



2017 International Workshop
on
**Observations and Understanding of Changes in
High Mountain and Cold Regions**
(HiMAC 2017)

3-4, March 2017

Digital Belt and Road Initiative (DBAR)

Institute of Remote Sensing and Digital Earth (RADI)

Chinese Academy of Science (CAS)

Beijing, China

2017 International Workshop on Observations and Understanding of Changes in High Mountain and Cold Regions (HiMAC 2017)

Organizers

DBAR/HiMAC, GEO/GEOCRI, ISDE, PEEX, ICIMOD, SDIM, IEEE GRSS,
RADI/CAS, WMO

Background

The Earth-Three-Poles (ETPs), i.e. the Arctic, Antarctic and Tibetan Plateau - the majority of High Mountain cold regions - account for the global stock of frozen water on the Earth. The ETPs are facing the rapid changes of the snow, ice, and various consequently undergoing environmental variations. Melting of snow and ice provides fresh water release both in the Polar Oceans and downstream highland which may influence global climate, alter ecosystem system and create hazards posing major challenges to the nature and human activities. A better characterizing of these changes and understanding the linkages among ETPs would require more accurate and coordinated observations for improving the scientific understanding in such remote and tough areas.

The combined changes in the northern cold regions have an important impact on global climate change and societal benefits, through sea level rise and the albedo feedback. Changes in high mountain frozen water have multiple and complex impacts on human activities, such as large-scale infrastructure, transportation, pipelines and water reservoirs. In many parts of the world, meltwater guarantees water security for growing cities, agriculture, disaster mitigation and hydroelectric power generation. Vulnerability to all such changes needs to be reduced by interventions towards adaption.

Environmental changes in the ETPs cannot be observed and understood in isolation, because of the teleconnections in global climate and socio - economic effects. The recently "Belt and Road" (B&R) initiative proposed by Chinese President Xi Jinping in 2013 emphasizes that countries should work together to develop and share a prosperous "common destiny" by strengthening cooperation, which provides one of the biggest umbrellas that prompt various international and regional collaborations.

In order to ensure the regional sustainable development, it is necessary to observe multiple variables over a large area across national boundaries. This will further deepen the understanding of environmental changes and provide accurate information through a newly developed information system in high mountain area and northern cold regions.

In recent years, Earth observation developed rapidly, including new permanent observatories, while barriers towards wider sharing of such data are being removed. Much of such improvements are achieved by people and projects integrating resources and efforts towards a richer observation system. In particular, the space borne observation system improved greatly during the last ten years, data collected by a growing and diversified field of satellites are increasingly accessible, the spatial resolution increased to a sub-meter level and the frequency of observations increased as well.

Taken together the B&R initiative and technical developments provide a good opportunity for global and trans-boundary data sharing and making multi – national cooperation for a shared and better knowledge on ETPs.

Objectives

The workshop is an event in the framework of the international program - "Digital Belt and Road (DBAR)", and Group on Earth Observations Cold Region Initiative (GEO CRI). The workshop will focus on the observations and understanding of the environmental changes in the "Mountains and northern Cold Regions". The workshop will

- ✧ Review the scientific motivations of an observation network of High Mountains and northern Cold Regions, promote the integration of in-situ and space observations, and . This is expected to be a better perception of connected changes in High Mountainous and northern Cold Regions, for example, the pan-Arctic region. This will produce a basis for the document of existing knowledge on observation, and scientific understanding of changes that link with the High Mountain and northern cold regions.
- ✧ Pave the road to set up the Task Force for High Mountain and Cold Regions (DBAR-HiMAC) under the DBAR program, and which also contribute to the Digital Belt and Road Scientific Alliance of the International Society for Digital Earth (ISDE). (In the morning time of 4th, March)
- ✧ Outline the need for Essential Cold Region Variables (ECRVs) and required preparatory work to support the Group on Earth Observation Cold Region Initiative (GEOCRI). (In the afternoon time of 4th, March)

The workshop will be convened at Institute of Remote Sensing and Digital Earth, Chinese Academic of Science.

Beijing, China
DBAR-HiMAC
March, 2017

**2017 International Workshop on Observations and Understanding of Changes in
High Mountain and Cold Regions (HiMAC 2017)**

Scientific Committee

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Chair of DBAR Science Committee, Institute of Remote Sensing and Digital Earth, Chinese Academic of Science, China

Member

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Secretary Director, Group on Earth Observations (GEO)

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Zhen LIU
International Society for Digital Earth (ISDE)

**2017 International Workshop on Observations and Understanding of Changes in
High Mountain and Cold Regions (HiMAC 2017)**
Room C608

Refreshment (8:30 -9:00)

Opening (9:00-9:45)
Remarks and Welcome
Kick off DBAR Task Force on HiMAC

---Group Photo---

Session 1: GEOCRI and Integrated Observations (10:00-10:45)

Moderator: Jianbo LIU, Yubao QIU

Rapporteur: Massimo MENENTI

10:00~10:15	Yubao QIU	GEOCRI, its Development and HiMAC Meeting Arrangement
10:15~10:35	Stein SANDVEN	Introduction to EU H2020 INTAROS
10:35~10:50	Jianbo LIU	RADI Arctic Station and Chinese Satellite Observation
10:50~11:05	Tianjie ZHAO	Chinese Activities in Observing Earth's Water Cycle from Space

*Group Photo for International Workshop (in C608) and coffee break
---11:05~11:20---*

Session 2: Observations and Understanding of Arctic changes (11:20-12:25)

Moderator: Stein SANDVEN, Hongjie XIE

Rapporteur: Yongqi GAO

11:20~11:40	Hongjie XIE	Arctic Sea Ice Thickness Changes during the 2010-2016 from Cryosat-2 Radar Altimetry
11:40~11:55	Yongqi GAO	Introduction of EU H2020 BlueAction
11:55~12:10	Xiao Cheng	Drone-based Ice Sheet Observations in Antarctica
12:10~12:25	Bingrui Li	Polar Observations from Polar Institute of China

*---Lunch Break (Dinning Hall)---
12:25~13:30*

Session 3: Teleconnections between High Mountain and northern Cold Regions (13:30-14:35)

Moderator: Yongqi GAO, Birendra BAJRACHARYA

Rapporteur: Yubao Qiu

13:30~13:50	Yongqi GAO	Link the Arctic and Eurasian climate
13:50~14:05	Narantuya DAVAA	Snow and Related Research in Mountains of Mongolia
14:05~14:20	Tonghua WU	Permafrost Monitoring and Observations in HMA
14:20~14:35	Xi LIANG	A High Resolution Arctic Sea Ice-ocean Forecasting System in NMEFC

---Coffee Break ---
14:35 -14:50

Session 4: Snow/Ice Observations over High Mountain (14:50-15:55)

Moderator: Xin Li, Joni KUJANSUU

Rapporteur: Joni KUJANSUU

14:50~15:10	Xin Li	Cryosphere Observations and Ecosystem
15:10~15:25	Birendra BAJRACHARYA	Monitoring High Mountain Environments in the HKH
15:25~15:40	Tao CHE	Ground investigation of Snow Cover Properties in China
15:40~15:55	Chuan XIONG	Terrestrial snow monitoring by Global Water Cycle Observation Mission (WCOM)

---Coffee Break---
15:55 -16:10

Session 5: Water cycle observations over High Mountain (16:10-17:30)

Moderator: Massimo MENENTI, Zhijun LI

Rapporteur: Birendra BAJRACHARYA

16:10~16:30	Massimo MENENTI, Jia LI	Energy and Water Balance of High Mountain Catchments
16:30~16:45	Zhijun LI	Lake Ice Observations in Inner Mongolia
16:45~17:00	Joni KUJANSUU	PEEX and DBAR HiMAC
17:00~17:15	Shiyin LIU	Glacier Changes in the Yarkant River Since the Late 1960s and the Quantification of Meltwater Runoff
17:15~17:30	Guoqing ZHANG	Lake's Change and Water Balance

---Coffee Break---
17:30 -17:40

Summary and Adjourn

17:40~18:00

Reception (Sishi Tinayun Restaurant)
Start from 18:30~

Working Meeting of DBAR Task Force on High Mountain and Cold

Regions (DBAR-HiMAC)

4, March 9:00am-11:30am

Room B714

Participants: DBAR-HiMAC

Draft Agenda

Topics: DBAR HiMAC Science Plan Definition, and Publication Drafting

Co-chair to DBAR-HiMAC: Massimo MENENTI, Xin LI, Yubao QIU

- [1] Self-Introduction
- [2] DBAR Science Plan and DBAR-HiMAC
 - Introduction of DBAR Science Plan and Working Group/Task Force
- [3] Review and Discussion the DBAR-HiMAC
 - Document on DBAR-HiMAC
- [4] Discussion on the paper Structure and Content
 - Publication (Define the author-) and Style(Interview)
 - Deadline – 10th, March (Chinese/English Version)
- [5] Adjourn

Meeting on the Essential Cold Region Variables (ECRVs)

4, March, 1:30pm-4:00pm

Room B714

(Open)

Participants: Open to all (include all members of GEOCRI)

Draft Agenda

Outcomes: One short document, and presentation (PPT file), aiming to report in the meeting in Helsinki (Early Time of April) and Prague (Mid of April)

Leads to GEOCRI: Yubao QIU, Xin LI, Massimo MENENTI, Stein SANDVAN etc.

[1] Introductions

- Essential Variables –Background
- Indicators (UN SDGs or Societal Impacts)

[2] Brain Storm and Discussion

- Road Map for the ECRVs

[3] List of Actions

- Inventory of publications and Actions
- List of Consortium and Actions
- List potential outcomes – review, publication or white paper

[4] Adjourn

Location of Venue: C608/B714 Institute of Remote Sensing and Digital Earth (RADI), Chinese Academy of Science (CAS)



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