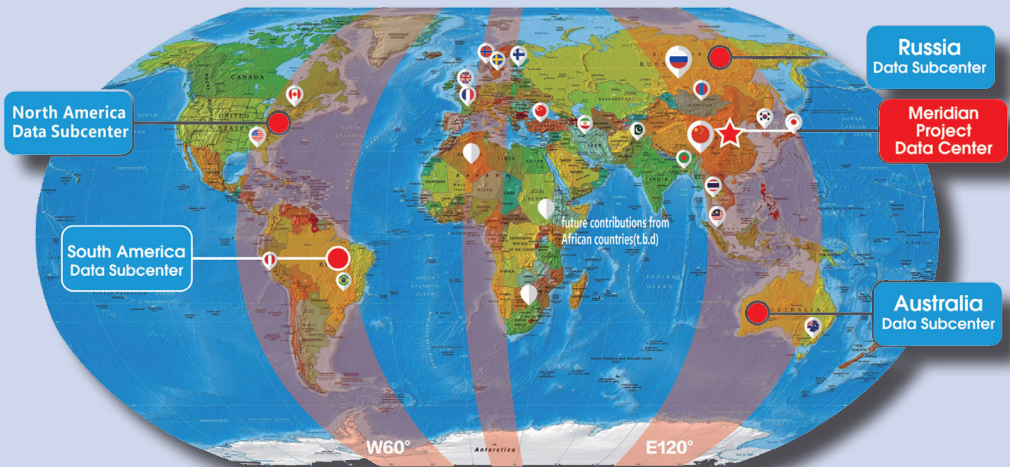


SCIENCE OBJECTIVES AND OBSERVATION SYSTEM FOR THE INTERNATIONAL MERIDIAN CIRCLE

September 23-25, 2019

Earth Hall A0401



FORUM HANDBOOK

CONTENTS

ABOUT ISSI-BJ	3
ORGANIZERS	4
Conveners	4
Sponsors	4
FORUM OUTLINE AND PROGRAM	5
Context and Objectives of the Forum	5
Main Themes of the Forum	6
Program	7
PRACTICAL INFORMATION	11
Venue	11
WIFI Access	11
Accommodation	12
Lunch	13
Coffee Breaks	13
Useful Information	13
Emergency Contact Person in China	13
September 23 Dinner Location	14
PARTICIPANTS	15
NOTES	17

ABOUT ISSI-BJ

The International Space Science Institute in Beijing (ISSI-BJ) was jointly established by the National Space Science Center (NSSC) and the International Space Science Institute (ISSI) with the support of the International Cooperation Bureau and the Space Science Strategic Project of the Chinese Academy of Sciences (CAS). ISSI-BJ is a close cooperation partner of ISSI in Bern. The two institutes share the same Scientific Program Committee, the same study tools, and other information of mutual relevance and interest. However, both use independent operational methods and different funding sources.

ISSI-BJ is a non-profit research institute. Our main mission is to contribute to the achievement of a deeper scientific and

technological understanding of future space missions as well as of the scientific results from current and past missions through multidisciplinary research, possibly involving, whenever felt appropriate, ground based observations, modelling, numerical simulation and laboratory experiments, using the same tools as ISSI, i.e. **Forums, International Teams, Workshops, Working Groups or individual Visiting Scientists.**

The Program of ISSI-BJ covers a widespread spectrum of space science disciplines, including astrophysics, solar and space physics, planetary science, astrobiology, microgravity science and Earth observation from space.

ORGANIZERS

The Forum on “Science objectives and observation system for the International Meridian Circle” is organized by the International Space Science Institute - Beijing (ISSI-BJ).

Conveners

- William Liu, NSSC, CAS, China
- Michel Blanc, IRAP (CNRS-Université Toulouse III), Toulouse, France
- Eric Donovan, University of Calgary, Canada
- John C. Foster, MIT Haystack Observatory, USA
- Mark Lester, University of Leicester, UK
- Maurizio Falanga, ISSI-BJ, China



Sponsors



FORUM OUTLINE AND PROGRAM

Context and Objectives of the Forum

Dealing with our changing environment is one of the greatest challenges humanity faces in the 21st century. Since the environment is a global whole, its understanding demands a global effort from all countries. This forum will be a contribution to this global effort focusing on the scientific potential of using our planet's Upper and Middle Atmosphere and Ionosphere layers (IMUA for short) as a detecting screen onto which the different types of natural disasters coming from above (Solar activity and Interplanetary Space) and from below (lower atmosphere, meteorology, climate change and Solid Earth) project signatures that can be used to better monitor, understand, predict and possibly mitigate them. A global, internationally-coordinated Observation System of the IMUA will make it possible to tackle one of the most critical scientific questions of the century: how does energy from the Sun and Earth change our physical environment, how can the resulting change pose

a threat to the human society, and how can we mitigate and manage the negative consequences of this change? Designing this system is the goal of the International Meridian Circle Program (IMCP).

This FORUM intends to bring together multidisciplinary key scientists from different countries with the objectives of producing (1) a compelling Science Case for the development of a global-scale, internationally integrated monitoring of major threats on our environment using their effects on our Upper and Middle Atmosphere and Ionosphere (IMUA) and (2) guidelines for a preliminary design of the associated Observation System, referred to as the "International Meridian Circles Project" (IMCP). The output of the FORUM organized at ISSI-BJ will also lead to the publication of a report in the TAIKONG magazine, which will be understandable to the non-expert and to a peer-reviewed article in an international journal.

Main Themes of the Forum

The two-and-a-half days of this ISSI-Beijing Forum will be devoted to discussing and producing

1. A compelling science case for this global Observation System that shall demonstrate how a global monitoring of the IMUA makes it possible to accomplish a major step forward towards better monitoring, understanding, predicting and mitigating the different sources of disasters threatening our Human environment.
2. Preliminary specifications for the ground-based component of the Observation System (types of instruments needed and their desired distribution over the globe), for an associated space segment (which will be the specific subject of a second Forum), and for the needs in terms of data analysis and modeling tools.

Program

Monday, September 23

	Subject	Contributor
Session I	Introduction	Chair: W. Liu
8:20-8:30	<i>Registration</i>	
8:30-8:40	Welcome and introduction to ISSI-BJ	Alvaro Giménez
8:40-8:50	Introduction to the forum and its objectives	William Liu
Session II	Science Cases	Chair: M. Lester
8:50-9:10	Overarching science goal	Michel Blanc
9:10-9:30	Solar and interplanetary processes	Nat. Gopalswamy
9:30-9:50	<i>Coffee Break</i>	
9:50-10:10	Magnetosphere processes	Walter Gonzalez
10:10-10:30	MIT Coupling	John Foster
10:30-10:50	Precursor ionosphere anomaly associated with Large earthquakes	Koh-Ichiro Oyama
10:50-11:10	Troposphere/stratosphere weather system	Daren Lu
11:10-11:30	Geomagnetic field processes	Mioara Mandea (remote)
11:30-11:50	Long-term evolution of the climate system	Jan Lastovicka (remote)
12:00-13:30	<i>Group photo and lunch</i>	

Monday, September 23

	Subject	Contributor
Session III	Observation System	Chair: M. Blanc
13:30-13:50	Chinese Meridian Project	Jiyao Xu
13:50-14:10	Solar and Interplanetary Observations	Yihua Yan
14:10-14:30	Magnetosphere Observations	Hermann Opgenoorth
14:30-14:50	Optical Observations of Ionosphere	Eric Donovan
14:50-15:10	Radio Observations of Ionosphere	Shunrong Zhang
15:10-15:30	<i>Coffee Break</i>	
15:30-15:50	FPI Observations of middle/upper atmosphere	Aziza Bounhir
15:50-16:10	Atmospheric Electricity	Xiushu Qie
16:10-16:30	Lithospheric activity: Earthquakes and volcanoes	Xuhui Shen
16:30-16:50	Meridian Chain Instruments in Americas	Qian Wu
16:50-17:10	The East-Siberian meridian chain of ground-based instruments for Earth's atmosphere studying	Vasilyev Roman
17:10-17:30	Acceleration of upflowing ionospheric oxygen ions and its relation to magnetic reconnection	Suyan Fu
18:00	<i>Dinner offered by ISSI-Bj</i>	

Tuesday, September 24

	Subject	Contributor
9:00-9:20	Meridian Chain instruments in West Africa	Frédéric Ouattara
Session IV	Modeling and data analysis/ assimilation	Chair: E. Donovan
9:20-9:40	Temporary Variation of Galactic Cosmic Rays near Earth from Numerical Simulations	Xiaocheng Guo
9:40-10:00	MIT (Magnetosphere-Ionosphere-Thermosphere) coupling	Shasha Zou
10:00-10:20	ITM (Ionosphere-Thermosphere-Mesosphere) coupling	Jiuhou Lei
10:20-10:40	<i>Coffee Break</i>	
10:40-11:00	Plasmasphere Modeling	Viviane Pierrard
11:00-11:20	Data Assimilation	Xinan Yue
12:00	<i>Lunch</i>	
	Preliminary Synthesis	Chair: W. Liu
13:30-16:30	<ul style="list-style-type: none"> •Which networks? •Which "key instruments"? •First discussion of the "space segment" needed •General Discussion 	

Wednesday, September 25

	Subject	Contributor
Session V	Discussion and Conclusion	Chair: J. Foster
8:30-9:00	Summary of the Forum	Mark Lester
9:00-9:30	Overall organization of IMCP science: activities and platforms and International collaboration	Eric Donovan
9:30-10:00	Forum report: outline, structure, publication and Elements for the preparation of Forum #2 (ISSI) on the Space Segment	Michel Blanc
10:00-10:30	<i>Coffee Break</i>	
10:30-12:00	Future Plans	William Liu
12:00	<i>Lunch</i>	

PRACTICAL INFORMATION

Venue

The Forum will be held in the Earth Hall A0401, NSSC building A, 4th Floor.

Address

N°1 Nanertiao, Zhongguancun, Haidian District, Beijing, 100190
北京市海淀区中关村南二条一号

ISSI-BJ Office

The ISSI-BJ office is located at NSSC, Building A, 4th Floor. It is equipped with computers (MS Windows) with USB ports, connected to high-speed network and printer.

WIFI Access

Login via web: NSSC-guest

Username: issi-bj

Password: issi-bj



Accommodation

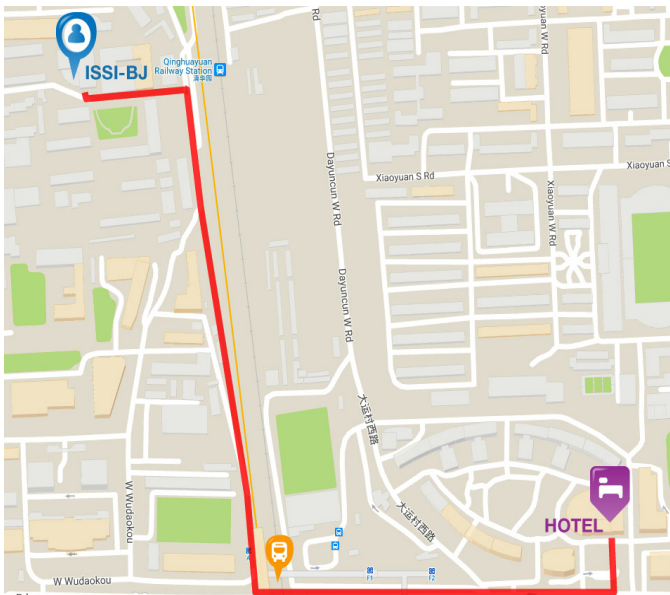
ISSI-BJ covers the cost of the accommodation and breakfast. Please kindly note that all the other expenses in hotel will be deducted from your check-in deposit.

Park Plaza Hotel Beijing Science Park

No.25, Zhichun Road, Haidian District, 100083, Beijing China
北京市海淀区知春路25号

Directions: Turn right on Zhichun Rd. (知春路) when going out

of the hotel. Climb the stairs to the entrance of the metro station ZhiChunLu (Exit A), turn left and walk straight for about two minutes. Then turn right on West Wudaokou (西五道口), following the northbound elevated subway. Walk for about 10 minutes, towards the direction of LiaoNing International Hotel (辽宁大厦) or the National Microgravity Laboratory Tower, finding NSSC (国家空间科学中心) on the left. The way is highlighted in red on the map.



Lunch

Lunch buffet for all participants of the ISSI-BJ Forum will be available at the canteen on the -1 floor of the NSSC Building A.

Coffee Breaks

Coffee breaks will be provided at the entrance of Earth Hall. See the Program section to check the coffee break times.

Useful Information

Credit Cards: Credit and debit cards can be used in ATMs displaying the appropriate sign. Credit cards are increasingly becoming accepted in major shopping zones and high level restaurants but keep some cash handy just in case.

You can find two ATMs at the NSSC lobby of Building A.

Currency: Chinese Yuan Renminbi (RMB)

(1 USD = approx. 6.6 RMB)

(1 EUR = approx. 7.8 RMB)

Drinking Water: Avoid drinking tap water directly. Bottled water and mineral water can be found in convenience stores and drink stalls. The price is 2-10 yuan RMB per bottle.

Electricity: 220 volts AC

Taxi: Please contact Ms. Lijuan EN: +86-139-1139-7464 if you need to book a taxi.

Time: UTC/GMT +8 hours

Emergency Contact Person in China

Ms. Lijuan EN +86-139 1139 7464

Ms. Laura BALDIS +86-157 2667 3953

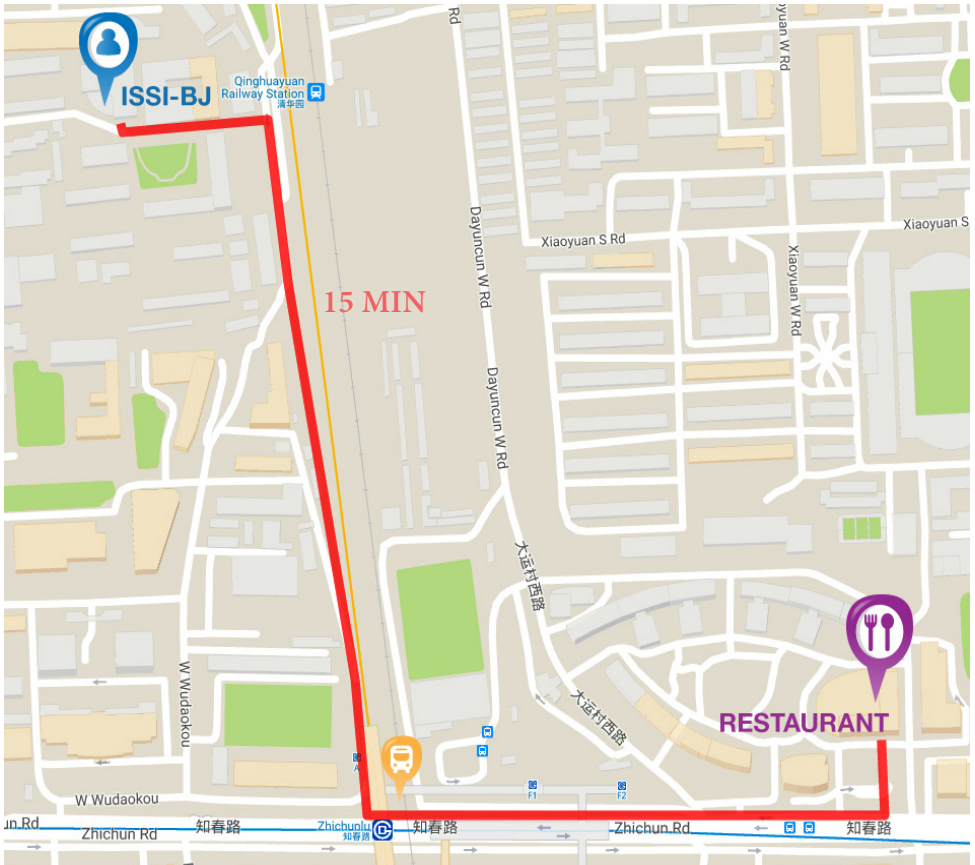
DINNER

Dinner on September 23, 2019

Dinner offered by ISSI-BJ on
Monday, September 23, 2019 at
18:00.

Restaurant:
Amber 1, 3rd Floor of Park Plaza
Beijing Science Park
丽亭华苑酒店金辉1厅

Address:
No. 25 Zhichun Rd. (知春路),
Haidian District, Beijing
北京市海淀区知春路25号



PARTICIPANTS

No. Name Institution

CONVENERS AND PARTICIPANTS		
1	Blanc Michel	Research Institute in Astrophysics and Planetology, France
2	Bounhir Aziza	University of Marrakech and Oukaimeden Observatory, Morocco
3	Donovan Eric	University of Calgary, Canada
4	En Lijuan	National Space Science Center, CAS, China
5	Falanga Maurizio	ISSI-BJ, China
6	Foster John	MIT Haystack Observatory, US
7	Fu Suiyan	Peking University, China
8	Giménez Alvaro	CSIC, Spain
9	Gonzalez Walter	INPE, Brazil
10	Gopalswamy Natchimuthuk	NASA Goddard Space Flight Center, US
11	Guo Xiaocheng	National Space Science Center, CAS, China
12	Klein Ludwig	LESIA, Observatoire de Paris, France
13	Lei Jiuhou	University of Science and Technology of China, China
14	Lester Mark	University of Leicester, UK
15	Liu William	National Space Science Center, CAS, China
16	Lu Daren	Institute of Atmospheric Physics, CAS, China
17	Opgenoorth Hermann	University of Umeå, Sweden - University of Leicester, UK - ESF/ESSC
18	Ouattara Frédéric	University Norbert Zongo, Koudougou, Burkina Faso

No.	Name	Institution
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20	Pierrard Viviane	Belgian Institute for Space Aeronomy, Brussels, Belgium
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24	Ren Liwen	National Space Science Center, CAS, China
25	Shen Xuhui	Institute of Earthquake Forecasting, China
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30	Yang Fang	National Space Science Center, CAS, China
31	Yue Xinan	Institute of Geology and Geophysics, CAS, China
32	Zhang Beichen	Polar Research Institute of China, China
33	Zhang Qinghe	Shandong University, China
34	Zhang Shunrong	MIT Haystack Observatory, US
35	Zou Shasha	University of Michigan, US

NOTES

Forum website:

http://www.issibj.ac.cn/Program/Forums/IMCP/201905/t20190531_210998.html





Advancing Space Science Research by Worldwide Collaboration

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