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Japan Science and Technology Agency

JST to fund five research projects for "Human-Centered Data for Resilience Research in line with related items of the SDGs and the Sendai Framework for Disaster Risk Reduction" jointly with the National Science Foundation (NSF) of the United States

The Japan Science and Technology Agency (JST) has decided to fund five research projects under the theme of "Human-Centered Data for Resilience Research in line with related items of the SDGs and the Sendai Framework for Disaster Risk Reduction" jointly with the National Science Foundation (NSF) under the Japan-US International Science and Technology Infrastructure Development Project. [1]

A total of 7 applications were received, and they were evaluated by a selection committee. Based on this evaluation, a total of 5 research projects were selected for funding based on their scientific merit and promise for the Japan-US collaboration. Research projects should be completed by March 2023.

[1] The Japan-US International Science and Technology Infrastructure Development Project is based on a Memorandum of Cooperation signed in October 2018 between JST and NSF following talks during a visit by the Minister of Education, Culture, Sports and Technology of Japan to NSF in April 2018. Based on the talks between the Minister and former Director Cordova of NSF, the initiative is meant to promote research exchange between Japan and the United States. Based on this initiative, a digital science call for proposals was launched in 2019, followed by a joint call for proposals for resilience research based on agreement between JST President Hamaguchi and NSF Director Panchanthan.
More information (in Japanese): https://www.jst.go.jp/inter/program/kiban/index.html

Appendices

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Contact

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List of Awarded Projects

#	Project Title	Principal Investigators	Position and Institution	Project Abstract
1	A follow-up test of the resilience measurement scale and knowledge creation through assessment tasks	ARIMOTO Masahiro (Japan)	Professor, Graduate School of Education, Tohoku University	This research project aims to rethink the Sendai Framework for Disaster Reduction from a pedagogical and psychological perspective to develop and implement a novel software-based disaster prevention educational curriculum. The Japanese team will draw on resilience research methodology used in the US, such as awareness surveys, narrative coding and media dependence analyses, to study disaster-affected populations, yielding data which will be analyzed by both the Japan and US teams. Based on the findings, the team will work together with stakeholders including local residents and students to develop an open participation curriculum for disaster prevention education.
		Kenneth Lachlan (United States)	Professor, Department of Communication, University of Connecticut	

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2	Land use strategy and redefinition of the landscape for urban hole emerged after coastal disasters	KONDO Tamiyo (Japan)	Associate Professor, Graduate School of Engineering, Kobe University	This collaborative research project explores effects of land use strategy and community-driven placemaking following the Great East Japan Earthquake tsunami and U.S. coastal disasters. This is done through showing how redefining landscapes through placemaking and resilient land use strategy can create new value in urban spaces which have been affected by disasters, or “urban holes.” These are pre-disaster residential area which have been transformed into hazardous zones through buyout programs which provide a site for understanding mitigation and recovery efforts. Through collaborative research, this research is expected to develop resilient land use recovery strategies, sustainable and livable landscape design solutions, and socially just adaptation process by a transdisciplinary team composed of researchers in housing and urban planning (Japan-side) and landscape architecture and sociology (U.S.-side).
		Michelle Meyer (United States)	Associate Professor, Department of Landscape Architecture and Urban Planning, Texas A&M University	

#	Project Title	Principal Investigators	Position and Institution	Project Abstract
3	Resilience-based governance framework and practical models to build back better even before: through systems approach with the focus on cascading disasters	TAKARA Kaoru (Japan)	Professor, Graduate School of Advanced Integrated Studies in Human Survivability, Kyoto University	Addressing the goal of “build back better” of the Sendai Framework for Disaster Risk Reduction, this project aims to identify operational gaps in enabling resilience to structure a resilience-based governance framework and practical models for building back better at the pre-disaster stage. This is achieved through collecting data with a focus on vulnerable groups, such as the elderly, the disabled and foreign populations through questionnaires and surveys to investigate pre-disaster recovery measures of local governments and communities affected by earthquakes and flooding (in Japan) and heavy snowfall and power outages (in the US). The data will be converged into a platform through which analysis and evaluation will be made by employing a systems approach. The results will include collaboration-based knowledge which enable the design of a resilience-based governance framework and practical models for local disaster prevention.
		Keri Stephens (United States)	Professor, Department of Communication, University of Texas at Austin	

#	Project Title	Principal Investigators	Position and Institution	Project Abstract
4	Development of a resilience evaluation method of localities through operational continuity of hospitals as indicators	NISHIKAWA Satoru (Japan)	Professor, Disaster Mitigation Research Center, Nagoya University	This project aims to take a systematic approach to investigate how hospitals depend on their local communities for external supplies and support, by collecting and analyzing data from disaster case studies in Japan and the US. As a part of this, attention will be given to factors such as critical human and physical resources, communications, risks of damage to buildings and facilities, as well as logistics to support the working and living environment of various health professionals. The Japan and US teams are comprised of experts in a variety of fields, including nursing, medicine, architecture, civil engineering, geography, psychology, and disaster reduction administration, in order to analyze and compare data between the two countries. By doing this, this project will develop a new evaluation tool for community resilience through the identification of enabling environments for hospitals.
		Maria Watson (United States)	Assistant Professor, M.E. Rinker, Sr., School of Construction Management and Shimberg Center for Housing Studies, University of Florida	

#	Project Title	Principal Investigators	Position and Institution	Project Abstract
5	Sequential decision analytics and its application to flood risk reduction and evacuation advisory optimization	Erick Mas (Japan)	Associate Professor, International Research Institute of Disaster Science, Tohoku University	To address the constantly changing risks of flooding brought about by heavy rains and typhoons in order to minimize the number of victims affected, this project uses a novel sequential decision analytics framework, combining stochastic programming and reinforcement learning drawing on mobile spatial statistical data and flood scenarios, to identify optimal timings for evacuation advisory and maximize the time for evacuation. The Japan-side team uses mobile statistical data and flooding scenarios to evaluate worse-case scenarios of population exposure and evacuation advisory within a reinforcement learning framework of evacuation simulation. On the other hand, the US-side team is tasked with taking the problem into stochastic programming approaches to discuss the advantages and limitations of research operational and machine learning methods. Finally, by drawing on the contributions of the two teams, a sequential decision analysis framework will be developed to identify optimal evacuation advisory timings under various population exposure and flooding conditions.
		Zhijie Dong (United States)	Assistant Professor, Ingram School of Engineering, Texas State University	

Call Outline

(1) Application Requirements

The Japan-based applicant must demonstrate the existence of an agreement with collaboration with a US-based researcher falling under either of the following two conditions:

i. The US-based researcher is already receiving support from NSF for the research concerned

ii. The US-based researcher has applied for NSF support and is expecting an award decision by the end of October 2021

(2) Partner Funding Agency

National Science Foundation (NSF), United States

(3) Research Period

The research period lasts from February 1, 2022 until March 31, 2023.

(4) Number of Awarded Projects

Five projects.

(5) Funding Awarded

Total amount (5 projects): 50 million yen

Total amount (per project): 10 million yen (for 14 months) (including 30% overhead costs)

(6) Evaluation Method

Proposals are screened and reviewed at an evaluation meeting by relevant experts.

(7) Evaluation Criteria

i. Suitability to the objective of the project and the target research area

- Relevance to Sendai Framework for Disaster Risk Education
- Potential for social impact
- Degree of collaboration with US-based researchers
- Use of human-centered data

ii. Eligibility of the principal investigator and current research activities

iii. Effectiveness and synergy of the research
iv. Validity of the research plan
v. Effectiveness and continuity of bilateral research exchange
vi. Validity of the bilateral exchange plan

List of Evaluators

Name	Position and Institution
ONO Yuichi	Professor, International Research Institute of Disaster Science, Tohoku University
ISHIKAWA Yoshitaka	Professor, Faculty of Economics, Teikyo University
EGAWA Shinichi	Professor, International Research Institute of Disaster Science, Tohoku University
ODA Takashi	Associate Professor, Disaster Risk Reduction Learning Institute for Educators, Miyagi University of Education
KOKETSU Kazuki	Project Professor, the Graduate School of Media and Governance, Keio University
KOMATSU Toshimitsu	Emeritus Professor, Kyushu University
TAKAMATSU Hiroyuki	Director of Land Infrastructure Division, Pacific Consultants
TAKEUCHI Kuniyoshi	Professor Emeritus, Yamanashi University
TAKEMURA Haruo	Professor, Cybermedia Center, Osaka University
TAMURA Keiko	Professor, Risk Management Office, Niigata University
NARA Yumiko	Professor, Faculty of Liberal Arts, The Open University of Japan
HASHIMOTO Manabu	Professor, Disaster Prevention Research Institute, Kyoto University
HIRUMA Yoshiki	Vice President, Development Bank of Japan Inc.
FUJITA Masayuki	Professor, Department of Information Physics & Computing, The University of Tokyo
FUTAGAMI Toru	Associate Professor, Center for Disaster Management Informatics Research, Ehime University
HORI Tomoharu	Professor, Disaster Prevention Research Institute, Kyoto University
MAKI Norio	Professor, Disaster Prevention Research Institute, Kyoto University
MAKINO Mitsutaku	Professor, Atmosphere and Ocean Research Institute, The University of Tokyo
MIZUNO Hideaki	Associate Professor, Faculty of Agriculture, Kyushu University
MUROSAKI Yoshiteru	Professor, Graduate School of Disaster Resilience and Governance, The University of Hyogo