

# INTERNATIONAL WORKSHOP ON MULTI-WELL DEEP UNDERGROUND LABORATORY IN EASTERN CHINA

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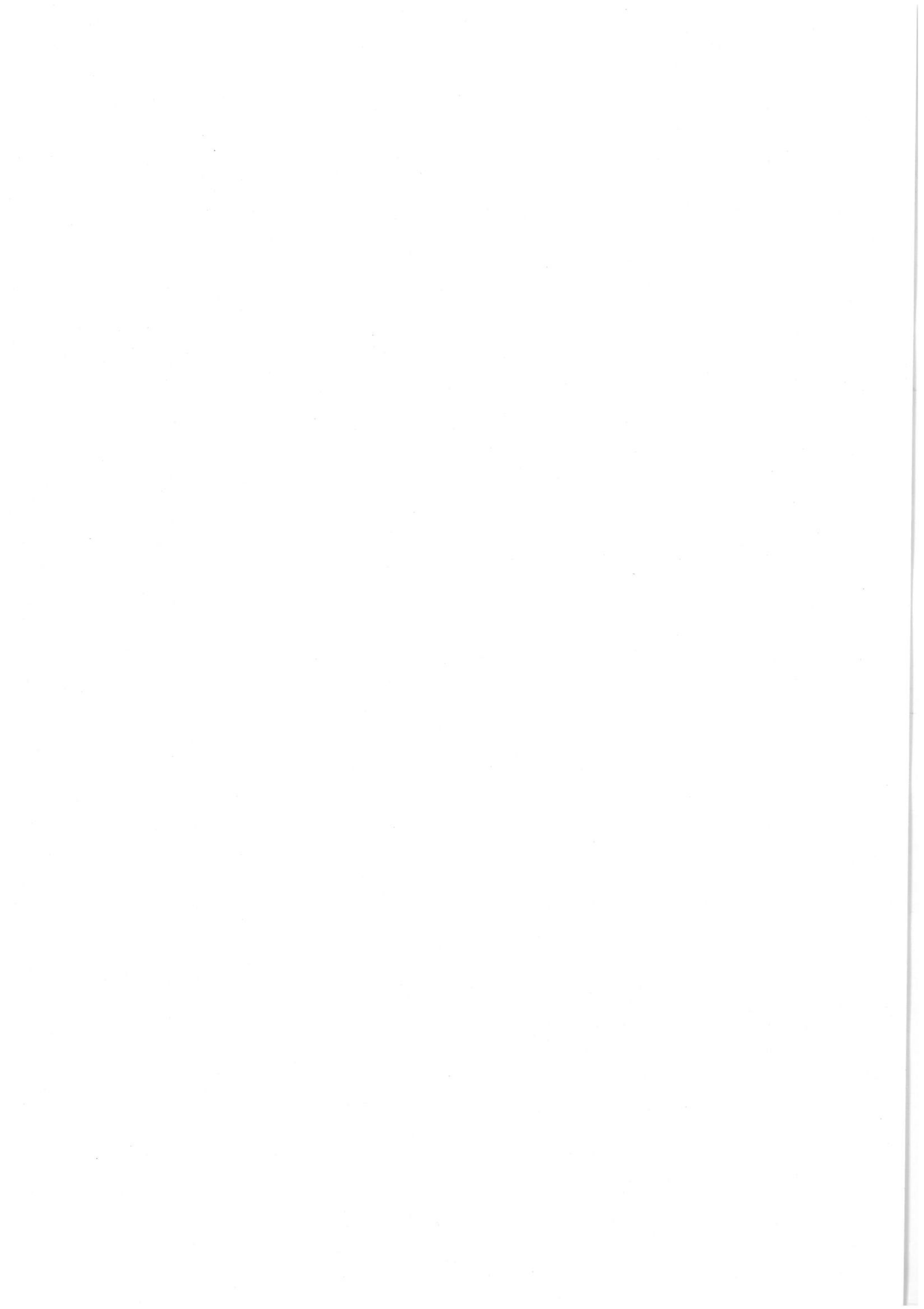


Deep Carbon Observatory



July 3<sup>th</sup>-8<sup>th</sup>, 2016 CHANGCHUN, CHINA





# Welcome

On behalf of the organizing committee, we would like to welcome you to the international workshop on multi-well deep underground laboratory in the eastern China in Changchun 2016, which is launched by the International Continental Drilling Program (ICDP), the Deep Carbon Observatory (DCO) and International Union of Geological Science (IUGS), and organized by the Jilin University, the Chinese Academy of Geological Sciences, the China University of Geosciences at Beijing and the Sino-Probe.

The earth's surface phenomenon is originated from the deep underground. Hence, the application of the international workshop on multi-well deep underground laboratory in eastern China, which is led by the Chinese scholars, cooperated with the American, German, Japanese, Korean and other scholars, is submitted to the ICDP in 2013 and approved in 2014.

A deep underground laboratory (DUL) is defined here, the main propose of this international workshop is to discuss science and engineering issues on "Multi-well deep underground laboratory", form a full proposal which includes the scientific objectives of deep underground laboratory and submit to the ICDP. Technical challenges related to the MW-DUL construction and operation will be discussed, such as installation of various instruments, observation and experimentation related to the deep biosphere research, deep CO<sub>2</sub> sequestration, fluid migration and recovery by injection of CO<sub>2</sub> and bio-gasification, and monitoring of volcanic and earthquake hazards. After the workshop we also prepare two routes for field trips to Changbai Mountain or Wellsite of SK-2 from July 6<sup>th</sup> to 8<sup>th</sup>. For more details, please read the third circular.

This workshop will be open to all the men of deep insight and sincerely welcome to your arrival. We believe that this workshop will provide precious opportunity to commute innovation for professionals in related field from all over the world.

Early July is a beautiful and pleasant month of the year in Changchun, which is passionate and potential. The climate here is quite comfortable. The temperature during this time is approximately around 20~28℃ on average.

Thank you for participating in and supporting multi-well deep underground laboratory in eastern China in Changchun 2016. We wish you a successful workshop and satisfactory stay!

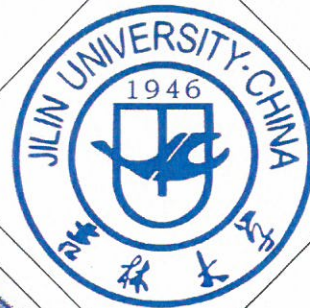
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# SCIENTIFIC COMMITTEE

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Prof. Steve Graham, Stanford University, USA

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Prof. Shuwen Dong, SinoProbe Center of Chinese Academy of  
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Prof. Axel Liebscher, GFZ, Germany

Prof. Tullis C. Onstott, Princeton University, USA

## Member

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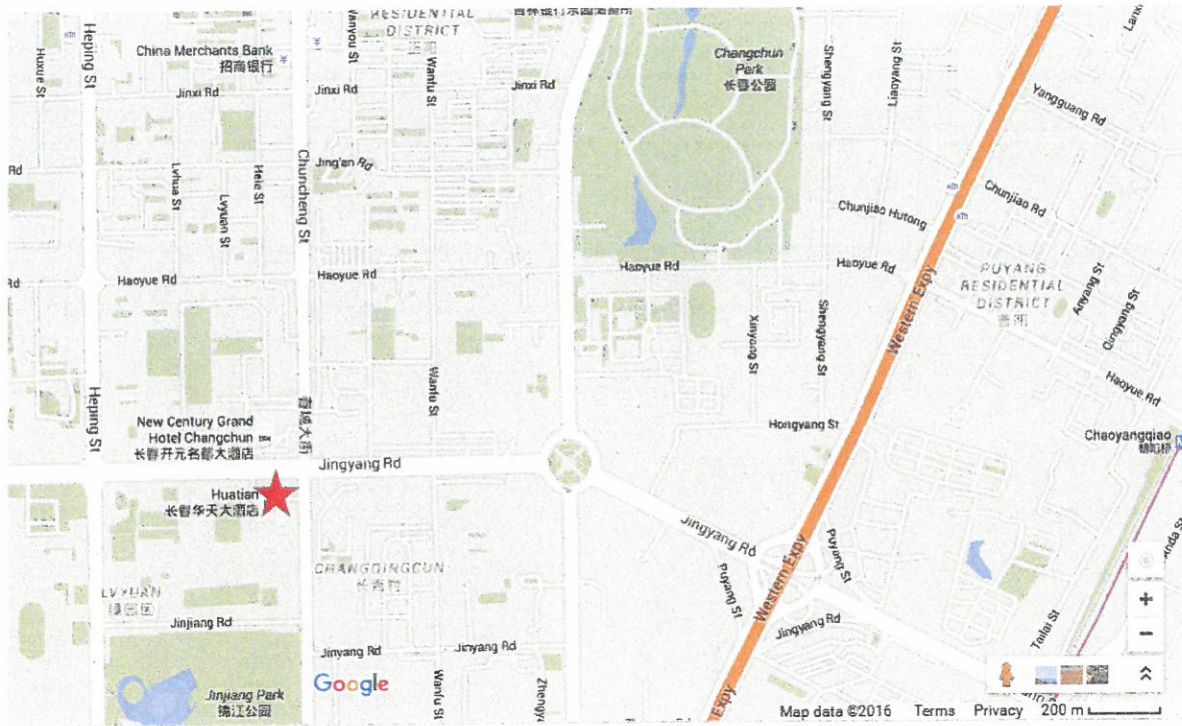
Prof. Zhenmin Jin, China University of Geosciences at Wuhan, China

Prof. Peizhen Zhang, China Earthquake Administration, China

Prof. Rui Gao, Chinese Academy of Geological Science, China

# VENUE LOCATION MAP

## Changchun Huatian Hotel Locality



## Changchun Huatian Hotel Address:

Changchun Huatian Hotel, No.2288,

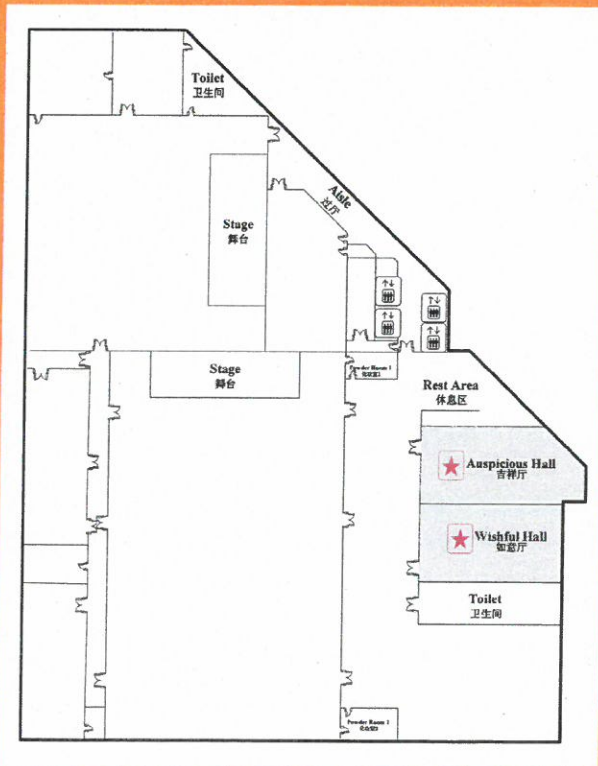
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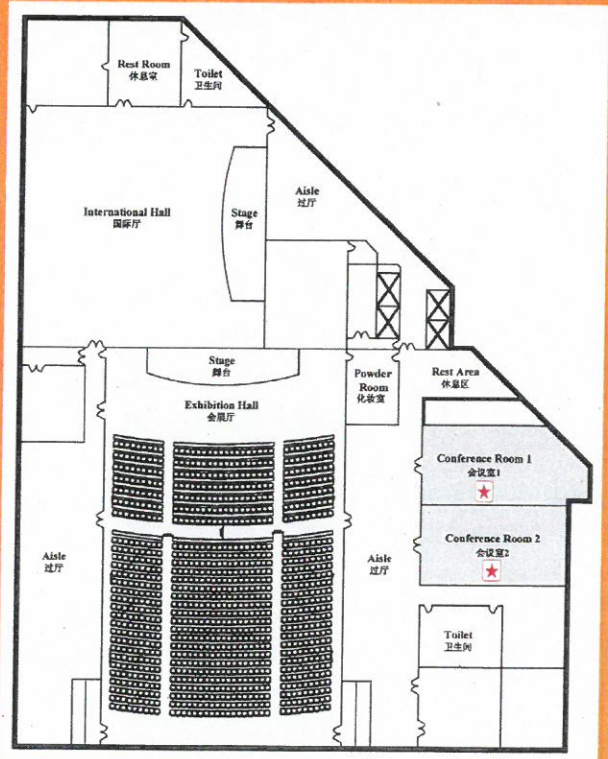


# MEETING VENUE FLOOR MAP

The Second Floor



The Fourth Floor



The Sixth Floor

# ROUTES OF FIELD TRIPS



●—● A line

●—● B line

WSCM West slope of changbai Mountain

**Route A:**

Changchun—Wellsite of SK-2—Wudalianchi  
Volcano-Harbin

**Route B:**

Changchun—Wellsite of Lincan 1—  
Changbai Volcano-Changchun



# WORKSHOP SCHEDULE

Saturday, 2 July				
09:00-21:00	Registration Location: Lobby, Huatian Hotel			
18:00-21:00	Ice-breaker Party Location: Western Dining Room, the First Floor, Huatian Hotel			
Sunday, 3 July				
09:00-21:00	Registration Location: Lobby, Huatian Hotel			
Location: Friendship Hall, the Second Floor, Huatian Hotel (*15 min/presentation+5 min/discussion)				
Time	Title	Presentations	Chaired by	Session Description
08:30-09:00	Speech on behalf of the Ministry of land and resources	Caisheng Zhao	Qingtian Lyu, Craig Schiffries	Opening Ceremony
	Speech on behalf of ICDP	Thomas Wiersberg		
	Speech on behalf of Jilin University	Youhong Sun		
	Funding opportunities for international collaboration	Enriqueta Barrera		
09:00-09:20	General introduction to MW-DUL	Chengshan Wang	Qingtian Lyu, Craig Schiffries	Introduction Session
09:20-09:40	Phanerozoic tectonic framework of Northeast China	Wenliang Xu		
09:40-10:00	Structures of the lithosphere in Northeast China	Shuwen Dong		
10:00-10:20	Break and photograph Location: In Outdoor			
10:20-10:40	Design and key function of the multi-well deep underground laboratory in eastern China	Pujun Wang	Zhenmin Jin, Thomas Wiersberg	Borehole Construction
10:40-11:00	Deep underground laboratory and deep hole drilling and completion technology	Wenwei Xie		
11:00-11:20	Installation of geophysical comprehensive survey instrument in the borehole of CCSD, Donghai	Jinyun Pi		

11:20-11:40	Considerations and simulation experiments for deep well Observation	Jun Lin	Zhenmin Jin, Thomas Wiersberg	Insturments and Monitoring
11:40-12:00	Emerging technologies for well-based monitoring of the deep subsurface	Barry Freifeld		
12:00-14:00	Lunch Location: Western Dining Room, the First Floor, Huatian Hotel			
14:00-14:20	Permanent monitoring and smart completions	Ronald Bland	Youn Soo LEE, Barry Freifeld	Insturments and Monitoring
14:20-14:40	Tracers to characterise the subsurface and their use in monitoring for CCS	Linda Stalker		
14:40-15:00	Novel scientific instrumentation for deep carbon research	Craig Schiffries		
15:00-15:20	Walkaway VSP using multimode optical fibers in a hybrid wireline	Gang Yu		
15:20-15:40	Adaptive modeling in computational geoelectromagnetics	Changchun Yin		
15:40-16:00	Development of deep slimhole acoustic and electrical logging tool	Xiuming Wang		
16:00-16:10	Break			
16:10-16:30	Innovative borehole methods for exploration and monitoring of enhanced geothermal systems	Jan Henninges	Jiyang Wang, Linda Stalker	Underground Energy
16:30-16:50	Geothermal gradients in different rocks	Kewen Li		
16:50-17:10	Replacing coal power with geothermal: options for no-CO <sub>2</sub> energy in China	Susan Petty		
17:10-17:30	Conceptual model of Enhanced Geothermal System based on excavation technology (EGS-E)	Chun'an Tang		
17:30-17:50	Observations of abiogenic hydrocarbons in the Songliao Basin of China	Yongjian Huang		
17:50-18:00	Introduction to FORGE Program	Susan Petty		
18:30-20:00	Evening Party Location: Western Dining Room, the First Floor, Huatian Hotel			

Monday, 4 July

Location: Friendship Hall, the Second Floor, Huatian Hotel  
 (\*15 min/presentation+5 min/discussion)

Time	Title	Presentations	Chaired by	Session Description
08:30-08:50	Underground microbial experiments	Tullis Onstott	Xueyu Lin, Linda Stalker	Underground Geofluid and Biosphere
08:50-09:10	Life in extreme environments: deep subsurface, saline lakes, and hot springs	Hailiang Dong		
09:10-09:30	A role for virus in deep carbon biogeochemistry	Donald Pan		
09:30-09:50	Characteristics and analysis of deep underground fluid and geological media	Tianfu Xu		
09:50-10:10	CO <sub>2</sub> gravitational trapping processes in deep marine sediments	Zhenxue Dai		
10:10-10:20	Break			
10:20-10:40	A large-scale Mg isotope anomaly in the mantle of eastern China constraining deep carbon recycling	Wei Yang	Jiaqi Liu, Christian Koeberl	Deep Carbon Cycle
10:40-11:00	Tracing subducted crustal materials by using magnesium isotopes	Fangzhen Teng		
11:00-11:20	Stagnant subducted Pacific slab-derived CO <sub>2</sub> emissions: Insights into magma degassing at Changbaishan volcano, NE China	Zhengfu Guo		
11:20-11:40	Ca isotopes in Hawaiian shield lavas: a role of ancient carbonate	Huang Sichun		
11:40-12:00	The carbon in the mantle lithosphere: occurrence modes and chemical compositions	Mingjie Zhang		
12:00-14:00	Lunch Location: Western Dining Room, the First Floor, Huatian Hotel			
14:00-14:20	Onset of antarctic glaciations: insights from CO <sub>2</sub> circulation between exterior and interior of Tibetan plateau	Yan Liu	Peizhen Zhang, Thomas Wiersberg	Deep Carbon Cycle

14:20-14:40	Time lapse geophysical monitoring techniques-a proposed plan of ground well coupling	Qingtian Lyu	Peizhen Zhang, Thomas Wiersberg	Ground Well Coupling
14:40-15:00	Development of advanced seismic imaging methods for local seismic monitoring array	Haijiang Zhang		
15:00-15:20	Double block mechanics based on the newton force measurement	Manchao He		
15:20-15:40	Seismic velocity structure of upper mantle in Northeast China: an upper mantle convection model for the origin of the Quaternary intra-plate volcanism in Northeast China	Yongshun Chen		
15:40-16:00	Break			
16:00-16:20	Geodynamic transection across northeast Asia : focus on Changbai Volcanoes	Jiaqi Liu	Shuguang Li, Tullis Onstott	Deep Hazard
16:20-16:40	The end-Cretaceous asteroid impact and mass extinction: from Chicxulub to Songliao	Christian Koeberl		
16:40-17:00	Seismic hazards in continental China and the Yilan-Yitong faults adjacent to the Songliao basin	Peizhen Zhang		
17:00-17:20	Late Mesozoic Reconstruction of the NE Asia	Youn Soo LEE		
17:20-17:40	Operational support and funding of scientific drilling through the International Continental Scientific Drilling Program	Thomas Wiersberg		
17:40-18:00	Data center initiative of Multi-Well Deep Underground Laboratory	Huai Zhang	Shuguang Li, Tullis Onstott	Data Center
18:30-20:00	Dinner Location: Western Dining Room, the First Floor, Huatian Hotel			

Tuesday, 5 July		
Time	Session Description	Moderators
8: 30-12: 30 (Discussion Session)	Deep Subsurface Geofluid and Biosphere Location: Conference Room 1	Xueyu Lin, Hailiang Dong, Tullis Onscott
	Deep Subsurface Hazards (earthquakes and volcanos) Location: Conference Room 2	Jiaqi Liu, Peizhen Zhang, Craig Schiffries
	Deep Subsurface Geothermal development Location: Conference Room 3	Jiyang Wang, Kewen Li, Susan Petty
	Surface-subsurface Coupling Location: Auspicious Hall	RuiGao, Qingtian Lyu, Thomas Wiersberg
	Borehole Observation Location: Wishful Hall	Manchao He, Jun Lin, Barry Freifeld
12:30-14:00	Lunch Location: Western Dining Room, the First Floor, Huatian Hotel	
14:00-15:30	Summary Statement (Fifteen minutes per theme) Location: Auspicious Hall	Shuwen Dong, Craig Schiffrie
15:30-16:00	Poster Display	
	Location: Outside the Friendship Hall, the Second Floor, Huatian Hotel	
	The carbon species and chemical compositions in the mafic magmatism, Qingyan Tang	
	Heat Producing Elements in the Earth and Geoneutrino study, Feiyu Xi	
	The origin of orogenic and plume-related carbonatites: the role of subducted sediments, Wenlei Song	
	CO <sub>2</sub> Released From Carbonated Eclogites During Their Exhumation, Jianjiang Zhu	
	The paleo-Asian oceanic subduction-related deep mantle recycling of sedimentary carbonate: Evidence from the Dalihu carbonatitic xenolith, Detao He	
	Stress measurements and monitoring and its application, Zhongyuan Zhang	
16:00-18:00	Visit the laboratory of Jilin University	Hongdong Li
18:30-20:00	Dinner Location: Western Dining Room, the First Floor, Huatian Hotel	

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# GENERAL INFORMATION

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## Onsite Rules and Instructions

1. The official language of the workshop will be English.
2. All participants will need to wear the name badges to enter all the meeting rooms and poster sessions.
3. Please mind your own safety, take care of your belongings and prevent accidents in any forms. If any unexpected event occurs, please contact the onsite staff immediately so that measures can be taken appropriately.
4. If the fire incident and other disaster occur during this meeting, the participants should be led to leave through the nearest exit immediately and congestion should be prevented.
5. Please remain calm if the fire incident occurs in the rooms. If evacuation is needed, please follow the instructions by the onsite staff and leave according to the evacuation instructions posted in the rooms and the corridors.
6. If any accident happens outside the meeting venues, please call 110 for police and emergencies, 119 for fire accidents and 120 for ambulances.
7. Room 1601 is the infirmary, please contact the onsite staff if any physical problems occur to you.
8. Please contact us if you have any question, we will serve for you with our heart and soul.  
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