The 3rd International Workshop

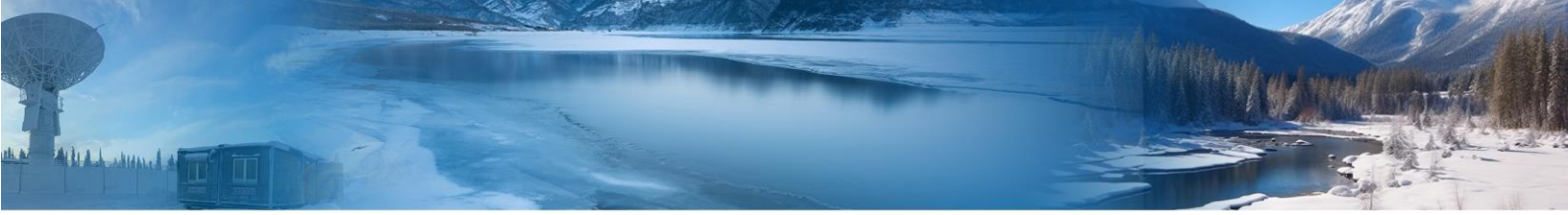
on

Observations and Understanding of Changes in High Mountain and Cold Regions (HiMAC 2023)

Theme：Connections of Environment Changes between High Mountain Asia and the Arctic Region

November 29 - December 2, 2023

Urumqi, Xinjiang, China



The 3rd International Workshop on Observations and Understanding of Changes in High Mountain and Cold Regions (HiMAC 2023)

Background

The world is getting more sensitive to the climate change and human activities as floods, droughts, fires, wars, inequality, health emergency, and so on occur more frequently, in turn, exerting an influence on the environmental changes and sustainable development. High Mountain and Cold Regions saw an amplification effect about changes and impacts. Specifically, the High Mountain and Cold Regions are linked with spatial contiguous air and vapor on the sky, permafrost, snow, forest and even hazards on the land, seasonally or perennially. Thus, environmental changes in the high mountain and cold regions cannot be observed and understood in isolation. A better characterizing and understanding the linkages in high mountain and cold regions would be a must to improve the scientific understanding and to design interventions towards adaption.

Both the Qinghai-Tibet Plateau and the Arctic region are sensitive areas of global change and research hotspots, which have an important impact on the implementation of the "Belt and Road". Improving the observation and understanding ability of high mountains and polar cold regions is of great significance to the adaptability of ecological environment and the transportation, large-scale infrastructure, water and agricultural security, and energy pattern involved in human activities.

At present, the rate of warming in the Arctic and the high mountain areas in Asia is 2 or even 3 times more than the global average. Big data based on space observation can obtain macro, long time series and objective data sources for scientific research in remote areas where snow and ice have a large impact. The technology of coordination between ground observation and space observation can obtain multi-element environmental information for scientific research and further deepen the understanding of environmental change.

Filed work in China and abroad are linked more closely by conducting experiments jointly and sharing scientific outputs in different subregions of High Mountain Asia (HMA) and the Arctic Region, with a series of essential variables ranging for decades. Taken together the development of observation systems and great changes in HMA and the Arctic Regions, it is a good opportunity for global and trans-boundary scientific and decision-making cooperation for a shared and better knowledge on HMA and the Arctic Regions.

The workshop is an event in the framework of the international program - “Group on Earth Observations Cold Regions Initiative (GEOCRI)” and “High Mountain and Cold Regions Working Group (HiMAC) of Digital Belt and Road Program (DBAR) ".

The workshop will focus on the connections of Environment Changes between High Mountain Asia and Arctic Region, and which is organized around follow themes:

Theme1: Remote Sensing Experiments and Modelling of Cryosphere

- Remote sensing experiments for in-situ calibration and validation
- Experiments for environmental factors, process and physical modelling for environment evolution based on snow, water cycle, carbon cycle and other processes

Theme2: Earth observations Data and value-added products

- Innovative methods and approaches for earth observations data processing
- EO Data and value-added products in High Mountain Asia and the Arctic
- Data management and data sharing principle

Theme3: Modeling and change analysis of High Mountain Asia and the Arctic

- Spatial and temporal change and analysis of the environmental changes in High Mountain Asia and the Arctic
- Forecast and assessment of land and ocean environment

Theme4: Correlation and synergy of HMA and the Arctic environment

- Correlation or tele-correlation analysis of the environmental changes of High Mountain Asia and the Arctic
- Synergy of environmental changes in High Mountain Asia and the Arctic

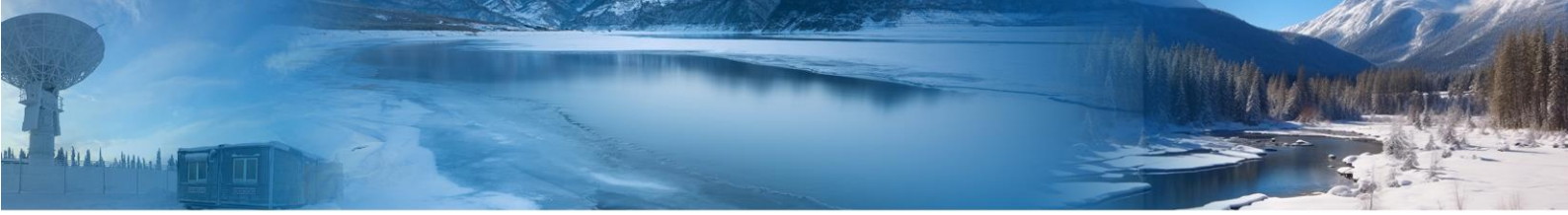
Theme5: Impact of environmental changes and sustainable development through EOs

- Impacts and implication of environmental changes to societal benefits Area : agriculture, disaster, water resources, infrastructure, forest in High Mountain Asia and Arctic Region
- Impacts and responses of future environmental changes in HMA and the Arctic

Lanhai LI, Massimo MENENTI, and Yubao QIU

Organization Committee of HiMAC2023

Xinjiang, China, November, 2023



Organization

Organizers:

- High Mountain and Polar Cold Region Working Group (Digital Belt and Road Program) (HiMAC WG)
- GEO Cold Regions Initiative, Group on Earth Observations (GEO-CRI)
- Xinjiang Association for Science and Technology
- Xinjiang Institute of Ecology and Geography, Chinese Academy of Sciences (XIEG-CAS), China
- Xinjiang Key Laboratory of Water Cycle and Utilization in Arid Zone

Host：

- Tianshan Snowcover and Avalanche Observation and Research Station of Xinjiang
- The Third Xinjiang Scientific Expedition Program（No.2022xjkk0600，2021xjkk1300，2021xjkk1400）
- Research Center for Ecology and Environment of Central Asia, Chinese Academy of Science
- Xinjiang Society of Natural Resources, China
- Xinjiang Scientific Exploration Association

Co-Sponsor:

- Aerospace Information Research Institute, Chinese Academy of Sciences (AIR-CAS), China
- China Aero Geophysical Survey and Remote Sensing Center for Natural Resources (AGRS), China Geological Survey (CGS), China
- Committee on Digital Poles, Chinese National Committee of International Society for Digital Earth (CN-ISDE)
- Institute of Space Earth Science, Nanjing University
- Institute of Tibetan Plateau Research, Chinese Academy of Sciences (ITP-CAS), China
- International Research Center of Big Data for Sustainable Development Goals (CBAS)
- International Society for Digital Earth (ISDE)
- National Marine Environmental Forecasting Center(NMEFC), China
- Northwest Institute of Eco-Environment and Resources, Chinese Academy of Sciences（NIEER-CAS), China
- Pan-Eurasian Experiment (PEEX)
- Polar Research Institute of China (PRIC), China
- Sun Yat-Sen University, China
- Tsinghua University, China
- Yunnan University, China

HiMAC2023 Committee

Scientific committee

Chairs

Huadong GUO	International Research Center of Big Data for Sustainable Development Goals (CBAS); Aerospace Information Research Institute, Chinese Academy of Sciences (AIR-CAS), China
Philippe De Maeyer	Ghent University, Belgium
Xi CHEN	Xinjiang Branch, Chinese Academy of Sciences, China
Yana Gevorgyan	Group on Earth Observations (GEO)

Members

Dashtseren Avirmed	Institute of Geography and Geoecology, Mongolian Academy of Sciences, Mogolia
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Terry V. Callaghan	Sheffield Univeristy, UK and International Network for terrestrial research and monitoring in the Arctic (INTERACT)
Qing BAO	Institute of Atmospheric Physics (IAP) CAS, China
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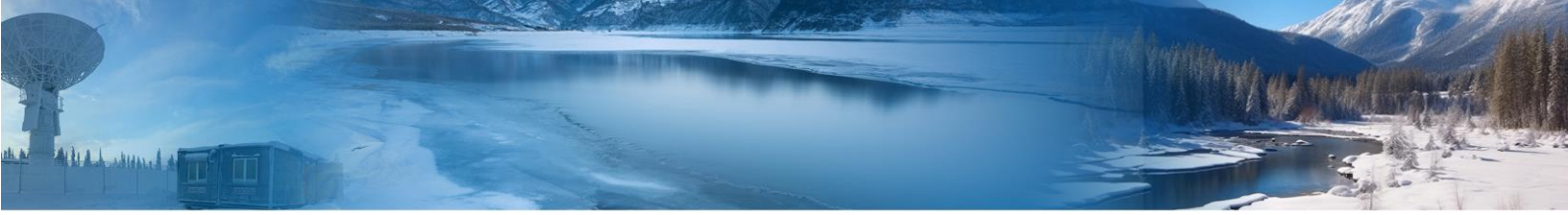
Fang CHEN	International Research Center of Big Data for Sustainable Development Goals (CBAS)
Xianyao CHEN	Ocean University of China, China
Bin CHENG	Finnish Meteorological Institute (FMI), Finland
Xiao CHEN	Sun Yat-Sen University, China
Duo CHU	Institute of Tibetan Plateau Atmospheric and Environmental Sciences, Tibet Meteorological Bureau, China
Junyu DONG	Ocean University of China, China
Andreas Dietz	German Aerospace Center (DLR), Norway
Hiroyuki Enomoto	National Institute of Polar Research (NIPR), Japan
Jinghui FAN	China Aero Geophysical Survey and Remote Sensing Center for Natural Resources (AGRS), China Geological Survey (CGS), China



Fengming HUI	Sun Yat-sen University, China
Huabing HUANG	Sun Yat-sen University, China
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Li JIA	Aerospace Information Research Institute, Chinese Academy of Sciences (AIR-CAS), China
Masaki Kanao	National Institute of Polar Research (NIPR), Japan
Richard Kelly	University of Waterloo, Canada
Joni Kujansuu	Helsinki University, Finland
Alishir Kurban	Xinjiang Institute of Ecology and Geography, Chinese Academy of Sciences, China
Hanna K. Lappalainen	Pan-Eurasian Experiment (PEEX)
Ruibo LEI	Polar Research Institute of China, China
Jan Rene Larsen	Sustaining Arctic Observing Networks (SAON)
Juha Lemmetyinen	Finnish Meteorological Institute (FMI), Finland
Matti Leppäranta	Helsinki University, Finland
Qun LI	Polar Research Institute of China, China
Rongxing LI	Tongji University, China
Tao LI	Ocean University of China
Xiaofeng LI	Northeast Institute of Geography and Agroecology, Chinese Academy of Sciences (NIGA-CAS), China
Xin LI	Institute of Tibetan Plateau, Chinese Academy of Sciences (ITP-CAS), China
Xinwu LI	Aerospace Information Research Institute, Chinese Academy of Sciences (AIR-CAS), China
Zhijun LI	Dalian University of Technology, China
Xi LIANG	National Marine Environmental Forecasting Center, China
Shiyin LIU	Yunnan University, China
Tie LIU	Xinjiang Institute of Ecology and Geography, Chinese Academy of Sciences, China
Peng LU	Dalian University of Technology, China
Mingyang LV	Nanjing University, China
Andrea Marinoni	The Arctic University of Norway (UiT), Norway

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Barbara Ryan	World Geospatial Industry Council (WGIC)
Jiancheng SHI	National Space Science Center, Chinese Academic of Science (NSSC-CAS), China
Olga Shaduyko (Morozova)	Tomsk State University, Russia, and Siberian Environmental Change Network
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Sara Venturini	Group on Earth Observations (GEO)
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Pengfeng XIAO	Nanjing University, China
Shiming XU	Tsinghua University, China
Yaonan ZHANG	Northwest Institute of Eco-Environment and Resources, Chinese Academy of Sciences (NIEER-CAS), China
Tianjie ZHAO	Aerospace Information Research Institute, Chinese Academy of Sciences (AIR-CAS), China

Local Organizing Committee

Chair

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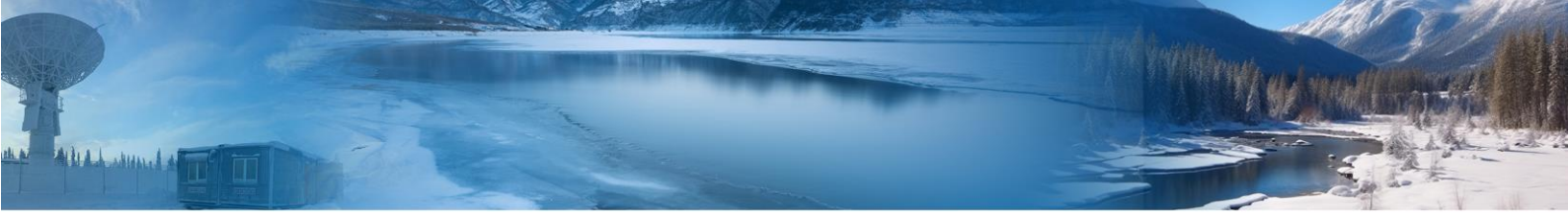
Massimo Menenti	Delft University of Technology, the Netherlands; Co-Chair of HiMAC WG; Co-lead/PoC of GEO Cold Regions Initiative
Yubao QIU	International Research Center of Big Data for Sustainable Development Goals (CBAS), Aerospace Information Research Institute, Chinese Academy of Sciences (AIR-CAS), China; Co-Chair of HiMAC WG; Co-lead/PoC of GEO Cold Regions Initiative



Member

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Shaohua ZHANG	Xinjiang Association for Science and Technology (XJAST), China

HiMAC 2023 Agenda at a Glance

Venue: Yunhai Room, Zhonghe hotel (4F)

Date	Time	Session Arrangement
29th November, 2023 (Wednesday)	Morning (10:30-14:30)	Check-in and Onsite Registration
	Afternoon (15:30 -20:30)	Workshop Opening
		Opening Special Session
		Technique Session - Theme1(1)
30th November, 2023 (Thursday)	Morning (10:30-14:15)	Technique Session – Theme3(1)
		Technique Session – Theme2(1)
	Afternoon (15:30-20:00)	Technique Session – Theme2(2)
		Technique Session – Theme4
1st December, 2023 (Friday)	Morning (10:30-14:00)	Technique Session - Theme1(2)
		Technique Session - Theme5(1)
	Afternoon (15:30-19:30)	Technique Session - Theme5(2)
		Technique Session – Theme3(2)
		Workshop Closing
		Working Meeting
2nd December, 2023 (Saturday)		Discussion/Trip Return

Time Zone: UTC+8, the online meeting connection will be only shared to those who present online. The workshop is not an open meeting.

November 29th, 2023 (Wednesday)		
10:30-14:00	**Onsite Registration**	
Lunch (Bu Er Shuang Yu Guan, 3F)		
Workshop Opening		
15:30-16:10	**Welcome message and Opening Remarks**	**Chair: Lanhai LI**
Group Photo		
Opening Special Session		
16:30-16:50	**A proposed satellite for SWE observations** Jiancheng SHI, National Space Science Center, Chinese Academic of Science (NSSC-CAS), China	**Chair: Tao CHE** Rapporteur: Meng DANG
16:50-17:10	**Modelling spatiotemporal variations in lake ice seasons in Eurasia** Matti J Leppäranta, Helsinki University, Finland	
17:10-17:30	**The spatiotemporal dynamics of the snowline elevations on large glaciers during 1990 and 2022 in Pamir-Karokaram-Western Kunlun Mountains** Shiyin LIU, Yunnan University, China	
17:30-17:50	**Remote sensing of spatiotemporal changes in lakes in Arctic permafrost regions** Xiao CHENG, Sun Yat-Sen University, China	

17:50-18:10	**Influence of Asian Mountains on the Arctic Pressure System and the Stratospheric Ozone** Anmin DUAN, Xiamen University, China	**Chair: Yubao QIU** Rapporteur: Guoqiang JIA
18:10-18:30	**Linking ground ice and glacier melt to changes in lake volume on the Tibetan Plateau** Qiuhong TANG, Institute of Geographic Sciences and Natural Resources Research, Chinese Academy of Sciences, China	
18:30-18:50	**Framework of Establishment of Siberia-Mongolia-Tibet Permafrost Observation Transect: Progress & Perspective** Tonghua WU, Northwest Institute of Eco-Environment and Resources, Chinese Academy of Sciences (NIEER-CAS), China	
18:50-19:10	**Snow Property and Avalanche Monitoring in Tianshan Mountains** Lanhai LI, Xinjiang Institute of Ecology and Geography Chinese Academy of Sciences (XIEG-CAS), China	
Break		

19:30-20:30	**Theme1: Remote Sensing Experiments and Modelling of Cryosphere (1)** Corresponding Person: Lingmei JIANG, Beijing Normal University, China Xiaofeng LI, NIGA-CAS, China Yubao Qiu, AIR-CAS, China Tianjie ZHAO, AIR-CAS, China	
12'+3'	**Research and Progress on Airborne Very High Frequency Glacier Detection Technology** Jinbiao ZHU, Aerospace Information Research Institute, Chinese Academy of Sciences (AIR-CAS), China	Chiar: Lingmei JIANG Rapporteur: Tianjie ZHAO
12'+3'	**Development of FY-3/MWRI** Shengli WU, National Satellite Meteorological Centre, China	
12'+3'	**Microwave radiometry experiment for snow in Altay China** Liyun DAI, Northwest Institute of Eco-Environment and Resources, Chinese Academy of Sciences (NIEER-CAS), China	
12'+3'	**Topographic and Vegetation Controls on Microwave Behavior of Seasonal High-Elevation Snowpacks** Yueqian CAO, Nantong University, China	
Dinner (Bu Er Shuang Yu Guan, 3F)		

November 30th, 2023 (Thursday)		
10:30-13:00	**Theme3: Modeling and change analysis of High Mountain Asia and the Arctic (1)** Corresponding person: Tonghua WU, NIEER-CAS, China Yingying CHEN, ITP-CAS, China Shiming XU, Tsinghua University, China Xi LIANG, NMFC, China	
12'+3'	**Domino effect of a natural cascade alpine lake system on the Third Pole** Lei Wang, Institute of Tibetan Plateau, Chinese Academy of Sciences (ITP-CAS), China	Chair: Tonghua WU Rapporteur: Yingying CHEN
12'+3'	**Recent and future climate change in the western part of Mongolian permafrost region** Saruul zaya Adiya, Institute of Geography and Geoecology, Mongolian Academy of Sciences, Mongolia	
12'+3'	**Glacier changes and their impact on runoff in HMA** Donghui SHANGGUAN, Northwest Institute of Eco-Environment and Resources, Chinese Academy of Sciences (NIEER-CAS), China	
12'+3'	**Simulation of potential impacts of lakes on glacier behavior over the Tibetan Plateau in summer** Lijuan WEN, Northwest Institute of Eco-Environment and Resources, Chinese Academy of Sciences, China	
12'+3'	**Thermal conditions and lake metabolism in the ice-covered North Aral Sea** Georgiy KIRILLIN, Leibniz-Institute of Freshwater Ecology and Inland Fisheries, Germany	
12'+3'	**Wave-Affected Marginal Ice Zones in Southern Ocean from Satellite Altimetry Synergy** Shiming XU, Tsinghua University, China	Chair: Shiming XU Rapporteur: Xi LIANG

12'+3'	**Operational sea ice forecasts for polar regions in the NMEFC** Xi LIANG, National Marine Environmental Forecasting Center, China	
12'+3'	**Unsupervised Learning and Its Applications in Arctic Sea Ice Prediction** Feng GAO, Ocean University of China, China	
12'+3'	**Subseasonal-to-seasonal Prediction of Arctic Sea Ice Using a Fully Coupled Dynamical Ensemble Forecast System** Anling LIU, Beijing Normal University, China	
12'+3'	**Shift simulation of typical Arctic plants with climate change and construction of bioplant dataset** Shaomei LI, Beijing Normal University, China	
13:00-14:15	**Theme2: Earth observations Data and value-added products (1)** Corresponding Person: Lanhai Li, XIEG-CAS, China Pengfeng XIAO, Nanjing University, China; Joni Kujansuu, University of Helsinki, Finland Yubao Qiu, AIR-CAS, China	
12'+3'	**Investigations of air-ice-water interactions on four Chinese lakes** Zhijun LI, Dalian University of Technology, China	Chair: Lanhai Li Rapporteur: Xueliang ZHANG
12'+3'	**Big Data Environment of SMEAR In-situ Measurement Concept** Joni Kujansuu, University of Helsinki, Finland	
12'+3'	**Cross-sectional rainfall observation on the central-western Tibetan Plateau and the multiscale precipitation observation platform in Namco basin** Yingying CHEN, Institute of Tibetan Plateau, Chinese Academy of Sciences (ITP-CAS), China	
12'+3'	**Inconsistency and correction of manually observed ground surface temperatures over snow-covered regions in China** Bin CAO, Institute of Tibetan Plateau, Chinese Academy of Sciences (ITP-CAS), China	

12'+3'	**Improving snow fraction spatio-temporal continuity using a combination of MODIS and FY4A over Asia Water Tower** Fangbo PAN, Beijing Normal University, China	
Lunch (Bu Er Shuang Yu Guan, 3F)		

15:30-18:30	**Theme2: Earth observations Data and value-added products (2)** Corresponding Person: Lanhai Li, XIEG-CAS, China Pengfeng XIAO, Nanjing University, China Joni Kujansuu, University of Helsinki, Finland Yubao Qiu, AIR-CAS, China	
12'+3'	**Sustaining Arctic Observing Networks' (SAON) Roadmap for Arctic Observing and Data Systems (ROADS) (online)** Jan Rene Larsen, Sustaining Arctic Observing Networks (SAON)	Chair: Joni Kujansuu Rapporteur: Yubao Qiu
12'+3'	**GEO Mountains: A global initiative on multi-disciplinary mountain data and information for science and policy (online)** James Thornton, GEO Mountains Coordinator	
12'+3'	**Data management, sharing and publication for polar sciences as the NADC in Japan presentation type (online)** Masaki Kanao, National Institute of Polar Research (NIPR), Japan	
12'+3'	**Cryosphere changes and monitoring in Mongolia (online)** Dashtseren Avirmed, Institute of Geography and Geoecology, Mongolian Academy of Sciences, Mongolia	

12’+3’	**Snow and ice interaction in Lake Orajärvi: observation and modelling (online)** Bin CHENG, Finnish Meteorological Institute (FMI), Finland	
12’+3’	**Interdecadal glacier inventories in the Karakoram since the 1990s** Fuming XIE, Yunnan University, China	
12’+3’	**Daily snow water equivalent product with SMMR, SSM/I and SSMIS from 1980 to 2020 over China** Lingmei JIANG, Cheng ZHANG, Beijing Normal University, China	Chair: Lanhai Li Rapporteur: Xueliang ZHANG
12’+3’	**Introduction of snow cover series products over China** Xiaohua HAO, Northwest Institute of Eco-Environment and Resources, Chinese Academy of Sciences (NIEER-CAS), China	
12’+3’	**Snow parameter estimation driven by multisource data and machine learning: methods and products** Xueliang ZHANG, Nanjing University, China	
12’+3’	**GNSS-Reflectometry of cryospheric components: several applications in snow, surface freeze/thaw state, and lake ice** Wei WAN, Peking University, China	
12’+3’	**Estimating Arctic melt pond fraction, melt pond depth and sea ice concentration from optical and passive microwave remote sensing** Chuan XIONG, Southwest Jiaotong University, China	
12’+3’	**Remote Sensing Products for Lake and River Ice** Guoqiang JIA, Aerospace Information Research Institute, Chinese Academy of Sciences (AIR-CAS), China	

18:30-20:00	**Theme4: Correlation and synergy of HMA and the Arctic environment** Corresponding person: Xinwu LI, AIR-CAS, China Anmin DUAN, Xiamen University, China Linlu MEI, AIR-CAS, China Mingyang LV, Institute of Space Earth Science, Nanjing University, China	
12'+3'	**The gap analysis of the existing Arctic Science Co-Operations and research (AASCO) (online)** Hanna K Lappalainen, Helsinki University, Finland	Chair: Anmin DUAN Rapporteur: Linlu MEI
12'+3'	**Climate change, permafrost degradation and their hydrological impact in Southern Siberia(online)** Lucas Menzel & Li Han, Heidelberg University, Germany	
12'+3'	**The Comparative Study on snowmelt for Tibet Plateau, Arctic and Antarctic Using Remote Sensing Technology，** Xinwu LI, Aerospace Information Research Institute, Chinese Academy of Sciences (AIR-CAS), China	
12'+3'	**Aerosol trends in the Arctic and their origins** Linlu MEI, Aerospace Information Research Institute, Chinese Academy of Sciences (AIR-CAS), China	Chair: Xinwu LI Rapporteur: Mingyang LV
12'+3'	**A new way of characterizing glacier surge behaviour: a case study in the Karakoram** Mingyang LV, Institute of Space Earth Science, Nanjing University, China	
12'+3'	**Fine-Resolution Mapping and Assessment of Artificial Surfaces in the Northern Hemisphere Permafrost Environments (online)** Chong LIU, Sun Yat-Sen University, China	
Dinner (Bu Er Shuang Yu Guan, 3F)		

December 1st, 2023 (Friday)		
10:30-12:00	**Theme1: Remote Sensing Experiments and Modelling of Cryosphere (2)** Corresponding Person: Lingmei JIANG, Beijing Normal University, China Xiaofeng LI, NIGA-CAS, China Yubao Qiu, AIR-CAS, China Tianjie ZHAO, AIR-CAS, China	
12'+3'	**Snow Retrieval Based on Experiments and Modelling (online)** Qinghuan LI, University of Waterloo, Canada	Chair: Xiaofeng LI Rapporteur: Tianjie ZHAO
12'+3'	**Time-series snow brightness temperature simulation based on SNTHERM and snow RT model** Jinmei PAN, National Space Science Center, Chinese Academy of Sciences, China	
12'+3'	**Comprehensive Layer Emission Model Based on Scattering Operator Framework for Layered medium** Dongjin BAI, National Space Science Center, Chinese Academy of Sciences, China	
12'+3'	**Evaluation of DMRT in Simulating Passive Microwave brightness temperature of Snow cover for AMSR2 and FY-3D/MWRI** Huizhen CUI, National Space Science Center, Chinese Academy of Sciences, China	
12'+3'	**Simulating snow-covered forest bidirectional reflectance by extending hybrid geometric optical–radiative transfer model** Siyong CHEN, Nanjing University, China	
12'+3'	**Investigating permafrost hydrological processes in the Tibetan Plateau using physical model and InSAR deformation** Huiru JIANG, Tongji University, China	

12:00-14:00	**Theme5: Impact of environmental changes and sustainable development through EOS (1)** Corresponding Person: Jinghui FAN, AGRS-CGS, China Youhua RAN, NIEER-CAS, China Alishir Kkurban, XIEG-CAS, China Guoqiang JIA, AIR-CAS, China	
12'+3'	**An Investigation into the Alteration of Soil Freezing Dynamics in Croplands under Climate Change (online)** Ziwei LI, Zhiming Qi, McGill University, Canada	Chair: Jinghui FAN Rapporteur: Youhua RAN
12'+3'	**Risk and economic damage of future permafrost degradation on infrastructure over Qinghai-Tibet Plateau** Youhua RAN, Northwest Institute of Eco-Environment and Resources, Chinese Academy of Sciences (NIEER-CAS), China	
12'+3'	**A preliminary index system of multisource Earth observation on snow, glacier and geohazards and some applications** Jinghui FAN, China Aero Geophysical Survey and Remote Sensing Center for Natural Resources (AGRS), China Geological Survey (CGS), China	
12'+3'	**Activity and susceptibility assessment for slow-moving landslides in the Hunza River Valley, Northern Pakistan** Shibiao BAI, Nanjing Normal University, China	
12'+3'	**Flood Susceptibility Mapping in the Qarqan River Basin Using Sentinel -1 Sar and Frequency Ratio Model** Fidelis Gift Donu, Xinjiang Institute of Ecology and Geography, Chinese Academy of Sciences, China	
12'+3'	**Climate change and its impact on water resources in the runoff formation zone** Khusen Gafforov, Scientific Research Institute of Irrigation and Water Problems of Ministry of Water Resources of Uzbekistan, Uzbekistan	Chair: Alishir Kkurban, Rapporteur: Guoqiang JIA

12'+3'	**Monitoring and analysis of landslide surface deformation using time-series InSAR in Woda** Youfeng LIU, China University of Geosciences (Beijing), China	
12'+3'	**Changing trends of major Arctic and boreal animals' distributions under climate change** Bingyu YANG, Beijing Normal University, China	
Lunch (Bu Er Shuang Yu Guan, 3F)		
15:30-16:45	**Theme5: Impact of environmental changes and sustainable development through EOS (2)** Corresponding Person: Jinghui FAN, AGRS-CGS, China; Youhua RAN, NIEER-CAS, China; Alishir Kkurban, XIEG-CAS, China. Guoqiang JIA, AIR-CAS, China;	
12'+3'	**Snow Product by DLR Polar Cold Region Group (online)** Andreas Dietz, German Aerospace Center, Germany	Chair: Alishir Kkurban Rapporteur: Guoqiang JIA
12'+3'	**Hazardous Natural Processes in conditions of Global Warming in the Mountainous Regions of Tajikistan** Gulayozov Majid, Research Center for Ecology and Environment of Central Asia (Dushanbe), Tajikistan	
12'+3'	**Progress toward Sustainable Development Goals and interlinkages between them in Arctic countries** Shijin WANG, Northwest Institute of Eco-Environment and Resources, Chinese Academy of Sciences (NIEER-CAS), China	
12'+3'	**Effects of climate change on vegetation and snow cover area in western Himalayas** Satti Zulqarnain, Xinjiang Institute of Ecology and Geography, Chinese Academy of Science, China	
12'+3'	**Simulation of the Complex Water System: from the Perspective of Accumulation process and feedback loops**	

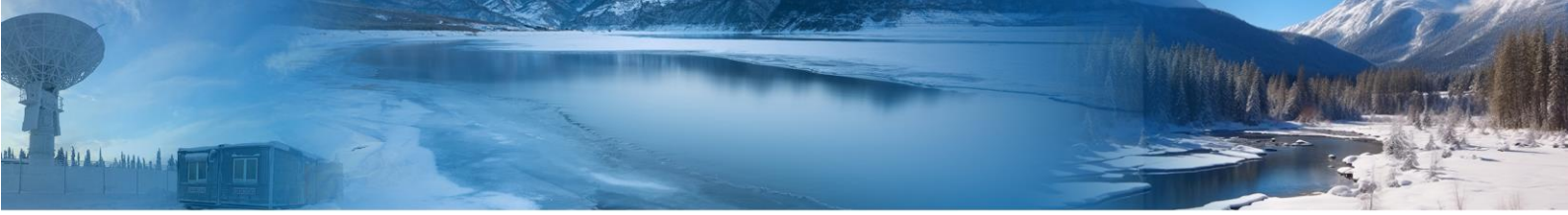
	Shanshan DAI, Xinjiang Institute of Ecology and Geography, Chinese Academy of Science, China	
16:45-17:45	**Theme3: Modeling and change analysis of High Mountain Asia and the Arctic (2)** Corresponding person: Tonghua WU, NIEER-CAS, China Yingying CHEN, ITP-CAS, China Shiming XU, Tsinghua University, China Xi LIANG, NMFC, China	
12'+3'	**The evolution of the wet snow zone in the Karakoram** Yiyuan SHEN, Yunnan University, China	Chair: Guoqiang JIA Rapporteur: Meng DANG
12'+3'	**Winter surface velocity derived from satellite images and time-lapse photogrammetry and its implication for Basal sliding of a temperate Mingyong Glacier in southwestern China** Caixia QIN, Yiyuan SHEN, Yunnan University, China	
12'+3'	**Improving Permafrost Annual Active Layer Thickness Estimation Model by Optimizing Soil Surface Temperature Data: A case study in High-Latitude Northern Hemisphere** Hongxiang GUO, Beijing Normal University, China	
12'+3'	**Research on the characteristics, variability and influencing factors of runoff in the Yarkand River Basin** Jinyue WEI, Yunnan University, China	
17:45-18:15	**Workshop Closing**	
18:30-19:30	**Working Meeting**	Online In person
Dinner (Bu Er Shuang Yu Guan, 3F)		

December 2nd, 2023 (Saturday)	
10:30-18:00	**Discussion Session / Trip Return**

Introduction

The Digital Belt and Road Program （DBAR） Science Program is an international venture to share expertise, knowledge,technologies and data to demonstrate the significance of EOST and Big Earth Data applications for large-scale sustainable development. DBAR calls for international Science Technology and Innovation (STI) cooperation in support of sustainable development at local, regional and national levels. The extensive geographical scope of the Belt and Road region requires smart uses and applications of“ Big Earth Data” for environmental protection, disaster risk reduction, water resource management, urban planning, food security, coastal zone management, and conservation and sustainable use of natural and cultural heritage sites over the next few decades. The DBAR Science Program will serve as a platform for the Belt and Road countries to develop projects and activities in various focus areas, identified in,and important for progress toward achieving the UN SDGs.

The DBAR High Mountain and Cold Region Working Group (DBAR-HiMAC) focuses on science-driven objectives to link existing Earth observations, archive and document Earth observation data and geophysical products, and produce knowledge and services based on a scientific understanding of changes and their interactions in High Mountain and northern Cold Regions (HiMAC). Big Earth Data on HiMAC will be incubated to support sustainable development through improving risk awareness and enhancing assessments for infrastructure construction (roads, pipelines, and industrial plants), environmental changes, energy supply, disaster reduction, and agricultural development over the high-altitude and high-latitude Belt and Road regions.



GEO Cold Regions Initiative (GEOCRI) coordinates global joint efforts for Earth observations and information services to provide societal benefits over the world's Cold Regions area including the North Pole, South Pole, Himalaya-Third Pole and Mountain areas. It has a strong legacy and impact in the understanding cold region environments through space observations on polar ice and snow, ocean and climate change and natural disasters. The core interest is to bring data and information, gathered continuously by national and multi-national agencies, institutions, and organizations, growing infrastructures of diverse and complementary Earth observation, to local and international users. Its aims at providing information to assess the effectiveness of climate actions relevant to SDG-s, and at providing data on snow cover, GLOF, ice mapping useful to monitor water availability (SDG6 and SDG7), to analyze impacts on downstream ecosystems (SDG15) and to deal with emerging risks (SDG11) Particularly relevant will be the even daily information on transportation on land and Northern Sea Route, in the form of shipping advisory and disaster risk assessment (SDG14); GEOCRI likewise aims at providing data products to support on open science by offering access to other communities and stakeholders, including access capacity reference building actions (SDG17).

The Xinjiang Institute of Ecology and Geography (hereinafter referred to as XIEG) of the Chinese Academy of Sciences (CAS) was established on July 7, 1998, by merging Xinjiang Institute of Biology, Pedology and Desert Research，and Xinjiang Institute of Geography of the CAS. XIEG dedicates itself to research on major issues of natural resource development, ecological restoration, environmental management, biodiversity conservation and regional sustainable development of arid zones. With the State Key Laboratory of Desert and Oasis Ecology (Key Laboratory of Ecological Security and Sustainable Development of Arid Zones), the National Engineering Technology Research Center for Desert-Oasis Ecological Construction, the CAS Research Center for Ecology and Environment of Central Asia, as well as other research units within the institute, XIEG has established 12 field observationstations in Xinjiang, China and 19

international joint field observation stations in Central Asia. XIEG has also founded the “Belt and Road " Association for Combating Desertification of the Alliance of International Science Organizations (ANSO-ACD), and the Biodiversity Conservation Alliance for Arid Lands (BCAA). Since the implementation of the “Belt and Road” initiative, XIEG's rapid development on international cooperation boosted the cultivation of talents, improved scientific research and innovation capabilities, helped improve people's livelihoods in neighboring countries, and enhanced XIEG's visibility and impact worldwide

Location of Venue:

Zhonghe Hotel, Urumqi, Beijing South Road No. 499, Urumqi, Xinjiang

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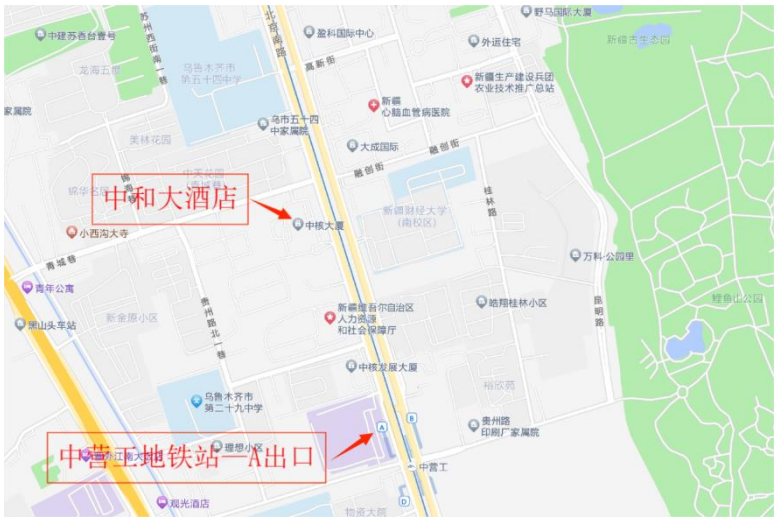

Transportation Guide

- **Airport - Zhonghe Hotel**

Cab:11Km, ¥ 26

Urumqi Metro (First: 07:40 Last: 23:30): Line 1, Self-service Ticket Machines / WeChat or Alipay swipe code to buy tickets / Download Urumqi Metro APP, ¥ 5, Zhongyinggong Station - Exit A, walk north 500m

- **Urumqi Station - Zhonghe Hotel**

Cab: Urumqi Station North Square, 7Km, ¥ 18