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国际空间科学研究所-北京

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COVER PAGE

Bubbles composed of seven images (from the lower left to the upper right):

1. Prof. Claude Nicollier discussing with students after his lecture during the 1st ISSI-BJ & APSCO Space Science School, organized on October 17-26, 2016 in Thailand.
2. Group picture of the 1st Space Science School participants.
3. Artistic image of the cosmic distance ladder. (Credit: Spitzer/JPL)
4. Prof. Tilman Spohn giving an Understanding Science seminar on *The Evolution of Planets, Habitability and Life* at the Bridge Cafe on May 25, 2016.
5. Group picture of the Science Committee members with the ISSI and ISSI-BJ staff after the SC meeting in Beijing on May 25-26, 2016.
6. Image of the SMILE (Solar-wind Magnetosphere Ionosphere Link Explorer) spacecraft. (Credit: ESA-CAS CDF)
7. The Long March-2D rocket carrying a carbon dioxide monitoring satellite blasts off from the launch pad at the Jiuquan Satellite Launch Center in Jiuquan, Gansu Province, China, on December 22, 2016. (Credit: Xinhua/Ren Hui)

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MESSAGE FROM THE CHAIRMAN OF THE BOARD OF TRUSTEES

2016 was the 4th year of the ISSI-BJ operation since its official inauguration in 2013. It was an important transition year in the development of ISSI-BJ. In this year, the first Executive Director, Prof. Maurizio Falanga finished his three-year fruitful and remarkable term, and Prof. Michel Blanc started his term as the new Executive Director. During the founding and starting period of ISSI-BJ, Prof. Falanga made great efforts to establish the new institute with many management actions, including the operating rules and regulations; under his leadership, ISSI-BJ had been gaining more and more recognition and reputation from the international space science community. The Board of Trustees approved the decision of the Selection Committee, and recruited Prof. M. Blanc as the new Executive Director. We hope that he will lead ISSI-BJ to proceed into a new development phase, establishing a higher reputation, and attracting the community with more and more high quality activities and teams.

2016 was also a fruitful year for ISSI-BJ. In addition to the continued achievements of its teams and other activities, the first book of ISSS from ISSI-BJ was published. In 2016, ISSI-BJ continued its success in supporting the Chinese space science missions by organizing the Forum on the "Link between Solar Wind, Magnetosphere, Ionosphere"which provided important input to further and advance the science of the CAS-ESA joint SMILE mission. The Board of Trustees supported that ISSI-BJ should pay much attention to building up its science programs with a bottom-up approach, and at the same time maximize scientific achievements from Chinese or Asian science missions. It is also expected that more and more workshops, working groups and international teams will be organized in ISSI-BJ with support from other organizations in the region.

ISSI-BJ is an international institute located in Beijing, and its development is relying on further recognition by the international space science community, as well as its contribution to the community, both in China and internationally. In 2016, with collaboration with the Asia Pacific Space Cooperation Organization (APSCO), ISSI-BJ organized in Thailand its first training program, the first Space Science School. 57 students from 16 countries, mainly from the Asia-Pacific region, benefited from this high-quality activity. At the same time, ISSI-BJ also extended its reputation and impact on the Asia-Pacific space community.

To advance the development of ISSI-BJ, it is important for ISSI-BJ to establish a disciplinary scientist team, which is a significant output of the review for the implementation of the first strategic plan of ISSI-BJ. In 2016, ISSI-BJ started the expansion of this team. Of course, the Board of Trustees supports this development with direct and efficient help to the activities. I also expect that ISSI-BJ will make progress in searching for more funding resources, which would make our further development possible.

I also would like to convey my thanks to the staff of ISSI-BJ, with the leadership of the former Executive Director Prof. Maurizio Falanga and the new Executive Director Prof. Michel Blanc. Special acknowledgement would go to Prof. Maurizio Falanga, for his enthusiasm and outstanding contributions to make ISSI-BJ a new, yet vibrant organization in the international space science community. I also thank all the funding agencies, as without their contribution, all the development and achievements would be like water without a source and a tree without roots.

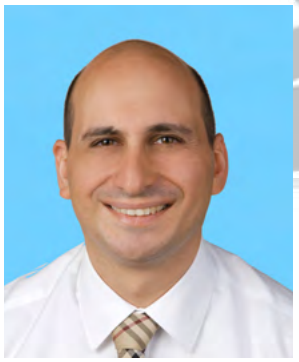
Ji Wu
Beijing, May 2017

MESSAGE FROM THE LEAVING EXECUTIVE DIRECTOR

During these three years when I served as the founding ISSI-BJ Executive Director, the seeds were sown in a fertile soil and ISSI-BJ grew to become a beautiful institute of excellence, with an international character and respectable reputation. 2016 saw a number of significant events, like ISSI-BJ for the first time hosting the ISSI/ISSI-BJ Science Committee meeting which was attended by 16 SC members, ex officio members and ISSI/ISSI-BJ directorate. In this message, however, I would like to mostly highlight the ISSI-BJ Space Science School, as the Annual Report already exhaustively reported all the other 2016 activities.

First, I would like to stress once more the importance of our institute serving different space science communities by promoting informal face-to-face multi-disciplinary meetings; these are the qualities which, among others, form to the strength and uniqueness of ISSI-BJ. With this mission on mind, ISSI-BJ jointly with APSCO for the first time organized a space science school on How to design a Space Science Mission, connecting scientists and facilitating international collaboration also among young scientists. It was a great success to see how during the school students from different countries built links between each other, in order to collaborate with the sole goal of benefiting the science, and with the potential to become leaders in the future.

Let me share here the story behind this school. Back in 2012/2013, I was discussing with Prof. Roger M. Bonnet my vision to organize for the Asia-Pacific young space scientists and engineers a school on space mission design, but outside of our institute's premises. However, since ISSI-BJ is operating by invitations, and the scientists are supported to attend scientific activities only at the ISSI-BJ venues, this school was just a far aim. And yet, in July 2015, ISSI-BJ and APSCO signed a Memorandum of Understanding to develop and strengthen the links between space engineers of the APSCO Member States and the international users' community of ISSI-BJ. APSCO was the perfect partner to organize this school with, especially because of the complementarities and synergies between us in bringing the space scientists and engineers together, and the possibility of also involving the country states in full development of their own space programs. Now, three years later, this vision became reality and I believe that we could not have had a better venue than GISTDA in Thailand, one of the APSCO country states, to host this school. At the same time, I am especially proud of the high level and quality of the invited speakers, all chosen among experts and well-recognized scientists, engineers, and space managers. I feel deeply honored by their participation in the school. I would like to thank APSCO, especially Dr. Li Xinjun, Dr. Mohammad Ebrahimi Seyedabadi and Susan Su, as well as GISTDA for their outstanding collaboration. I would also like to extend my thanks and appreciation to all the sponsors and supporters of the school.



At the end of my term, I am thankful for the trust and support I always received from the ISSI-BJ Board of Trustees, especially from its Chair, Prof. Ji Wu, as well as from Prof. Roger Bonnet and Prof. Rafael Rodrigo. I am also thankful to the ISSI-BJ advisory body, i.e. the joint ISSI/ISSI-BJ Science Committee and its Chair, Prof. Tilman Spohn. Of course, my special thanks go to the very productive and efficient ISSI-BJ staff: Xiaolong Dong, Lijuan En, Anna Yang, and Wang Gang, to the scientific staff: Ivan Zimovets and Richard de Grijs, as well as to the two former staff members: Ariane Dubost-Bonnet and Sabrina Brezger, who with dedication, professionalism, and enthusiasm contributed to the success of ISSI-BJ.

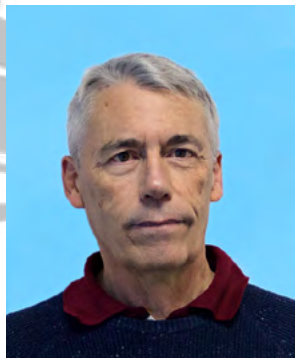
To the newly appointed Executive Director, Michel Blanc, I wish all the best in the endeavors to ensure continuity, and to constantly improve the quality of the past and present services. In conclusion, I am glad to see how the scientific activities are increasing, so let's keep ISSI-BJ unique and aiming always at the highest level, and serving at best all the space communities by facilitating informal meetings.

On a personal note, I am missing all my friends at ISSI-BJ and in Beijing, I am missing Beijing and its excellent food, I am just missing everything that I could experience during these three great and unforgettable years. Thanks to all of you.

M. Falanga

Maurizio Falanga
Beijing, May 2017

MESSAGE FROM THE NEW EXECUTIVE DIRECTOR



If ISSI-BJ exists today and has already acquired a high international reputation, we owe it entirely to the initiative of Prof. Ji Wu, its founder, to the strong support provided to his initiative by the Executive Director of ISSI at that time, Prof. Roger-Maurice Bonnet and by the Chinese Academy of Sciences (CAS), and to the talent and dedication of its first Executive Director, Prof. Maurizio Falanga and of his staff. At the time of taking the reins of ISSI-BJ, my first duty is to extend to all of them my warmest thanks. And as I realize the unique legacy that they kindly left in my hands, my second duty is a very pleasant and stimulating one: it is to work hand in hand with the ISSI-BJ team and with our Board of Trustees, so that the beautiful seeds they have planted continue to grow year after year, to finally develop into the beautiful fruit-bearing tree we are all looking for. Allow me to say I feel very fortunate to find myself in such a position: throughout all my career, participating in the wonderful adventure of the development of Space Science has been my passion. I chose to join ISSI-BJ because I have the deep conviction that it is THE place to live this most exciting adventure today, in the part of the world where space science will experience the most spectacular growth over the years to come. Being here, I will also have the privilege of serving great scientific communities I am eager to discover and work with!

Serving is indeed the key word: ISSI-BJ serves the Space Science community by fostering collaborative research and foresight on an international basis. Through its action, it is an essential stimulus to the virtuous circle which permanently connects the international space science community to the host of space science missions undertaken by the space-faring nations. Via this specific approach, ISSI-BJ produces new scientific knowledge, contributes to the training of new users of space missions, including young scientists, and helps provide community visions on the needs for future space missions.

From a broader perspective, Space Science is an interdisciplinary field nurtured by all disciplines of science and technology. Because of its unique appeal to the public, it is a fantastic tool to illustrate the value of the scientific method to produce new knowledge for the benefit of our societies. By communicating not only towards the space science community, but also towards the scientific community and the public, ISSI-BJ can contribute to the much-needed effort to promote science as a base of our societies. Serving the full spectrum of Space science is a scientifically very exciting challenge I am determined to meet: we must encompass in our action the Science OF space, e.g. the in situ exploration of our near environment and of our whole Solar System, Science FROM space (looking up at our Universe to better understand it, and DOWN towards our "Spaceship Earth" to learn how to better preserve it), and Science IN space, using the microgravity conditions of our spaceships to perform experiments unachievable on Earth. Our other important challenge is to serve not only the scientific community which supports us most – the Chinese science community - but also the many other science communities interested in contributing to the space science adventure, particularly in the Asia-Pacific region.

To address properly these two major challenges, let us make the development of ISSI-BJ an international space mission project, shared and supported by all interested actors and communities of space sciences, in this region of the globe and beyond. As is the case for any space mission, the centerpiece of this approach will be an International Science team selected to be able to cover both the diversity of themes and the diversity of regional communities interested in the development of ISSI-BJ. This team will propose directions for our development, and will advise us on the fine tuning of our tools. I will use the calendar year 2017 to assemble and establish it.

It is my deep conviction that the quality of our services and activities, their potential for producing new scientific knowledge, and our insights into future space missions and deeper international collaborations, will be a strong motivation for partners throughout the world to join our development effort, in particular by supporting our International Science team. As I commit myself to leading this future "dream team" to full success, it is my deep conviction that it will contribute to address one of the greatest challenges of our times: promote Science for the benefit of our societies.

Michel Blanc
Beijing, May 2017

ABOUT ISSI-BJ

The International Space Science Institute Beijing (ISSI-BJ) is a non-profit research institute 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 Strategic Priority Program on Space Science. ISSI-BJ is a close cooperation partner of ISSI in Bern. Both institutes share the same Science Committee, the same study tools, and other information of mutual relevance and interest. However, both use independent operational methods and different funding sources.

The main mission of ISSI-BJ 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 and laboratory experiments. The Program of ISSI-BJ covers a widespread spectrum of space science disciplines, including solar and space physics, planetary science, astrobiology, micro-gravity science and earth observation. It offers a complement to the ISSI program with special emphasis on future scientific opportunities.

History

In October 2011, Professor Ji Wu, the Director General of the National Space Science Center (NSSC), visited the International Space Science Institute (ISSI). He proposed to establish an International Space Science Institute in Beijing (ISSI-BJ) during his visit.

In February 2012, Simon Aegeter, Chairman of ISSI's Board of Trustees and Roger-Maurice Bonnet, Executive Director of ISSI, visited NSSC for further discussion. Both parties exchanged opinions and signed the Memorandum of Understanding (MoU) which was approved by the ISSI Board of Trustees (BoT) in June 2012. On April 19, 2013, the BoT of ISSI signed the Agreement of Cooperation with NSSC and approved the implementation plan of cooperation between ISSI and ISSI-BJ. It was decided, for the first time in the history of ISSI, to share the name with another institution. This decision was made because it was convinced that NSSC is an extremely trustworthy partner. According to this decision, ISSI and NSSC moved forward on the implementation plan for establishment of ISSI-BJ.

The inauguration ceremony of ISSI-BJ was held at the NSSC in Beijing on July 16, 2013. Professor Rafael Rodrigo, Executive Director of the International Space Science Institute, and Professor Ji Wu, Chairman of the BoT of ISSI-BJ and Director General of NSSC, jointly inaugurated the new institute located on the 3rd floor of the NSSC building. In 2013, the ISSI-BJ Board of Trustees elected Professor Maurizio Falanga from Switzerland to head the Institute as its Executive Director.

A brainstorm forum on the strategy of ISSI-BJ was held in November, 2014, and a international visiting assessment committee was established to evaluated the performance of ISSI-BJ. The international visiting assessment reports gave ISSI-BJ a very good credit and concluded that ISSI-BJ had a good start and had been gaining excellent reputations from the international science communities. Based on the evaluations, NSSC and ISSI agreed to continue their cooperation on ISSI-BJ. The Board of Trustees of ISSI-BJ and ISSI approved assessment report and the new agreement in April and June, 2015, respectively. Therefore, on October 23, 2015, Professor Ji Wu, director-general of National Space Science Center of Chinese Academy of Sciences (NSSC) and chair of the Board of Trustees of the ISSI-BJ, and Professor Rosine Lallement, representative and vice chair of the Board of Trustees of ISSI, signed a new agreement, which confirmed the cooperation of two sides on continuation of ISSI-BJ. According to the new agreement, the cooperation will last for at least three years and after the specified period of three years, the agreement can be extended.

ISSI-BJ'S SCIENTIFIC PROGRAM

ISSI-BJ is an institute with the mission to serve the space science communities in multi-lateral and multi-disciplinary activities. ISSI-BJ is open to support projects from any Asia or international scientists or institutes, encouraging the scientists to work together in Beijing.

Research Tools

WORKSHOPS

Workshops are study projects on specific scientific themes, selected in consultation with the Science Committee. The duration of a Workshop is typically one week. Workshops are organized by a group of conveners who define the theme, set up the program, and list the group of participants. Participation is by invitation only. The size of any Workshop is usually limited to a maximum participants of 45, including few young scientists.

The results of the Workshops are published as refereed papers in issues of Space Science Reviews and in parallel as volumes of the Space Science Series of ISSI (SSSI).

WORKING GROUPS

Working Groups are set up by the Directorate for specific tasks, often of technical nature. Their life time can be of several years. The results of the Working Groups are published as volumes of ISSI-BJ Scientific Report Series (SR) or in the scientific literature.

INTERNATIONAL TEAMS

International Teams follow a strict bottom-up approach whereby in response to a specific call issued every year in January, scientists can propose projects corresponding to the topics broadly identified in the Call. The reviewing and ranking process is the responsibility of the Science Committee.

International Teams are composed of about 5-15 scientists from different institutions, nationalities, and expertise. They meet at ISSI-BJ for one or several periods of time of typically one week. They are active for 12-18 months. IT projects often involve data or modelling work. Their activities is directed and organised by a team leader, generally the initiator of the proposal. Teams are largely independent in the execution of their project, but maintain close contact with ISSI-BJ.

FORUMS

Forums are informal and free debates among 20-25 high-level participants on open questions of scientific or science policy nature. A Forum may lead to formal recommendations or decisions depending upon the topic or issues addressed in the Forum.

TAIKONG magazines constitute the output of the Forums organized at ISSI-BJ. They report the content of the Forums and reflect in a neutral way the discussions and advises from the participants.

VISITING SCIENTISTS

Senior and Junior Visiting Scientists carry out scientific work in collaboration with, or under the supervision of the ISSI-BJ scientific staff on matters directly or indirectly connected with the ISSI-BJ projects. They contribute to the scientific environment at ISSI-BJ in complement to the ISSI-BJ scientific staff.

Outreach and Training Tools

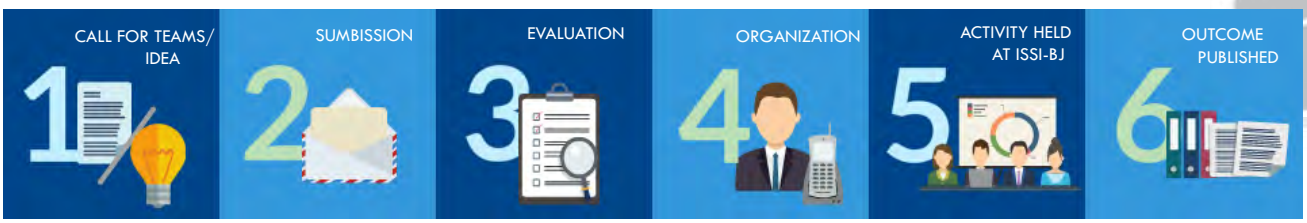
U.S. SEMINARS

Understanding Science is organized by the UK Royal Society of Chemistry, the Institute of Physics and ISSI-BJ. Its goal is to make a broader public aware of today's accomplishments in research through short scientific lectures in English (popularization talks) as well as to have an opportunity to talk with either international or Chinese scientists currently carrying out research in China, in a relaxed atmosphere.

SPACE SCHOOL

ISSI-BJ Space School is a biennial Summer School on space sciences and space science missions for international students. The students are provided with the required scientific background relevant to producing a report.

How to use the ISSI-BJ Tools



INTERNATIONAL TEAM

1. A joint **call for proposals** is released by ISSI/ ISSI-BJ every year in January.
2. Submit your **proposal** corresponding to the topics broadly identified in the Call.
3. The proposals are **evaluated**, prioritized and recommended to ISSI-BJ by the ISSI/ISS-BJ **Science Committee**.
4. The activity is directed and **organized** by a team leader who is also the initiator of the proposal to ISSI-BJ.
5. The IT holds a series of two to three one-week **meetings** over a period of 12 to 18 months.
6. The **results** of Teams are published in scientific journals.

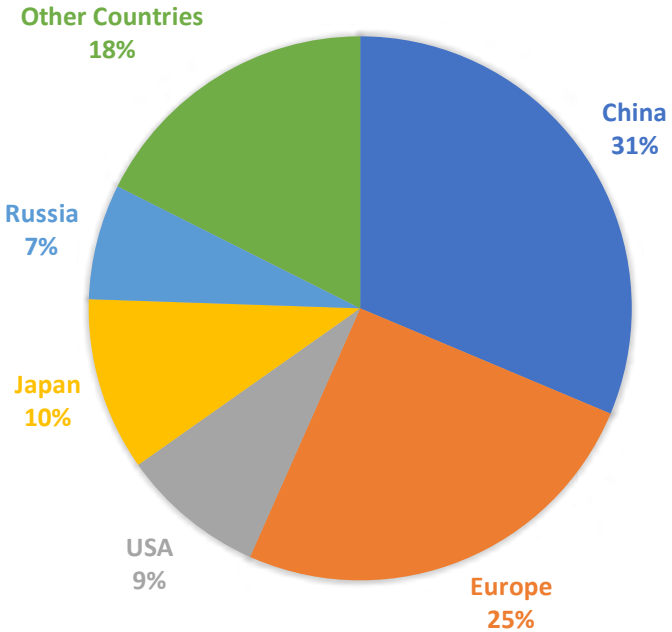
WORKSHOP, WORKING GROUP AND FORUM

1. There is no annual call. The scientific community can put forward suggestions **at any time** on future Workshops and Forums.
2. Submit a **summary** of maximum **one page**, explaining the proposal **topic**, the **rationale** to organize the event at ISSI-BJ and the **list of proposers**.
3. The proposals are **evaluated**, prioritized and recommended to ISSI-BJ by the ISSI/ISS-BJ **Science Committee**.
4. The activity is **organized** by the conveners.
5. The activity is held at **ISSI-BJ**.
6. The activity **outcome** is prepared and published.

Statistics

In 2016, ISSI-BJ organized one forum, one workshop, one Understanding Science public seminar, two scientific seminars and one summer school. We have 10 active international teams - 3 selected in 2015, and 7 selected in 2016.

In the course of 2016, a total number of 233 international scientists participated in the scientific activities of ISSI-BJ.



Pie chart on the right: Geographical distribution of the ISSI-BJ scientific activities participants

The link between Solar wind, Magnetosphere, Ionosphere

July 6-7, 2016

Conveners: Chi Wang (NSSC, CAS), Graziella Branduardi-Raymont (UCL, UK), Benoit Lavraud (CNRS, France), Tony Lui (APL, USA) and Maurizio Falanga (ISSI-BJ, China)

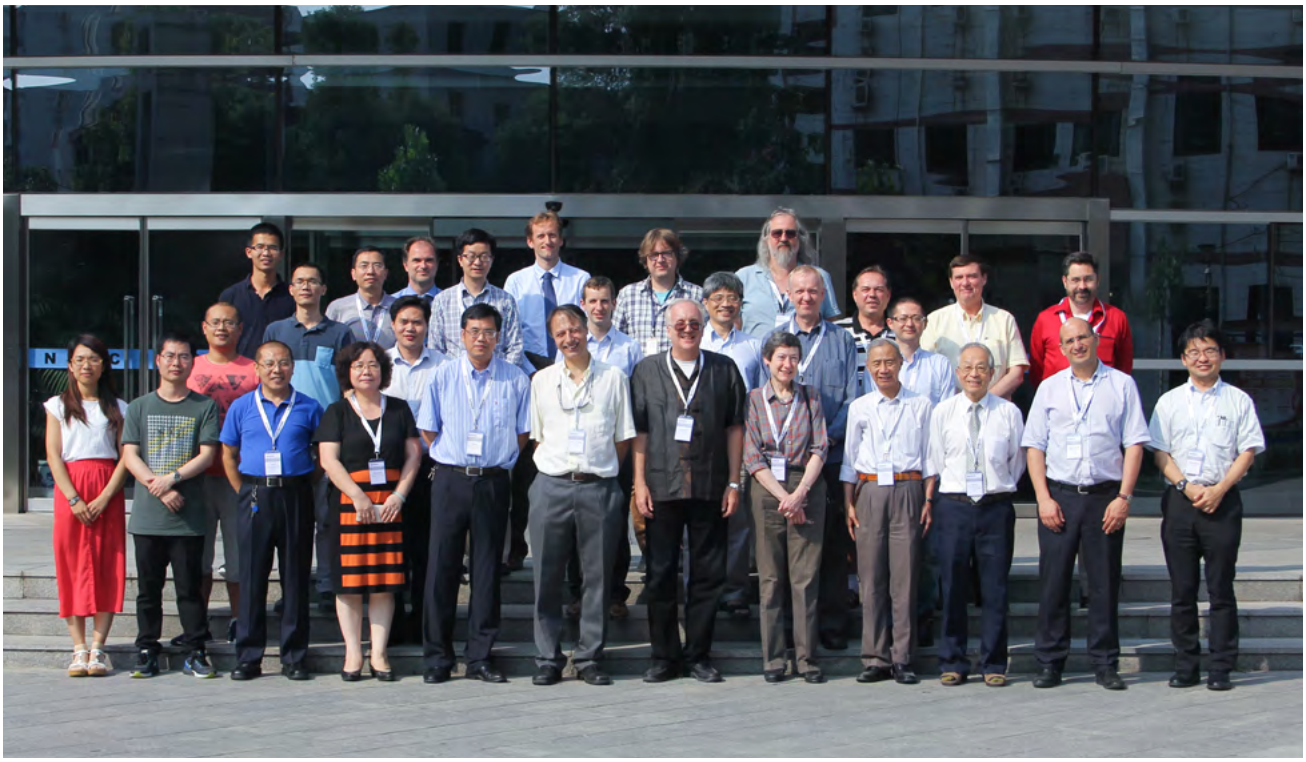
The aims of this ISSI-BJ FORUM are related to the scientific questions of how the Sun controls the Earth's magnetic environment and space weather. Recently the European Space Agency (ESA) and Chinese Academy of Sciences (CAS) selected a joint small mission (Solar wind Magnetosphere Ionosphere Link Explorer - SMILE, to be launched in 2021) to study these processes from beginning to end and predict the effects of space weather events in a way unmatched so far.

SMILE is a self-standing mission to observe solar wind-magnetosphere coupling via simultaneous in situ solar wind/magnetosheath plasma and magnetic field measurements, X-Ray images of the magnetosheath and magnetic cusps, and UV auroral images of global auroral distributions defining system-level consequences.

The Forum's main aims divided the meeting into 4 sessions: overview to the Solar Wind Magnetosphere and Ionosphere Coupling; key science of the Solar wind, Magnetosphere, Ionosphere Coupling; Instruments and capability required; Synergies Complementary missions and International Collaborations.

The Forum started with an overview and the goals of SMILE mission. The participants discussed the interaction between Earth's protective shield – the magnetosphere – and the supersonic solar wind. SMILE is expected to give an important contribution to our understanding of space weather and, in particular, to the physical processes taking place during the continuous interaction between the solar wind and the magnetosphere.

An issue of Taikong, the ISSI-BJ magazine, devoted to the content of this Forum has been issued for distribution to the science communities and space science institutions.

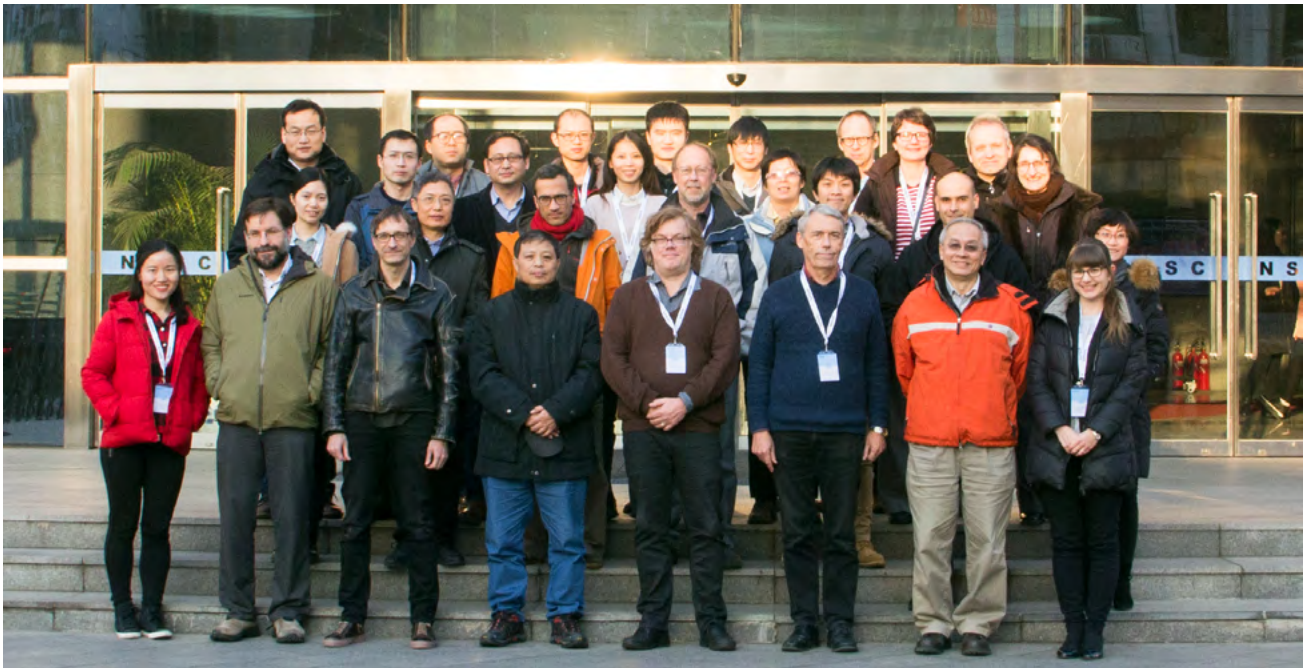


Participants of the Forum on "The link between Solar wind, Magnetosphere, Ionosphere" in Beijing

Lunar and Planetary Seismology Forum

January 11-12, 2017

Conveners: Philippe Lognonné (University of Paris Diderot/IPGP, France), Ip Wing Huen (NCU, IANCU, Taiwan), Yosio Nakamura (UT Austin, IG, USA), Mark Wieczorek (CNRS/IPGP, France), Wang Yanbin (SESS, PKU, China), Maurizio Falanga (ISSI-BJ, China), Tilman Spohn (DLR, Berlin, Germany)



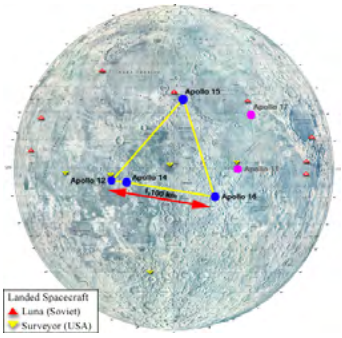
Participants of the Forum on "Lunar and Planetary Seismology Forum" in Beijing

The ISSI-BJ forum on Lunar and Planetary Seismology was joined by over 30 leading scientists from 8 countries.

The Forum started with an overview of the Apollo seismic experiment, followed by the outline of the goals and challenges of planetary seismology. Next, the achievements of the Apollo seismic experiment have been reviewed, and the science goals of a new post-Apollo seismic return on the Moon have been identified. The participants then proceeded to review the perspective of planetary seismology on other bodies of the solar system from Mars, where a major seismology mission (INSIGHT) is in preparation, and to the gas giants Jupiter and Saturn, where seismology experiments using astronomical techniques have already been successfully implemented. Finally, the participants discussed the new developments and future projects in Japan, Russia, USA, Europe and China.

The Forum ended with an extensive discussion during which the participants summarized the outcomes of the Forum. All participants shared the vision that future seismology at the moon and further out into the Solar System, will develop on the same foundations which prevailed for terrestrial seismology from its very beginning: a full dedication to open, free, international collaboration and free circulation of data.

An issue of Taikong, ISSI-BJ magazine, will be devoted to the content of this Forum for distribution to the science communities and space science institutions.



Apollo passive seismic network operating on the Moon from 1972 to 1977

Astronomical Distance Determination in the Space Age

May 23-27, 2016

Conveners: Richard de Grijs (KIAA/ PKU, China; ISSI-BJ, China), Giuseppe Bono (Universita di Roma Tor Vergata, Italy), Barry Madore (CIS, USA), Noriyuki Matsunaga (The University of Tokyo, Japan), Sherry Suyu (ASIAA, Academia Sinica, Taiwan; MPA, Germany), Jianmin Wang (IHEP, CAS, Beijing, China), Maurizio Falanga (ISSI-BJ, China)

The ISSI-BJ workshop on "Astronomical Distance Determination in the Space Age" brought together as many as 42 scientists from 13 countries around the world.

Knowing the distance of an astrophysical object is key to understanding its formation and evolution. This ISSI-BJ workshop highlighted the tremendous amount of recent and continuing research into a myriad of exciting and promising aspects of accurately pinning down the cosmic distance scale. Putting the many recent results and new developments into the broader context of the physics driving cosmic distance determination is the next logical step, which will benefit from the combined efforts of theorists, observers and modellers working on a large variety of spatial scales, and spanning a wide range of expertise.

The workshop covered the following 5 themes:

- Structure of the Milky Way and the Local Group,
- Pulsating variables from optical to infrared wavelengths,
- Distance benchmarks out to the smooth Hubble flow,
- Type Ia Supernovae (SNe Ia) as standardizable candles,
- Cosmological constraints.

Under its special program for supporting young scientists, 8 early career scientists, within two years of their PhD, were invited to speak at the Workshop. The Young Scientist session was intended to give young scientists working on the broad scientific topic of the workshop an opportunity to present their projects in front of the expert audience, and to initiate fruitful discussions with these experts. The session on Thursday afternoon opened new perspectives and was highly appreciated by all participants.

Following the Workshop, its output will be published as a volume in the "Space Science Series of ISSI" by Springer, after publication of the chapter as peer-reviewed papers in the "Space Science Reviews" journal.

INTERNATIONAL TEAMS

Since 2014, every year in January ISSI-BJ and ISSI jointly release the Call for International Teams in Space and Earth Sciences to invite proposals for study projects from internationally collaborating teams of scientists from different institutions.

The Call is open to scientists of any nationality actively involved in the following research fields:

1. Space Sciences (Solar and Heliospheric Physics, Solar-Terrestrial Sciences, Space Plasma and Magnetospheric Physics, Planetary Sciences, Astrobiology, Cosmology, Astrophysics, and Fundamental Physics in Space)
2. Earth Sciences using space data

Teams selected in 2014

1. Cheng K. S. (CN) & Dogiel V. (RU)

New Approach to Active Processes in Central Regions of Galaxies

Sessions: June 1-5, 2015, & June 6-8, 2016

Scientific Rationale: The aim of this project is to search and to understand the origin of processes in the very special region of the Galaxy - the Galactic central region (GCR). Recent discoveries obtained with new observational missions like Fermi, Planck, Swift, INTEGRAL, Chandra etc. found there very unusual phenomena with huge energy release which are not seen in any other part of the Galaxy. It seems that similar processes also take place in central regions of other galaxies. We intend to discuss and to analyze these processes in attempt to find physical reasons for these unusual phenomena associated in the galactic centers.

2. Chen C. (UK) & He J. (CN)

Anisotropy and Intermittency in Solar Wind Turbulence

Session: June 29-July 3, 2015

Scientific Rationale: Plasma turbulence is ubiquitous throughout the heliosphere but in many respects remains poorly understood. As well as being of intrinsic interest, this turbulence is important for understanding plasma heating, such as in the solar corona, and determining the propagation, and therefore origin, of energetic particles. Two fundamental features of turbulence in the solar wind are anisotropy (different properties with respect to the magnetic field direction) and intermittency (burstiness of the fluctuations), but their origin, precise nature, and, in particular, the relationship between them is not well understood. The team combines observations, simulation and theory to make progress in understanding these features.

3. Corpetti T. (FR)

Remote Sensing Image Data Assimilation for Pollution Monitoring: Application to Urban and Ocean Pollution

Session: January 27-30, 2015

Scientific Rationale: In this project we aim at defining methodological tools devoted to image data assimilation. Such tools will be applied to oil sick monitoring in ocean and to urban pollutant estimation and forecasting in city environments (these applications require indeed common computer vision methods).

Detection and monitoring of the evolution of oil slicks aims firstly at helping to the planning of contingency or cleanup actions of oil spill in case of serious pollution and secondly, to enable identification of polluters. As for urban environment, because of the large increase of pollution in large cities (and especially in China), the question of the estimation, understanding, monitoring and forecasting of pollutants is crucial.

Note: *is used to mark the joint ISSI-BJ/ISSI teams*

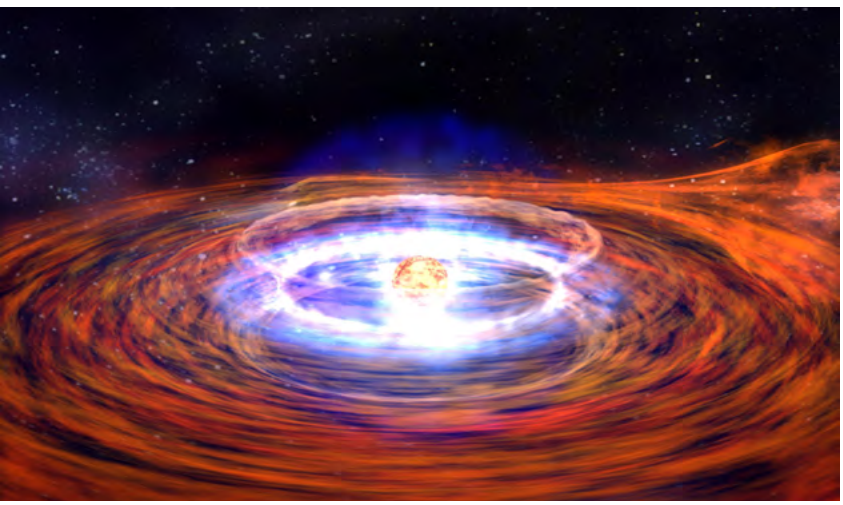
4. **Dunlop M. (UK)**

Small Scale Structure and Transport During Magnetopause Magnetic Reconnection: from Cluster to MMS

Session: October 26-30, 2015

Scientific Rationale: The team project is designed to investigate small-scale structure and transport induced by magnetic reconnection (MR) in the Earth's magnetosphere; focusing on the dayside magnetopause. Magnetic reconnection is one of the most fundamental processes controlling the interaction of planetary magnetospheres with the solar wind. In particular, the dynamics of reconnection are strongly influenced by small-scale processes occurring within the diffusion region, and in the (larger scale) sub-layers, which separate inflowing and out-flowing plasma. The dayside magnetopause provides a special context for the operation of MR under asymmetric conditions driven by the solar wind. Over the last decade, data from the four-spacecraft Cluster mission have demonstrated the key importance of multi-spacecraft analysis in deciphering the structure, and thus the physics, of magnetic reconnection.

The team includes experts in both, reconnection physics and four-spacecraft analysis to address two specific goals: 1. Examine Cluster observations of reconnection on the dayside magnetopause, and establish the likely signatures that will be observed by MMS, 2. Review and collate all the Cluster four-spacecraft techniques and determine how these techniques can be used by MMS with its much smaller tetrahedron.



Visualisation of the neutron star X-ray burst (Credit: NASA/Dana Berry)

5. **Kretschmar P. (ES)**

Coronae in the X-ray Flashlight

Sessions: May 11-15, 2015 & June 13-17, 2016

Scientific Rationale: Although the theory of high-energy emission from X-ray binary systems is generally well developed, the nature of the X-ray emitting corona remains poorly understood. The concept of a corona, a hot gas flow radiating inefficiently, has been widely used to model spectral state transitions in X-ray binaries and the connection between disk and jets. The intrinsic properties of these coronae are difficult to obtain and quite different views are proposed in the literature. Expanding on the methodology used in a recent series of papers, the team discusses the impact of type I X-ray bursts on the coronae in X-ray bursters as a mechanism to explore corona properties in these systems. This project is expected to shed some further light also on the possible connections among the accretion disk, the corona and jets in other kinds of X-ray binaries. The project will also lay the groundwork for observing opportunities of X-ray bursters with the first Chinese hard X-ray satellite, HXMT, which is to be launched in 2016. HXMT will provide the largest detection area yet at 20–250 keV, an energy band that is crucial for this line of research.

6. **Mueller-Wodarg I. (UK)**

Aeronomy of Terrestrial-sized Bodies

Session: November 16-20, 2015

Scientific Rationale: The team discusses comparative aeronomy of terrestrial sized bodies in the solar system (Titan, Venus, Mars) as well as predictions for extrasolar terrestrial sized planets. We focus on four key topics related to small-scale structures and perturbations, including waves, large- scale background structures and solar cycle/seasonal/diurnal variations as well as ionospheric structure, variability and chemistry. The key innovation lies in the comparative understanding of these bodies, which are characterized by different boundary conditions, and development of a more fundamental physical understanding of their properties.

Teams selected in 2015

7. Brasseur G. (DE) & Bouarar I. (DE)

Analysis of Persistent Regional Air Pollution in Asia

Session: February 29-March 4, 2016

Scientific Rationale: We propose to assemble an international and interdisciplinary team of air pollution specialists to address the unresolved problem of the formation of persistent and health-threatening aerosol layers during wintertime in large areas of Asia.

Our objective is to bring together a group of experts representing these different disciplines to address the problem of the formation of large haze episodes in Asia from different perspectives (space observations, surface monitoring, profiling, laboratory approaches, data analysis, modeling and impacts).

The two projected meetings, one in Bern and one in Beijing will provide the opportunity to discuss in detail the different issues related to haze formation and to develop a synthesis that should lead to the production of a proceedings book and to seminal papers that present the state-of-the-art on this issue. Of highest importance is the participation of Asian experts who have collected large datasets and are ready to contribute.

8. Miyoshi Y. (JP) & Hosokawa K. (JP)

Pulsating aurora as a manifestation of non-linear wave particle

Session: May 30-June 3, 2016

Scientific Rationale: The ISSI-BJ Team will understand the causal relationship between the micro-process of the wave-particle interactions in the magnetosphere and pulsating aurora (PsA) in the ionosphere.

We have assembled a team of experts of ground-based observations, satellite observations, and simulations to tackle the focused questions on the pulsating aurora,

Picture of the team work on "Pulsating aurora as a manifestation of non-linear wave particle"

which is a manifestation of the non-linear wave particle interactions of whistler mode chorus waves.

Besides the experts of the observations, we invite several members from the simulation studies for comprehensive understanding of the physical processes. These members also represent several space missions providing the data that are relevant for our focused research, namely, NASA's Van Allen Probes and THEMIS missions, ESA's Cluster mission, and the upcoming JAXA's ERG mission.

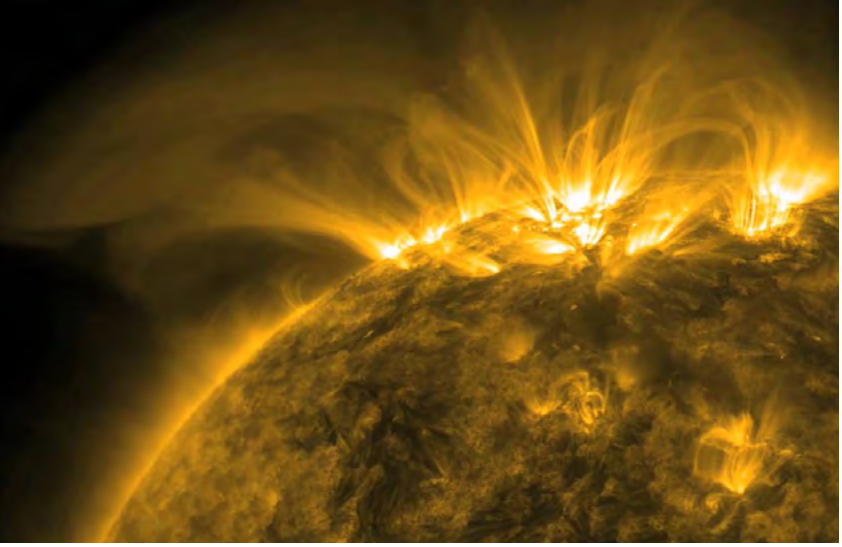
9. Nakariakov V. (UK) & Van Doorsselaere T. (BE)

Magnetohydrodynamic Seismology of the Solar Corona in the Era of SDO/AIA

Sessions: December 14-18, 2015 & January 16-20, 2017

Scientific Rationale: We are going to assess in depth, develop and create the basis for full-scale implementation of the magnetohydrodynamic (MHD) seismological methods for the diagnostics of the solar coronal plasmas by MHD waves and oscillations with the use of data obtained with the Atmospheric Imaging Assembly (AIA) on the Solar Dynamics Observatory.

The unique capabilities of the instrument, such as the combination of the high spatial and time resolution, high sensitivity and 24/7 full-disk coverage allows for the confident detection of coronal wave and oscilla-



Solar Corona (Credit: NASA)

tory processes, and assessing their key parameters.

These observational findings, in combination with the advanced MHD wave theory and instrumentoriented forward modelling provide us with the ground for the delivery of robust coronal plasma diagnostics of the key coronal plasma parameters, such as the coronal heating function and sub-resolution structuring.

Aims of the proposed activity are: 1. major expansion of the international research collaboration in the field by establishing new research collaborations and enhancing existing links 2. conducting collaborative research on several selected topical problems, 3. performing effective knowledge exchange, and 4. creation of a fertile ground for the joint application for collaborative research grants.

10. Ouzounov D. (US) & Zhang X. (CN)

Validation of Lithosphere-Atmosphere-Ionosphere-Magnetosphere Coupling (LAIMC)

Sessions: September 21-25, 2015 & August 22-26, 2016

Scientific Rationale: We propose an investigation of the near-Earth space plasma dynamics and electromagnetic environment by multi-parameter analysis from variety of space-based missions (ESA, NASA, NOAA, JMA and CNSA).

This study aims to advance the physical concept of the coupling mechanism between lithosphere, atmosphere, ionosphere and magnetosphere, which is linked to the chain of processes initiated by atmospheric boundary layer modification associated with major natural disasters: earthquakes, tsunamis, typhoons, dust storms and volcanoes.

Our primary interests for this inter geosphere exploration are to utilize ensemble of space-born observations to verify the geospheres interaction caused by large-scale natural disasters over Taiwan (ROC) and Mainland China. This study is advancing the initial study "Multi-instrument space-borne observations and validation of the physical model of the Lithosphere-Atmosphere-Ionosphere-Magnetosphere Coupling" (Pulinets and Ouzounov, ISSI-Bern, 2013-15).

Team of leading international and Chinese experts from different disciplines of space and Earth sciences will provide an unique opportunity for knowledge fusion to make breakthrough in the holistic understanding the physics of coupling process among different geospheres of our planet.

11. Tian F. (CN)

Astrobiology in the New Age

Session: April 25-27, 2017

Scientific Rationale: Astrobiology, the quest for life in the universe, is "scientifically" driving most NASA and ESA exploratory missions in the Solar System and beyond. China is developing a solid plan of exploration of the Solar System and construction of new generation scientific satellites. A strong astrobiology community in China will be able to suggest substantial science cases to make its space exploration efforts beneficial.

Here we proposed to organize an ISSI-BJ astrobiology team in order to address some strategic questions important to the development of China's astrobiology community. The team is highly interdisciplinary with a broad expertise to study Astrobiology.

The results of our project will be important for identifying priorities in astrobiology in China and will foster the growth of this discipline in China, which could in turn contribute to relevant researches internationally.

Teams selected in 2016

12. Belloni T.(IT) & Dipankar B.(IN)

Understanding multi-wavelength rapid variability: accretion and jet ejection in compact objects

Session: March 20-24, 2017

Scientific Rationale: The study of fast variability of compact objects, in particular galactic X-ray binaries, has in the past few years shifted in focus and technique. Earlier we had plenty of observational information in the Xrays, thanks to the RossiXTE satellite, but it was a heroic effort to obtain fast timing observations at longer wavelengths, due to the non-availability of suitable instrumentation. The situation has now reversed, as the RossiXTE mission was terminated and more and more fast-timing capabilities are being added to optical and infra-red observatories.

At the same time, the radio coverage that was at best patchy in the past is now easier to obtain. Starting from 2016, fast timing in X-rays will again be possible through the Indian multi wavelength satellite Astrosat, launched in 2015 September. As the recent outburst of a bright peculiar transient, V404 Cyg, has shown, it is now possible to coordinate major facilities throughout the world to obtain multi-wavelength coverage, which is essential to understand the nature of the emission and its variability, and hence the underlying physics.

Our International Team will discuss both existing results and future observational programs in order to summarise the current status of our understanding and devise projects to coordinate observational efforts in a manner to maximise their scientific output.

13. Zhang S.(US)

Climate Change in the Upper Atmosphere

Scientific Rationale: Climate change is characterized by global surface warming associated with the anthropogenic increase in greenhouse gas concentrations since the start of the industrial era. In the Earth's upper atmosphere where many modern technologies reside, it is now recognized that a long-term cooling has been taking place over the past several solar cycles. Compelling evidence for such cooling comes from direct measurements of the thermospheric density and the ionospheric temperature. A lot more indirect evidence has become available since the 1990s following a seminal modeling study by Roble and Dickinson (1989), suggesting potential effects of increased greenhouse gases on the ionosphere and thermosphere. However, there are several outstanding issues, for example, (1) the very strong ionospheric cooling observed by multiple ionospheric radars that does not fit with the prevailing theory based on the argument of anthropogenic greenhouse gas increases; (2) CO2 trends in the mesopause region observed by satellite missions are about twice of what current general circulation models predict; (3) trends in atmospheric wave activity and their impacts on the atmosphere-ionosphere system are poorly known and unquantified.

Our International Team will be taking on these challenging outstanding topics as our research theme, with the goal to improve the understanding of the long-term trends in the ionosphere and thermosphere.

A multi-wavelength view of all that remains of RCW 86, the oldest documented example of a supernova (Credit: X-ray: NASA/CXC/SAO & ESA; Infared: NASA/JPL-Caltech/B. Williams (NCSU))

14. Mowlavi N.(CH)

Understanding the fate of binary systems in the Gaia era

Session: November 6-10, 2017

Scientific Rationale: The majority of stars in the Universe are in binary or multiple systems. Yet, the evolution of binary systems is still poorly understood theoretically and poorly constrained observationally. This is especially true for close systems experiencing mass transfer from one companion to the other.

The field will benefit from the exceptional database that is being gathered by ESA's Gaia mission. Launched at the end of 2013, the spacecraft is repeatedly observing several millions of which are expected to be eclipsing binaries. This unprecedented all-sky sample of eclipsing systems can serve as a proxy of the population of binary systems in the Galaxy and in the Magellanic Clouds. This ensemble of data on eclipsing binaries will offer a unique opportunity to analyze binary systems in different states of evolution, and eventually provide more reliable predictions for the occurrence fractions of various binary evolution channels.

The purpose of this team is to clarify and answer questions like: the identification of eclipsing binary parameters that can be extracted from large scale multi-epoch surveys, including Gaia, their link with observable properties of binary systems, and the efficiency of binary population synthesis models to predict various binary evolutionary channels based on eclipsing binary parameters extracted from large-scale multi-epoch surveys.

The study will rely on space- and ground-based multi-epoch surveys of eclipsing binaries such as Kepler and OGLE, and on simulated Gaia-like eclipsing binary time series in advance of, and in preparation for the study of, real Gaia data of eclipsing binaries.

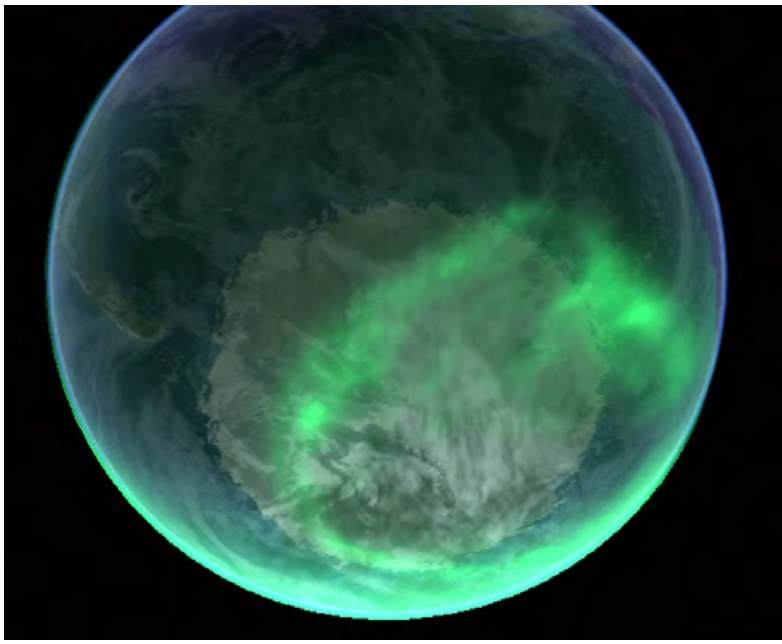
15. Zhang Q.H.(CN)

Multiple-instrument observations and simulations of the dynamical processes associated with polar cap patches/aurora and their associated scintillations

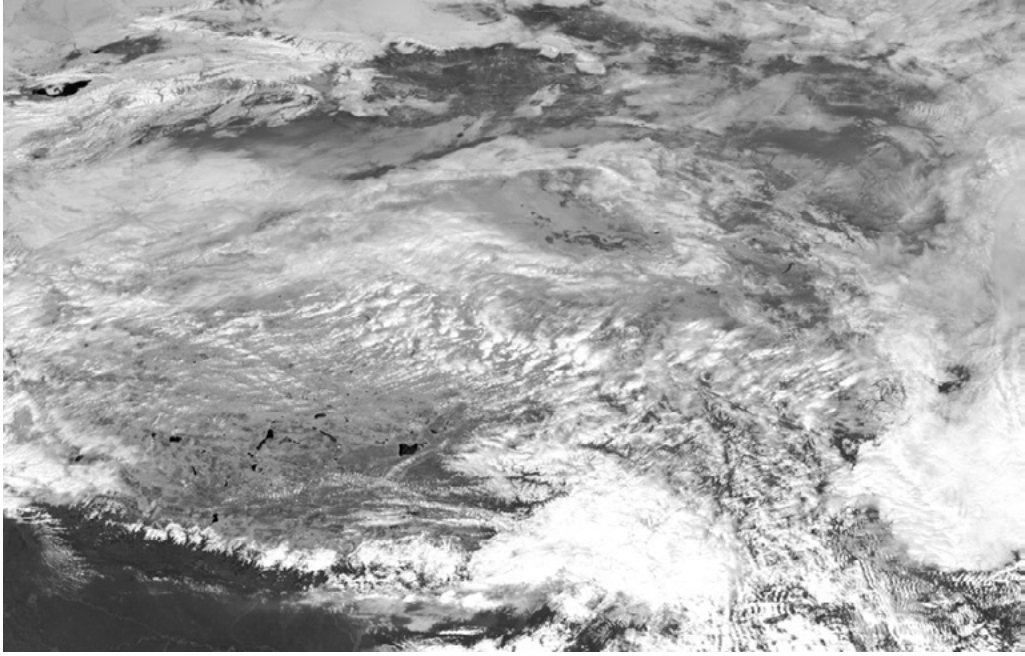
Session: May 8-12, 2017

Scientific Rationale: Polar cap patch/aurora are common in the polar ionosphere where their motion and associated density gradients give variable disturbances to High Frequency (HF) radio communications, over-the-horizon radar location errors, and disruption and errors to satellite navigation and communication. They are also directly subject to space weather disturbances and link to the magnetosphere-ionosphere-thermosphere (M-I-T) coupling processes. However, their formation and evolution under disturbed space weather conditions are poorly understood, and there is no forecasting tool to predict it.

Improved knowledge and modelling efforts in these phenomena is key to make progress toward improved space weather forecasts and correction of global navigation satellite system (GNSS) signals in real-time in the polar cap regions. With the fast developing of the coverage in the polar regions during the recent years from the multiple instruments,



Polar Aurora (Image Credit: NASA (IMAGE Spacecraft))



Tibetan Plateau (Credit: NSMC, CMA)

such as GNSS ground-based receivers, incoherent scatter radars (ISR), Super Dual Auroral Radar Network (SuperDARN), and all sky imagers as well as space-based measurements, the global distributions of plasma and flows as well as the associated scintillations are well obtained, which offer us a good opportunity to study the polar cap patch/aurora and detailed understand the M-I-T coupling processes in a global view.

The aim of this Team is to organize multiple instruments observing campaigns (including ISRs, SuperDARN, all sky imagers, etc.) through international collaborations for understanding high latitude dynamics processes of the ionosphere, including particularly the polar cap patches and aurora generated by M-I-T coupling in the polar regions.

To enhance our understanding of the basic high-latitude physics, we propose to conduct investigation in three aspects: (1) Observational data taking with ground-based and space-based instruments which involves coordinating international campaigns within high latitudes; (2) Scientific analysis of the observations; (3) model simulation of important high-latitude effects. The conclusion of this team study will involve the drafting of a number of papers on the work carried out.

16. Orsolini Y.(NO)

Snow reanalyses over the Himalaya-Tibetan Plateau region and the monsoons

Session: February 27 - March 3, 2017

Scientific Rationale: The aim of this Team is to inter-compare and assess available re-analyses and snow datasets over the Himalaya-Tibetan Plateau region in the satellite era, and the impact of the improved snow re-analyses over that region upon subseasonal-to-seasonal forecasts of the Asian monsoons.

The Asian monsoons are among the climate phenomena that have the strongest social and economic impacts. The types of snow analyses used by operational meteorological centers to initialize subseasonal-to-seasonal forecasts, are now rapidly evolving. Land re-analyses which include assimilated satellite and in-situ observations are currently being tested at operational meteorological centers for the next generation of prediction systems. They harbinger the foreseen development of strongly coupled data assimilation method, involving the different subsystems of the forecast model.

While snow datasets and re-analyses have been compared over hemispheric or continental scales for variability and trends, their quality over the Himalaya-Tibetan Plateau region, sometimes called the Third Pole, is quite uncertain. While complicated by high orography and a paucity of in-situ data, it is nevertheless important for monsoon forecast initialisation.

The aim is to provide a synthesis evaluation paper and, ultimately, recommendation about what is needed to better initialize subseasonal-to-seasonal forecasts.

17. Tian H.(CN)

Diagnosing heating mechanisms in solar flares through spectroscopic observations of flare ribbons

Scientific Rationale: Solar flares are one of the most energetic events on the Sun that have

profound impacts on the near-Earth space environment and the rest of the heliosphere. Flare ribbons are locations of enhanced line and continuum emissions in broad wavelengths ranges from infrared and white light to extreme ultraviolet (EUV) from the lower solar atmosphere (from the photosphere to the chromosphere and transition region). They consist of footpoints of hot and dense flare loops, locations where most of the flare energy is deposited and dissipated.

With a high cadence up to a few seconds and a resolution of ~0.33 arcsecond (~240 km on the Sun), NASA's Interface Region Imaging Spectrograph (IRIS) mission has revealed unprecedented details of the dynamics in ribbons of hundreds of flares since July 2013. Characteristics of emission line profiles observed at the ribbons, e.g., Doppler shift, line width, asymmetry, central reversal and wing enhancement, are manifestations of various physical processes occurring in these flares. Such observables can be used to help disentangle different chromospheric heating mechanisms, namely thermal conduction, electron beam and Alfvén wave.

Our Team will diagnose flare heating mechanisms through combined efforts of spectroscopic observations of flare ribbons and advanced flare modeling. The team includes observers who will fully characterize the temporal evolution of several key emission lines, e.g., Mg II, Si IV and Fe XXI lines, at different locations of the ribbons in at least ten IRIS observations of flares. The team also includes modelers who will perform hydrodynamic/radiative-hydrodynamic simulations focusing on different heating mechanisms to reproduce signatures in the observed IRIS line profiles.

18. Savin S.(RU) & Wang C.(CN)

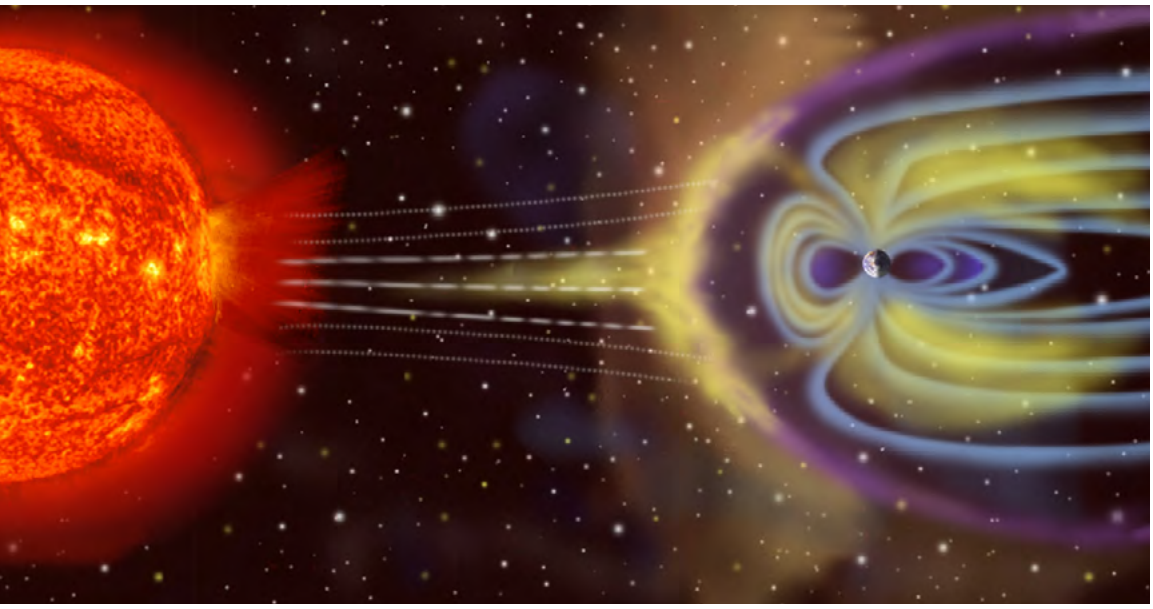
Outer Magnetospheric Resonances: The Role in Ionosphere-Magnetosphere Coupling

Session: June 12-16, 2017

Scientific Rationale: The key objective of the proposed Team is a new understanding of solar wind dynamic interaction with the Earth's magnetosphere: how surface and cavity resonances of the outer magnetospheric boundary layers can govern the plasma penetration inside and outside magnetosphere.

We propose that the main mechanism is the generation of the coherent plasma jets in magnetosheath, modulated by the resonances, which can be well seen inside the ionosphere. We propose to analyze cross-correlations of all available data from the spacecraft (s/c) in outer magnetosphere and the ionospheric data. Unlike most of the previous studies, we use the dynamic pressure data from the outer s/c and correlate them with energetic particle and magnetic field data, including SYM-H and AE indices.

We plan to simulate the experimental data using the facilities of our Chinese members, to study new features, such as a secondary shock over cusp.



Solar wind impact on Earth's magnetosphere (Image Credit: ESA)

The Ultimate Fate of Planetary Systems

Sylvie Vauclair

March 10, 2016

Sylvie Vauclair, Professor at the University of Toulouse, member of Institut Universitaire de France, Academie de l'Air et de l'Espace and Academia Europaea, visited ISSI-BJ on March 10, 2016, and gave a talk at ISSI-BJ/NSSC on "The Ultimate Fate of Planetary Systems".

Since the discovery of the first exoplanet in orbit around a solar-type star in 1995, a large number of observations have been performed from the ground and from space. More than a thousand exoplanets have now been detected. What is the fate of these planetary systems, including ours, when the star evolves and becomes a white dwarf after the giant stage?

More and more observations of white dwarfs show evidences of debris disks around them, with planetary matter falling onto the star. Accretion rates may be derived from theoretical studies and modelling of these stars. This becomes a lively field for the following years. In her talk, Sylvie Vauclair presented the context and first results on this subject.

Sylvie Vauclair giving a talk on "The Ultimate Fate of Planetary Systems"

Sea Level Observation, The Revolution of Space Gravimetry Remote Sensing

Nicolas Champollion

September 1, 2016

Nicolas Champollion, Post-Doctoral Scientist of the International Space Science Institute in Bern, visited ISSI-BJ in the beginning of September, and gave a talk at ISSI-BJ/NSSC.

Nicolas Champollion giving his seminar at ISSI-BJ/NSSC

Since the end of the XIX century, sea level is rising around 2 mm per year and the rate of sea level rise reaches 3.3 mm per year today. Altimeter is the main sensor to derive the Global Mean Sea Level since 1993 and the launch of TOPEX/Poseidon satellite. The projection of sea level rise due to global warming for the end of XXI century remains uncertain, between 0.3 to 1 meter depending on the greenhouse gaz emission.

Nicolas Champollion discussed his study of all the components of the sea level budget, mainly the thermal expansion, ice sheets, glaciers and land waters, which aim to help understanding the processes leading to sea level rise in order to improve sea level projections. He also presented some remaining questions about sea level like the inter-annual variability, the acceleration of sea level rise especially the ice sheet contribution, the uncertainty concerning land water.

The Evolution of Planets, Habitability and Life

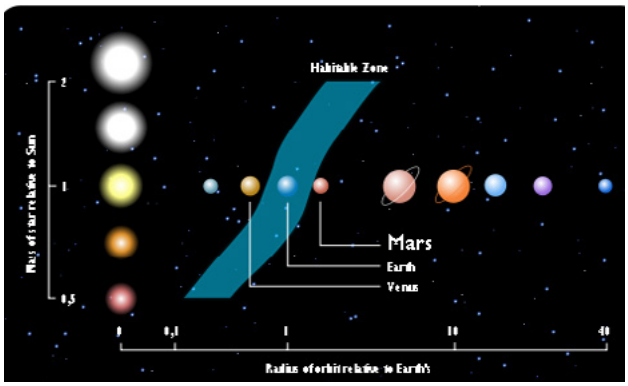
Tilman Spohn

May 25, 2016

Prof. Tilman Spohn giving an Understanding Science seminar on "The Evolution of Planets, Habitability and Life"

On May 25, 2016, ISSI-BJ organized a very successful Understanding Science seminar at the Bridge Café, a coffeehouse in Tsinghua university district, Wudaokou. The lecture on "The Evolution of Planets, Habitability and Life" was held by Prof. Tilman Spohn, Director of the Institute of Planetary Research of the German Aerospace Center (DLR) in Berlin, Germany and Former Chairman of the ISSI/ISSI-BJ Science Committee. More than 45 scientists and young students joined the event.

During his talk, Prof. Tilman Spohn explained that thousands of new planets orbiting stars other than our own Sun have recently been discovered. Habitability for life as we know it is usually thought to require water and a sufficient supply of energy and nutrients. Plate tectonics is considered the most important element determining habitability, serving as the basis for the food chain, cooling the planet's deep interior to drive the geodynamo and closing the loop on essential feedback cycles, such as the water cycle and the long-term carbonate silicate cycle. In this talk, Prof. Spohn discussed the role of plate tectonics and life to keep these cycles operating.



The Solar System along center row range of possible habitable zones of varying size stars. (Credit: Wikipedia)

Interview with Tilman Spohn

Professor Tilman Spohn is a geophysicist and Director from DLR Institute of Planetary Research of Germany and Former ISSI/ISSI-BJ Science Committee Chair.

Could you briefly explain how you were involved with ISSI-BJ?

ISSI-BJ shares with ISSI the Science Committee, and I had the pleasure of being the chairman. The Science Committee regularly considers proposals for teams, workshops and fora at ISSI-BJ and serves as advisor for science questions that turn up.

A highlight of my involvement with ISSI-BJ was the meeting of the Science Committee in Beijing in the Spring of 2016. We were very impressed with the outstanding hospitality of ISSI-BJ and its staff and by the excellent organization of our meeting. I personally enjoyed very much giving a lecture in the "Understanding Science" Seminar series at the famous Bridge Cafe.

Prof. Tilman Spohn resting before his Understanding Science seminar at Brigde Cafe

What do you think is special about ISSI-BJ?

ISSI-BJ is providing a unique bridge between Asia, Europe and the US using scientific workshops and teamwork as building stones. It provides access for scientists from the western world to the exciting developments in astronomy, space and planetary sciences and Earth observation in China and other Asian countries. It serves as an invaluable tool for fostering cooperation in solving some of the most fundamental questions of humankind.

As you have been involved with ISSI-BJ since the very beginning, how do you think has ISSI-BJ evolved during the last three years, and how do you see its future development?

ISSI-BJ has evolved from the first discussions to the signing of the contract to its present day role with an astounding pace and a clear direction to become a true ISSI of the Asian World.

Do you have any ideas on how to better adapt the Science Committee for the ISSI-BJ needs?

The Science Committee should probably try to meet more often in Beijing. In addition, it may be a good idea to have more members from China or from Asia in the Committee. The members of the Committee should also get more opportunities to meet with the scientists they help to support, for instance, by having members participate on a more regular basis in the workshops or fora that ISSI-BJ is hosting.

Is there any place where you particularly enjoyed spending time while in Beijing?

Unfortunately, the meeting last spring was my first visit to Beijing and my time was too limited. Therefore, I did not see too much of the city and not its famous touristic spots. But I was impressed of what I already saw which was more the regular life of the friendly Chinese people. Next time, I plan to take more time to see more of the city and the country.

The 2015 ISSI/ISSI-BJ Science Committee members Prof. Tilman Spohn first from the left

First ISSI-BJ and APSCO Space Science School on "How to Design a Space Science Mission"

October 17-26,2016

Participants of the First ISSI-BJ and APSCO Space Science School on "How to Design a Space Science Mission"

The 1st ISSI-BJ and APSCO Space Science School on "How to design a Space Science Mission" was held at the Sirindhorn Center for Geo-Informatics, located in Space Krenovation Park, Si Racha district, Chon Buri province, Thailand. Throughout the school, 18 lecturers from Asia and beyond shared their knowledge with 57 students from 16 countries.

The School began with a formal opening ceremony, during which the participants were officially greeted by the organizers, as well as by the officials representing Switzerland – the country where ISSI-BJ takes its roots from, and Thailand – the host country. The informal and friendly tone of the School was set during the opening lectures given by Prof. Roger M. Bonnet from the International Space Science Institute in Bern, Switzerland, and Prof. Claude Nicollier from the Swiss Space Center at EPFL Lausanne, Switzerland. Prof. Bonnet discussed the importance of international collaboration in space science research, whereas Prof. Nicollier shared his spaceflight experiences as a European Space Agency astronaut.

The School provided the young Asian-Pacific space researchers and engineers an opportunity to gain a global view on how to design a space science mission, and encouraged international cooperation. Overall, the School featured 29 lec-

Opening lecture on "Steps in Space" given by Prof. Claude Nicollier, a former Swiss ESA astronaut

Students actively participated in the School with their questions, presentations and posters

Students and lecturers could continue discussions also during the coffee breaks

tures given by the leading experts in the field, and covered the topics of scientific objectives and requirements of the space science missions, mission and spacecraft design, mission cost, etc. The students actively contributed to the School not only with questions and constructive comments after the lectures, but also with oral presentations and posters. During the students' talk sessions, young scientists had an occasion to present their research, and receive invaluable comments and advices from the experts in the field.

Apart from the strictly scientific aspect, the School also helped in building links between students and experts from different countries. Young scientists could develop a professional network during coffee breaks and everyday meals, as well as through such events as Welcome Cocktail, Social Dinner, and Social Excursion. It was a wonderful and one of a kind experience to see the space science research and engineering students and lecturers from all over the world brought together, exchanging their ideas also outside of the lecture hall, in the breathtaking surroundings of Thailand.

The 10-day School concluded with the lecture given by Prof. Suthi Aksornkitti, member of Thailand's space development committee, followed by the closing ceremony, during which each student was granted a Certificate of Completion. The participants expressed their great satisfaction with the School, praising the stimulating atmosphere of mutual learning and the unique networking opportunity, as well as appreciating the shared knowledge and skills which they could take back and apply to their work. After the huge success of the 1st Space Science School, the second edition is planned in two years.

School participants visiting the Space Inspirium - a space learning center at Space Krenovation Park, Thailand

All the materials related to the School, including presentations and pictures, can be found on the ISSI-BJ website.

ISSI/ISSI-BJ Science Committee 42nd Meeting Successfully Held at ISSI-BJ

May 25-26, 2016

For the first time, the ISSI/ISSI-BJ Science Committee Meeting was held at ISSI-BJ. The 42nd SC Meeting was attended by 16 science committee members, ex officio members and ISSI/ISSI-BJ directorate.

At the beginning of the meeting, Prof. Tilman Spohn, Chairman of Science Committee, delivered a welcome speech and Prof. Maurizio Falanga, Executive Director of ISSI-BJ, introduced the status of ISSI-BJ and of ISSI on behalf of Prof. Rafael Rodrigo. After a half-day group discussion, split into astrophysics, earth science, planets, plasma magnetosphere and solar physics, the Science Committee evaluated the 2016 Team proposals. As a result, the evaluation report was announced in June, 2016.

ISSI and ISSI-BJ share the same Science Committee, made up of internationally renowned scientists. The Science Committee advises and supports the Directorate in the establishment of the scientific agenda, providing a proper equilibrium among the activities. It also grades the International Team proposals in response to the annual call.

Group picture of the ISSI/ISSI-BJ Science Committee members with the ISSI and ISSI-BJ staff

ISSI-BJ in media

Article

1. "Who Said that China is not up to Space Science?"

   Go Taikonauts 龙腾太空, January 2016

GO TAIKONAUTS!

Who Said that China is not up to Space Science?

by Jacqueline Myrrhe

Among chocolate, precision watches and other noble and interesting things, Switzerland is famous for its cheese with big-big holes in it. What is lesser known about Switzerland is the existence of its academic environment and space science expertise. But still, it was Professor Johannes Geiss, a Swiss scientist who drove the establishment of the International Space Science Institute in Bern.

In the late 1980s, the international exploration of Comet Halley, involving the big space agencies of that time lead to a big success but also a wealth of data. Together with his colleagues, Prof. Geiss wanted to make best use out of those collected valuable information, and looked for ways to utilise the results in an interdisciplinary way - coordinated and across the different fields of science. So what might be good for Swiss cheese - having big holes and gaps - is not at all desirable in scientific research.

Since the establishment of ISSI in Bern in 1995, several means of scientific interaction and intellectual exchange were successfully introduced. The office is open to **Visiting Scientists** by invitation "to work on scientific subjects at the forefront of research in areas of the international space science communities."

But there are also **International Teams** formed after applications originating from an Annual Call. Typically, the International Teams are "composed of about 8-15 scientists of different laboratories, nationalities and expertise. They hold a series of two to three one-week meetings over a period of 12 to 18 months".

Another ISSI tool are **Working Groups**, which "are set up for specific tasks, also of technical nature. The results of the Working Groups activities are published as volumes of ISSI Scientific Report Series or in the scientific literature".

ISSI's Science Committee recommends up to five topics per year, studied during a one-week long **Workshop**. The Workshops "can be attended by 40-45 invited scientists and experts. The results of the Workshops are published as refereed papers in issues of Space Science Reviews and in parallel as volumes of the Space Science Series of ISSI"

And last but not least, once a year, ISSI invites 25 leading experts for a two-day **Forum** where "informal and free debate ... on open questions of a scientific nature or of science policy matters" can take place in Bern.

ISSI Bern's website (*http://www.issibern.ch/index.html*) explains in clear and good detail the conditions and options for taking part in those activities. Also, on the website are well-sorted links to ISSI's publications, although only the outreach publications (Annual Report, ISSI presentation, Spatium magazine) are for free download.

On 16 July 2013, Professor Rafael Rodrigo, Executive Director of the International Space Science Institute ISSI and Professor Wu Ji, Chairman of the Board of Trustees of ISSI-Beijing and Director General of NSSC, jointly inaugurated the International Space Science Institute-Beijing. ISSI Beijing is hosted at the National Space Science Center, NSSC of the Chinese Academy of Sciences CAS. (credit: ISSI/NSSC)

ISSI Beijing's science publication "Taikong" (credit: ISSI/NSSC)

Interview

1. "From Bern to Beijing: Cultivating Collaboration for the Excellence of Space Science" with Maurizio Falanga

   Bulletin of the Chinese Academy of Sciences, Vol. 30 No. 3 2016

Mention

1. "Opportunities and Limits for the Actors" (5.4.2 The example of China: more than a rising power)

   Our Space Environment: Opportunities, Stakes, and Dangers, C. Nicollier & R.-M. Bonnet (eds.), 2016

News

1. First ISSI-BJ and APSCO Space Science School on How to Design a Space Science Mission Successfully Held in Thailand

   NSSC website, http://english.nssc.cas.cn/ns/NU/201611/t20161103_170024.html

2. The First APSCO & ISSI-BJ Space Science School on "How to Design a Space Science Mission" was held during Oct.17 -26, 2016 in Chonburi, Thailand

   APSCO website, http://www.apsco.int/NewsOne.asp?ID=489

3. การอบรม space science school ณ อุทยานรังสรรค์นวัตกรรมอวกาศ

   GISTDA website, http://skp.gistda.or.th/txp/articles/848/space-science-school+2016101727

4. The 1st Space Science School on How to Design a Space Science Mission

   Space Affairs Bureau Thailand, http://www.space.mict.go.th/newss.php?id=10

5. การอบรม Space Science School ณ อุทยานรังสรรค์ นวัตกรรมอวกาศ

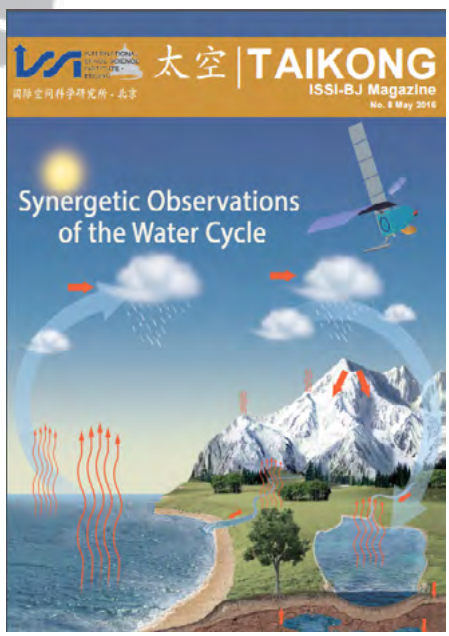
   Sarawit, No. 44 2016

6. อุทยานรังสรรค์นวัตกรรมอวกาศ GISTDA เปิดการอบรม The 1st Space Science School 2016.....

   Chonburi Today, http://chonburitoday.com/show-news.php?newsid=74

Taikong Magazine

No. 8, May 2016
Synergetic Observations of the Water Cycle



Authors: Jiancheng Shi (RADI, CAS, China), Xiaolong Dong (NSSC, CAS, China), Tianjie Zhao (RADI, CAS, China)

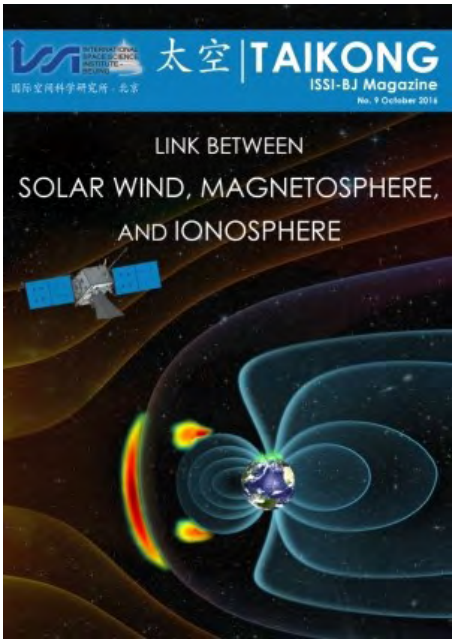
Water (hydrological) cycle is the most active and important component in global mass and energy circulation of the earth system. The existence, transport, and change of water in the atmosphere, land (surface and underground) and oceans play very important roles in the earth system, ecosystem and human society. The responses and feedback of water cycle to global change are one of the key questions in the earth science. Observations and modeling are the essentials of water cycle and global change research, especially the retrieval of parameters based on satellites with fine spatial and temporal resolutions and accuracies. A global water observation mission (WCOM) has been proposed by the Chinese Academy of Sciences. The implementation of WCOM promises significant improvements in the observation capabilities and understanding of the responses and feedbacks of water cycle to global change.

This TAIKONG magazine provides an overview of the scientific objectives and the overall design of the WCOM project, including spacecraft and instrumentation discussed during the forum.

No. 9, October 2016
Link Between Solar Wind, Magnetosphere, and Ionosphere

The conditions prevailing at the Sun's photosphere and atmosphere and in the Solar Wind directly control the dynamics of the Magnetosphere-Ionosphere-Thermosphere system, and more generally of the Earth's geospace. Understanding how our geospace influences the performances and realiability of technological systems and can endanger human health and life is the objective of an emerging discipline: Space Weather. Understanding how this vast system works requires knowledge of energy and mass transport, and of the coupling both between regions and between plasma and neutral populations.

This TAIKONG magazine provides an overview of the scientific objectives and the overall design of the Solar-wind Magnetosphere Ionosphere Link Explorer (SMILE) project, including spacecraft and instrumentation discussed during the Forum.



Authors: Graziella Branduardi - Raymont (MSSL-UCL, UK), C. Philippe Escoubet (ESA/ ESTEC, The Netherlands), Kip Kuntz (JHU/APL, USA), Tony Lui (JHU/APL, USA), Andy Read (Leicester U., UK), David Sibeck (NASA/ GSFC, USA), Tianran Sun (NSSC/CAS, China), Brian Walsh (Boston U., USA), Chi Wang (NSSC/CAS, China)

Space Science Reviews

Depiction of a gamma ray burst and the clouds of gas that absorbed some of the light it emitted. Credit: Gemini Observatory/AURA, artwork by Lynette Cook

Volume 202, Issue 1-4, December 2016
Gamma Ray Bursts—A Tool to Explore the Young Universe

Editors: D. Götz, Z. Dai, M. Falanga, N. Gehrels, E. Le Floc'h, N. Tanvir, B. Zhang

This volume reviews a comprehensive set of problems raised by the use of Gamma-Ray Bursts (GRBs) as cosmological probes, as they were addressed and debated during the ISSI-BJ workshop organized in April 2015. Particularly original about this workshop was that the invited scientists were representing both the GRB community *stricto sensu*, as well as the community studying high-redshift galaxies and star formation history.

This volume elucidates the connection between GRBs and the deep Universe. At the same time, it explores how to develop worldwide synergies between the high-redshift GRB studies and the surveys of the deep Universe, especially in the framework of the future GRB dedicated facilities.

Volume 205, Issue 1-4, December 2016
From Disks to Planets: The Making of Planets and Their Early Atmospheres

Editors: M. Blanc, G. Herczeg, H. Lammer, V. Sterken, W. Benz, S. Udry, R. Rodrigo and M. Falanga

This volume discusses the complex evolutionary paths leading from the formation of a circumstellar disk around a nascent star to the build-up of the different categories of planets (terrestrial, ice giants, gas giants...) known today after more than 4000 exoplanet detections.

It also describes possible scenarios for the formation of individual planets and of their atmospheres, and discusses the large dispersion observed among known planetary systems architectures and its consequences for the possible emergence of habitable worlds among planets and their satellites.

This volume is the result of the first joint ISSI-BJ/ISSI workshop held in August 2014 in Beijing.

The artist's impression shows the formation of a gas giant planet in the ring of dust around the young star HD 100546. Credit: ESO/L. Calçada

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Tropical and Sub-Tropical Cyclones from Space

April 2018

Conveners:

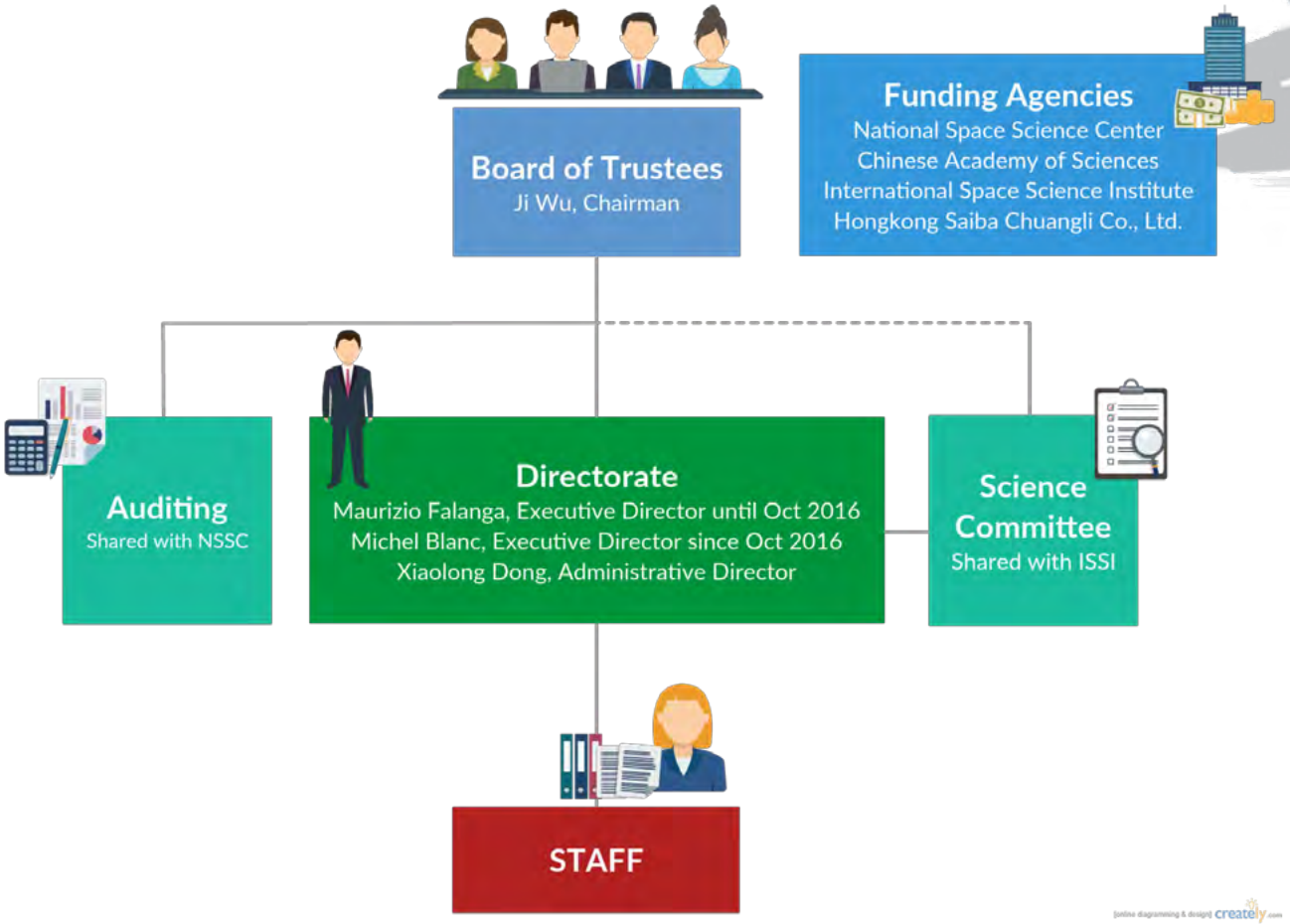
- Lennart Bengtsson (University of Reading, UK/Max Plank Institute of Meteorology)
- Wu Ji (National Space Science Center, CAS, Beijing, China)
- Xiaolong Dong (National Space Science Center, CAS & ISSI-BJ, Beijing, China)
- Mark Bourassa (Center for Ocean-Atmospheric Prediction Studies, Florida State University)
- Hui Yu (Shanghai Typhoon Institute, CMA, Shanghai, China)
- Anny Cazenave (ISSI, Bern, Switzerland)

Tropical cyclones and extreme convective weather events have significant impacts on lives, properties and global and regional hydrological and energy cycles. Satellite observations can provide atmospheric and surface information over ocean and land, which is important for the forecast and nowcast for these meteorological processes.

The goal of this workshop is to review the achievement, development and perspective of satellite observations for tropical cyclones and extreme convective weather events. The workshop will also discuss the gaps between the current observation capabilities and the requirements from assimilation, forecast and assessment of the impacts, which would contribute to the formulation of future development of both the satellite observations and research on the tropical cyclones and extreme convective weather events.

Hurricane Isabel (2003) as seen from orbit during Expedition 7 of the International Space Station.
Credit: ISS

ISSI-BJ'S ORGANIZATIONAL STRUCTURE



Board of Trustees

The Board of Trustees supervises the work accomplished at the Institute, exerts financial control and appoints the Directors. It consists of representatives of the Founder and of the funding agencies. The Board of Trustees is presided over by Ji Wu.

Science Committee

The Science Committee is shared with ISSI and is made up of internationally known scientists active in the field covered by ISSI-BJ and ISSI.

Chaired by Mioara Mandea, the Science Committee advises and supports the Directorate in the establishment of the scientific agenda providing a proper equilibrium among the activities and reviews and grades the International Team proposals in response to the annual call.

Science Committee members serve a three year term with a possible extension of one year.

Directorate

The Directorate is in charge of the scientific, operational and administrative management of the Institute. It interacts with the Funding Agencies, the Board of Trustees and the Science Committee.

The Directorate consists of Executive Director (Maurizio Falanga until October 2016, Michel Blanc since October 2016) and Administrative Director (Xiaolong Dong).

BOARD OF TRUSTEES & ISSI-BJ STAFF

Board of Trustees

From left to right:

- Karl Bergquist, Board Member, Administrator for the International Relations Department, ESA, France
- Chi Wang, Deputy Director-General NSSC, CAS, China
- Maurizio Falanga, Executive Director ISSI-BJ, China
- Ji Wu, Director-General NSSC, CAS, China (Chairman)
- Raphael Rodrigo, Executive Director ISSI, Switzerland
- Roger-Maurice Bonnet, International Scientist, France
- Xiaolong Dong, Administrative Director of ISSI-BJ
- Xiaoyu Li, Secretary of the Board, NSSC, CAS, China

Board of Trustees members not in the picture:

- Jinghua Cao, Deputy Director-General, Bureau of International Cooperation, CAS, China
- Yingjie Yu, Deputy Director-General, Bureau of Major Research and Development Programs, CAS, China

Staff

From left to right:

- Gang Wang, Assistant
- Lijuan En, Assistant to the Executive Director
- Xiaolong Dong, Administrative Director
- Maurizio Falanga, Executive Director until Oct 2016
- Richard de Grijs, Discipline Scientist
- Ivan Zimovets, Post-doc

Michel Blanc,
Executive Director since Oct 2016

Anna Yang,
PR & Editorial Manager

SCIENCE COMMITTEE

Members of the Science Committee:

Chair: Mioara Mandea, CNES, Paris, France

- Daniel Baker, University of Colorado, USA
- Lennart Bengtsson, University of Reading, United Kingdom
- Andrei Bykov, Russian Academy of Sciences, St. Petersburg, Russia
- Corinne Charbonnel, Department of Astronomy, University of Geneva, Switzerland
- Athéna Coustenis, Observatoire de Paris-Meudon, France
- Xiaolong Dong, International Space Science Institute Beijing, Beijing, China (ex officio)
- Lyndsay Fletcher, University of Glasgow, Scotland
- Masaki Fujimoto, Japan Aerospace Exploration Agency, Sagamihara, Japan
- Kevin Heng, Center for Space and Habitability, University of Bern, Switzerland
- Timothy Horbury, Imperial College, London, UK
- Vladislav Izmodenov, IKI, Russian Academy of Sciences, Moscow, Russia (ex officio RAS)
- Luisa M. Lara, Instituto de Astrofisica de Andalucia, CSIC, Granada, Spain
- Arvind Parmar, ESTEC ESA, Noordwijk, The Netherlands (ex officio ESA)
- Michael Rast, ESA ESRIN, Frascati, Italy (ex officio ESA)
- Nathan Schwadron, University of New Hampshire, Durham, USA
- Christophe Sotin, NASA Jet Propulsion Laboratory (JPL/Caltech), Pasadena, USA
- Stéphane Udry, Department of Astronomy, University of Geneva, Switzerland
- Lidia van Driel-Gesztelyi, MSSL, University College London, Dorking, United Kingdom

FINANCIAL OVERVIEW

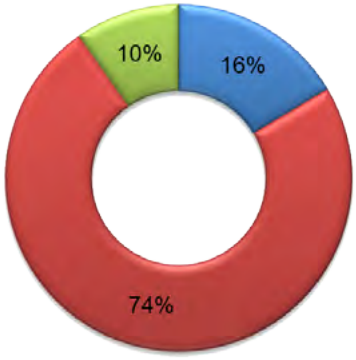
In the 2016 fiscal year, from January 1 to December 31 of 2016, ISSI-BJ was operated with the total revenue of 2,127,043.84 RMB, and the total expenses were 1,518,466.86 RMB. The surplus is 608,576.98 RMB, which will be transferred to the 2017 budget and used for the cross-year activities, as well as relocation and redecoration of the new premises for ISSI-BJ.

The funding revenues include: direct financial support of 350,000.00 RMB from the Bureau of International Cooperation of Chinese Academy of Sciences (CAS) as international organization project for ISSI-BJ activities; project support of 1,570,000.00 RMB from the Bureau of Major Research and Development Programs of CAS for activities; and the direct support of 207,043.84 RMB from the National Space Science Center (NSSC) of CAS for expenses on premises, facilities, half salary of one staff member and the international travel costs of the administrative director for the ISSI/ISSI-BJ activities. The NSSC in-kind support, including the use of the premises, visa and finance management, IT support and support for the administrative director, is not included in the statistics.

The expenses include: expenses on the scientific activities including workshop, forum, space science school and team meetings; the salary of the executive director; domestic and international traveling expenses of the executive director and staffs; and other daily operating and maintaining expenses. The expenses of the premises use and administrative expenses which are in-kind support from NSSC are not included.

Total Revenues in RMB for 2016 Fiscal Year (1 January, 2016 – 31 December, 2016)

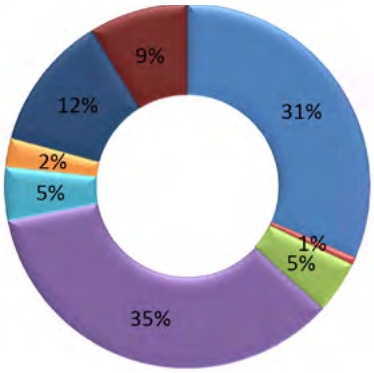
Funding Sources	Amount
Bureau of International Cooperation, CAS	350,000.00
Bureau of Major R & D Projects, CAS	1,570,000.00
NSSC Direct Support	207,043.84
Total	2,127,043.84



2016 fiscal year revenues

Operating Expenses in RMB for 2016 Fiscal Year (1 January, 2016 – 31 December, 2016)

Expenses	Amount
Scientific Activities[1]	541,897.51
Local Transportations	12,247.00
Design, Publications, Printing, Post, Telecommunication	79,698.50
Salary[2]	607,877.97
Travel[3]	81,724.33
Premises	43,825.90
NSSC Direct Fund Expenses	207,043.84
Other Reception Expenses	151,195.65
Total	1,725,510.70



2016 fiscal year expenses

Remarks:

[1]Scientific activities expenses include 1 workshop, 5 international teams, 1 forum and 1 summer school;

[2]Salary includes the salaries for staffs (salary for administrative director is not included);

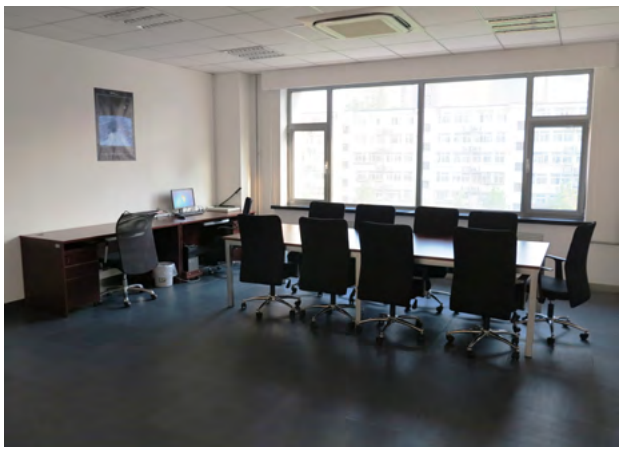
[3]Traveling expenses include the international and domestic traveling of the executive director and other ISSI-BJ and ISSI activities.

FACILITIES

ISSI-BJ office is located in the Building B at the Zhongguancun campus of the National Space Science Center, Chinese Academy of Sciences (NSSC, CAS).

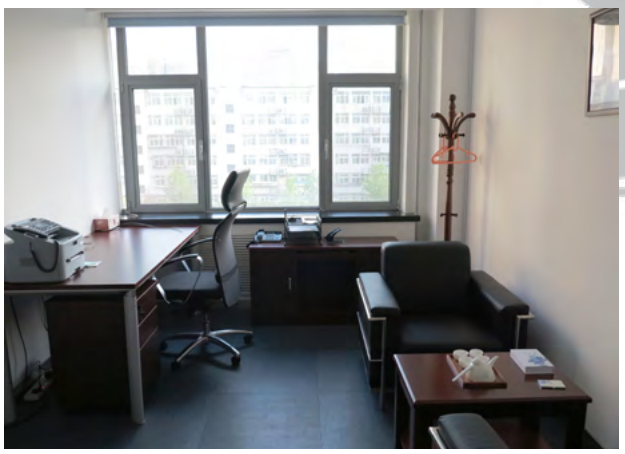
The 90 m^2 ISSI-BJ office space consists of a small meeting room (suitable for up to 12 participants) equipped with a projector, a working station with a computer, as well as a coffee break and reading area with all ISSI-BJ and ISSI publications. The two attached office rooms offer space for the ISSI-BJ staff members, and are equipped with printers, laptops and computers.

Coffee break/reading area



Meeting room

Small library



Office room

Furthermore, ISSI-BJ shares its conference facilities with the National Space Science Center of the Chinese Academy of Sciences. The facilities are composed of six seminar rooms (20-30 participants each), two lecture halls (up to 100 participants each) and one multimedia conference hall (30 participants). All rooms are equipped with overhead projectors for large screen presentations and high speed wireless network connection.

INTERNATIONAL SPACE SCIENCE INSTITUTE IN BERN

About ISSI

The International Space Science Institute (ISSI) was created by Space Pioneer Professor Johannes Geiss in 1995. Since then the institute offers scientists from all around the world a forum to work together.

The main function is to contribute to the achievement of a deeper understanding of the results from different space missions, ground based observations and laboratory experiments, and adding value to those results through multidisciplinary research.

The program of ISSI covers a widespread spectrum of disciplines from the physics of the solar system and planetary sciences to astrophysics and cosmology, and from Earth sciences to astrobiology.

Workshops

ISSI organized six Workshops in the course of 2016:

- The Delivery of Water to Proto-planets, Planets and Satellites (11–15 January 2016)

- Shallow Clouds, Water Vapor, Circulation and Climate Sensitivity (8–12 February 2016)

- The Scientific Foundation of Space Weather (27 June –1 July 2016)

- Supernovae (3-7 October 2016)

- Cosmic Dust from the Lab to the Stars (31 October – 4 November 2016)

- Exploring the Earth's Ecosystems on a Global Scale: Requirements, Capabilities and Directions in Spaceborne Imaging Spectroscopy (21 – 25 November 2016)

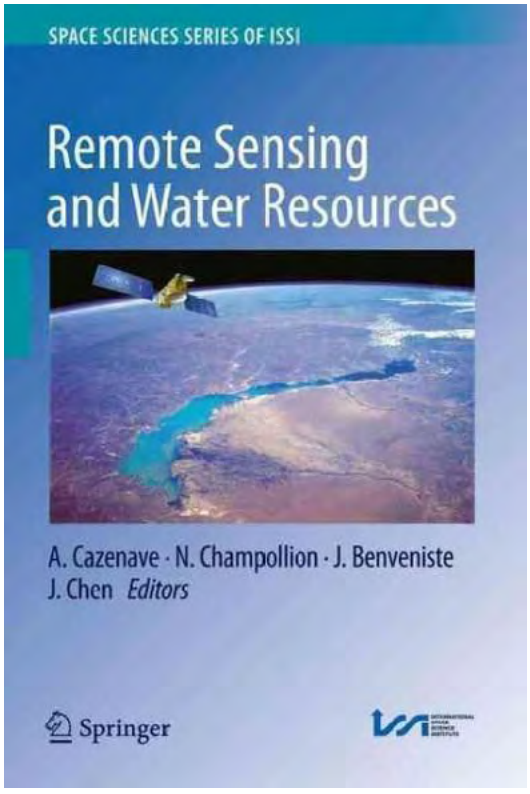
All Workshops activities lead to a volume in the Space Science Series of ISSI (SSSI) published by Springer.

Forums

In the reported period, four Forums – which are informal and free-ranging debates - were held discussing the following topics: "Performing High-Quality Science on Cube Sats", "VARSITI Variability of the Sun and Its Terrestrial Impacts", "Outstanding Questions for Solar System Planetary Science and Associated Key Representative Space Missions" (in collaboration with Europlanet) and "Monitoring Coastal Zones Evolution Under Various Forcing Factors Using Space-based Observing Systems".

Working Groups

In 2016 several Working Groups had worked on their projects: EXPLORNOVA (leader: V. Minier), Virtual Sea Ice Mission (leaders: S. Mecklenburg and M. Drusch), Earth Observation Open Science and Innovation 2.0 (leader: P. Mathieu) and Ionospheric Multi-Spacecraft Analysis Tools (leaders: M. Dunlop and H. Lühr). Every Working Group work leads to a Scientific Report Volume (SR).



Cover of the Space Science Series of ISSI on "Remote Sensing and Water Resources" published in 2016

Participants of the Workshop on the "Supernovae" held at ISSI in October 2016

Team Meetings

Furthermore, 65 Team Meetings were organized. The teams publish usually their results in refereed journals with acknowledgement to ISSI. Over 200 papers are published per year based on ISSI Team activities. Thirty new International Teams – approved in 2016 by the Science Committee – started their activities in the following business year (July 2016 to June 2017).

Operation

ISSI is using all these tools to address, in a strict scientific framework, controversial issues and to promote a science program related directly to the most pressing issues raised by space and Earth science missions. On average ISSI is now hosting around 950 scientists per year in its activities.

Three statutory bodies interact regularly in matters of strategy, operation, finance or public relations: the Board of Trustees, the ISSI Directorate and the Science Committee. The latter gives also scientific advice to ISSI-BJ. Rafael Rodrigo is ISSI's Executive Director. Together with the other directors Rudolf von Steiger, Anny Cazenave and John Zarnecki, the directorate is in charge of the scientific, operational and administrative management of the institute. The complete ISSI staff (scientists and administration) counts 17 members.

The European Space Agency (ESA), the Swiss Confederation, the Swiss National Science Foundation (SNF) provide the financial resources for ISSI's operation. The University of Bern contributes through a grant to a Director and in-kind facilities. The Space Research Institute (IKI) and the Institute of Space and Astronautical Science (Japan Aerospace Exploration Agency, JAXA) are supporting ISSI with an annual financial contribution.

The complete information about the Institute, its present and near term program and its publications can be found on the web page www.issibern.ch.

www.issibj.ac.cn

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