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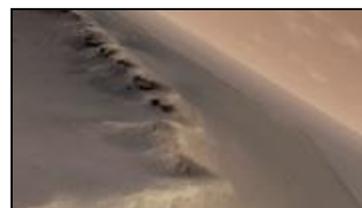
Mars meets Hollywood

Stunning movies of Mars' surface premiered.

Katharine Sanderson

Stunning footage of the surface of Mars has been filmed — sort of.

The movie has been compiled from the latest pictures taken by HiRISE (NASA's High-Resolution Imaging Science Experiment, on board the Mars Reconnaissance Orbiter). The movie was then given some final touches — smoothing out the picture and ensuring colour consistency — by using the same tricks that are used in Hollywood and the video-games industry.



Victoria Crater With Rover. [Click here](#) to watch the video.

The reconstructions, calculated from real data but with all vertical heights multiplied by 1.5 to give the landscape more definition, are providing Mars explorers with a wealth of information about where they can and can't attempt to go.

Randy Kirk from the US Geological Survey's (USGS) astrogeology team in Flagstaff, Arizona, has led the movie-making effort. The [first film](#) shows the Victoria crater — current destination of the plucky rover Opportunity — in glorious detail, with the crater walls, shadows and rocks, all in true-to-life colour.

The Spirit rover has recently been at the Columbia Hills region of Mars — it edged across the ridge of Husband Hill, which is seen in the [second piece](#). The films were premiered this week at the 38th Lunar and Planetary Sciences conference in Houston, Texas.

HiRISE has no built-in stereo capability, so the images had to be made by taking pictures of the same area from different places in consecutive orbits.

HiRISE stereo images derived in this way offer at least 10 times better resolution than previous best efforts, with each pixel showing a 30x30-centimetre square. The previous best effort came from Mars Orbiter Camera, which went AWOL with the Mars Global Surveyor in November last year. The European Space Agency's Mars Express, which does have a stereo camera, has a resolution of 12x12 metres per pixel.



Columbia Hills. [Click here](#) to watch the video.

"These are substantially more 'real' than what we've done in the past," says Kirk.

A safe exit

The raw topographic data being collected by HiRISE, rather than the Hollywood-esque films,

are what's valuable to scientists, says Kenneth Herkenhoff, also at the USGS in Flagstaff, and part of the Mars rovers team.

With this latest detail, thoughts that Opportunity might get stuck if it goes right into Victoria crater can be put to rest, he says. Thanks to the HiRISE stereo images, it's possible to find a site where Opportunity could go in and out of the crater safely, he says, without making it a suicide mission.

Future Mars landings will also benefit from these stereo images. Matthew Golombek, co-chair of NASA's landing-site steering committee for the Mars Science Laboratory mission due to launch in 2009, has whittled down a long list of potential landing sites to 33 locations. When this list is re-analysed, Kirk's images will come into play. "Stereo is absolutely critical to get the third dimension at potential landing sites," Golombek says.

The next mission to land on Mars, NASA's Phoenix, selected its landing site last week. Kirk's images did not affect the final decision between the three short-listed sites says Phoenix principal-investigator Peter Smith at the University of Arizona, Tucson, but the three-dimensional images were very important in identifying a general area.

Kirk's data show "only a slight tilt" at the selected site, says Smith, so the lander shouldn't slide away. Shadows from any rocks or boulders are notably absent from Kirk's images of the landing site, giving Smith more confidence that he made the right choice, he says.

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