

Who are the two new arrivals at Mars?

September 24 2014, by Helen Maynard-Casely



Mangalyaan Mars Orbiter Mission MOM Vipul M.B.

As I write this, a team of engineers and scientists will be nervously watching the clock (in fact they are probably in their beds not sleeping). They are waiting for the time when the Mars Orbiter Mission (or MOM) will fire its thrusters and start a gravitational pas-de-deux with Mars.

These engineers and scientists are not sat in Huston, but in Bangalore and represent India's first attempt at reaching the [red planet](#). If they succeed they will become only the fourth [space agency](#), after NASA, the Soviets and ESA, to achieve such a feat.

Mostly the MOM spacecraft is a technology mission, designed to test the systems and space engineering of the craft as well as the technology the Indians have developed to complete it.

It has, however, carried a few scientific instruments mostly to investigate Mars's atmosphere. One key scientific target of MOM, is to search for the signal of methane in Mars atmosphere – [a potential sign of life hiding somewhere on the planet](#).

A potential 'whiff' of methane in the atmosphere of Mars was first detected in 2004, [by the ESA Mars Express mission](#). But counter to these observation, as MOM took off in November 2013, was the fact that just months before the [Curiosity rover had looked for methane and did not find any](#). So there's fantastic potential that any observations from MOM will really add to this debate.

The project has not been without controversy, and has sparked debate as to how a country [racked with poverty](#), can afford to send missions to space. Not only is it expensive sending spacecraft to Mars, but also very risky – as the [Chinese](#), [Japanese](#) and [NASA](#) space agencies have found to their cost.

Having said that, NASA has learnt from its difficulties with other Mars missions, and made the insertion of MAVEN into the gravitational well of Mars look 'old hat'.

[Arriving at Mars orbit on Sunday](#), MAVEN's (which is a rather forced acronym standing for Mars Atmosphere and Volatile Evolution) scientific goals will focus almost entirely on the red planet's atmosphere. One of the questions it is hoping to answer is 'Has all of Mars' water escaped to space?'

Water on Mars is an on-going issue - we now have [planet-wide images](#) of

Mars showing, what seem to be, water cut features. On top of this the rovers on the ground are picking up evidence for minerals that (from our current understanding), could only have been formed through some [interaction with water](#).

Evidence is mounting that it is not trapped underground, with the results from the ground penetrating radars carried by the Mars Express and NASA's Mars Global Surveyor. Hence, the next 'sink' of the water to be investigated is [space](#) itself – and that's the job MAVEN has turned up to do.

So fingers crossed for a couple of hours' time, when MOM tries to wriggle into orbit. You can watch the live feed from the Indian Space Agency here <http://webcast.isro.gov.in/>. I hope that it makes it, and together with MAVEN can find another piece to the puzzle that is Mars's geological history.

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