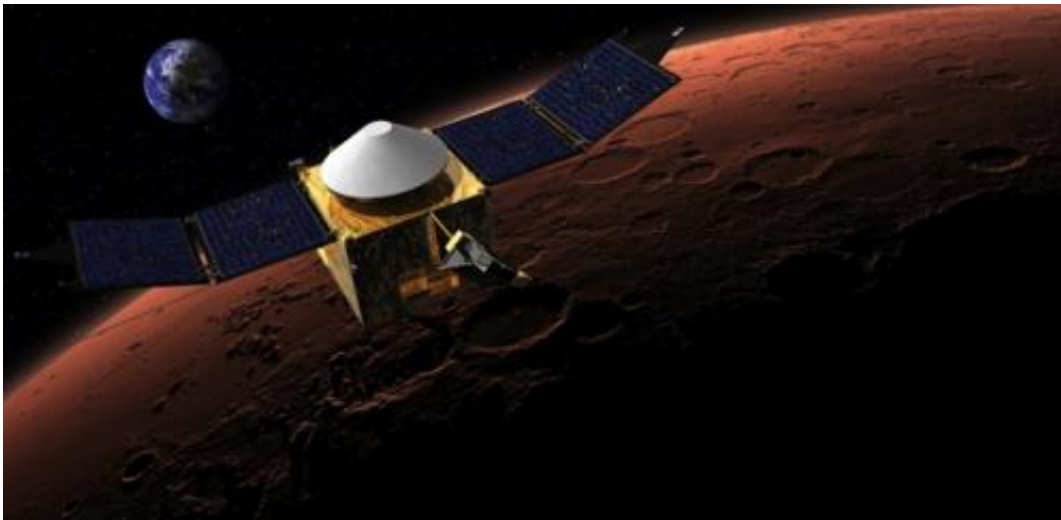


# Another Mars mission... but what about the rest of the solar system?

November 26 2013, by Helen Maynard-Casely

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MAVEN's on its way to Mars ... but look at what we've sent to our other neighbours. Credit: NASA/Goddard

Following India's maiden Mars probe launch earlier in the month, last week saw the successful launch of the Martian Atmospheres and Volatiles Evolution mission, or [MAVEN](#) for short.

With the second spacecraft this month now on its way to Mars, you could be forgiven for thinking we've forgotten that there is a number of other planets in our [solar system](#).

Due to arrive in orbit about the red planet in September 2014, MAVEN

will be the first probe to explore the upper reaches of the Martian atmosphere. It will do this by taking a number of dives into the upper atmosphere, dipping to only 125 km about the Martian surface from its home orbit of 6,000 km.

The hope is that to find clues to a possible warmer and wetter past.

But with [Opportunity](#) still trundling along, [Curiosity](#), the [Mars Orbiter Mission](#), MAVEN, the Mars Reconnaissance Orbiter, Mars Express, [2001 Mars Odyssey](#) and the planned [InSight](#), [ExoMars](#) and [Mars 2020](#) rover missions, are we forgetting that there's more to the solar system than Mars?

Sure it is the most viable planet that we, the human race, could go and walk on but it's probably not the best hope for the discovery of biological activity.

Don't get me wrong, I'm a massive fan of any space mission, and every step we make in space is a "giant" leap for us down here on Earth. Every endeavour we have undertaken on Mars has thrown up yet more intrigue, and we've barely scratched the surface.

But let's not kid ourselves; it looks pretty dead up there. If we do find any biology on Mars, it going to be most interesting working out how it has hung on for billions of years (and try and get some survival tips).

I admit "The Mars Overload" is a bit of misrepresentation, as we are currently exploring (or travelling to) pretty much every other planet in our solar system right now (with two notable exceptions). So what are they all up to?

## Mercury

The Messenger craft is currently 3,400 days into its mission in orbit about Mercury, and has now imaged the whole surface of the Sun's closest neighbour. It's currently in a bit of a limbo, with it's extended mission finishing in March this year.

## Venus

Venus currently has the European Space Agency's Venus Express spacecraft in orbit and the Japanese mission Akatsuki hopefully en route. Venus Express has returned the strongest indications yet that Venus is geologically active, and if confirmed would be the first planets (other than our own Earth) to be discovered so.



The sunlit side of Mercury, photo taken October 2013 by the Messenger spacecraft. Credit: NASA/Johns Hopkins University Applied Physics Laboratory/Carnegie Institution of Washington

Akatsuki, which was planning to study Venus' extreme climate, unfortunately failed to insert into Venutian orbit in 2010. But hope is not lost, and it is currently held in an elliptical orbit with plans to make another attempt into a closer orbit in 2015.

## **The asteroid belt**

The [asteroid belt](#) is the museum of the solar system, and the Dawn mission has been the first to traverse it and focus on some of its biggest exhibits. Dawn's first stop was orbiting about the asteroid Vesta, and has now left to journey to the largest body in the belt – Ceres – due to arrive in 2015.

At Vesta, Dawn discovered this body's large metallic core revealing it to be the "last of its kind" as a failed planet.

## **Jupiter**

Any mission to Jupiter has a lot to live up to, with the enduring data set that the Galileo spacecraft collected, coupled with its dramatic ending.

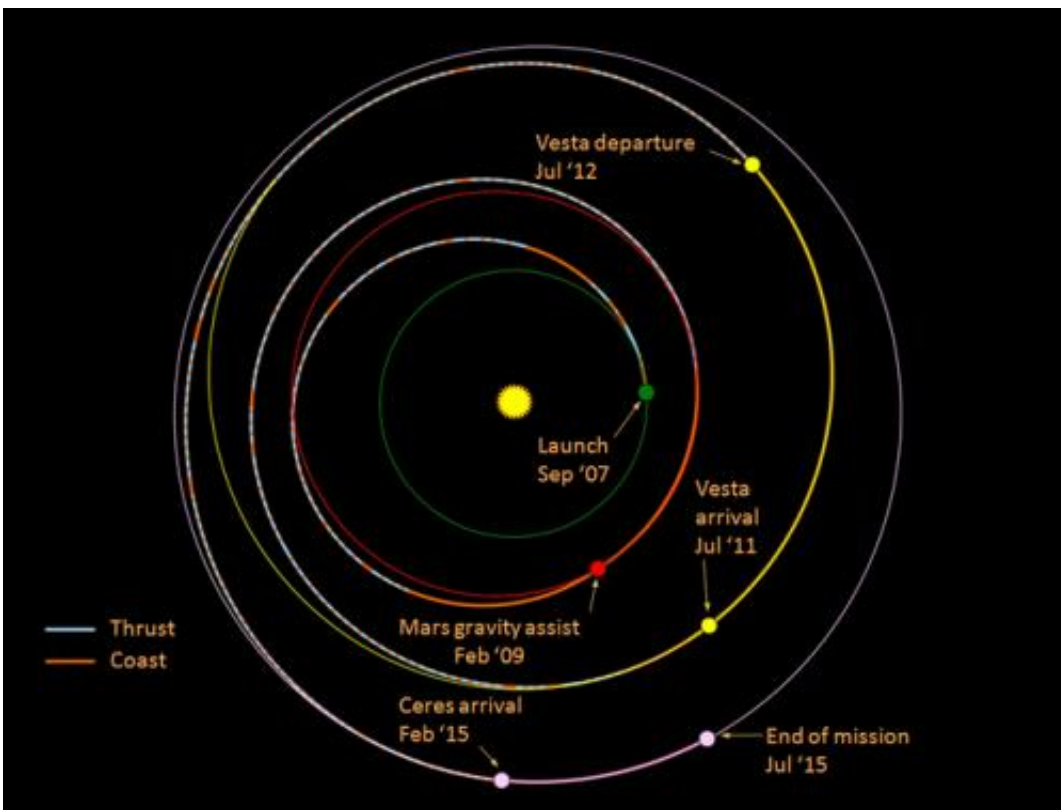
The Juno mission is currently on its way, arriving in 2016 will concentrate on the gas giant's poles and magnetic and gravity field. The hope that such a detailed mission will reveal more about our largest neighbours interior.

On the cards is more of a successor of Galileo, the European Space Agency's JUICE mission. But we're playing the waiting game on this one – with arrival at Jupiter not anticipated to be before 2030.

## **Saturn**

The most longstanding of current planetary missions is Cassini, launched in 1997. It's currently in the second phase of its mission and has performed a Galileo-like job on Saturn, returning data on the planet, its rings and moons that will be mulled over for decades.

Like Messenger, is waiting confirmation of its next extended [mission](#), which will keep it running until 2017.



A map of Dawn's planned journey through the asteroid belt. Credit: NASA

There has been worrying news that cuts to NASA's budget will force them to choose between extending Cassini or the Mars-roving Curiosity. A terrible choice by all accounts, but given the massive effort taken to get Cassini out there, I really hope that there is some way of keeping

them both going.

## **Pluto**

New Horizons is going to be a science highlight of 2015 when it arrives at the far reaches of our solar system to study Pluto. Since it was launched in 2006 it has seen its primary target kicked out of the planet club, but promoted to be the "king" of the dwarf planets.

New Horizons will pass Pluto and its companion Charon before heading deeper into the Kuiper belt. Being the first probe to explore this new class of planets in detail, it's almost guaranteed to return some very exciting stuff.

## **And the rest ...**

Uranus and Neptune are the notable exceptions. These gassy icy giants still lie pretty much unexplored with humankind only waving hello in 1986 and 1989 with the respective fly-bys of the Voyager 2 spacecraft.

The biggest difficulty in exploring these planets is that they are so far away that to reach them takes a spacecraft travelling at massive speeds – so fast that by the time they get there you need a massive amount of energy to kick them into orbit. With current technology missions to the outer fringes of the solar system, like New Horizons, are likely only to be fly-bys.

So, contrary to what you might think from recent media coverage, there really is so much more planetary exploration going on than that focused on Mars. To undertake these feats we've had to overcome technological hurdles and travelled massive distances at outrageous speeds.

I, for one, very much hope that we can continue to explore our solar system, Mars and beyond, at the same – or even faster – rate.

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Citation: Another Mars mission... but what about the rest of the solar system? (2013, November 26) retrieved 20 May 2024 from <https://phys.org/news/2013-11-mars-mission-rest-solar.html>

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