



THE HUNT FOR ALIEN WORLDS HITS A MILESTONE

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Sky at Night

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6 spectacular dying stars
to seek out in late
summer's night skies

**SATURN
RINGS TRUE**

The Ringed Planet
puts on a show at
opposition

**AN ASTRONOMER AT THE
BOTTOM OF THE WORLD**

**12 ASTROPHOTO PITFALLS
(AND HOW TO AVOID THEM)**

**CURIOSITY CELEBRATES
10 YEARS ON MARS**

**REGION OF MYSTERY: SEE THE
LUNAR SWIRL, REINER GAMMA**

**CHINA COMPLETES ITS
ORBITING SPACE STATION**

Tiangong

the Chinese Space Station

China is taking its place among the heavens as it puts the finishing touches to its first long-term space station

The China National Space Agency (CNSA) has become a major space player over the last decade. This year, the nation hopes to take its next leap towards the heavens and complete its first long-term space station, Tiangong, which translates as 'heavenly place'.

A crew of three 'taikonauts' are already on board the Tianhe core module, which launched last year. They will oversee the installation of the final two science modules, the first of which, Wentian, is due to launch on 23 July. The goal of the station is to give CNSA the know-how to send crews to live in space, and Tiangong is a key component of China's ambitions to send humans to the Moon and on to Mars.

China has constructed its own station as US law prohibits NASA from working with China, effectively barring them from the International Space Station. However, the nation is keen to collaborate with other international partners and has already run joint training exercises with ESA. Indeed, China's aim is that Tiangong will act as a new hub of international cooperation in space once the ISS is decommissioned in 2031.

Shenzhou - 'Divine vessel'

The Shenzhou transport vehicle is the main vehicle used by China for its human spaceflight programme. It borrows heavily from the Russian Soyuz capsule, though is slightly larger and can carry up to three passengers at a time.

Mengtian - 'Heavenly dream'

Launch: October 2022

Mengtian will form the final instalment of the space station. As well as its interior serving as a laboratory, it has a cargo airlock where replacement parts or external experiments can be delivered outside the station. From here taikonauts and robotic arms can place them on the station's hull.

Solar panels

The station is powered by solar arrays. The solar panels on Wentian and Mengtian are about 30m long and will provide most of the station's power. A set of smaller arrays on Tianhe measures 18m long.

ISS vs Tiangong

ISS

Living space: 916m³
Length: 108m
Normal occupancy: 6
Orbit height: 408km

Tiangong

Living space: 110m³
Length: 20m
Normal occupancy: 3
Orbit height: 389km

Wentian - 'Heavenly quest'

Launch: 23 July 2022

A laboratory module where scientific experiments, both from China and international partners, can be conducted. It will contain an airlock to allow taikonauts outside to conduct spacewalks. The hull has several stations where external experiments can be set up. The module also contains back-up avionics and propulsion.

Tianhe - 'Harmony of the heavens'

Launch: 29 April 2021

The core module and central node of Tiangong, this provides the essential functions of the space station – life support, navigation, propulsion – as well as the living quarters for up to three crew members.

Tianzhou - 'Heavenly ship'

An automated freight vehicle which can transport large payloads up to a mass of 6,500kg to the station. Like almost all the components of the station, they are launched on Long March 7 rockets.