

# Countdown to Mars: Indian mission prepares for blastoff (Update)

November 4 2013

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This photograph taken on October 30, 2013 shows an Indian security forces member keeping watch near the PSLV-C25 launch vehicle, carrying the Mars Orbiter probe as its payload, at the Indian Space Research Organisation facility in Sriharikota

India's launches its first mission to Mars on Tuesday, aiming to become the only Asian nation to reach the Red Planet with a programme designed to showcase its low-cost space technology.

A rocket carrying a 1.35-tonne unmanned probe will blast off at 02:38pm (0908 GMT) from the Sriharikota spaceport off the southeast coast, beginning a 300-day journey to study the Martian atmosphere.

"The countdown is progressing well, as scheduled," said Deviprasad Karnik, spokesman for the Indian Space Research Organisation (ISRO). "The weather is normal. Slightly cloudy but no problem."

The Mars Orbiter Mission, known as "Mangalyaan" in India, was announced 15 months ago by Prime Minister Manmohan Singh shortly after a Chinese probe flopped when it failed to leave Earth's atmosphere.

The timing led to speculation that India was seeking to make a point to its militarily and economically superior neighbour, despite denials from ISRO.

"We are in competition with ourselves in the areas that we have charted for ourselves," ISRO chairman K. Radhakrishnan told AFP last week. "Each country has its own priorities."

The golden-coloured probe, about the size of a small car, has been hurriedly assembled and will be carried by a rocket much smaller than American or Russian equivalents.

Lacking the power to fly directly, the 350-tonne launch vehicle will orbit Earth for nearly a month, building up the necessary velocity to break free from our planet's gravitational pull.

Only then will it begin the second stage of its nine-month journey which will test India's scientists to the full, five years after they sent a probe called Chandrayaan to the moon.

More than half of all Mars projects have failed, including China's in

2011 and Japan's in 2003. Only the United States, Russia and the European Union have successfully reached there.

"I was very nervous during the moon mission, but after seeing the precision with which our people took Chandrayaan to the orbit I have to be confident," top Indian space scientist Jitendra Nath Goswami told AFP.

The total cost of the project is just 4.5 billion rupees (\$73 million), one sixth of the cost of a Mars probe set to be launched by NASA in 13 days time.

"We didn't believe they'd be able to launch this early," project scientist for the new NASA Mars probe, Joe Grebowsky, told AFP. "If it's successful, it's fantastic."

He underlined that Mars, which has a complicated orbit meaning it is between 50-400 million kilometres from Earth, was a far more complex prospect from a moon mission.

"When you shoot a rocket at Mars you have to take into account that Mars is going to move a good deal before you get there. The moon is fairly close," he said.

There have been recent setbacks for India too, including when Chandrayaan lost contact with its controllers in 2009 and when a new larger launch vehicle blew up after take-off in 2010.

The country has never before attempted an inter-planetary journey, meaning new technology had to be developed to enable the probe to run autonomously. Communication signals take about 12 minutes to travel between Earth and Mars.

The programme also has to contend with domestic critics who say a country that struggles to feed its people adequately and where more than half have no toilets should not be splurging on space travel.

ISRO counters that its technology has helped with economic development through satellites which monitor weather and water resources, or enable communication in remote parts of the country.

The Bangalore-based organisation and its 16,000 staff also share their rocket technology with the state-run defence body responsible for India's rapidly evolving missile programme.

The United States is the only nation that has successfully sent robotic explorers to land on Mars, the most recent being Curiosity, a nearly one-tonne vehicle which touched down in August 2012.

One of its discoveries appeared to undercut the purpose of the Indian mission which is to find evidence of methane which would lend credence to the idea of Mars supporting a primitive form of life.

A study of data from Curiosity published in September found that the rover had detected only trace elements of methane in the Martian atmosphere.

"Remember that it (Curiosity's methane reading) is for a single spot. One point doesn't make it a story for the whole planet," said Goswami, who was lead scientist for the moon mission.

NASA, which will launch its Maven probe to study the Mars atmosphere on November 18, is helping ISRO with communications. Two Indian ships stationed in the Pacific will also assist with monitoring.

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