

## Dr Grace Garner

Research Fellow

[School of Geography, Earth and Environmental Sciences \(/schools/gees/index.aspx\)](/schools/gees/index.aspx)

### Contact details

Telephone **+44 (0)121 414 6925** (tel: **+44 121 414 6925**)

Email [g.garner@bham.ac.uk](mailto:g.garner@bham.ac.uk) (mailto: [g.garner@bham.ac.uk](mailto:g.garner@bham.ac.uk))

Twitter [@DinosaurusGrace](http://twitter.com/@DinosaurusGrace) (<http://twitter.com/@DinosaurusGrace>)

School of Geography, Earth and Environmental Sciences  
University of Birmingham  
Edgbaston  
Birmingham  
B15 2TT  
UK



### About

Grace's research investigates the effects of weather, climate, and landuse (particularly riparian vegetation and stormwater control measures) on in-channel hydrological processes. She is especially interested in monitoring and deterministic modelling of river water energy budgets and the thermal dynamics of water under present and probable future climates; this is the focus of her current research.

### Qualifications

- 2014: PhD River and stream temperature in a changing climate, University of Birmingham
- 2010: MSc Water Resources Technology and Management, University of Birmingham
- 2009: BSc (hons) Geography, University of Birmingham

### Biography

Grace completed a BSc in the School of Geography and MSc in the School of Civil Engineering, both at the University of Birmingham. During the Masters, Grace worked with the Water Management Team at British Waterways (now the Canal and River Trust) on present and future canal water resource supply and use efficiency scenarios.

In 2010 she began a PhD at Birmingham, funded by NERC and supervised by David Hannah, and Jonathan Sadler in collaboration with Iain Malcolm (Marine Scotland Science, Freshwater Laboratory). Prior to completing her PhD thesis, she took a five-month research secondment in 2013 to work in the USA on a NSF funded research project in at the Universities of North Carolina at Charlotte and Kent State University.

Grace took-up the post of Research Fellow at Birmingham in June 2014 and continues to work with her colleagues in the UK and the USA.

### Teaching

GGM 314 Applied Micrometeorology and Climatology

### Research

#### Research interests

River and stream temperature, hydrology, hydroclimatology, hydrometeorology, environmental modeling

### Other activities

- Member of the British Hydrological Society, EGU and AGU
- Member of and contributor to the Birmingham R User Meetings (BRUM) group.
- Co-convener of the National Meeting on Stream Temperature (2011) and the annual Early Career Hydrologists' event (2012), both on behalf of the British Hydrological Society
- Convenor of the Water Sciences Seminar Programme at Birmingham (2011-2013)
- Reviewer for Hydrological Processes, Freshwater Science, WIREs Water, Hydrology Research and Geophysical Research Letters

### Publications

**Garner G**, Malcolm IA, Sadler JP, Hannah DM. In press. What causes cooling water temperature gradients in a forested stream reach? Hydrology and Earth System Sciences. DOI: hess-2014-195

Hannah DM, **Garner G**. In press. River water temperature in the United Kingdom: changes over the 20th century and possible changes over the 21st century. Progress in Physical Geography. DOI: DOI: 10.1177/0309133314550669

Watts G, Battarbee R, Bloomfield JP, Crossman J, Daccache A, Durance I, Elliot A, **Garner G**, Hannaford J, Hannah DM, Hess T, Jackson CR, Kay AL, Kernan M, Knox J, Mackay JD, Marianne SE, Monteith D, Ormerod S, Rance J, Wade A, Wade S, Weatherhead K, Whitehead, Wilby RL. In press. Climate change and water in the UK- past changes and future prospects. Progress in Physical Geography. DOI: DOI: 10.1177/0309133314542957

**Garner G**, Malcolm IA, Sadler JP, Millar CP, Hannah DM. Early View. Inter-annual variability in the effects of riparian woodland on micro-climate, energy exchanges and water temperature of an upland Scottish stream. *Hydrological Processes*. DOI: 10.1002/hp.10.223 [[Open access article \(http://onlinelibrary.wiley.com/doi/10.1002/hyp.10223/abstract\)](http://onlinelibrary.wiley.com/doi/10.1002/hyp.10223/abstract)]

**Garner G**, Hannah DM, Sadler JP, Orr HG. 2014. River temperature regimes of England and Wales: spatial patterns, inter-annual variability and climatic sensitivity. *Hydrological Processes*. 28: 5583- 5598. DOI: 10.1002/hyp.9992 [[Open access article \(http://onlinelibrary.wiley.com/doi/10.1002/hyp.9992/abstract\)](http://onlinelibrary.wiley.com/doi/10.1002/hyp.9992/abstract)]

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