



## CHINA'S HUMAN SPACEFLIGHT PROGRAM: BACKGROUND AND LIST OF CREWED AND AUTOMATED LAUNCHES

China's human spaceflight program, Project 921, officially began in 1992. The program is proceeding at a measured pace. The most recent crewed launch, Shenzhou-13 in October 2021, was the 13<sup>th</sup> flight in the series, but only the eighth to carry a crew.

**Shenzhou Spacecraft:** Shenzhou 1-4 were automated tests of the spacecraft. Shenzhou-8 was an automated test of rendezvous and docking procedures with the Tiangong-1 space station.

The others (5, 6, 7, 9, 10, 11, 12, 13) carried crews of one, two or three people and were launched in 2003, 2005, 2008, 2012, 2013, 2016 and 2021 respectively (see list below).

**Space Stations:** Tiangong-1, China's first space station, was launched in September 2011. It hosted the automated Shenzhou-8 in 2011 and two three-person crews: Shenzhou-9 in 2012 and Shenzhou-10 in 2013. It made an [uncontrolled reentry](#) at 8:16 pm April 1, 2018 EDT (00:16 April 2 UTC; 8:16 am April 2 Beijing Time) over the southern Pacific Ocean.

Tiangong-1 was a small 8.5 metric ton (MT) module. As first space stations go, it was rather modest -- just less than half the mass of the world's first space station, the Soviet Union's Salyut 1. Launched in 1971, Salyut 1 had a mass of about 18.6 MT. The first U.S. space station, Skylab, launched in 1973, had a mass of about 77 MT.

Today's International Space Station (ISS), a partnership among the United States, Russia, Japan, Europe, and Canada, has a mass of about 420 MT and has been permanently occupied by two to seven-person crews rotating on 4-6 month missions for over 21 years (since November 2, 2000).

Tiangong-2, very similar to Tiangong-1, was launched on September 15, 2016. The Chinese initially said they intended to launch two two-man crews to Tiangong-2, but later indicated there would be only one. Shenzhou-11 was launched on October 16, 2016 EDT (October 17 Beijing Time) and returned on November 18, 2016. Tiangong-2 was deorbited on July 19, 2019.

China sent its first automated cargo resupply spacecraft, Tianzhou-1, to Tiangong-2 in 2017. It docked three times and conducted a number of tests, including refueling.

On April 28, 2021 EDT (April 29 UTC and Beijing time), China launched Tianhe, the first of three 22.5 ton modules that will comprise the China Space Station (CSS), also called Tiangong-3, that it plans to complete in 2022. The Long March 5B rocket is required to launch the modules: the core module (Tianhe) and two experiment modules (Mengtian and Wentian). Long

March 5 [failed](#) on its second launch in 2017, so the space station schedule was delayed, but China still hopes to complete it by 2022.

The 2021 successful launch of Tianhe is a step in that direction. Like Soviet/Russian space stations beginning in 1977 and the ISS, Tianhe can be resupplied by robotic spacecraft enabling crews to stay onboard for extended periods of time. China's cargo ship is called Tianzhou.

Tianzhou-2 was launched to Tianhe on May 29, 2021 and docked about 8 hours later. That was followed on June 16 EDT (June 17 UTC) by the first crew, Shenzhou-12. The three-person crew remained onboard until September 17, setting a new Chinese duration record of 90 days and conducting two multi-hour spacewalks. China had conducted only one spacewalk previously, for 22 minutes on Shenzhou-7.

The Tianzhou-3 robotic resupply ship was launched three days later on September 20. That was followed on October 15 (EDT and UTC) by another crew, Shenzhou-13, composed of two men and one woman. They returned on April 15, 2022 EDT (April 16 UTC) after 183 days in space, a Chinese duration record. Two approximately 6 hour spacewalks were conducted. On the first, in November 2021, Wang Yaping became the first Chinese woman to make a spacewalk.

Chinese astronauts are called "taikonauts." Shenzhou means Divine Vessel. Tiangong means Heavenly Palace. Tianzhou is Heavenly Ship (or Vessel).

The Shenzhou launches are from the Jiuquan Space Launch Center in the Gobi desert. Tiangong-1 and -2 also were launched from there. The Tianzhou cargo ships are launched from the Wenchang Satellite Launch Center on Hainan Island using the Long March 7 rocket. Wenchang is also the launch site for Long March 5 and thus for the China Space Station/Tiangong-3 modules.

The table below lists all Chinese human spaceflight missions to date. Shaded entries are those that carried crews. All times are Eastern Daylight Time or Eastern Standard Time unless otherwise indicated.

<b>LIST OF CHINESE HUMAN SPACEFLIGHT MISSIONS</b> (Prepared by SpacePolicyOnline.com) All dates are U.S. Eastern Time (ET) unless otherwise indicated			
<b>Mission</b>	<b>Launch Date (U.S. Eastern Time)</b>	<b>Crew (# of flights)</b>	<b>Comments</b>
Shenzhou-1	Nov. 19, 1999	none	Automated test
Shenzhou-2	Jan. 9, 2001	none	Automated test
Shenzhou-3	Mar. 25, 2002	none	Automated test
Shenzhou-4	Dec. 29, 2002	none	Automated test
Shenzhou-5	Oct. 15, 2003	Yang Liwei	First Chinese astronaut 21 hour 12 min mission
Shenzhou-6	Oct. 12, 2005	Fei Junlong Nie Haisheng	First Chinese 2-person crew 5 day mission
Shenzhou-7	Sept. 25, 2008	Zhai Zhigang Liu Boming Jing Haipeng	First Chinese 3-person crew First Chinese spacewalk (Zhai for 22 min; Liu did stand-up EVA in airlock for about 2 min) 3 day mission Small (40 kg) subsatellite ejected
Tiangong-1	Sept. 29, 2011	Visited by automated Shenzhou-8 and crewed Shenzhou- 9 and -10	First Chinese space station (8.5 metric tons). Made uncontrolled reentry over southern Pacific Ocean April 1, 2018 ET (April 2 UTC)
Shenzhou-8	Oct. 31, 2011	none	Automated test of rendezvous and docking with Tiangong-1 (docked twice)

Shenzhou-9	July 19, 2012	Jing Haipeng (2) Liu Wang Liu Yang	First Chinese space station crew; automated and manual docking Liu Yang first Chinese woman astronaut Jing first Chinese astronaut to make 2 flights 13 day mission
Shenzhou-10	June 11, 2013	Nie Haisheng (2) Zhang Xiaoguang Wang Yaping	Automated docking with Tiangong-1 on June 13. Later did manual docking test, and, just before reentry, a fly-around (China's first) Wang second Chinese woman astronaut and first "teacher in space" because she taught a lesson from space 15 day mission
Tiangong-2	Sept. 15, 2016	Visited by crewed Shenzhou-11; automated Tianzhou-1	Similar to Tiangong-1. First on-orbit refueling tests with Tianzhou-1.
Shenzhou-11	Oct. 16, 2016	Jing Haipeng (3) Chen Dong	Jing first Chinese astronaut to make 3 flights. Docked with Tiangong-2 for 30 days (total mission time 32 days)
Tianzhou-1	Apr. 20, 2017	none	13 MT automated resupply ship. Conducted refueling tests. Docked 3 times. Reentered Sept. 22, 2017.
Tianhe	Apr. 28, 2021 (Apr. 29 UTC and CST)	Visited by Shenzhou-12, Shenzhou-13 crews; automated Tianzhou-2, Tianzhou-3	Core module for China Space Station (or Tiangong-3).
Tianzhou-2	May 29, 2021	none	Cargo resupply ship. Docked with Tianhe. Undocked Mar. 27, 2022. Reentered Mar. 31, 2022.

Shenzhou-12	June 16, 2021 (June 17 UTC and CST).	Nie Haisheng (3) Liu Boming (2) Tang Hongbo	First Tianhe crew ~ 7-hr spacewalk by Liu and Tang, July 4, 2021 ~ 5-hr spacewalk by Liu and Haisheng, Aug. 20, 2021 90 day mission
Tianzhou-3	Sept. 20, 2021	none	Cargo resupply ship. Docked with Tianhe (with Tianzhou-2 also docked).
Shenzhou-13	Oct. 15, 2021 (Oct 15 UTC, Oct 16 CST)	Zhai Zhigang (2) Wang Yaping (2) Ye Guangfu	~6 hour spacewalk Nov 8, 2021 by Zhai and Wang (who became first Chinese woman to make a spacewalk ~6 hour spacewalk Dec 26, 2021 by Zhai and Ye 182 day mission

CST=China Standard Time (Beijing Time). UTC=Coordinated Universal Time (in French), which is also Greenwich Mean Time (GMT) and Zulu.