Find your own place on the Red Planet

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Arizona State University researchers and scientists have created two new features for Google Earth 5.0, the popular online application that lets users tour Earth, the starry sky, and the Red Planet Mars.

The first of the new features lets anyone, anywhere, recommend places on Mars to photograph with ASU's THEMIS camera on NASA's Mars Odyssey orbiter. The second new feature shows the most recent infrared images of Mars sent back to Earth from the THEMIS camera.

THEMIS is the Thermal Emission Imaging System, a multiband infrared and visual camera designed at ASU by Dr. Philip Christensen. A Regents' Professor of Geological Sciences in the School of Earth and Space Exploration, Christensen is THEMIS' principal investigator and also director of the Mars Space Flight Facility on the Tempe campus.

"These two features, developed by our staff in cooperation with programmers at Google, will help everyone have a lot more fun exploring the Red Planet," says Christensen. "It's public engagement at its best."

Hey Mars, say cheese!

"We wanted to give the general public a way to suggest places on Mars for THEMIS to photograph," says Christensen. "Using the new feature, people can recommend sites, and these recommendations go to mission scientists who will decide what areas THEMIS images. If a public suggestion matches what the researchers choose, we'll notify the person who suggested the site and let them see the image as soon as we do."

To suggest a place for THEMIS to photograph, viewers need two things: Google Earth 5.0 and a file that is updated each week giving the spacecraft's Mars orbital groundtrack. Google Earth 5.0 is available at earth.google.com.

To get the orbital track, users should go to suggest.mars.asu.edu and follow the simple steps to register. Registering takes users to a page to download each week's orbital track file and it also lets them make image suggestions without having to enter an e-mail address with each image suggestion.

Registering also creates a customized page where users can see their past image suggestions and find links to their successful ones.

With the orbital track file downloaded, viewers start Google Earth and switch the globe to Mars (via the Planets toolbar button, which resembles the planet Saturn). Then viewers open the orbital track file from within Google Earth. Viewers can also just double-click on the orbital file once Google Earth has been set to Mars as its planet.

The places where THEMIS can take images during the coming week appear as stripes wrapped onto the Martian globe. Viewers click on stripe segments to recommend places for THEMIS to photograph.

"Each viewer can make up to 10 imaging suggestions per week," says Christian Yates, software engineer at the Mars Space Flight Facility. Yates designed the online interface for the project. If a site picked by a member of the public matches one chosen by the mission scientists, the suggester will be sent a link providing access to the image after it has come from the spacecraft.

Says Yates, "Making 10 image selections a week, a typical viewer will probably get at least one image."

THEMIS takes images at both visual and infrared wavelengths; viewers using Suggest an Image are making recommendations for visual images. These have higher resolutions than THEMIS' infrared ones: 60 feet (18 meters) per pixel versus 330 feet (100 m) per pixel for infrared.

"Taking pictures with an orbiting satellite can be a complicated business, but this tool makes it much easier," says Eric Engle, scientific software engineer at the Mars Space Flight Facility and lead project developer for the ASU team. "We hope people enjoy this chance to participate with us in exploring Mars."

Live from Mars

The ASU team also developed, with Google's programmers, a second new Google Earth feature called Live From Mars. It shows the latest infrared images from THEMIS as soon as the mission team at ASU receives them; look for the new feature among the Mars Gallery layers in Google Earth 5.0.

When the layer is clicked on, viewers see the Martian globe with the most recent THEMIS infrared images displayed on the surface, each flagged with a square symbol. Viewers can zoom in on each image to see details more clearly.

Mousing over the square symbol brings up the image's identification number, and clicking on the symbol opens a bubble window with more information (such as latitude and longitude, and date and time the photo was taken). The bubble also has links to the THEMIS camera site at ASU and NASA's Mars Odyssey site.

THEMIS' designer Christensen notes that both new features let the general public look over the shoulder of Mars researchers — and Suggest an Image in particular offers a potentially unique reward:

"Because the coverage of Mars by THEMIS at visual wavelengths is by no means complete, some people who recommend an image target could be the first humans ever to see that particular place in such detail."

Source: Arizona State University