

Transcript:
Rover Weather Report
(CRR: 2nd Martian Year)
May 11, 2012

(Music)

I'm Ashwin Vasavada, Project Scientist of the Mars Science Laboratory, and this is your Curiosity Rover Report.

Curiosity has completed its 2nd Mars year since landing at Gale Crater.

(Sound effect)

I know what you're thinking. Didn't Curiosity land *four* years ago in August 2012? Well, those were Earth years. Since Mars is farther from the sun, it takes nearly twice as long to make one circle around the sun. Each Mars year lasts 687 Earth days.

Even though Curiosity may be better known for driving around and drilling into rocks, it has quietly been compiling a comprehensive almanac of the Martian weather for two full seasonal cycles. Scientists can figure out which events occur year after year and which ones are unique.

Mars has seasons, just like Earth. The similar tilts of Earth and Mars give both planets a yearly rhythm of seasons: spring, summer, fall, and winter. But there are some big differences. Temperatures in Los Angeles are pretty warm all year long and they don't vary much between daytime and night time.

But Mars is much farther from the sun and has a very thin atmosphere, so temperatures at Gale Crater are really cold. In the middle of summer, they're almost bearable for us human beings. But in the middle of winter and at night they reach -130 degrees Fahrenheit or -90 Celsius.

Curiosity has measured water content and relative humidity over the Martian seasons. Even with its tiny amount of water, if temperatures get cold enough, the relative humidity goes up and you can get clouds in the sky and frost on the ground.

In the middle of winter and at night, relative humidities can reach as high as 70%, but so far Curiosity has not detected any frost.

Curiosity's long seasonal record also has given scientists some new clues to understanding methane in the Martian atmosphere.

Curiosity saw a large spike in methane during its first year on Mars. It didn't repeat the next year, so we can rule out a seasonal cause. But there is a lower, background level of methane that does seem to vary with the seasons.

Methane may be produced by microbes, but it may also be produced by a number of non-biological processes.

Other seasonal patterns have now become apparent, as well. For example, spring and summer at Gale Crater are dusty. But in the fall and winter, the air gets remarkably clear.

It's been a great two Martian years and we're looking forward to a third. I'm Ashwin Vasavada, and this has been your Curiosity Rover Report. Check back for more updates.