



A year in science

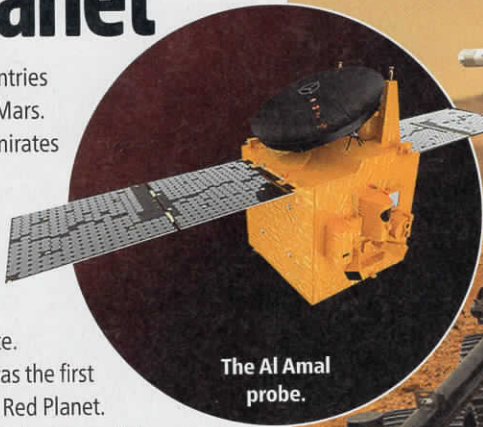
Scientists have achieved amazing things in 2020.

A race to the Red Planet

This summer, three countries launched missions to Mars. China, the United Arab Emirates (UAE) and the US all took advantage of a short period when the Earth and Mars were at their closest point to send unmanned craft into space.

On 19 July, the UAE was the first country to blast off to the Red Planet. It launched the Al Amal probe on a rocket from Tanegashima Space Centre in Japan. The probe is now on a journey of more than 300 million miles to study the planet's weather and climate. The country is hoping to become the first Arab nation to send an orbiter to Mars. *Al amal* is Arabic for "hope".

A few days later, on 23 July, China launched Tianwen-1. *Tianwen* means "questions to heaven" and comes from a poem by the Chinese writer Qu Yuan. The Chinese spacecraft has an orbiter, lander and rover. When it reaches Mars, the lander will detach from the orbiter and parachute down to the planet's surface. The orbiter will stay in space and take measurements of Mars's atmosphere. The lander will settle on the surface and a ramp will be lowered so that the rover can drive out.



The Al Amal probe.



WINNING NAME
The US rover Perseverance was named by a 13-year-old called Alexander Mather after he won a competition.

Perseverance has 19 cameras.

On 30 July, the US joined the race and launched a spacecraft carrying Perseverance, a rover the size of a large car. Perseverance has 19 cameras and a drill so that it can extract samples from rocks on the surface. It also has an experimental Mars helicopter called Ingenuity on board. The American mission will be looking for signs of life and will analyse the planet's soil and look for water and ice.

Perseverance rover will also carry out tasks to pave the way for future human missions to the planet. It will practise making oxygen from the atmosphere, which is 96% carbon dioxide. This is necessary if future astronauts are to survive on the Red Planet. Space-suit material will be tested to see how it fares in the tough conditions and the helicopter, Ingenuity, will make the first attempt to fly on another planet.

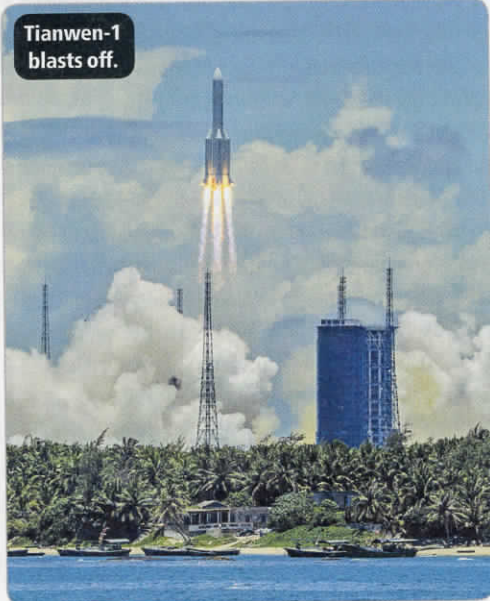
The Chinese mission is going to try and map the surface of Mars and probe its magnetic field. The UAE mission will examine the planet's atmosphere. All three spacecraft are expected to reach Mars in February 2021.

Is there life on Venus?

In September, we reported on new research suggesting there could be living things in the clouds above Venus. A study of the planet's atmosphere had revealed a type of gas called phosphine, which on Earth is only produced by microbes (microscopic living things). If such creatures were found on Venus, it would be the first evidence of life existing anywhere else in the universe. However, in October another analysis of the information showed no phosphine. Scientists are continuing to study the data to find out the true answer.



An artist's impression of Venus's atmosphere.



Tianwen-1 blasts off.