



国际空间科学研究所-北京

PLANETARY HABITABILITY AND ORIGIN OF LIFE

FORUM HANDBOOK

DECEMBER 04-06, 2025

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

ISSI-BJ is a non-profit research institute. Our main mission is to contribute to the achievement of a deeper scientific and technological understanding of future space missions as well as of the scientific results from current and past missions through multidisciplinary research, possibly involving, whenever felt appropriate, ground-based observations, modelling, numerical simulations and laboratory experiments, using the same tools as ISSI, i.e. Forums, International

Teams, Workshops, Working Groups or individual Visiting Scientists. The Program of ISSI-BJ covers a widespread spectrum of space science disciplines, including astrophysics, solar and space physics, planetary science, astrobiology, microgravity science and Earth observation from space.

ISSI-BJ is an independent and politically neutral institute. We offer generous financial support to the scientists that come to Beijing: we offer coffee breaks, snacks, lunches and dinner at our institute, as well as travel and hotel expenses for the conveners of Workshops and Forums, and the leaders of the International Teams. After each meeting, we also offer support for publishing and promoting articles, essays and peer-reviewed papers.



ISSI-BJ CALL FOR PROPOSALS

ISSI-BJ Activities

ISSI-BJ organizes a wide range of activities, such as Forums, Workshops, Working Groups, and International Teams. Applications to join our programs are always welcome. More information available at www.issibj.ac.cn.



International Teams Annual Call in January

Goal: Research focus, 10-15 scientists

Duration: 5 days each time

Result: Publications

Support: Living costs while in Beijing, travel support to team leader



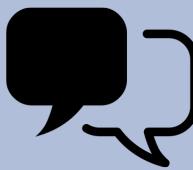
Workshops

Goal: Research focus, 30-40 scientists

Duration: 5 days

Result: Book

Support: Living costs while in Beijing



Forums

Goal: Open discussion among 20-30 scientists

Duration: 2 days

Result: *Taikong Magazine*

Support: Living costs while in Beijing



Working Groups

Goal: Specific tasks, 8-12 scientists

Duration: As long as needed

Result: Springer ISSI Scientific Report Series (SR)

Support: Living costs while in Beijing, travel support if needed

ORGANIZER

The Forum “Planetary Habitability and Origin of Life” is organized by International Space Science Institute-Beijing (ISSI-BJ).

Conveners

- Henderson James Cleaves, Howard University, USA; International Society for the Study of the Origin of Life, USA
- Christopher Glein, Southwest Research Institute, USA
- Jihua Hao, University of Science and Technology, China
- Yamei Li, University of Science and Technology, China
- Dominic Papineau, Institute of Deep-sea Science and Engineering, Chinese Academy of Sciences, China
- Johanna Teske, Carnegie Earth and Planet Laboratory, USA
- Jun Yang, Peking University, China
- Sharon Xuesong Wang, Tsinghua University, China; International Space Science Institute-Beijing, China

Sponsor



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FORUM PROGRAM

Context

By convening leading experts across planetary science, astrobiology, geochemistry, and astronomy, the forum seeks to critically assess where we stand in understanding the emergence of life and what the next breakthroughs might be. In a time defined by major leaps in space exploration—such as missions like Hayabusa2, OSIRIS-REx, Perseverance, Juno, JUICE, Europa Clipper, and JWST, alongside China's upcoming initiatives like Tianwen III & IV, CHORUS, EarthTwo, CHES, HABITAT, and Miyin—the forum offers a timely platform to chart the future direction of interdisciplinary research.

The event will build on the momentum and outcomes of previous ISSI-Bern and ISSI-Beijing workshops (e.g., *the Life Beyond Earth and Toward Detection of Earth-like Planets Forums*). Through focused discussions, panels, and synthesis sessions, the forum will explore key research bottlenecks and forge stronger collaborations between disciplines. The cumulative goal is to sharpen the global and Chinese scientific roadmap for unraveling life's origins and expanding the search for habitability beyond Earth.

Objectives

- Identify pivotal research challenges at the intersection of planetary habitability and the origin of life.
- Cultivate interdisciplinary collaboration, integrating chemistry, geology, biology, astronomy, and planetary science.
- Explore pathways for sustained research infrastructures, drawing on international—and Chinese—experiences in building interdisciplinary centers.

Program

Thursday December 04, 2025

**1. Dynamical Processeses
(Chair: Jun Yang, Jihua Hao)**

09:00-09:05	Welcome Introduction	Xiaolong Dong
09:05-09:50	Self Introduction (1 Minute per Person)	
09:50-10:25	Review on Planet Formation, with Anders Johansen a Focus on Links to Habitability	

10:25-10:50 Coffee Break

10:50-11:25	Geomagnetism	Yufeng Lin
11:25-12:00	Effects of Impacts	Yamei Li
12:00-12:35	Plate Tectonics	Ming Tang
12:35-12:50	Group Photo	
12:50-14:00	Lunch Break	

**2. Building Blocks & Processes of Life
(Chair: Yamei Li, Henderson James Cleaves)**

14:00-14:35	Hypotheses on the Origin of Life	Henderson James Cleaves
14:35-15:10	Life's Building Blocks in Yabuta Hikaru Extraterrestrial Materials	
15:10-15:45	Interiors of Exoplanets & Surface- Atmosphere Interactions	Caroline Dorn (<i>online</i>)
15:45-16:15	Coffee Break	
16:15-16:50	Cosmochemistry/Polluted WD	Siyi Xu
16:50-17:25	Summary of the Bern Workshop	Laura Kreidberg (<i>online</i>)
17:25-18:15	General Discussion	Yamei Li
18:30	Social Dinner at Second Floor Park Plaza Hotel	

Friday December 05, 2025

3. Habitable Environments

(Chair: Christopher Glein, Johanna Teske)

09:00-09:35	Bridging Planetary & Exoplanetary Habitability	David Catling (<i>online</i>)
09:35-10:10	Icy Moons, Habitability & Connection to Exoplanets	Christopher Glein (<i>online</i>)
10:10-10:45	Stars & Stellar Environments	Song Wang
10:45-11:10	Coffee Break	
11:10-11:45	Protoplanetary Disks	Feng Long
11:45-12:30	General Discussion	Jun Yang
12:30-14:00	Lunch Break	

4. Evidence & Records of Life

(Chair: Jihua Hao, Dominic Papineau)

14:00-14:35	Earliest Records of Life	Dominic Papineau
14:35-15:10	Evolution of Complex Life & Biosignatures	Qing Tang
15:10-15:45	Up to Date Atmospheric Observations	Renyu Hu
15:45-16:15	Coffee Break	
16:15-16:50	Extrasolar Evidence of Life	Giovanna Tinetti
16:50-17:50	General Discussion	Jihua Hao

Saturday December 06, 2025

5. Search for Biosignatures

(Chair: Sharon Xuesong Wang, Johanna Teske)

09:00-09:55	Review of Future Planetary Probes	Yang Liu; Michel Blanc
09:55-10:50	Review of Future Exoplanet Probes	Wei Wang; Taro Matsuo
10:50-11:10	Coffee Break	

11:10-12:30	Panel Discussion on Fostering Interdisciplinary Research	Shude Mao (Host); Bing Shen, Michel Blanc, Henderson James Cleaves; Shigeru Ida; Fabio Favata, Hikaru Yabuta; Luca Maltagliati; Robert Hazen; Giovanna Tinetti
13:00-14:30	Lunch Break at Tsinghua Campus Cafe or Restaurant	
14:30	Lead Writer Work Session & End of Forum	

PRACTICAL INFORMATION

Venue

On December 04-05, the Forum will be held in the Saturn Hall (A0418), NSSC building A, 4th Floor. On December 06, the Forum will be held at Qinghua University Campus. For more information on the second location, please contact professor Sharon Xuesong Wang: sharonw@tsinghua.edu.cn

NSSC Address:

No. 1 Nanertiao, Zhongguancun, Haidian District, Beijing, 100190
北京市海淀区中关村南二条一号

ISSI-BJ Office:

The ISSI-BJ office is equipped with a printer, connected to staff members' computers.

WIFI Access

To access WIFI, please connect to NSSC-Guest, and then fill in the information as shown here down below:



NSSC-Guest
10.10.0.3

NSSC 国家空间科学中心
National Space Science Center, CAS

空间中心无线网申请平台

短信访客认证 Visitor Auth 会议邀请码访客 Code Auth

* 姓名: (Name) YOUR NAME

* 单位: (Department) ISSI-BJ

* 邀请码: (Invite Code) 194220

我已阅读并同意网络使用规定 (I Agree)

提交 Submit 重置 Reset

Arrangement for December 06

Saturday, December 06's conference will be held at Tsinghua University campus. A shuttle will depart from the parking lot of Park Plaza Hotel at 08:30. Please arrive at least five minutes early and do not miss the shuttle departure, as one person alone is not allowed to enter the campus.

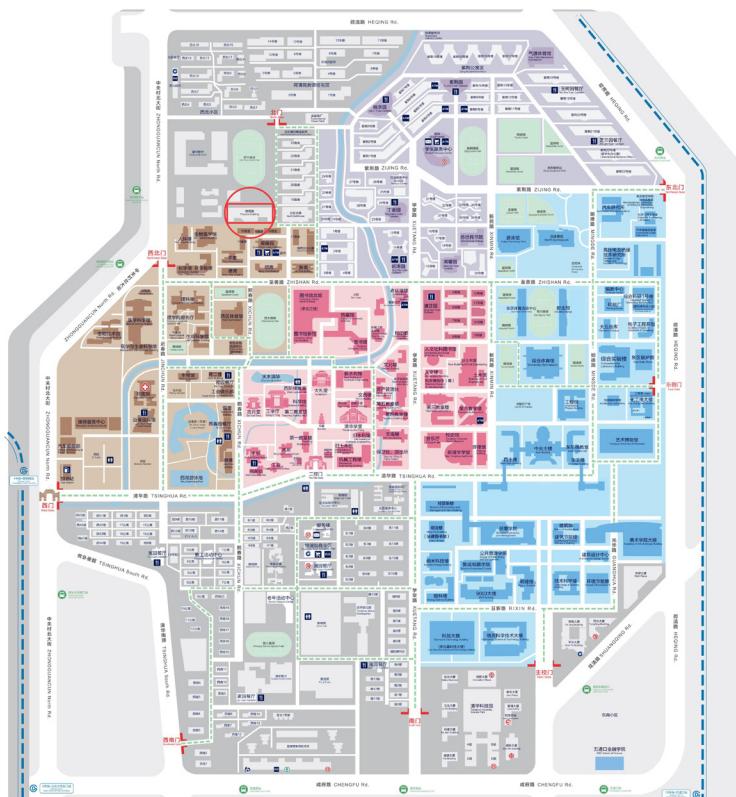
WIFI: Tsinghua campus has eduroam available.

Venue:

Astronomy Department, E100 Meeting Room
天文系, E100会议室

Contact Person:

Ms. Yindong Zhang +86 13581776903



Accommodation

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

Park Plaza Hotel Beijing Science Park No. 25, Zhichun Road, Haidian District, 100083, Beijing China

北京市海淀区知春路25号

Directions: Turn right when going out of Park Plaza Hotel and walk straight for 3 minutes, there is road

“DAYUNCUN LU” (大运村路) in front of the Exit F of ZHICHUNLU (知春路) subway station, then keep going north along “DAYUNCUN LU” (大运村路) for 7-8 minutes, there is JINGZHANG RAILWAY PARK (京张铁路遗址公园) on your left, pass by the football field in the park, and follow the sign (down below) towards the National Microgravity Laboratory Tower, then cross the path, NSSC (国家空间科学中心) is located at the end of the path.



Lunches

Lunches for all participants of the ISSI-BJ Forum will be available at

the canteen on the -1 floor of the NSSC Building A.

Coffee Breaks

Coffee breaks will be provided by ISSI-BJ in the office (room A0421).

See the Program section to check the coffee break times.

Useful Information

Credit Cards: credit and debit cards can be used in ATMs displaying the appropriate sign. Credit cards are increasingly becoming accepted in major shopping zones and high level restaurants.

You can find an ATM at the NSSC lobby of Building A.

Currency:

Chinese Yuan Renminbi (RMB)
(1 USD = approx. 7.2 RMB)
(1 EUR = approx. 7.8 RMB)

Electricity: 220 volts AC

Cash & Electronic Payment: since cash is not usually accepted, we suggest you to connect your credit card to Wechat and Alipay, which can also be used to purchase subway tickets.

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

Emergency Contacts in China

Ms. Lijuan EN +86-136 9912 1288

Ms. Francesca GARFAGNOLI +86-195 6873 9884

Dinner on December 04

Dinner offered by ISSI-BJ on Thursday, December 04, 2025 at 18:30.

Restaurant:

Amber 6, 2nd Floor of Park Plaza Beijing Science Park
丽亭华苑酒店2楼金辉6厅

Address:

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



PARTICIPANTS

No.	Name	Affiliation
CONVENERS		
1	Henderson James Cleaves	Howard University, USA
2	Christopher Glein (<i>online</i>)	Southwest Research Institute, USA
3	Jihua Hao	University of Science and Technology of China, China
4	Yamei Li	University of Science and Technology of China, China
5	Dominic Papineau	Institute of Deep-sea Science and Engineering, Chinese Academy of Sciences, China
6	Johanna Teske (<i>online</i>)	Earth and Planets Laboratory, UK
7	Sharon Xuesong Wang	Tsinghua University, China
8	Jun Yang	Peking University, China

PARTICIPANTS

9	Michel Blanc	Institute of Research for Astrophysics and Planetology, France
10	Yuxuan Cai	University of Science and Technology of China, China
11	Yu Cao	University of Science and Technology of China, China
12	David Catling (<i>online</i>)	University of Washington, USA
13	Caroline Dorn (<i>online</i>)	Swiss Federal Institute of Technology Zurich, Switzerland
14	Fabio Favata	Imperial College London, UK
15	Robert Hazen	Earth and Planets Laboratory, UK
16	Renyu Hu	The Pennsylvania State University, USA
17	Shigeru Ida	Westlake University, China
18	Anders Johansen	University of Copenhagen, Denmark; Lund University, Sweden

19	Pengcheng Ju	University of Science and Technology of China, China
20	Laura Kreidberg (<i>online</i>)	Max Planck Institute for Astronomy, Germany
21	Yufeng Lin	Southern University of Science and Technology, China
22	Jiachen Liu	Peking University, China
23	Yang Liu	National Space Science Center, Chinese Academy of Sciences, China
24	Feng Long	Peking University, China
25	Luca Maltagliati	Springer Nature, Italy
26	Shude Mao	Westlake University, China
27	Taro Matsuo	Osaka University, Japan
28	Javed Mondal	University of Science and Technology of China, China
29	Yoko Ochiai	Westlake University, China
30	Boding Ouyang	University of Science and Technology of China, China
31	Bing Shen	Peking University, China
32	Ming Tang	Peking University, China
33	Qing Tang	Nanjing University, China
34	Giovanna Tinetti	King's College London, UK
35	Song Wang	National Astronomical Observatories, Chinese Academy of Sciences, China
36	Wei Wang	National Astronomical Observatories, Chinese Academy of Sciences, China
37	Siyi Xu	International Space Science Institute-Bern, Switzerland
38	Hikaru Yabuta	Hiroshima University, Japan
39	Xingtai Zhang	University of Science and Technology of China, China

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THE PRIME NETWORKING VENUE FOR SPACE SCIENTISTS IN EAST ASIA

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