



The Impact of Climate Change on Groundwater Resources and Groundwater Quality in the Patcham Catchment, England.

R.J Phillips (1), M Smith (1), D.J Pope (1), and L Gumm (2)

(1) School of Environment and Technology, University of Brighton, United Kingdom. (r.j.phillips@brighton.ac.uk), (2) School of Environmental Sciences, University of East Anglia, United Kingdom

The CLIMAWAT project is an EU-Regional Development Fund Interreg IV funded research programme to study the impacts of climate change on groundwater resources and groundwater quality from the Chalk aquifer of SE England. The use of partially treated wastewater for artificial recharge will also be extensively studied in both the field and laboratory. The Chalk is a major aquifer and regionally supplies 70% of potable water supplies. The long term sustainable use of this resource is of paramount importance and the outcomes of this project will better inform and enhance long term management strategies for this. Project partners include water companies, regulatory bodies and industry consultancies.

The four main objectives of the CLIMAWAT project are: i) better improve the prediction of the impact of climate change on this groundwater resource; ii) better understand and quantify how recharge mechanisms will vary due to the uncertainty associated with climate change; iii) better understand the storage mechanisms and fate of contaminants (e.g. nitrates and pesticides) in this aquifer and iv) investigate the impact of using partially treated wastewater for artificial recharge.

An extensive field monitoring and data collection programme is underway in the Patcham Catchment (SE of England). Simultaneous monitoring of climatic, unsaturated zone potentiometric, groundwater level and chemistry data will allow for a better understanding of how changes in recharge patterns will effect groundwater quality and quantity. Isotopic analysis of sampled groundwaters has allowed for interpretations and a better understanding of the storage and movement of water through this aquifer.

The laboratory experimental programme is also underway and the results from this will compliment the field based studies to further enhance the understanding of contaminant behaviour in the both unsaturated and saturated zones. Core experiments are being used to investigate how nutrient and other contaminants are transported and retained in the Chalk aquifer. The results of which will better help understand how these contaminants are transported and held in the Chalk matrix and will provide quantitative information on the risk associated with the use of partially treated wastewater for artificial recharge and the contamination of groundwater reserves.

This poster will present the findings of the research project so far.