

Ph.D. Student Application Guideline for admission before May 2026 for “International joint research of geospace variability by combining multi-point ground and satellite observations and modeling” (PBASE Program)

The Grant-in-Aid for Scientific Research (International Leading Research) " International joint research of geospace variability by combining multi-point ground and satellite observations and modeling" (PBASE Program, 22K21345), which started in January 2023, invites applications for doctoral degree program under PBASE. The participating students will be employed or appointed as research assistants or research fellows by the participating institutions (Nagoya University, Kyoto University, Kyushu University, or National Institute of Polar Research) and will be paid approximately 200,000 yen per month (before tax) for up to three years during the doctoral program, with 500,000 yen available annually for research expenses.

Purpose of this program

The near-Earth space (geospace), including the upper atmosphere, is highly dynamic. This is due to ultraviolet and X-ray radiation from the Sun, magnetic storms caused by high-energy plasma particles from solar explosions, and atmospheric waves from the lower atmosphere (Figure 1). These geospace variations affect radio communications between satellites and the ground, causing satellite positioning and communication failures. Magnetic storms also cause the atmosphere to heat and expand resulting in alteration of satellites' orbits. In addition, high-energy plasma particles from solar explosions and magnetic storms cause radiation hazards to astronauts, satellites, and aircraft crews. As humanity's use of space continues to increase, understanding and predicting these geospace variabilities have become an urgent issue.

To understand the mechanism behind geospace variability, it is necessary to combine ground instruments and satellites. This allows for comprehensive measurements of geospace. Furthermore, there is also a need to coordinate with modeling through numerical simulations to complement sparse observations and for quantitative evaluations, including space weather prediction. The PBASE program aims to significantly contribute to understanding and

predicting geospace variabilities by combining ground-based and satellite observations and modeling, covering a wide area in both altitude and latitude/longitude directions.

Homepage: <https://www.isee.nagoya-u.ac.jp/dimr/PBASE/>

Qualifications of candidacy for application

Students who have already completed a master's degree or expect to complete a master's degree by the time of admission (before May 2026), who have already been assigned or expect to be assigned before May 2026 to a doctoral course related to one of the following institutes: (a) Institute for Space-Earth Environmental Research, Nagoya University; (b) National Institute of Polar Research; (c) Research Institute for Sustainable Humanosphere, Kyoto University; and (d) International Research Center for Space and Planetary Environmental Science, Kyushu University.

Those who will be applying for a doctoral course related to one of these institutions are also eligible to apply for this program. However, failure to pass the entrance examination for the doctoral course will invalidate your selection for this program.

Graduate students who are already receiving more than 1.5 million yen per year in scholarships and research assistant (RA) expenses from other organizations (such as Doctoral Course Fellow of the Japan Society for the Promotion of Science) will not be eligible for support of the PBASE program. If a student employed under this program receives another scholarship or RA expenses from another organization, his/her employment under this program will be terminated.

Application procedure

Submit the following application forms (free format) in PDF file via e-mail to [asakura\[at\]isee.nagoya-u.ac.jp](mailto:asakura[at]isee.nagoya-u.ac.jp). No application fee is required.

1. Curriculum vitae
2. Publication record and awards received
3. Material showing English ability sufficient for international joint research (scores of TOEIC, TOEFL, or IELTS).

4. Transcripts of undergraduate course
5. A research plan (about 2 pages in A4 size) (The applicant's understanding of the purpose of this program and the expected level of contribution to the program will be reviewed)
6. A summary of the applicant's previous research (1 page)
7. Letter of acceptance from the host researcher
8. A letter of recommendation from the current supervisor or the Dean of the university to which the applicant belonged

Application period

Application documents will be received via e-mail between November 13, 2024 at 9:00 am and December 20, 2024 at 4:00 pm in Japan Standard Time (JST=UT+9 h). Upon receipt, a confirmation e-mail will be sent to the applicant. If you do not receive the confirmation e-mail, please contact [asakura\[at\]isee.nagoya-u.ac.jp](mailto:asakura[at]isee.nagoya-u.ac.jp) / tel: 052-747-6417 and resubmit the application.

Selection method

1 . Document screening

Preliminary screening will be conducted based on the application documents and the applicant will be notified of the results via e-mail by the morning of January 10, 2025.

2 . Screening by interview

Applicants who have passed the document screening will be screened at the person to be interviewed via online between January 13 and 24, 2025. Applicants who pass the document screening will be notified of the details of the interview at the time of notification of acceptance.

Announcement of Successful Applicants

The applicant will be notified by e-mail by January 31, 2025.

Handling of personal information

Students' names and affiliations may appear on the website and in printed materials for publicity purposes. The names, addresses and other personal information submitted at the time of application will be used for the document screening, the interview, the announcement of successful applicants, and other operations related to this program. The personal information such as examination results used for the selection will be used for aggregation and analysis of the results of the selection and for research and study of the method of selecting students.

Contact information

Institute for Space-Earth Environmental Research, Nagoya University: Kazuo Shiokawa, Yoshizumi Miyoshi, Yuichi Otsuka, Nozomu Nishitani, and Shinichiro Oyama
E-mail: shiokawa[at]isee.nagoya-u.ac.jp, miyoshi[at]isee.nagoya-u.ac.jp, otsuka[at]isee.nagoya-u.ac.jp, nisitani[at]isee.nagoya-u.ac.jp, soyama[at]isee.nagoya-u.ac.jp

National Institute of Polar Research: Yasunobu Ogawa and Ryuho Kataoka
E-mail: yogawa[at]nipr.ac.jp and kataoka.ryuho[at]nipr.ac.jp

Research Institute for Sustainable Humanosphere, Kyoto University: Tatsuhiro Yokoyama, Yikai Hsieh, and Mamoru Yamamoto
E-mail: yokoyama[at]rish.kyoto-u.ac.jp, yikai_hsieh[at]rish.kyoto-u.ac.jp, and yamamoto[at]rish.kyoto-u.ac.jp

International Research Center for Space and Planetary Environmental Science, Kyushu University: Akimasa Yoshikawa and Huixin Liu

E-mail: yoshikawa.akimasa.254[at]m.kyushu-u.ac.jp and liu.huixin.295[at]m.kyushu-u.ac.jp