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LUNAR TEAM REPORT FROM A PLANETARY DESIGN WORKSHOP AT ESTEC. A. Gray[1], J. MacArthur[2], B. Foing[3,4], [1]Blekinge Institute of Technology (Department of Mechanical Engineering, 371 79, Karlskrona, Sweden, email: amber.gray@bth.se), [2]University College London (Department of Physics and Astronomy, University College London, Gower Street, London WC1E 6BT, United Kingdom), [3]European Space Research and Technology Centre (ESTEC, Keplerlaan 1, 2201 AZ Noordwijk, Netherlands), [4]International Lunar Exploration Working Group (ILEWG).

Abstract:

On February 13, 2014, GeoVUsie, a student association for Earth science majors at Vrijie University (VU), Amsterdam, hosted a *Planetary Sciences: Moon, Mars and More* symposium. The symposium included a learning exercise the following day for a planetary design workshop at the European Space Research and Technology Centre (ESTEC) for 30 motivated students, the majority being from GeoVUsie with little previous experience of planetary science.

Students were split into five teams and assigned pre-selected new science mission projects. A few scientific papers were given to use as reference just days before the workshop. Three hours were allocated to create a mission concept before presenting results to the other students and science advisors. The educational backgrounds varied from second year undergraduate students to masters' students from mostly local universities.

The lunar team was told to design a mission to the lunar south pole, as this is a key destination agreed upon by the international lunar scientific community. This region has the potential to address many significant objectives for planetary science, as the South Pole-Aitken basin has preserved early solar system history and would help to understand impact events throughout the solar system as well as the origin and evolution of the Earth-Moon system, particularly if samples could be returned.

This report shows the lunar team's mission concept and reasons for studying the origin of volatiles on the Moon as the primary science objective [1]. Amundsen crater was selected as the optimal landing site near the lunar south pole [2]. Other mission concepts such as RESOLVE [3], L-VRAP [4], ESA's lunar lander studies and Luna-27 were reviewed. A rover and drill were selected as being the most suitable architecture for the requirements of this mission.

Recommendations for future student planetary design exercises were to continue events like this, ideally with more time, and also to invite a more diverse range of educational backgrounds, i.e., both engineering and science students/professionals.

References:

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