

Space Droids In The Desert

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Arizona tourists may think they've stumbled upon a science fiction movie set if they find themselves near the state's famed Meteor Crater in early September. Though they won't get a glimpse of R2D2 or C3PO, they will see robots, rovers and space suited subjects with the latest interplanetary gear trekking over some of the state's harshest topography.

For two weeks a year, the stark Arizona landscape becomes a surrogate planet for NASA scientists. Why? Well, you can only do so much in a laboratory and it's a long way to Mars.

The temperature extremes, gusty winds and grit and dust of Arizona's high desert make it an ideal location to field test and evaluate prototype planetary exploration gear.

So, now it is exam time for NASA's Desert Research and Technology Studies (RATS), a team of scientists and engineers who test futuristic equipment that may one day be used for explorations of the moon and Mars.

This is the ninth year for Desert RATS to test a variety of advanced prototype equipment and operational concept techniques. The two-week trials will be conducted Sept. 4 -16 on remote field sites near the crater.

"Field tests like these are much like a final exam," said Johnson Space Center's Joe Kosmo, who leads the team. "We know what works on paper or in the laboratory, but what works there may not work in the field, or it may work differently than expected. Field testing offers a

hands-on experience base that is important as we strive to design and operate these emerging planetary surface technologies."

This year, a team of approximately 100 scientists and engineers from six NASA centers, several industries and academia will participate in the coordinated field demonstration.

During the field tests, space suited test "astronauts" enact a "day in the life" of a surface exploration crew: investigating the surrounding landscape, installing and testing science equipment, and excavating and collecting samples. Exploring planet surfaces is definitely different than spacewalks.

The desert trials will also put to test three robots, including a mammoth-sized all-terrain robotic vehicle called Athlete and Centaur, a half humanoid, half vehicle robot. In one demonstration, the crew will return to a mock way station -- called a Pressurized Rover Compartment (PRC) -- that has been delivered to the site by Athlete, an All-Terrain Hex-Legged Extra-Terrestrial Explorer vehicle capable of "walking" over extremely rough or steep terrain.

Centaur will then unload the day's sample collection and equipment and another robot will "visually" inspect the rover. The robotic maneuvers will be controlled through a satellite link to NASA's Exploration Planning and Operations Center -- a mission control center -- at Johnson Space Center in Houston.

Robots, rovers and rough terrain: It's all in a day's work for Kosmo and his team. The lessons learned in the field will someday help the cadre of astronauts who will explore the moon and Mars.

The NASA team includes representatives from Johnson Space Center, Glenn Research Center, Ames Research Center, Langley Research

Center, the Jet Propulsion Laboratory and Marshall Space Flight Center. Other experts participating in the field test are from Oceanering Sea and Space Systems, Hamilton Sundstrand, ILC/Dover, Carnegie Institute, University Space Research Association and Virginia Commonwealth University.

The Desert RATS team won't be the only ones learning from the experience. Students across the country will also be tapped into the tests through satellite-link Webcasts by NASA's Digital Learning Network. The one-hour-long programs will allow students to ask and hear from the experts about planning for future missions to the moon, Mars and beyond.

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