



Traverse velocity maps for human exploration

Christiane Heinicke (1), Carmel Johnston (), Elliot Sefton-Nash (2), Bernard Foing (1,2)

(1) Department of Earth and Life Sciences, VU Amsterdam, Netherlands, (2) ESTEC, Noordwijk, Netherlands

It is often proposed that humans are more effective and efficient in conducting exploratory work during planetary missions than rovers. However, even humans are hindered by the restrictions of their suits and by necessary precautions to ensure the astronauts' safety.

During the 12-month simulation at the Hawaii Space Exploration Analog and Simulation facility, several members of the six-person crew conducted a large number of exploratory expeditions under conditions similar to a Mars crew. Over the course of 145 extra-vehicular activities (EVAs), they traversed several thousand kilometers of various types of terrain. The actual walking speeds of the crew members have been correlated with different properties of the terrain as determined from field excursions and remote sensing.

The resulting terrain and velocity maps can be used both for ground truthing of satellite imagery, and potential EVA planning on celestial bodies.