



Date: Tuesday 15 November 2016

Location: The Bell Inn, Godstone, 18:00 for 18.30 start

Geology of Mars

By Dr Marcus Matthews

With its distinctive red glow and being the third brightest object in the night sky, Mars has fascinated and intrigued mankind since prehistoric times. Early telescopes revealed a surface marked by shadowy features that changed with time. As telescopes improved, the shadows became more detailed, and latticework of channels were observed. It was considered by some that these were canals designed to distribute polar meltwater to the drier equatorial regions. The observations triggered a debate about the true nature of the Martian surface and promoted the thought that there was once water on Mars and that inspired the thought that perhaps the planet once and possibly still does support some form of life. To answer these questions a closer look is required.

Since the early 1960s there have been 55 missions to Mars with only 44% being successful. Only seven are currently operational. Vast amount of data has been acquired allowing the geology and terrain of Mars to be studied.



View from the Mast Camera (Mastcam) on NASA's Curiosity Mars rover showing sets of sandstone beds all inclined to the left (after NASA/JPL-Caltech/MSSS).

The rovers have provided some very interesting and important data on the geology of Mars. However, this has come at a cost since the regolith can be treacherous. The Spirit rover became stuck after traversing 7.7km when it broke through a thin layer of duricrust and sank up to its axles in loose sand. Traversing the martian surface is interesting from a geotechnical point of view and much research has been carried out to develop soil sensors that will allow the ground to be assessed ahead of the rover.

The talk will look at some of the more detailed and interesting aspects of Martian geology and geomorphology as well as the challenges the Martian regolith poses to rover design. The speaker was part of a team at the University of Surrey that developed a package of instruments to be mounted on a small scout rover that could assess trafficability of the ground ahead of a much larger mother rover as part of an FP7 EU sponsored research project.

LOCATION: The Bell Inn, Godstone, Surrey, RH9 8DX.

Details of this and other events are provided on the SERG section of the Geology Society website: <http://www.geolsoc.org.uk/serg>

Please let us know if you plan to attend so that we have an idea for numbers for catering.
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