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Fact Sheet
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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 has proceeded at a measured pace. Only six crewed launches took place between 2003 and 2021. The pace is accelerating now, however, with completion of construction of the three-module China Space Station, also called Tiangong-3, occupied by overlapping Shenzhou crews and resupplied by Tianzhou cargo ships.

China's first space station crew handover or crew exchange was in November 2022. It was a milestone for China, even though it came more than 45 years after the Soviets began the practice on Salyut 6 in January 1978 and exactly 22 years after permanent occupancy of the US-Russian-European-Japanese-Canadian International Space Station began.

At the October 2023 International Astronautical Congress, Chinese officials said they plan to expand Tiangong-3 to six modules and operate it for at least 15 years instead of 10 as previously planned.

China is making clear their human spaceflight aspirations do not end in Earth orbit. Planning is underway to send taikonauts to the Moon as early as 2030. On February 24, 2024, the China Manned Space Agency released the names of their lunar vehicles: Mengzhou (Dream Vessel) and Lanyue (embracing the Moon) for the lander.

Shenzhou Spacecraft

Shenzhou 1-4 were automated (uncrewed) tests between 1999 and 2002. Shenzhou-8 in 2011 was an automated test of rendezvous and docking procedures with the Tiangong-1 space station.

The others (Shenzhou 5, 6, 7, 9, 10, 11, 12, 13, 14, 15, 16) carried crews of one, two or three people (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

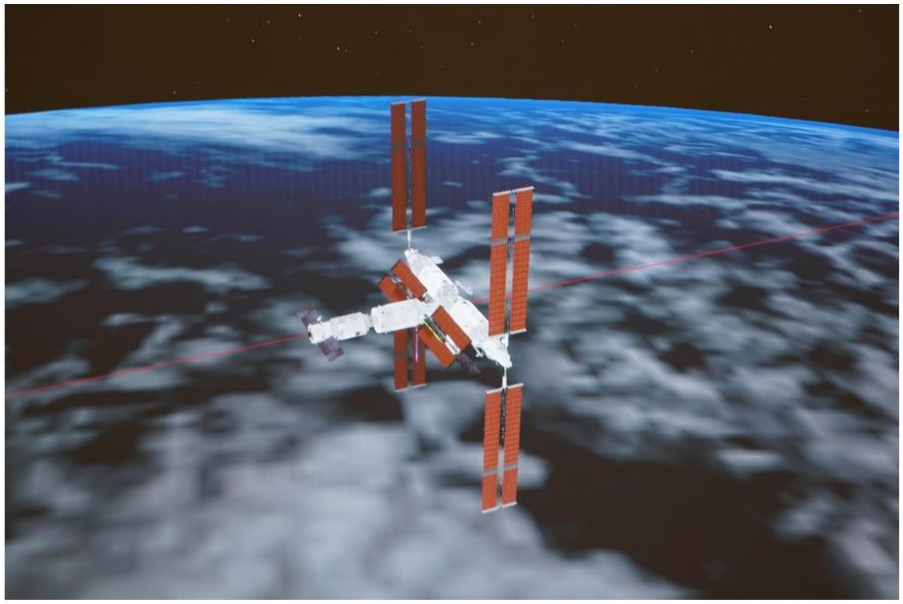
1. Launched in 1971, Salyut 1 had a mass of about 18.6 MT. The first U.S. space station, Skylab, launched in 1973, had a mass of about 77 MT.

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 crews of between two and seven people rotating on 4-6 month missions 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.

Tiangong-3, also called the China Space Station (CSS), is much larger, comprised of three 22.5 MT modules: Tianhe, which serves as living quarters, and two science modules, Wentian and Mengtian. Like the International Space Station and Soviet/Russian space stations before that, the space station is periodically resupplied by Tianzhou cargo ships.



This simulated image captured at Beijing Aerospace Control Center on Nov. 12, 2022 shows China's cargo spacecraft Tianzhou-5 having conducted a fast automated rendezvous and docking with the combination of the space station Tiangong.

(Photo by Sun Fengxiao/Xinhua)

The ***Long March 5B rocket*** is required to launch the modules. A Long March 5 failed on its second launch in 2017 and since its design is very similar to the Long March 5B the space station schedule was delayed. After four successful Long March 5 or 5B launches in 2019 and 2020, the first module, Tianhe, was launched on April 28, 2021 EDT (April 29 UTC/CST). Long March 5B launches are controversial because the entire rocket goes into orbit and several days later makes an uncontrolled reentry, endangering populations under the flight path.

The ***Tianzhou-2*** cargo ship was launched on May 29, 2021. That was followed on June 16 EDT (June 17 UTC/CST) by ***the first crew, Shenzhou-12***. The three taikonauts remained onboard until September 17, 2021 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 cargo ship was launched three days later on September 20. That was followed on October 15 by another crew, ***Shenzhou-13***, composed of two men and one woman. They returned on April 15, 2022 EDT (April 16 UTC/CST) after 183 days in space, another 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.

Tianzhou-4 was launched to the unoccupied Tianhe core module on May 6, 2022 (EDT/UTC, May 7 CST).

A new three-person crew, ***Shenzhou-14***, also two men and one woman, launched on June 4, 2022 EDT and remained for 183 days. Their busy schedule included the dockings of Wentian on July 22 and Mengtian on October 31, completing construction of the facility. They also conducted two spacewalks in September and one in November; **oversaw the departure of *Tianzhou-4*** on November 9 and arrival of ***Tianzhou-5*** on November 11, the first time a cargo ship docked to the space station while a crew was aboard (it docked just 2 hours and 7 minutes after launch, which Xinhua called the fastest rendezvous and docking in history*);* and welcomed the arrival of their replacements, the three-person ***Shenzhou-15*** crew on November 29 (EST/UTC, November 30 CST).

The Shenzhou-14 and Shenzhou-15 crews were the ***first Chinese crews to occupy the space station at the same time and conduct a crew handover*** or crew exchange, with Shenzhou-14 departing on December 4, 2022.

Shenzhou-15 spent six months in orbit before handing off operations to Shenzhou-16. Two members of the Shenzhou-15 crew, Fei and Zhang, did a total of four spacewalks in 2023, setting a record for the number of spacewalks by a single Chinese crew: one is February 2023, two in March. and one in April. Except for the first, China provided no public notice that a spacewalk was planned or underway, revealing them only after the fact and offering little information about what they did.

Tianzhou-5 undocked on May 5, 2023 and station-kept for several weeks, redocking on June 6 after the departure of Shenzhou-15. It undocked for the last time on September 11, 2023.

Tianzhou-6, launched on May 10, 2023 EDT/UTC/CST, docked about 8 hours later at the rear port vacated by Tianzhou-5. Tianzhou-6 is a new version of the cargo ship with 20 percent more cargo capacity (7.4 Metric Tons versus 6.9 MT). It undocked on January 12, 2024 EST/UTC/CST and reentered on January 19. The day before, it released the Dalian-1 12U cubesat.

The ***Shenzhou-16*** crew launched on May 29, 2023 EDT (May 30 UTC/CST) to replace Shenzhou-15 and docked about 6.5 hours later. The crew includes the first civilian taikonaut, a university professor, Gui Haichao, who oversaw the science experiments. The crew also includes

Jing Haipeng, the first taikonaut to make four spaceflights, and Zhu Yangzhu, China's first flight engineer. They landed on October 30, 2023 at 8:12 pm EDT. Jing and Zhu performed a spacewalk on July 20, 2023.

Shenzhou-17 launched on October 25, 2023 EDT (October 26 UTC/CST) to replace the Shenzhou-16 crew. They docked about 6.5 hours later. On December 21 EST, Tang Hongo and Tang Shenjgie finished a 7.5 hour spacewalk that included repairing a solar array on the Tianhe module damaged by micrometeorite strikes. On March 2 EST, Tang Hongbo and Jiang Xinlin did an approximately 8 hour spacewalk that Xinhua reported was the first time taikonauts have performed in-orbit maintenance on the exterior of the space station.

Tianzhou-7 launched on January 17, 2024 to replace Tianzhou-6 on a new fast-track trajectory with docking just three hours later.

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

The Shenzhou crew launches are from the Jiuquan Satellite 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 launched by the Long March 5B.

Beginning with Shenzhou-12, crews land at the Dongfeng Landing Site in the Gobi desert in China's Inner Mongolia Autonomous Region.

The table below lists all Chinese human spaceflight missions to date.

Shaded entries are those that carried crews.

All dates are U.S. Eastern Time unless otherwise indicated.

LIST OF CHINESE HUMAN SPACEFLIGHT MISSIONS (Prepared by SpacePolicyOnline.com) All dates are U.S. Eastern Time (ET) unless otherwise indicated			
Mission	**Launch Date**	**Crew** **(# of flights)**	**Comments**
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

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Mission	**Launch Date**	**Crew** **(# of flights)**	**Comments**
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, -13 and -14 crews; Tianzhou-2, -3 and -4 cargo ships	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 ended Sept 17, 2021.
Tianzhou-3	Sept. 20, 2021	none	Cargo resupply ship. Docked with Tianhe (Tianzhou-2 also there). Undocked July 17, 2022.

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Mission	**Launch Date**	**Crew** **(# of flights)**	**Comments**
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 (Wang was 1st Chinese woman to make a spacewalk) ~6 hour spacewalk Dec 26, 2021 by Zhai and Ye 182 day misson ended Apr 16, 2022.
Tianzhou-4	May 9, 2021 EDT/UTC, May 10 CST	none	Docked with the unoccupied Tianhe core module (joining Tianzhou-3). Undocked Nov 9, 2022.
Shenzhou-14	June 4, 2022 EDT June 5 UTC/CST	Chen Dong (2) Liu Yang (2) Cai Xuzhe	2nd flight for China's first woman in space, Liu Yang. Chen and Liu did ~6 hour spacewalk Sept 1, 2022 EDT, Sept 2 CST. Chen and Cai did a 4 hr 12 min spacewalk on Sept 17, 2022 CST/EDT and another on Nov 17 CST (~5.5 hours). First crew handover, with Shenzhou-15. 183 day mission ended Dec 4, 2022.
Wentian	July 24, 2022 EDT/UTC/CST	none	First of 2 science modules. Docked July 24 EDT/UTC, July 25 CST.
Mengtian	Oct 31, 2022 EDT/UTC/CST	none	Second science module and final module for the space station. Docked Oct 31 EDT/UTC, Nov 1 CST.
Tianzhou-5	Nov 11, 2022 EST/Nov 12 UTC/CST	none	Docked just 2 hours 7 minutes after launch, Xinhua says fastest in history, at Tianhe rear port. Undocked May 5, 2023 to make way for Tianzhou-6, stationkept until June 6 when it redocked at the forward port after the departure of Shenzhou-15. It undocked for the last time on Sept 11, 2023.

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Mission	**Launch Date**	**Crew** **(# of flights)**	**Comments**
Shenzhou-15	Nov 29, 2022 EST/UTC/CST	Fei Junlong (2) Deng Qingming Zhang Lu	First Chinese crew handover, with Shenzhou-14. Fei and Zhang did spacewalk Feb 9-10, 2023 (Xinhua said only that it ended at 12:16 am Feb 10 Beijing time and lasted ~7 hrs). Second spacewalk around March 1 or 2, a third on March 30 CST, and a fourth on April 16 CST. Details were scant, but China posted a brief video of the April 16 spacewalk. 186-day mission ended June 3 EDT/UTC (June 4 CST).
Tianzhou-6	May 10, 2023 EDT/UTC/CST	none	Docked at the rear port ~8 hours after launch. Undocked Jan 12, 2024. Released Dalian-1 cubesat Jan 18. Reentered Jan 19.
Shenzhou-16	May 29, 2023 EDT (May 30 UTC/CST)	Jing Haipeng (4) Zhu Yangzhu Gui Haichao	Second crew handover. Docked ~6.5 hours later [May 30, 4:29 pm CST/4:29 am EDT/08:29 UTC] Jing and Zhu did ~8 hr spacewalk July 20, 2023, announced after the fact. Landed Oct 30, 8:12 pm EDT
Shenzhou-17	Oct 25, 2023 EDT (Oct 26 UTC/CST)	Tang Hongbo (2) Tang Shengjie Jiang Xinlin	Third crew handover. Docked ~6.5 hours later. Tang Hongbo and Tang Shengjie finished a 7.5 hr spacewalk on Dec 21, 2023 EST. Tang Hongbo and Jiang did an ~8 hr spacewalk on Mar 1-2, 2024 EST.
Tianzhou-7	Jan 17, 2024 EST/UTC/CST	none	Used new fast-track trajectory, docking 3.5 hours after launch (liftoff at 1427 UTC, docking 1746 UTC)

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