



Tianwen-1: China's Mars Mission

Why in News

Recently, China's spacecraft **Tianwen-1** landed on Mars carrying its **first Mars rover** named **Zhurong**.

- It became the **third country** to land on Mars **after the US and Soviet Union**.
- **China's previous 'Yinghuo-1' Mars mission**, which was supported by a Russian spacecraft, **had failed** after it did not leave the earth's orbit and disintegrated over the Pacific Ocean **in 2012**.

Key Points

▪ About the Tianwen-1 Mission:

◦ Launch:

- The **Tianwen-1 Spacecraft** was **lifted off on a [Long March 5 rocket](#)**, from the Wenchang launch center in **July 2020**.

◦ Three Parts:

- The Spacecraft consists of three parts - the **orbiter, the lander and the rover** - which separated in Mars orbit.
- The **orbiter will remain in the orbit for scientific operations** and to relay signals while the **lander-rover combination has made an autonomous descent and landing**.

- The **lander from Tianwen-1 has touched down on Utopia Planitia**, a large plain in the northern hemisphere of Mars.

◦ Objectives:

- To conduct scientific investigations into the planet's soil, geological structure, environment, atmosphere and water.
- The mission **will be the first to place a ground-penetrating radar** on the Martian surface, which will be able to study local geology, as well as rock, ice, and dirt distribution.

▪ China's Other Space Programmes:

- [Chang'e-5](#) (Moon)
- [Tianhe](#) (Permanent Space Station)

▪ Other Mars Missions:

- [NASA's Perseverance Rover](#)
- [UAE's Hope Mars Mission](#) (UAE's first-ever interplanetary mission)
- **India's [Mars Orbiter Mission \(MOM\)](#) or [Mangalyaan](#):**
 - It was launched from the Satish Dhawan Space Centre in Andhra Pradesh by [Indian Space Research Organisation](#) in November 2013.

- It was launched on board a PSLV C25 rocket with the aim of studying Martian surface and mineral composition as well as scan its atmosphere for methane (an indicator of life on Mars).

Mars

▪ Size and Distance:

- It is the **fourth planet from the Sun** and the **second-smallest** planet in the Solar System.
- Mars is about **half the size of Earth**.

▪ Similarity to the Earth (Orbit and Rotation):

- As Mars orbits the Sun, it completes **one rotation every 24.6 hours**, which is very similar to one day on **Earth (23.9 hours)**.
- Mars' axis of rotation is **tilted 25 degrees** with respect to the plane of its orbit around the Sun. This is similar to **Earth**, which has an **axial tilt of 23.4 degrees**.
- Mars has distinct seasons like Earth, but **they last longer than seasons on Earth**.

- **Martian days are called sols**—short for 'solar day'.

▪ Other Features:

- The **reason Mars looks reddish** is due to oxidation or rusting of iron in the rocks, and dust of Mars. Hence it is also called the **Red Planet**.
- It has the **largest volcano** in the solar system i.e. **Olympus Mons**.
- It has **two small moons, Phobos and Deimos**.

[Source: TH](#)

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