GLEX 2017 – MEDIA REPORT

SPACEWATCH
MIDDLE EAST

#SpaceWatchME Review: GLEX 2017 in Beijing – China is off to the stars

SpaceWatch Middle East *COO Torsten Kriening took the chance to attend the Global Space Exploration Conference 2017 from June 6-9 in the Beijing International Congress Center, Beijing, China.*

What is known about China's space industry and ambitions to space? Sure, we see the regular notices about successful Long March launches and hear about the doomsday scenario for the Skypalace that seems to be out of control. And of course we read that Change'5, Chinas lunar sample return mission 2017 is scheduled for November this year. But what do we know in detail about these missions from an international perspective? I have been part of the space industry for two decades, and my knowledge of China's space programmes and capabilities are limited, so I jumped at the opportunity to learn more about it.

Entrance to GLEX 2017; Credits: SpaceWatch Middle East

This was my first trip to Beijing and my first impression was overwhelming. Well organised, structured, clean and welcoming. This impression lasted until departure and will remain. It is fair to say that the weather during the conference week was perfect and air pollution was taking a break.

The conference was organised with professionalism by the IAF (International Astronautical Federation) team. I would like to express my thanks for the outstanding work of the media team: **Emma Huis**, **Silvia Antolino** and all their colleagues!

Over 1000 attendees made the journey to Bejing from 51 countries. Heads of Space Agencies, Cosmonauts, Taikonauts and Moonwalker Buzz Aldrin, came together to discuss the challenges of space exploration from all different perspectives.

Day 1 – Will Space Exploration lead us to a Global Space Agency?

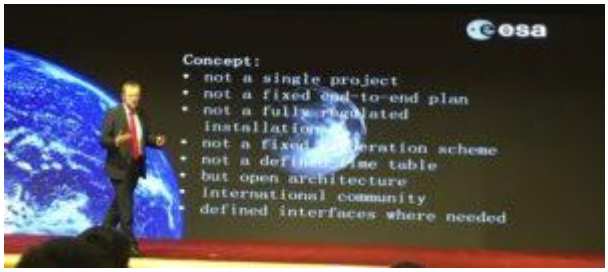
The Global Space Exploration Conference officially opened with a welcome address by Li Yuanchao, Vice-President of People's Republic of China, who also read a participative letter from Xi Jinping,

President of People's Republic of China stating that: "China is ready to strengthen cooperation with the international community for a better future to humankind". Lei Fanpei, President of the Chinese Society of Astronautics (CSA) and Jean-Yves Le Gall, President of the International Astronautical Federation (IAF), welcomed the delegates.

This Chinese call to cooperation has been the main focus of the Heads of Agency Plenary where the idea of a global space agency has been analysed. Roberto Battiston, President of the Italian Space Agency (ASI) praised this dream of a global space agency and the great impact it would have on mankind; he also added that this could be achieved by "the ultimate endeavor in front of us: sending men to Mars". However, Pascale Ehrenfreund, Chair of the Executive Board of German Aerospace Center (DLR), defended "the role that national space agencies have in fostering national businesses".

Afterwards, delegates attended the International Platform for Diversity and Equality in Astronautics (IDEA) Diversity luncheon, moderated by IAF President, Jean-Yves Le Gall. Yang Baohua, Vice President of the China Aerospace Science and Technology Corporation (CASC), presented the impressive results of China's space development contribution to 3G (Gender – Geography – Generation). The audience discussed, among many other topics, the role of female space leaders, the characteristics of the first astronauts' crew landing on Mars, the work of space nations and emerging space countries to foster diversity.

Delegates then attended a Plenary organised by the Chinese Host focusing on the key role played by China in international space cooperation with Cheng'e 4 mission.



ESA DG Jan Woerner presents the Moon Village concept; Credits: SpaceWatch Middle East

Finally, Jan Woerner, Director General of the European Space Agency (ESA) expressed the wish to invite the global space community to join a cooperative Moon Village concept.

Both Global Networking Forum (GNF) and Technical Sessions received a huge interest from the delegates and left us with the reassuring conviction that global partnerships are vital in order to ensure the successful inclusion of all countries in space exploration. All technical papers will be available online at the conference page over the coming weeks. These are worth reviewing.

Day 2: Mars – Moon: How do we get there?

International Space Exploration Coordination Group members; Credits: SpaceWatch Middle East

GLEX 2017 second day continued to look deep into the significance of global cooperation and international partnerships within space exploration. Indeed, an interesting presentation on the International Space Exploration Coordination Group (ISECG) outlined the work of fifteen space agencies that intend to advance the implementation of individual and collective space exploration.

Africas Space Agency Heads discussing the role of Africa in space exploration; Credits: SpaceWatch Middle East

A collective effort is also at the core of the African continent, eager to create a continental African Space Agency that will be focused upon mapping Africa. Dr Valanathan Munsami, CEO of South Africa National Space Agency SANSA mentioned the status and current achievements of Square Kilometre Array (SKA) project.

During the day, another main question emerged from the talks: should we explore the Moon or Mars? While for Russia the interrogation should be centred on the direction rather than on the destination, for the United Arab Emirates (UAE) Space Agency, Mars is clearly the main focus with their ambitious mission “Hope” to explore Mars by 2021, as Khaled Al Hashmi, Head of Missions at UAE Space Agency mentioned. In the technical session Adnan Al Rais, Project Lead of the Emirates Mars Mission at MBRSC gave a positive status of the mission to an excited audience.

In terms of the Moon, Sun Weigang, Chief Engineer, China Aerospace Science and Technology Corporation presented the Chang’e 5 Lunar Probe mission’s development. He firmly stated that “China is willing to jointly explore the boundless universe and peacefully utilise outer space together with countries all over the world”.

NewSpace and commercial moon activities were frequently discussed. It is worth mentioning that Karsten Becker, Head of Electronics at PTScientists gave an update on their private 2018 Mission to the Moon.

Dr Buzz Aldrin presents the Mars cycler concept; Credits: SpaceWatch Middle East

Last but certainly not least, the legendary Buzz Aldrin gave insights on his Cycling Pathways to Mars concept, focused on exploring.

Day 3: Space Exploration – A Common Goal

The last day of GLEX 2017 marked the end of an intense three-day conference where space exploration achievements, potentials and future directions were shared and discussed by its engaged actors.

Amongst them, Zhang Rongquiao, Chief Engineer of Lunar Exploration and Space Engineering Center, China National Space Administration (CNSA), and Wei Chuanfeng, Deputy Chief Designer of Tiangong-2 Space Laboratory of China Academy of Space Technology (CAST), presented China's deep space exploration undertakings. The Long March (LM) series launch vehicles and Yuanzheng (YZ) managed by CALT attest the vision that "space transportation system is the foundation of developing space technology", as declared by Lu Yu, Director of Science and Technology Committee at CALT. In that sense, CALT warmly welcomes all countries to participate in China space activities and commercial launch services. As for CAST, the attention is paid to the Chinese Space Station (CSS) 'Tiangong' planned for launch in 2022 which will be composed of three modules: Core Module, Experiment Module 1 and Experiment Module 2.

Chinas Lunar rover model; Credits: SpaceWatch Middle East

Space exploration will answer the fundamental questions that have baffled humans since the beginning: Who are we? Are we alone? Where do we come from? We have to keep exploring the universe but in order to face the huge difficulties and challenges of space exploration, a common vision is needed. GLEX 2017 leaves us with a clear and optimistic message: Space Exploration requires the global cooperation of all space actors worldwide. GLEX 2017 has opened the dialogue so let's continue the discussion at IAC 2017 in Adelaide: How do we unlock our imagination? How do we foster innovation?

My personal concluding remarks:

When I look back, with jetlag and extensive travels home, I am still speechless with the openness and the positive spirit that brought the community together.

China demonstrated, through many presentations, where they stand, what outstanding achievements they have made in the last decades and where they want to go. In all presentations, international

cooperation was praised and was acknowledged as the base for success. However, if the journey to space is faced with difficulties due to the current challenges and circumstances, then China will move forward – with or without the international community.

China is off to the stars.

Original published at: https://spacewatchme.com/2017/06/spacewatchme-review-glex-2017-beijing-china-off-stars/

China set for X-ray observatory, orbital refueling, GLEX and Long March 5 mission in June

ANDREW JONES

2017/06/01

The Long March 7 launch of Tianzhou-1 in April 2017 from Wenchang.

June will see a string of major Chinese space missions and activities, with big steps ahead in space science, satellite technology and space station-related operations, as well as a major international space exploration conference in Beijing.

First up will be the Global Space Exploration Conference (GLEX 2017), which will be held in Beijing June 6-8 and hosted by the International Astronautical Federation (IAF) and the Chinese Society of Astronautics (CSA).

The event will feature leaders of the world's major space agencies and be attended by policy-makers, scientists, entrepreneurs, educators and more. Plenary sessions will include those on the development and prospects for China's space programme, ESA's Moon Village vision and international cooperation in space.

Following this, China will move ahead with some major missions, building on the five successful launches so far in 2017.

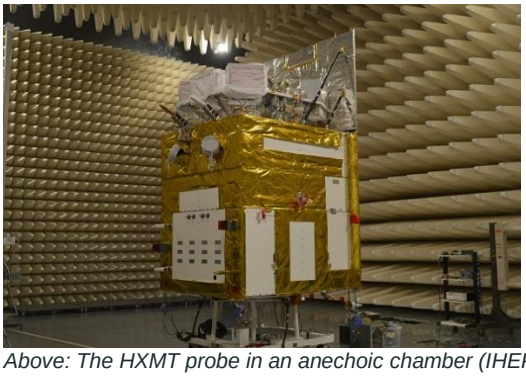
HXMT X-ray observatory

China's first space observatory, the Hard X-ray Modulation Telescope (HXMT), is set to be launched in mid-June from the Jiuquan Satellite Launch Centre in the Gobi Desert.

Developed by the Institute of High Energy Physics (IHEP) under the Chinese Academy of Sciences (CAS), HXMT aims to study highly obscured supermassive black holes, neutron stars, observe transient X-ray sources in greater detail than ever before, and create a high precision x-ray map of the sky.

The 2,800kg satellite will orbit at an altitude of 550km inclined at 43 degrees for around four years, using three telescopes to survey the galactic plane for phenomena emitting at high energies of between 1-250 kiloelectron volts (KeV).

It will also look for the electromagnetic counterparts to gravitational waves, which were first detected by LIGO in 2015, and gamma-ray bursts (GRBs) up to energies of 3000 keV.



Above: The HXMT probe in an anechoic chamber (IHEP).

The mission has been long delayed but is now expected to launch via Long March 2D from Jiuquan on June 15.

HXMT will complete China's first batch of space science missions led by CAS, which started with the dark matter probe DAMPE in December 2015, and followed by the Shijian-10retrievable microgravity research satellite and the QUESSquantum science satellite in 2016.

HXMT, which involves cooperation with a number of institutes in Italy including the University of Ferrara, will join x-ray astronomy cousins in orbit such as NASA's Chandra X-ray Observatory and ESA's XMM-Newton, providing observations of the universe in a wavelength absorbed by the Earth's atmosphere.

Long March 5 Y2 to launch Shijian-18

Around June 30 China will launch its second Long March 5heavy-lift rocket, which debuted dramatically in November.

Shijian-18 is an experimental telecommunications satellite which, at around seven metric tonnes launch mass, will possibly be the most massive satellite launched to geostationary orbit.

Launching from Wenchang Space Launch Centre, the Ka band satellite will be the first deployment of the new Dongfanghong-5 (DFH-5) satellite platform, the country's most advanced and heaviest so far.

Shijian-18 will immediately overshadow the capabilities of China's first high-throughput satellite, Shijian-13 launched in April, boasting a capacity of around 70 Gbps. It will also feature LIPS-300 ion thrusters and test space-based laser communications.


Above: Rollout of the first Long March 5 in October 2016 (China Daily/Su Dong).

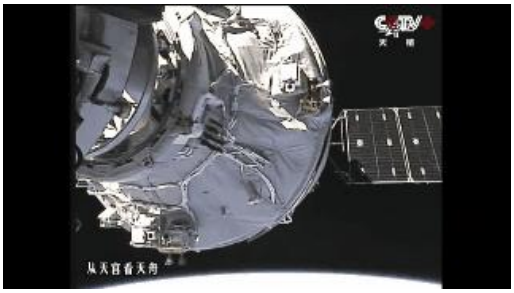
The third flight of Long March 5 is expected in late November to launch Chang'e-5, a complex and ambitious mission to collect samples from the lunar surface and return to Earth.

Tianzhou-1: second refueling test

Also late in the month Tianzhou-1, the country's first space freighter mission, will undock from the Tiangong-2 space lab in preparation for another rendezvous, docking and a second test of the 29-step, five-day orbital refueling process.

The successful transfer of liquid propellant in microgravity to Tiangong-2 in late April was the primary objective for the Tianzhou-1 mission, marking a huge step forward in the country's plans for a large, modular space station.

The second docking will be conducted from a different direction, in order to test the ability of the cargo ship to dock with the future Chinese Space Station from different directions.



Above: Tianzhou-1 (right) docks with Tiangong-2 in April (CCTV+).

Zhongxing-9A

June will also see the launch of the 5-tonne Zhongxing-9A (ChinaSat 9A) Ku band telecommunications satellite via a Long March 3B/E rocket from the Xichang Satellite Launch Centre in the hills of China's southwestern Sichuan Province.

The DFH-4 based satellite will be placed at 92 degrees East to provide radio and TV transmission and other broadcasting services to China and surrounding regions over an expected lifetime of 15 years.

The launch date has not been announced, and is currently rumoured for between 13-17 June.

Above: A view of the Xichang Satellite Launch Centre from 2013.

http://gbtimes.com/china/china-set-x-ray-observatory-orbital-refueling-glex-and-long-march-5-mission-june

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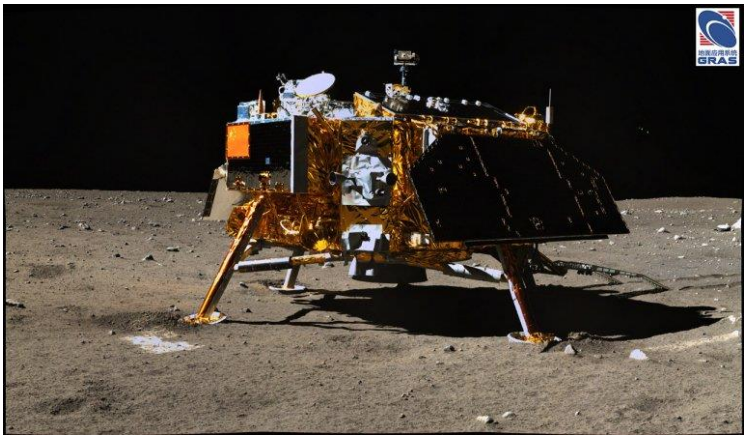
China’s telescope on the Moon is still working, and could do for 30 years

ANDREW JONES

2017/06/05



The Chang'e-3 lander on Mare Imbrium, imaged by the Yutu rover. (Photo: Chinese Academy of Sciences)

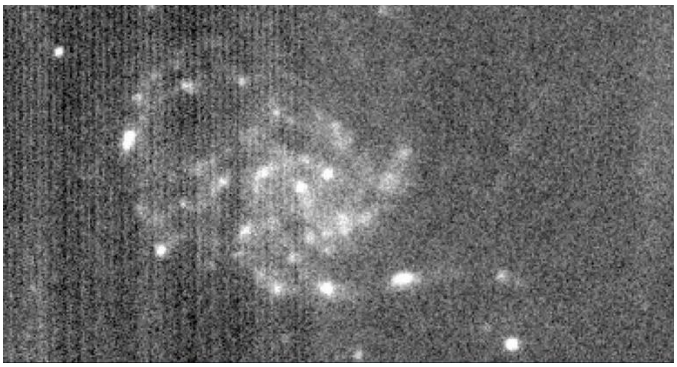
China’s Chang’e-3 lander and its Lunar-based Ultraviolet Telescope (LUT) are still operational, three and a half years after landing on the Moon.

The LUT has been monitoring variable stars and stars like our own Sun, and also performing low-galactic-latitude sky surveys during the daytime periods over Mare Imbrium, the area in which Chang’e-3 landed.

Wang Jing at the National Astronomical Observatories under the Chinese Academy of Sciences (CAS) told gbtimes that the lander was still waking automatically after hibernating during a 14 Earth-day-long period of nighttime on the Moon.

Chang’e-3 is still in contact with ground stations in China during these periods of sunlight and transmitting data from LUT, which is the only instrument on the lander that is still operational.

The lack of atmosphere makes the Moon a prime place for UV astronomy, which is not possible at low altitudes on Earth, and the LUT has yielded some interesting results.



Above: An image of the Pinwheel galaxy captured earlier by the UV telescope on the Chang'e-3 lander (NAO).

“The most significant scientific result from the LUT telescope is the water content in the lunar exosphere,” Wang says.

The lunar exosphere refers to the almost negligible amount of molecules above the Moon’s surface. If present in the Moon’s silicate rocks, OH and H_2O molecules could be released due to micro-meteor impacts and the effects of the solar wind.

The presence of substantial quantities of water on the Moon would be a big boost for plans to establish a lunar habitat, as transporting water from Earth for astronauts would be very expensive. It would also serve as a potential source of oxygen and propellant.

However in situ measurements carried out by LUT revealed the concentration of OH/H_2O molecules to be about two orders of magnitude lower than the values reported by previous missions, with the results reported in a paper by Wang and others.

Durable extraterrestrial first

While the Apollo 16 mission astronauts had a manual UV telescope, LUT is the first automated and remote operated telescope placed on an extraterrestrial body.

It has also been taking advantages of the unique conditions during lunar eclipses.

China has its own Planetary Data System, maintained by the National Astronomical Observatories of China, which allows people across the world to access and download data and stunning images from its lunar exploration missions.

Wang was speaking at an event at the Global Space Exploration Conference (GLEX 2017) which opens formally on Tuesday.

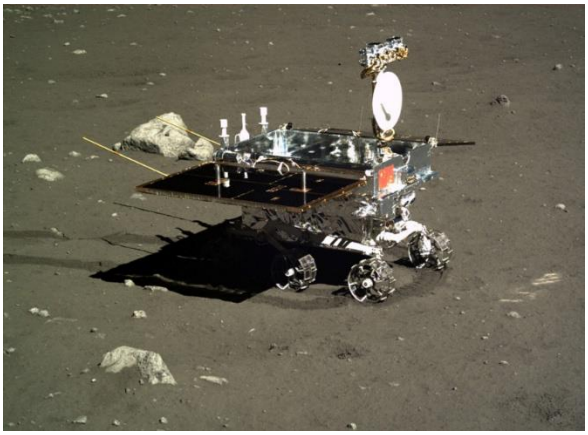
Steve Durst, director of the International Lunar Observatory Association (ILOA) which has Chinese partners, stated during a presentation at the same event that the power source for the Chang’e-3 lander could last for 30 years.

The lander, which was expected to operate for a year, is powered by a Radioisotope Thermoelectric Generator (RTG) and solar panels. Durst hopes that the mission will receive the necessary support on Earth to continue well into the future.

Chang'e-3 was launched in December 2013, and has returned valuable scientific data from the Moon, adding to our understanding of our celestial neighbour. Chang'e-3 was due to awaken for its 44th lunar day on June 4.

The mission, which included the Yutu rover, also made China only the third country to soft-land on the Moon, following the United States and Soviet Union, and the first since the 1970s.

China's next mission to the Moon will be the Chang'e-5 lunar sample return spacecraft, which is set to launch in November.



Above: The Yutu rover, imaged by the Chang'e-3 lander.

http://gbtimes.com/china/chinas-telescope-moon-still-working-and-could-do-30-years

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New Chinese astronaut selection and space station missions revealed

ANDREW JONES

2017/06/06

The crew of Shenzhou-10 ahead of launch in June 2013.

China has provided an update to its human spaceflight plans, announcing that a third selection round of 10-12 astronauts - including two women - will take place this year, while outlines of crewed missions to the future Chinese Space Station (CSS) are taking shape.

While the two previous rounds drew on air force pilots, the third astronaut selection will seek candidates with more diverse backgrounds, reflecting the changing requirements for CSS objectives.

"Scientific experiments are going to be a major part of the new space station, so we're going to need astronauts who have the right backgrounds," said Yang Liwei, deputy director of China's manned space engineering office.

Yang, who became China's first astronaut in space in 2003, was speaking to Chinese media on Tuesday on the sidelines of the Global Space Exploration Conference (GLEX 2017) in Beijing.

China has sent 11 astronauts into space, most recently on the Shenzhou-11 mission last October, the country's longest by far at 33 days.

China's Wang Yaping appearing at #GLEX2017

Crewed missions to the CSS will last for between three months and half a year.

Building a space station

China will also carry out at least four crewed missions across five years as it constructs the 60 metric tonne space station in low Earth orbit, Yang said.

The country plans to complete the three-module space station by around 2022, requiring around a dozen launch missions, according to Yang.

Missions will include launches of Long March 5 heavy-lift rockets to loft the 20-tonne modules to around 390 kilometres above the Earth, starting with the Tianhe core module in 2019, earlier slated for late 2018.

Long March 2F and Long March 7 launchers will be used for crewed missions and Tianzhou cargo spacecraft respectively.

The CSS complex will also be joined by a co-orbiting space telescope, Xuntian, a two metre aperture Hubble-class observatory that can dock for maintenance and repairs.

The second docking will be conducted from a different direction, in order to test the ability of the cargo ship to dock with the future Chinese Space Station from different directions.

http://gbtimes.com/china/new-chinese-astronaut-selection-and-space-station-missions-revealed

China confirms landing site for Chang'e-5 Moon sample return

ANDREW JONES

2017/06/07

The Chang'e-5 return capsule (right) and lander and ascend vehicle (background) undergoing tests. (Photo: Framegrab/CCTV)

China has confirmed the landing site for its Chang'e-5 Moon sample return mission, which is set to launch in late November.

The Chang'e-5 lander will set down near Mons Rümker in Oceanus Procellarum, a large area of lunar mare in the northwest region of the Moon.

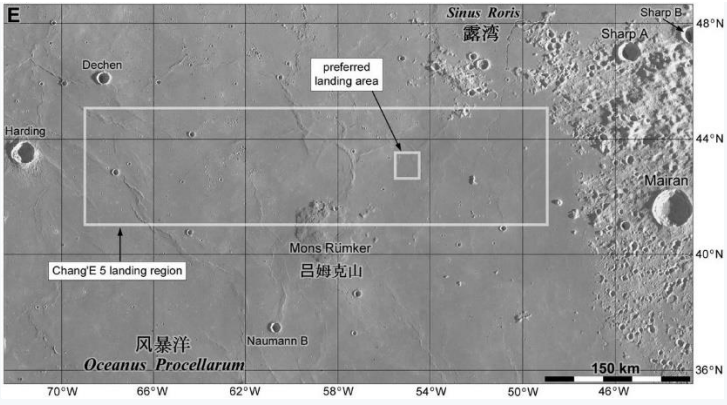
The lander, one of four units making up the Chang'e-5 probe, will then collect around 2 kilograms of samples of lunar regolith and rock from a depth of up to 2 metres in preparation for return to Earth.

Liu Jizhong, director of the China Lunar Exploration Program (CLEP), confirmed the planned landing area to press at the Global Space Exploration Conference (GLEX 2017), running from June 6-8 in Beijing.

There are understood to be seven candidate sites within the area, from 41 to 45 degrees North and 49 to 69 degrees West.

Selecting one of the sites in particular would mean China will return the youngest lunar basaltic samples so far, with spectral analysis from Chandrayaan-1 Moon Mineralogy Mapper data indicating a surface age of around 1.33 billion years old.

Conversely, the basalt samples collected by the Apollo missions were 3 to 4 billion years old.



Chang'e-5 Complexity

Chang'e-5 will be the first such mission since the Soviet Union's Luna 24 probe in 1976. However, instead of heading directly back to Earth, China's mission will be much more complex.

An ascent module will lift off from atop the lander and dock with a service module in orbit around the Moon, nearly 400,000 kilometres away from Earth. The samples will be transferred to the reentry capsule, which itself will separate from the service module closer to Earth before reentry and landing.

The decision to undertake a complex sample return mission suggests that China is interested in gaining experience for future human landings on the Moon, and a Mars sample return mission.

Chang'e-5 is due to launch on a Long March 5 heavy-lift rocket from the Wenchang Satellite Launch Centre, with the launch window opening on November 29.

Sun Weigang, chief engineer at the the China Aerospace Science and Technology Corporation (CASC), said in a keynote session on Chang'e-5 at GLEX 2017 that a range of tests, including simulated launch, landing, take-off and sampling, have demonstrated the effectiveness of the mission plan.

The mission will also be assisted with ground station supportfrom the European Space Agency for launch and landing, and cooperation may also be extended to analysis of samples once back on Earth.

Further discussion of the Chang'e-5 mission profile, instruments and sub-plots can be found at this Planetary Society blog.

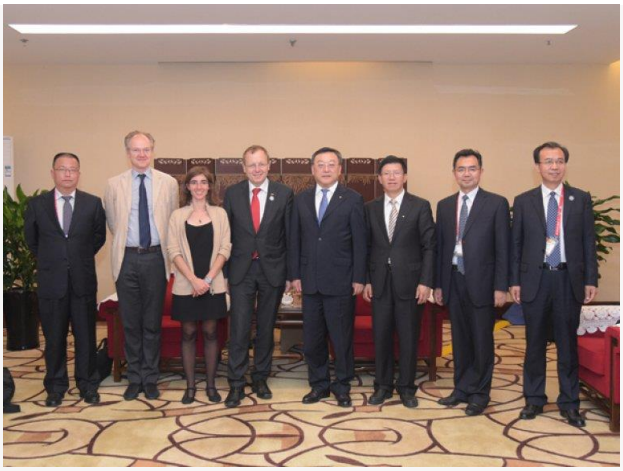
Above: Maspalomas station hosts a 15-metre antenna with reception in S- and X-Band (ESA).

http://gbtimes.com/china/china-confirms-landing-site-change-5-moon-sample-return

China quietly appoints new space agency administrator

ANDREW JONES

2017/06/09



Tang Dengjie with ESA head Johann-Dietrich Woerner, centre, in Beijing on June 6, 2017. (Photo: CNSA)

China has quietly appointed a new administrator of the China National Space Administration (CNSA), as the country looks to become an increasingly influential player in space.

Tang Dengjie is an economic engineer and formerly vice-mayor of Shanghai municipality, with no apparent aerospace background. He will be supported by established CNSA officials Wu Yanhua and Tian Yulong.

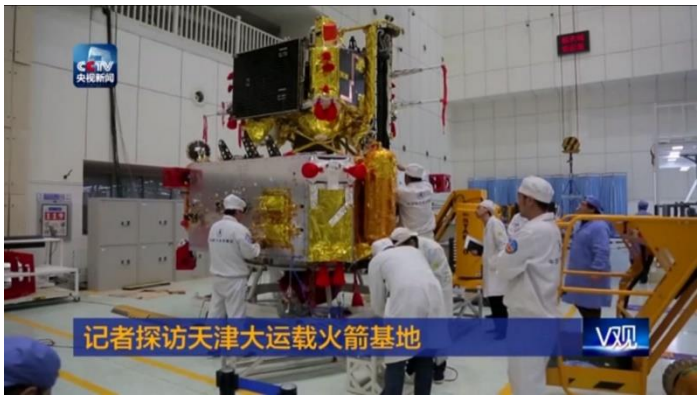
The appointment of Tang came just ahead of the opening the Global Space Exploration Conference (GLEX 2017) held in Beijing.

The event, organised by the International Astronautical Federation (IAF) and Chinese Society of Astronautics (CSA), was attended by space agency heads and representatives from around the world, with cooperation stressed as the key themethroughout.

The timing of the appointment allowed Mr Tang to already meet with the European Space Agency (ESA) Director General, Johann-Dietrich Woerner, with the two sides reaffirming commitment to the China-Europe Joint Commission on Space Cooperation.

China and ESA have been deepening cooperating on space missions since the initial collaboration for the Double Star project, which saw launches in 2003 and 2004.

ESA will provide ground station support for the launch and reentry of China's ambitious Chang'e-5 lunar sample return mission in November.



Above: The Chang'e-5 lander and ascent modules in January 2017 (CCTV).

Mr Teng also met Jean-Yves Le Gall, president of the IAF and the French space agency, CNES, and Pascale Ehrenfreund, head of the German Aerospace Centre, DLR, for a signing related to cooperation on the unprecedented Chang'e-4 mission to the lunar far side, due to launch in 2018.

The CNSA is not comparable to overarching space agencies such as NASA and ESA. CNSA acts in a much more limited role as China's public face for international activities and cooperation.

The State Administration for Science, Technology and Industry for National Defence (SASTIND), of which Mr Tang is also now in charge, is the government body which oversees and coordinates China's space activities.

The former CNSA administrator, Xu Dazhe, is now governor of Hunan Province. A number of aerospace engineers have recently been appointed to major political positions under the leadership of Chinese President and Communist Party General Secretary Xi Jinping.

Space announcements

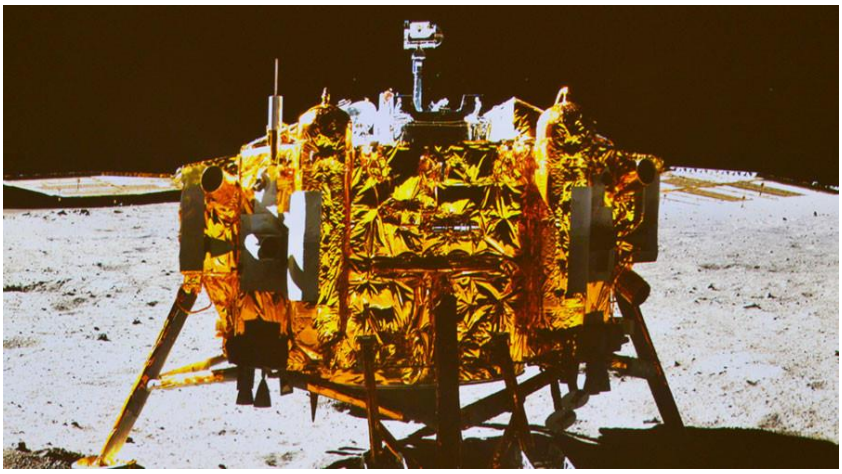
The GLEX conference in Beijing saw a number of announcements from China, including astronaut selection and missions to the future Chinese Space Station, and a reiteration that China is undertaking preparatory work towards landing humans on the Moon in the 2030s.

On a shorter timeframe, Chang'e-5 will land near Mons Rümker in Oceanus Procellarum, a large area of lunar mare in the northwest region of the Moon.

http://gbtimes.com/china/china-quietly-appoints-new-space-agency-administrator

China reveals moon mission landing site in quest to retrieve 1st soil samples since 1976

Published time: 7 Jun, 2017 17:36



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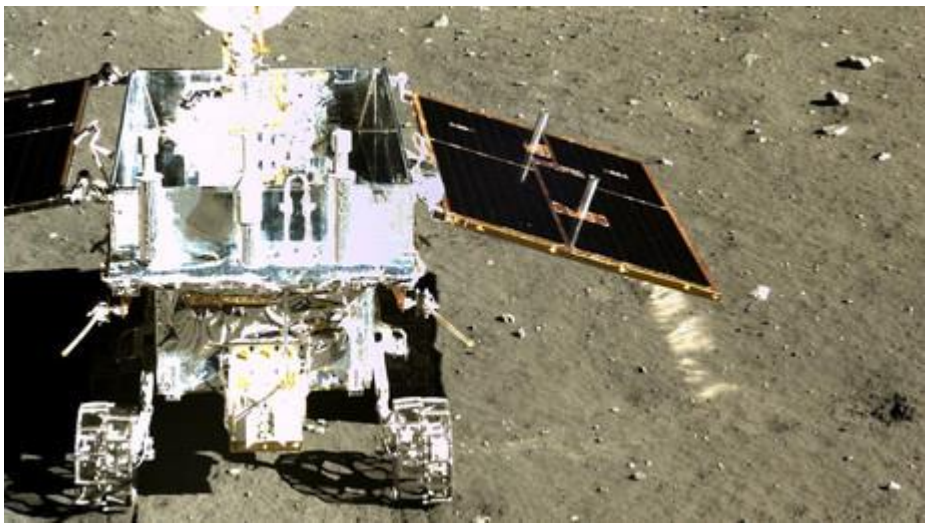
Chinese space officials have revealed details about the country's ambitious lunar mission, which would be the first to return soil samples to Earth since the Soviet Luna 24 expedition in 1976. Beijing is also planning to have a fully-functioning space station by 2022.

The China National Space Administration (CNSA) has chosen the Mons Rumker region of the moon as the landing site for the upcoming Chang'e 5 mission, Liu Jizhong, director of the Chinese agency's lunar exploration program, told an international conference.



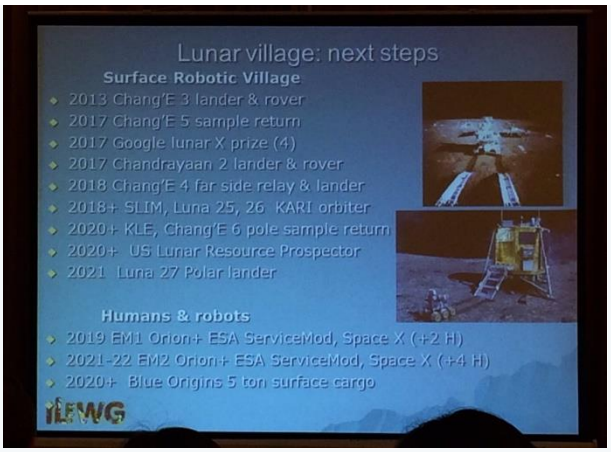
[China posts hundreds of never-before-seen HD color photos of the moon]

The site, which was named in honor of German astronomer Karl Rumker, is a volcanic formation in the northwest part of the visible side of the satellite.

The Luna 24 mission retrieved 170g of soil from the moon. The Chinese probe aims to collect about 2kg of soil and rock samples, drilling as deep as 2 meters under the surface. The mission will be launched by a Chang Zheng 5 rocket in late November, according to CNSA plans.

Liu was speaking at the Global Space Exploration Conference (GLEX) 2017, which opened in Beijing on Tuesday, Xinhua news agency reported. The Chinese official also said the CNSA partnered with four nations to develop the scientific payload for the Chang'e 4 lunar probe.

Despite the smaller number in its designation, it is scheduled to be launched later than Chang'e 5, sometime in 2018. The mission was originally planned for 2015, but was repurposed to land on the far side of the moon instead. China plans to place a relay station at the Earth-moon Lagrange Point 2, a spot of gravitational stability, to serve the mission.



Just a few planned lunar missions to whet your appetite for lunar exploration! #GLEX2017

According to Liu, the Chang'e 4 payload includes 11 instruments. CNSA vice-administrator Wu Yanhua, who is also among the hosts of GLEX 2017, thanked the Netherlands, Germany, Sweden, Saudi Arabia, and the European Space Agency (ESA) for their contribution to the mission.

"We support more international cooperation in China's future lunar and Mars missions, as well as exploration to the Jupiter system and asteroids that are still under discussion," Wu said.

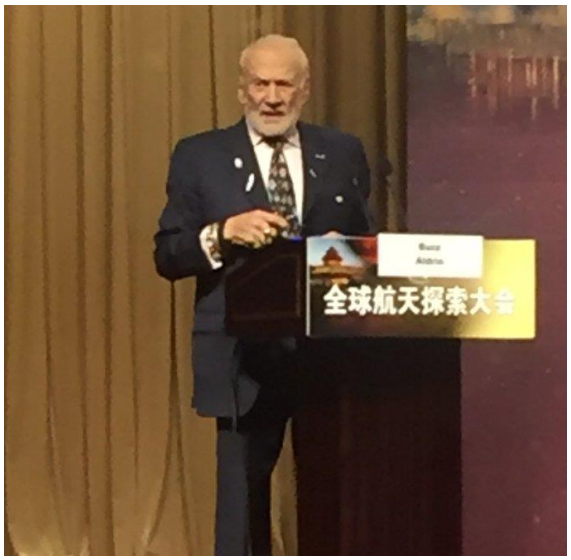
The Chinese space program, which for years was aimed at ensuring Beijing's capability to conduct missions on its own, is gradually opening to international cooperation.

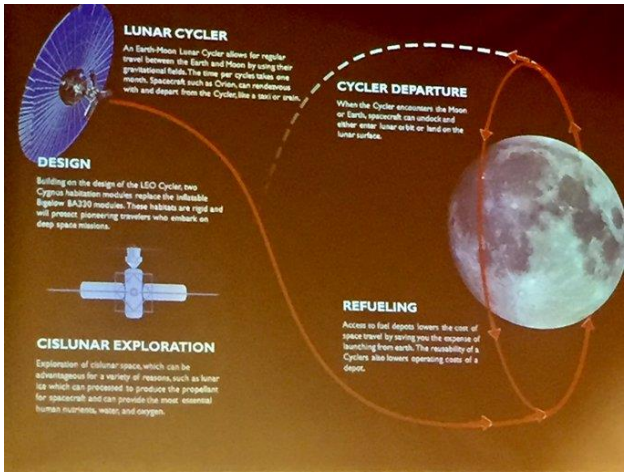
"China is expanding cooperation with the United Nations (UN) in space exploration, and will disclose projects later this year," said Yang Liwei, China's first space explorer, who now serves as deputy director of the China Manned Space Engineering Office.

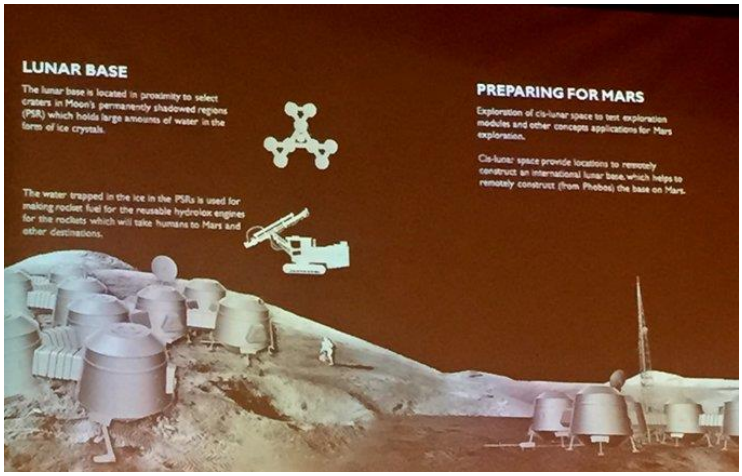
Chinese space station an alternative to ISS?

Future joint projects between China and the UN's Office of Outer Space Affairs may include cosmonaut training and scientific research on China's future permanent space station, he added.

Beijing plans to launch the core module of the future station with a Long March 5 rocket in 2019 and have an operational space outpost by 2022, two years ahead of the possible retirement of the International Space Station.







When it is operational, the Chinese large modular space station will have a living module capable of supporting a crew of three for 40 days, and will contain two laboratory modules. The Shenzhou spacecraft will provide crew rotations while robotic Tianzhou space freighters will be used for resupply.

The Chinese station may become an alternative for joint space exploration, Xu Yansong, the CNSA's International Cooperation Department director, told RIA Novosti on the sidelines of the conference.

"We have no certainty about the ISS, but we will have our own space station in orbit, and it will be opened for the international community," he said.

https://www.rt.com/news/391274-china-lunar-missions-details/

SPACE DAILY
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DRAGON SPACE

Moon or Mars - humanity's next stop

by Staff Writers
Beijing (XNA) Jun 12, 2017

Back in 1969, Neil Armstrong, the first person to walk on the moon, uttered his famous words: "That's one small step for (a) man, one giant leap for mankind."

The statement has inspired ever since. More than 500 astronauts have entered space in the nearly five decades that have followed, and over 10 have landed on the moon.

Buzz Aldrin, the second man to set foot on the moon and Armstrong's companion in the Apollo 11 mission, gave a presentation on his ideas for visiting Mars at the Global Space Exploration Conference (GLEX 2017), which concluded on Thursday.

File image of China's lunar rover Yutu.

Global leaders in space exploration have now set their sights on Mars, including China.

Wu Yanhua, deputy head of the China National Space Administration (CNSA), said that the country has started an unmanned Mars probe project and plans to launch a Mars probe around 2020.

Steve Eisenhart, senior vice president of the Strategic and International Affairs of the Space Foundation of the United States, said that Aldrin has been working on his idea for close to 30 years.

According to Aldrin's plan, humans may be able to land on Mars before 2039 and set up a station there. Eisenhart and Aldrin, while not representing the U.S. government or the National Aeronautics and Space Administration (NASA), agreed that Mars is a good destination for space exploration.

However, Jan Woerner, director-general of European Space Agency (ESA), said that the moon is a good stepping-stone before going to Mars.

"If we have a goal which is too far away, there might be roads in between those inspirations," said Woerner, adding that the moon is close enough to test and develop needed technology. "It's a very good test bed - then go deeper into our solar system."

Tian Yulong, secretary-general of the CNSA, said that China is now in discussions with the ESA on co-building a "moon village."

Tian said that a house on the moon could be constructed within a week with materials brought from Earth as well as moon surface materials using 3D printing technology.

Yasuyuki Ito, associate director-general of the Japan Aerospace Exploration Agency, said that his generation was greatly affected by the Apollo program.

"Lunar exploration is our target. At the same time, we've also been discussing a Mars goal," he added.

Pascale Ehrenfreund, chair of the executive board of the German Aerospace Center, said that bringing humans to Mars is very difficult, as is raising funds for space exploration.

"We do things in steps. And the moon is one of the important steps on our way to Mars," she said.

China's Lunar Exploration

China's Chang'e lunar program, named after a legendary goddess, includes three phases: orbiting, landing and returning with samples.

Liu Jizhong, director of the China Lunar Exploration and Space Engineering Center of the CNSA, said the Chang'e 5 lunar probe is expected to land in the Mons Rumker region and to take samples back to Earth at the end of the year.

The probe landing site, an isolated volcanic formation located on the northwest of the near side of the moon.

"China is planning and designing its future lunar exploration program. We will focus on the south pole region of the moon. The research on water and the permanent shadow area of the lunar south pole region will bring greater scientific discoveries," Liu said.

According to Wu Yansheng, general manager of China Aerospace Science and Technology Corporation (CASC), China is working on an idea for manned lunar landing.

The mission will consist of a manned spaceship, a propulsion vehicle and a lunar lander. The manned spaceship and the lunar lander will be sent into circumlunar orbit separately.

Yang Liwei, deputy director of the China Manned Space Engineering Office, said that China is in the preliminary stage of its manned lunar program and estimated that Chinese astronauts will be able to walk on the moon around 2030.

Low-Cost Space Transport

Without capable launch vehicles, humans are not able to go deeper into space.

China's Long March carrier rockets still have room for improvement, according to Lu Yu, director of Science and Technology Committee of the China Academy of Launch Vehicle Technology (CALT).

He said that CALT is developing a heavy-lift launch vehicle with a payload of 140 tonnes to low Earth orbit and 50 tonnes to lunar transfer orbit.

CALT has made progress in developing reusable launch vehicles, including parachute landing and propulsion landing, said Lu.

Founded by U.S. entrepreneur Elon Musk in 2002, SpaceX aims to reduce space transportation costs and enable the colonization of Mars. It has developed the Falcon launch vehicle family and invested big in reusable technology for orbital rockets.

Aerospace transportation is now focused on low-cost ways to enter space, said Wang Guoqing, a CASC official.

Wang said leaders in space exploration have set up their own range of launch vehicles and systems, and reusing launch vehicles will become important for reducing costs.

"Breakthroughs have been achieved in reusable technology after 10 years of study. However, we still face challenges as reusable aerospace launches require high reliability and safety," he added.

Win-Win Situation

Chinese and global space leaders reached an agreement on cooperation in space exploration at GLEX 2017 - no matter whether they aim for the moon or Mars.

"China is expanding cooperation with the United Nations (UN) in space exploration and will disclose projects later this year," said Yang.

The country has previously undertaken bilateral cooperation with various countries and institutions and is looking toward multilateral projects. China will carry out joint projects with the UN Office of Outer Space

Affairs (UNOOSA), including astronaut training, scientific experiments aboard space stations and multilateral application of such experiments, he added.

Liu also proposed creating an open platform for cooperation in accordance with the principle of "sharing the risks and achievements" and setting up the International Union of Planetary Scientists and the International Union of Planetary Science College Students.

"Rather than a space race, I think cooperation is always good and worldwide cooperation is even better. I hope we can breach Earth's crises by having worldwide cooperation in space," said Woerner.

"We should not try to duplicate everything, and if we join forces we can do even more with the same amount of money," he added.

Source: Xinhua News

http://www.spacedaily.com/reports/Moon_or_Mars___humanitys_next_stop_999.html

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China announces future space exploration programs at GLEX 2017

2017-06-12 10:28 | China Plus

The 2017 Global Space Exploration Conference (GLEX) opens in Beijing on June 6, 2017.

China has announced some of its future space exploration programs at the ongoing 2017 Global Space Exploration Conference (GLEX).

The GLEX 2017 opened Tuesday in Beijing, revisiting China for the first time in 7 years.

China's first astronaut Yang Liwei said the country will carry out at least 4 manned spaceflight missions over the next 5 years to build a space station, which is set to be completed by around 2022.

The station's first core module will be launched in 2019, followed by launches of 2 experiment modules.

It will enable astronauts to stay in space for 3 months to half a year, and the selection of new astronauts will begin this year.

Yang also announced that China is making preliminary preparations for a manned lunar landing mission, which consists of a manned spaceship, a propulsion vehicle and a lunar lander.

Space theorists, scientists and engineers from both China and abroad attend the 2017 Global Space Exploration Conference (GLEX) in Beijing on June 6, 2017.

Meantime, China also released information about another 2 lunar exploration projects, namely the Chang'e-4 and Chang'e-5.

The Chang'e-4 probe is set to be the world's first to land on the dark side of the moon to carry out research, and its flight mission is scheduled for next year.

Liu Jizhong, director of Lunar Exploration and Space Engineering Center of the Chinese Society of Astronautics, said progress has been made in international space cooperation related to the mission.

"China sent out invitations with intent to enhance international cooperation as soon as it started its studies on the Chang'e-4 project and received many responses from other countries. Over a dozen countries have sent us more than 20 cooperation proposals. So far, it has been confirmed that the Chang'e-4 project will include projects from the Netherlands, Germany, Saudi Arabia and Sweden," said Liu.

China plans to launch its Chang'e-5 mission at the end of November 2017, which will see an unmanned probe land on the moon, collect samples, and return to earth - a first for the Chinese space program.

Chinese Vice President Li Yuanchao (2nd from Right) attends the 2017 Global Space Exploration Conference (GLEX) in Beijing on June 6, 2017.

At the conference, China also vowed to further enhance international aerospace cooperation by providing more opportunities for other countries.

Yang Baohua, deputy general manager of China Aerospace Science and Technology Corporation, said China is focusing not only on the cooperative projects, but also the values and capabilities on conducting research in related aerospace areas.

"For example, we cooperated with France in the China-France Oceanography Satellite and with Italy in the electromagnetic monitoring satellite for earthquakes. All those programs have profound significance in science and applications. Specially, we will launch more cooperation with countries along the Belt and Road routes with an aim to jointly explore the universe and benefit the humans," said Yang.

Jan Woerner, Director General of the European Space Agency, also expressed willingness to achieve more international cooperation.

"As the European Space Agency, we have already some good cooperation with China, especially in science. So we have some experiments in microgravity, we are looking forward to a mission which is called SMILE (Solar wind Magnetosphere Ionosphere Link Explorer), which is investigating the magnetosphere of the Earth and influence of solar flares. So there are a lot of opportunities for cooperation," said Woerner.

Chinese President Xi Jinping has also sent a letter of congratulations to the event, hoping that the conference will promote the development of space science and technology and help boost international exchanges and cooperation.

The 3-day GLEX 2017 will see nearly a 1000 space theorists, scientists and engineers discussing the challenges of space exploration as well as solutions and future development plans.

http://www.china-ceec.org/eng/zjzdo_1/t1469411.htm

Buzz Aldrin assiste à la *Global Space Exploration Conference* (GLEX) 2017 à Beijing

French.china.org.cn | Mis à jour le 07. 06. 2017 | Mots clés : Global Space Exploration Conference ,Buzz Aldrin ,Beijing

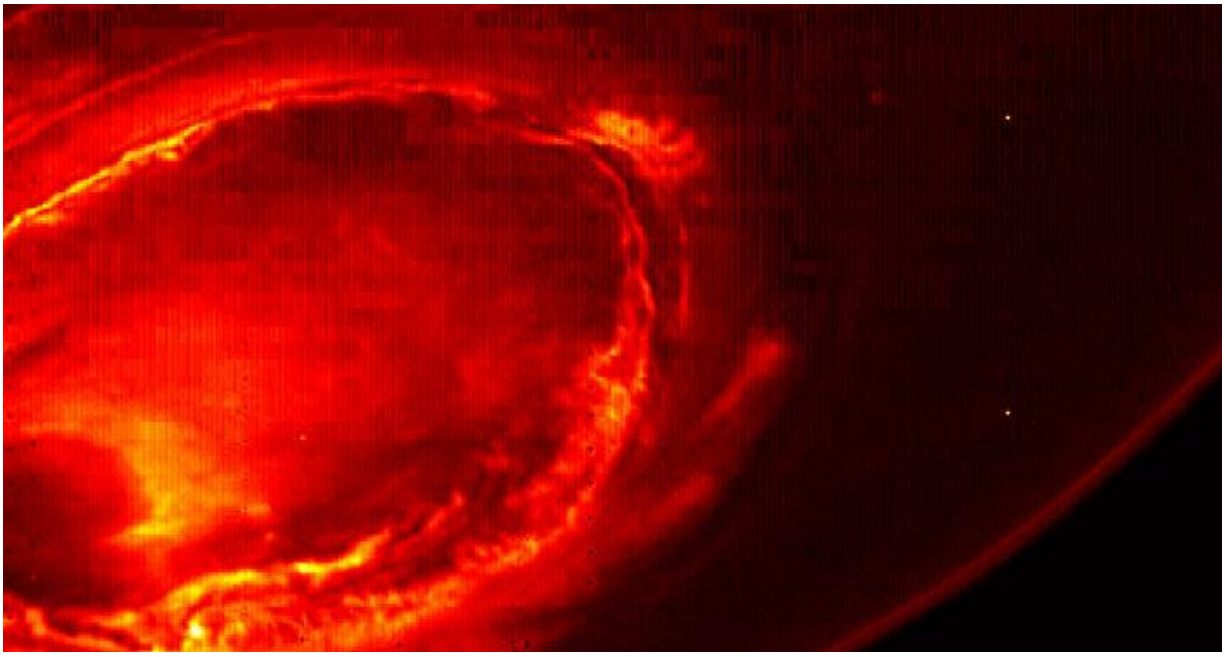
Le 6 juin, Buzz Aldrin, le deuxième homme à avoir marché sur la Lune,assiste à la cérémonie d'ouverture de la *Global Space Exploration Conference* (GLEX) 2017 à Beijing. Sur la photo, Buzz Aldrin, qui a déjà 87 ans, bavarde avec la petite fille américaine Poppy Upite.

http://french.china.org.cn/china/txt/2017-06/07/content_40982575.htm

Chinese leader Xi Jinping said Beijing is ready for broad international cooperation on space.

BEIJING (Sputnik) — China calls for peaceful use of space and seeks international cooperation in this field, China's President Xi Jinping said Tuesday in the address to the participants of the Global Space Exploration Conference (GLEX) 2017.

"China has historically attached importance to the space exploration and scientific technological innovations. China is ready to strengthen cooperation with all countries in the world; peacefully study, explore and use space, so that the results of space researches contribute to a better future of humanity," the address, which was presented by Vice President Li Yuanchao, read.



GLEX is an annual event held since 2012, which gathers representatives from scientific circles, government, and industry. This year the conference is taking place in China's capital of Beijing and will last through Thursday.

The conference is co-organized by the International Astronautical Federation (IAF), and focuses on current challenges in the field of space exploration.

https://sputniknews.com/science/201706061054346641-xi-china-space/

France-China space cooperation CNES meets CNSA and CAS at the GLEX 2017 Conference in Beijing

TOPICS:CNESNomination

POSTED BY: STAGIAIRE AEROMORNING 09/06/2017

CNES was at the Global Space Exploration Conference (GLEX 2017) co-organized by the International Astronautical Federation (IAF) and the Chinese Society of Astronautics (CSA) from Tuesday 6 to Thursday 8 June in Beijing. On this occasion, the agency met the China National Space Administration (CNSA) and the Chinese Academy of Sciences (CAS)

Co-organized by the International Astronautical Federation (IAF) and the Chinese Society of Astronautics (CSA), the GLEX 2017 conference, following on from GLEX 2012 held in Washington D.C., offers governments, space agencies, industry and entrepreneurs a high-level forum for debate, analysis and sharing of experience. Opened by Li Yuanchao, Vice-President of the Republic of China, this year's event is bringing together for three days in Beijing more than 1,000 participants, including leading space officials from around the world.

On this occasion, CNES and IAF President Jean-Yves Le Gall warmly congratulated and thanked Lei Fanpei, President of CSA, and Yang Baohua, Vice-President of the China Aerospace Science and Technology Corporation (CASC), for hosting such a successful conference. He presented IAF's 2016-2019 agenda, focusing on innovation as the right response in the shifting landscape being defined by NewSpace players and emerging space nations who are now challenging the established space powers, and underlined the importance of promoting diversity across the space sector by fostering the principles of 3G (Geography, Generation and Gender).

Jean-Yves Le Gall also met Tang Dengjie and Wu Yanhua, the Administrator and Vice- Administrator of CNSA, and Xiangli Bin, Vice-President of CAS, to review progress on the two French-Chinese satellite programmes, CFOSat (China French Oceanography Satellite), planned to launch in 2018, and SVOM (Space-based multiband astronomical Variable Objects Monitor), to be orbited in 2021.

The CFOSat mission, dedicated to gaining new insights into Earth's climate, was recently distinguished with the France-China Joint Committee's Innovation Prize and its forthcoming launch is set to take on added significance in the light of efforts to implement the Paris Agreement on climate. SVOM, meanwhile, will help scientists to delve deeper into the origins of the most energetic phenomena in the Universe.

http://www.aeromorning.com/blog/france-china-space-cooperation-cnes-meets-cnsa-cas-glex-2017-conference-beijing/

China emphasizes peaceful space exploration

Yang Liwei, China's first astronaut and deputy director of China's manned space program office, makes a speech during the 2017 Global Space Exploration Conference in Beijing, capital of China, June 6, 2017. The conference opened Tuesday in Beijing. (Xinhua/Chen Yehua)

BEIJING, June 7 (Xinhua) -- China wants to improve space infrastructure and develop space sciences under the principle of creating peaceful cooperation in outer space, said an industry leader.

Wu Yansheng, president of China Aerospace Science and Technology Corporation (CASC), made the remarks at the ongoing Global Space Exploration Conference (GLEX 2017) which began Tuesday in Beijing.

He said that China will continue to provide services for other countries, including international commercial launches and sending satellites into orbit.

According to Wu, China plans to set up a space station around 2022, and launchspace Chang'e-5 lunar probe in late 2017 to collect samples from the moon.

China plans to send a probe to Mars around 2020 and launch the Chang'e-4 lunar probe for a soft landing on the far side of the moon in 2018, he said.

China is also working on a concept for a manned lunar landing.

The mission will consist of a manned spaceship, a propulsion vehicle and a lunar lander. The manned spaceship and the lunar lander will be sent separately into lunar orbit, according to Wu.

The conference, which ends Thursday, was jointly held by the International Astronautical Federation (IAF) and the Chinese Society of Astronautics and follows the GLEX 2012 conference held in Washington D.C.

International space engineers and delegates from leading aerospace companies including Boeing, Lockheed Martin and Airbus attended the conference.

Chinese astronaut Wang Yaping (C) talks with children during an event on the 2017 Global Space Exploration Conference in Beijing, capital of China, June 6, 2017. The conference opened Tuesday in Beijing. (Xinhua/Zhang Ling)

http://news.xinhuanet.com/english/2017-06/07/c_136346741.htm

Global space exploration conference kicks off

06.06.2017 17:47:41

Close to a thousand of space theorists, scientists and engineers gathered in Beijing for their Global Space Exploration Conference 2017.

China released information to the conference about the country's latest development of its space exploration programs. The programs include the Chang'e-4 and Chang'e-5 lunar probe missions. The topics of exploring the unknown space and strengthening international cooperation have drawn weighted attention from the conference participants.

The Chang'e-4 lunar probe will be the world's first to land on the far back side of the moon to carry out researches, director of Lunar Exploration and Space Engineering Center of the Chinese Society of Astronautics said.

The three-day GLEX 2017 conference will cover an array of topics including the purpose and infrastructure of space exploration, space lab, space station, the Moon, the Mars and near-Earth asteroid exploration, and international cooperation. Discussions will center on the challenges facing space exploration, solutions and future development.

http://mir.uzreport.uz/news_e_152941.html

SPACE DAILY
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China's space station to help maintain co-orbital telescope

by Staff Writers
Beijing (XNA) Jun 08, 2017

China will develop and launch a two-meter-caliber space telescope, which will share the same orbit with the country's future space station, said Yang Liwei, deputy director of China Manned Space Agency.

The telescope will dock with the co-orbital space station for refueling as well as maintenance and exchange, Yang revealed at the ongoing Global Space Exploration Conference (GLEX 2017) which began Tuesday in Beijing.

Used for large-scale, multi-color imaging and seamless spectroscope surveying, the space telescope is expected to provide observation data for astronomical and physical studies, said Yang, who is also China's first astronaut.

China will launch the core module of the country's manned space station in 2019 as the first step in completing the country's first space outpost.

The station, expected to begin operation by 2022 and orbit for at least 10 years, will be composed of three modules: core module, experiment module I and experiment module II. Each module will weigh more than 20 tonnes and together the three will be structured in a T shape, with the core module in the middle and an experiment module on each side.

The three modules will be equipped with advanced multipurpose facilities for scientific experiments in many fields, including space life science and biotechnology, microgravity fluid physics and combustion, and material science in space, Yang said.

With the International Space Station set to retire in 2024, the Chinese space station will offer a promising alternative, and China will be the only country with a permanent space station.

The station, orbiting 340 to 450 kilometers above the Earth's surface, will usually accommodate three crew members, with a maximum crew capacity up to six during rotations, Yang said.

The crew will be transported to the station by Shenzhou spaceships, and airtight cargo, large extravehicular payloads and experiment platform will be delivered by cargo ships, he said.

China sent its first cargo spacecraft Tianzhou-1 into space in April. Cargo ships will be sent to help maintain a space station.

Source: Xinhua News Agency

http://www.spacedaily.com/reports/Chinas_space_station_to_help_maintain_co_orbital_telescope_999.html

SPACE DAILY
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Reusable craft are in CASIC's plans

by Staff Writers
Beijing (XNA) Jun 08, 2017

China Aerospace Science and Industry Corp, one of the nation's major space contractors, said on Tuesday it is developing reusable spacecraft capable of taking off and landing at airports.

Liu Shiquan, deputy general manager of CASIC, told the 2017 Global Space Exploration Conference, which opened on Tuesday in Beijing, that the cutting-edge spacecraft's key technologies and major parts - such as its engine - have passed ground tests and the program is proceeding smoothly.

Yang Yuguang, a spaceflight expert and member of the International Astronautical Federation's Space Transportation Committee, said reusable spacecraft will have a wide range of applications, such as providing space tours for ordinary people, transporting astronauts, resupplying space stations as well as placing satellites into orbit.

Liu said the company also is designing a cargo re-entry spacecraft that will be used to transport cargo from a space station or space laboratory back to Earth, adding that the spacecraft will make its first flight in 2019.

In addition, CASIC's new-generation Kuaizhou 11 solid-fuel carrier rocket will make its maiden flight before the end of the year, expanding the contractor's share in the domestic and international commercial space market, Liu said.

In China, the term commercial space mission generally refers to one paid for by an entity other than a Chinese government or military department. Despite the country's long history of space exploration, commercial space missions are a new idea and are sought-after by State-owned space contractors eager to seize lucrative opportunities beside government-assigned tasks.

CASIC began to develop the Kuaizhou-series solid-fuel rockets in 2009, intending to form a low-cost, quick-response rocket family for the commercial launch market. It has launched three Kuaizhou rockets so far.

The company previously said the Kuaizhou 11 will have a liftoff weight of 78 metric tons and will be able to put a 1-ton payload into a sun-synchronous orbit at an altitude of 700 km, or a 1.5-ton payload into a low Earth orbit at an altitude of 400 km.

Also on Tuesday, Gao Hongwei, chairman of CASIC, said at the Global Innovation Summit 2017 in Beijing that his company places great importance on innovation and information technology. He said CASIC has formed the largest online cloud-based platform in the world by the number of registered enterprises and the website has been extensively assisting with the research and development and production for CASIC and other companies.

Source: Xinhua News Agency

http://www.spacedaily.com/reports/Reusable_craft_are_in_CASICs_plans_999.html

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SPACE DAILY
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China's 1st astronaut details projects for orbital station, manned lunar visit

by Staff Writers
Beijing (XNA) Jun 08, 2017

China will launch at least four manned missions with Shenzhou spacecraft before the end of 2022 to build a space station, according to a senior space official.

Yang Liwei, deputy head of the China Manned Space Agency and the first Chinese astronaut in space, said on the sidelines of the 2017 Global Space Exploration Conference that the nation will start building its first manned space station in 2019. The first step will be the launch of a Long March 5B heavy-lift rocket to put the station's core module into orbit, he said.

Yang said in the Shenzhou XII and XIII missions, scheduled for 2020, Chinese astronauts will go to space to assemble the station and at least two such missions will follow in 2021 and 2022. He added that Shenzhou XII and XIII will each remain in space for three to six months.

The space station will have three parts-a core module attached to two space labs, each weighing about 20 metric tons-and will operate for at least 10 years, according to the space agency.

In a letter of congratulations to the conference, which opened on Tuesday in Beijing, President Xi Jinping said China is willing to enhance cooperation with the international community in peaceful space exploration and development.

Xi hailed the achievements of 20th-century space exploration and said progress in space science and technology will benefit people around the world.

China is the third country to independently achieve manned spaceflight, following the former Soviet Union and the United States.

It has launched six spacecraft carrying 11 astronauts since 2003, when Yang pioneered the way in Shenzhou V.

Yang said the nation will start recruiting and training its third generation of astronauts this year, and the candidates' field will be expanded to not only pilots from the PLA Air Force but also to engineers from the space industry. The 21 original Chinese astronauts all were Air Force pilots.

China is conducting preliminary research on manned exploration of the moon, Yang said, adding that he's never stopped training and would be thrilled to get an opportunity to land on the moon.

In an interview with China Youth Daily, Yang said the third generation of Chinese astronauts will have 10 to 12 people, two of them women.

He told the newspaper the crew of Shenzhou XII will be selected from the current 21 astronauts because the new recruits will still be training.

In another development, the China National Space Administration announced on Tuesday that the country's Chang'e 4 unmanned lunar probe will carry four scientific devices-from the Netherlands, Germany, Sweden and Saudi Arabia-to the lunar surface around 2018 and make the world's first soft-landing on the far side of the moon.

Source: Xinhua News Agency

http://www.spacedaily.com/reports/Chinas_1st_astronaut_details_projects_for_orbital_station_manned_lunar_visit_999.html

SPACE DAILY
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China willing to cooperate in peaceful space exploration: Xi

by Staff Writers
Beijing (XNA) Jun 06, 2017

Chinese President Xi Jinping has sent a letter of congratulations to the Global Space Exploration Conference, which opened Tuesday in Beijing.

In his letter, Xi said China is willing to enhance cooperation with the international community in peaceful space exploration and development.

Hailing the achievements made in space exploration in the 20th century, Xi said progress in space science and technology will benefit people around the world in the future.

China has attached great importance to space exploration as well as innovation in space science and technology, the president said, noting that the country wants to use these achievements to create a better future for mankind.

He also expressed hope that the ongoing conference will promote space science development and international exchanges and cooperation.

Source: Xinhua News Agency

http://www.spacedaily.com/reports/China_willing_to_cooperate_in_peaceful_space_exploration_Xi_999.html

China-Space Exploration Conference/Xi

China willing to cooperate in peaceful space exploration: President Xi

Chinese President Xi Jinping has sent a letter of congratulations to the Global Space Exploration Conference (GLEX 2017), which opened in Beijing on Tuesday.

In his letter, Xi said China is willing to enhance cooperation with the international community in peaceful space exploration and development.

Hailing the achievements made in space exploration during the 20th century, Xi said future progress in space science and technology will bring benefits to people around the world.

China has attached great importance to space exploration as well as innovation in space science and technology, the president said, noting that the country wants to use these achievements to create a better future for all of mankind.

He also expressed hope that the ongoing conference will promote space science development and help international exchanges and cooperation.

Guests at the conference also expressed their willingness to achieve more international cooperation.

"As the European Space Agency, we have already some good cooperation with China, especially in science. So we have some experiments in microgravity, we are looking forward to a mission which is called SMILE (Solar wind Magnetosphere Ionosphere Link Explorer), which is investigating the magnetosphere of the Earth and influence of solar flares. So there are a lot of opportunities for cooperation," said Jan Woerner, Director General of the European Space Agency.

Liu Jizhong, director of Lunar Exploration and Space Engineering Center of the Chinese Society of Astronautics, said that progress has already been made in international space cooperation and referred in particular to China's lunar exploration project, Chang'e 4.

"China sent out invitations with intent to enhance international cooperation as soon as it started its studies on the Chang'e-4 project and received many responses from other countries. Over a dozen countries have sent us more than 20 cooperation proposals. So far, it has been confirmed that the Chang'e-4 project will include projects from Netherlands, Germany, Saudi Arabia and Sweden," said Liu.

The three-day GLEX 2017 conference, which attracted nearly a thousand space theorists, scientists and engineers, will cover an array of topics including the purpose and infrastructure of space exploration, space laboratories and space stations, exploration of the Moon, Mars and near-Earth asteroids, and international cooperation on all these fronts. Discussions will center on the challenges facing space exploration, possible solutions and future developments.

http://www.cctvplus.com/news/20170607/8052455.shtml#!language=1

DLR

Worldwide aerospace network

The Global Space Exploration Conference 2017 in Beijing

The second Global Space Exploration Conference (GLEX) took place in Beijing from 6 to 8 June 2017. There, the chairman of the German Aerospace Center (DLR), Prof. Pascale Ehrenfreund, discussed the new challenges of space research together with international decision-makers from science, industry and politics. The GLEX conference was organized by the Chinese Society of Astronautics (CSA) and the International Astronautical Federation (IAF). The conference focused on current findings, future

challenges and technologies of today's space research. In addition, the partners exchanged views on where investments can promote the research.

An example of already successful cooperation is the Chinese Chang'e 4 mission: DLR Space Management supports the University of Kiel, whose scientists developed the Lunar Lander Neutrons & Dosimetry Experiment (LND) experiment. The 2018 mission is expected to land a landing craft on the side of the moon, which is remote from the Earth. The DLR Chairman of the Board of DLR received an award for the participation in the challenging Chang'e 4 mission for DLR Space Management and the University of Kiel.

In addition, the National Space Administration of China (CNSA) exchanged with DLR for forthcoming Chinese exploration missions to the Moon, Mars or more distant asteroids. For example, the CNSA is planning a Mars mission in 2030, where a robot is to collect red planet specimens and return to earth, and an asteroid mission in 2025. Representatives discussed the China Manned Space Agency (CMSA) Of DLR on the cooperation between DLR and CMSA within the framework of the Chinese space station CSS. Further talks were held with the National Space Science Center and the German Embassy in Beijing.

http://www.dlr.de/dlr/desktopdefault.aspx/tabid-10857/1527_read-22758/#/gallery/27208

GLOBAL TIMES
DISCOVER CHINA, DISCOVER THE WORLD

China is making preparations for manned lunar landing

Source:Xinhua Published: 2017/6/7 8:32:35

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Yang Liwei, China's first astronaut and deputy director of China's manned space program office, makes a speech during the 2017 Global Space Exploration Conference in Beijing, capital of China, June 6, 2017. The conference opened Tuesday in Beijing. (Xinhua/Chen Yehua)

China is making preliminary preparations for a manned lunar landing mission, said Yang Liwei, deputy director general of China Manned Space Agency, in Beijing on Tuesday.

It will not take long for the project to get official approval and funding, Yang said during a group interview at the Global Space Exploration Conference (GLEX 2017).

When asked whether he has any plan to step onto the Moon, Yang, China's first astronaut, showed great excitement. "If I am given the opportunity, no problem!" he said.

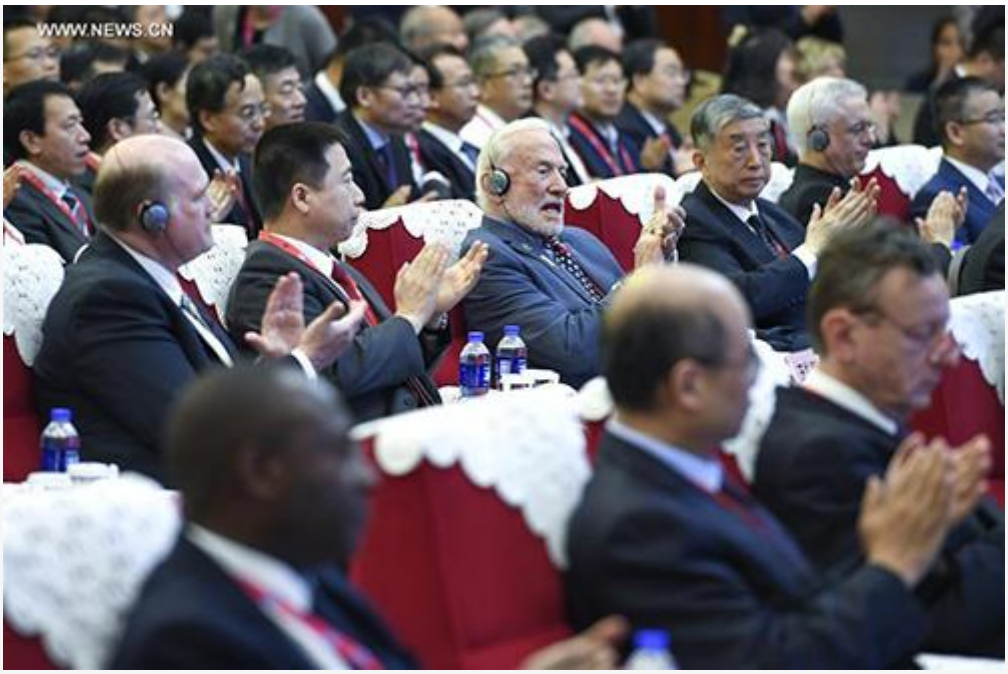
Wu Yansheng, president of China Aerospace Science and Technology Corporation (CASC), also said that China is working on a manned lunar landing plan.

The mission will consist of a manned spaceship, a propulsion vehicle and a lunar lander. The manned spaceship and the lunar lander will be sent into circumlunar orbit separately, according to Wu.

Chinese astronaut Wang Yaping (C) talks with children during an event on the 2017 Global Space Exploration Conference in Beijing, capital of China, June 6, 2017. The conference opened Tuesday in Beijing. (Xinhua/Zhang Ling)

Johann-Dietrich Woerner, Director General of the European Space Agency, makes a keynote speech during the 2017 Global Space Exploration Conference in Beijing, capital of China, June 6, 2017. The conference opened Tuesday in Beijing. (Xinhua/Chen Yehua)

American former astronaut Buzz Aldrin (1st R, front) talks with attendants during the 2017 Global Space Exploration Conference in Beijing, capital of China, June 6, 2017. The conference opened Tuesday in Beijing. (Xinhua/Zhang Ling)



Yang Liwei (2nd L, second row), China's first astronaut and deputy director of China's manned space program office, and American former astronaut Buzz Aldrin (3rd L, second row) attend the opening ceremony of the 2017 Global Space Exploration Conference in Beijing, capital of China, June 6, 2017. The conference opened Tuesday in Beijing. (Xinhua/Zhang Ling)

http://www.globaltimes.cn/content/1050395.shtml

中新网 Ecns.cn

Moon potatoes? China plans to grow crops on lunar surface in 2018

2017-06-14 09:51Global Times*Editor: Li Yan***ECNS App Download**

China's space authorities are planning to send potato seeds to the moon to see how they do on the lunar surface, media reported Monday.

A 3-kilogram mini-ecosystem, developed by research teams led by Chongqing University, will be transported to the lunar surface by the Chang'e 4 scheduled to launch in 2018, authorities announced at this year's Global Space Exploration Conference.

In this first of its kind experiment for China, the 18-centimeter-tall cylinder will carry potato seeds and silkworm eggs to be incubated.

The theory is that silkworms will hatch and create carbon dioxide, while the potato plants will generate oxygen, explained Zhang Yuanxun, designer of the ecosystem model.

Xie Gengxin, chief designer on the project, said their mission is to prepare for future moon landings and possible human inhabitants.

"We will livestream the development of plants and insects on lunar surface to the whole world," Xie added.

http://www.ecns.cn/2017/06-14/261397.shtml

Ecns.cn

Moon or Mars? Heated discussion on human's next stop

2017-06-10 10:45Xinhua*Editor: Huang Mingrui*ECNS App Download

Back in 1969, Neil Armstrong, the first person to walk on the moon, uttered his famous words: "That's one small step for (a) man, one giant leap for mankind."

The statement has inspired ever since. More than 500 astronauts have entered space in the nearly five decades that have followed, and over 10 have landed on the moon.

Buzz Aldrin, the second man to set foot on the moon and Armstrong's companion in the Apollo 11 mission, gave a presentation on his ideas for visiting Mars at the Global Space Exploration Conference (GLEX 2017), which concluded on Thursday.

WHAT IS THE NEXT STOP?

Global leaders in space exploration have now set their sights on Mars, including China.

Wu Yanhua, deputy head of the China National Space Administration (CNSA), said that the country has started an unmanned Mars probe project and plans to launch a Mars probe around 2020.

Steve Eisenhart, senior vice president of the Strategic and International Affairs of the Space Foundation of the United States, said that Aldrin has been working on his idea for close to 30 years.

According to Aldrin's plan, humans may be able to land on Mars before 2039 and set up a station there. Eisenhart and Aldrin, while not representing the U.S. government or the National Aeronautics and Space Administration (NASA), agreed that Mars is a good destination for space exploration.

However, Jan Woerner, director-general of European Space Agency (ESA), said that the moon is a good stepping-stone before going to Mars.

"If we have a goal which is too far away, there might be roads in between those inspirations," said Woerner, adding that the moon is close enough to test and develop needed technology. "It's a very good test bed -- then go deeper into our solar system."

Tian Yulong, secretary-general of the CNSA, said that China is now in discussions with the ESA on co-building a "moon village."

Tian said that a house on the moon could be constructed within a week with materials brought from Earth as well as moon surface materials using 3D printing technology.

Yasuyuki Ito, associate director-general of the Japan Aerospace Exploration Agency, said that his generation was greatly affected by the Apollo program.

"Lunar exploration is our target. At the same time, we've also been discussing a Mars goal," he added.

Pascale Ehrenfreund, chair of the executive board of the German Aerospace Center, said that bringing humans to Mars is very difficult, as is raising funds for space exploration.

"We do things in steps. And the moon is one of the important steps on our way to Mars," she said.

CHINA'S LUNAR EXPLORATION

China's Chang'e lunar program, named after a legendary goddess, includes three phases: orbiting, landing and returning with samples.

Liu Jizhong, director of the China Lunar Exploration and Space Engineering Center of the CNSA, said the Chang'e 5 lunar probe is expected to land in the Mons Rumker region and to take samples back to Earth at the end of the year.

The probe landing site, an isolated volcanic formation located on the northwest of the near side of the moon.

http://www.ecns.cn/2017/06-10/260961.shtml

中新网 Ecns.cn

China's future explorations to focus on south pole of Moon

2017-06-08 08:47Global Times*Editor: Li Yan***ECNS App Download**

China on Tuesday revealed the landing location of Chang'e-5 probe on the Moon and the future focus of lunar explorations at the ongoing Global Space Exploration Conference (GLEX 2017) in Beijing.

Liu Jizhong, the director of the lunar exploration project of the China National Space Administration, said at the conference that Chang'e-5 will be launched by CZ-5 carrier rocket at the end of the year and will land at the Mons Rümker on the near side of the Moon to collect rock samples for scientific research, the Xinhua News Agency reported.

Liu said that the follow-up lunar exploration will focus on the south pole of the Moon.

"The hot spot of lunar exploration is the south pole of the Moon based on international consensus. More significant scientific discoveries lie in the permanently shadowed region of the Moon and the water in that region," said Liu.

Liu called on other countries to join hands in the lunar exploration. "The lunar exploration concerns all people's life and happiness. All countries should participate in the course and utilize the lunar space in a peaceful and lawful way," said Liu.

The conference, which ends Thursday, was jointly held by the International Astronautical Federation (IAF) and the Chinese Society of Astronautics, and follows the GLEX 2012 conference held in Washington DC, Xinhua reported.

International space engineers and delegates from leading aerospace companies including Boeing, Lockheed Martin and Airbus attended the conference.

http://www.ecns.cn/2017/06-08/260575.shtml

Potatoes in space: Chinese scientists to grow crops on surface of the moon

INQUIRER.net / 08:20 PM June 14, 2017

Image: INQUIRER.net

Chinese space program authorities have revealed plans to send potatoes to the moon as part of an experiment.

The Global Times, an English-language Chinese daily, reports that a 3-kilogram mini-ecosystem will be transported to the lunar surface via the Chang'e 4 Chinese lunar exploration mission. It is scheduled to launch on 2018, as announced by Chinese space program authorities during this year's Global Space Exploration Conference.

The experiment is the first of its kind for China. An 18-centimeter-tall cylinder will carry potato seeds and silkworm eggs which will be incubated.

The theory is that silkworm eggs hatching will create carbon dioxide, while the potatoes generate oxygen. This will result in a give and take between the organisms as explained by Zhang Yuanxun, designer of the ecosystem model.

Project designer Xie Gengxin stated that this mission is in preparation for future moon landings and possible human occupation.

“We will livestream the development of plants and insects on lunar surface to the whole world,” Xie added.

The Global Space Exploration Conference (GLEX) was held between June 6 to 8 2017 in Beijing, China. It is an event for leaders and decision makers in the science and human exploration community to gather in one place. Here they discussed recent results, current challenges and innovative solutions concerning opportunities for space exploration. **Alfred Bayle/*JB***

http://technology.inquirer.net/64066/potatoes-in-space-chinese-scientists-to-grow-crops-on-surface-of-the-moon

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China unveils space vehicle concept at GLEX 2017

Jun 7, 2017
1012

Space vehicle concept

The CASIC Vice General Manager Liu Shiquan has revealed a concept of space vehicle at recent Global Space Exploration Conference (GLEX 2017) in Beijing.

The new space vehicle as a new generation of the reusable vehicle for transport between space and ground, the aerospace vehicle can execute aerospace launch missions and take off from ground airport horizontally. It features advantages such as low cost, safety, convenience, and maneuverability.

It can be used as a manned vehicle or freight vehicle. As a manned vehicle, it can be used for space travel, astronaut transport, etc. which can provide passengers with comfort space flight experience as a freight vehicle. it can be used to launch various satellites, replenish goods in space station, and conduct space emergency rescue, etc. it also can provide aerospace launch service in time for user as required with low cost.

The two-stage to orbit fully reusable aerospace vehicle takes off horizontally from the airport, accelerates to climb up in the atmosphere, and conducts separation between first stage and the second stage at the attitude of 30 to 40km. After that, the first stage returns to land horizontally, while the second stage continues canting up to enter the near-earth orbit after transport mission is completed. The second stage will conduct reentry for return, and then land horizontally. Main technical specifications of the vehicle are as follows

- Take off mass 100-150t
- Payload: It can launch 2t-load to near-earth orbit at the altitude of 200 to 800km
- Reusable capability 100 times

http://defence-blog.com/news/china-unveils-space-vehicle-concept-at-glex-2017.html

China plans to send a manned mission to the moon in the not too distant future

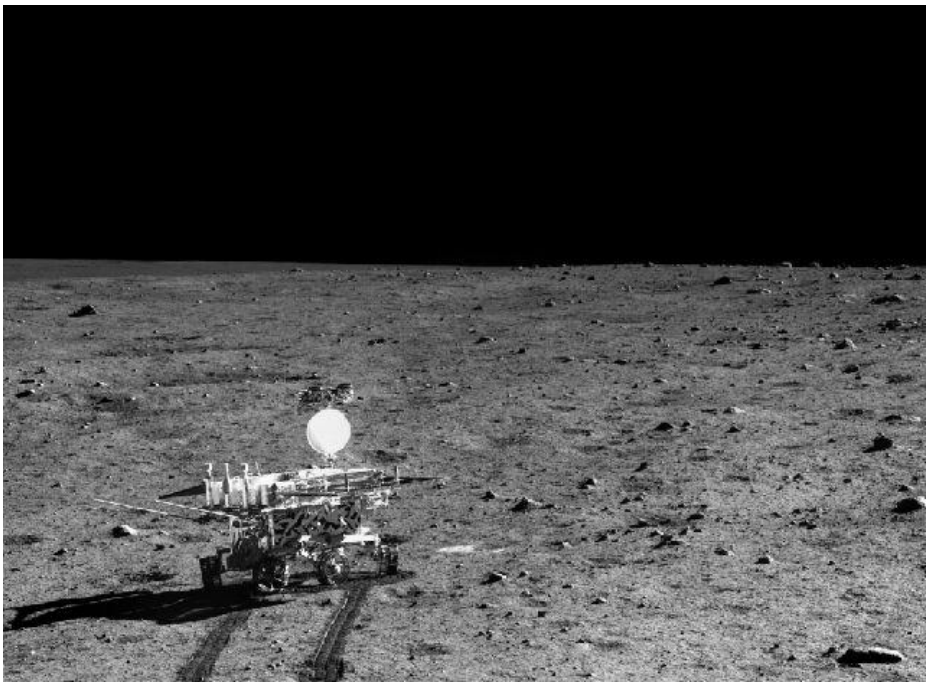
BY SHANGHAIIST IN NEWS ON JUN 8, 2017 3:35 PM

At the 2017 Global Space Exploration Conference (GLEX) in Beijing on Tuesday, China revealed some big plans for the future of space exploration, including the landing site for the Chang'e 5 probe and plans to expand international cooperation in space. Not to mention reports of someday soonish sending a Chinese man/woman to the moon.

Liu Jizhong, the director of China's Lunar Exploration and Space Engineering Center of China National Space Administration (CNSA), announced at the conference that the lunar probe Chang'e 5 will land in the Mons Rumker region, on a volcanic formation located on the near side of the moon.

The probe will bring moon samples back to earth by the end of the year, according to a space official quoted by *Reuters*.

The Chang'e 5 is the latest in a series of lunar probes that have changed the game for China's space exploration program. Liu mentioned that its predecessor, the Chang'e 4, will launch in 2018 and will be the first probe ever to land on the dark side of the moon. The Chang'e 3 launched in 2013 and made the first lunar "soft landing" since 1976, transmitting back some gorgeous true color photos of the moon.



Liu spoke to the conference about CNSA's long term goals.

"China is planning and designing its future lunar exploration program. We will focus on the South Pole region of the moon. The research on water and the permanent shadow area of the lunar south pole region will bring greater scientific discoveries," he said, according to *Xinhua*.

While space exploration has been a source of competition between nations in the past, Liu made it clear that China wants to make it an international effort. He recognized the four countries (the Netherlands, Germany, Sweden and Saudi Arabia) who collaborated with China on the Chang'e 4.

Liu also wants to see Chinese involvement on a host of other projects, like the construction of an international moon village, a project proposed by the European Space Agency (ESA).

But most intriguingly, state media cites a senior space official who says that China will send a manned mission to the moon in the coming years. According to Reuters, the preparations for this mission are still in the early stages, but Yang Liwei, the first Chinese man to go to space, says that approval and funding will not take long.

China spends around $2 billion per year on its space program, but if the 2017 GLEX conference is any indicator, China's involvement in space will only grow in the future.

By Caroline Roy

http://shanghaiist.com/2017/06/08/moon.php

hindustantimes

China willing to cooperate with India in space, says top Chinese scientist

China is willing to cooperate with India in space programmes provided the two governments decide the scope of the collaboration, a top Chinese aerospace scientist has said.

Sutirtho Patranobis
Hindustan Times, Beijing

File photo of the Long March 3B rocket docked at the launch pad at Xichang Satellite Launch Center in Liangshan, Sichuan province of China, in December 2013.(Reuters)

China is willing to cooperate with India in space programmes but this depends on the governments deciding the extent of collaboration, a top Chinese aerospace scientist has said, playing down the so-called “space race” between the two countries.

“We are very willing to cooperate with India in the field of aerospace,” said Sun Weigang, chief engineer of China Aerospace Science and Technology Corporation (CASC).

Sun spoke to Hindustan Times at the Global Space Exploration Conference (GLEX) 2017 in Beijing after delivering a keynote talk on “The Engineering Plan of China’s Lunar Exploration Program Phase III”.

India, despite its standing as an emerging player in the sector, was the notable absentee at the three-day conference that brought together space engineers, scientists, entrepreneurs, educators, agency representatives and policy-makers from dozens of countries.

Several international delegates expressed surprise at India not being represented at the meet.

Sun didn't comment on India's absence but said top Indian and Chinese officials were in contact over possible collaborative projects. "The directors of space agencies from both sides have met and have discussed about cooperation and collaboration," he said.

He said both countries should invest in space programmes. If the two governments were willing, then the possible areas of cooperation is very wide, he added.

It emerged last year that India and China were cooperating on the proposed "BRICS Constellation of satellites".

Media reports on a space summit in New Delhi last year quoted Wu Yan Hua, deputy administrator of the Chinese National Space Agency (CNSA) as saying that China was "in dialogue with India on the BRICS Constellation for disaster risk reduction".

Sun was among the top speakers at GLEX, co-organised by the International Astronautical Federation and the Chinese Society of Astronautics.

Despite India's competitive space programme, including its successful Mars orbiter project, China is considered to have a more advanced programme with its six manned space missions to date.

Valanathan Munsami, chief executive officer of the South African National Space Agency, said it was surprising that India wasn't present at the conference.

Speaking of collaborating with the Indian Space Research Organisation, Munsami said talks were ongoing about launching a joint science mission by South Africa, Brazil and India. "We would bring in the satellite bus, Brazil would bring in the instruments and India would launch it," he said.

http://www.hindustantimes.com/world-news/china-willing-to-cooperate-with-india-in-space-says-top-chinese-scientist/story-uP6L3jk6DyUlPMSktEllvN.html

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Will it explore the cosmos to the Global Space Agency?

Lei Fanpei, president of the Chinese Society of Astronautics (CSA) and Jean-Yves Le Gall, president of the International Astronautical Federation (IAF), welcomed the over 1000 delegates from 51 countries.

This call by China to co-operation was the main focus of the leaders present, who analyzed the idea of creating a global space agency.

Roberto Battison, the president of the Italian Space Agency (ASI), praised this dream of setting up the global space agency and its great impact on

mankind, adding that a realization could take the form of a joint final effort channeled on sending People on Mars.

However, Pascale Ehrenfreund, Chairman of the German Aerospace Center (DLR), defended the role that national space agencies have in promoting their own country's businesses.

At the end of the day, Jan Woerner, general manager of European Space Agengy (ESA), expressed his desire to invite the global space community to a cooperative concept of the Selenarian Village.

http://cosmicnews.ro/va-duce-explorarea-cosmosului-catre-agentia-spatiala-globala/

China Says It Is Preparing For A Manned Lunar Landing

By Jonathan O'Callaghan

09/06/2017, 12:44

China is apparently planning to land humans on the Moon, according to a couple of comments made this week at the Global Space Exploration Conference (GLEX 2017) in Beijing.

In a group interview, Yang Liwei, deputy director general of China Manned Space Agency and China's first astronaut in 2003, said they were making "preliminary preparations for a manned lunar landing," reported Xinhua.
Like the manned Apollo missions, this spacecraft would be launched in different parts, namely the manned capsule and the lunar lander. Xinhua claims these would then rendezvous in lunar orbit.

The manned lunar landing plan was also confirmed by Wu Yansheng, president of China Aerospace Science and Technology Corporation (CASC). A statement from China last year suggested they were hoping to do this by 2036.
Other details are few and far between at the moment. But the country has been making great strides in space, both unmanned and manned exploration.

At the same conference, China said they had four new crewed missions planned over the next five years. The country is also planning to start building its first permanent space station in 2019, the Chinese Space Station (CSS). It currently has an experimental space laboratory called Tiangong-2 in orbit.
This year, they will also select a third group of astronauts, comprising 10 to 12 people, two of which will be women (it's unclear if these have already been selected).

These astronauts will travel to the CSS for three to six months to perform scientific research. They will have more of a science background than previous Chinese astronauts, known as taikonauts.

China has sent 11 taikonauts to space so far, with the most recent coming last October on their Shenzhou-11 mission.
And all of this seems to be leading towards China's ultimate goal of landing humans on the Moon. It's a slightly different approach than the US took in the 1960s, however. Back then, the US performed back-to-back missions in Earth orbit before heading to the lunar surface; they did not build their first space station, Skylab, until after Apollo 17 in 1972.

China has big plans for the Moon. Aside from manned missions, it already has a telescope that's operational on the surface, and may continue to do so for 30 years, having landed as part of the wider Chang'e-3 mission in 2013. In 2018, it hopes to land a probe on the far side of the Moon, something no one has done before, and it also wants to send a mission to return a lunar sample in November this year.
http://www.iflscience.com/space/china-says-it-is-preparing-for-a-manned-lunar-landing/

3NDSCAPE

China ready to launch a lunar mission

CHINA PLANS TO LAUNCH CHANG'E-5 LUNAR MISSION ON NOV. 30

Director of the international cooperation department of China National Space Administration Xu Yansong stated that the third launch of the carrier rocket Long March 5 with the satellite Chang'e-5 will take place in the end of November, approximately on November 30.

Alongside with the United States and Russia, China is the only nation that has landed on the moon's surface.

"The third launch of the carrier rocket Long March 5 with the satellite Chang'e-5 will take place in the end of November, approximately on November 30. These are our plans so far," Xu said on the sidelines of the Global Space Exploration Conference (GLEX) 2017.

As part of its lunar program, China plans the launch of the satellite that would collect the samples of the Moon soil and return to Earth.

"The second launch of Long March-5 carrier rocket is planned for the late June or early July, approximately July 2," Xu said on the sidelines of the Global Space Exploration Conference (GLEX) 2017.

Media reported that the carrier rocket was already transferred to the Wenchang Satellite Launch Center earlier in May in preparation for launching a communications satellite.

http://3ndscape.com/blog/2017/06/07/china-ready-launch-lunar-mission/