

48th Lunar and Planetary Science Conference – The Woodlands, Texas 19th–24th March 2017

Joel Davis – final year PhD student studying the geology of aqueous environments on ancient Mars

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Summary

The generous British Society for Geomorphology conference attendance grant of £550 enabled me to attend the 48th Lunar and Planetary Science Conference in The Woodlands, Texas, near Houston, from 19th–24th March, 2017. The LPSC is the largest annual and most prestigious international gathering of planetary scientists. The main focus of the LPSC is the geology and geomorphology of planetary bodies, such as the Moon, Mars, and icy satellites. Attendance of the LPSC provided me with an opportunity to present my work on the geology and geomorphology of Mars' surface to wide, international audience of my peers, beyond the relatively small community with the UK, and receive feedback on it, as well as develop many international collaborations. In all, I presented one talk from my PhD work and two posters. I am grateful to the BSG for providing me with this opportunity and support at this early stage in my career.

Fluvial processes in Melas Chasma, Valles Marineris, Mars (talk)

Having presented preliminary results at LPSC 2015, my abstract was chosen to be presented as a talk (Fig. 1) in the [Mars Sedimentology and Stratigraphy session](#), giving me an opportunity to present the finished work, a mapping investigation into the fluvial history of Valles Marineris, Mars' famous canyon system. In particular, my region of investigation covers an enclosed basin, the south-west Melas basin (SMB), which contains a complex series of fluvial valleys, deltaic and lacustrine deposits. My work documents the fluvial history and stratigraphy of the basin using recent, high-resolution data. I have identified numerous networks of fluvial channels, not previous seen in early studies, as well as inverted channels – former fluvial channels that form due to regional deflation, and now preserved as raised, sinuous ridges, similar to those seen in terrestrial deserts (Fig. 2). The complex stratigraphy of these channels suggests the SMB underwent episodic aqueous phases, and is representative of a “warm and wet” Martian climate that may have extended for much longer than previous thought during Mars' early history, with implications for the planet's habitability. The talk was positively received with much constructive feedback, which I plan to incorporate into the paper, which I am now writing.

The case for Melas Chasma as a landing site for the NASA 2020 rover (poster)

I also presented the case for the [SMB as a landing site](#) for NASA's upcoming 2020 Mars rover mission, on behalf of an international team from the UK, France, and the USA. The SMB was one of eight remaining candidate landing sites for the mission, which aims to characterise formerly habitable geochemical environments and cache samples of astrobiological interest. The SMB received much interest as a site for future Mars exploration.

Science results from the UKSA MURFI field trials, Utah (poster)

In addition, I also presented the [science results](#) from a rover field trial I was involved in last autumn. The Mars Utah Rover Field Investigation (MURFI) was a UK Space Agency sponsored trial to simulate ESA's upcoming ExoMars rover missions in 2020. There was much interest from NASA and CSA scientists in the MURFI mission, opening the door to future collaborations on rover analogue missions.

Importance of BSG funds

BSG funding was essential to my attendance at the LPSC this year. The £550 awarded covered the cost of my accommodation for the duration of the conference, with further funding from my PhD studentship covering flights, conference registration, and subsistence. The LPSC is a unique networking opportunity for planetary science students, yet it is also an expensive conference. Support from the BSG is essential for early career researchers to attend, and I hope this support continues for many years to come.

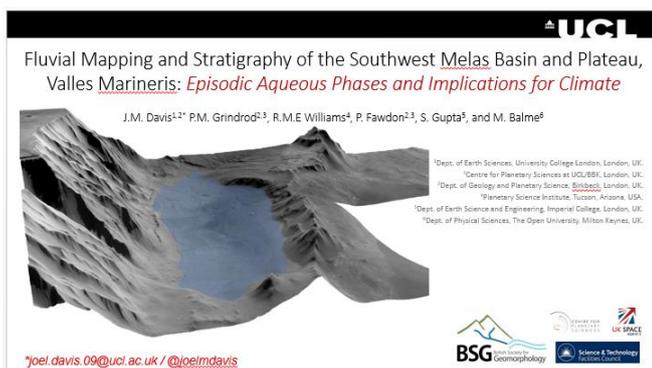


Figure 1: Title slide from talk

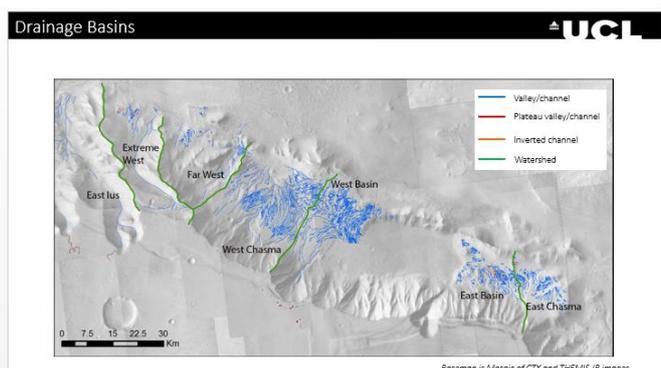


Figure 2: Drainage basins in the SMB