

## BSG Support for Attendance at the EGU General Assembly 2014

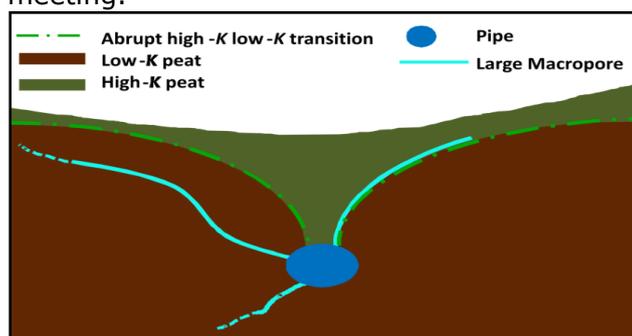
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### BSG Support

In February 2014, I was awarded a grant of £725 by the BSG to support my attendance at the European Geophysical Union's General Assembly. This prestigious meeting of geoscientists was the first international conference I had attended, and I was delighted to make three contributions across both the hydrological and soil science divisions.

I presented highlights from my published Masters research as a poster entitled 'Understanding the spatial structure of peat permeability around natural pipes in blanket peatlands'. This described new understanding of the hydrological functioning of these natural drainage features (Figure 1). As I currently work in a very different environmental context for my doctorate, this was a valuable opportunity to showcase these findings and may have led to several new citations of the work since the meeting.



**Figure 1.** Schematic showing a cross section of the natural soil pipe with the transition from high permeability to low permeability peat soil.

In a session on Dynamics Soil Landscapes: coupling soils, landscape evolution and biogeochemical cycles, I contributed an oral presentation on 'the distribution and fluvial redistribution of soil organic carbon in semiarid rangelands'. This described preliminary findings from my doctoral work, looking at the effect of woody shrub encroachment into former grasslands on terrestrial carbon dynamics. The work focused on generating new empirical data to refine our mechanistic understanding of the redistribution of particular-associated organic carbon. Contrary to predictions based on reductionist laboratory experiments, this work demonstrated that the enrichment of organic carbon in mobilised sediment is an important and enduring phenomenon, which increased significantly across the grass-shrub ecotone. We also found a six-fold increase in the erosion-induced efflux of organic carbon from shrublands relative to grasslands, which suggests that comparisons of the carbon sequestration potential of shrubs relative to grasses based solely on gaseous fluxes may be incomplete, due to failure to consider losses to fluvial systems. This could be extremely significant for the estimation of carbon sequestration attributed to woody shrub encroachment in semi-arid areas. This session was extremely well attended, far exceeding the capacity of the allocated room, and my empirical findings exemplified some of the core themes of the session. Analysis of the full dataset is now complete, and this work will very shortly be submitted for publication in a peer-reviewed journal.

My final contribution was a poster entitled: 'Are we overestimating organic carbon concentrations in soils containing inorganic carbon', in a session on innovative and successful research on soil science developed by young scientists. This prompted stimulating and insightful discussions with other researchers tackling the same issues of apportioning carbon between organic and inorganic forms, which have developed into collaborations with Dr Alain Plante from the University of Pennsylvania and Dr Felix Heitkamp from the University of Göttingen. We've undertaken comparison of our different methodologies, which will shortly be submitted for publication.

Lastly, while the feedback to my ongoing doctoral studies were the most useful component of the meeting, I appreciated the opportunity to meet many geoscientists undertaking related work in a wide variety of environmental contexts and geographical locations, and to see the exciting and innovative applications of geosciences.