

Topic: India's march towards Mars

India's first mission to Mars blasted off successfully on Tuesday, completing the first stage of an 11-month journey that could see New Delhi's low-cost space programme win Asia's race to the Red Planet.

- The 350-tonne rocket carrying an unmanned probe soared into a slightly overcast sky on schedule at 2:38 pm (0908 GMT), monitored by dozens of scientists at the southern spaceport of Sriharikota. After 44 minutes, applause broke out in the tense control room as navigation ships in the South Pacific reported that the spacecraft had successfully entered orbit around Earth.
- At the end of this month, once enough velocity has been built up to break free from Earth's gravitational pull, "the great, long, difficult voyage will start" to Mars. The spacecraft is expected to be around Mars in September 2014 and the challenge then would be to precisely reduce the velocity and get it into an orbit.
- The gold-coloured probe, the size of a small car, will aim to detect methane in the Martian atmosphere, which could provide evidence of some sort of life form on the fourth planet from the sun.
- The mission has been hurriedly assembled, and was carried into orbit by a rocket much smaller than rival launch vehicles which can blast out of Earth's gravitational pull and head directly for Mars.
- The cost of the project, at 4.5 billion rupees (\$73 million), is less than a sixth of the \$455 million earmarked for a Mars probe by NASA which will launch later this month.
- If it's successful, it's fantastic. We didn't believe they'd be able to launch this early, project scientist for the NASA Mars probe, Joe Grebowsky, said before blastoff.
- The United States is the only nation that has successfully sent robotic explorers to land on Mars, the most recent being Curiosity which touched down in August 2012.

Objectives:

- It will test and showcase Indian technology as India attempts its first foray beyond Earth's orbit through some of space's harshest conditions and ***open a new frontier on infinitely cheaper space missions.***
- Once in Mars' orbit, it will attempt scientific experiments related to climate, geology and evidence of past water, pointing to possible signs of early life.
- For India, the mission is about proving the value of its indigenous rocket and instrument ***technology to inspire its own scientists***
- Its officials believe a successful mission will establish its superiority over regional rival China and Japan, whose recent Mars missions failed to achieve their goals.

Topic
Introduction

The country has never before attempted inter-planetary travel, and more than half of all missions to Mars have ended in failure, including China's in 2011 and Japan's in 2003.

Only the United States, Russia and the European Space Agency have been successful.

The Mars Orbiter Mission, known as "Mangalyaan" in India, was revealed only 15 months ago by Prime Minister Manmohan Singh, shortly after China's attempt flopped.

Failures so far:

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

The programme also has to contend with 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. Though the mission is cheap by developed countries' standards, it has faced criticism in India where commentators have questioned why the money has not been spent instead on improving poor sanitation.

Former ISRO Chairman Madhavan Nair has also termed the Mars Mission as "**utter non-sense**".

He said with a minuscule methane sensor, even if you want to look at methane, it cannot be done. NASA has come out very publicly after a rove experiment that there is no trace of life on Mars. He, however, sought to tone down his criticism by saying, "From whatever we have seen through the channels, the mission took off well. All the initial stages of the rocket functioned as they said. Normally nothing should go wrong in this phase."

Training his guns at the expenses incurred on the mission, Development economist Jean Drèze reportedly termed the project as "**part of the Indian elite's delusional quest for superpower status**".

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