Postgraduate Conference Attendance Grant: Lunar and Planetary Science Conference, The Woodlands, Texas, USA, 21-25 March 2016

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Glacial geomorphology: a planetary perspective

Overview

The BSG generously awarded £850 to help facilitate my attendance at the 47th Lunar and Planetary Science Conference (LPSC) in The Woodlands, Texas. The motivation to attend LPSC was to present and disseminate exciting new research from my PhD at one of the most prestigious and established conferences in the field of Planetary Science. Attended by thousands of delegates, LPSC always provides a diverse and thought provoking program, which not only allowed for interaction with experts directly related to my subject area of maritan geomorphology/glaciation, but also provided opportunity to glean a greater understanding of the prominent research questions in Planetary Science – an important aspect for an Early Career Scientist. Attending LPSC would also allow me to promote the BSG and the society's ongoing commitment to the discipline of geomorphology.

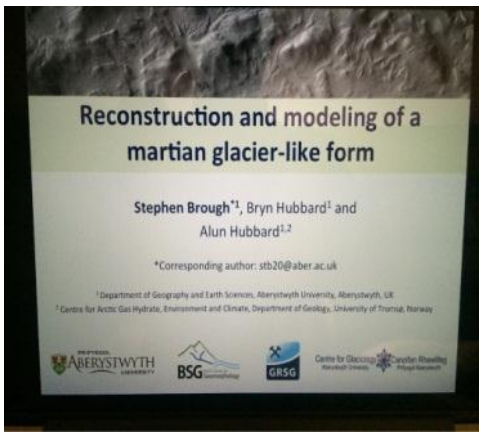

Figure 1: Opening presentation slide.

Conference contribution

My main contribution came in the form of an oral presentation on the Thursday of the conference. My talk, titled 'Two dimensional numerical ice flow modeling of an empirically reconstructed martian glacier-like form' (abstract available here), was first up in the 'Mars Ice: Under Pressure It Flows' session (Figure 1). The work was based around a wider topic which I am currently undertaking, whereby the identification of pervasive geomorphological evidence of former glacier extents had led to the suggestion that Mars has undergone multiple phases of glaciation (Brough et al., 2016a), and that the landforms we see today are thus diminished remains of once more prevalent ice masses (Hubbard et al., 2014; Brough et al., 2016b). Specifically the talk presented a reconstruction of a glacier-like form in eastern Hellas Planitia (Figure 2), which was used to assess ice volume and area change over time. A second component of the talk focused on initial modelling results for this reconstructed ice mass, where we are looking to adapt and apply a higher-order ice flow model to assess the potential environmental conditions required to produce this enigmatic landform.

I was also co-author on a poster, titled 'Radar-based observations of variable thickness debris cover on martian ice masses: Evidence of debris transfer by flowing ice on Mars' (abstract available here), which I presented in the 'Mars Polar Processes/Cryosphere' session on the Thursday evening. This work discussed some initial results trying to quantify the thickness of debris layers on top (supra-glaical) of martian ice masses, which to date is poorly constrained. High-resolution geomorphological mapping and morphometric analysis was also undertaken in a bid to better understand the processes and characteristics associated with such landforms.

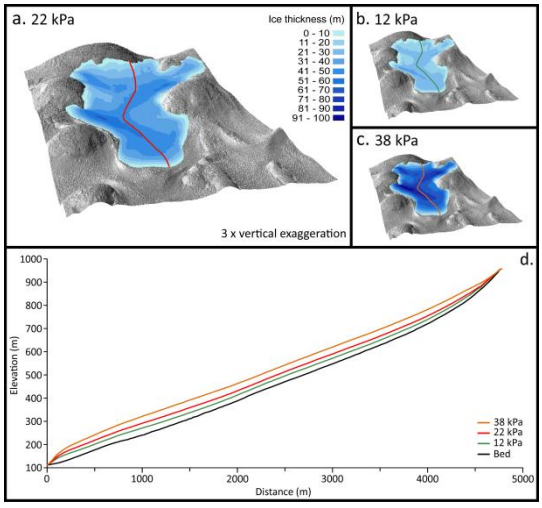

Figure 2: Palaeo-reconstructed glacier on Mars (after Brough et al., 2016b).

Career development/Wider impacts

As well as exposing my work to the academic community, the conference provided the opportunity to meet other researchers in the field of martian geomorphology/glaciation, which is relatively small in the UK. These discussions have already provided me with several new research ideas, as well as potential collaborations with researchers in the UK, USA and Canada. Without the support of the BSG I would not have been able to attend LPSC and I hope that the society's continued support of Early Career Scientists will enable future awardees to experience similar opportunities and ultimately ensure that geomorphology remains an important research topic in both Earth and Planetary Sciences.