THE ADSTOCK SCIENCE CLUB

Our June Science Club talk was presented by Dr Stephen Lewis who is the Deputy Head of the Department for Physical Sciences at the Open University. He began his talk by comparing Venus, Earth and Mars and how they are all rather similar in many fundamental respects, being rocky bodies of comparable size, surrounded by thin gaseous atmospheres. They have very different environments that are challenging to spacecraft exploration. Mars has proved a notoriously tricky planet on which to land a spacecraft, in fact about two thirds of all missions to Mars have failed in one way or another.

Dr Lewis is currently involved with Europe's latest mission to land the Schiaparelli probe, part of the broader ExoMars missions, on 19th October 2016. This will be the first time Europe has been involved in all aspects of landing a probe on Mars.

The Schiaparelli probe was to be powered by a Russian-made radioisotope power source, but due to political tensions this has not happened. The probe is in fact now being powered by a Lithium ion battery, similar to those found in your everyday laptop, and this is not expected to last for more than a day or two. Though this is a bit of a drawback, it does not, in fact, impact the main reason for the mission, which is to prove that ESA is capable of actually landing a probe on Mars without US help!

One of Dr Lewis's main jobs is to try and predict the Martian weather at the time of landing as low/high pressure, dust storms and other factors will have an effect on the deceleration and angle of entry of the craft as it enters the Martian atmosphere.

Finally Dr Lewis discussed issues around landing a probe on Venus where the temperature is around 500^{o}C and the average atmospheric surface pressure is about 90 times that of Earth's, also the atmosphere is mainly composed of Carbon Dioxide containing Sulphur dioxide with clouds composed of Sulphuric Acid. Not a very hospitable place! That is probably why most landers, mainly Russian Venera probes, which made it to the surface, only lasted a few minutes. I believe the last probe held out for almost 2 hours.

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