

# Scientist reveals Mars' secrets to Tahoe crowd



Dawn Sumner talks Jan. 28 about Curiosity's mission on Mars. Photo/Denise Haerr

**By Kathryn Reed**

INCLINE VILLAGE – Looking a bit like the desert of southern Utah, the landscape seems familiar. But this is another world.

Curiosity, a six-wheeled robot about the size of a car, is providing scientists with new insight about the composition of Mars as well as photographs of Earth's neighbor.

"There are layers of rock that are a lot like the Grand Canyon. We can read it like a history book of the environment," Dawn Sumner explained during a talk at Sierra

Nevada College on Jan. 28.

Sumner is a professor at UC Davis and a member of NASA's Mars Science Laboratory. Her team is handling the rover named Curiosity that landed on Mars on Aug. 5, 2012, after being launched Nov. 26, 2011. It is estimated there is enough power to last another six years. The robot is 10-feet long, 9-feet wide and 7-feet tall. It weighs 1,982 pounds.

It is equipped with a ton of software that allows scientists to program various tests as new data is acquired. The robot is able to drill into rocks, vaporize them, siphon dirt, use a laser and travel across rugged terrain. The mineral composition, chemistry and isotopes are part of the data collection.

The main mission is to see if the planet can support small life forms and potentially humans.

Gale Crater near Mount Sharp is where Curiosity is spending its time.

A challenge for those on Earth – it is an international group working on Curiosity – is the time difference. Days on Mars are 39 minutes longer than on Earth, so that is a consideration for when work is done and data is transmitted.



A replica of the rover Curiosity. Photo/Denise Haerr

For now, scientists have seen no evidence of carbon.

Organics have been located in samples that Curiosity has collected. Round pebbles like what are found in a stream are a new discovery.

“The only way to get rounding is in a stream or waves washing on a beach,” Sumner explained. This is how scientists know there was once water on this planet.

An alluvial fan has been mapped, which also suggests water flowed there.

“It flowed from the rim of the crater to just east of our landing site,” Sumner said.

Identifying the various rocks is a goal of the mission. Gypsum is one identifiable mineral. Measuring the force that it takes to drill into the rocks is one way to tell how hard or soft the rock is.

Mars, which is known as the red planet, gets this coloring because of oxidation. Where there is oxidation organic compounds are not likely to be found. However, Curiosity has been able to brush away some of the dirt on rocks. A gray color is unveiled. This, according to Sumner, means it is not oxidized.

“There are some rocks that we think are part of a delta system,” Sumner said.

Right now Curiosity is on the edge of black sand dunes that are actively moving. Sumner described them as pristine.

This week the goal is to sample the mud next to the sand dunes.

Plenty of questions remain to be answered. Being able to study the matter in labs on Earth instead of having the rover run tests and send back data would be more ideal and precise.

More missions are planned for Mars, with a launch date set for 2018 for another rover to study earthquakes on this planet. In 2020 a rover will launch that is designed to bring back samples. The first trip to Mars was the Viking in 1976.