



United Nations/China Workshop on Human Space Technology

**Beijing, China
16-20 September 2013**

Programme

Organized jointly by
United Nations Office for Outer Space Affairs and
China Manned Space Agency

Co-organized by
International Academy of Astronautics

Hosted by
China Manned Space Agency

**Venue: Landmark Convention Center
Beijing Landmark Towers
No. 8, North Dongsanhuan Road
Beijing, China**

Honorary Committee (in alphabetical order):

Dr. Madhavan NAIR, President, International Academy of Astronautics
Prof. Dr. Mazlan OTHMAN, Director, United Nations Office for Outer Space Affairs
Dr. Zhaoyao WANG, Director General, China Manned Space Agency
Prof. Dr.-Ing. Johann-Dietrich WORNER, Chairman of the Executive Board, German Aerospace Centre

Programme Committee (in alphabetical order):

Mr. Takao DOI, United Nations Expert on Space Applications
Mr. Chun HAO, Director, Scientific Planning Bureau, China Manned Space Agency
Mr. Qiming JI, Deputy Director, Scientific Planning Bureau, China Manned Space Agency
Mr. Yaofeng LU, Official, Scientific Planning Bureau, China Manned Space Agency
Mr. Aimin NIU, Expert, Space Applications Section, United Nations Office for Outer Space Affairs
Ms. Mika OCHIAI, Expert, Space Applications Section, United Nations Office for Outer Space Affairs
Mr. Giuseppe REIBALDI, Director, Human Space Flight, International Academy of Astronautics
Ms. Heike STEFFENS, Expert, Space Applications Section, United Nations Office for Outer Space Affairs

Local Organising Committee (LOC)

Chairman

Mr. Liwei YANG, Deputy Director, China Manned Space Agency (CMSA)

Co-Chairman

Mr. Chun HAO, Director, Scientific Planning Bureau, CMSA
Ms. Li WANG, General Manager, China Aerospace Science & Technology Consulting Co., Ltd

Secretary-General

Mr. Qiming JI, Deputy Director, Scientific Planning Bureau, CMSA

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Working Group Abbreviation

Working Group 1: MGS - Microgravity Science
Working Group 2: CBE - Capacity Building and Education
Working Group 3: HSE - Human Space Exploration

Meeting Room Arrangement

The following rooms will be used unless otherwise stated.

Plenary technical presentation sessions	Bauhinia Grand Hall B (紫金 B 厅 in Chinese)
Working Group 1: MGS (Tuesday, Thursday)	Vanda Grand Hall A (万黛 B 厅 in Chinese)
Working Group 2: CBE (Tuesday, Thursday)	Vanda Grand Hall B (万黛 C 厅 in Chinese)
Working Group 3: HSE (Tuesday, Thursday)	Vanda Grand Hall C (万黛 D 厅 in Chinese)
Working Group 1: MGS (Friday)	Lotus Room 1 (荷花 4 厅 in Chinese)
Working Group 2: CBE (Friday)	Lotus Room 2 (荷花 2 厅 in Chinese)
Working Group 3: HSE (Friday)	Bauhinia Grand Hall A (紫金 A 厅 in Chinese)
Secretary office	Begonia (海棠 in Chinese)
Sponsored lunch, dinner and ceremony	Bauhinia Grand Hall A (紫金 A 厅 in Chinese)

<i>Monday, 16 September 2013</i>	
Time	<i>Morning</i>
09:00	Registration
	Master of Ceremony: Mr. Liwei YANG, Deputy Director, CMSA
10:00	<p><u>Welcome Address</u></p> <ul style="list-style-type: none"> ○ By Mr. Hongguang NIU, Deputy Commander, China Manned Space Program, China ○ By Mr. Jean Michel CONTANT, Secretary General, IAA ○ By Ms. Mazlan OTHMAN, Director, UNOOSA <p><u>Keynote Speech</u></p> <ul style="list-style-type: none"> ○ Beyond the Earth – Towards a New Era in Human Space Exploration Mr. Zhaoyao WANG, Director General, CMSA ○ The International Academy of Astronautics and the January 2014 Summit of Space Agencies Mr. Jean-Michel CONTANT, Secretary General, IAA
	Master of Ceremony: Mr. Takao Doi, United Nations Expert on Space Applications
11:00	<p><u>Commemoration of the 10th Anniversary of China's First Human Space Flight</u></p> <ul style="list-style-type: none"> ○ Statement by Mr. Liwei YANG, Deputy Director, CMSA ○ Video playback ○ Remarks by International Astronauts/Cosmonauts/Taikongnauts ○ Remarks by representatives of participants ○ Remarks by IAA and UNOOSA
12:00	<p><u>General Announcement</u></p> <p><u>Photo Session</u></p>
12:30	<i>Lunch (sponsored by CMSA)</i>
Time	<i>Afternoon</i>
	Chairperson: Mr. Liwei YANG, Deputy Director, CMSA
14:00	<p><u>Introduction to the United Nations Programme on Space Applications</u></p> <ul style="list-style-type: none"> ○ By Mr. Takao DOI, UNOOSA <p><u>Introduction to the United Nations Human Space Technology Initiative</u></p> <ul style="list-style-type: none"> ○ By Mr. Aimin NIU, UNOOSA
	<p><u>Technical Presentation Session-1: National, Regional & International Space Programmes-1</u></p> <p><i>Chairperson</i> : Ms. Mazlan OTHMAN</p> <p><i>Rapporteur</i>: Ms. Xiaoxu CHEN</p>
14:30	China Manned Space Program
	Mr.Jianping ZHOU, China Manned Space Agency (CMSA),China
14:50	ESA Human Spaceflight Programme and Future Perspectives
	Mr.Bernhard HUFENBACH, Space Exploration Architecture Office, ESTEC, ESA
15:10	JAXA's Human Spaceflight Activities and Contribution through ISS/Kibo
	Mr. Yoshiya Fukuda, Japan Aerospace Exploration Agency (JAXA), Japan
15:30	Role of Asia Pacific Space Cooperation Organization in Advancing Space Technology and its Applications in the Asia Pacific Region
	Mr.Maqbool Ahmad CHAUDHRY, Asia-Pacific Space Cooperation Organization (APSCO)
15:50	Space policies in Latin America and Regional Cooperation, New challenges
	Mr.Camilo GUZMAN GOMEZ, Sergio Arboleda University, Colombia
16:10	<i>Break & Poster Session</i>

	Technical Presentation Session-2: Microgravity Science 1	
	Chairperson: Ms. Yinghui LI	
	Rapporteur: Ms. Zhaokun LI	
16:40	Space Science Research and Education in Malaysia	Mr.Mohd Alauddin MOHD ALI, Institute of Space Science (ANGKASA), Universiti Kebangsaan Malaysia, Malaysia
17:00	Malaysia Microgravity Sciences Program 2012-2013	Ms.Nyana Bhoo PATHY, National Space Agency (ANGKASA), Malaysia
17:20	International Collaborations of Space Science and Application in Chinese Manned Space Program	Ms.Ming GAO, Technology and Engineering Center for Space Utilization, Chinese Academy of Science (CAS),China
17:40	Microgravity Research Planning of Two-Phase Fluids System in China	Mr.Qiusheng LIU, National Microgravity Laboratory, Chinese Academy of Sciences, China
	Reception Dinner and Opening Ceremony	
	Master of the Ceremony: Mr. Hongguang NIU, Deputy Commander, China Manned Space Program	
19:00	<u>Arrivals of guests and Workshop participants</u>	
	<u>Welcome address</u>	
19:30	Dinner	
21:30	<i>End of Day 1</i>	

Tuesday, 17 September 2013		
Time	Morning	
08:30	<i>Registration</i>	
	Technical Presentation Session-3: Capacity Building & Education-1 Chairperson: Ms.Anjana Narendra VYAS Rapporteur: Ms. Xuhan CHEN	
09:00	Building Capacity in Space Science and Technology in Africa: A Case Study of ARCSSTE-E's Programme Implementation	Mr.Joseph Olusola AKINYEDE, African Regional Centre for Space Science and Technology Education in English(ARCSSTE-E) affiliated to the UN, Nigeria
09:20	(1) Space Science Education Activities in China Manned Space Program (2) The Development of Manned Space Science Activities for Chinese Adolescents	(1) Ms.Weifen HUANG, China Astronaut Research and Training Center, China. (2) Mr.Xiaoliang LI, Children & Youth Science Center, China Association for Science and Technology (CAST), China
09:50	Promoting Space Development in an Emerging Country– Challenges and Opportunities	Mr.Adolfo Guillermo JOHANNING PÉREZ, Central American Association for Aeronautics and Space (ACAE), Costa Rica
10:10	Pakistan Plans National Capacity Building and Awareness in Microgravity	Mr.Ghulam MURTAZA, Pakistan Space & Upper Atmosphere Research Commission (SUPARCO), Pakistan
10:30	Building Space Technology Awareness in Thailand	Mr.Ravit SACHASIRI, Geo-Informatics and Space Technology Development Agency (GISTDA), Thailand
10:50	<i>Break & Poster Session</i>	
	Technical Presentation Session-4: National, Regional & International Space Programmes-2 Chairperson: Mr.Dumitru-Dorin PRUNARIU Rapporteur: Ms. Xiaoxu CHEN	
11:10	ASI activities and achievements in human space technology	Ms.Veronica LA REGINA, Italian Space Agency, Italy
11:30	Microgravity and Human Spaceflight Related Research in the Czech Republic	Mr. Michal VACLAVIK, Czech Space Office, Czech Republic
11:50	Space Technology Roadmap of Turkey	Mr.Yusuf HASCICEK, Turksat AS, Turkey
12:10	Space Research Initiatives and Nigerian Space Agency	Mr.Akeem Babatunde RABIU, Centre for Atmospheric Research, National Space Research and Development Agency, Nigeria
12:30	<i>Lunch (sponsored by CMSA)</i>	
Time	Afternoon	
	Technical Presentation Session-5:Human Space Exploration & International Cooperation-1 Chairperson: Mr.Bernhard HUFENBACH Rapporteur: Ms. Yangmei ZHANG	

14:00	The Human Spaceflight activities of the International Academy of Astronautics (IAA)	Mr.Giuseppe REIBALDI, Human Spaceflight, International Academy of Astronautics (IAA)	
14:20	Human Space Exploration, a Truly Global Endeavour	Mr.Franklin Ramon CHANG-DIAZ, Ad Astra Rocket Company, USA	
14:40	A Discussion of the Technical Approach and Mode of China's Space Station International Collaborations	Mr.Hong YANG, China Academy of Space Technology (CAST), China	
15:00	Human Space Exploration: The African Perspective	Mr.Olugbenga Ayotunde OGUNMODIMU, Lancaster University, UK	
15:20	Common Benefits and JAXA Space Exploration in International Space Exploration	Kohtaro MATSUMOTO, Japan Aerospace Exploration Agency (JAXA), Japan	
15:40	Introduction to Working Groups (Organisational Aspects) By Mr. Takao DOI, UNOOSA		
15:50	<i>Break & Poster Session</i>		
16:20	<u>Working Group Session-1</u>		
	Working Group 1: MGS <i>Co-Chairs:</i> Mr.Jacobus VAN LOON, Mr.Fengyuan ZHUANG <i>Rapporteur:</i> Ms. Zhaokun LI	Working Group 2: CBE <i>Co-Chairs:</i> Mr.Joseph Olusola AKINYEDE, Mr.Zhijun XIAO <i>Rapporteur:</i> Ms. Xuhan CHEN	Working Group 3: HSE <i>Co-Chairs:</i> Ms.Gerda Hildegard HORNECK, Mr. Xiang WANG <i>Rapporteur:</i> Ms. Yangmei ZHANG
	Discussion	(1) Presentation: HSTI Zero-Gravity Instrument Project, By Ms. Mika OCHIAI, UNOOSA (2) Discussion	(1) Presentation: The ISECG Global Exploration Roadmap, By Mr.Bernhard HUFENBACH, Space Exploration Architecture Office, ESTEC, ESA (2) Discussion
17:30	<i>Break</i>		
	<u>International Astronauts/Cosmonauts/Taikongnauts Public Forum</u> (at Tsinghua University)		
18:00	Transferring participants to the venue (1 hour to the location) <i>Light meals are provided on the bus (sponsored by CMSA)</i>		
19:30	Moderator: Ms. Jiangtian WANG ○ Opening /Welcoming Speeches ○ Panel Discussion ○ Questions and Answers with Audience		
21:30	Transferring participants to the hotel		
22:00	<i>End of Day 2</i>		

Wednesday, 18 September 2013		
Time	Morning	
08:30	<i>Registration</i>	
	Technical Presentation Session-6: <u>Microgravity Science-2</u> Chairperson: Mr.Mohd Alauddin MOHD ALI Rapporteur: Ms. Zhaokun LI	
09:00	The Altered Gravity Platform: a Ground Based Research Facility for Human	Mr.Jacobus VAN LOON, VU Medical Center Amsterdam, The Netherlands
09:20	Researches in Life Sciences and Microgravity Sciences of Chinese Manned Space Program: Past, Present and Future	Ms.Yingchun LIU, Technology and Engineering Center for Space Utilization, Chinese Academy of Science (CAS), China
09:40	Progress and Prospect of Space Medicine in China	Ms.Yinghui LI, China Astronaut Research and Training Center, China
10:00	Studies on Space Life for the Humans Health on Earth	Mr.Fengyuan ZHUANG, Beihang University, China
10:20	Quantitative Ultrasound Technology for Monitoring Bone Loss in Space	Mr.Yixian Phil QIN, Stony Brook University, USA
10:40	<i>Break & Poster Session</i>	
	Technical Presentation Session-7: <u>Capacity Building & Education-2</u> Chairperson: Mr.Joseph Olusola AKINYEDE Rapporteur: Ms. Xuhan CHEN	
11:10	Capacity Building through Innovative Learning: Impact Assessment on Societal Benefits	Ms.Anjana Narendra VYAS, CEPT University, India
11:30	Human Space Technology: A Case of Ghana	Mr.Emmanuel Proven ADZRI, Ghana Space Science and Technology Institute (GSSTI), Ghana Atomic Energy Commission, Ghana
11:50	Application of Space Technology In Bangladesh And International Cooperation	Ms.Mehrun NESSA, Bangladesh Space Research and Remote sensing Organization (SPARRSO), Bangladesh
12:10	Inspire! Enable! Propel! Advancing Education and Humanity thru Space Technology	Mr.Elliot Gaylord PULHAM, Space Foundation, USA
12:30	<i>Lunch (sponsored by CMSA)</i>	
Time	Afternoon	
	<u>China's Human Space Facility Tour</u>	
14:00	Transferring participants to Beijing Space City	
15:00	<ul style="list-style-type: none"> ○ Facility Tour at China Academy of Space Technology (CAST) <ul style="list-style-type: none"> - Exhibition Hall - AIT Center for Manned Spacecraft ○ Facility Tour at Astronaut Centre of China(ACC) <ul style="list-style-type: none"> - Simulators for Astronauts Mission Training - Neutral buoyancy Pool for Simulated Zero-Gravity Training - EVA Training Lab ○ Facility Tour at Beijing Aerospace Control Centre (BACC) <ul style="list-style-type: none"> - Mission Control Hall 	
17:30	Transferring participants to hotel	
18:30	<i>End of Day 3</i>	

Thursday, 19 September 2013			
Time	Morning		
08:30	<i>Registration</i>		
	Technical Presentation Session-8: Human Space Exploration & International Cooperation-2 <i>Chairperson:</i> Mr. Yu LU <i>Rapporteur:</i> Ms. Zhaokun LI		
09:00	Approach of Tomorrow's Space Habitation and its Legal Framework	Mr.Dumitru-Dorin PRUNARIU, Romanian Space Agency, Romania	
09:20	Development and Prospect of China Launch Vehicle	Mr.Zhaoping HAO, China Academy of Launch Vehicle Technology, China	
09:40	Space Solar Energy towards Human Space Technology	Mr.Musse Mohmud AHMED, International Islamic University Malaysia (IIUM), Somalia	
10:00	Perspectives of Space Generation Regarding Human Space Flight and Exploration	Ms.Catherine DOLDIRINA, Space Generation Advisory Council, Austria	
10:20	IAA Study Group on Global Human Mars System Missions Exploration	Mr.Giancarlo GENTA, Polytechnic University of Turin, Italy	
10:40	<i>Break & Poster Session</i>		
	Technical Presentation Session-9: Human Space Exploration & International Cooperation-3 <i>Chairperson:</i> Mr.Giancarlo GENTA <i>Rapporteur:</i> Ms. Xuhan CHEN		
11:10	Critical Health Issues for Human Exploratory Missions	Ms.Gerda Hildegard HORNECK, Institute of Aerospace Medicine, German Aerospace Center (DLR), Germany	
11:30	Feasibility Study of Astronaut Standardized Career Dose Limits in LEO and the Outlook for BLEO	Ms.Susan Mary Patricia MCKENNA-LAWLOR, Space Technology Ireland Ltd., Ireland	
11:50	Mining Data for Space Exploration	Mr.Nandu GOSWAMI, Medical University of Graz, Austria	
12:10	Space Mineral Resources - Opportunities and Challenges, Introduction to a Study Now in Progress	Mr.Arthur McKee DULA, The Heinlein Prize Trust, USA	
12:30	<i>Lunch (sponsored by CMSA)</i>		
Time	Afternoon		
14:00	<u>Working Group Session-2</u>		
	Working Group 1: MGS <i>Co-Chairs:</i> Mr.Jacobus VAN LOON, Mr.Fengyuan ZHUANG <i>Rapporteur:</i> Ms. Zhaokun LI	Working Group 2: CBE <i>Co-Chairs:</i> Mr.Joseph Olusola AKINYEDE, Mr.Zhijun XIAO <i>Rapporteur:</i> Ms. Xuhan CHEN	Working Group 3: HSE <i>Co-Chairs:</i> Ms.Gerda Hildegard HORNECK, Mr. Xiang WANG <i>Rapporteur:</i> Ms. Yangmei ZHANG
	Discussion	Discussion	Discussion
15:30	<i>Break</i>		
16:00	<u>Working Group Session-3</u>		
	Working Group 1: MGS <i>Co-Chairs:</i> Mr.Jacobus VAN LOON, Mr.Fengyuan ZHUANG	Working Group 2: CBE <i>Co-Chairs:</i> Mr.Joseph Olusola AKINYEDE, Mr.Zhijun XIAO	Working Group 3: HSE <i>Co-Chairs:</i> Ms.Gerda Hildegard HORNECK, Mr. Xiang WANG

	Rapporteur: Ms. Zhaokun LI	Rapporteur: Ms. Xuhan CHEN	Rapporteur: Ms. Yangmei ZHANG
	Discussion	Discussion	Discussion
18:00	Culture Dinner (<i>sponsored by CMSA</i>)		
	Chinese culture shows / Dinner		
20:00	<i>End of Day 4</i>		

Friday, 20 September 2013			
Time	Morning		
09:00	Working Group Session 4		
	Working Group 1: MG Co-Chairs: Mr.Jacobus VAN LOON, Mr.Fengyuan ZHUANG Rapporteur: Ms. Zhaokun LI	Working Group 2: CBE Co-Chairs: Mr.Joseph Olusola AKINYEDE, Mr.Zhijun XIAO Rapporteur: Ms. Xuhan CHEN	Working Group 3: HSE Co-Chairs: Ms.Gerda Hildegard HORNECK, Mr. Xiang WANG Rapporteur: Ms. Yangmei ZHANG
	Discussion	Discussion	Discussion
10:30	<i>Break</i>		
11:00	Joint Working Group Session Moderator: Dr. Takao DOI, UNOOSA Rapporteur: Ms. Xiaoxu CHEN		
	Round Table Speakers: - To be designated.		
12:30	<i>Lunch (sponsored by CMSA)</i>		
Time	Afternoon		
14:00	Wrap Up Session		
	Co-Chairs : Mr. Takao DOI, Mr. Giuseppe REIBALDI Rapporteur: Ms. Mika OCHIAI, Mr. Aimin NIU		
	<ul style="list-style-type: none"> ○ Review of the Workshop, approval of recommendations, and discussions of future activities 		
16:00	Closing Remarks By Mr. Zhaoyao WANG, CMSA By Mr. Giuseppe REIBALDI, IAA By Mr. Takao DOI, UNOOSA		
16:30	<i>End of the Workshop</i>		

Poster sessions during break time, 16-19 September 2013

No.	Date	Title	Author/Presenter
Monday 16 September			
1	Mon, 16 Sep. Afternoon	Algerian National Space Programme (2006-2020)	Mr. Mohammed BEKHTI, Algerian Space Agency, Algeria
2	Mon, 16 Sep. Afternoon	Development of space activities in the Republic of Kazakhstan	Mr. Baubek Zhetkergenovich ORALMAGAMBETOV, National Space Agency of Republic of Kazakhstan, Kazakhstan
Tuesday 17 September			
3	Tue, 17 Sept. Morning	Space Activity in Nepal	Mr. Jayanta ACHARYA, Takshashila Academy, Nepal
4	Tue, 17 Sept. Morning	National, Regional and International Space Programmes in Kenya	Mr. Moses Kipngeno RUGUTT, National Commission for Science, Technology and Innovation, Kenya
5	Tue, 17 Sept. Afternoon	Space Education in Bangladesh	Ms. Kamrun Naher KHANAM, Bangladesh Space Research and Remote Sensing Organization (SPARRSO), Bangladesh
6	Tue, 17 Sept. Afternoon	Student contest - Expedition Mars	Mr. Jan HRABOVSKÝ, Czech Space Office, Czech Republic
7	Tue, 17 Sept. Afternoon	Science and Technology in Zambia Today	Mr. Mumba Dauti KAMPENGELE, Tazama Pipeline, Zambia
Wednesday 18 September			
8	Wed, 18 Sept. Morning	Effects of reduced gravity on combustion and reduction of Greenhouse Gas Emissions (GHG)	Mr. Iskander TLILI TLILI, Energy and Thermal Systems Laboratory, National School of Engineers in Monastir, Tunisia
9	Wed, 18 Sept. Morning	Lightening Protection Scheme for Nigeria SAT 01 Ground Control Station after Thunderstorm Lightening Failure	Mr. Abiola Kayode OLANREWAJU, University Of Ibadan, Nigeria
10	Wed, 18 Sept. Morning	The Regional Center for Space Science and Technology Education for Western Asia / UN (RCSTEWA)	Mr. Mohammad Salim ALJBOUL, Royal Jordan Geographic Centre, Jordan
Thursday 19 September			
11	Thu, 19 Sept. Morning	GNSS Applications in Pakistan; Requirements and recent developments	Mr. Khalid ISHAQ, Pakistan Space & Upper Atmosphere Research Commission (SUPARCO), Pakistan
12	Thu, 19 Sept. Morning	LUNAR PALACE 1 as an Integrative Experimental Facility for Permanent Astrobase Life-support Artificial Closed Ecosystem (P.A.L.A.C.E.)	Ms. Hong LIU, Beihang University, China

Appendix I

SESSION GUIDELINES

I. Objectives of Sessions

Presentation Session:

Exchange information and learn work from other people.

Working Group Session:

We are planning to have three working groups. They are Microgravity Science (MGS), Capacity Building & Education (CBE), and Human Space Exploration (HSE). Each working group has the following phases and objectives:

- (1) Mapping Phase: Identify niches, capabilities and current activities in countries which could be of relevance for the topics of the working groups.
- (2) Observation Phase: Identify issues and problems in countries that are trying to implement specific objectives.
- (3) Recommendation Phase: Discuss how to solve any issues and problems and how to foster new activities.

Joint Working Group Session:

- (1) Share observations and recommendations identified in the different Working Groups.
- (2) Consolidate recommendations

Wrap Up Session

Finalize recommendations.

II. How to Run the Sessions

Presentation Session:

Each speaker is given 20 minutes (including five minutes for Questions and Answers).

Working Group Session:

- (1) Ask each participant to choose one (in principle) working group to join.
- (2) Identify opportunities, issues and problems in implementing specific objectives. The pre-workshop questionnaire can be used for the Mapping/Observation Phases.
- (3) Discuss how to resolve the issues and problems and how to foster the new activities in the Recommendation phase.

Joint Working Group Session:

We are planning to have experts (to be designated) at the round table.

- (1) Each working group chairperson will present observations and recommendations of his/her working group.
- (2) Experts at the round table will make comments on any findings.
- (3) The session will be open to the floor for further comments.

Wrap Up Session:

Review and conclude the observations and the recommendations.