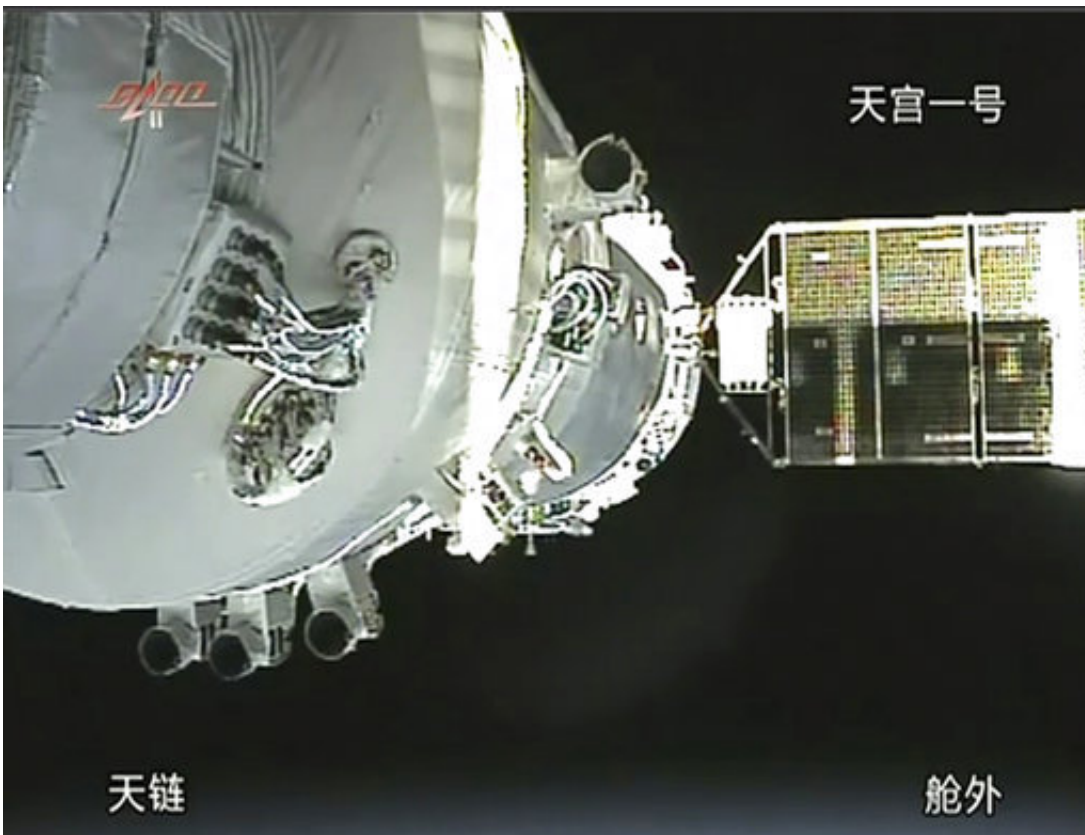


China's defunct space lab hurtling toward Earth for re-entry

March 29 2018, by Christopher Bodeen



In this Nov. 3, 2011, file image taken from video from China's CCTV via AP Video, China's Shenzhou-8 spacecraft is docked with the orbiting Tiangong-1 space station. China's defunct and believed out-of-control Tiangong 1 space station is expected to re-enter Earth's atmosphere sometime in the coming days, although the risk to people and property on the ground is considered low. (CCTV via AP Video, File)

China's defunct and reportedly out-of-control Tiangong 1 space station is expected to re-enter Earth's atmosphere sometime this weekend. It poses only a slight risk to people and property on the ground, since most of the bus-size, 8.5-ton vehicle is expected to burn up on re-entry, although space agencies don't know exactly when or where that will happen.

Below are some questions and answers about the station, its re-entry and the past and future of China's ambitious [space program](#).

—

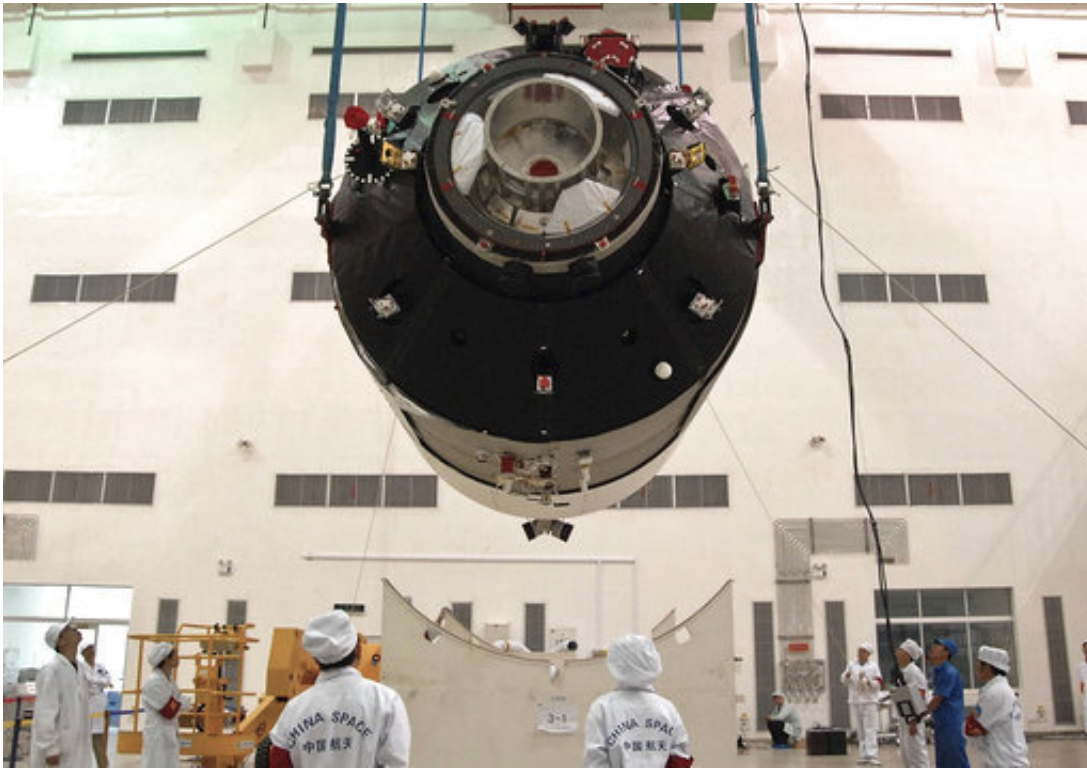
WHAT WILL HAPPEN AND HOW GREAT IS THE DANGER?

The European Space Agency predicts the station will re-enter the atmosphere between Saturday morning and Sunday afternoon—an estimate it calls "highly variable," likely because the ever-changing shape of the upper atmosphere affects the speed of objects falling into it.

The Chinese space agency's latest estimate puts re-entry between Saturday and Wednesday.

Western space experts say they believe China has lost control of the station. China's chief space laboratory designer Zhu Zongpeng has denied Tiangong was out of control, but hasn't provided specifics on what, if anything, China is doing to guide the craft's re-entry.

Based on Tiangong 1's orbit, it will come to Earth somewhere between latitudes of 43 degrees north and 43 degrees south, or roughly somewhere over most of the United States, China, Africa, southern Europe, Australia and South America. Out of range are Russia, Canada and northern Europe.



This undated file photo shows researchers installing China's first space station module Tiangong-1 at the Jiuquan Satellite Launch Center in northwest China's Gansu Province prior to its launch on Sept. 29, 2011. China's defunct and believed out-of-control Tiangong 1 space station is expected to re-enter Earth's atmosphere sometime in the coming days, although the risk to people and property on the ground is considered low. (Color China Photo via AP, File)

Based on its size, only about 10 percent of the spacecraft will likely survive being burned up on re-entry, mainly its heavier components such as its engines. The chances of anyone person on Earth being hit by debris is considered less than one in a trillion.

Ren Guoqiang, China's defense ministry spokesman, told reporters Thursday that Beijing has been briefing the United Nations and the international community about Tiangong 1's re-entry through multiple channels.

HOW COMMON IS MAN-MADE SPACE DEBRIS?

Debris from satellites, space launches and the International Space Station enters the atmosphere every few months, but only one person is known to have been hit by any of it: American woman Lottie Williams, who was struck but not injured by a falling piece of a U.S. Delta II rocket while exercising in an Oklahoma park in 1997.



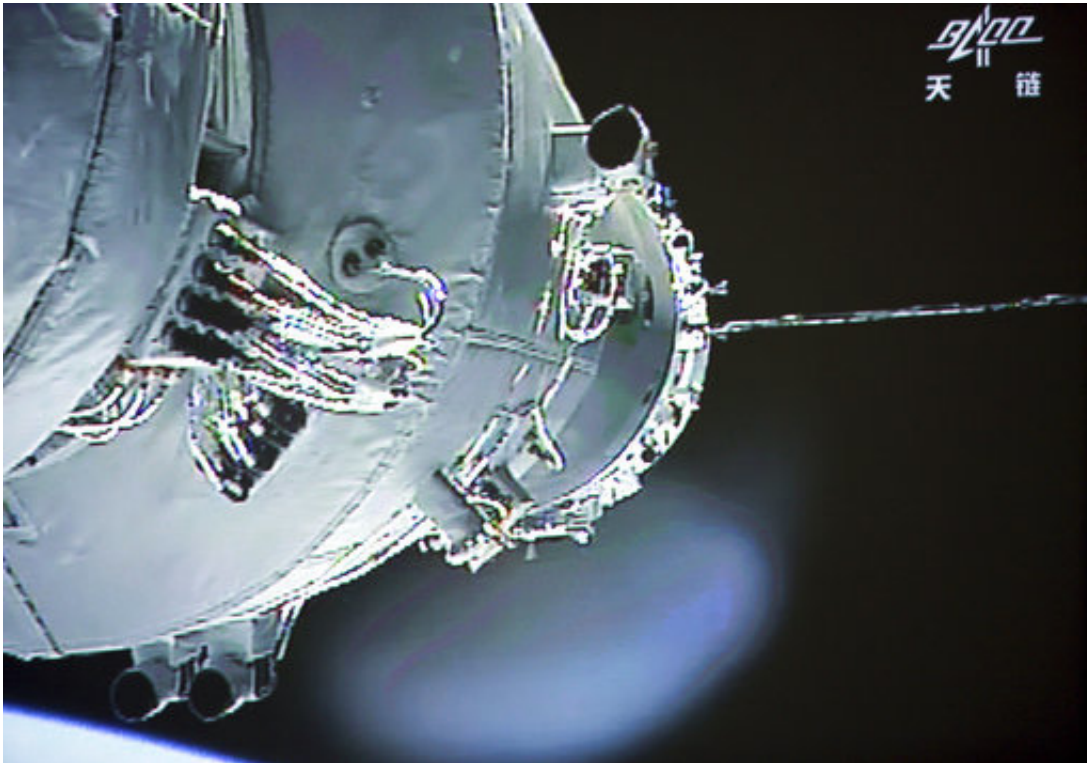
In this June 18, 2012, file image released by China's Xinhua News Agency, Chinese astronauts, from left, Liu Wang, Liu Yang and Jing Haipeng wave while aboard the orbiting Tiangong-1 space station. China's defunct and believed out-of-control Tiangong 1 space station is expected to re-enter Earth's atmosphere sometime in the coming days, although the risk to people and property on the ground is considered low. (Beijing Aerospace Control Center/Xinhua via AP)

Most famously, America's 77-ton Skylab crashed through the atmosphere in 1979, spreading pieces of wreckage near the southwestern Australia city of Perth, which fined the U.S. \$400 for littering.

The breakup on re-entry of the Columbia space shuttle in 2003 killed all seven astronauts and sent more than 80,000 pieces of debris raining down on a large swath of the Southern United States. No one on the ground was injured.

In 2011, NASA's Upper Atmosphere Research Satellite was considered to pose a slight risk to the public when it came down to Earth 20 years after its launching. Debris from the 6-ton satellite ended up falling into the Pacific Ocean, causing no damage.

China's own space program raised major concerns after it used a missile to destroy an out-of-service Chinese satellite in 2007, creating a large and potentially dangerous cloud of debris.



In this June 13, 2013, file image released by China's Xinhua News Agency, the Shenzhou-10 manned spacecraft is seen while conducting docking with the orbiting Tiangong-1 space module. China's defunct and believed out-of-control Tiangong 1 space station is expected to re-enter Earth's atmosphere sometime in the coming days, although the risk to people and property on the ground is considered low. (Beijing Aerospace Control Center/Xinhua via AP, File)

WHAT IS TIANGONG 1 AND WHAT WAS IT USED FOR?

Launched in 2011, Tiangong 1 was China's first space station, serving as an experimental platform for bigger projects such as the Tiangong 2 launched in September 2016 and a future permanent Chinese space station.

The station, whose name translates as "Heavenly Palace," played host to two crewed missions that included China's first female astronauts and

served as a test platform for perfecting docking procedures and other operations. Its last crew departed in 2013 and contact with it was cut in 2016. Since then it has been orbiting gradually closer and closer to Earth on its own while being monitored.

The station had two modules, one for its solar panels and engines, and one for a pair of astronauts to live in and conduct experiments. A third astronaut slept in the Shenzhou spaceships that docked with the station, which also contained facilities for personal hygiene and food preparation.



In this Sept. 29, 2011, file photo, a Long March-2FT1 carrier rocket loaded with China's Tiangong-1 space station blasts off from the launch pad at the Jiuquan Satellite Launch Center in northwest China's Gansu Province. China's defunct and believed out-of-control Tiangong 1 space station is expected to re-enter

Earth's atmosphere sometime in the coming days, although the risk to people and property on the ground is considered low. (Color China Photo via AP, File)

HOW ADVANCED IS CHINA'S SPACE PROGRAM?

Since China conducted its first crewed mission in 2003—becoming only the third country after Russia and the U.S. to do so—it has taken on increasingly ambitious projects, including staging a spacewalk and landing its Jade Rabbit rover on the moon.

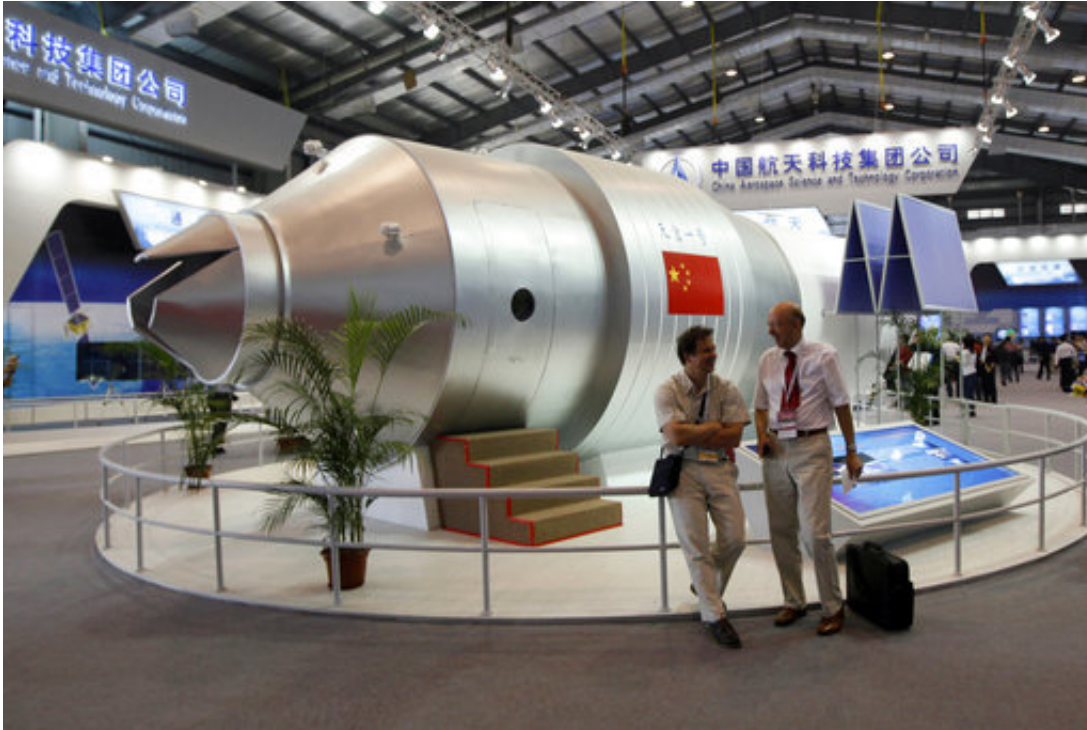
China now operates the Tiangong 2 precursor [space station](#) facility, while the permanent station's 20-ton core module is due to be launched this year. The completed 60-ton [station](#) is set to come into full service in 2022 and operate for at least a decade.



This undated file photo shows researchers testing China's first space station module Tiangong-1 at the Jiuquan Satellite Launch Center in northwest China's Gansu Province prior to its launch on Sept. 29, 2011. China's defunct and believed out-of-control Tiangong 1 space station is expected to re-enter Earth's atmosphere sometime in the coming days, although the risk to people and property on the ground is considered low. (Color China Photo via AP, File)

China was excluded from the 420-ton International Space Station mainly due to U.S. legislation barring such cooperation and concerns over the Chinese space program's strong military connections. China's [space](#) program remains highly secretive and some experts have complained that a lack of information about Tiangong 1's design has made it harder to predict what might happen upon its re-entry.

A mission to land another rover on Mars and bring back samples is set to launch in 2020. China also plans to become the first country to soft-land a probe on the far side of the moon.



In this Nov. 16, 2010 file photo, visitors sit beside a model of China's Tiangong-1 space station at the 8th China International Aviation and Aerospace Exhibition in Zhuhai in southern China's Guangdong Province. China's defunct and believed out-of-control Tiangong 1 space station is expected to re-enter Earth's atmosphere sometime in the coming days, although the risk to people and property on the ground is considered low. (AP Photo/Kin Cheung, File)

More information: Official website of China Manned Space:
en.cmse.gov.cn/col/col1763/index.html

© 2018 The Associated Press. All rights reserved.

Citation: China's defunct space lab hurtling toward Earth for re-entry (2018, March 29) retrieved 8 August 2024 from <https://phys.org/news/2018-03-china-defunct-space-lab-hurling.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.