

Curiosity's Mars landing was astronomically difficult, says rocket scientist

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Sapa

STELLENBOSCH: Landing the Curiosity rover accurately on Mars was akin to a champion golfer scoring a 10 000km hole-in-one, an SA scientist working at Nasa's Jet Propulsion Laboratory (JPL) said yesterday.

Speaking at his alma mater, Stellenbosch University, JPL's associate director for project formulation and strategy, Jakob van Zyl, told his audience that touching down on a precise spot on the Red Planet was a very

difficult procedure.

"To put it in context, it would be a little bit like asking Ernie Els to tee off here in Cape Town, and hit a golf ball into the cup at St Andrew's in Scotland.

"And to make life more difficult, he doesn't know what the weather is like in Scotland. And if that isn't enough... the cup is moving at 100 000km/h," he said.

The three-ton craft carrying the robot Curiosity rover entered the thin Martian atmosphere last month at a

speed of 41 000km/h.

"And we're supposed to stop in seven minutes," Van Zyl said, to laughter from his audience.

Curiosity touched down in Gale Crater on the surface of Mars on August 6 (SA time). The last stage of its landing saw the rover lowered 7m on cables by means of a revolutionary "sky crane".

The dramatic descent was followed by millions around the world at the time, and has been hailed as a triumph of US technological prowess.

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Van Zyl said the six-wheel rover was about the size of a Mini Cooper car, and could negotiate its way over half-metre obstacles.

He said some of the photos

off the Martian surface it had sent back "reminds me of Namibia, where I grew up".

Curiosity's mission was to climb a 6km high mountain, dubbed Mount Sharp. Photographs of the mountain show it is made up of layer upon layer of apparently stratified rock.

"It represents millions of years of Martian history and we will be driving up the mountain... to analyse the rocks. The lowest rocks are the oldest, and the top rocks the youngest. We'll be able to see if life ever

existed there and, if so, for how long."

Van Zyl said there had been a question on how Curiosity would get up Mount Sharp, given that its radio-isotope-driven engine generated only 110 watts.

However, the torque the engine delivered to each individual wheel on the rover was greater than that delivered by a V-8 engine on a Ford truck.

"So that's how we're going to climb up that mountain: slowly and deliberately."

Van Zyl said among the

aims of the mission was to find signs of past life, which he stressed would be "an enormous discovery".

Responding to questions, he said the Curiosity was not looking for life on Mars, but for signs of past life.

"Some people think we're looking for rabbits and stuff like that. But we're looking for signs such as carbon compounds that will show life might have existed at one time. Of course, we'll be delighted if we get a picture of the rabbit," he joked.

Another puzzle was what had happened to Mars's once-full atmosphere.

"Mars must once have had an atmosphere. It's a big mystery about what happened to it."

Van Zyl is based at the California Institute of Technology in Pasadena, California. The institute is also the home of the JPL.

According to Nasa's website, Curiosity has been designed "to assess whether Mars ever had an environment able to support small life forms called microbes".