

WELCOME TO MARS

Where should we land on Mars? Choosing a landing site on Mars depends on what you want to learn and your mission objectives. Are you looking for water, studying astrobiology, looking for Marsquakes, or investigating a particular feature?

OXIA PLANUM

This is the proposed landing site for the ExoMars Rosalind Franklin Rover, which will be looking for signs of past or present life. Life, as we know it, needs water. This area has plenty of evidence of past water, so it is a great place to start this search.

SCHIAPARELLI CRATER

This huge crater is 459km across. In the book and film of 'The Martian', astronaut Mark Watney is left stranded on Mars and undertakes an exciting mission to reach this crater to find a rocket as his final hope of escaping back to Earth.

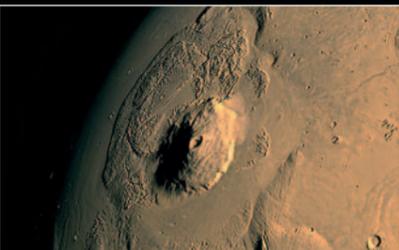
THE POLES

In winter, temperatures at the poles plummet to -153°C . In comparison the coldest temperature ever recorded on Earth was in Antarctica at -92°C . A landing site near the poles would be fascinating, but the weaker sunlight there will also cause problems for solar-powered missions

The atmosphere on Mars is so thin, if you tried to land on an area that is high up (like Olympus Mons) you would probably crash land. That's because there may not be enough air to slow down your parachute!

THE THARSIS MONTES

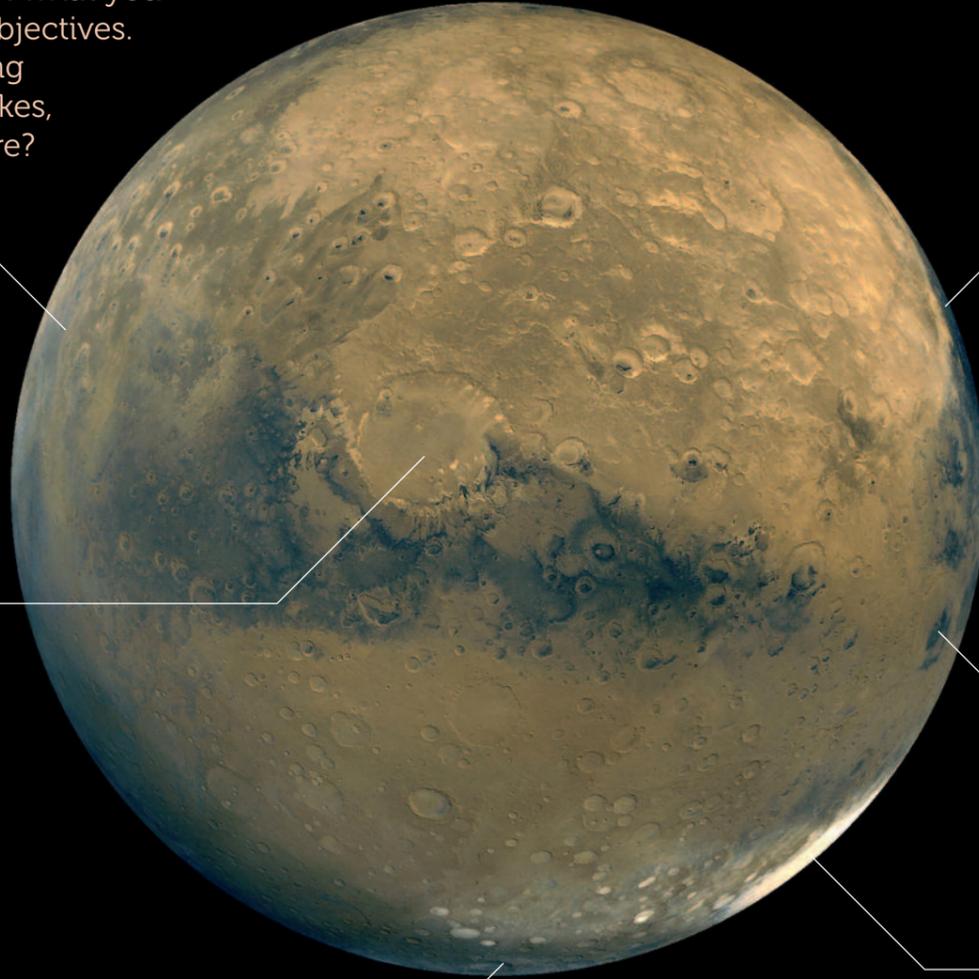
Running from north to south, these three volcanoes are the Tharsis Montes. All three are enormous by Earth's standards. The tallest is called Ascræus Mons and is furthest north. The other two are Pavonis Mons and Arsia Mons. None of them are active.



OLYMPUS MONS

Just out of sight on the horizon above The Tharsis Montes is Olympus Mons, an extinct shield volcano (built almost entirely of fluid lava flows). It is often considered to be the biggest volcano and tallest mountain in the solar system. The base of Olympus Mons is about the width of France. It is the highest point on Mars at nearly 22km, and towers roughly two and a half times as high as Mount Everest.

The thin atmosphere does have wind which causes dust storms. Sometimes they can grow so large, they encircle the whole planet and last for weeks.



ISIDIS PLANITIA

Sometimes missions don't go according to plan. This is the landing site of Beagle 2, a British-made Mars lander that touched down on the surface of Mars on Christmas Day 2003. However, the solar panels didn't deploy fully and although this little lander may have worked hard on its astrobiology mission for a while, contact with the UK team back on Earth was never made.

Mars is protected! We have not found life on Mars, but if a region is considered to have a high potential for the existence of current life, we cannot land there. This is because we might introduce Earth bacteria that could harm Martian life.

HUYGENS CRATER

This huge impact crater measures 467km across. Branched channels around the rim of this crater provided evidence that water once flowed on the surface of Mars.

HELLAS PLANITIA

Hellas is an ancient impact crater in the southern hemisphere of Mars, one of the largest impact craters known in the solar system. It is more than 2,300km in diameter and 7km deep. The lowest point on the surface of Mars lies at the very bottom of Hellas.

When you get close to Mars, you can see there are different colours beyond the reddish/orange iron oxide (rust). Did you know there is so much dust in the atmosphere, if you lived on Mars, the sky would be hazy and red too?



GALE CRATER

Not visible on these images due to its size and position is Gale Crater. Originally formed by a meteor impact, it is near the equator of Mars, and is the landing site for the NASA's Curiosity Mars Rover. Curiosity has been exploring this ancient lakebed since 2012, and is now slowly climbing up the side of Mount Sharp, a 5km high mountain, at the centre of crater.

The terrain at some possible landing sites will present problems. Surface features are interesting to explore but boulders and crevasses will cause problems for landers.

VALLES MARINERIS

A vast system of canyons which stretches almost a fifth of the way around Mars near the equator. Over 4000km long, 200km wide and reaching 7km deep, Valles Marineris is four times as deep as the Grand Canyon and would stretch right across the United States if it was on Earth.