Geophysical Research Abstracts
Vol. 20, EGU2018-19, 2018
EGU General Assembly 2018

Cosmic impact risk and protection for a Moon Village

James Burke
The Planetary Society, Sierra Madre, United States (jdburke@caltech.edu)

New craters observed by the Lunar Reconnaissance Orbiter enable an assessment of impact risk to lunar base elements, including ESA's proposed south polar Moon Village. Some protective measures have been discussed in previous papers, the primary method being to pile regolith on top of Village structures. Here we examine ways to create more effective shielding, using combinations of materials both local and imported and also exploiting Village architecture choices and local topography. Our main argument is that impact defense over the long term is both practical and important, requiring serious attention in Village planning. To enable discussion of a range of possibilities, we recognize five classes of hazard: first, small enough to be ignored; second, needing routine robotic repair; third, requiring prompt action using installed repair kits and possibly human participation; fourth, demanding urgent measures such as isolating damaged Village structures; fifth, large enough to eradicate the village. For the fifth impact class the only realistic solution is to divert the oncoming threat object, as is now studied and proposed for terrestrial impact hazards. Detection and deflection options are the same for the Moon as for Earth. The needed technical systems could be installed on Earth, in cislunar orbits or on the Moon. Probably the most efficient solution would be to incorporate lunar coverage in development planning for terrestrial Planetary Defense.