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Space exploration

China to make a home in space

The Chinese Space Station could have geopolitical ramifications

Leah Crane

CHINA is about to launch the first section of a new space station, beginning an orbital construction project that is expected to end in 2022 with an outpost about a quarter of the size of the International Space Station (ISS).

While the exact date hasn't been announced, China was expected to launch its 18-metre-long core module, called Tianhe, as *New Scientist* went to press. Tianhe will contain living quarters for up to three astronauts, along with the station's control centre, power, propulsion and life-support systems. It will be followed

2022

China is expected to complete its new space station next year

by two other main modules, both designed to house scientific experiments.

The Chinese Space Station (CSS) will be the 11th crewed space station ever built. It is China's third station, although the previous two were significantly smaller. The CSS will be slightly larger than Mir, the Soviet space station that preceded the ISS.

China, in a sense, is trying to catch up with the capabilities of other space powers that have already done this, says space analyst Laura Forczyk. "One of the things that helps China here is that their government is not democratic, so there isn't the infighting that we have in the US about what the priorities are and how to fund them."

That has allowed the nation to develop this technology relatively quickly, but Charles Bolden, who served as NASA administrator under President Barack Obama, says China will struggle to match US capabilities in space. "Technologically, I don't think they're going to catch up as long as we keep up with the pace that we're going in terms of human space flight."

Another boon to the Chinese space programme has been a growing partnership with Roscosmos, Russia's space agency, which comes while NASA's historically strong cooperation with Roscosmos in space is waning. For the past decade, NASA has been reliant on purchasing seats on the Russian Soyuz spacecraft to reach the ISS, but now the US has its own crewed launch capabilities through SpaceX. In April, Dmitry Rogozin, chief of Roscosmos, said that the country plans to end its participation in the ISS in 2025, and will build its own space station, to be launched in 2030.

"We've seen China and Russia partnering quite a bit recently, because Russia has significant expertise in space and with space stations," says Forczyk. "China is capitalising on the expertise and experience of the Russian space sector while also providing a significant amount of funds,

STRINGER/CHINA OUT VIA REUTERS

The first module of the Chinese Space Station sits atop a Long March-5B Y2 rocket

which Russia does not have."

However, to some in the Western world, this partnership and the rapid growth of China's space capabilities have caused concern about military ambitions. A recent report by the US Office of the Director of National Intelligence on global threats includes a mention of the new space station. It warns that China is working "to gain the military, economic, and prestige benefits" of matching the US's capabilities in space.

"Nevertheless, historically, these space stations have been for the purpose of increasing human understanding, and we have no reason to suspect that China is using its space station for anything different," says Forczyk.

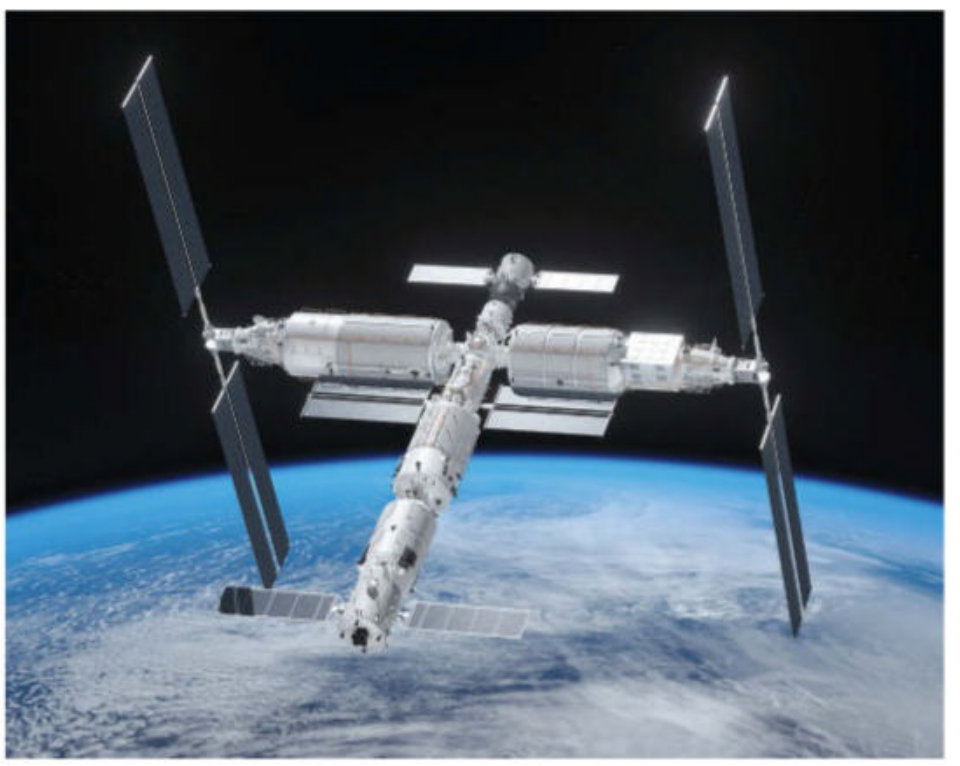
The China National Space Administration has already selected several experiments to be run onboard the CSS, including work with ultracold atoms to research quantum mechanics, materials science research and work on medicine in microgravity. It has several international partners that will send experiments onto the space station, including the Italian Space Agency and the United Nations Office for Outer Space Affairs.

NASA, on the other hand, won't be a partner – the US has laws restricting the agency from collaborating with China, which Bolden sees as a mistake because commercial and international partners could choose to work with China instead.

"We'd end up on the outside looking in. That's why I think we should be collaborating with the Chinese... I think the smaller nations look for the best offer," he says. "I think a pretty savvy commercial entrepreneur might in fact blaze a trail, might be able to work collaboratively with the Chinese, the Russians and the Americans and pull us together. That might not happen, but I'm the eternal optimist."

While this utopian vision of space collaboration may be unlikely, the launch of the CSS will almost certainly have an effect on the US's stance on Earth orbit missions because of its potential geopolitical implications.

"It will cause a reaction – what that reaction is remains to be seen," says Forczyk. "I don't know if we can say that this will provoke American politicians to fund the ISS for longer or to encourage commercial space stations or some third option."



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An artist's impression of the completed Chinese Space Station