

FULLY FUNDED PHD STUDENTSHIP ON EXCITING PROJECT!! Deadline: May 30, 2020

Analysing the expression of climate change within big continental-scale rainfall datasets and the impacts on the water balance

Supervisors:

Dr Michael Singer (School of Earth and Environmental Sciences, Cardiff University)

Dr Katerina Michaelides (School of Geographical Sciences, University of Bristol)

Dr Rafael Rosolem (Department of Civil Engineering, University of Bristol)

Dr Mark Cuthbert (School of Earth and Environmental Sciences, Cardiff University)



Project Aims and Methods

Little is known about the regional expression of climate change within rainfall fields at high spatial and temporal resolution, yet this information is critical for understanding catchment and regional responses to climate change and the regional water balance. This studentship will utilise large hydrometeorological datasets at continental scale to explore trends in key precipitation variables including storm intensity, duration, time between storms, and evaporative demand. These data on climatic forcing will be contextualized with *in situ* time series of water fluxes and storage at or near the Earth's surface in order to link climate change to its hydrological impacts on land. There will also be opportunities to model the links between climate and hydrology and to explore how they might be expected to change under future climate.

Supervisorial Team

You will be joining an established and well-funded group of collaborating academics with active research groups spanning Cardiff and Bristol, who have deep interests in the links between climate (including climate change) and land surface and subsurface hydrology.

Candidate Profile

The successful candidate will have degree in geography, geology, engineering, and/or mathematics and will have a strong foundational background in hydrology and/or climate science. Experience with coding (e.g., Python) and large datasets is desirable, and additional training will be provided as necessary. Interest in climatology, climate change and hydrological processes. Most of all, you should be self-motivated, intellectually curious, and interested in climate change and water.

Training and Career Development Opportunities

You will have opportunities to learn new skills in formal and informal settings and the training programme will be tailored to your needs/interests in line with the goals of the project. The supervisory team will work to connect you to a wider network of researchers and stakeholders to enhance opportunities to continue in academia or seek employment upon completion of the PhD. You will also be supported to present your research at international conferences and publish your work in the peer review literature.

Funding

The PhD studentship covers Cardiff University fees and a stipend of ~£15K/year for 3.5 years. It also includes all expenses related to travel for fieldwork and to attend/present at international conferences.

1. Singer, M. B., and Michaelides, K.: Deciphering the expression of climate change within the Lower Colorado River basin by stochastic simulation of convective rainfall, *Environmental Research Letters*, 12, 10.1088/1748-9326/aa8e50, 2017.
2. Cuthbert, M. O., Gleeson, T., Moosdorf, N., Befus, K. M., Schneider, A., Hartmann, J., and Lehner, B.: Global patterns and dynamics of climate-groundwater interactions, *Nature Climate Change*, 9, 137-141, 10.1038/s41558-018-0386-4, 2019.

For further information, please contact Michael Singer (singerm2@cardiff.ac.uk). To apply, go to <https://www.cardiff.ac.uk/study/postgraduate/applying> , but please contact me first.