 Zhou Y, Grice K, Stuart-Williams H, Hocart CH, Gessler A, Farquhar GD (2016) Hydrogen isotopic differences between C_3 and C4 land plant lipids: consequences of compartmentation of C4 photosynthetic chemistry and C_3 photorespiration. **Plant, Cell & Environment** 39:2676-2690.

325 Buckley TN, Sack L, Farquhar GD (2017) Optimal plant water economy. **Plant, Cell & Environment** 40:881-896.

326 Barbour MM, Farquhar GD, Buckley TN (2017) Leaf water stable isotopes and water transport outside the xylem. **Plant, Cell & Environment** 40:914-920.

327 Busch FA, Farquhar GD (2016) Poor evidence for C4 photosynthesis in the wheat grain. **Plant Physiology** 172(3):1357.

328 Farquhar GD, Busch F (2017) Changes in the chloroplastic CO_2 concentration explain much of the observed Kok effect: a model. **New Phytologist** 214:570-584.

329 Tcherkez G, Gauthier P, Buckley TN, Busch FA, Barbour MM, Bruhn D, Heskel MA, Gong XY, Crous, K, Griffin KL, Way DA, Turnbull MH, Adams MA, Atkin OK, Bender M, Farquhar GD, Cornic G (2017) Tracking the origins of the Kok effect, 70 years after its discovery. **New Phytologist** 214:506-510.

330 Henry RJ, Busch FA, Rangan P, Furtado A, Farquhar GD (2017) Does C4 photosynthesis occur in wheat seeds? **Plant Physiology** 174:1992-1995.

331 Tcherkez G, Gauthier P, Buckley T, Busch F, Barbour M, Bruhn D, Heskel M, Gong X, Xiao; Crous K, Griffin K, Way D, Turnbull M, Adams M, Atkin O, Farquhar G, Cornic G, (2017) Leaf day respiration: low CO_2 flux but high significance for metabolism and carbon balance. **New Phytologist** 216(4):986-1001.

332 Wu A, Doherty A, Farquhar GD, Hammer GL (2017) Simulating daily field crop canopy photosynthesis: an integrated software package. **Functional Plant Biology** 45:362- 377.

333 ★Busch FA, Sage RF, Farquhar GD (2017) Plants increase CO_2 uptake by assimilating nitrogen via the photorespiratory pathway. **Nature Plants** 4:46-54.

334 Zhou Y, Zhang B, Stuart-Williams H, Grice K, Hocart C, Gessler A, Kayler Z, Farquhar GD. (2017) On the contributions of photorespiration and compartmentation to the contrasting intramolecular ^2H profiles of C_3 and C4 plant sugars. **Phytochemistry** 145:197-206.

335 Bathellier C, Tcherkez G, Lorimer GH, Farquhar GD. (2018) Rubisco isn't really so bad. **Plant, Cell & Environment** 41:705-716.

336 ★Sun F, Roderick ML, Farquhar GD (2018) Rainfall statistics, stationarity and climate change. **Proceedings of the National Academy of Sciences of the USA** 15(10):2305-10.

337 Cornwell WK, Wright I, Turner J, Maire V, Barbour M, Cernusak L, Dawson T, Ellsworth D, Farquhar G, Griffiths H, Keitel C, Knohl A, Reich P, Williams D, Bhaskar R, Cornelissen J,Richards A, Schmidt S, Valladares F, Körner C, Schulze ED, Buchmann N, Santiago L (2018) Climate and soils together regulate photosynthetic carbon isotope discrimination within C-3plants worldwide. **Global Ecology and Biogeography** 27:1056-1067.

338 Cernusak LA, Ubierna N, Jenkins MW, Garrity SR, Rahn T, Powers HH, Hanson DT, Sevanto S, Wong SC, McDowell NG, Farquhar GD. (2018). Unsaturation of vapour pressure inside leaves of two conifer species. **Scientific Reports** 8:1-7.

339 Tcherkez GG, Bathellier C, Farquhar GD, Lorimer G (2018) Commentary: "Directions for optimization of photosynthetic carbon fixation: RuBisCO's efficiency may not be so constrained after all" **Frontiers in Plant Science** 9:1-4.

340 Ubierna N, Holloway-Phillips M-M, Farquhar GD (2018) Using Stable Carbon Isotopes to Study C_3 and C4 Photosynthesis: Models and Calculations. Chapter 10 in Sarah Covshoff (ed.), Photosynthesis: Methods and Protocols, Methods in Molecular Biology, vol. 1770, https://doi.org/10.1007/978-1-4939-7786-4_10, © Springer Science+Business Media, LLC, part of Springer Nature 2018, pp 155-196.

341 Shimono H, Farquhar GD, Brookhouse M, Busch AF, O'Grady A, Tausz M, Pinkard EA (2018). Pre-screening from large populations as a tool for identifying elevated CO_2- responsive genotypes in plants. **Functional Plant Biology** 46:1-14.

342 Earles JM, Buckley TN, Broderson CR, Busch FA, Cano FJ, Choat B, Evans JR, Farquhar GD, Harwood R, Huynh M, John GP, Miller ML, Rockwell FE, Sack L, Scoffoni C, Struik PC, Wu A, Yin X, Barbour MM (2019) Embracing 3D complexity in leaf carbon- water exchange. **Trends in Plant Science** 24 (1):15-24.

343 Deans RM, Brodribb TJ, Busch FA, Farquhar GD (2019) Plant water-use strategy mediates stomatal effects on the light induction of photosynthesis. **New Phytology** 222 (1):382- 395.

344 Ubierna N, Cernusak LA, Holloway-Phillips M-M, Busch FA, Cousins AB, Farquhar GD (2019) Critical review: Incorporating the arrangement of mitochondria and chloroplasts into models of photosynthesis and carbon isotope discrimination **Photosynthesis Research** 141 (1):5-31.

345 Henry A, Stuart-Williams H, Dixit S, Kumar A, Farquhar GD (2019) Stomatal conductance responses to evaporative demand conferred by rice drought-yield QTL *qDTY12.1* **Functional Plant Biology** 46:660-669.

346 Wu A, Hammer G, Doherty A, von Caemmerer S, Farquhar G (2019) Quantifying impacts of enhancing photosynthesis on crop yield. **Nature Plants** 5:380-388.

347 Bellasio C, Farquhar G (2019) A leaf–level biochemical model simulating the introduction of C2 and C4 photosynthesis in C_3 rice: gains, losses and metabolite fluxes. **New Phytologist** 223:150–166.

348 Deans RM, Farquhar GD, Busch FA (2019) Estimating stomatal and biochemical limitations during photosynthetic induction. **Plant, Cell & Environment** 42(12):3227-3240.

349 Holloway-Phillips M, Cernusak LA, Stuart-Williams H, Ubierna N, Farquhar GD (2019) Two- source $\delta^{18}OCO_2$ method to validate the $CO^{18}O$-photosynthetic discrimination model: implications for gm. **Plant Physiology** 181(3):1175-1190.

350 Farquhar GD (2017) The Magical Mystery Tour from Physics and Applied Mathematics to Plant Physiology. ***In*** Kyoto Prize and Inamori Grants 2017. Inamori Foundation pp133- 171.

351 Farquhar GD (2019) « Ralph Owen Slatyer » **Historical Records of Australian Science** 31(1):54-63.

352 Haverd V, Smith B, Canadell JG, Cuntz M, Mikaloff-Fletcher S, Farquhar G, Woodgate W, Briggs PR, Trudinger CM (2019) Higher than expected CO_2 fertilisation inferred from leaf to global observations. **Global Change Biology** 26:2390-2402.

353 Hossain SM, Masle J, Easton A, Hunter MN, Godwin ID, Farquhar GD, Lambrides CJ. (2019) Genetic variation for leaf carbon isotope discrimination and its association with transpiration efficiency in canola (*Brassica napus* L.). **Functional Plant Biology** 47(4):355-367.

354 Busch FA, Holloway-Phillips MM, Stuart-Williams H, Farquhar GD (2020) Revisiting carbon isotope discrimination in C_3 plants shows respiration rules when photosynthesis is low. **Nature Plants** 6:245–258.

355 Vogado NO, Winter K, Ubierna N, Farquhar GD, Cernusak LA (2020) Directional change in leaf dry matter ^{13}C during leaf development is widespread in C_3 plants. **Annals of Botany** (in press). doi.org/10.1093/aob/mcaa114.

356 Raman H, Raman R, McVittie B, Borg L, Diffey S, Yadav AS, Balasubramanian S, Farquhar GD (2020) Genetic and physiological bases for variation in water use efficiency in canola. **Food and Energy Security** 2020;00:e237.

357 Walker A, *et al*. Integrating the evidence for a terrestrial carbon sink caused by increasing atmospheric CO_2. **New Phytologist**. doi:10.1111/nph.16866.

358 Deans RM, Brodribb TJ, Busch FA, Farquhar GD (2020) Optimisation can provide the fundamental link between leaf photosynthesis, gas exchange and water relations. **Nature Plants** 6(9):1-10.

359 Bathellier C, Yu L-J, Farquhar GD, Coote ML, Lorimer GH, Tcherkez G. Ribulose 1,5- bisphosphate carboxylase/oxygenase activates O_2 by electron transfer. **PNAS** 117 (39) 24234-24242.

360 Barbour M, Loucos K, Lockhart E, Shrestha A, McCallum D, Simonin K, Song X, Griffani D, Farquhar GD (2020) Can hydraulic design explain patterns of leaf water isotopic enrichment in C_3 plants? **Plant, Cell & Environment** 44:432-444. doi.org/10.1111/pce.13943

361 Márquez DA, Stuart-Williams H, Farquhar GD (2021) An improved theory for calculating leaf gas exchange more precisely accounting for small fluxes. **Nature Plants** 7:317-326.

doi.org/10.1038/s41477-021-00861-w

362 Farquhar GD, Griffani DS, Barbour M (2021) The effects on isotopic composition of leaf water and transpiration of adding a gas-exchange cuvette. **Plant, Cell & Environment** 2021;1-14.

363 Tredenick EC, Farquhar GD (2021) Dynamics of Moisture Diffusion and Adsorption in Plant Cuticles: the Role of Cellulose. **Nature Communications**. 12:5042.

364 Tcherkez GGB, Farquhar GD (2021) Opinion Rubisco catalytic adaptation is mostly driven by photosynthetic conditions - not by phylogenetic constraints. **Journal of Plant Physiology**, 267: 153554.

365 Liang, J., Stuart-Williams, H., Farquhar, G., and Ball, M., The quantification of water isotopic enrichments of plant stems, vol. 2021. **AGU Fall Meeting Abstracts**

366 Márquez DA, Stuart-Williams H, Farquhar GD, Busch FA (2021) Cuticular conductance of adaxial and abaxial leaf surfaces and its relation to minimum leaf surface conductance. **New Phytologist**.

367 Tredenick EC, Farquhar GD (2021). Dynamics of Moisture Transport in Plant Cuticles: The Role of Cellulose. **PREPRINT**, arXiv:2102.08666

368 Liang J, Farquhar GD, Ball MC (2022) Chapter Two - Water use efficiency in mangroves: Conservation of water use efficiency determined by stomatal behaviour across leaves, plants, and forests. Editor(s): Sergey Shabala. **Advances in Botanical Research**. Academic Press, 103:43-59, https://doi.org/10.1016/bs.abr.2022.02.017.

369 Brookhouse MT, Bush D, Ivkovich M, Busch F, Farquhar GD, Pinkard E (2022) Early-growth results within a *Eucalyptus globulus* breeding population suggest limited scope for selection focused on CO_2 responsiveness. **Tree Genetics & Genomes** 18:16. https://doi.org/10.1007/s11295-022-01547-w

370 Baldocchi D, Ciais P, Cramer W, Ehleringer J, Farquhar GD, Field BD, Ghazi A, Gifford R, Heimann M, Houghton R et al. (2022) The terrestrial carbon cycle: Implications for the Kyoto Protocol. AAAS, 1998:280(5368), 1393-1394.

371 Raman H, Raman R, Pirathiban R, McVittie B, Sharma N, Liu S, Qiu Y, Zhu A, Kilian A, Cullis B, Farquhar GD, Stuart-Williams H, White R, Tabah D, Easton A, Zhang Y (2022). Multienvironment QTL analysis delineates a major locus associated with homoeologous exchanges for water-use efficiency and seed yield in canola. **Plant Cell Environ** 45(7):2019-2036

372 Wu A, Brider J, Busch FA, Chen M, Chenu K, Clarke VC, Collins B, Ermakova M, Evans JR, Farquhar GD, Forster B, Furbank R, Groszmann M, Hernández-Prieto MA, Long BM, Mclean G, Potgieter A, Price GD, Sharwood RE, Stower M, van Oosterom E, von Caemmerer S, Whitney S, Hammer G (2022) A cross-scale analysis to understand and quantify effects of photosynthetic enhancement on crop growth and yield across environments. **Plant Cell Environ**. *In press.*

373 Wong SC, Canny MJ, Holloway-Phillips M, Cernusak LA, Márquez DA, Farquhar GD (2022) Humidity gradients in the air spaces of leaves. **Nature Plants** 8, 971–978 .

374 Ubierna N, Holloway-Phillips MM, Farquhar GD (2022) Scaling from fluxes to organic matter: interpreting 13C isotope ratios of plant material using flux models. **New Phytologist**. *In press.*

375 Wu, A., Brider, J., Busch, F.A., Chen, M., Chenu, K., Clarke, V.C. et al. (2023) A cross-scale analysis to understand and quantify the effects of photosynthetic enhancement on crop growth and yield across environments. **Plant, Cell & Environment**, 46, 23–44.

376 Márquez, D.A., Stuart-Williams, H., Cernusak, L.A. and Farquhar, G.D. (2023), Assessing the CO_2 concentration at the surface of photosynthetic mesophyll cells. **New Phytologist**, 238: 1446-1460.

377 Scafaro, A. P., Posch, B. C., Evans, J. R., Farquhar, G. D., & Atkin, O. K. (2023). Rubisco deactivation and chloroplast electron transport rates co-limit photosynthesis above optimal leaf temperature in terrestrial plants. **Nature Communications**, 14(1), 2820.

378 Márquez DA, Stuart-Williams H, Wong SC, Farquhar GD. An Improved System to Measure Leaf Gas Exchange on Adaxial and Abaxial Surfaces. **Bio Protoc**. 2023 Jun 5;13(11):e4687.

379 Liang, J., Krauss, K.W., Finnigan, J., Stuart-Williams, H., Farquhar, G.D. and Ball, M.C. (2023), Linking water use efficiency with water use strategy from leaves to communities. **New Phytol**, 240: 1735-1742.

380 Griffani, D.S., Rognon, P. and Farquhar, G.D. (2024), The role of thermodiffusion in transpiration. **New Phytol**, 243: 1301-1311. https://doi.org/10.1111/nph.19642

381 Ubierna, N., Holloway-Phillips, M. M., Wingate, L., Ogeée, J., Busch, F. A., & Farquhar, G. D. (2024). Using carbon stable isotopes to study C_3 and C_4 photosynthesis: models and calculations. In S. Covshoff (Ed.), Methods in molecular biology: Vol. 2790. **Photosynthesis**. Methods and protocols (pp. 163-211).

382 Cernusak, L.A., Wong, S.C., Stuart-Williams, H., Márquez, D.A., Pontarin, N. & Farquhar, G.D. (2024) Unsaturation in the air spaces of leaves and its implications. **Plant, Cell & Environment**, 1–14. https://doi.org/10.1111/pce.15001

383 Ermakova, M., Woodford, R., Fitzpatrick, D., Nix, S.J., Zwahlen, S.M., Farquhar, G.D., von Caemmerer, S. and Furbank, R.T. (2024), Chloroplast NADH dehydrogenase-like complex-mediated cyclic electron flow is the main electron transport route in C_4 bundle sheath cells. New Phytol. https://doi.org/10.1111/nph.19982

384 Bellasio, C., Stuart-Williams, H., Farquhar, G.D. and Flexas, J. (2024), C4 maize and sorghum are more sensitive to rapid dehydration than C_3 wheat and sunflower. **New Phytol**, 240: 2239-2252.

385 Márquez, D.A., Wong, S.C., Stuart-Williams, H., Cernusak, L.A., and Farquhar, G.D. (2024). Mesophyll airspace unsaturation drives C4 plant success under vapor pressure deficit stress. **Proc. Natl. Acad. Sci. U.S.A.**, 121(39), e2402233121. https://doi.org/10.1073/pnas.2402233121

386 Collaviti, Spencer & Stuart-Williams, Hilary & Farquhar, Graham & Cernusak, Lucas & Márquez, Diego. (2024). Unsaturation and Approximate Isotopic Homogeneity in Leaf Air Spaces. 10.1101/2024.09.30.610858. **PREPRINT**

387 Condon, Anthony & Farquhar, Graham & Rebetzke, Greg & Richards, Richard. (2024). The Application of Carbon Isotope Discrimination in Cereal Improvement for Water-Limited Environments. Boca Raton. 10.1201/9781003578338-8.

388 Bellasio, Chandra & Stuart-Williams, Hilary & Farquhar, Graham & Flexas, Jaume. (2024). Fast dehydration reduces bundle sheath conductance in C4 maize and sorghum. New Phytologist. 244. 2197-2209. 10.1111/nph.20167.

389 Von Caemmerer S, Farquhar GD (2025). A perspective: some relationships between the biochemistry of photosynthesis and the gas exchange of leaves. **PLANTA**, 263 (2), 10.1007/s00425-025-04761-7

390 Marquez DA, Cernusak LA, Busch FA, Farquhar GD (2025). Cytosolic water potential as a mechanistic driver of leaf airspaces unsaturation and non-stomatal control of transpiration. **PREPRINT**. 10.1101/2025.07.08.663815

391 Von Caemmerer S, Berry JA, Farquhar GD (2025). A perspective: A biochemical model of photosynthetic CO2 assimilation in leaves of C3 species. **PLANTA**, 262 (5), 10.1007/s00425-025-04834-7

392 Iftakharul A, Cheesman A, Farquhar GD, Givnish T, De Kauwe M, Schulze E, Westerband A, Wright I, Cernusak L (2026). Soil phosphorus drives subcontinental patterns of carbon-isotope discrimination across Australia. **PREPRINT** 10.1111/nph.71069

393 Bellasio C, Tholen D, Stuart-Williams H, Farquhar GD, Flexas J (2026). Rapid dehydration drives a non-diffusional drop in C3 photosynthesis that aligns with phosphate limitation. **PREPRINT**