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About

Mark Cuthbert's research, into process fundamentals in subsurface hydrology and paleohydro(geo)logy, is currently focussed on groundwater sustainability in drylands, improving interpretations of speleothem climate proxy archives and exploring how groundwater has influenced our evolution as a species.

He currently holds a Marie Curie Research Fellowship at the University of Birmingham, UK, and UNSW Australia. Please get in touch for more information about his research, for copies of papers, or if you are interested in collaborating.

Biography

After graduating from the University of Oxford with a degree in Earth Sciences in1998, Mark specialised in Hydrogeology and Groundwater Resources through an MSc at University College London in 1999.

Following 3 years working in environmental and engineering consultancy (Entec UK, now AMEC), he completed a **NERC (http://www.nerc.ac.uk/)** funded (**LOCAR (http://catchments.nerc.ac.uk/about/)**) PhD at the University of Birmingham (UoB). He then worked in the charitable sector doing peace and development work for 3 years before returning to UoB as a postdoc in 2008.

Since then Mark has worked on a variety of projects including **SWITCH (http://www.switchurbanwater.eu/links.php)** (EU FP6), **BANDD (http://bandd-research.org.uk/index.php)** (**EPSRC (http://www.epsrc.ac.uk/)**/NERC) and presently holds a **Marie Curie Research Fellowship (http://ec.europa.eu/research/mariecurieactions/)** (EU FP7) jointly between UoB and UNSW Australia's **Connected Waters Initiative Research Centre (http://www.connectedwaters.unsw.edu.au/)**.

Research

Research group

- **Water sciences (/research/activity/water/index.aspx)**
- **Hydrogeology (/research/activity/water/themes/hydrogeology/index.aspx)**

Research interests

- Groundwater recharge
- Surface water-groundwater interactions
- Climate-groundwater interactions and paleohydro(geo)logy
- Groundwater flow and transport processes

Groundwater recharge

How and why does groundwater recharge occur? How has recharge changed as the climate has varied, and how might it in the future? How can we best estimate groundwater recharge? Answering these questions is key to developing strategies for sustainable groundwater management, a critical part of meeting our global food-water-energy needs.

Key papers: Cuthbert et al. 2009 QJEG&H, Cuthbert 2010 WRR, Cuthbert et al. 2010a JoH, Cuthbert et al. 2010b JoW&CC, Cuthbert et al. 2013 HESS

Surface water-groundwater interactions

What are the fundamental controls on exchange fluxes between surface water and groundwater? How does human activity change these dynamics? How can we best estimate these fluxes? Such interactions control catchment water quality and hydroecological health and are fundamental for underpinning sound integrated catchment management.

Key papers: Cuthbert et al. 2010 AWR, Cuthbert & Mackay 2013 WRR, Krause et al. 2014 WRR, Roshan et al. 2014 AWR

Climate-groundwater interactions and paleohydro(geo)logy

How has groundwater availability varied with climate over Earth's history? How has this influenced the evolution of humans and other species? How do groundwater recharge and discharge processes influence climate proxy archives such as speleothems and lake carbonates? How will future climate change affect groundwater availability? A better understanding of climate-groundwater interactions in the past and present is crucial to developing strategies for future human resilience to climate change.

Key papers: Cuthbert & Ashley 2014, Cuthbert et al. 2014 EPSL, Cuthbert et al. 2014 SR, Holman et al. 2012 HJ

Groundwater flow and transport processes
(http://scholar.google.com.au/citations?hl=en&user=8DSHWm0AAAAJ&view_op=list_works)

What governs the form of groundwater recession? How can we characterise preferential flow phenomena in porous media? How do bacteria move in the subsurface? How can biomineralisation be used for reducing the spread of groundwater contaminants? Exploring fundamental groundwater flow and transport processes is critical to managing human impact on the natural environment.

Key papers: Cuthbert 2014 WRR, Cuthbert et al 2013 ES&T, Tobler et al. 2014, Handley-Sidhu et al. 2014

Publications

You can also view Mark's publications via **Google Scholar (http://scholar.google.com.au/citations?hl=en&user=8DSHWm0AAAAJ&view_op=list_works)** , **ResearchGate (http://www.researchgate.net/profile/M_Cuthbert)** or **ResearcherID (http://www.researcherid.com/ProfileView.action?SID=P19qNB7frEnJH2wSEVf&returnCode=ROUTER.Success&queryString=KG0UuZjN5WnikDkr0zr0q2JCEtdpuO5bO%252B6XGJF3mXQ%253D&SrcApp=CR&Init=Yes)**

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