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Exchange·Promotion·Development

Newsletter

The winter will be over, and the spring is on its way;
may the mountains and rivers remain the same, and all people be at peace.

Regional Centre for Space Science and Technology Education
in Asia and the Pacific (China)(Affiliated to the United Nations)
联合国附属空间科技教育亚太区域中心(中国)

Algeria Argentina Bangladesh Bolivia Brazil China Indonesia Pakistan Peru Venezuela

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The Galaxy is Shining, the Future is Promising

"We are all running hard, we are all dreamcatchers." Looking back at 2021, the world's space industry continues to surpass the past and is turning dreams into reality with every solid footprint.

On December 30, 2021, the successful launch of the Communication Technology Test Satellite 9 marked the perfect conclusion of space launch mission of China Aerospace in 2021. According to statistics, a total of one hundred and forty-four (144) space launches were carried out worldwide in 2021, breaking the record of one hundred and thirty-nine (139) launches set in 1967.

At 18:51 on October 14, 2021, APSCO Student Small Satellite-1 (APSCO SSS-1), developed by eight (8) countries with Beihang University as the lead institution, was successfully launched from Taiyuan Satellite Launch Center in Shanxi, China. Mr. Huang Hai, Professor in charge of Micro-satellite Technology direction of the Centre, is the Chief Engineer of APSCO SSS Project. Eight hundred and twelve (812) seconds after launch, the satellite separated from the carrier rocket in triumph, entered the preset orbit, and then shifted to the autonomous operation phase with various equipment on board successively turned on. The successful launch of this small satellite is the result of the cooperation of APSCO Member States and an important achievement of the Centre's international cooperation, talent training and scientific innovation this year.

The galaxy is vast and the exploration is endless. Even though the shadow of the COVID-19 has not dissipated worldwide, the entire staff of the Centre have always maintained an optimistic and upward attitude, carried out work and implemented care online and offline, and did their best to enable participants around the world to successfully keep their learning and scientific research on-going.

This semester, the Centre enrolled thirty-five (35) new participants from thirteen (13) countries, including Algeria, Bangladesh, Bolivia, Jordan, Nigeria, Pakistan, etc. In addition, seven (7) participants graduated from the Centre and officially devoted themselves to the business of space science and technology.

The Centre still adheres to the participant-centered policy, overcomes various difficulties, and makes every effort to ensure the participants' study and life. Online class meetings are held regularly, allowing teachers and participants to exchange recent news and important matters via the internet. In addition, all the participants also give feedback on learning progress and research to their supervisors and the Centre in the form of "monthly report". For participants who have been on campus since the epidemic, the Centre regularly conducts care activities and goes to dormitories to distribute free epidemic prevention and daily necessities such as masks, alcohol wipes, hand sanitizers, etc. In order to further protect the health and safety of participants, the Centre encourages participants to get the COVID-19 vaccination actively. Currently, all participants on campus have been vaccinated against COVID-19. It is believed that with the increasing vaccination rate, the global epidemic situation will continue to improve.

No matter where we are, the galaxy is always brilliant above us. Now, a star belonging to us is shining in the sky.

Special Focus

——APSCO Student Small Satellite-1

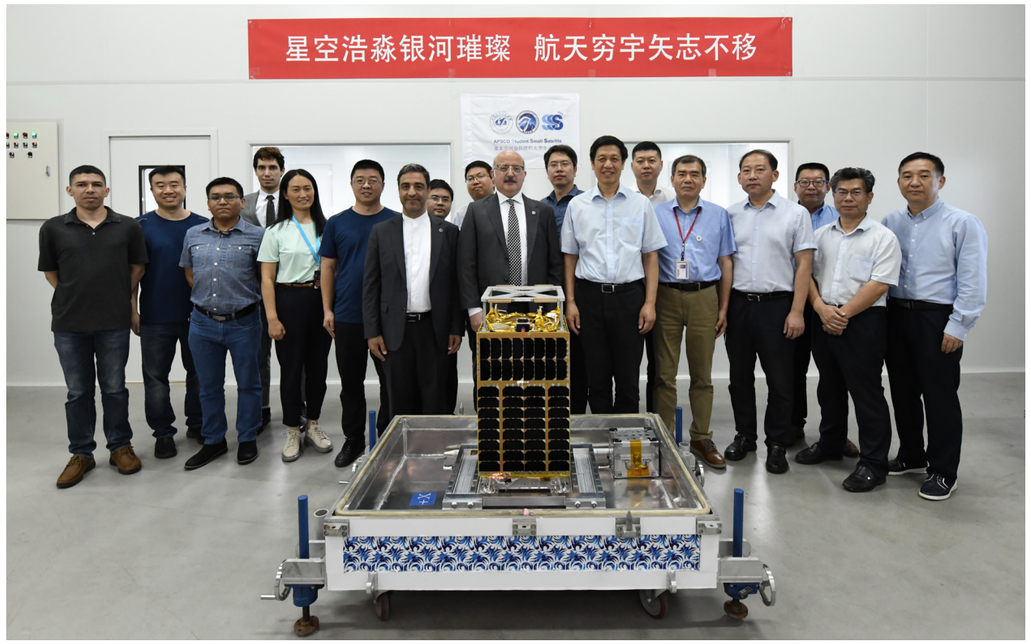
01

“APSCO Student Small Satellite-1 (APSCO SSS-1) has been in orbit for several months and is in good operating condition with normal data. “It is not only a satellite,” said Mr. Huang Hai, Chief Designer of APSCO SSS-1 and Professor in charge of the Micro-satellite Technology direction of the Centre, “but also serves as a link for cooperation in the field of space technology in the Asia-Pacific region. Its successful launch is the result of the collaborative efforts of APSCO Member States, and reflects the Centre’s commitment to international education and talent training in space technology.”

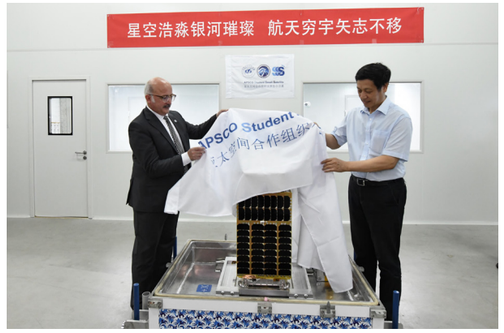
APSCO SSS Ready to Launch

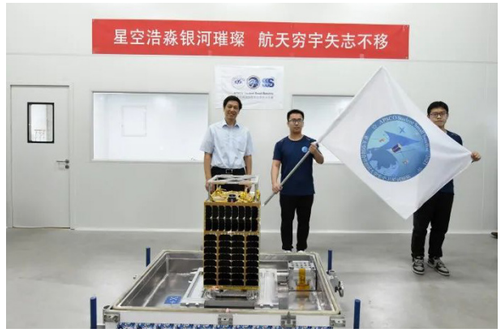
On September 16, the launching ceremony of APSCO Student Small Satellite (SSS) was held in Shahe Campus of Beihang University.

Prof. Xu Huibin, President of Beihang University, Prof. Wang Rongqiao, President Assistant of Beihang University, Dr. Ferhat, Deputy Secretary-General of APSCO, Dr. Ebrahimi, Director General of Department of Education and Training and Database Management of APSCO, leading groups from School of Astronautics, International School, China Academy of Space Technology, MinoSpace and other related organizations, with representatives of students from the Centre attended the ceremony.

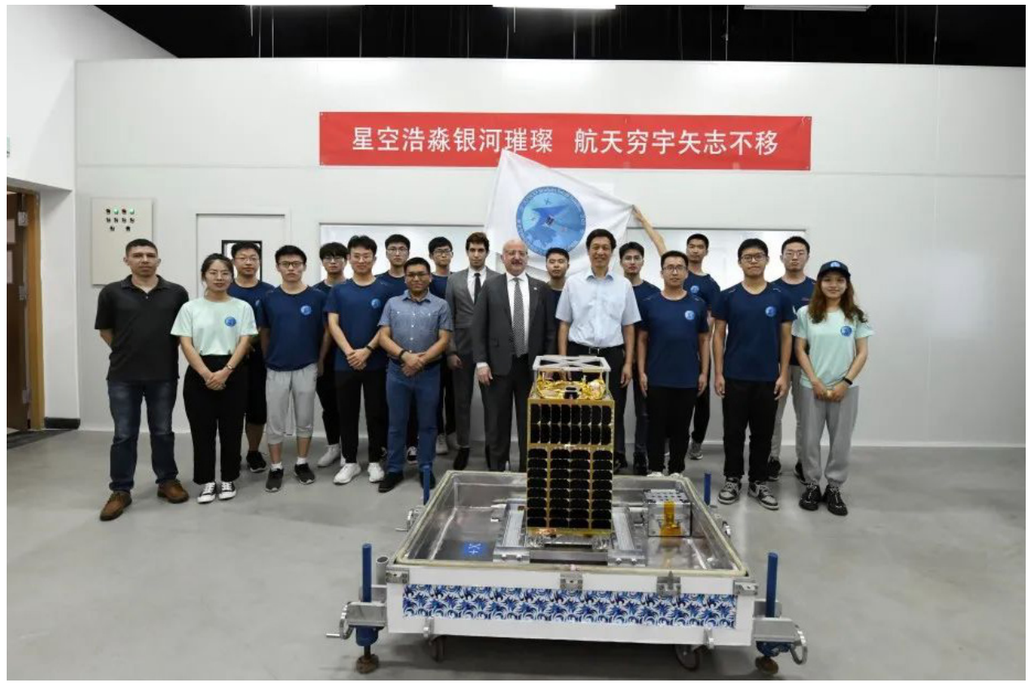


President Xu Huibin and Dr. Ferhat listened to the introduction of the development process of APSCO SSS by the student leader in the Small Satellite Laboratory. President Xu highly praised the efforts of the teachers and students involved in the project. Later, APSCO SSS unveiling ceremony was held. President Xu presented the flag to the student leader and took photos with the teachers and students of the project.





Before the ceremony, Professor Huang Hai, Chief Engineer of the Project, reported the progress of SSS-1 project on behalf of APSCO SSS Project team members. Mr. Zhao Xurui, student representative of School of Astronautics, explained the key progress and international cooperation in APSCO SSS combining his own experience. Mr. Amir Hossein Alikhah Mishamand, a PhD student from the Centre, presented the scientific and technological achievements of APSCO SSS project in combination with his own research direction as a representative of the international students.



Dr. Ferhat, Deputy Secretary-General of APSCO, stressed in his speech that APSCO SSS project was an important cooperation for international space exchanges among university students. He fully affirmed Beihang University's active participation and contribution to this project, and hoped that APSCO and Beihang University could continue to expand cooperation areas and forms in the future, promoting the establishment of the more profound cooperation.

APSCO SSS Project is an international cooperation project initiated by APSCO with the participation of eight (8) Asia-Pacific countries, including China, Pakistan, Turkey, Peru, etc. China is the leading country of the project, while Beihang University is appointed as the leading university for implementing the project. A number of participants from the Centre have participated in the project and played an active role.

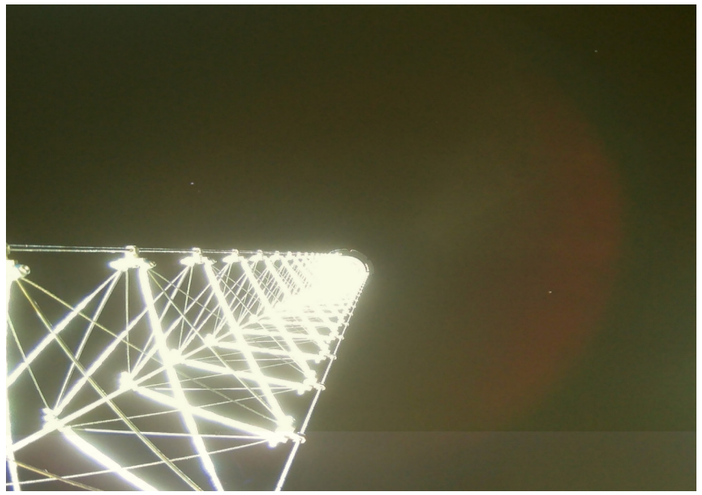
Three (3) satellites are designed and developed under this project: one (1) micro-satellite named SSS-1, two (2) CubeSats named SSS-2A and SSS-2B. At present, the main test of the satellite has been completed, and it is scheduled to be launched in mid-October 2021, followed by in-orbit verification.

APSCO SSS-1 Successfully Launched

At 18:51 on October 14, 2021, APSCO Student Small Satellite-1 (APSCO SSS-1) was successfully launched by piggy-backing a CZ-2D rocket from Taiyuan Satellite Launch Center in Shanxi, China. After 812 seconds, the satellite separated from the carrier rocket in triumph and entered the preset orbit. At 20:24, the ground station successfully received the telemetry signal within the first orbital cycle of the satellite, which showed that the satellite was in good condition, the power supply and distribution were normal, the attitude was stable, and the UV antenna was deployed smoothly. At 6:29 on October 15, the ground station monitored the telemetry signal from the fifth orbital cycle and the condition remained normal, indicating that the satellite had reached a basic success status.

At 16:41 on 16th October, the ground station controlled the satellite to carry out the mission of the remote sensing camera for Earth observation and ADS-B payload. The telemetry data showed that the payloads were working properly, and the data was well transferred to the solid-state storage of SSS-1. At 18:21, the ground station controlled the satellite to deploy the coilable mast. The telemetry data showed that the deploying process was going well, the coilable mast deployed to the predetermined length (two meters) after about thirty (30) seconds, while the space camera turned on normally and recorded the deploying process. At 18:24, OBDH distinguished the full deployment of the coilable mast. At 6:17 on October 17, the images taken by space camera were transmitted to the ground station via S-digital transmitter, which marked the complete success of this satellite mission!

A group photo at Taiyuan Satellite Launch Center



The full deployment of the coilable mast

APSCO SSS-1 is China's first micro-satellite jointly developed by university students of domestic and abroad, which is also the main satellite of the APSCO SSS Project led by Beihang University. It weighs 36kg with dimension of 350 × 350 × 700mm^3, operating in a 517km sun-synchronic orbit. The successful development of APSCO SSS-1 filled the gap of international cooperation in the development of small satellites by Chinese universities.

In the future, the Member States will build corresponding ground stations to receive, demodulate and decode satellite signals in accordance with the communication system and satellite-to-ground agreement of the APSCO SSS Project, and use the unified TCP protocol to transmit the satellite telemetry data and load data to the server of Ground Station Management System for APSCO SSS Project in Beihang University via the internet. With the assistance of Beihang University, the ground stations of various countries will join the existing satellite ground stations network, so as to build a university ground station measurement and control network, realize data sharing, and maximize the duration of satellite measurement and control. Ground networking and interconnection will also continue to serve education and training.

Micro-satellite Mission Control Center

Serving training and education is also one of the important features of APSCO SSS Project. In 2014, the UN Centre in China established the international graduate programme of Micro-satellite Technology. So far, it has trained seventy-eight (78) international participants from thirteen (13) countries. Most participants have become the technical experts or industry director of small satellite related departments in their countries.

Words from Participants in APSCO SSS Project

Since the launch of the APSCO SSS Project, a number of students in the field of Micro-satellite Technology have actively participated in the project. On the occasion of the successful launch of APSCO SSS-1, some of the participants shared their feelings with us.

Zeenat Rajar

My name is Zeenat Rajar and I am from Pakistan. In my primary school, I participated in a science exhibition for the first time and that was the start of my inclination towards science and space where my vision expanded about how the life on earth is dependent on the space resources such as natural and artificial satellites. After completing my undergraduate degree in Telecommunications Engineering, I joined Pakistan Space and Upper Atmosphere Research Commission (SUPARCO) and at present I am working as operations and control engineer for a satellite ground control station. Recently, I have completed my Master's study in Aerospace Science and Technology at Beihang University. My study tenure was from September 2019 to June 2021. I had the unique opportunity to study and analyze Electric Power Subsystem (EPS) of SSS-1, a microsatellite developed by Beihang University and APSCO Member States team members. My focus was the solar array used to power SSS-1 onboard equipment. This work not only fulfilled my desire to explore space technology by working on a satellite subsystem but helped me to achieve my study as well professional goals. I was able to simulate the in-orbit behavior of solar array and completed my Master's thesis with a conference paper publication. I now feel more confident at my work place as this opportunity has nurtured me not only in terms of knowledge but also as a person by working in team. The rare experience and the knowledge that I gained by working on SSS-1 project has opened new perspectives for my future career as well as study goals by providing a boost to my passion for space education.

Honny Uscategui Parra

All this stage of academic training, as well as the institutional cooperation relationships that were established, gave us very important tools for the consolidation of space projects similar to the SSS that will contribute to the solution of the problems in our countries through the development and application of Space Technology. My sincere words of congratulations on the success of the APSCO SSS Project.

Muhammad Asfandyar

In 2019, I got a great opportunity to do a Masters in Micro satellite engineering from Beihang University. Beihang was chosen as lead for the SSS-1 satellite project, so I got a tremendous opportunity to work on this project. After completing my course work, I opted to work on the detailed Energy balance analysis of the SSS-1 satellite as my Masters thesis. I am very glad and fortunate that I became part of this team which worked so hard on materializing and completing this project.

Meeting on In-orbit Operation of APSCO SSS-1 Successfully Held

APSCO Student Small Satellite-1 is the first micro-satellite mainly developed and led by Beihang University. It was launched at 18:51 on October 14, 2021, by piggy-backing a CZ-2D rocket from Taiyuan Satellite Launch Center in Shanxi, China. After 812 seconds, the satellite separated from the carrier rocket in triumph, entered the preset orbit, and then shifted to the autonomous operation phase with various equipment on board successively turned on.

On the morning of October 26, 2021, Mr. Tao Zhi, Vice President of Beihang University, came to Micro-satellite Mission Control Center located in the Centre and made a detailed understanding of the in-orbit operation status of APSCO SSS-1. He viewed satellite telemetry data played back on the large screen, watched the corresponding images of the successful deployment of the coilable mast sent back by satellite core-load, real-time checked the stable satellite attitude, normal power supply and distribution, good condition in monitoring, and listened to the report on relevant situation.

Mr. Weng Jingnong, Executive Director of the Centre, briefly reported on the work of the Centre, as the relying unit of APSCO Education and Training Center (China), carried out through the establishment of degree programme on Micro-satellite Technology for international postgraduates, as well as the construction situation of Micro-satellite Mission Control Center of Beihang University. Mr. Huang Hai, Chief Engineer of APSCO SSS Project and Professor in charge of Micro-satellite Technology direction of the Centre, concisely reviewed the extraordinary history of APSCO SSS Project in the past five years, thanked the university for its strong support, and showed in detail a series of outstanding achievements during the development of the small satellite, including software and hardware design, load test and so on. Associate Professor Mr. Sun Liang, Deputy Chief Engineer of the project, reviewed the desktop joint tuning and assembly test work in the past year, said that the project team had conducted comprehensive and detailed tests on the satellite in the front line, which was an important guarantee for the normal status of the satellite in-orbit. The student representatives explained their personal experiences and said that through the development of this satellite, they had understood the operation mode of international cooperation projects and accumulated a lot of practical engineering experience, which was very beneficial.

Then, Mr. Tao Zhi fully affirmed the encouraging achievements made by the small satellite team in overcoming many difficulties in the past five years. Now, the satellite is working well, which is the best reward for the team's long-term efforts and the excellent embodiment of the truth-seeking and pragmatic spirit of Beihang University. In addition, this small satellite is an important achievement of Beihang' s international cooperation, talent training and scientific innovation in this year. It is hoped that the small satellite team could further summarize the project, strengthen the talent echelon construction, ride on the momentum, improve the professional curriculum and practice system of Micro-satellite Technology, better optimize the international talent training mode, follow the trend, keep a foothold in a new starting point, make the next step of work plan, and make new and greater contributions to cultivate more international talents in aerospace.

Micro-satellite Science Popularization Activity Successfully Held

The successful launch of APSCO Student Small Satellite-1 (APSCO SSS-1) has generated a great response from both inside and outside of Beihang University. At present, the small satellite has been in orbit for nearly a month and is in stable condition with normal monitoring. In order to further develop the nurturing function of the satellite and attract more space work enthusiasts and reserve talents, we have joined hands with the APSCO-SSS team to conduct a series of Micro-satellite science popularization activities.

On the afternoon of November 11, 2021, the first science popularization activity took place in Room 511 of the Centre and Micro-satellite Mission Control Center. Mr. Zhao Xurui, Student Chief Engineer of the APSCO-SSS team and PhD student from School of Astronautics, Beihang University, delivered a lecture on Micro-satellite Technology for twenty (20) high school students from Experimental School of Beihang University. During the lecture, Mr. Zhao gradually introduced the students to the knowledge of space and Micro-satellite Technology from three aspects: Astronautical Engineering System, Spacecraft System and Satellite Development Process (Part). Combining the development experience of APSCO SSS-1, he used vivid videos and pictures to demonstrate the whole process of a Micro-satellite from design and assembly to launch and operation.

After the lecture, the students went to Micro-satellite Mission Control Center located in the Centre. Mr. Li Jia, PhD student from the APSCO-SSS team, explained the current location and trajectory of APSCO SSS-1 through the large screen of the Centre, introduced the meaning of various satellite's telemetry data, and showed the corresponding images of the deployment of the coilable mast sent back by the core payload on satellite. The students present were curious about this small satellite operating in sun-synchronous orbit at an altitude of 517 km, and actively exchanged with team representatives on the operating cycle, life span and function of the satellite.

This activity provided a good platform for popularizing the knowledge of Micro-satellite Technology and expanding the influence of APSCO SSS-1. At the same time, it also broadened the horizon of space knowledge of high school students, and the students who participated in the activity said contentedly that they benefited a lot.

Media Reports at Home and Abroad

APSCO Student Small Satellite Project is the most significant international cooperation project of APSCO since its establishment in 2008. The successful development of APSCO SSS-1 has further enhanced China's influence and status as the host country of APSCO and strengthened the cohesion of APSCO Member States.

At 18:51 on October 14, 2021, APSCO SSS-1 was successfully launched from Taiyuan Satellite Launch Center in Shanxi, China, which was widely applauded around the society. It was reported by dozens of national and international media, including Xinhua News Agency and China Daily.

List of Media Reports at Home and Abroad

No.	Time	Agency	Title
1	2021/10/14	BUAA News	APSCO SSS-1 Successfully Launched
2	2021/10/15	Xinhuanet	APSCO SSS-1 Successfully Launched, with Beihang University in Charge of System Design and Development
3	2021/10/19	People	Converging the Wisdom of Beihang Students, APSCO SSS-1 Successfully Launched
4	2021/10/15	China Daily	Converging the Wisdom of Beihang Students, APSCO SSS-1 Successfully Launched
5	2021/10/14	China Youth	APSCO SSS-1 Successfully Launched
6	2021/10/15	Chinese Education Online	APSCO SSS-1 Successfully Launched
7	2021/10/15	China Youth Daily	APSCO SSS-1 Successfully Launched
8	2021/10/15	China	APSCO SSS-1 Successfully Launched
9	2021/10/15	ScienceNet	APSCO SSS-1 Successfully Launched
10	2021/10/15	Beijing News	APSCO SSS-1 Successfully Launched as the First Satellite of the Project
11	2021/10/15	NetEase	APSCO SSS-1 Successfully Launched as the First Satellite of the Project
12	2021/10/15	NetEase	Converging the Wisdom of Beihang Students, APSCO SSS-1 Successfully Launched
13	2021/10/15	The Paper	APSCO SSS-1 Successfully Launched
14	2021/10/15	WORKERCN	APSCO SSS-1 Successfully Launched, with Beihang University in Charge of System Design and Development
15	2021/10/20	BJKSB	APSCO SSS-1 Successfully Launched
16	2021/10/14	QIANLONG	APSCO SSS-1 Successfully Launched
17	2021/10/15	CHINA	APSCO SSS-1 Successfully Launched, with Beihang University in Charge of System Design and Development
18	2021/11/4	BJHDNET	Innovation Zhongguancun
19	2021/10/28	Zhongguancun Science City	APSCO SSS-1 Successfully Launched and in Good Operating Condition
20	2021/10/25	CHINA ECNOMIC NET	Pakistani Student Contributes to Successful Launch of Satellite in China
21	2021/10/25	Islamabad Post	Pakistani Student Contributes to Successful Launch of Satellite in China
22	2018/5/10	SCIENCE & TECH	APSCO to Launch Three Small Satellites into Orbit by 2020
23	2021/10/27	AikQaum	Pakistani Students Rocked Out in Projection of Satellite at China's Beihang University
24	2017/10/7	Mehr News Agency	Iran to Coop. with APSCO on Building Microsat, CubeSat
25	2011/4/10	Timesaerospace	Iran to Build Satellite with APSCO
26	2021/9/30	Go-taikonauts	APSCO Student Small Satellites Ready for Launch
27	2021/9/30	Ecoruspace.me	APSCO Student Small Satellites Ready for Launch
28	2021/10/26	UrduPoint	Pakistani Student Contributes to Successful Launch of Satellite in China
29	2021/10/26	Associated Press of Pakistan	Pakistani Student Contributes to Successful Launch of Satellite in China
30	2021/10/21	News Ghana	China's First Solar Exploration Satellite Sent into Space
31	2021/10/18	ISNA Iranian Students' News Agency	An Iranian University Participated in Launching APSCO SSS-1
32	2021/10/17	Student News Network	With the Help of Academic Team, APSCO SSS-1 Successfully Launched into Space
33	2021/10/18	AFPBB	APSCO SSS-1 Successfully Launched
34	2018/7/24	Mehr News Agency	Three Iranian Universities to Jointly Produce a CubSat
35	2016/4/1	BUAA News	The Kick-off Preparation Meeting of APSCO Student Small Satellite (SSS) Project Held at Beihang University
36	2016/12/15	BUAA News	The Kick-off Meeting of APSCO Student Small Satellite (SSS) Project

No.	Time	Agency	Title
37	2017/1/17	BUAA News	Beihang University and APSCO Signed Contract for APSCO Student Small Satellite Project
38	2017/8/16	BUAA News	The First Summer Camp of APSCO SSS Project Held in Beihang University
39	2015/1/22	RCSSTEAP	The Centre Signed Cooperation Agreement with China Academy of Space Technology
40	2018/8/17	RCSSTEAP	Teachers and Students of Beihang University Participated in the Second Summer Camp of APSCO SSS Project
41	2020/12/30	RCSSTEAP	Acceptance Review of APSCO SSS Ground Station System
42	2020/12/8	RCSSTEAP	Attitude Determination and Control Subsystem (ADCS) Debugging and Demonstration Activity of APSCO SSS Project
43	2019/7/16	RCSSTEAP	The Centre Signed the Cooperation Agreement with Changzheng Institute of China Academy of Launch Vehicle Technology
44	2019/7/4	RCSSTEAP	Secretary General of Shenzhou Institute of China Academy of Space Technology Visited the Centre
45	2018/4/25	RCSSTEAP	Technical Review and Progress Review Meeting of APSCO SSS Project Was Successfully Held at Ankara, Turkey
46	2021/9/18	RCSSTEAP	APSCO Student Small Satellite (SSS) Ready to Launch
47	2021/10/28	RCSSTEAP	Meeting on In-orbit Operation of APSCO-SSS-1 Successfully Held
48	2021/10/14	APSCO	APSCO Satellites SSS-1 and SSS-2A Successfully Launched into Orbit
49	2021/9/30	APSCO	APSCO Student Small Satellites Ready for Launch
50	2020/11/30	APSCO	Progress Review Meeting on APSCO Student Small Satellite SSS Project Concluded Successfully
51	2019/8/12	APSCO	The Third Summer Camp of APSCO SSS Project has Successfully Completed
52	2018/9/10	APSCO	The Second Summer Camp of APSCO SSS Project is Successfully Completed
53	2018/5/14	APSCO	The System CDR of SSS-1/SSS-2A and PRR/PDR of SSS-2B Meeting of the APSCO Student Small Satellite Project
54	2018/9/10	APSCO	The Second Summer Camp of APSCO SSS Project is running in Full Wing
55	2018/8/3	APSCO	The Second Summer Camp of APSCO Student Small Satellite Project

“Educational training is the core work of the Centre, which mainly includes postgraduate degree programmes and short-term training programmes. In 2021, the Centre enrolled international postgraduates in three (3) directions: Satellite Communications and Global Navigation Satellite System (SC&GNSS), Remote Sensing and Geographic Information System (RS&GIS), and Micro-satellite Technology.

Based on the principles of resource sharing, efficiency improvement, and win-win cooperation, the Centre jointly organized short-term training programmes with its partners and other Regional Centres, and carried out popular science training for teenagers with an expanding range of audience.”

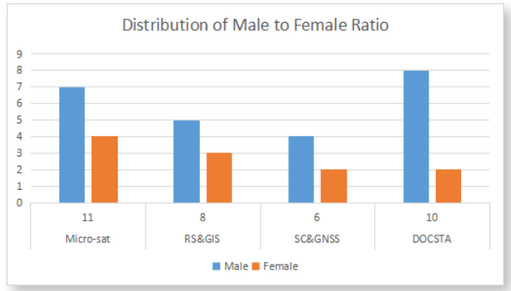
Education & Training Programmes

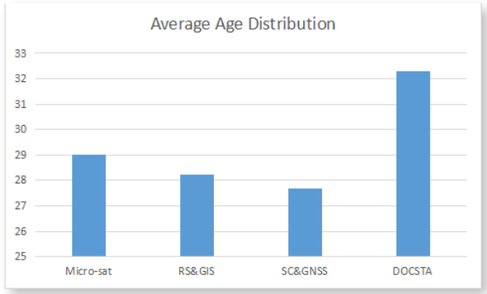
02

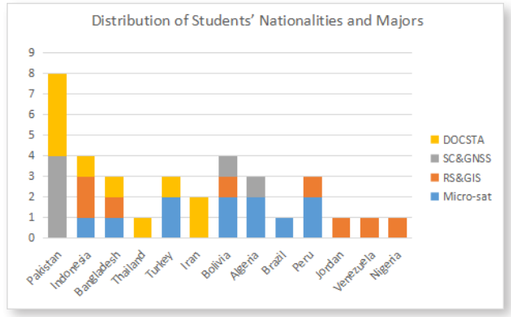
New School Year | Welcome New Participants

Online Registration

In September 2021, the Centre welcomed thirty-five (35) new participants. They come from thirteen (13) countries, including Algeria, Bolivia, Pakistan, etc. There are twenty-four (24) males and eleven (11) women. The details are as follows.







According to the current epidemic prevention and control requirements, the new international participants currently outside of China are temporarily inadmissible and need to complete online registration.

In order to ensure the smooth implementation of the registration process, and to enhance the experience of the online registration for new students, International School of Beihang University organized a project team to improve the function of the online registration system for the new international students this year. The new students can use cell phones or computers to modify their personal registration information anytime and anywhere, and they can easily upload registration documents such as admission letters and passports by taking photos on their cell phones. Up to now, all the new students in the Centre have successfully completed their online registration.

Opening Ceremony for 2021 International Students

On September 14, the opening ceremony for the international students enrolled in 2021 was held at International School of Beihang University, Xueyuan Road campus. The new international students who have already registered on campus or currently abroad attended the ceremony as their first class through a combination of online and offline sessions.

During the ceremony, the new students watched a video clip first to learn more about the history, philosophy, achievements and culture of Beihang University.

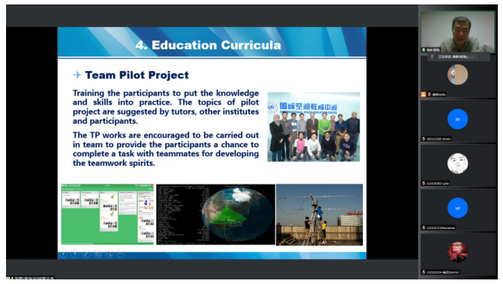
Mr. Weng Jingnong, Executive Director of the Centre and Dean of International School, extended a warm welcome to the new international students from fifty-five (55) countries. He said that as a university with responsibility, dreams and sentiments, Beihang University's international education is committed to enabling international students to converge Chinese and Western cultures, interweave science and technology and art, integrate inheritance and innovation, as well as collide with passion and inspiration during their studies at Beihang University. Up to now, more than two thousand (2000) international students have received Ph.D., M.S. and B.S. degrees, and a number of distinguished alumni have returned to their home countries and become the link between Beihang University and the world.

Subsequently, Mr. Weng Jingnong gave a lecture to the new international students on "The First Lecture of the School Year" from four aspects, including general information of Beihang University, international education, role models, and hope for the future. He told the new students that Beihangers should not only look up to the stars, pursue the truth and be good at learning, but also be down-to-earth, practical and innovative, combining theory and practice, and walking with the times. Mr. Weng Jingnong emphasized the four (4) key words of "**Calm, Cooperation, Courage and Cherish**", and hoped that the new students would continue to challenge themselves and keep pace with the times in their pursuit of knowledge.

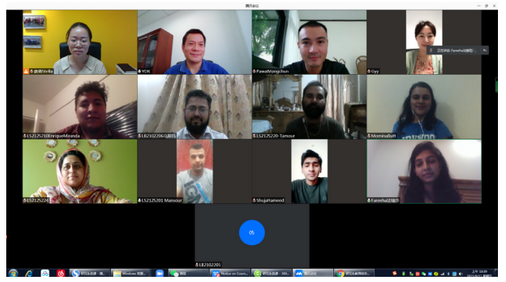
The opening ceremony for international students was broadcast live through Tencent Meeting and ZOOM. Currently, more than two hundred (200) new students and their friends and relatives abroad watched the ceremony via live webcast.

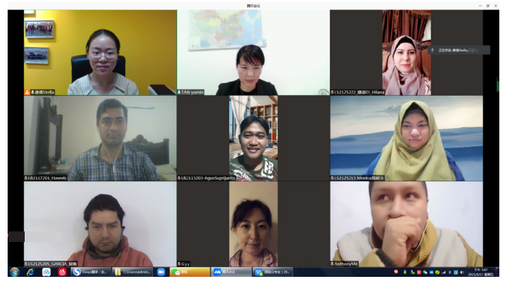
Online Orientation Session for Participants of 2021

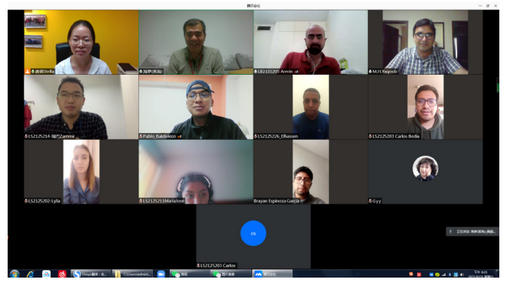
In 2021, the Centre enrolled thirty-five (35) new participants in three (3) major directions: Remote Sensing and Geo-information System (RS&GIS), Satellite Communications and Global Satellite Navigation Systems (SC&GNSS), and Micro-satellite Technology.



From September 17 to 18, online orientation sessions for fresh participants of 2021 in all major directions were organized by the Centre. Mr. Yang Dongkai from Satellite Communications and Global Satellite Navigation Systems (SC&GNSS), Ms. Tan Yumin from Remote Sensing and Geo-information System (RS&GIS), and Mr. Huang Hai from Micro-satellite Technology, respectively introduced their majors to the new participants, gave them a systematic explanation and Q&A guidance on the course outline and study requirements to understand each participant's professional background and research direction of interest.







The new participants of all majors attended the session on time and had a "online face-to-face" consultation with teachers on relevant issues. After the session, the participants expressed that they had a better understanding of their upcoming majors and a better plan for their future study and research direction. Based on their research plans, participants will make a two-way choice with their supervisors, and then develop their courses and research plans under the guidance of their supervisors.

Work Seminar for New Semester

On September 28, 2021, the work seminar of the Centre in fall semester was held in Conference Room 201, International School, Beihang University. The meeting was chaired by Mr. Weng Jingnong, Executive Director of the Centre and Dean of International School, and attended by faculty representatives of various majors and staff of the Centre.

In view of the situation and problems of online teaching and student management since the outbreak of COVID-19, the meeting sorted out and discussed the content of student accounting, course teaching and research guidance, and further planned the construction of teaching materials, system, enterprise cooperation and faculty team of the Centre.

Mr. Weng Jingnong pointed out that it was necessary to clarify the academic arrangement, constantly check the quality of cultivation, and explore new ideas and initiatives to enhance the training of international participants under the epidemic situation.

Teachers of each major combined with practical work and suggested that during the online study period, supervisors and participants should meet by video at least once a month, while participants should submit monthly study reports to their supervisors to exchange guidance on course study and research progress.

For the construction of teaching materials, the meeting sorted out existing ideas and encouraged teachers to write professional books. The books could be combined with the characteristics of the Centre to explore space features like China's Space Story Exploration, Human Space Civilization Series. In terms of enterprise cooperation, for the sake of strengthening the initiative, the Centre planned to conduct field research in relevant enterprises and universities, made full use of existing conditions to achieve resource cooperation. The Centre will further expand inter-university cooperation and explore exchanges in teaching, management and other fields in the form of annual conferences. In the construction of system, the Centre will need to document the basic systems such as training requirements and regulations, updating the old documents that are still in use.

This work seminar clarified the direction and focus of the current work of the Centre, and played a positive role in promoting sustainable development in capacity building, information communication and training programs of the Centre.

Participants' Progress in Research and Thesis

In the fall semester of 2021, the Centre organized thesis proposal, mid-term assessment and thesis defense in an orderly manner according to the time schedule. Affected by the epidemic, most participants have not yet returned to the campus, so the thesis-related work in this semester was carried out online. The defense was conducted online and offline, with teachers participating offline and participants attending online through Tencent Meeting.

In October 2021, thirty (30) participants from the class of 2020 majoring in Remote Sensing and Geo-information System (RS&GIS), Satellite Communications and Global Navigation Satellite Systems (SC&GNSS), Space Law and Policy, and Space Science and Environment completed the thesis proposal, laying a good foundation for the following research.

In November 2021, five (5) participants of the class of 2019 majoring in Micro-satellite Technology passed the mid-term assessment of their dissertations under the guidance of their supervisors. From November to December, six (6) participants passed their thesis defenses for master's degree and one (1) participant passed the thesis defense for doctoral degree, all of whom successfully graduated.

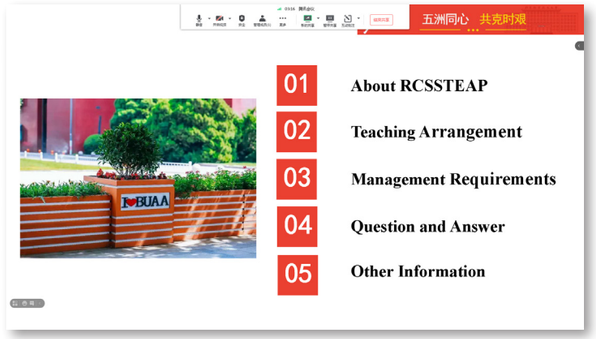
Daily Management

“ This year, the Centre enrolled a total of thirty-five (35) MASTA and DOCSTA participants, including twenty-five (25) MASTA participants and ten (10) DOCSTA participants, majoring in SC&GNSS, RS&GIS, and Micro-satellite Technology. Since the global epidemic situation is still worrisome, the new participants can only take online learning. All the faculty and staff of International School and the Centre use various channels and methods to ensure that participants can continue their studies online. ”

03

Class Meetings: Learning & Communication

First Class Meeting for 2021 Participants



On September 16, the Centre held the first online meeting for the new participants from five (5) aspects, including an overview of the Centre, teaching arrangement, management requirements, FAQ and information sharing.

During the meeting, the new participants firstly watched the promotional video of the Centre and gained a deeper understanding of the Centre and the United Nations Programme on Space Applications. As the new members of the Centre, the participants enrolled in 2021 made a wonderful self-introduction and expressed their expectation to come to China to study and get together soon.

Ms. Guo Yuanyuan, Program Director of the Centre, introduced the postgraduate training program, teaching arrangements and practical activities to the participants, and answered their concerns about course selection and supervisors patiently and carefully. She hoped that new participants would adapt to online learning as soon as possible, maintain the continuous development of their scientific research.

Ms. Tang Qian, Coordinator of the Centre, emphasized the management requirements during the online learning period and reminded the participants to check the new messages in the WeChat group and email in time. In addition, she introduced the class monitors of each major, as well as the information about the new participant data and the Centre’s website.

At the end of the meeting, the participants left an online group photo together. We believe that all the participants and teachers of the Centre will be able to overcome all difficulties and achieve academic success with more cooperation and communication in the new learning stage.

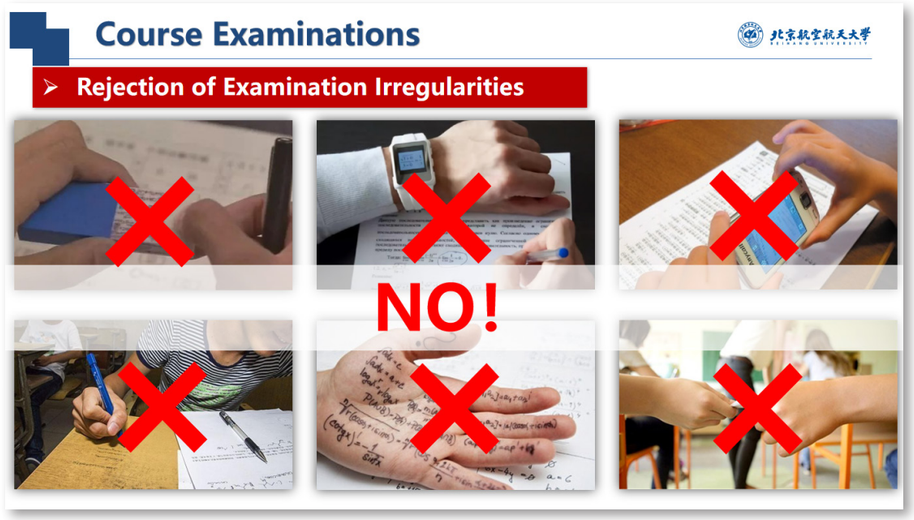
Strengthen Contact, Exam Integrity

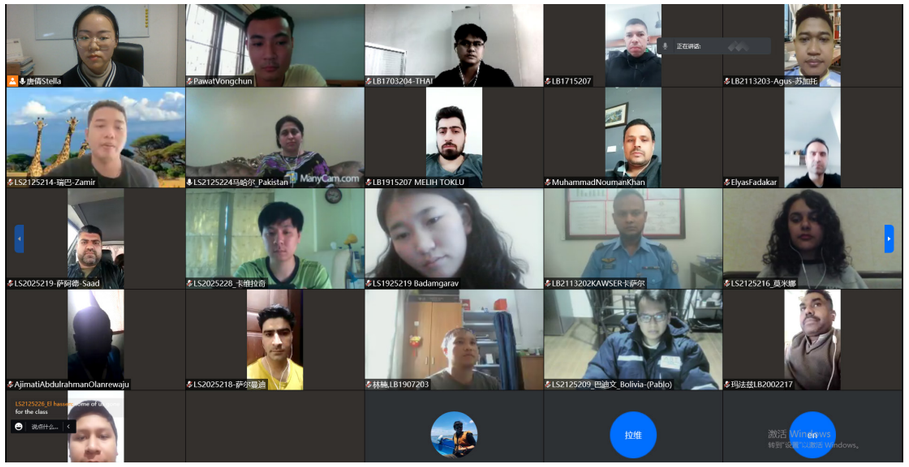
In order to strengthen the contact with participants during online learning, the Centre takes the form of monthly reports and regular class meetings to keep abreast of their developments and demands. After reading the monthly reports submitted by participants, the Centre held its last online class meeting of this year on November 30.

Affected by the COVID-19, the participants enrolled since 2020 have not yet had the opportunity to come to the campus of Beihang University for offline study. In order to enhance the participants' sense of belonging and identity to Beihang University, the coordinator of the Centre first shared recent major news, scientific research achievements, campus scenery and study routine at the class meeting.

Halfway through the semester, with the completion of some courses, online examinations and assessments are being arranged as well. The coordinator took advantage of this class meeting to educate on the theme of active learning and integrity in examinations. Online learning does present some difficulties, but the positive attitude to learning should not be absent at any time. The coordinator further emphasized to the participants that they must say "no" to cheating on examinations and other disciplinary violations. Otherwise, they will not only fail the exam, but also face punishment from the university.

Finally, the coordinator explained and answered questions about the scholarships, academic system, thesis defense, graduation process, and other issues of concern to the participants, at the same time, reminded the senior participants to contact their supervisors more often to ensure the progress of thesis research for successful completion of their studies.





Monthly Report Presentation

In order to maintain regular contact with participants, the Centre requires participants to submit monthly reports of not less than two hundred (200) words to the class coordinator and their supervisors every month, reporting the recent learning situation (course learning gains, self-study content, research interests, research progress, difficulties encountered, etc.). On the basis of reading these monthly reports, the Centre will adjust the arrangement and content of class meeting at the right time to meet the needs of most participants as much as possible.

The following is a display of some monthly reports written by participants:

Cuba Mamani Jaime Gerson

During the past and current month, I had been conducting self-study content oriented to get a more detailed knowledge on the Attitude Determination and Control System (ADCS) of a small satellite. The study content was related to my current mathematical models, so that they get more reliable. During this period, the research material used was different papers, and thesis, both, searched on the scholar web pages and the library of the regional center. In addition, different books about Spacecraft Dynamics, Rotations, and Quaternions were used for improving the simulation results by searching and fixing the errors, and bugs found within the general system model. I also have been attending some online courses and listening recordings to get more information for my research.

The ADCS is a dynamic nonlinear system, composed by two main topics, the attitude control, and the attitude determination. In general, the work needed in a control system is divided into two parts, the stability and the performance, both, for the general control system. The stability of a control system is the first task to be reached. In the other part, the performance of the system gets a bit more complex. It can be done by linearizing the system in order to find suitable parameters to be later performed in the control system. In addition, this part also requires all inputs in the control system. This is where the attitude determination plays a role. I have been studying related topics to get these models and include them into the feedback loop system of my model. I found interesting related models and videos about motor control by embedded devices in Chinese language, getting myself a difficulty to apply them to my research and studies. During this month, I have been working on a deeper study of my research and working on running simulations. I also have been working on the opening report of the thesis.

北京航空航天大学

Oubara Amel

July 2021

Progress in the past month

1) Tried to conduce a comparative study based on some basic architectures used to solve a change detection of bitemporal images.
2) I have implemented, using Google Collaboratory resources, four architectures: Fully Convolutional Early Fusion (FC-EF), Unet++, Fully Convolutional-Siamese-Concatenation (FC-Siam-conc) and Fully Convolutional-Siamese-Difference (FC-Siam-diff). I used two small open source change detection datasets (OSCD dataset and Google Earth built dataset).
3) Wrote a kind of conference paper on this study but not finished yet because I didn't get better results

Plan for the next month

1) Continue working on the same concept
2) Find some new ideas to get better results and higher accuracy

Comments

This work was taken as an exercise to get more used to the topic.
The results of this study were not as expected. I faced the problem of lack of high performance and limited resources even I bought abonnement of Google Collab Pro I couldn't work. It took me time and I couldn't do different experiments.
Working on machine learning requires higher computer performances. I tried with the existing resources but I was not very satisfied and I couldn't progress

Comments (Supervisor)

Agus Superijanto

Registration for new student was held on September, 6 2021 in the Beihang University website and China Scholarship Council website for the scholarship registration. Registration for study plan in fall semester have been done in GSMIS Beihang University system. In the fall semester, some courses have been taken with total credit is 15 credit and detail of courses taken will be shown in the table below :

No	Courses	Credit
1	Plastic Mechanic of Rock and Soil	2
2	Matlab Program	2
3	Visual Interpretation of Remote Sensing Image	1
4	Transportation of Big Data	2
5	Spatial Analysis	2
6	Numerical Analysis	3
7	Introduction of China	1
8	Chinese-1	2
Total Credit		15

First of courses have been started on September 24 2021 and until now all courses taken still running on the track. All courses have assignment and final project, for that i can understand and follow it until now although some time I have a difficulties with it because of some assignment have the deadline in same time but it doesn't matter and normal, I can do it.

For the next semester I hope I can follow the courses by offline teaching in campus of Beihang University because it will be better to make understand to learn everything and discuss face to face with our supervisor, expert and classmates.

Byambadorj Chantsaldulam

Student ID: LS2025223

Thesis title: Remote Sensing and GIS-based Urban Expansion Monitoring and Evaluation in Ulaanbaatar, Mongolia between 2000-2020

Supervisor: Ms Tan Yumin

For this month, I attended an academic lecture once, and the topic was about new technologies, so I found a lot of fascinating and advantageous information. In general, my thesis is going as planned. I am currently trying to get advice from as much literature as possible and expand and deepen my basic knowledge on the subject. I am also working on data gathering, which is a crucial part of the research, and I am looking at another available data source, even though there are sources planned to be acquired. Obtaining higher resolution data will make research more efficient.

In addition, before I begin the main section of the research, I am learning about the platforms of scientific analysis and visualization of geospatial datasets that shall be used in the study.

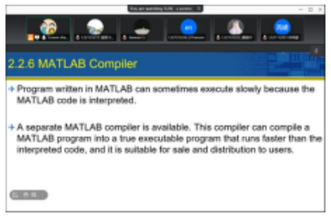
I suppose the main section of the research work has not commenced yet, so there aren't encountered any difficulties. During the research, if there have any obstacles, I will consult with my supervisor for guidance.

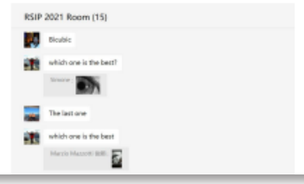
Donna Monica

A. Course learning gains

It has been a month since the courses started, and I have been acquiring new knowledge especially about Remote Sensing. In this semester, I take 10 courses which consist of 6 Platform Courses (Probability and Statistics in Engineering, Matlab Programming, Space Environment Orbit and Spacecraft systems, Introduction to Space Technology Applications, International Cooperation in the Peaceful Uses of Outer Space, Chinese 1) and 4 Major Courses (Remote Sensing Image Visual Interpretation, Remote Sensing Principles and Methods, Physical Principles of Microwave Remote Sensing, Remote Sensing Image Processing and Software Application).

All the courses are conducted online using various programs and APPs such as VooV, Zoom, WeChat, OneDrive, and other supporting APPs. Generally, the courses activities include lectures from the teachers, weekly assignments, and software lab. Here I attached some of the documentation of the lectures and my assignments.





Care Activities for Participants on Campus

Since the outbreak of the epidemic, all staff members of the Centre have been doing their best to ensure the learning and life of the participants on campus through various channels and methods.

In the fall semester of 2021, the staff of the Centre visited student dormitories to understand the needs of participants, publicize fire safety knowledge, and distribute masks,

alcohol wipes, sanitizing gel and other epidemic prevention items three (3) times. On November 28, the Centre organized the participants on campus to receive COVID-19 Booster Vaccinations on a voluntary basis. Currently, all the participants on campus have been vaccinated against COVID-19.



We are very pleased to see that the participants have maintained a good mental and physical state, and they have also expressed their unanimous recognition of the Centre's work.



> To expand the influence of the Centre and promote long-term sustainable development, the Centre has been actively expanding its external exchanges and cooperation. In addition to maintaining close communication with APSCO and other partners, the Centre has also established active contacts with Jiangxi Normal University and reached a number of cooperation intentions during this semester.

Cooperation& Exchange

04

Representatives of the Centre Attended ICG15

From September 27 to October 1, 2021, the 15th Meeting of the International Committee on Global Navigation Satellite Systems (ICG-15) was held in Vienna, Austria. Affected by the COVID-19 epidemic, the meeting was conducted in a combination of online and offline.

Hosted by United Nations Office for Outer Space Affairs, the meeting was attended by more than three hundred (300) representatives from global and regional satellite navigation system providers, ICG member countries, ICG associate members, as well as other relevant organizations. Dr. Weng Jingnong, Executive Director of the Centre and Dean of International School, Beihang University, Dr. Yang Dongkai and Dr. Xiu Chundi, experts in the direction of Global Navigation Satellite System, attended the Working Group C Session on “Information Dissemination and Capacity Building”.

Dr. Weng Jingnong delivered a report on “Update of BDS&GNSS International Education and Capacity Building”. He mainly introduced the latest progress and achievements of the Centre on international education, cooperation and capacity-building in BeiDou/GNSS since ICG-14, including degree programmes, short-term training programmes and the expansion of educational cooperation, especially the efforts and progress of the Centre during the COVID-19 outbreak in management and the development of educational and training activities.

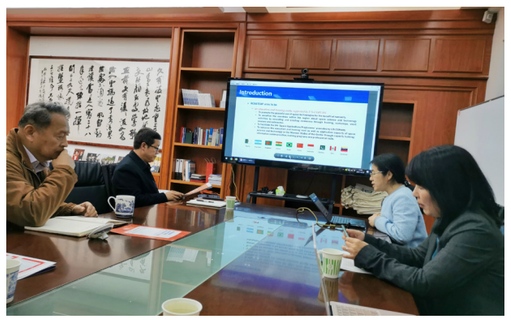
During the meeting, representatives of the Centre and other participants fully exchanged the work on education and training topics, initiated the construction of GNSS curriculum programmes, teaching materials and experimental conditions to serve the development of the UN Regional Centres, and recommended to continue strengthening the cooperation among the UN Regional Centres under the ICG framework.

Representatives of the Centre Visited Jiangxi Normal University

In order to further explore the cooperation mode of universities and actively expand the cooperation field, from October 19 to 20, 2021, Dr. Xiu Chundi, teacher from Satellite Communications and Global Navigation Satellite Systems, and Dr. Tan Yumin, teacher from Remote Sensing and Geo-information System, went to School of Geography and Environment, Jiangxi Normal University for research exchange. The two sides had in-depth discussions and exchanges on how to carry out cooperation under the framework of the Centre and how to promote the implementation.

On October 19, the representatives of the Centre visited the campus and laboratories under the guidance of Executive Dean Dr. Luo Jin, and got familiar with the basic situation of School of Geography and Environment of Jiangxi Normal University, as well as the research team and achievements of the Key Laboratory of Poyang Lake Wetland and Watershed Research, Ministry of Education.

The next day, the representatives of the Centre had an exchange and discussion with Dr. Lin Hui, Dean of School of Geography and Environment, Dr. Luo Jin and other teachers. The representatives firstly introduced the background of the Centre, the work carried out and achievements made in the past five years. Both sides had an in-depth exchange on student visit, practical internship, teacher exchange, joint application projects, and reached a consensus, which laid a solid foundation for the next step of cooperation and exchange. Dr. Lin Hui expressed his support and agreement to the specific mode of cooperation proposed by the Centre, and was willing to grasp the opportunity for cooperation and active participation. The two sides also discussed issues related to jointly organizing special training courses, cooperating with UNESCO HIST-Nang Chang Base in the form of forums and seminars, planning and building a practical training base at Poyang Lake, and reached a preliminary cooperation intention.

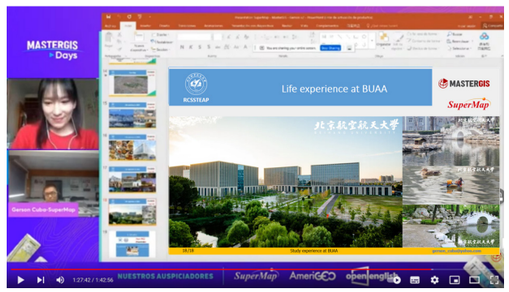


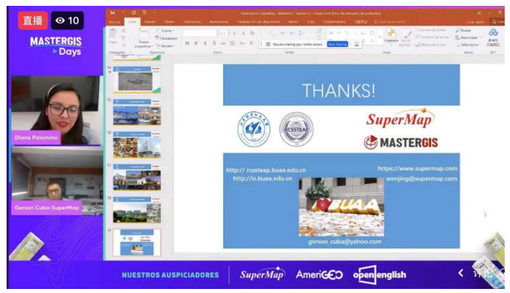
Since its establishment, the Centre has been attaching great importance to cooperation and exchange with universities, research institutions and enterprises, etc. Based on the extensive pooling of high-quality resources, the Centre will further improve the level of education and training, and strive to make new and greater contributions to the enhancement of space science and technology education as well as space technology application capabilities of the Centre's Member States and even other developing countries.

Participant of the Centre Shared Learning Experience at Corporate Cooperation Event

Since its establishment, the Centre has always been exploring the establishment of a wide range of cooperative alliances with the industry to provide participants with diversified internship and practice opportunities.

Beijing SuperMap Software Co., Ltd. (SuperMap) has been a partner of the Centre for many years. From November 25 to November 27, SuperMap teamed up with MasterGis, a local GIS network software brand company in Peru, to host an annual three-day event, which was known as MasterGis Day. Mr. Cuba Mamani Jaime Gerson, a Peruvian doctoral candidate majoring in Micro-Satellite Technology at the Centre, was invited as a guest speaker. Combining his own learning experience at the Centre, Mr. Cuba Mamani Jaime Gerson gave a wonderful online speech for senior undergraduates of relevant majors in Peru. He demonstrated the application of the 3D function of SuperMap software in the core courses he had studied at Beihang University. In addition, he mentioned a plenty of learning activities and described the beautiful campus of Beihang University.





This speech inspired many Peruvian students to have a better understanding of the Centre and SuperMap, and developed their desire to study in China. As a participant of the Centre, Mr. Cuba Mamani Jaime Gerson was delighted to give this speech for students from his home country. He expressed his willingness to be a bridge for international cooperation and a messenger for cultural dissemination, contributing to cultural exchanges between China and South America.

Beihang University- APSCO Education and Training Seminar Held

On the morning of December 28, 2021, the education and training seminar between Beihang University and Asia-Pacific Space Cooperation Organization (APSCO) was held at the Conference Centre of New Main Building, Beihang University. Ms. Yu Qi, Secretary-General of APSCO, Mr. Ferhat Fikri Ozeren, Deputy Secretary-General of APSCO, Mr. Mohammad Ebrahimi Seyedabad, Director General of Department of Education and Training and Database Management of APSCO, Ms. Wu Shuhui, Deputy Director of International Department of China National Space Administration (CNSA), Mr. Huang Haijun, Vice President of Beihang University, Mr. Liu Tiegang, Director of Department of Graduate Education and Training of Graduate School of Beihang University, and Ms. Wan Lina, Deputy Director of International Division of Beihang University, attended the meeting. The meeting was hosted by Mr. Weng Jingnong, Director of APSCO Education and Training Center (China) and Dean of International School of Beihang University.

Mr. Huang Haijun expressed a warm welcome to the visit of Ms. Yu Qi and her delegation, saying that Beihang University has been cooperating with APSCO for more than ten years, and in the field of Space Science and Technology Education, Beihang University has trained nearly three hundred (300) master's and doctoral students for the Member States of APSCO. Since 2020, in response to the impact of the epidemic, Beihang University has been actively expanding online education models and conducting online teaching and research to ensure the quality of training of our postgraduate students from APSCO Member States. On October 14, 2021, APSCO Student Small Satellite-1 (APSCO SSS-1), led by Beihang University, was successfully launched from Taiyuan Satellite Launch Center in Shanxi, China. APSCO SSS Project has advanced the development and application capabilities of small satellites for students from the Member States and trained a number of talents in space technology and applications.

Ms. Yu Qi first congratulated the successful launch of APSCO SSS-1. She said that APSCO SSS Project was the first major international project of APSCO, and the success of this project further promoted the exchange and cooperation among the Member States in the field of space technology and applications. In the thirteen (13) years since the establishment of APSCO, Beihang University has been providing strong support to APSCO, and the cooperation between Beihang University and APSCO in the training of international talents in the aerospace field has been deepening. Over one hundred (100) postgraduate students from APSCO Member States have graduated from Beihang University, with thirty-five (35) students enrolled since the outbreak of the epidemic in 2020. Ms. Yu Qi expressed her gratitude to Beihang University for its long-term strong support to APSCO. She also introduced several important activities to be carried out by APSCO in the next year, hoping to develop more extensive and in-depth cooperation with Beihang University in a series of fields such as technology research and development, application and talent training.

Then, Mr. Weng Jingnong gave a report on the overall education and training of students recommended by APSCO, focusing on the measures taken by International School of Beihang University in terms of teaching and daily management since the outbreak of COVID-19. Despite the many challenges, the International School has always adhered to the student-centered policy, started from online and offline aspects, overcome various difficulties, and fully guaranteed the learning and life of students.

Subsequently, the meeting discussed the difficulties and problems caused by the distance learning since the COVID-19 pandemic. Ms. Yu Qi pointed out that, combined with the feedback from Member States, the students enrolled in 2020 and later have been studying online, which not only exposed them to objective problems such as time difference in classes, lack of laboratory conditions and data, and economic sources, but also led to difficulties in degree conferral and certification. Mr. Huang Haijun said that Beihang University will actively coordinate to solve problems from the university level, including helping the students to apply for extending their study periods, and urging supervisors to strengthen the contact with students. Although international students are not yet able to return to campus, Beihang University will always put students first, and ensure the smooth progress of the training of international students. Mr. Weng Jingnong said that the International School would pay further attention to the dynamics of students, handle the procedures, such as suspension and extension for students in need, and investigate the learning situation of each student and analyze the specific situation.

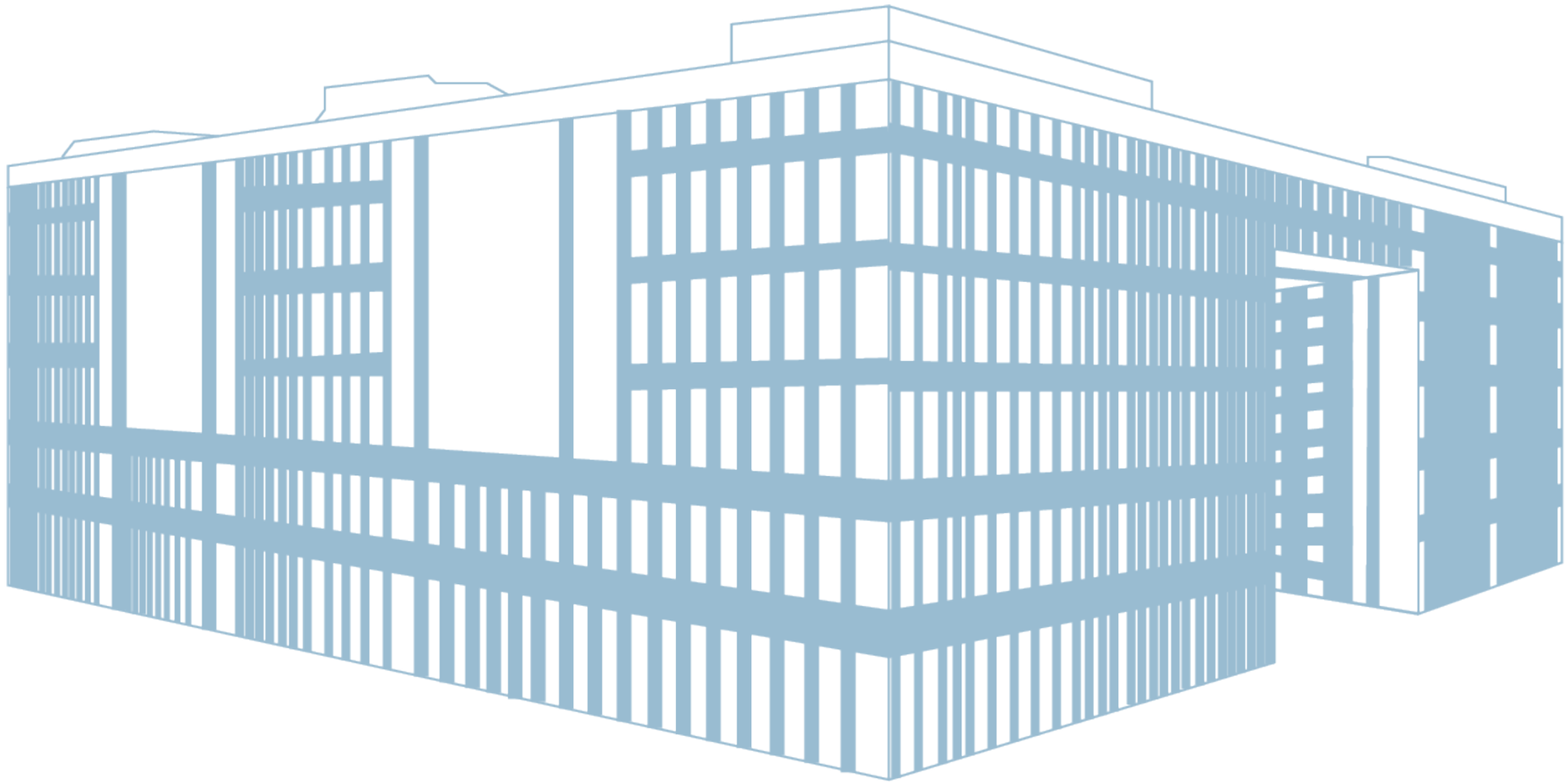
The representatives of APSCO and CNSA fully affirmed and expressed their gratitude to Beihang University for its efforts and contributions in the training of international students. Representatives attending the meeting said that they would actively cooperate with the education and training work of Beihang University and APSCO, work together to overcome the adverse effects of the epidemic, and look forward to the early dissipation of the epidemic and the early return of international students to campus.

Additional Words

This *Newsletter* records the main work of the Centre from July to December in 2021, including the Successful Launch of APSCO SSS-1, Online Registration and Opening Ceremony for New Participants of 2021, Daily Management of Class Meetings and Monthly Reports, Representatives of the Centre Attended ICG-15, and a visit to Jiangxi Normal University.

Since 2020, in response to the impact of the epidemic, we have actively expanded our online education model, carried out online teaching and research, and ensured the training quality of participants. In the past two(2) years, we have promoted various work in an orderly manner through remote teaching, online guidance, regular exchanges, care and condolences, etc. With the increasing number of COVID-19 vaccinators and the relentless prevention and control measures of various countries, the global epidemic situation is getting better and better. It is the end of the year and the cold winter, although we have not met yet, we sincerely look forward to the spring blossoms and the day when teachers and students will meet sooner.

Thank you for your long-term concern and support to the Centre. Your valuable comments and suggestions are most welcomed. We will continue to work hard and keep innovating to raise *Newsletter* to a higher level!



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