Ref.No.63

September 8, 2021

Director Kenji SATAKE
Earthquake Research Institute
The University of Tokyo

To whom it may concern,

Earthquake Research Institute Joint Usage/Research Program

Call for proposals for research projects and workshops for the Academic Year 2022

The Earthquake Research Institute (ERI) has been designated as a nationwide Joint Usage/Research Center for Earthquake and Volcano Sciences by the Ministry of Education, Culture, Sports, Science, and Technology since the academic year 2010.

The goal of this center is to promote solid-earth sciences related to earthquakes and volcanoes, science and engineering to mitigate disasters caused by earthquakes and volcanic eruptions, and observational research both in Japan and abroad for the prediction of earthquakes and volcanic eruptions. In order to achieve this goal, the ERI conducts joint research, accepts visiting researchers from both Japan and abroad, and provides facilities, equipment, materials, and data held by the ERI to related research institutions nationwide.

This time, we call for proposals for joint research projects, workshops, and participants for Specific Research Projects for the Academic Year 2022.

The application guidelines are subject to change, because the final result of the accreditation of the Joint Usage/Research Center for 2022 has not been obtained yet.

1. Categories (See the Application Guidelines for the details)
   (1) Joint Research
   (2) Workshop/Symposium
   (3) Usage of Facilities, Observation Equipment, and Laboratory Equipment
   (4) Usage of Data and Records
   * We call for proposals for (1) and (2) annually. Please be aware that the period of application submission varies depending on the specific category. Applications for (3) and (4) are accepted all year-round, but with some exceptions.

2. Eligibility for application:
   Faculty members and researchers of national, public, and private universities, or national and public research institutions, and their equivalents (a professor emeritus, graduate students, and researchers in private companies) are eligible to apply. Graduate students are not allowed to be the principal investigators of the research except for (3) Usage of Facilities, Observation Equipment, and Laboratory Equipment and (4) Usage of Data and Records. For more explanations about students, please refer to the “13. precautions (5).”

3. Submission of proposals:

Fill out necessary fields on the specified forms to be found on the joint usage homepage (https://www.eri.u-tokyo.ac.jp/en/joint-usage-top/) and submit the form online.

Please follow the procedure shown on the homepage on Web-application guideline (https://erikyodo.confit.atlas.jp/en)

4. Period of research: From April 2022 to March 2023.

5. Review Policy:

The Joint Usage Committee of the ERI will review the submitted applications. It is important that the content of the research plan follows the intent of the category for the joint usage/research program. It is required that a proposed project/workshop has relevance to the researches conducted in the ERI and/or to the facilities, equipment, records, and data provided by the ERI. Applications are reviewed by all members of the Joint Usage Committee from several research fields. In addition, we will also refer to the application forms for the related Joint research for the past three years during a review.

For specific research projects (A), (B), and (C), the ERI will compile submitted participation applications for each project and send them to each principal investigator of the project. The principal investigator should submit a proposal for review by summarizing the application information before mid-November.

6. Application Deadline: October 29, 2021

7. Submission of Letter or File of Consent:

All members of a "1. Joint Research," except those who belong to the ERI, must submit a Letter or a File of Consent (Form N-1-E) by the project. Please submit one by postal mail, email or web system with the signature of the head of your affiliated institution within two weeks after you submitted the application by postal mail to the mailing address shown at the end of this document. In case an applicant moves to a new institution, he/she should submit a Letter of Consent signed by the head of the new institution without delay.

Submission of the Letter of Consent is not required for the one applying for "2. Workshop/Symposium," "3. Usage of facilities, observation equipment, and laboratory equipment" or "4. Usage of data and records."

Researchers who belong to ERI do not need to submit the letter of consent.

8. Submission of Confirmation of Research Ethics form:

The Confirmation of Research Ethics form (Form N-2-E) must be submitted by all participants for "1. Joint Research", "3. Usage of facilities, observation equipment, and laboratory equipment", and "4. Usage of data and records".

Submission of the form is not required for the participants for "2. Workshop/Symposium". Members of the University of Tokyo also do not have to submit the form. Please send a signed Confirmation of Research Ethics form by postal mail, e-mail to the mailing address shown in "15. precautions (11)" or by e-mai.

9. Submission of Confirmation of intellectual property

All members of a Cooperative Study on High Energy Geophysics Research project must submit a Confirmation of intellectual property (Form N-3-E). Those who submitted it previously between the 2016 – 2022 fiscal years, or belong to the University of Tokyo are not required to submit it.

10. Review Results:

The Joint Usage Committee of the ERI will evaluate all applications, and principal investigators of the projects will be informed about the results before late March 2022.

11. Funds for research/workshop:

The ERI will make expenditures for research/workshop expenses (travel costs, consumables, honorarium for simple labor, and service fees) within its budget. However, expenditure on equipment will not be provided. Please check the definition and examples of "equipment" and "consumable" in "15. precautions (6)."

12. Acknowledgments:

Please acknowledge the ERI's joint usage/research program in any papers published, which uses the results of the research performed under the program. In addition, when publishing a paper on the Supercomputer Joint Research that has been adopted, please acknowledge the University of Tokyo Information Technology Center. And also, please provide a copy of the paper to the ERI.

The following is an example of an acknowledgment format:

- This study was supported by ERI JURP 20XX-X-XX (project number)in Earthquake Research Institute, the University of Tokyo.
- This study was funded by Earthquake Res. Inst., the University of Tokyo, Joint Research program 20XX-X-XX.
- This research was conducted using the Fujitsu PRIMERGY CX400M1/CX2550M5 (Oakbridge-CX) in the Information Technology Center, The University of Tokyo.

13. Lodging facilities:

The ERI is not equipped with lodging facilities. Please arrange accommodations by yourself.

14. Handling of Personal Information

(1) The applicant's personal data, such as name and address obtained through this Call for Proposals, will be used only for the management of our joint research programs. The Institute is required to share some of your data and statistics with MEXT (Ministry of Education, Culture, Sports, Science, and Technology), such as for mandatory surveys such as the Progress Reports and Annual Reports that the institutes are obliged to carry out. Your data may also be shared with the University of Tokyo to conduct surveys.

(2) In principle, without obtaining the prior consent of the applicant, the personal information is not offered or disclosed to a third party, with the exception of the circumstances outlined below.

(a) The University of Tokyo uses retained personal information within the University only to the extent necessary for executing the business provided by laws and regulations, and there are reasonable grounds for the use of that retained personal information.

(b) The retained personal information is provided to the public administrative agency, in which

the person who receives the information uses it only to the extent necessary for executing the processes or business under its jurisdiction provided by laws and regulations, and there are reasonable grounds for the use of that retained personal information.

(c) The retained personal information is provided exclusively for statistical purposes or academic research purposes when the provision of the information to others is obviously beneficial to the relevant individual, or there are other special grounds for providing the retained personal information.

(3) In accordance with the rules and regulations regarding personal information, and within a reasonable period of time and scope, the University will swiftly handle requests received from individuals for the disclosure, correction, suspension of use or deletion of their personal information collected through the University's site, once the University has confirmed the individual's identity.

15. Precautions: (1) When using facilities, comply with the rules of the ERI as well as relevant laws, and follow the directions of the director for better management and safety.

(2) Keep adequate contact with and follow the orders of the contact person and/or related members in the ERI when executing budget, implementing research, and using the equipment.

(3) Losses and damages suffered by participants of the joint research projects or users of the equipment from outside the University of Tokyo shall be covered by their institution, and the University of Tokyo is not liable for them. A student participating in a joint research project, except Supercomputer Joint Research, should take out accident insurance. If provided equipment or accessories are damaged or lost, repairs or replacement will be made by the sole responsibility of the user. If defects are found after a device is returned, a repair fee may be claimed.

(4) If you create intellectual property through this joint usage program, please inform the contact person at the ERI and research group members before making copyright or patent application. Additionally, please contact the intellectual property department of your affiliated institution. Division of rights and the application procedures will be determined following discussion among related parties.

(5) Graduate students may participate in the projects as members of a research group with acceptance of his / her supervisor, but they cannot be a principal investigator. Graduate students may, however, apply as a principal investigator to use facilities, equipment, and data. Undergraduate students cannot participate in the projects but can be a “research assistant” by request of the principal investigator. A letter of consent is needed for the “research assistant”, too. Please contact the “Research Support Team” if you want to add a new “research assistant”.

(6) A material that is durable for more than one year and costs more than 100,000 yen per one piece/set is considered as “equipment”. Batteries/cells, chemicals, or software are, however, handled as “consumable” even if they are expensive. Please contact the Research Support Team (Joint Usage Section) for confirmation if there are difficulties

classifying a material into one of the two categories.

(7) Honorarium for simple labor is for a research assistant, administrative assistant, event support, unskilled labor, which is defined as the table of standard reward in “10. The reward for the unskilled labor such as counting and site management”.

(8) If research meetings etc. are to be held using these funds, please make sure to include the ERI as one of the organizers.

(9) Reports on the joint research and research meetings must be provided by the principal investigator, which will then be posted on the Joint Usage page of the ERI’s website.

(10) If the participants’ personal information is to be collected, please make sure to obtain the consent from the ERI and follow procedures in accordance with the Personal Information Protection Law, such as stating that the number of participants will be given in reports submitted to the ERI as well as in the progress reports of the ERI in such a way that individuals cannot be identified.

(11) If you have any other inquiries with regard to the joint usage program, please ask the Research Support Team (Joint Usage Section).

[Contact Information]
1-1-1 Yayoi, Bunkyo-Ku, Tokyo 113-0032
Earthquake Research Institute, the University of Tokyo
Research Support Team (Joint Usage Section)
Phone: 03-5841-1769, 5710
FAX: 03-5689-4467
Email: k-kyodoriyo@eri.u-tokyo.ac.jp

Application Guidelines

In order to facilitate researches in the fields relevant to earthquakes and volcanoes across Japan, the ERI conducts various joint usage/research programs. Applications for joint researches are accepted annually.

Please refer to the following explanations, and apply using the application form available from the online web system on the following website.

https://www.eri.u-tokyo.ac.jp/en/joint-usage-top/

Forms required for applications and related information are posted to the above URL.

If you apply for usage of equipment, please arrange a plan for the usage with a person in charge of the equipment at the ERI before submitting an application.

1. Joint Research

(1) Specific Research Project (A):

Specific Research Project (A) is for research projects that are already funded by a source other than the joint usage/research program. Individual projects are being conducted nationwide by the ERI and/or other institutions, such as joint research based on "Promoting the Second Earthquake and Volcano Hazards Observation and Research Program (proposition)" hereinafter called the "Earthquake and Volcano Hazard Reduction Research." We call for applications to participate in these projects.

Research projects in this category are listed in Appendix A. Expenses to work for the projects will be supported. The maximum research expenses for each project should be 300,000 yen or less annually. Applicants to participate in projects under "Earthquake and Volcano Hazard Reduction Research" (Research Title No. 2022-A-01, see Table A-01 for projects) must not be a member of a research institution that receives project funds from "Earthquake and Volcano Hazard Reduction Research." Other research proposals are also eligible for researchers who do not participate in the original project itself, which is funded by a budget other than the joint usage/research budget. Details of each research project can be found on the following website.

http://www.eri.u-tokyo.ac.jp/YOTIKYO/2020/project_r3.html

An applicant should contact the principal investigator or the contact person of the project at the ERI that he/she wishes to join in arranging a research plan and submitting the participation application (Form A-2a-E) with the principal investigator.

Applicants who wish to participate in the project listed in Appendix A but other than those for No. 2022-A-01 should submit application form A-2b-E.

As for the projects in No. 2022-A-01, acknowledgments for the joint usage/research program by the ERI must be included in publications, and participants shall be obligated to submit reprints of the publications.

(2) Specific Research Project (B):

The projects in this category include those planned by individual researchers or research groups with the aim of forming future large-scale projects. Those who wish to participate in these projects are invited to apply. The projects in this category are not currently supported by large-scale project-funds such as the "Earthquake and Volcano Hazard Reduction Research." Exploratory or international/interdisciplinary subjects are registered as in Appendix B.

Those who are interested in joining the project should inquire about the details of the research project with the

principal investigator or the contact person of the project at the ERI. Those who wish to join the research projects listed in Appendix B should submit application form B-2-E.

(3) Specific Research Project (C):

The projects in this category include those operating with funding other than joint usage/research program, but approved by the ERI approved as the projects belong to the program. The projects are listed in Appendix C.

Those who are interested in participating in a project should inquire about the details of the research content with the principal investigator or the contact person of the project at the ERI. Those who wish to join the research projects listed in Appendix C should submit application form C-2-E. Some research titles are open to applications at all times of a year.

(4) General Research Project: （including grant program for Early-Career Scientists）

This category is for joint research projects conducted by a small group of researchers formed from inside and outside of the ERI. Proposals that advance research performed at the ERI further or that stimulate research activities in the ERI are welcome. In addition, proposals that involve foreign visiting researchers accepted by the ERI's International Research Promotion Office for the joint usage/research program are given appropriate consideration. Proposals for research that are not yet conducted at the ERI are also welcome. A principal investigator of a project must be a faculty member or researcher of a university/institution other than the ERI, and at least a member of the ERI must be involved in the project. The principal investigator of a project should submit an application (Form G-1-E).

A project in this category shall receive 500,000 yen or less for travel costs, consumables, and services to conduct the research. However, appropriate considerations shall be made for research projects that require more than 500,000 yen for some reason, which must be explained in the application. In addition, regardless of the category, if there is a carryover of expenses from the adopted joint research in 2020, please submit the additional form to confirm the relevance and difference between the previously proposed and actual expenses.

For research conducted at the ERI, please see the "2017 Handbook for Earthquake Research Institute, the University of Tokyo" or check the ERI website at (https://www.eri.u-tokyo.ac.jp/en/).

A principal investigator of a project must submit a project report (Form G-2-E) within 30 days of the completion of the research period through the online web system.

Grant program for Early-Career Scientists

According to the Grant program for Early-Career Scientists, the proposals from an individual researcher (*) who had obtained his/her Ph.D. qualification within eight years of the application are prioritized As an interim measure, a non-Ph.D. researcher who is 39 years old or younger may also apply.

(5) Cooperative Study on Elucidation and Prediction of Earthquakes and Volcanic Eruptions:

This category is for research projects related to items in “Earthquake and Volcano Hazard Reduction Research.” The items to be accepted are as follows;

1. Research for the elucidation of earthquakes and volcanic phenomenon,
2. Research for prediction of earthquakes and volcanic eruptions,
4. Research to improve literacy for preventing disasters due to earthquakes and volcanic eruptions,
5. Improvement of a system for research promotion,

and proposals for new researches that are not listed in Table A-01.

The period of research for a project is one year, but it may be continued up to three years or until the end of the project. Research funds shall be 1,000,000 yen or less per research project per year. Expenses shall include travel costs and joint research expenses (consumables and service fees). Please clarify the relevant research topic to the proposed research [Ex: 2. (5) Volcanic eruption forecasting by constructing a volcanic activity transition model]. Proposals for research projects related to item “3. Research for inducement to the earthquake and volcanic eruption disasters” will be accepted by another program run jointly by the ERI and the Disaster Prevention Research Institute, Kyoto University.

Please refer to the following URL for details on “Earthquake and Volcano Hazard Reduction Research.”

http://www.mext.go.jp/b_menu/shingi/gijyutu/gijyutu6/toushin/1413118.htm

We focus on the relevance of the items in “Earthquake and Volcano Hazard Reduction Research” and the novelty of the research. In particular, priority will be given to research topics closely related to the following items, which are listed as priority research;

2. (1) New long-term forecasting of earthquake occurrence,
2. (2) Earthquake forecasting based on crustal activity monitoring,
2. (5) Volcanic eruption forecasting by constructing a volcanic activity transition model, or
5. (2) System that promotes integrated research across several fields (Great earthquakes along the Nankai Trough, Tokyo inland earthquakes, Great earthquakes along the Chishima Trench (Kuril Trench), Large-scale volcanic eruptions at Sakurajima, and Small-scale but high-risk volcanic eruptions).

A faculty member from the Coordination Center for Prediction Research of Earthquakes and Volcanic Eruptions shall be the contact person at the ERI for accepted research projects. The principal investigator of a project should submit an application (Form Y-1-E). In addition, regardless of the category, if there is a carryover of expenses in the adopted joint research in 2020, please submit the additional form due to confirm the relevance and difference between the previously proposed and actual expenses.

A principal investigator of a project must submit a project report (Form Y-2-E) within 30 days of the completion of the research period through the online web system. Another project report in the format set by the Coordinating Committee of Earthquake and Volcanic Eruption Prediction Researches must be submitted at the end of every academic year. Also, the results of the project should be presented at the annual-symposium held by the Committee in March every year.

As for the projects in this category, acknowledgments for the joint usage/research program by the ERI must be included in publications, and participants shall be obligated to submit reprints of the publications.

For "Continuity from last year," please choose "New" if you are applying for a new proposal this year, or "Continuation" if you are applying for a proposal that has been continued from last year. Please note that depending on the content of the application, "New/Continuation" may be determined to be different from the declaration during the screening process.

(6) Cooperative Study on High Energy Geophysics Research:

This category is for research projects related to items in "High Energy Geophysics Research." Proposals based on industry-academia collaboration are given high priorities, especially proposals with matching funds from the applicants themselves.

The period of research for a project is one year, but it may be continued as long as three years. Research funds shall be 1,000,000 yen or less per research project per year. Expenses shall include travel costs and joint research expenses (consumables and service fees).

The Coordinating Committee of High Energy Geophysics Research conducts an initial review of the proposals, and the ERI Joint Usage Committee will make the final decision regarding the review.

A faculty member shall be the contact person at the ERI for accepted research projects. The principal investigator of the proposedproject should submit theapplication form H-1-E. All members of a project must submit a Confirmation of Intellectual Property (Form N-3-E)except for those who submitted it once in FY 2016 - 2022, or University of Tokyo members .

The principal investigator of a project must submit a project report (Form H-2-E) within 30 days of the completion of the research period through the online web system. As for the projects in this category, acknowledgments for the joint usage/research program by the ERI must be included in publications, and participants shall be obligated to submit reprints of these publications.

(7) Supercomputer Joint Research

In the research fields related to earthquakes, volcanos, and disaster prevention, research that uses big data and supercomputers is increasing. However, a supercomputer is a limited resource and is not yet widely available. Therefore, the ERI call for researches that use supercomputer related to earthquakes, volcanos, and disaster prevention from the 2020 fiscal year.

ERI calls for the proposal of "A. Large research project", "B. Research project", and "C. Challenging" research as follows. In addition, the ERI calls for research related to earthquakes, volcanos, and disaster prevention. The earthquake and volcano information center computer system (EIC System) can be used at any time separately form this joint research. If you plan to do large scale computations, please apply for this call.

Category	Nodes	Application form	Remarks
A. Large research project	Over 250,000 nodes	S-1a	At least a member of the ERI must be involved in the project.
B. Research project	85,000– 250,000 nodes	S-1b	At least a member of the ERI must be involved in the project.
C. Challenging research	Under 50,000 nodes	S-1c	Target research is in the preparation stage for A and B, challenging exploratory research, and research that is difficult to carry out with EIC System.

The Coordinating Committee of Supercomputer Joint Research conducts an initial review of the proposals, and the Earthquake Research Institute Joint Usage Committee will make the final decision regarding the review. In principle, applications for C will not be reduced in the amount of applied computational resources by these

committees, in order to support early research related to computational geoscience and calculations on a scale that cannot be performed by EIC.

The principal investigator of a project should submit an application form S-1a or S-1b or S-1c depend on category. The principal investigator of a project must submit a project report (Form S-2) within 30 days of the completion of the research period through the online web system.

A and B are solicited once a year (deadline at the end of May), and C is solicited three times a year (deadline at the end of May, August, and November).

As for the projects in this category, acknowledgments for the joint usage/research program by the ERI and Information Technology Center, The University of Tokyo, must be included in publications, and participants shall be obligated to submit reprints of the publications.

2. Workshop/Symposium

This category is for holding workshops and symposiums for topics on earthquakes, volcanoes, and related sciences. The length of a workshop or symposium should not be more than three days. The category includes a summer school and other workshops that are expected to contribute to the development of the research community on earthquakes, volcanos, and related fields. If workshops or symposia are to be held using these funds, please make sure to include the ERI as one of the organizers. A representative of the workshop/symposium should submit an application (Form W-1-E). At least one member of the ERI must be included in the application as a contact person. The venue should be at the ERI or online. If a workshop is to be held outside of the ERI (including overseas, excluding online), please state the necessity for this clearly. And, if the workshop is open to the general public, please select “open”, otherwise select “closed”. And then, it is necessary to include the ERI as the organizer in the workshop/symposium using this fund. In addition, regardless of the category, if there is a carryover of expenses in the adopted joint research in 2020, please submit the additional form due to confirm the relevance and difference in the purpose of using expenses.

(1) International workshop/symposium

International workshop/symposium will receive 2,000,000 yen or less, per workshop/symposium. The fund is expendable to cover travel and printing costs (including electronic version printed matter production expenses (service contract expenses)), honorarium for simple labor for supporting workshop/symposium management, and service contract costs for workshop/symposium management.

(2) Domestic workshop/symposium

Domestic workshop/symposium will receive 1,000,000 yen or less, per workshop/symposium.

The fund is expendable to cover travel and printing costs (including electronic version printed matter production expenses (service contract expenses)), honorarium for simple labor for supporting workshop/symposium management, and service contract costs for workshop/symposium management.

If major changes in the plan, such as a change of venue, are needed, those should be reviewed again at the Joint Usage Committee of the ERI. The representative of the workshop/symposium should submit a statement of the reason explaining the changes as soon as possible to the Research Support Team of the ERI.

The Joint Usage Committee will evaluate the original proposal and the statement of the reason to decide whether to approve the changes or not.

The representative to the workshop/symposium must submit a report of workshop/symposium (Form W-2-E)

within 30 days of the completion of the workshop/symposium through the online web system. These Reports on the research workshop or symposium, excluding the attendance list, will be posted on the Joint Usage page of the ERI's website.

3. Usage of Facilities, Observation Equipment, and Laboratory Equipment

Some of the facilities, observation equipment, and laboratory equipment managed by the ERI are available for joint usage. Available items are listed in Appendix F, and Appendix M. Those who wish to use the items should contact the contact person at the ERI for arrangement and submit an application (Form F-1-E or Form M-1). It is necessary to submit a specified items lease form (Form F-3-E) to take observation equipment outside the ERI. If funds are required to use these facilities, please apply to the general research project instead.

A user of the item must submit a report (Form F-2-E or Form M-2) within 30 days of the completion of the usage of the items through the online web system.

4. Usage of Data and Records

Appendix D is a list of earthquakes and other earth science data and records managed by the ERI, which are available for joint usage. Those who wish to use them should contact the contact person of the data and records at the ERI for arrangement, and submit an application (Form D-1-E) by the online system. Applications to use the computer system database of the Earthquake Information Center are accepted by the Earthquake Information Center homepage below.

However, Oakforest-PACS and Reedbush-H/L are not covered because their services will be discontinued by FY2022.

https://eic-support.eri.u-tokyo.ac.jp/

If funds are required to use these data and records, please apply to the general research project instead.

If you wish to receive national earthquake observation system data using satellite communications, please submit an application (Form T-1-E). In addition, please submit reports (Forms D-2-E, T-2-E) within 30 days of the completion of the research using the data and records through the online web system.

【Appendix A】 2022FY Specific Research Project (A) Titles

Project code Project title	○Principle investigator ・ Contact Person at ERI	Details of the project and condition to participate in the project
2022-A-01 Earthquake and Volcano Hazards Observation and Research Program	○ List of principal investigators is given in Table A-01 ・Head of Coordination Center for Prediction Research of Earthquakes and Volcanic Eruptions	The Second Earthquake and Volcano Hazards Observation and Research Program (Earthquake and Volcano Hazard Reduction Research) is a 5-year plan beginning in Fiscal Year 2019, based on a proposal in January, 2019, by the Council for Science and Technology (refer to the website; http://www.mext.go.jp/b_menu/shingi/gijyutu/gijyutu6/toushin/1413118.htm). The program is composed of the four components as follows; 1. Research for elucidation of earthquakes and volcanic phenomenon, 2. Research for prediction of earthquakes and volcanic eruptions, 3. Research for prediction of inducement to earthquake and volcanic eruption disasters, 4. Research to improve literacy for preventing disasters due to earthquakes and volcanic eruptions, and 5. Improvement of a system for research promotion. Researchers from 35 universities, research institutions and government agencies across the country have been jointly conducting about 170 specific research projects under the program. The Earthquake Research Institute will subsidize the expense of joining any of Universities' projects under this program listed in【Table A-01】for researcher(s) from universities or research institutes which do not participate in the Earthquake and Volcano Hazard Reduction Research. Those researcher(s) who wish to join a specific project should take contact with the Principal Investigator of the project, and submit the application form A-2a-E. Please refer Table A-01 or the following URL for detail information about the respective projects; https://www.eri.u-tokyo.ac.jp/YOTIKYO/2020/project_r3.html
2022-A-02 Structure and dynamics of Earth's deep interior	○Satoru Tanaka（JAMSTEC） ・Hisayoshi Shimizu	This collaboration aims to reveal the structure and dynamics of the Earth's deep interior mainly by observational approach. We continue long-term observations by geophysical network in the Pacific region (Ocean Hemisphere Network) and conduct observations by seismic and/or electromagnetic array both on land and seafloor to achieve the scientific aim by analyzing data from these observations. **Project name of the financial base to conduct this specific research project:** Contribution to Global Seismographic Network Geophysical studies by using submarine cables, TPC-1 and TPC-2.

Project code Project title	○Principle investigator ・ Contact Person at ERI	Details of the project and condition to participate in the project
2022-A-03 Intelligent seismic data processing based on integration of next-generation seismic observations and the forefront of Bayesian statistics	○Naoshi Hirata（Earthquake Research Institute） ・Hiromichi Nagao	In our country, more than 1,000 seismic stations have been continuously acquiring high-resolution digital seismic data. A large amount of instrumentally measured vibration data, which can be so-called big-data, will be available in near future. The data consist of both the conventional high-quality seismic data by well-calibrated seismometers and many kinds of new vibration data measured by accelerometers based on Micro Electro Mechanical Systems (MEMS), which are installed in such as infrastructures, lifelines and smartphones. This project, which consists of the three research topics shown in the attached table【Table A-03】, aims to develop, collaborating with the forefront of Bayesian statistics, a set of algorithms that enable us to comprehensively analyze the seismic data obtained by sensors of various types. This project will eventually contribute to prevention/mitigation of seismic disasters and clarification of earthquake phenomena. **Requirement for participation:** Applicants must contribute to the promotion of the JST CREST project that this collaborative research bases. **Project name of the financial base to conduct this specific research project:** JST CREST “Intelligent seismic data processing based on integration of next-generation seismic observations and the forefront of Bayesian statistics”

【Table A-01】 2022-A-01 projects

Please consult the following URL for the respective projects
https://www.eri.u-tokyo.ac.jp/YOTIKYO/2020/project_r3.html

(In Japanese Version Only) 2021/9/X

課題番号	代表機関名	課題代表者	研究課題名
1．地震・火山現象の解明のための研究 (1) 地震・火山現象に関する史料・考古データ、地質データ等の収集と解析			
ERI_01	東京大学地震研究所	加納 靖之	歴史地震史料を活用した地震学的解析
IRID01	東北大学災害科学国際研究所	蝦名 裕一	東北地方における地震・津波・火山情報に関する歴史資料の所在調査とデータ収集
NGT_01	新潟大学	片桐 昭彦	日本海沿岸地域を中心とした地震・火山現象の解明のための史料収集と解析
NGY_01	名古屋大学	山中 佳子	古文書解読による南海トラフ巨大歴史地震像の解明　～歴史地震情報の可視化システムの構築とその活用～
UTH_01	東京大学史料編纂所	榎原 雅治	地震火山関連史料の収集・分析とデータベースの構築・公開
NAB_01	奈良文化財研究所埋蔵文化財センター	村田 泰輔	考古・文献資料からみた歴史災害情報の収集とデータベース構築・公開ならびにその地質考古学的解析
HKD_01	北海道大学	西村 裕一	津波堆積物情報の高度化と実践的活用に関する研究
UTS_01	東京大学理学系研究科	後藤 和久	沿岸巨礫を用いた古津波評価法の検討：南海トラフ～琉球海溝の連動可能性評価に向けて
ERI_02	東京大学地震研究所	安田 敦	マグマ溜まりの時間発展と噴火様式との関連性
TYM_01	富山大学	石﨑 泰男	極小規模噴火を含めた草津白根火山の噴火履歴の解明と噴火ポテンシャル評価
(2) 低頻度大規模地震・火山噴火現象の解明			
HMEV01	東京大学地震火山史料連携研究機構	大邑 潤三	地震火山関連史資料に基づく低頻度大規模地震火山災害の調査
UTS_02	東京大学理学系研究科	田中 愛幸	巨大地震に伴う粘弾性余効変動の解明
ERI_03	東京大学地震研究所	前野 深	大規模噴火に伴う諸現象とそれを駆動するマグマ溜り―火道システムの解明
HKD_02	北海道大学	栗谷 豪	大規模噴火に関わるマグマプロセスの時間スケールの解明
(3) 地震発生過程の解明とモデル化			
ERI_05	東京大学地震研究所	篠原 雅尚	千島海溝・日本海溝における複合海底地震測地観測によるプレート境界の挙動解明とそのモデル化
ERI_04	東京大学地震研究所	亀 伸樹	非線形動力学・計算材料科学との学際連携に基づく地震現象の多様性の統一的理解
THK_01	東北大学	岡田 知己	国際共同研究によるニュージーランドにおける地震発生機構の解明
UTS_03	東京大学理学系研究科	井出 哲	地震発生場のテクトニクスとマルチスケール地震現象の予測可能性
ERI_06	東京大学地震研究所	中谷 正生	より現実的な断層面ダイナミクス
RTM_01	立命館大学	小笠原 宏	南アフリカ大深度金鉱山からの地震発生場における応力と物質の直接調査

課題番号	代表機関名	課題代表者	研究課題名
THK_02	東北大学	松澤 暢	流体の寄与に注目した地震断層すべり物理モデルの高度化
(4) 火山現象の解明とモデル化			
ERI_07	東京大学地震研究所	大湊 隆雄	多項目観測データの比較研究に基づく噴火過程の理解とモデル構築
THK_03	東北大学	西村 太志	噴火発生時刻の即時把握と噴火ダイナミクスの研究
TIT_01	東京工業大学	野上 健治	海域火山活動に伴う熱水活動の実験的研究と観測研究
TIT_02	東京工業大学	野上 健治	小型拡散放出二酸化炭素率測定装置の開発
TYM_02	富山大学	堀田 耕平	富山県弥陀ヶ原火山における地球物理学的観測による火山活動モニタリング
HKD_03	北海道大学	吉村 俊平	マグマ脱ガス実験と火山噴出物の揮発性成分解析に基づく噴火分岐メカニズムの解明
THK_04	東北大学	中村 美千彦	浅部貫入マグマの結晶化速度と噴火挙動の推定手法の開発
(5) 地震発生及び火山活動を支配する場の解明とモデル化			
ERI_08	東京大学地震研究所	望月 公廣	日本・NZ国際協力によるヒクランギ沈み込み帯における多様な地震活動と，その発生環境との関係の解明
THK_06	東北大学	東 龍介	スラブ内地震の発生メカニズムに関する研究
KGSM01	鹿児島大学	八木原 寛	南西諸島北部域におけるプレート間すべりの特性に関する地震・地殻変動観測研究
AORI01	東京大学大気海洋研究所	朴 進午	巨大津波を引き起こす震源断層の実態解明と流体変動モニタリング
DPRI01	京都大学防災研究所	伊藤 喜宏	津波生成過程の理解に向けた浅部スロー地震の活動様式・発生場の解明とモデル化
DPRI02	京都大学防災研究所	澁谷 拓郎	南海トラフ巨大地震の予測高度化を目指したフィリピン海スラブ周辺域での総合的観測研究
THK_05	東北大学	趙 大鵬	世界各地の大地震発生域との比較研究に基づく地震・火山現象の理解
IRID02	東北大学災害科学国際研究所	木戸 元之	GPS-A観測による効率的な上下変動検出技術の開発と根室沖観測への適用
HRS_01	弘前大学理工学研究科	前田 拓人	東北日本弧・千島弧会合部とその周辺における地震発生場の解明
DPRI03	京都大学防災研究所	飯尾 能久	内陸地震の発生機構と発生場の解明とモデル化
ERI_09	東京大学地震研究所	飯高 隆	内陸地震発生ポテンシャルの予測を目指した島弧の地殻応答と断層における地殻内流体の影響の解明
THK_07	東北大学	岡田 知己	地殻応答による断層への応力載荷過程と断層間相互作用の解明と予測
ERI_10	東京大学地震研究所	今西 祐一	東日本における長期的重力変化の観測とモデリング
UTS_04	東京大学理学系研究科	角森 史昭	地殻流体の化学的観測による地震火山活動評価システムの高度化と応用
KOBE01	神戸大学海洋底探査センター	島 伸和	鬼界海底カルデラにおけるマグマ供給系の構造・進化の解明
TIT_03	東京工業大学	寺田 暁彦	水蒸気噴火の準備過程を捉えるための火山熱水系構造モデルの精緻化
AORI02	東京大学大気海洋研究所	小畑 元	地球物理・化学的探査による海底火山および海底熱水活動の調査

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THK_08	東北大学	山本 希	集中地震観測による火山体構造・火山現象発生場の解明
KYU_01	九州大学	相澤 広記	地震火山相互作用下の内陸地震空間ポテンシャル評価
DPRI04	京都大学防災研究所	深畑 幸俊	日本列島の地震—火山噴火の基本場解明：地殻とマントルにおける応力、流体-マグマ、温度・流動－変形場
2．地震・火山噴火の予測のための研究 (1) 地震発生の新たな長期予測			
NGY_02	名古屋大学	田所 敬一	南西諸島海溝におけるプレート間固着状態の解明
HMEV02	東京大学地震火山史料連携研究機構	榎原 雅治	地震関連史料に基づく近代以前の地震活動の調査
ERI_11	東京大学地震研究所	篠原 雅尚	地震発生予測のための島弧-海溝システムの観測-モデリング統合研究
UTS_05	東京大学理学系研究科	安藤 亮輔	物理モデルと地形・地質学およびテクトニックな観測データを統合した地震発生の長期予測手法の開発と検証
DPRI05	京都大学防災研究所	西村 卓也	測地観測データに基づく内陸地震長期評価手法の開発
NGY_03	名古屋大学	鈴木 康弘	変動地形学的手法による内陸地震発生モデルと活断層長期評価手法の再検討
(2) 地殻活動モニタリングに基づく地震発生予測			
ERI_12	東京大学地震研究所	蔵下 英司	スロー地震モニタリングに基づく南海トラフ域の地震発生可能性評価手法に関する研究
KUS_01	京都大学理学研究科	宮崎 真一	地殻活動データの同化による沈み込みプレート境界面すべり予測に関する研究
THK_09	東北大学	内田 直希	繰り返し地震再来特性の理解に基づく地殻活動モニタリング
NGY_04	名古屋大学	田所 敬一	南海トラフ域におけるプレート間固着・滑りの時空間変化の把握
(3) 先行現象に基づく地震発生の確率予測			
THK_10	東北大学	長濱 裕幸	地殻変動に伴う大気中ラドン濃度変動
CBA_01	千葉大学	服部 克巳	電磁気学的な地震先行現象の総合的研究
ERI_13	東京大学地震研究所	中谷 正生	経験的アプローチによる大地震の確率予測のパフォーマンス調査
RTM_02	立命館大学	川方 裕則	地震に先行する極微小な前震活動の異常度評価と発生環境の評価
(4) 中長期的な火山活動の評価			
UTS_06	東京大学理学系研究科	森 俊哉	遠隔地火山、特に離島火山における火山ガスモニタリングの高度化
KUS_02	京都大学理学研究科	大倉 敬宏	地震・地殻変動モニタリングによる中期的な火山活動の評価
HKD_04	北海道大学	橋本 武志	電磁気・熱・ガス観測に基づく火山活動推移モデルの構築
(5) 火山活動推移モデルの構築による火山噴火予測			
DPRI06	京都大学防災研究所	井口 正人	インドネシアの活動的火山における火山活動推移モデルの構築

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DPRI07	京都大学防災研究所	中道 治久	桜島火山における火山活動推移モデルの構築による火山噴火予測のための総合的観測研究
THK_11	東北大学	西村 太志	多項目観測データに基づく火山活動のモデル化と活動分岐判断指標の作成
３．地震・火山噴火の災害誘因予測のための研究 (1) 地震・火山噴火の災害誘因の事前評価手法の高度化			
DPRI08	京都大学防災研究所	関口 春子	広帯域強震動予測の高度化に関する研究
DPRI09	京都大学防災研究所	岩田 知孝	断層破壊過程と極大強震動生成に関する研究
ERI_14	東京大学地震研究所	古村 孝志	大規模数値シミュレーションに基づく広帯域強震動災害の事前・即時予測
ERI_15	東京大学地震研究所	酒井 慎一	首都圏の地震被害分布と地震像の解明
NGY_05	名古屋大学	鈴木 康弘	地表地震断層の特性を重視した断層近傍の強震動ハザード評価
ERI_16	東京大学地震研究所	三宅 弘恵	堆積平野・堆積盆地における地震災害発生機構の解明
TTR_01	鳥取大学	香川 敬生	地方自治体の地震被害想定，災害リスク評価を高度化するための基盤整備
DPRI10	京都大学防災研究所	釜井 俊孝	火山地域を含む地震地すべり発生場の評価と斜面における強震動及び不安定化の事前予測手法の展開
IRID03	東北大学災害科学国際研究所	佐藤 源之	地表設置型合成開口レーダ(GB-SAR)による地表面変位計測の高精度化
DPRI11	京都大学防災研究所	為栗 健	火砕流の発生と流下予測
HKD_05	北海道大学	谷岡 勇市郎	巨大地震に伴う海底斜面崩壊による津波の事前評価・即時予測に関する研究
(2) 地震・火山噴火の災害誘因の即時予測手法の高度化			
THK_12	東北大学	太田 雄策	海陸測地データを活用したプレート境界面すべり即時把握能力の向上とそれにもとづく津波即時推定手法の高度化
HRS_02	弘前大学理工学研究科	前田 拓人	データ同化に基づく津波現況把握と即時予測の高度化
DPRI12	京都大学防災研究所	藤田 正治	噴火後の土石流および泥流の発生に関する観測と予測手法の開発
ERI_17	東京大学地震研究所	前野 深	堆積物に基づく噴火物理化学パラメータ推定手法の高度化と事象分岐判断への活用
(3) 地震・火山噴火の災害誘因予測を災害情報につなげる研究			
IRID04	東北大学災害科学国際研究所	福島 洋	地震の事前情報を起点とするハザード事象系統樹の開発
III_01	東京大学情報学環	関谷 直也	ニーズ・アセスメントに基づく地震・火山災害に関する発生確率、被害想定、災害情報のコミュニケーション戦略の開発
HKD_06	北海道大学	橋本 武志	火山活動即時解析表示システムの開発
４．地震・火山噴火に対する防災リテラシー向上のための研究 (1) 地震・火山噴火の災害事例による災害発生機構の解明			
NGY_06	名古屋大学	室井 研二	被害の地域的な発現過程とコミュニティの社会・空間構造に着目した地震・津波災害発生機構に関する文理融合的研究

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UTH_02	東京大学史料編纂所	杉森 玲子	近代以前の地震・火山災害に関する多角的研究
(2) 地震・火山噴火災害に関する社会の共通理解醸成のための研究			
DPRI14	京都大学防災研究所	矢守 克也	災害リテラシーの育成のためのオープンサイエンス手法の検討
HKD_07	北海道大学	橋本 雄一	地理空間情報の総合的活用による災害への社会的脆弱性克服に関する人間科学的研究
HYG_02	兵庫県立大学	澤田 雅浩	地震観測研究の成果を活用した土地利用に係る事例収集に基づく枠組みの提案
NGT_02	新潟大学	田村 圭子	地震・火山噴火災害における被害軽減のために利活用可能な要素・知識体系の整理・検証
KUS_03	京都大学理学研究科	大倉 敬宏	阿蘇で学ぶ地震・火山災害への備え
HYG_01	兵庫県立大学	阪本 真由美	地震・火山観測データを活用した減災・復興モデルの構築とリスクコミュニケーションに資する事例収集
DPRI13	京都大学防災研究所	中道 治久	桜島火山における地域との連携による火山災害に関する社会の共通理解醸成のための研究
IRID06	東北大学災害科学国際研究所	杉浦 元亮	災害に関わる個人の心理・行動特性とその評価・活用・調整に関わる研究
TYM_03	富山大学	井ノ口 宗成	地震学・火山学の知見に基づくコンパクトシティをデザインする情報科学からの被災生活シミュレーション
NGY_07	名古屋大学	山岡 耕春	御嶽山地域の防災力向上の総合的推進に関する研究
IRID05	東北大学災害科学国際研究所	蝦名 裕一	歴史地形の復元・可視化手法の確立と災害発生要因の分析
5．研究を推進するための体制の整備 (2) 分野横断で取り組む総合的研究を推進する体制			
HKD_09	北海道大学	高橋 浩晃	千島海溝沿いの巨大地震津波災害軽減に向けた総合研究
(3) 研究基盤の開発・整備			
ERI_18	東京大学地震研究所	加納 靖之	観測研究データへの永続的識別子付与
ERI_19	東京大学地震研究所	鶴岡 弘	データ流通網の高度化
THK_13	東北大学	内田 直希	地震・火山データの無線伝送技術の開発
NGY_08	名古屋大学	山中 佳子	小電力・小型・携帯テレメータ地震観測装置の改良開発
ERI_22	東京大学地震研究所	篠原 雅尚	海底ケーブルを用いる地震・地殻変動・津波リアムタイム観測技術開発
ERI_23	東京大学地震研究所	塩原 肇	海底での地震・地殻変動観測に向けた機動的観測技術の高度化
KOC_01	高知大学	大久保 慎人	地震動観測点観測環境の時間変化把握に向けた、解析手法の検討・開発
ERI_21	東京大学地震研究所	田中 宏幸	高精細ミュオグラフィ画像自動診断による火山活動状況の推移との相関評価
ERI_20	東京大学地震研究所	新谷 昌人	光技術を用いた地下深部・火山近傍における地震・地殻変動計測技術の確立
HKD_08	北海道大学	高橋 浩晃	地殻変動等多項目データの全国流通一元化公開解析システムの高度化

課題番号	代表機関名	課題代表者	研究課題名
KOC_02	高知大学	大久保 慎人	地震波形データ流通のための、新ＷＩＮ伝送プロトコルの検討・開発
ERI_24	東京大学地震研究所	中川 茂樹	マルチプラットフォーム次世代WINシステムの開発
ERI_25	東京大学地震研究所	鶴岡 弘	研究成果共有データベースの構築

Table A-01

【Table A-03】2022-A-03 Projects

「Intelligent seismic data processing based on integration of next-generation seismic observations and the forefront of Bayesian statistics」

No.	PI	Affiliation	Research Project
A	Takahiro Shiina	The National Institute of Advanced Industrial Science and Technology	Methodology for utilization of various types of seismic data and its validation
B	Kosuke Morikawa	Graduate School of Engineering Science, Osaka University	Development of algorithms for seismic data processing based on the forefront of Bayesian statistics
C	Masayuki Kano	Graduate School of Science, Tohoku University	Intelligent seismic data processing: application to real data and development of data assimilation methods

【Appendix B】 2022FY Specific Research Project (B) Titles

Project code Project title	○ Principle investigator/ ★ Early-Career Scientist ・ Contact Person at ERI	Details of the project and condition to participate in the project
2020-B-03 New developments on crustal deformation research based on the ultra-dense GNSS observation	○Yusaku Ohta （Tohoku University） ・Yosuke Aoki	Recently, very low-price multi-frequency GNSS receivers appeared through expanded use of GNSS system for many purposes. In this study, we will utilize these new GNSS system for the understanding the high-spatial resolution crustal deformation. We will observe the specific areas which were observed by past repeated campaign observations such as strain concentration areas in Niigata and Miyake-jima volcano. Through the GNSS observation, we will provide the chance to communicate between the students, young and senior researchers, and technical staffs. Furthermore, we will share and hand down the skills for the GNSS observation through the observations. **Requirement**: Nothing **List of affiliations for projected participants**: Hokkaido University, Tohoku University, University of Tokyo, Nihon University, Toyama University, Kanazawa University, Nagoya University, Kyoto University, Kochi University, Kyushu University, Kagoshima University, National Astronomical Observatory of Japan, National Institute of Polar Research, Geospatial information Authority of Japan, National Research Institute for Earth Science and Disaster Resilience, National Institute of Advanced Industrial Science and Technology, Meteorological Research Institute, National Institute of Information and Communications Technology, the Institute of Physical and Chemical Research, Japan Agency for Marine-Earth Science and Technology, Tono Research Institute of Earthquake Science
2020-B-06 Understanding the deep Earth using ocean bottom detector toward direct measurement of mantle geoneutrinos	○Kunio Inoue （Tohoku University） ・Hiroyuki Tanaka	Cooperative researches had been constructed in FY 2014 and 2017 to launch an interdisciplinary research, which provide new observation for understanding the Earth with neutrinos. Our research group developed a new technology which can be used by next generation detector, and constructed new geo-neutrino flux calculation model with integration of geological knowledges by incorporating a method which is used in physics. The cooperative research structure together with geoscience and physics has been working effectively. The ocean bottom detector goes beyond the impossibilities of the modern land-based detector toward direct measurement of mantle geoneutrinos. We will study how to estimate the uncertainty of the geo-neutrino flux calculation to make higher reliable model with the cooperative research structure. In this FY, we will develop data taking system with low electric power supply. We are going to analyze collected rock samples to apply to estimation of flux model uncertainty. **List of affiliations for projected participants**: Tohoku U., U. Tokyo, Japan Agency for Marine-Earth Science and Technology, National Institute of Advanced Industrial Science and Technology, U. Hawaii, U. Maryland, Charles University

Project code Project title	○ Principle investigator/ ★ Early-Career Scientist ・ Contact Person at ERI	Details of the project and condition to participate in the project
2020-B-07 Dynamics of plate subduction and island arc processes	○Bunichiro Shibazaki （Building Research Institute） ・Hikaru Iwamori	In the Japanese Island arc, various processes, such as inland earthquakes, volcanic activity, and mountain development, are occurring. These phenomena originate with the subduction of the oceanic plate under the island arc, which is caused by gravitational instability. The subduction of the oceanic plate induces hot upwelling flow in the mantle wedge; the transport of fluid, from the slab to the shallow part, results in the generation of magma and partial melting, as well as volcanic activity in the island arc. In addition, the fluids weaken the strength of the lithosphere and cause strain concentration which produces inland earthquakes. Recent studies indicate that the characteristics and heterogeneity of the oceanic plate subducting beneath the island arc (e.g., thermal and hydration structures) affect the heat and mass transport in the mantle wedge and surface processes. This study aims to achieve a comprehensive understanding of the dynamics of plate subduction and island arc processes: the characteristics of the subducting oceanic plate , dehydration in the slab, heat and mass transport that accompanies upwelling flow in the mantle wedge, magma generation, strain concentration, and mountain development through observational, experimental and simulation research . **List of affiliations for projected participants:** Earthquake Research Institute, The University of Tokyo, Tokyo Institute of Technology, Hiroshima University, Kobe University, Kyoto University, Nagoya University, Hokkaido University, Japan Agency for Marine-Earth Science and Technology, National Research Institute for Earth Science and Disaster Resilience,National Institute of Advanced Industrial Science and Technology, Building Research Institute
2021-B-01 Frontier of data-driven earth science based on machine learning	○Kenta Ueki （Japan Agency for Marine-Earth Science and Technology） ・Hiromichi Nagao	Geological and geochemical processes driven by interactions of various processes under various conditions have been studied by integrating various observations such as petrology and geology, geophysical observations, and laboratory experiments. These observations have individual characteristics, such as an amount of data, observable variables, and resolutions. A data-driven approach based on machine learning is effective in processing such complex data and understanding its hidden structure. Recently, researches based on machine learning, including artificial intelligence, is rapidly developing in earth science. In this project, we would like to establish an open scheme of data-driven earth science based on machine learning that deals with various geological and geochemical processes such as volcanism, seismic activity, and material fractionation in the solid Earth. Our goal is to establish a multidisciplinary field of research among various earth scientists such as geology, geochemistry, geophysics, laboratory experimentalists, and information scientists, and to construct a new research scheme and data-analysis method for the challenging issues. We will hold onsite meetings as well as online meetings to explore new analytical methods and perspectives for various earth science problems. **List of affiliations for projected participants**: Japan Agency for Marine-Earth Science and Technology, Hokkaido Univ., Tohoku Univ., Univ. Tokyo, Tokoha Univ., Kanazawa Univ., ISM, Kyoto Univ., Kagoshima Univ., Kitakyushu Nat'l Museum, National Institute of Advanced Industrial Science and Technology

Project code Project title	○ Principle investigator/ ★ Early-Career Scientist ・ Contact Person at ERI	Details of the project and condition to participate in the project
2021-B-02 Long-term tsunami history and earthquake source areas along Nankai Trough to Ryukyu Trench based on geological records and numerical simulations	★Masaki Yamada （Shinshu University） ・Kenji Satake	With an occurrence of the 2011 Tohoku-oki earthquake and tsunami, the source area of the largest possible earthquake in Nankai Trough was reconsidered in 2012. The assumed source area of this megathrust earthquake (M=9.1) extends to off the east Kyushu. However, there are no observed and historical records that show such a huge earthquake has occurred in Nankai Trough to Hyuga-nada. In the Hyuga-nada and Ryukyu Trench areas, it is known that interplate earthquakes around magnitude 7 repeatedly occurred in the 20th century, whereas no earthquakes of magnitude 8 or higher have been recorded in historical time. A 400 years record about historical tsunamis does not cover the full range of high magnitude, low frequency giant earthquakes that might be experienced in the region. Geological research along with tsunami numerical simulations are therefore important to better understand the occurrence of past earthquakes and tsunamis. This study tries to reveal the history of tsunamis for the last several thousand years along Nankai Trough through Ryukyu Trench based on surveys of tsunami deposits, and estimate their source regions by using tsunami numerical simulations. We seek for researchers and students who conduct geological studies, both in the field and laboratory, of tsunami deposits or tsunami numerical simulations. **List of affiliations for projected participants**: The University of Tokyo, Shinshu University, Kyoto University, Tohoku University, University of Tsukuba, Tokushima University, Geological Survey of Japan, National Institute of Advanced Industrial Science and Technology (AIST), Agency for Marine-Earth Science and Technology (Japan Agency for Marine-Earth Science and Technology)

Project code Project title	○ Principle investigator/ ★ Early-Career Scientist ・ Contact Person at ERI	Details of the project and condition to participate in the project
2021-B-03 Study on the crustal/surface deformation using high-frequency SAR observation	○Satoshi Okuyama (Japan Meteorological Agency) ・Yosuke Aoki	Utilizing huge data archives from 7 years of ALOS-2 observations, a large number of scientific results have been produced. PIXEL, a study group of SAR, played an important role in maintaining the environment to address such SAR studies. PIXEL is founded on the joint usage of ERI, the University of Tokyo, and this project serves as a base of its activity. Under this project, partici-pants share ALOS/ALOS-2 SAR data provided by JAXA and analyze them to detect various phenomena such as earthquakes, volcanic activities, landslides, glaciers, ground subsid-ence, etc. We also aim for the expan-sion and skill-up of the SAR commu-nity in Japan. ALOS-4, the ALOS-2 takeover, will be launched in 2022. Its wide observa-tion range enables much higher ob-servation frequency. Oversea SAR satellites such as Sentinel-1 also have the capability of frequent ob-servation. Thus, spaceborne SAR is advancing onto a new stage – high-frequency SAR observation. To make full use of the frequent obser-vation, InSAR time-series analysis is the most important technique. With this technique, we place the greatest importance in revealing the time evolution of crustal and/or surface deformation. For that purpose, we will share the knowledge and the technology that we have developed in this research project. Especially, ionosphere/troposphere delay correc-tion will play an important role in improving the accuracy. Along with the studies stated above, we hold a series of lectures on the SAR analysis software “RINC” for the expansion and skill-up of the SAR community. Through these activities, we enhance the research capability of the partic-ipants for application to large-scale project funds in the future. We also collaborate with the project “Next Generation Volcano Research B-2-1”. **List of affiliations for projected par-ticipants:** The University of Tokyo, Hokkaido University, Tohoku University, Kan-azawa University, Ibaraki Uni-versity, University of Tsukuba, Tokyo Denki University, Tokyo Met-ropolitan University, University of Aizu, Nihon University, Shizuoka University, Nagoya University, Kyoto Universi-ty, Kochi University, Uni-versity of Kochi, Kyushu University, Kago-shima University, Kagawa Univer-sity, Tokushima University., National Research Institute for Earth Science and Disaster Resilience, Na-tional Institute of Advanced Indus-trial Science and Technology, Center for Environmental Science in Saitama, Tono Research Institute of Earth-quake Science, Hot Springs Research Institute of Kanagawa Prefecture, National Institute of Polar Research, Japan Meteorological Agency, Mete-orological Research Institute, Fukada Geological Insti-tute

Project code Project title	○ Principle investigator/ ★ Early-Career Scientist ・ Contact Person at ERI	Details of the project and condition to participate in the project
2022-B-01 Utilization of ultra-precision geophysical observation records.	○Makoto Okubo （Kochi Univerisity） ・Akito Araya	Observation techniques to measure crustal activities and deformations with high precision have made rapid progress, for example km-class long baseline laser extensometers and borehole instruments at large depths isolated from surface noise. However, utilization of these instruments and their analysis methods with the high-precision records to instantly extract signals, such as precursors of earthquakes and volcanic eruptions, are not well established. In this research project, we advance to match the observation techniques related to crustal activities with the analysis techniques that enable significant signal extraction. We aim to develop and establish new methods to analyze the crustal activity records and promoting various analyses applied by various researchers in different fields. We invite applications from those who have interests in crustal activity records that should be made into open data, who have applicable analytical methods for them in different fields, and who can match both of them from broad perspectives. **List of affiliations for projected participants:** Hokkaido Univ., Hirosaki Univ., Tohoku Univ., Toyama Univ., Univ. of Tokyo, Tokyo City Univ., Nagoya Univ., Kyoto Univ., Kyushu Univ., Kochi Univ., Kagoshima Univ., Meteorological Research Institute, National Research Institute for Earth Science and Disaster Resilience, National Institute of Advanced Industrial Science and Technology, Hot Spring R.I., and Mt. Fuji R.I.
2022-B-02 Accelerating International Research on Earthquake Disasters	○Hiroe Miyake (Earthquake Research Institute) ・Hiroe Miyake	To improve the accuracy of converting earthquake hazard assessment into earthquake disaster risk calculation, we develop earthquake risk assessment indices in collaboration with science and engineering in national and international research fields. **List of affiliations for projected participants:** e.g., Hokkaido University, The University of Tokyo, Kyoto University, Hiroshima University, Kochi University, Kyushu University, Building Research Institute
2022-B-03 Geodynamics and Evolution of plume related magmatism: Case of the Cameroon Volcanic Line and the East African Rift System	○Takeshi Hasegawa (Ibaraki University) ・Mie Ichihara	This study investigates the thermal structure of the mantle plumes and related magmatism beneath the African Plate including the Cameroon Volcanic Line and East African Rift System based on geology, geochemistry, petrology, chronology and geophysics. We plan to carry out geological surveys and sampling of the volcanic products, laboratory analyses of the samples, and monitoring of active volcanoes, such as Mt. Cameroon and Mt. Nyiragongo. The final goal is to establish a comprehensive model of temporal evolution and geodynamics of the plume and related magma systems by combining these multidisciplinary data. **List of affiliations for projected participants:** The university of Tokyo, Ibaraki University, Tokyo Institute of Technology, Tokai University, The University of Buea and the Institute for Geological & Mining Research (Cameroon)

Project code Project title	○ Principle investigator/ ★ Early-Career Scientist ・ Contact Person at ERI	Details of the project and condition to participate in the project
2022-B-04 New development in solid-earth dynamics study based on advanced gravimetry	★Takahito Kazama (Kyoto University) ・Yuichi Imanishi	Gravity measurement is one of the most effective methods to understand spatiotemporal mass variations associated with earthquakes and volcanic activities. However, the seismic/volcanic gravity signals are typically smaller than 10 microGal. In order to detect such small gravity signals, technologies in absolute/relative/superconducting gravimetry should be progressed, and environmental disturbances such as hydrological gravity change need to be corrected from acquired gravity time series accurately. This research project aims to reveal spatiotemporal mass variations associated with solid-earth dynamics such as earthquakes and volcanic activities, using high-quality gravity data obtained with advanced gravimetric techniques and data analyses. In this project, four-dimensional gravity data is obtained at seismic and volcanic areas by various time-spatial scales of gravity measurements. Gravity disturbances such as hydrological effect are then corrected from the obtained gravity data, using physical models and machine learning algorithms. Seismic/volcanic gravity signals are finally extracted from the original gravity data, and physical mechanisms of the gravity changes are discussed in terms of mass redistribution. In addition, this project will address some gravimetric issues related to instrumental error for relative gravimeters and future construction of gravity database. This research project invites nationwide researchers and graduated students in gravimetry, and also welcomes researchers in geodesy and solid-earth geophysics. **List of affiliations for projected participants:** Hokkaido Univ.; Tohoku Univ.; Tsukuba Univ.; The Univ. of Tokyo; Toyama Univ.; Kanazawa Univ.; Nagoya Univ.; Kyoto Univ.; Kobe Univ.; Kochi Univ.; Kyushu Univ.; Kagoshima Univ.; National Astronomical Observatory of Japan; National Institute of Polar Research; Geospatial Information Authority of Japan; Meteorological Research Institute; National Research Institute for Earth Science and Disaster Resilience; National Institute of Advanced Industrial Science and Technology; National Institute of Information and Communications Technology; Institute of Physical and Chemical Research; Japan Agency for Marine-Earth Science and Technology; Tono Research Institute of Earthquake Science; Hokkaido Research Organization; Hot Springs Research Institute of Kanagawa Prefecture; Mount Fuji Research Institute, Yamanashi Prefectural Government
2022-B-05 Research on Seismicity and Plate Structure by the Metropolitan Seismic Observation Network (MeSO-net)	○Hisanori Kimura (National Research Institute for Earth Science and Disaster Resilience) ・Shinichi Sakai	Metropolitan Seismic Observation Network (MeSO-net) is a dense, widely distributed seismograph network, which is unique in the world. This project aims to advance understanding of the seismotectonics beneath the metropolitan area, refine the assessment of the seismic hazards that have been elucidated so far, and contribute to the detailed evaluation of damages at cities caused by disastrous earthquakes. To that end, we will conduct joint research using secondary data created from the MeSO-net by ERI. **List of affiliations for projected participants:** Hot Springs Research Institute of Kanagawa Prefecture,National Research Institute for Earth Science and Disaster Resilience

Project code Project title	○ Principle investigator/ ★ Early-Career Scientist ・ Contact Person at ERI	Details of the project and condition to participate in the project
2022-B-06 Study on solid-earth science by deep learning and data assimilation	★Yuto Miyatake (Osaka University) ・Shin-ichi Ito	Data assimilation combines numerical models and observations to obtain a better understanding or good prediction of physical phenomena. It has long been an essential tool in, for example, meteorology and oceanography. It is now attracting attention in solid-earth science, where the main applications include the estimation of frictional parameters on the plate interface, seismic wavefield, physical parameters inside volcanoes, and the prediction of fault slip, ground motions, and tsunami arrivals. The principal task of data assimilation is to numerically estimate the state variables and parameters of the underlying physical model, and it becomes challenging if the system of interest gets large. Further, there are significant difficulties specific to solid-earth science. For example, we have to deal with strong nonlinearity when considering earthquakes and volcanic eruptions, and we do not have a good governing equation like the Navier-Stokes equation in many cases. These difficulties are problematic from the computational viewpoint and restrict the applicability of data assimilation techniques in solid-earth science. In this project, focusing on new insights on the relationship between data assimilation and deep learning, and on a modern numerical analysis, researchers in solid-earth science and researchers in statistical science, meteorology and numerical analysis, who are familiar with algorithms on data assimilation, collaborate to establish a new statistical approach that overcomes the above difficulties by developing data assimilation and deep learning complementarily. For example, we consider using characteristic quantities extracted by using deep learning in the framework of data assimilation. We also discuss a unified theory that could embrace deep learning and data assimilation. Moreover, applying the developed methods to observations, we aim to understand further and predict seismic and volcanic phenomena. **List of affiliations for projected participants**: Earthquake Research Institute, Graduate School of Information Science and Technology, The University of Tokyo, The Institute of Statistical Mathematics, University of the Ryukyus, Kyoto University, Tohoku University, Hokkaido University, Osaka University, Prefectural University of Hiroshima, Japan Agency for Marine-Earth Science and Technology, the Institute of Physical and Chemical Research, Meteorological Research Institute
2022-B-07 Multi-disciplinary Usage of Full-text Data of Collections of Materials for the History of Japanese Earthquakes	★Junzo Ohmura (Earthquake Research Institute) ・Junzo Ohmura	Full-text database of materials on Japanese historical earthquakes such as Zotei Dai-nihon Jishin Shiryo and Shinshu Nihon Jishin Shiryo is launched. The database will provide new information on earthquakes and volcanic eruptions in history. Because the text data is quite large, recent technology such as geocoding and natural language processing should be adopted. We will develop new tools for extraction and analyses of historical natural disasters utilizing the idea of historical big data and historical GIS. Multi-disciplinary usage of the text data and collections can be achieved through investigations on meteorological disasters such as floods as well as earthquakes and eruptions. **List of affiliations for projected participants:** National Institute of Informatics, Joint Support-Center for Data Science Research, National Museum of Japanese History, Kyoto University, Tokushima University, The University of Tokyo, Kokugakuin University

Project code Project title	○ Principle investigator/ ★ Early-Career Scientist ・ Contact Person at ERI	Details of the project and condition to participate in the project
2022-B-08 Discussion about normalization and development of a basic system to understand the scale of regional disasters using infrasound and seismic observation networks	○Masa-yuki Yamamoto (Kochi University of Technology) ・Yuichi Imanishi	The purpose of this project is to develop a basic system by using remote observation to understand the scale of disasters, such as tsunamis, landslides, and avalanches, that occur at the national or regional level. By utilizing the scheme of this specific joint research adopted in the previous years, researchers from research institutes and universities that observe and study infrasound (sound below audible frequency or micro-atmospheric pressure waves) in Japan have gathered and have been making efforts to improve the domestic observation network, which has recently developed into the "Nation-wide Infrasound Observation Consortium." In addition, several research institutes and universities have been working with several manufacturers and agencies to develop low-cost small infrasound sensors using MEMS type pressure sensors and microphones, to make observation systems more reliable and robust, and to build real-time visualization systems for observed datasets and make some of the data available online to the public. Owing to full use of these works with using standard open datasets obtained from existing domestic seismic observation networks, we aim to remotely detect and understand the scale (energy) of occurred disaster events at national and regional levels. In order to quantify the energy, it is important to calibrate the sound pressure level in the infrasound band, however, one of the problems is that there are no measurement standards for this band because it is an intermediate area between acoustic waves and pressure measurements. Internationally, it is necessary to establish a standard for this band, and discussions are underway in several countries, but it is still an open research/development area. In this situation, we will take advantage of this joint research scheme, which brings together domestic infrasound researchers, and start activities to develop domestic measurement standards for the infrasound band in near future. **List of affiliations for projected participants:** Hokkaido Univ., Hokkaido Information Univ., NICT, Univ. of Tokyo (ERI), JWA, Kanazawa Univ., Nagoya Univ., Kyoto Sangyo Univ., Kochi Univ. of Tech., Kyushu Univ.

【Appendix C】 2022FY Specific Research Project (C) Titles

Project code Project title	○ Principle investigator ・ Contact Person at ERI	Details of the project and condition to participate in the project
-	-	There were no applications this year.

【Appendix D】2022 FY List of earthquake and other Earth Science Data and Records

Please also refer the our database page (http://www.eri.u-tokyo.ac.jp/en/publication/)

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Examples of the appropriate format for the indication in the acknowledgments are given below.

・This study was supported by ERI JURP 2022-D-01 in Earthquake Research Institute, the University of Tokyo.
・This study was funded by Earthquake Res. Inst., the University of Tokyo, Joint Research program 2022-D-01.

Joint Usage Code and Name of data/ records	Contact person (◯Responsible person)	Conditions of Use and Related URL	Application periods
2022-D-01 WWSSN Seismogram microfiche	◯Head of Committee for old seismograms and mareograms	Advance appointment required. Inquire about paper supplies. http://wwweic.eri.u-tokyo.ac.jp/wwssn/filmlist.html	Any time, as needed.
2022-D-02 Historical seismograms	◯Head of Committee for old seismograms and mareograms	Use microfiche archives. Original records can be used with ERI staff. http://wwweic.eri.u-tokyo.ac.jp/susu/ (Japanese version only)	Any time, as needed.
2022-D-03 Seismological Bulletin, Selected newspaper articles, Foreign seismological reports	◯Head of Committee for old seismograms and mareograms	Copies can be made in library. Bulletins: http://wwweic.eri.u-tokyo.ac.jp/record-J/index.html Foreign seismological reports: http://wwweic.eri.u-tokyo.ac.jp/record-W/index.html	Any time, as needed.
2022-D-04 Earthquake data of Center for Geophysical Observation and Instrumentation	◯Kazushige Obara	Data should be used under the treatment of earthquake data of Japanese universities.	–
2022-D-05 Nation-wide earthquake data transfer by satellite communication system and other facilities	◯Kazushige Obara	Application required under the treatment on earthquake data transfer by satellite communication system. http://eoc.eri.u-tokyo.ac.jp/eisei_system/riyou/data_jushin_riyou.htm (Japanese version only)	–
2022-D-06 Japan University Network Earthquake Catalog(JUNEC)	◯Head of Earthquake and Volcano Information Center	Hypocenter data can be accessed through anonymous ftp. ftp://ftp.eri.u-tokyo.ac.jp/pub/data/junec/ Arrival time data can be provided by CD, according to rule among the universities.	Any time, as needed.
2022-D-07 Seismic data of Asama, Izu-Oshima, Kirishima, and Fuji volcanoes	◯Head of Volcano Research Center	Must contact with the responsible person prior to the application.	Any time, as needed.
2022-D-08 Broadband Seismic Waveform Data	◯Head of Ocean Hemisphere Research Center	none. http://ohpdmc.eri.u-tokyo.ac.jp/dataset/permanent/seismological/index.html	Any time, as needed.

Joint Usage Code and Name of data/ records	Contact person (◯Responsible person)	Conditions of Use and Related URL	Application periods
2022-D-09 New J-array seismogram data	◯Head of Earthquake and Volcano Information Center	Can be used through website. http://jarray.eri.u-tokyo.ac.jp/	Any time, as needed.
2022-D-10 Earthquake data in Nikko region, Northern Kanto, Japan, in 1993	◯Kazushige Obara	Treatment of data usage by participants of the 1993 Nikko seismic observation.	–
2022-D-11 Strong motion observation database (mainly Suruga bay, Izu peninsula, and Ashigara valley)	◯Hiroe Miyake	https://smsd.eri.u-tokyo.ac.jp/smad/	Any time, as needed.
2022-D-12 Copies of old historical documents and interpretation	◯Yasuyuki Kano	No limitation. Copies and interpretation of a part of special database for historical materials of ERI library: http://wwweic.eri.u-tokyo.ac.jp/tokubetsu/ (In Japanese only)	Any time, as needed.
2022-D-13 Geoelectromagnetic Observation Database	◯Makoto Uyeshima, Yoshiya Usui	Must contact with the responsible person prior to the application.	Any time, as needed.
2022-D-14 Provisional data at Yatsugatake geo-electromagnetic observatory	◯Tsutomu Ogawa	Those who wish to use the data should contact the contact person at the ERI for arrangement and submit an application.	Any time, as needed.
2022-D-15 Heat flow dataset	◯Makoto Yamano	No limitation. Compilation of heat flow data in the northwest Pacific area, covering an area from 0 to 60°N and from 120 to 160°E, which includes the whole Philippine Sea, Japan Sea, and Sea of Okhotsk. It consists of station name, coordinates, altitude (or water depth), number of temperature measurements, maximum measurement depth, temperature gradient, number of thermal conductivity measurements, average thermal conductivity, heat flow, reference and year of publication. The heat flow values measured with submersibles or ROVs and those estimated from depths of gas hydrate BSRs (bottom simulating reflectors) are not included. The values less than or equal to zero are also excluded.	Any time, as needed.
2022-D-16 Aerial photographs of Japan	◯ERI Library	Number of holding sheets: 44,999 This collection is for research purposes only: active fault research, seismology, volcanology, tectonics, etc. Please have a request at the service counter of ERI library. https://www.eri.u-tokyo.ac.jp/tosho/collection-e.html	Any time, as needed.
2022-D-17 Digital images of tsunami waveforms	◯Head of Committee for old seismograms and mareograms	Apply through search system of digital images of tsunami waveforms. http://wwweic.eri.u-tokyo.ac.jp/tsunamidb/ (In Japanese only) Same condition to joint usage of ERI applies.	Any time, as needed.
2022-D-18 Superconducting Gravimeter Data	◯Yuichi Imanishi	Must contact with the responsible person prior to the application.	Any time, as needed.

Joint Usage Code and Name of data/ records	Contact person (◯Responsible person)	Conditions of Use and Related URL	Application periods
2022-D-19 Special Project for Earthquake Disaster Mitigation in the Tokyo Metropolitan Area Data(2008-2011)	◯Kazushige Obara	Must contact with the responsible person prior to the application. http://www.eri.u-tokyo.ac.jp/shuto/index.html (In Japanese only)	Any time, as needed.
2022-D-20 Special Project for Reducing Vulnerability for Urban Mega Earthquake Disasters Data(2012-2016)	◯Kazushige Obara	Must contact with the responsible person prior to the application. http://www.eri.u-tokyo.ac.jp/project/toshi/ (In Japanese only)	Any time, as needed.

【Appendix F】
2022 FY List of Facilities, Observation Equipment, and Laboratory Equipment

Please refer to Joint usage URL（http://www.eri.u-tokyo.ac.jp/en/joint-usage-top/）
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Examples of the appropriate format for the indication in the acknowledgments are given below.

・This study was supported by ERI JURP 2022-F1-01 in Earthquake Research Institute, the University of Tokyo.
・This study was funded by Earthquake Res. Inst., the University of Tokyo, Joint Research program 2022-F1-01.

（facilities）

Joint Usage Code and Name of facility/equipment	Information of facility	Contact person (〇Responsible person)	Conditions of Use and Remarks	Application periods
2022-F1-01 Tsukuba Seismological Observatory Aburatsubo Geophysical Observatory Nokogiriyama Geophysical Observatory Wakayama Seismological Observatory Hiroshima Seismological Observatory Dodaira Seismological Observatory Shin-etsu Seismological Observatory Fujigawa Geophysical Observatory Muroto Geophysical Observatory Observatories and facilities		〇Head of Center for Geophysical Observation and Instrumentation		—
2022-F1-02 Yatsugatake Geo-electromagnetic Observatory		〇Tsutomu Ogawa	Must contact with the responsible person prior to the application.	Any time, as needed.

Joint Usage Code and Name of facility/equipment	Information of facility	Contact person (○Responsible person)	Conditions of Use and Remarks	Application periods
2022-F1-03 Asama Volcano Observatory Komoro observatory of Seismology and Volcanology Izu-Oshima Volcano Observatory Kirishima Volcano Observatory		○Head of Center for Geophysical Observation and Instrumentation		—

(observation equipment)

Joint Usage Code and Name of facility/equipment	Information of Equipment	Contact person (○Responsible person)	Conditions of Use and Remarks	Application periods
2022-F2-01 Data receiver system by satellite communication for a nation-wide seismic telemetry network.	http://eoc.eri.u-tokyo.ac.jp/eisei_system/riyou/data_jushin_riyou.htm 1 system (In Japanese version only)	○Kazushige Obara	Must contact with the responsible person prior to the application. It is a rule that the users install it and maintain it by themselves. Another application about data use is needed.	Any time, as needed.
2022-F2-02 Temporal seismic data acquisition systems (incl. data transfer units, seismometers and recording units)	http://eoc.eri.u-tokyo.ac.jp/eisei_system/riyou/vsat_riyou.htm 1 system (In Japanese version only) http://eoc.eri.u-tokyo.ac.jp/eisei_system/riyou/chijo_souti.htm (In Japanese version only)	○Kazushige Obara	Must contact with the responsible person prior to the application. Not always available for period of specific research projects.	Any time, as needed.

Joint Usage Code and Name of facility/equipment	Information of Equipment	Contact person (○Responsible person)	Conditions of Use and Remarks	Application periods
2022-F2-04 Broadband-MT instruments	Metronix 1) Main unit: ADU07e 22 sets ADU08e 2 sets 2) Induction coils MFS06 24 coils MFS07 4 coils MFS06e 16 coils MFS07e 30 coils Phoenix 1) induction coils MTC50 3 coils Basically, 5 component data (2-component E-field and 3-component H-field) can be measured. Sample frequency is 2^n Hz up to 524 kHz.In addition, we have some other items necessary to the MT survey, such as, various batteries and electrodes.	○Makoto Uyeshima, Takao Koyama, Yoshiya Usui	Must contact with the responsible person prior to the application. Please recognize that we cannot let you use the instruments if we have some field campaigns.	Any time, as needed.
2022-F2-05 Network-MT voltage difference measurement system	SES93: 8 channel 20 bit voltage difference acquisition systems developed by ADOSYSTEMS. We have about 20 instruments. Sampling interval is 0.1, 1 or 10 s. 20 instruments SESNET93: Data transfer units.	○Makoto Uyeshima, Yoshiya Usui	Must contact with the responsible person prior to the application. Please recognize that we cannot let you use the instruments if we have some field campaigns.	Any time, as needed.
2022-F2-06※ Marine heat flow measurement system	The system consists of a data logger, probes, temperature sensors, weight, and an acoustic pinger. Heat flow is measured by penetrating a probe equipped with multiple temperature sensors into seafloor sediment. 1 set An instrument for thermal conductivity measurement on sediment samples (Quick Thermal Conductivity Meter, Kyoto Electronics Manufacturing Co., Ltd.) is also available. 1 unit	○Makoto Yamano	Users must have an experience in marine heat flow measurement, unless they conduct cooperative research with the Earthquake Research Institute.	Any time, as needed.

Joint Usage Code and Name of facility/equipment	Information of Equipment	Contact person (○Responsible person)	Conditions of Use and Remarks	Application periods
2022-F2-07 Portable broadband seismic observation system(1)	Broadband seismometers: 40 sets CMG3T,STS2 Recorders: REFTEK130	○Takeuchi Nozomu	Data have to become open in public at the data center of OHRC, ERI after 2-3 years of moratorium period. For the system availability, consult with the contact person.	Any time, as needed.
2022-F2-08※ Portable broadband seismic observation system (2)	Broadband seismometers 14 sets (Nanometrics Inc., Canada) Trillium 120PA Number of equipment: 14	○Jun Oikawa	Must contact with the responsible person prior to the application.	Any time, as needed.
2022-F2-09※ Absolute gravimeter	FG5 gravimeter with 1-2 microgal accuracy manufactured by microg-Lacoste corp., U.S.A. 2 sets	○Yuichi Imanishi	Must contact with the responsible person prior to the application.	Any time, as needed.
2022-F2-10※ Lacoste & Romberg Land gravimeter	Spring gravimeter with 10 microgal accuracy manufactured by microg-Lacoste corp., U.S.A. 2 sets	○Yuichi Imanishi	Operational instruction should be understood.	Any time, as needed.
2022-F2-11※ Potable strong motion observation system	Potable strong motion observation system(Revision of SMAR-6A3P) equipment with amplifier(16 JEP-6A3P sensors with 1V/G) (Akashi Corporation) 16 units equipment without amplifier (5 JEP-6A3P sensors with 10V/G) (Akashi Corporation) 5 units logger LS-7000XT (Hakusan Corporation) 10 units logger LS-7000 (Hakusan Corporation) 10 units ※A single set consists of an equipment and a logger. ※20 sets are available. ※Amplifier gain is a multiplication of 1, 20, 50, 100 and 0.1, 1, 10, 100.	○Hiroe Miyake	Must contact with the responsible person prior to the application.	Any time, as needed.
2022-F2-12 Volcanic gas observation system	Volcanic gas observation system 1 set	○Jun Oikawa	Must contact with the responsible person prior to the application.	Any time, as needed.

Joint Usage Code and Name of facility/equipment	Information of Equipment	Contact person (○Responsible person)	Conditions of Use and Remarks	Application periods
2022-F2-13 Ultra-long period MT instruments	Ukurine Systems with fluxgate sensors LEMI-417 6 sets 3 magnetic and 4 electric field components with 1 s sampling Tierra Technica systems with fluxgate sensors U43 12 sets U36MD 3 sets UY44 1 sets U43: 3 magnetic and 2 electric field components with 1s sampling U36MD: 3 magnetic and 2 electric field components with 1s sampling UY44: 3 magnetic field and 2 tilt components with 1s sampling	○Makoto Uyeshima, Hisayoshi Shimizu, Takao Koyama	Must contact with the responsible person prior to the application. Please recognize that we cannot let you use the instruments if we have some field campaigns.	Any time, as needed.
2022-F2-14 High accuracy gyro-compass system	A SOKIA's GP1X manual gyro-compass system. 1 system Measurement accuracy is 20 angle-seconds.	○Makoto Uyeshima, Hisayoshi Shimizu, Takao Koyama	Must contact with the responsible person prior to the application.	Any time, as needed.
2022-F2-15※ 3D deep-sea current profiler system	NORTEK Aquadopp - 6000m 1 system 1 system (http://www.nortek-as.com/en/products/CurrentMeter/Aquadopp6k) A current profiling system by combination of the Doppler current profiler (Aquadopp) and the Ti sphere transponder system of a self pop-up recovery, which enables 10 s interval observation of more than one-year-long by the external power supply. Use of the current profiler only is also available.	○Hajime Shiobara	Must contact with the responsible person prior to the application.	Any time, as needed.
2022-F2-16 High accuracy broad-band voltage difference measurement instruments	NT System Design's Elog1k. We can measure 2-component voltage differences at 1024Hz or 32 Hz with 24 bit accuracy. 17 sets Very low power consumption(1.8W).	○Makoto Uyeshima, Takao Koyama, Yoshiya Usui	Must contact with the responsible person prior to the application.	Any time, as needed.

(laboratory equipment)

Joint Usage Code and Name of facility/equipment	Information of Equipment	Contact person (○Responsible person)	Conditions of Use and Remarks	Application periods
2022-F3-01 Controlled Seismic source	Minivibrator T-15000 (IVI, Inc.) 1 unit	○Tatsuya Ishiyama	Users are required to have precise and detailed knowledges on how to use the controlled Seismic source.	Any time, as needed.
2022-F3-02 Computer system of Earthquake and Volcano Information Center	https://eic-support.eri.u-tokyo.ac.jp/index-e.html 1 system	○Head of Earthquake and Volcano Information Center	Limited to academic use and along with the purpose of ERI, according to the rule. Apply directly to ERI, if joint usage fund is not needed.	Any time, as needed.
2022-F3-03 Rock Fracture Apparatus with Data Acquisition System	http://www.eri.u-tokyo.ac.jp/gijyutsubu/jikken/ 1 system (In Japanese version only)	○Shingo Yoshida, Masao Nakatani	Must contact with the responsible person prior to the application.	Any time, as needed.
2022-F3-05 XRF spectrometer	RIGAKU Wavelength dispersive-X-ray fluorescence spectrometer ZSX Primus II 1 system	○Atsushi Yasuda	All users were requested to receive instruction beforehand upon contact to responsible persons. Consumables were users' pocket.	―
2022-F3-06※ Vibration testing system	EMIC Corp. Vibration testing system F-1400BD/LAS15 1 system Horizontal or vertical shaking table(1-axis)	○Akito Araya	Must contact with the responsible person prior to the application. Operate the equipment by yourself in principle.	Any time, as needed.
2022-F3-07※ Laser source equipment	NEOARK Corp. Frequency stabilized He-Ne laser 1 set Emission wavelength 633nm (red light)	○Akito Araya	Must contact with the responsible person prior to the application.	Any time, as needed.
2022-F3-08 National Seismogram Data System	National Seismogram Data System 8 system	○Head of Earthquake and Volcano Information Center	System to use national seismogram data, jointly operated with Japanese universities. Consult with corresponding faculty.	Any time, as needed.
2022-F3-09 Karl Fischer moisture titrator (Coulometric titration)	Kyoto Electronics Manufacturing Co., Ltd. Karl Fischer moisture titrator (Coulometric titration) ＜MKC-610＞ 1 set http://www.kyoto-kem.com/en/product-category/karl/ Evaporator for measurement of water in rocks ＜ADP-512＞ 1 set http://www.kyoto-kem.com/en/product-category/option-karl/	○Kenji Mibe	All users must be trained before operating the machine. It is requested that all applicants discuss their projects with contact person before submitting the proposal. The chemicals for measurements have to be purchased by users.	Any time, as needed.

Joint Usage Code and Name of facility/equipment	Information of Equipment	Contact person (○Responsible person)	Conditions of Use and Remarks	Application periods
2022-F3-10 Laser diffraction particle-size analyzer(wet dispersion condition)	Sympatec HELOS/KF-RODOS-QUIXEL System 1 system	○Fukashi Maeno	All users are required to receive instruction from contact persons and to adjust schedule.	Any time, as needed.
2022-F3-11※ Equipment set for thermometer calibration	Fluke 1586A, 9142, 7103 etc. Thermostatic bath(-30 degC to 150 degC), thermistor scanner, and so on 1 set	○Masao Nakatani	Must contact with the responsible person prior to the application. Operate the equipment by yourself in principle.	Any time, as needed
2022-F3-12 Large Continuous Seismic Data Analyzing System	It is the seismic waveform analysis system which stores nationwide seismic data. Users develop and execute their own codes for analyzing the data. The minimum tools are available. 1 system	○Shigeki Nakagawa	Must contact with the responsible person prior to the application. Also, all users were requested to finish the application for the Computer system of Earthquake and Volcano Information Center (2022-F3-02). Data should be used under the treatment of earthquake data of Japanese universities.	Any time, as needed

※Detailed information posted at Earthquake Research Institute, joint usage page.

【Appendix M】 2022 FY List of specific equipments

If you wish to use the specific equipment listed in this appendix for more than 2 months, please apply for the call for proposal for usage of specific equipments held in the previous year of the desired year. Applications for usage of less than 2 months are accept any time as needed.

On publishing papers based on the results of the researches performed by using facilities in the Earthquake Research Institute joint usage program, please acknowledge the program with joint usage code in the paper. Also, please provide a copy of the paper or report to Earthquake Research Institute, joint usage section.

Examples of the appropriate format for the indication in the acknowledgments are given below.

・This study was supported by ERI JURP 2022-M-01 and 2022-M-02 in Earthquake Research Institute, the University of Tokyo.
・This study was funded by Earthquake Res. Inst., the University of Tokyo, Joint Research program 2022-M-01 and 2022-M-02.

(Specific equipments)

Joint Usage Code and Name of equipment	Information of Equipment		Contact person (○Responsible person)	Conditions of Use and Remarks	Application periods
2022-M-01 Compact digital recorder	HKS-9700a-0505	30 sets	○Eiji Kurashimo, Kazushige Obara		Any time, as needed.
2022-M-02 Seismometer(1Hz, 3-components, Lennartz electronic GmbH)	LE-3Dlite MkII	30 sets	○Eiji Kurashimo, Kazushige Obara		Any time, as needed.
2022-M-03 Compact digital recorder(PELICAN)	LS-8800	49 sets	○Eiji Kurashimo, Kazushige Obara		Any time, as needed.
2022-M-04 Seismometer(1Hz, 3-components, Lennartz electronic GmbH)	LE-3Dlite MkIII	49 sets	○Eiji Kurashimo, Kazushige Obara		Any time, as needed.
2022-M-05 Compact digital recorder(Blue Box)	LS-8800	35 sets	○Eiji Kurashimo, Kazushige Obara		Any time, as needed.
2022-M-06 Seismometers(1Hz, 3-components, Lennartz electronic GmbH)	LE-3Dlite MkII	35 sets	○Eiji Kurashimo, Kazushige Obara		Any time, as needed.
2022-M-07 Single channel digital recorder	LS-8200SD	300 sets	○Eiji Kurashimo, Kazushige Obara		Any time, as needed.
2022-M-08 Seismometer(4.5Hz, UD-component)	SG820	300 sets	○Eiji Kurashimo, Kazushige Obara		Any time, as needed.

Joint Usage Code and Name of equipment	Information of Equipment			Contact person (○Responsible person)	Conditions of Use and Remarks	Application periods
2022-M-09 Geospace Seismic Recorder	GSX-3	50	sets	○Eiji Kurashimo, Kazushige Obara		Any time, as needed.
2022-M-10 Seismometer(4.5Hz, 3-components)	GS-11D ,3C	50	sets	○Eiji Kurashimo, Kazushige Obara		Any time, as needed.
2022-M-11 Large capacity storage recorder	DAT5/DAT5A	50	sets	○Eiji Kurashimo, Kazushige Obara		Any time, as needed.
2022-M-12 Seismometer(1Hz, 3-components, Lennartz electronic GmbH)	LE-3Dlite MkII	50	sets	○Eiji Kurashimo, Kazushige Obara		Any time, as needed.
2022-M-13 Nanometrics data recording units	Centaur digital recorder	6	sets	○Eiji Kurashimo, Kazushige Obara		Any time, as needed.
2022-M-14 Broad-band seismometer	Trillium-120PA	6	sets	○Eiji Kurashimo, Kazushige Obara		Any time, as needed.
2022-M-15 Broad-band seismometer	TS17840/Trillium-120QA	15	sets	○Eiji Kurashimo, Kazushige Obara		Any time, as needed.
2022-M-16 Networked digitizer and logger	LF-1100R/LF-2100R	9	sets	○Eiji Kurashimo, Kazushige Obara		Any time, as needed.