

## **CURRICULUM VITAE**

# **PROFESSOR ANDREW W WESTERN**

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## **CURRENT POSITION**

**Professor**, Department of Infrastructure Engineering, The University of Melbourne.

My current role includes:

- Melbourne School of Engineering, Director of Infrastructure.
- Research project leadership.
- Coursework postgraduate teaching, subject coordination and curriculum development.
- Undergraduate teaching, subject coordination and curriculum development, primarily in the Environmental Engineering degree stream and for the new Bachelor of Environments.
- Research Higher Degree supervision.
- Departmental and School administrative roles.

## **ADJUNCT POSITIONS**

Visiting Scientist, Bureau of Meteorology Australia, 2016-

## **QUALIFICATIONS**

- 1991-1994: Doctor of Philosophy, The University of Melbourne
- 1986-1990: Bachelor of Engineering (Hons., 1<sup>st</sup> class), Monash University
- 1986-1990: Bachelor of Economics, Monash University

## **EMPLOYMENT HISTORY**

- 2012-ongoing: Professor, The University of Melbourne
- 2007-2011: Associate Professor, The University of Melbourne
- 2008: Assistant Dean Research Training, School of Engineering, The University of Melbourne
- 2007: Principle Research Fellow, The University of Melbourne
- 2000-2006: Senior Research Fellow, The University of Melbourne
- 1995-2000: Research Fellow, The University of Melbourne
- 1997, April-June: Research Fellow: Technical University of Vienna
- 1991 - 1994: PhD Scholar: The University of Melbourne

- 1989-90: Gutteridge, Haskins and Davey (vacation employment)
- 1988-89: Melbourne and Metropolitan Board of Works (vacation employment)

### **PROFESSIONAL AFFILIATIONS**

- Institution of Engineers Australia, Fellow since 1/1/2013
- American Geophysical Society, member
- Modelling and Simulation Society of Australia and New Zealand, Fellow since 3/12/2015
- River Basin Management Society, member

### **PROFESSIONAL DEVELOPMENT**

#### **Management**

- Research Mentors Program (2011-12)
- Future Academic Leaders Program (2010)
- Media training (2010)
- PDF training (Apr, 2009)
- Leadership Inside Out (Apr.-Sept., 2006)
- Media Skills Masterclass (6 Sept., 2006)
- Performance Linked Communication. PDF for Faculties and Divisions (7 Aug., 2006)
- Recruitment and Selection of General Staff (26 May, 2006)
- Introduction to the Performance Development Framework (26 Sept., 2002)
- Safety courses for staff and supervisors (ongoing as required)

#### **Teaching**

- Assessment and Feedback to Students / Assessing to Identify Misconceptions (22-23 Sept., 2005)
- Introduction to Merlin (2 Feb., 2005)
- Test Pilot training workshop (23 Sept., 2004)
- Essential skills for effective teaching (2 June, 1998)
- Thesis supervision (23 May, 1995)
- Introduction to lecturing (10 May, 1995)

#### **Professional**

- Isotope Tracers in Catchment Hydrology (10 Feb., 2004)
- Looking for Jenny in South Gippsland (Australian Soil Science Society field day) (3 Nov., 1995)
- Safe use of nuclear type soil moisture and density gauges (15 March, 1995)
- Numerical water quality modelling in rivers and estuaries, short course and workshop (1-3 May, 1991)

#### **General**

- First Aid, Level 2 (8-9 Dec., 2005, 2002, 1998)
- Various other EHS training

## **RESEARCH RECORD**

### **Grants as Chief Investigator or Equivalent**

- 2017-2019, ARC Discovery Project, Understanding urban subsurface flow pathways from stormwater infiltration, Fletcher, Western, Arora, \$527,000
- 2016-2018, Healthy Soils for Sustainable Food Production and Environmental Quality, Australia-China Joint Research Centre, Chen, Zhang, Young, O'Donnell, Western, He, Walker, Shen, Wu, Xu, \$1,200,000
- 2016-2017, Melbourne Unmanned Aerial Systems Integration Platform, Melbourne Collaborative Research Infrastructure Program, Western, Ryu, Rajabifard, Burvill, Oetomo, Manzie, Fuentes, Smith, Rutherford, Sheridan, Kennedy, Lahoz-Monfort, \$320,000
- 2015-2016, Carlton Connect Infrastructure Fund, Precision agriculture and food systems: industry needs, research and education gaps, Nettle, Western, Eckhard, Ampaluanapillay, Ryu, Fuentes, Ayre, Farquharson, Brodie, Barber, Pang, \$20,000
- 2014-2017, ARC Linkage Project, Predicting water quality at the catchment scale: learning from two decades of monitoring, Western, Ryu, Webb, Leahy, Schreiber, Watson, Waters, Goudey, \$315,000
- 2014-2015, Carlton Connect Infrastructure Fund and Bureau of Meteorology, (Soil) Water Availability Outlook Pilot Research Project, \$125,000
- 2013-2016, ARC Linkage Project, Automated groundwater level mapping: a tool for catchment scale estimation of aquifer storage changes, fluxes and hydrogeological properties, Western, Frost, Carrara, Cheng, McAuley, \$455,000.
- 2013, ARC Linkage Infrastructure Grant, Integrated greenhouse gas measurement system (igms) for monitoring agricultural emissions at field to regional scales, Chen, Western, Grace, Griffith, Chung, Hacker, Ryu, Phillips, Eckard, Beringer, Dassanayake, Denmead, \$1,035,000.
- 2013, ARC Linkage Infrastructure Grant, Mobile weather radar system for advanced environmental monitoring and modelling, Walker, Deletic, Beringer, Siems, Sherwood, McCabe, Western, Moran, Gray, Lambert, \$760,000.
- 2013, Carlton Connect Initiatives Fund, Action planning for implementation of the carlton connect water theme innovation statement for regional water productivity, Nettle, Stewardson, Farquharson, Cook, Godden, Western
- 2013, Carlton Connect Initiatives Fund, Integrated model-observation system for water resources assessment in remote regions, Ryu, Western, Stewardson, Costelloe
- 2013, Carlton Connect Initiatives Fund, , Producing, distributing, communicating and presenting the innovation statement for regional water productivity, Skinner, Stewardson, Nettle, Ayre, Western, Webb, Barlow, Kalantari, Godden, Weyer, Langford, Cook, Rutherford, Fuentes, Rajabifard, Karoly, Farquharson, Ryu, Pettigrove.
- 2012-2014, ARC Discovery Project, A new method for identifying actual groundwater contributions to baseflow using both streamflow and groundwater head data, Western and McDonnell, \$450,000.
- 2011-2015, ARC Linkage Project, A New-Generation Flood Forecasting System Using Observations from Space, Western, Ryu, Walker, Elliott, Leahy, Crow, Wong, Pagano, Renzullo, \$294,000 plus \$120,000 in-kind
- 2011-2014, CSIRO Student Agreement, Effects of inter-decadal climate variability on rainfall-runoff relationships in Australian catchments, Saft, Western, Peel, Zhang.
- 2010-2014, CSIRO Student Agreement, Impact of bushfires and land use changes on seasonal stream flows for real-time forecasting, Li, Ryu, Western, Robinson, Wang.

- 2009-2013, ARC Linkage Project, A new paradigm for catchment management: detection, forecasting and management of water catchments with multiple steady states, Western, Peterson, Frost, Cheng, McAuley, \$524,000 plus \$231,754 in-kind
- 2009-2012, ARC Discovery Project, An integrated investigation of nutrient generation and delivery processes and pathways from paddock to small catchment scales, Western, Grace, White, McDonnell, \$440,000.
- 2008-2011, Farms Rivers Markets: Rivers Project, National Water Commission and Victorian Water Trust, Western and others, \$2,970,000
- 2008-2011, Land and Water Australia Innovation Project, Understanding multiple human impacts on stream flow regimes, Stewardson, Western, Rutherford, Nathan, \$196,837
- 2007-2008, Dept. Sustainability and Environ. Vic. Improving water resource assessment through spatial network design and data uncertainty determination, Western, \$198,000
- 2007-2009, ARC Linkage Project, Quantifying near-surface diffuse discharge from the southwest Great Artesian Basin, Western, Walker, Tyler, \$426,878 plus \$130,000 in-kind
- 2005-2012, Commonwealth of Australia, eWater CRC, University of Melbourne node leader, University expected budget is \$5.8M
- 7/2006-6/2010, ARC Linkage Project, Linking freshwater flows, salt wedge dynamics and fisheries productivity in estuaries, Swearer, Hindell, Jenkins and Western, \$605,000 plus \$264,256 in-kind
- 2006-2007, Dept. Sustainability and Environ, Vic, Review of Victorian surface water monitoring network, Western, \$194,078
- 2006-2008, eWater CRC, Predicting constituent generation, transport and transformation in catchments, Cox and Western, \$434,034 plus \$499,590 in-kind
- 2006, University of Melbourne Collaborative grant scheme, Innovative approaches to hydrological flow path determination, Western and McDonnell, \$3,000
- 2005-2007, ARC Discovery Project, Daily hydrological and erosion modelling utilising sub-daily rainfall intensity distributions, Western, Chiew, Blöschl, Seed, \$270,000
- 2005-2006, UoM-CSIRO Collaborative Scheme, Groundwater recharge processes and water use of arid zone rivers and riparian zones, Western, Costelloe, Herczeg, \$34,000
- 2005-2007, Land and Water Australia, Scholarships, PhD Scholarship awarded to Elizabeth Irvine, Irvine and Western, \$60,666
- 2004-2006, ARC Discovery Project, Salinity processes in Lake Eyre Basin Rivers, Grayson and Herczeg -Western now CI, \$278,020
- 2003, UoM Major Equipment Funding, Evapotranspiration and CO<sub>2</sub> flux monitoring system, Grayson, Western and others, \$35,000
- 2003, UoM, Visiting Scholar Award, Visiting Research Scholar Award for Dr Alessandro Simoni, Western and Simoni, \$6,000
- 2002-2004, European Space Agency, ALFS- Applications of Low Frequency SAR Data, Smith, Western and others, \$50,000 (UoM component)
- 2002-2005, CRC Catchment Hydrology, Project 5A. Hydrological Modelling for Weather Forecasting, Seed and Western, \$719,000 plus \$700,000 in-kind
- 2001-2004, ARC Linkage Project, Use of remote sensing actual evapotranspiration estimates and water delivery data for assessing water use efficiency in an irrigated landscape, Grayson and others, Western now 1<sup>st</sup> named CI and instigated and developed original project, \$163,000 plus \$185,000 in-kind

- 2000, UoM, Collaborative Grant Scheme, Mapping salinity and soil moisture using remote sensing, Western and Turrall, \$7,500
- 2000, Dairy R& D Corp., Project Grant, Modelling Nutrient Fluxes from Dairy Pasture to Surface and Ground Waters in Southwest Victoria, Sherwood, Western and others, \$282,000
- 1999-2002, CRC Catchment Hydrology, Project 1.2 - Scaling procedures to support process-based modelling at large scales, Grayson and Western, \$686,360 plus \$694,800
- 1999, Dept Natural Resources and Environment (ISIA), Vic, Remote Sensing of Soil Moisture, Soil Salinity and Vegetation using AirSAR (PACRIM 2000) - Imagery, Western and Turrall, \$27,000 in-kind
- 1997, UoM, Collaborative research program, Developing methods for estimating soil moisture at large scales from routine measurements, Grayson and Western, \$14,100
- 1997, UoM, Major Equipment Grant, Automated salinity mapping facility, Grayson, Western, Moore and McMahon, \$87,000
- 1994, Dept Conservation and Natural Resources, Design of Pile Fields for Training River Channels, Grayson, Tilleard & Western, \$44,579

### **Other Research Projects**

P = Major role in project development, M = major role in project management

- eWater CRC, Multiple drivers of river ecosystems, 2006-2008
- M CRCCH2 Project 5.1 - Modelling and Forecasting Hydroclimate Variables in Space and Time - Numerical Weather Prediction component, 2000 -2002
- Development of physically based parameterisations of subgrid scale variability of soil moisture and precipitation intensity for application to climate models, 1999
- P M Investigation of the behaviour of thermal stratification in the Wimmera and Glenelg Rivers, 1999 (ARC SG, \$13,000)
- P M Investigation of Catchment Average Soil Moisture Monitoring Methodologies, 1998-2001 (ARC LG, \$155,000)
- P M Investigation of the use of soil moisture data in runoff prediction, 1998 - 2001 (ARC SPIRT, \$251,678)
- P M Developing methods for using spatial pattern data in hydrological modelling, 1998 (ARC SG, 28000)
- P M Investigation of spatial organisation of soils and soil moisture and the implications for runoff behaviour, 1995-1997 (ARC LG, \$162,000)
- M Soil moisture estimation from AirSAR during PACRIM, 1996-1999
- M Ground-truthing of soil moisture estimation from ERS1/2 Synthetic Aperture Radar data, 1996-1997
- M Investigation of spatial variability of soil properties and their relation to topographic position, 1997 – 1998
- Investigation of salinity and density stratification in the Wimmera River, Australia, 1991-1994 (Western's PhD project)
- M Laboratory investigation of mixing of stratified pool, 1993 - 1994
- P M Laboratory and field investigation of the behaviour of retards for river training, 1994
- Assessment of the potential of an inexpensive sonar for monitoring fish population and activity in freshwater streams, 1994

## **Consulting Projects**

- Stormwater harvesting and the capacity for new dams in Victoria (Infrastructure Victoria, 2016)
- Advice on hydrologic design of temporary sedimentation basins (VicRoads, 2012)
- A review of riparian vegetation and flooding (Department of Sustainability and Environment, 2011)
- Development and delivery of hydrologic training courses for the Bureau of Meteorology (Bureau of Meteorology, 2011)
- Review of Corner Inlet Catchment Monitoring and Modelling (WaterTech, 2011)
- Impact Assessment of a Proposed Release of Treated Water from the Mt Gordon Copper Mine (Synergetics Pty Ltd/MBS Environmental, 2010)
- Hydrological training for hydrologists, training plan (Bureau of Meteorology, 2009)
- Technical Review of Tamar Catchment Sediment Model Project (Natural Resource Management North, 2009)
- An investigation of the hydrological and floristic values of peatland and spring soak wetlands in the Highlands and Strathbogie Ranges (Goulburn-Broken CMA, 2008-2009)
- Investigation of the geography and hydrology of Victorian Sub-alpine peatlands (DSE 2007-2008)
- Development of Modelling and Decision Support Systems for Nutrient and Sediment Reduction in Corner Inlet (West Gippsland CMA 2007-2008)
- Peer review of the WINDS model and the ecological focus of the proposed Chowilla groundwater salt interception scheme (Department of Water Land and Biodiversity Conservation, SA, 2007)
- Werribee River estuary fish migration and breeding study (2006)
- Modelling the effect of flow changes in Mullaroo Creek on the occurrence of saline pools (2001)
- Collation and Analysis of Data for Habitat Assessment in the Wimmera River (2000)
- Gippsland Lakes sediment and nutrient load estimation (2000)
- Investigation of the effect of flow changes in Mullaroo Creek on the occurrence of saline pools (1999)
- Scoping Study for Implementation of Water Quality Management Frameworks (1999)
- Investigation of the behaviour of thermal stratification in the Wimmera and Glenelg Rivers (1998-99)
- Wind wave predictions for Gippsland Rivers, Gippsland Coastal Board (1998)
- Boat wakes study, Gippsland Coastal Board (1998)
- Assessment of the impact of environmental flows on stratified pools in the Wimmera and Glenelg Rivers (1996-97)
- Development and testing a hydrodynamic model for design of Mosquito Depression drainage scheme (1993)

## **Industry Linkages**

- Bureau of Meteorology, Australia (2000 – ongoing)
- Department of Environment, Water, Land and Planning, Victoria (2006 – ongoing)
- Department of Economic Development, Jobs, Transport and Resources (DPI), Victoria (2002 – ongoing)

- Environment Protection Authority Victoria (2014 – ongoing)
- Department of Natural Resources and Mines, Qld (2014 – ongoing)
- Northern Territory Power and Water (2013 – ongoing)
- Synergetics Pty Ltd (2010 – ongoing)
- Water Technology Pty Ltd (2011)
- eWater Cooperative Research Centre (2005 – 2012)
- Sinclair Knight Merz (2009 – 2010)
- Shepparton Irrigation Region Implementation Committee (2001 – 2005)
- Westvic Dairy (2001 – 2003)
- Cooperative Research Centre for Catchment Hydrology (1998 – 2005)
- Bureau of Rural Sciences, Australia (1998 – 2001)
- Rural Water Corporation (1991 – 1994)

### **Specialist Workshops**

- 22-23 May 2014 Southern Hemisphere Water Productivity Workshop for the Agriculture of the Future, University of Talca, Santiago
- 19-21 January 2009 State of the of watershed residence time conceptualisation, modelling and analysis, IAEA, Vienna
- 1-4 June 2004 CUAHSI Meeting & Workshop on Hydropedology and the Earth's Critical Zone, Pennsylvania State University, USA
- 27 September 2002 Workshop on Soil Hydraulic Properties Mapping for the Shepparton Irrigation Region
- 14-15 Feb., 2002 Australian Climate System Modelling Workshop, Australian Academy of Sciences

### **Conference participation**

I = Invited, # = funded by organisers, P = presented

- P American Geophysical Union Fall meeting, San Francisco, 13-17 December 2016
- I# P GRDC Grains Research Update, Moama 28 July 2016
- I P North Central Catchment Management Authority Climate Change Adaptation and Mitigation Stakeholder Forum, Bendigo, 15 June 2016
- P American Geophysical Union Fall meeting, San Francisco, 14-18 December 2015
- P MODSIM Gold Coast, 29 November – 3 December 2015
- I P American Geophysical Union Fall meeting, San Francisco, 15-19 December 2014
- P Practical Responses to Climate Change, Melbourne, Engineers Australia, 25-27 November 2014
- I# P Southern Hemisphere Water Productivity Workshop for the Agriculture of the Future, University of Talca, Santiago, 22-23 May 2014
- I MODSIM, Adelaide, 2-6 December, 2013
- MODSIM, Perth, 12-16 December, 2011
- I P Management of Alpine and Sub-alpine Wetlands in the Australian Alps national parks – Co-operation Between Researchers and Managers, The Fourth Annual Workshop in the Science

- Management Workshop Series, An Australian Alps national parks / IUCN WCPA Mountains Initiative, 27-28 October 2009
- I<sup>#</sup> P State of the art of residence time conceptualization, modeling and analysis, International Atomic Energy Agency, Vienna, 19-21 January 2009
- I P American Geophysical Union Western Pacific meeting, Cairns, 29 July – 1 August, 2008
- P Water Down Under (Hydrology and Water Resources Symposium), Adelaide, 14-17 April, 2008.
- P MODSIM, Christchurch, 10-13 December 2007.
- P 30<sup>th</sup> Hydrology and Water Resources Symposium, 4-7 December, 2006.
- P MODSIM, Melbourne, 12-15 December 2005.
- I P Sir Mark Oliphant Conference on Thresholds and Pattern Dynamics, The University of Western Australia, 3-7 July 2005.
- P Productive Grazing Healthy Rivers Forum, Ellinbank, 20 April 2005.
- Hydrology and Water Resources Symposium, Canberra, 2005
- I<sup>#</sup> P CUAHSI Meeting & Workshop on Hydrogeology and the Earth's Critical Zone, Pennsylvania State University, State College, 1-4 June 2004
- P Aquarius/SAC-D - SMOS - HYDROS Joint Science Workshop, Salinity and Soil Moisture Remote Sensing, Miami, April 2004
- I<sup>#</sup> P Ian Moore Memorial Symposium on Terrain Analysis, ANU Canberra, September, 2003
- MODSIM, Townsville, 14-17 July 2003
- P Western Pacific Geophysics Meeting, July, 2002
- P Hydrology and Water Resources Symposium, Melbourne, 2002
- I P 27<sup>th</sup> European Geophysical Society General Assembly, Nice, 2002
- P MODSIM, Canberra, 2001
- P International Geoscience and Remote Sensing Symposium, Sydney, 2001
- I P Soil moisture monitoring techniques. A joint workshop conducted by the Victorian, Riverina and NSW branches of the Australian Society of Soil Science Inc, Tatura, 1999
- P 25<sup>th</sup> Hydrology and Water Resources Symposium, Brisbane, 1999
- I P Scaling issues in hydrology. Melbourne, 1999
- P 5<sup>th</sup> PACRIM workshop, Sydney, 1998
- I P American Geophysical Union Spring Meeting, Boston, 1998
- I P MODSIM 97, Hobart, 1997
- P IAHS 5<sup>th</sup> Scientific Assembly, Rabat, Morocco, 1997
- P American Geophysical Union Western Pacific Geophysics Meeting, Brisbane, 1996
- I P Workshop on Scale Problems in Hydrology, Austria, 1996 (Invited workshop)
- P 23<sup>rd</sup> Hydrology and Water Resources Symposium, Hobart, 1996
- P 22<sup>nd</sup> Hydrology and Water Resources Symposium, Adelaide, 1994
- P American Geophysical Union Fall Meeting, San Francisco, 1993
- P 21<sup>st</sup> Hydrology and Water Resources Symposium, Newcastle, 1993



- 6<sup>th</sup> Annual Soil and Water Conservation Association of Australia, Victorian Branch Conference, Longerenong, 1991
- 20<sup>th</sup> Hydrology and Water Resources Symposium, Perth, 1991

### **External Research Collaborations**

- Dr Robert Argent, Bureau of Meteorology (2014 – ongoing)
- Prof Zhongjing Wang, Tsinghua University (2012 – ongoing)
- Prof Feng Qi, Cold and Arid Regions Environmental and Engineering Research Institute, CAS (2013 – ongoing)
- Dr Wade Crow, USDA, (2011 – ongoing)
- Dr Lu Zhang, CSIRO (2011– ongoing)
- Dr David Robinson, CSIRO (2010 – ongoing)
- Dr QJ Wang, CSIRO (2010 – ongoing)
- Prof Ben Gawne, Murray Darling Freshwater Research Centre, Australia (2009 – 2012)
- Dr Nick Bond, Monash University, Australia (2009 – 2012)
- Dr Mike Grace, Monash University, Australia (2009 – 2013)
- Prof. Jeff McDonnell, University of Saskatchewan, Canada (2009 – ongoing)
- Dr John Moreau, Department of Earth Sciences, University of Melbourne (2006 – 2013)
- Dr Jeremy Hindell, Department of Primary Industries, Victoria (2006 – 2015)
- Dr Stephen Swearer, Department of Zoology, University of Melbourne (2006 – ongoing)
- Dr Alan Seed, Bureau of Meteorology Research Centre (2000 – ongoing)
- Dr Andrew Herczeg, CSIRO Land and Water (2004-2006)
- Dr Harald Richter, Bureau of Meteorology Research Centre (2000 – 2004)
- Dr Jorg Hacker, Airborne Research Australia, Flinders University (2002-2006)
- Professor Jetse Kalma, University of Newcastle, Australia (2002 – 2006)
- Assoc. Prof. Günter Blöschl, Technical University of Vienna, Austria (1995 - ongoing)
- Associate Prof. John Sherwood, Deakin University (2001 – 2006)
- Dr Tim Green, CSIRO Land and Water (1996 - 1998)
- Dr Ross Woods, NIWA (1997 - 2002)
- Prof. Peter Troch, University of Ghent, Belgium (1996 - 1998)
- Assoc. Prof. Garry Willgoose, University of Newcastle, Australia (1995 - 1997)
- Dr Mohammad Abuzar, Department of Primary Industries, Victoria (2002 – 2006)
- Dr Des Whitfield, Department of Primary Industries, Victoria (2002 – 2006)
- Mr Andrew McAllister, Department of Primary Industries, Victoria (2002 – 2006)
- Dr Gary Smith, Chalmers University of Technology, Department of Radio and Space Sciences (2002 – 2004)

## **SERVICE TO THE DISCIPLINE**

### **Editorships**

- Associate Editor, Water Resources Research

### **Workshop and Conference Organisation**

- Squeezing the juice out of data – advanced data analysis techniques. Special session at ModSim 2015, 29 November – 3 December 2015
- The resilience of ecosystems and catchments. Special session at ModSim 2013, 1-6 December 2013
- Top-down Catchment Model. Special session at ModSim 2011, 12-16 December 2011
- Observations and Modeling of Hydrological Processes. Special session at the Western Pacific Geophysics Meeting, 9-12 July 2002
- Soil Moisture: Measurement, Modelling and Scaling. Special session at the Western Pacific Geophysics Meeting, 23-27 July, 1996.
- Postgraduate Hydrologists - Who's doing what? Workshop W4, Water Down Under, Adelaide 21 November, 1994.

### **Grant Selection Panels**

- New Zealand Ministry of Business, Innovation and Employment, Catalyst Panel, New Zealand-China Strategic Research Alliance, 2016

### **Proposal Reviewing**

- UK NERC (2013 – ongoing)
- Australian Research Council (2006 – ongoing)
- National Science Foundation (USA) (2002 – ongoing)
- Swiss National Science Foundation (2014 – ongoing)

### **Paper Reviewing**

- Water Resources Research (1995, 1997 – ongoing)
- Advances in Water Resources (2005, 2010)
- Geophysical Research Letters (2014, 2016)
- Journal of Hydrology (1997 – ongoing)
- Hydrological and Earth Systems Science (2005 – ongoing)
- Hydrological Processes (2000-ongoing)
- Ecohydrology (2008, 2014)
- Agricultural Engineering Australia (1996-97)
- Australian Journal of Soil Research (2005)
- Australian Journal of Water Resources (2001, 2008)
- Catena (2007, 2016)
- Environmental Modelling and Software (2001,2007,2015)
- Forest ecology and Management (2004)
- Geoderma (2004)

- Hydrological Sciences Bulletin (1995, 1997)
- Journal of Hydrometeorology (2014)
- Journal of Hydrology, New Zealand (2011)
- Journal of Hydrologic Engineering (2005)
- Journal of Arid Environments (2004)
- Mathematical and Computer Modelling (1998)
- Nature Scientific Reports (2017)
- Remote Sensing of Environment (2001,2002)
- River Research and Application (2003)
- Transactions on Geoscience and Remote Sensing (2005)
- Vadose Zone Journal (2005, 2013)
- Various conferences and books

## **TEACHING AND RELATED EXPERIENCE**

### **Research Higher Degree**

- Supervision of research masters and PhD students: 22 PhD completions, 11 current students, 2 Masters completions
- PhD confirmation and conversion panels: approximately 40.
- Thesis Examinations: 3 PhD, 4 Masters

### **Students supervised - PhD**

1. **Margarita Saft**, 2017, Changes in rainfall-runoff partitioning during decadal drought – influential factors and implications for modelling.
2. **Jing Wei**, 2016, Evolution of newspaper coverage of water issues in Australia during 1843-2011.
3. **Camila Alvarez**, 2016, Improving flood prediction in sparsely gauged catchments by the assimilation of satellite soil moisture into a rainfall-runoff model.
4. **Kushan Perara**, 2016, Multivariate time series approach to forecast short-term system scale irrigation demand using real-time flow data and numerical weather predictions
5. **Eleanor Gee**, 2015, Linking freshwater flows, salt wedge dynamics and black bream dispersal in the Mitchell River sub-estuary.
6. **Vahid Shapoori**, 2015, Multivariate time series approach to forecast short-term system scale irrigation demand using real-time flow data and numerical weather predictions
7. **Iwona Conlan**, 2014, “The Geomorphology of Pools in Large, Mixed Alluvial-Bedrock Rivers: A Case Study of the Lower Mekong River”
8. **Yuan Li**, 2014, “Towards improved operational flood forecasting by assimilation of real-time streamflow measurements”, now Research Fellow, Monash University.
9. **Robert Pipunic**, 2014, “Assessment of multi-sensor data assimilation for improved land surface model heat flux prediction”, now at Bureau of Meteorology.
10. **Shabnam Saffarpour**, 2014, "Runoff generation mechanisms, hydrologic connectivity and nutrient export from a steep dairy farming catchment, Victoria, Australia". Now Research Fellow at York University, Canada.

11. **Adam Smith**, 2014, "Soil Moisture Monitoring with Ground-Based Gravity Data". Now Senior Hydrologist at Bureau of Meteorology.
  12. **Andrew Smith**, 2014, " The effects of landuse intensification on water quality in dairy farming catchments". Now at CSIRO Ecosystem Sciences.
  13. **Dan Borg**, 2010, "Stream bed scour around wood in sand bed streams: Monitoring pool dynamics in degraded rivers and streams". Now Senior Aquatic Scientist at Melbourne Water.
  14. **Tim Peterson**, 2010, "Multiple Hydrological Steady States and Resilience". Now Research Fellow, Dept. Infrastructure Engineering, The University of Melbourne.
  15. **Julian Reichl**, 2010, "Development of ensemble methods and catchment similarity measures for estimating ungauged Australian streamflow". Now Research Fellow at Grattan Institute.
  16. **Subhadra Jha**, 2009, "Modelling stream bank erosion at the cross-section and reach scales using a Monte Carlo framework".
  17. **Alice Brown**, 2008, "Predicting the effect of forest cover changes on flow duration curves". Now Research Scientist at CSIRO Land and Water.
  18. **Yinbang Bao**, 2008, "Development of a model restructuring system for transforming and comparing the conceptual structures of catchment models". Now with Sun Water.
  19. **Brett Anderson**, 2006, "Quantifying the interaction between riparian vegetation and flooding from cross-section to catchment scale". Now Supervising Hydrologist, Bureau of Meteorology Water Division.
  20. **Durga Dutta Kandel**, 2004, "Representation of short time-scale processes in daily time-step surface runoff and erosion modelling". Now Senior Hydrology Modeller, Murray-Darling Basin Authority.
  21. **David Wilson**, 2003, "Temporal and spatial characteristics of soil moisture. Point measurements to spatial patterns". Now with Bureau of Meteorology Water Division.
  22. **Nicholas Marsh**, 2002, "Large woody debris loading, distribution and scour hole formation in lowland streams". Now Principle, YORB Pty Ltd.
- **Mahdi Allahmoradi**, in progress, Topic: Microwave estimation of soil moisture for SMOS.
  - **Keirnan Fowler**, in progress, Topic: Improving hydrological modelling of climate change.
  - **Sina Khatami**, Topic: Improving hydrological modelling of climate change.
  - **Vjekoslav Matic**, in progress, Topic: Estimating the rate of diffuse discharge from the SW margin of the Great Artesian Basin with Remote Sensing
  - **Rajesh Nune**, in progress, Topic: Causes of change in the hydrology of the Krishna Basin, India
  - **Margarita Saft**, in progress, Effects of inter-decadal climate variability on rainfall-runoff relationships in Australian catchments.
  - **Nathan Taylor**, in progress, Topic: A hydro-economic framework for water infrastructure augmentation.
  - **Matthew Vicendese**, in progress, Topic: Groundwater data-based models.
  - **Emma White**, in progress, Topic: Groundwater management.
  - **Silwati al Womera**, in progress, Topic: The importance of flooding in recharge of alluvial aquifers
- Students supervised - Master level**
- **Soudabeh Neshastehriz**, 2016, Passive and Low Energy Cooling Systems in Melbourne.
  - **Ahmad Raza Khan**, M. Eng. 2006, "Meteorological drought monitoring options for Pakistan".

- **Myriam Ghali**, Diplomarbeit (U. Trier) 1998, “Using a hydrological model and GIS to investigate the relationship between soils, soil moisture and terrain patterns in the Tarrawarra Catchment, Australia”.
- **Li Wang**, M. Appl. Sci. 1997, “Investigation of the feasibility of the ERS-1/2 SAR for high resolution soil moisture mapping”.

## **Postgraduate and Undergraduate coursework programs**

### **Curriculum development and review**

- Environmental Engineering Exchange Coordinator (2010 – )
- Member, Bachelor of Environments First Year Review Panel 2009.
- Member of Civil and Environmental Engineering Departmental Curriculum Group working to develop Bachelor of Environments Civil and Environmental Engineering Streams
- Developed Graduate Certificate in River Health (Melbourne University Private / UoM School of Enterprise) with colleagues
- Member of committee undertaking major revision of Civil and Environmental undergraduate curriculum.
- Development of subjects (Fundamentals of Catchment Management, 421327 Computing for land and spatial systems [part], 880101 Natural Environments, 421289 Earth Processes for Engineering, 421504 Quantitative Environmental Modelling)

### **Subject coordination**

- ENEN90031 Quantitative Environmental Modelling (2010 – )
- ENEN90034 Environmental Applied Hydrology (2010 – 2014)
- 421325 Field Data Acquisition and Analysis, 2005 – 2007
- 421491 Quantification of Physical Processes B, 2005 – 2009
- Fundamentals of Catchment Management (in Grad. Cert. in River Health, Melb. Uni. Private/ UoM School of Enterprise), 2005-2007

### **Lecturing and other delivery**

- ENEN90031 Quantitative Environmental Modelling (100 %), 2010 –
- ENEN20002 Earth Processes for Engineering (45%), 2009 – 2014
- ENVS10001 Natural Environments (15%), 2008 – 2016
- ENVS10012 Changing Melbourne (15%), 2015 – 2016
- ENEN90034 Environmental Applied Hydrology (formerly Hydrological Processes and Quantification of Physical Processes A) (25-50%), 2005 –
- 421491 Hydrological Processes 2 (formerly Quantification of Physical Processes B) (30-70%), 2005 – 2009
- 421325 Field Data Acquisition and Analysis (50%), 2005 – 2007
- 421327 Computing for land and spatial systems (25%), 2004 – 2009
- 421316 Engineering Hydraulics 2, (20%), 1999 – 2007
- Fundamentals of Catchment Management, (50%), 2005 – 2007
- Supervision of final year student projects (1995 onwards)

## **ADMINISTRATIVE EXPERIENCE**

### **University Level**

- Bachelor of Environments Course Standing Committee (2015 – )
- Melbourne Metropolitan Rail Control Group (2016 – )
- Melbourne Unmanned Aerial Systems Integration Platform (MUASIP) (2015 – )
- PICCC Research Executive
- Melbourne School of Land and Environment Promotions (2013)
- eWater CRC Node leader (2006 - 2012)

### **Faculty Level**

- Assistant Dean, Research Training (2008)
- MSE Research and Research Training Committee (2008, 2010 – 2015)
- MSE Co-investment and Internal Grant Ranking committees (2010-2015)
- MSE Faculty Appointments and Promotions Committee (2013 – )
- MSE Endeavour Coordinator (2015 – )

### **Departmental Level**

#### **Leadership and Committees**

- Deputy Head of Department (2012 – )
- Discipline leader, Environmental Engineering (2010 – 2013)
- Water research group leader (2006 – 2009)
- Leading proponent of inter-departmental “Institute of Sustainable Engineering Systems” submission to 2005 Faculty of Engineering Review
- Department Senior Executive Committee (2008 – ongoing)
- Sustainable Systems and Energy executive committee (2006 – ongoing)
- Chair, Non-laboratory space committee (2006)
- Laboratory Committee (1997 – 2008)
- Chair, Research Committee (2010 – ongoing, acting chair 2009, member 2005 – ongoing)
- Safety Committee (2005 – 2007)
- Department Curriculum Group [Melbourne Model implementation] (2006 – 2007)
- (Undergraduate) Course Change Committee (2004 – 2005)
- Department Teaching and Learning Group (2004 – 2005)
- Global Energy and Water balance Experiment (GEWEX), Murray-Darling Basin Water Balance Project, University of Melbourne coordinator (2002 – 2007)

#### **Other Departmental Roles**

- Work Area Supervisor (Vasey laboratory, 2005 – ongoing)
- First Aider (2003 – ongoing)
- Convenor/co-convenor of the Dead Hydrologist's Society (seminar group) (1993-95)

## **ENGAGEMENT**

### **Advisory Roles**

- Environment and Scientific Advisory Group Greater Alpine National Park Management Planning Project (2009-2010)
- Victorian National Parks Association representative on Infrastructure Victoria Technical Advisory Group for raising of Rocky Valley Dam Full Supply Level (1999)
- Victorian National Parks Association, expert witness on water quality and environmental flows for VCAT appeal of pipeline for Wimmera Sand Mining (2003)

### **Media**

- [Science Plus discussion on water](#), J-Air Radio, 8 September 2016
- [Climate change fears worsen following university of Melbourne and CSIRO research](#), The Weekly Times, 1 April, 2016
- Comment on drought impacts on runoff, ABC Central Victorian Radio breakfast program (Fiona Parker), 22 March 2016
- [Coral bleaching threat for GBR rises to highest level](#), comment on impact of long droughts on streamflow, ABC Radio National, The World Today, 21 March, 2016
- [The rivers run ... but less than we thought](#), Pursuit, The University of Melbourne, 21 March, 2016
- Comment on sale of Gwydir environmental seasonal allocation ABC News 24, 20 January 2014
- [Queensland floods: motivation to get flood planning right](#), The Conversation, 30 January, 2013
- Queensland flood enquiry report comment, ABC News 24, 16 March 2012
- [You can't dam a flood, says hydrologist](#), ABC Radio Country Hour, 13 March 2012
- [Buy back in a flood prone land: a game of extremes](#), The Conversation, 2 May 2011
- [Averting disaster: why we shouldn't build on Australian flood plains](#), The Conversation, 23 March 2011
- 3RRR The Party Show, 30 January 2011, panel discussion on recent flood events
- ABC TV 7pm news, 29 January 2011, comment on flood forecasting
- Channel 7 news, 27 November 2010, comment on wet spring, full dams and floods
- Geelong Advertiser, 29 March 2010, comment on groundwater Borefield development problems

## **HONOURS AND AWARDS**

- Biennial Medallist Modelling and Simulation Society of Australia and New Zealand (2015)
- Fellow Modelling and Simulation Society of Australia and New Zealand (2015)
- Fellow Institution of Engineers Australia (2013)
- Australian Postgraduate Research Award (priority level) (1991-94)
- University of Melbourne Special Postgraduate Studentship (1991-94)
- University of Melbourne Postgraduate Writing-Up Award (1994)
- Ove Arup prize for best final year student in Civil Engineering (1990)
- Gutteridge, Haskins and Davey prize for best performance in subjects related to water resources (1990)

- Fred Green Memorial prize for best third year student in Civil Engineering (1989)
- Metal Building Products Manufacturers Association prize for best steel design in third year Civil Engineering (1989)



## **PUBLICATIONS**

Citation information for journal papers can be found at:

<http://www.researcherid.com/rid/G-1730-2011>

<http://www.scopus.com/authid/detail.url?authorId=7004147607>

<http://scholar.google.com.au/citations?user=Ht7N9MIAAAAJ&hl=en>

## **Book Chapters**

1. McMillan, H., Clark, M., Woods, R., Duncan, M., Srinivasan, M., Western, A. and Goodrich, D., 2010. Improving Perceptual and Conceptual Hydrological Models using Data from Small Basins. In: A. Herrmann and S. Schumann (Editors), Status and Perspectives of Hydrology in Small Basins. IAHS Publ. 336, pp. 264-269.
2. Cresswell, H.P., Ringrose-Voase, A.J. and **Western**, A.W., 2008. Hydrology. In: N.J. McKenzie, M.J. Grundy, R. Webster and A.J. Ringrose-Voase (Editors), Guidelines for surveying soil and land resources, 2nd Edition. CSIRO Publishing, Melbourne, pp. 93-115.
3. Grayson, R.B., **Western**, A.W., Walker, J.P., Kandel, D.D., Costelloe, J.F. and Wilson, D.J., 2006. Controls on patterns of soil moisture in arid and semi-arid systems. Chapter 7 in: A. Porporato and P.D'Ordorico (Editors), Ecohydrology of arid and semi-arid ecosystems. Springer, pp109-128.
4. **Western**, A.W., Grayson, R.B. and Costelloe, J.F., 2005. Principles of Hydrological Measurements. In: M.G. Anderson (Editor), The Encyclopedia of Hydrological Sciences. John Wiley and Sons, Chichester, volume 1, pp 75-95.
5. **Western**, A.W., Grayson, R.B., Blöschl, G. and Wilson, D.J. 2003. Spatial variability of soil moisture and its implications for scaling. In: Y. Perchepsky, M. Selim and D. Radcliffe (Editors), Scaling methods in soil physics. CRC Press, pp119-142.
6. Chiew, F.H.S., Peel, M.C. and **Western**, A.W., 2002. Application and testing of the simple rainfall-runoff model SIMHYD. In: V.P. Singh and D.K. Frevert (Editors), Mathematical models of small watershed hydrology and applications. Water Resources Publications, pp335-367.
7. Woods, R.A., Grayson, R.B., **Western**, A.W., Duncan, M.J., Wilson, D.J., Young, R.I., Ibbitt, R.P., Henderson, R.D. and T.A. McMahon, 2001. Experimental Design and Initial Results from the Mahurangi River Variability Experiment: MARVEX. In: Observations and modelling of land surface hydrological processes. Ed. Lakshmi, V., Albertson, J.D. and J. Schaake. Water Resources Monograph, AGU, pp201-213.
8. **Western**, A.W. and Grayson, R.B., 2000. Soil moisture and runoff processes at Tarrawarra. Chapter 9 in: R.B. Grayson and G. Blöschl (Editors), Spatial patterns in catchment hydrology - Observations and modelling. Cambridge University Press, Cambridge, pp209-246.

## **Journal Articles**

9. Wei, J., Wei, Y., **Western**, A., 2017. Evolution of the societal value of water resources for economic development versus environmental sustainability in Australia from 1843 to 2011. Global Environmental Change, 42: 82-92. doi:10.1016/j.gloenvcha.2016.12.005
10. Alvarez-Garreton, C., D. Ryu, A. W. **Western**, W. T. Crow, C.-H. Su, and D. R. Robertson (2016), Dual assimilation of satellite soil moisture to improve streamflow prediction in data-scarce catchments, Water Resour. Res., 52: doi:10.1002/2015WR018429.
11. Fowler, K.J.A., Peel, M.C., **Western**, A.W., Zhang, L., Peterson, T.J., 2016. Simulating runoff under changing climatic conditions: Revisiting an apparent deficiency of conceptual rainfall-runoff models. Water Resour. Res., 52(3): 1820-1846. DOI:10.1002/2015wr018068

12. Perera, K.C., **Western**, A.W., Robertson, D.E., George, B., Nawarathna, B., 2016. Ensemble forecasting of short-term system scale irrigation demands using real-time flow data and numerical weather predictions. *Water Resour. Res.*, 52(6): 4801-4822. DOI:10.1002/2015wr018532
13. Saffarpour, S., **Western**, A.W., Adams, R. and McDonnell, J.J., 2016. Multiple runoff processes and multiple thresholds control agricultural runoff generation, *Hydrology and Earth Systems Sciences*, 20: 4525–4545, doi:10.5194/hess-20-4525-2016.
14. Saft, M., Peel, M.C., **Western**, A.W., Perraud, J.-M., Zhang, L., 2016. Bias in streamflow projections due to climate-induced shifts in catchment response. *Geophys. Res. Lett.*: n/a-n/a. DOI:10.1002/2015GL067326.
15. Saft, M., Peel, M.C., **Western**, A.W., Zhang, L., 2016. Predicting shifts in rainfall-runoff partitioning during multiyear drought: roles of dry period and catchment characteristics. *Water Resour. Res.*, 52: 9290–9305, doi:10.1002/2016WR019525.
16. Su, C.-H., Costelloe, J.F., Peterson, T.J., **Western**, A.W., 2016. On the structural limitations of recursive digital filters for base flow estimation. *Water Resour. Res.*, 52(6): 4745-4764. DOI:10.1002/2015wr018067
17. Su, C.-H., Peterson, T.J., Costelloe, J.F., **Western**, A.W., 2016. A synthetic study to evaluate the utility of hydrological signatures for calibrating a base flow separation filter. *Water Resour. Res.*, 52(8): 6526-6540. DOI:10.1002/2015wr018177
18. White, E.K., Peterson, T.J., Costelloe, J., **Western**, A.W., Carrara, E., 2016. Can we manage groundwater? A method to determine the quantitative testability of groundwater management plans. *Water Resour. Res.*, 52(6): 4863-4882. DOI:10.1002/2015wr018474
19. Alvarez-Garretón, C., Ryu, D., **Western**, A.W., Su, C.-H., Crow, W.T., Robertson, D.E., Leahy, C., 2015. Improving operational flood prediction by the assimilation of satellite soil moisture: comparison between lumped and semi-distributed schemes. *Hydrological and Earth System Science*, 19(4): 1659-1676.
20. Costelloe, J.F., Matic, V., **Western**, A.W., Walker, J.P., Tyler, M., 2015. Determining vertical leakage from the Great Artesian Basin, Australia, through up-scaling field estimates of phreatic evapotranspiration. *J. Hydrol.*, 529, Part 3: 1079-1094.
21. Costelloe, J.F., Peterson, T.J., Halbert, K., **Western**, A.W., McDonnell, J.J., 2015. Groundwater surface mapping informs sources of catchment baseflow. *Hydrological and Earth System Sciences*, 19(4), 1599–1613.
22. Li, Y., Ryu, D., **Western**, A.W., Wang, Q.J., 2015. Assimilation of stream discharge for flood forecasting: Updating a semidistributed model with an integrated data assimilation scheme. *Water Resour. Res.*, 51(5): 3238-3258.
23. Lu, Z., Wei, Y., Xiao, H., Zou, S., Xie, J., Ren, J., **Western**, A., 2015. Evolution of the human–water relationships in the Heihe River basin in the past 2000 years. *Hydrol. Earth Syst. Sci.*, 19(5): 2261-2273.
24. Perera, K.C., **Western**, A.W., George, B., Nawarathna, B., 2015. Multivariate time series modeling of short-term system scale irrigation demand. *J. Hydrol.*, 531, Part 3: 1003-1019. DOI:http://dx.doi.org/10.1016/j.jhydrol.2015.11.007.
25. Perera, K.C., **Western**, A.W., Nawarathna, B., George, B., 2015. Comparison of hourly and daily reference crop evapotranspiration equations across seasons and climate zones in Australia. *Agricultural Water Management*, 148: 84-96.
26. Saft, M., **Western**, A.W., Zhang, L., Peel, M.C., Potter, N.J., 2015. The influence of multiyear drought on the annual rainfall-runoff relationship: An Australian perspective. *Water Resour. Res.*, 51: 2444–2463.

27. Shapoori, V., Peterson, T.J., **Western**, A.W., Costelloe, J.F., 2015. Estimating aquifer properties using groundwater hydrograph modelling. *Hydrological Processes*, 29(26): 5424-5437. DOI:10.1002/hyp.10583
28. Shapoori, V., Peterson, T.J., **Western**, A.W., Costelloe, J.F., 2015. Decomposing groundwater head variations into meteorological and pumping components: a synthetic study. *Hydrogeology Journal*, 23(7): 1431-1448. DOI:10.1007/s10040-015-1269-7
29. Shapoori, V., Peterson, T.J., **Western**, A.W., Costelloe, J.F., 2015. Top-down groundwater hydrograph time series modeling for climate-pumping decomposition. *Hydrogeology Journal*, 23:819-836.
30. Tesemma, Z.K., Wei, Y., Peel, M.C., **Western**, A.W., 2015. Including the dynamic relationship between climatic variables and leaf area index in a hydrological model to improve streamflow prediction under a changing climate. *Hydrol. Earth Syst. Sci.*, 19(6): 2821-2836.
31. Tesemma, Z.K., Wei, Y., Peel, M.C., **Western**, A.W., 2015. The effect of year-to-year variability of leaf area index on Variable Infiltration Capacity model performance and simulation of runoff. *Advances in Water Resources*, 83: 310-322. DOI:http://dx.doi.org/10.1016/j.advwatres.2015.07.002.
32. Wei, J., Wei, Y., **Western**, A., Skinner, D., Lyle, C., 2015. Evolution of newspaper coverage of water issues in Australia during 1843–2011. *AMBIO*: 44:319-331.
33. Adams, R., Arafat, Y., Eate, V., Grace, M.R., Saffarpour, S., Weatherley, A.J., **Western**, A.W., 2014. A Catchment Study of Sources and Sinks of Nutrients and Sediments in south-east Australia. *Journal of Hydrology*, 515: 166-179.
34. Alvarez-Garreton, C., Ryu, D., **Western**, A.W., Crow, W., Robertson, D., 2014. The impacts of assimilating satellite soil moisture into a rainfall-runoff model in a semi-arid catchment. *Journal of Hydrology*, 519: 2763-2774
35. Costelloe, J.F., Irvine, E.C., **Western**, A.W., 2014. Uncertainties around modelling of steady-state phreatic evaporation with field soil profiles of  $\delta^{18}\text{O}$  and chloride. *Journal of Hydrology*, 511: 229-241.
36. Li, Y., Ryu, D., **Western**, A.W., Wang, Q.J., Robertson, D.E., Crow, W.T., 2014. An integrated error parameter estimation and lag-aware data assimilation scheme for real-time flood forecasting. *Journal of Hydrology*, 519, 2722-2736
37. Nune, R., George, B.A., Teluguntla, P., **Western**, A.W., 2014. Relating trends in streamflow to anthropogenic influences: A case study of Himayat Sagar catchment, India. *Water Resources Management*, 28:1579–1595.
38. Perera, K., **Western**, A., Nawarathna, B., George, B., 2014. Forecasting Daily Reference Evapotranspiration for Australia using Numerical Weather Prediction outputs. *Agric. For. Meteorol.*, 194: 50-63.
39. Peterson, T.J., **Western**, A.W., 2014. Nonlinear Time-series Modeling of Unconfined Groundwater Head. *Water Resources Research*: 50(10):8330-8355.
40. Peterson, T.J., **Western**, A.W., 2014. Multiple hydrological attractors under stochastic daily forcing: 1. Can multiple attractors exist? *Water Resources Research*., 50(4):2993-3009.
41. Peterson, T.J., **Western**, A.W., Argent, R.M., 2014. Multiple hydrological attractors under stochastic daily forcing: 2. Can multiple attractors emerge? *Water Resources Research*, 50(4):3010-3029.
42. Su, C.-H., Ryu, D., Crow, W.T., **Western**, A.W., 2014. Stand-alone error characterisation of microwave satellite soil moisture using a Fourier method. *Remote Sensing of Environment*, 154: 115-126.

43. Su, C.-H., Ryu, D., Crow, W.T., **Western**, A.W., 2014. Beyond triple collocation: Applications to soil moisture monitoring. *Journal of Geophysical Research – Atmospheres*, 119 (11): 6419–6439.
44. Tesemma, Z.K., Wei, Y., **Western**, A.W., Peel, M.C., 2014. Leaf area index variation for cropland, pasture and tree in response to climatic variation in the Goulburn-Broken catchment, Australia. *Journal of Hydrometeorology*, 15(4): 1592-1606.
45. Wagner, W., Brocca, L., Naeimi, V., Reichle, R., Draper, C., Jeu, R.d., Ryu, D., Su, C.-H., **Western**, A., Calvet, J.-C., Kerr, Y.H., Leroux, D.J., Drusch, M., Jackson, T.J., Hahn, S., Dorigo, W., Paulik, C., 2014. Clarifications on the “Comparison Between SMOS, VUA, ASCAT, and ECMWF Soil Moisture Products Over Four Watersheds in U.S.”. *Transactions on Geoscience and Remote Sensing*, 52(3):1901-1906.
46. Adams, R., Costelloe, J.F., **Western**, A.W., George, B., 2013. Using uncertainty analysis and groundwater measurements to improve the confidence of river water balance estimates. *J. Hydrol.*, 503: 209-221
47. Brown, A.E., **Western**, A.W., McMahon, T.A., Zhang, L., 2013. Impact of forest cover changes on annual streamflow and flow duration curves. *J. Hydrol.*, 483: 39-50.
48. Li, Y., Ryu, D., **Western**, A., Wang, Q., 2013. Assimilation of stream discharge for flood forecasting: the benefits of accounting for routing time lags. *Water Resour. Res.*49(4): 1887:1900.
49. Pipunic, R.C., Walker, J.P., **Western**, A.W., Trudinger, C., 2013. Assimilating multiple data types for improved heat flux prediction: A one-dimensional field study. *Remote Sensing of Environment*, 136: 315-329.
50. Smith, A.P., **Western**, A.W., 2013. Predicting nitrogen dynamics in a dairy farming catchment using systems synthesis modelling. *Agricultural Systems*, 115:144-154.
51. Smith, A.P., **Western**, A.W., Hannah, M.C., 2013. Linking water quality trends with land use intensification in dairy farming catchments. *Journal of Hydrology*, 476:1-12.
52. Su, C.-H., Ryu, D., **Western**, A.W., Wagner, W., 2013. De-noising of passive and active microwave satellite soil moisture time series. *Geophysical Research Letters*, 40(14): 3624–3630.
53. Su, C.-H., Ryu, D., Young, R.I., **Western**, A.W., Wagner, W., 2013. Inter-comparison of microwave satellite soil moisture retrievals over the Murrumbidgee Basin, southeast Australia. *Remote Sensing of Environment*. 134:1-11.
54. Adams, R., **Western**, A.W., and Seed, A.W., 2012. An analysis of the impact of spatial variability in rainfall on runoff and sediment predictions from a distributed model. *Hydrological Processes*, 26: 3263–3280.
55. Costelloe, J.F., Irvine, E.C., **Western**, A.W., Tyler, M., 2012. Identifying fluvial recharge and artesian upwards leakage contributions to arid zone shallow, unconfined groundwater. *Chemical Geology*, 326-327: 189-200.
56. Peterson, T.J., **Western**, A.W. and Argent, R.M., 2012. Analytical methods for ecosystem resilience: A hydrological investigation. *Water Resources Research*,48: 16pp, W10531
57. Rosenbaum, U., Bogena, H.R., Herbs, M., Huisman, J.A., Peterson, T.J., Weuthen, A., **Western**, A.W., Vereecken, H., 2012. Seasonal and event dynamics of spatial soil moisture patterns at the small catchment scale. *Water Resources Research*, 48: 22pp, W10544
58. Smith, A.B., Walker, J., **Western**, A.W., Young, R.I., Ellett, K., Pipunic, R.C., Grayson, R.B., Siriwardena, L., Chiew, F.H.S., H. Richter, 2012. The Murrumbidgee soil moisture monitoring network data set. *Water Resources Research*, 48(7): 6pp, W07701

59. **Western, A.W.**, Anderson, B., Siriwardena, L., Chiew, F.H.S., Seed, A. and Bloschl, G., 2011. The within day distribution of 6 minute rainfall intensity in Australia. *Hydrological and Earth Systems Science*, 15:2561-2579.
60. McDonnell, J. J., McGuire, K., Aggarwal, P., Beven, K. J., Biondi, D., Destouni, G., Dunn, S., James, A., Kirchner, J., Kraft, P., Lyon, S., Maloszewski, P., Newman, B., Pfister, L., Rinaldo, A., Rodhe, A., Sayama, T., Seibert, J., Solomon, K., Soulsby, C., Stewart, M., Tetzlaff, D., Tobin, C., Troch, P., Weiler, M., **Western, A.**, Worman, A., Wrede, S., 2010. How old is streamwater? Open questions in catchment transit time conceptualization, modelling and analysis. *Hydrological Processes*, 24(12): 1745-1754.
61. Rüdiger, C., **Western, A.W.**, Walker, J.P., Smith, A.B., Kalma, J.D. and Willgoose, G.R., 2010. Towards a General Equation for Frequency Domain Reflectometers. *Journal of Hydrology*, 383(3-4): 319-329.
62. Neumann, L.N., **Western, A.W.** and Argent, R.M., 2010. The sensitivity of simulated flow and water quality response to spatial heterogeneity on a hillslope in the Tarrawarra catchment, Australia. *Hydrological Processes*, 24(1): 76-86.
63. Costelloe, J.F., Irvine, E.C., **Western, A.W.** and Herczeg, A.L., 2009. Groundwater recharge and discharge dynamics in an arid-zone ephemeral lake system, Australia. *Limnology and Oceanography*, 50: 86-100.
64. Peterson, T.J., Argent, R.M., **Western, A.W.** and Chiew, F.H.S., 2009. Multiple stable states in hydrological models: An eco-hydrological investigation. *Water Resources Research*, 45, 17pp, W03406.
65. Reichl, J.P.C., **Western, A.W.**, McIntyre, N.R. and Chiew, F.H.S., 2009. Optimization of a similarity measure for estimating ungauged streamflow. *Water Resources Research*, 45, 15pp, W10423.
66. Adams, R., **Western, A.**, Anderson, B. and Seed, A., 2008. Investigating spatial and temporal variability in runoff and sediment generation using a physically-based model, THALES. *Australian Journal of Water Resources*, 12(3): 233-243.
67. Costelloe, J.F., Payne, E., Woodrow, I., Irvine, E.C., **Western, A.W.** and Leaney, F.W., 2008. Water sources accessed by arid zone riparian trees in highly saline environments, Australia. *Oecologia*, 156: 43-52.
68. Pipunic, R.C., Walker, J.P. and **Western, A.W.**, 2008. Assimilation of remotely sensed data for improved latent and sensible heat flux prediction: A comparative synthetic study. *Remote Sensing of Environment*, 112(4): 1295-1305.
69. Anderson, B.G., Rutherford, I.D. and **Western, A.W.**, 2006. An analysis of the influence of riparian vegetation on the propagation of flood waves. *Environmental Modelling & Software*, 21(9), 1290-1296.
70. Ellett, K.M., Walker, J.P., **Western, A.W.** and Rodell, M., 2006. A framework for assessing the potential of remote-sensed gravity to provide new insight on the hydrology of the Murray-Darling Basin. *Australian Journal of Water Resources*, 10(2): 125-138.
71. Ladson, A., Lander, J., **Western, A.**, Grayson, R. and Zhang, L., 2006. Estimating extractable soil moisture content for Australian soils. *Australian Journal of Soils Research*, 44: 531-541.
72. Lin, H., Bouma, J., Pachepsky, Y. **Western, A.**, Thompson, J. van Genuchten, R. Vogel, H.-J. and Lilly, A., 2006. *Hydropedology: Synergistic Integration of Pedology and Hydrology*, *Water Resources Research*, 42, 13pp, W05301, doi:10.1029/2005WR004085.
73. Savige, C., French, A.N., **Western, A.W.**, Walker, J.P., Abuzar, M., Hacker, J.M. and Kalma, J.D., 2005. Remote Sensing Estimates of Evapotranspiration at a Range of Spatial Scales, *Australian Journal of Water Resources*, 10(2): 207-212.

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75. Chirico, G.B., **Western**, A.W., Grayson, R.B. and Blöschl, G., 2005. On the definition of the flow width for calculating specific catchment area patterns from gridded elevation data. *Hydrological Processes*, 19(13), 2539-2556.
76. Kandel, D.D., **Western**, A.W. and Grayson, R.B., 2005. Scaling from process timescales to daily timesteps: a distribution function approach. *Water Resources Research*, 41, 16pp, W02003, doi:10.1029/2004WR003380.
77. **Western**, A. W., and M. S. Seyfried, 2005. A Calibration and Temperature Correction procedure for the Water Content Reflectometer, *Hydrological Processes*. 19(18): 3785-3793.
78. Wilson, D.J., **Western**, A.W. and Grayson, R.B., 2005. A terrain and data -based method for generating the spatial distribution of soil moisture. *Advances in Water Resources*, 28 (1):43-54.
79. Richter, H., **Western**, A.W. and Chiew, F.H.S., 2004. The Effect of Soil and Vegetation Parameters in the ECMWF Land Surface Scheme. *Journal of Hydrometeorology*, 5(6), 1131-1146.
80. Kandel, D.D., **Western**, A.W., Grayson, R.B. and Turrall, H.N., 2004. Process parameterisation and temporal scaling in surface runoff and erosion modelling. *Hydrological Processes*, 18: 1423-1446 DOI 10.1002/hyp.1421.
81. Marsh, N.A., **Western**, A.W. and Grayson, R.B., 2004. A comparison of methods for predicting incipient motion for sand beds. *Journal of Hydraulic Engineering*, 130 (7): 616-621.
82. **Western**, A.W., Sadek, T., Grayson, R.B. and Turrall, H.N., 2004. On the ability of AirSAR to measure patterns of dielectric constant at the hillslope scale. *Journal of Hydrology*, 289(1-4), 9-22 DOI 10.1016/j.jhydrol.2003.10.016.
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