ANNUAL REPORT 2023



GLOBAL ALLIANCE OF DISASTER RESEARCH INSTITUTES

Global Alliance of Disaster

The 2011 Global Summit paved the way to start the Global Summit series of GADRI.

In November 2011, the Disaster Prevention Research Institute (DPRI), Kyoto University held the First Global Summit of Research Institutes for Disaster Risk Reduction which was held at DPRI, Kyoto University, Uji Campus, Kyoto, Japan in November 2011. At the conference, it was the proposed to establish a network of disaster research institutes to be fostered by DPRI. Kyoto University to bring together research institutes working on disaster risk prevention and mitigation in various disciplines.

GADRI Secretariat is hosted by: Disaster Prevention Research Institute (DPRI)

Research Institutes (GADRI

The Global Alliance of Disaster Besearch Institutes (GADRI) was established in March 2015 with a mandate to support the implementation of the Sendral Framework

for Disaster Risk Reduction 2015-2030 during Second Global Summit held at DPRI, Kyoto University, Uji Campus, Kyoto, Japan which was held soon after the UN World Conference on Disaster Risk Reduction (WCDRR, 2015) which took place in Sendai, Japan

Currently, GADRI members work in close partnership with the initiatives of UNDRR. GADRI works closely with the science and technology community collaborating in science-based research and technology, endorsing policies related to disaster new reduction, and disseminating and sharing cutting-edge knowledge and information supported by evidence-based research among research institutions. International organizations and the private sector in various nation states. GADRI community continue to evolve and strengthen research activities towards disaster risk reduction and management and find implementable solutions to achieve disaster resilience in the world.

Kyoto University, Uji Campus, Kyoto, Japan

We thank for the support received by all members and appreciate with gratitude their inputs to the GADRI Annual Report 2023.

GADRI Secretariat

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GADRI Annual Report 2023



Dear Member of GADRI,

Greetings!

We hope you are doing well.

We are pleased to bring to you the GADRI Annual Report 2023.

We sincerely thank all our members who sent information on their respective institute's activities to complete the report. Over 50 member institutes shared information.

GADRI Secretariat kept busy during 2023 too.

- 6th Global Summit of GADRI: Towards GADRI Objectives of Achieving a Sustainable Disaster-Resilient World was held at the Disaster Prevention Research Institute (DPRI), Kyoto University, Uji Campus, Japan from 15 to 17 March 2023.
- Side event on Sendai Midterm Review-MTF-SF Viewpoints and Discussion for the Next Seven Years of the Sendai Framework was held on 14 March 2023 at DPRI, Kyoto University.
- A pre-conference survey was conducted among GADRI members to collect their institute contributions to the four priority areas of the SFDRR.
 - Outcomes and Recommendations from the above-mentioned events were submitted by the Board of Directors of GADRI to the UNDRR for the Midterm Review meeting held in New York in May 2023. Click here to review the full report.
- 4. <u>Resolution_6th_Global_Summit_March</u> 2023.pdf (gadri.net)
- The Board of Directors of GADRI met four times this year. The Board continue to take of stock of GADRI activities and provide

Message from the

Secretary-General, GADRI

guidance and recommendations, in particular, for Committees of GADRI.

- GADRI Secretariat successfully concluded the nominations and voting process to elect new members to fill the upcoming vacancies in the Board of Directors of GADRI.
- The five Committees of GADRI are moving forward. - https://gadri.net/resources/ committee-of-gadri/
- Plans are underway to collect papers for the Proceedings of the 6th Global Summit of GADRI.
- Plans are underway to organize the 7th Global Summit of GADRI at the Colorado State University, USA during the week of 17th March 2025.
- 10. GADRI Lecture Series were revived and six lectures were held at the DPRI, Kyoto University, Uji Campus. <u>https://gadri.net/</u> <u>resources/gadri-lectures-series/</u>
- 11. GADRI Actions the newsletter of GADRI was published during the Summer and Winter 2023. <u>https://gadri.net/resources/</u> <u>publications/</u>
- 12. GADRI was represented at many international conferences and symposia..
- 13. GADRI Regional Alliances continue to support GADRI and promote its objectives.
- 14. GADRI Secretariat received nearly ten membership applications.

Do visit our website to find more about the above-mentioned activities.

Once again, thank you for your continued support and contributions to GADRI. We could not have achieved the successes of GADRI without your help.

Hinkazu Jatano

Hirokazu Tatano Secretary-General, GADRI; and DPRI, Kyoto University, Japan

GADRI Vision

To deepen the understanding of disasters and find implementable solutions to achieve disaster resilience, by integrating knowledge and technologies from around the world.

GADRI Objectives

- To support the implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030
- To establish a global research network that promotes and engages disaster research.
- To provide a research roadmap, with plans that help facilitate the organization of disaster research groups.
- To promote capacity building and development of disaster research institutes and enhances researcher and student exchange.
- To promote exchange and sharing of data and information for scientific research across the globe.
- To serve as an advocacy organization presenting evidence-based approaches that influence decision-making processes.

GADRI Activities

- Planning and organization of regionally or globally collaborative disaster risk research initiatives
- Formation of international research groups to investigate current global disasters, and implement new research methodologies for disaster risk reduction and implementation
- Establishment of an international network for timely communication related to research on disasters
- Organization of conferences, workshops and meetings
- Dissemination and sharing of information, publications, reports, data and other research outputs
 - Facilitation of rapid reconnaissance field surveys following disasters
- Preparation of GADRI news releases, policy recommendations, news bulletins, research reports, and other publications.

Disaster and **Risk Research:** GADRI **Book Series**



Springer

Disaster and Risk Research: GADRI Book Series is published under the auspices of the Global Alliance of Disaster Research Institutes (GADRI). The global status of disaster research reflects the major strides made in the disaster sciences. These volumes present the forefront of disaster research. including key scientific findings, methodologies, policy recommendations and case studies. Whilst disaster risk needs to be managed in an integrated manner, persistently isolated applications of knowledge, practice and policy are falling short of ensuring disaster-resilient societies.

Responding to this deficit calls for measurement, tools, techniques and institutional structures that can realistically support comprehensive risk assessment and management across multiple hazard landscape. As such, disaster research is now faced with a multi-disciplinary, multistakeholder challenge. Contributions to this series therefore address many varied and critical opportunities to advance the subject area. A cross-cutting vision shared across the Disaster and Risk Research volumes is to improve the future of scientific and technological guidance with clearly identifiable roadmaps to ensure human safety and security.

https://www.springer.com/series/16177

Disaster and Risk Research: GADRI Book Series



Ecosystem-Based Disaster and Climate Resilience Integration of Blue-Green Infrastructure in Sustainable Development GADRI 🖄 Springer Disaster and Risk Research: GADRI Book Series Hirokazu Tatano Andrew Collins Editors

Proceedings of the 4th Global Summit of Research Institutes for Disaster Risk Reduction

Increasing the Effectiveness and Relevance of Our Institutes

GADRI

Deringer

GADRI strives to work in close partnership with the UNDRR

GADRI has contributed to the Science and Technology Advisory Group (STAG); and the Expert Group on the Global Risk Assessment Framework (GRAF). The Global Alliance of Disaster Research Institutes (GADRI), established during the same year as the Sendai Framework for Disaster Risk Reduction was adopted in 2015, aims at stock taking of progress and achievements in DRR research from its members towards the targets of the Science and Technology Roadmap to implement the goals and priorities of the Sendai Framework

During the Global Summits of GADRI, members of GADRI are requested to report on their institute progress through a survey, voluntary progress reports and through the conference discussion sessions.

At the end of each conference, the Board of Directors of GADRI will share the recommendations and achievements from the survey and the discussion sessions with the UNDRR Office.

Soon after the 6th Global Summit of GADRI and Side Event organized to Sendai Midterm Review – MTR-SF - Viewpoints and Discussion for the Next Seven Years, were submitted to the Sendai Mid-term Review Meeting held in New York in May 2023.



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6th Global Summit of GADRI Engaging Sciences with Action DPRI, Kyoto University, Japan 15 to 17 March 2023



6th Global Summit of GADRI Towards GADRI Objectives of Achieving a Sustainable Disaster-Resilient World Disaster Prevention Research Institutes (DPRI), Kyoto University, Uji Campus, Kyoto, Japan • 15-17 March 2023



The 6th Global Summit of GADRI: Towards GADRI Objectives of Achieving a Sustainable Disaster-Resilient World was held at the Disaster Prevention Research Institute (DPRI), Kyoto University, Uji Campus, Kyoto, Japan from 15 to 17 March 2023.

The Opening Ceremony was decorated by the distinguished guested invited from the Kyoto University, UNDRR, Uji City Office, and DPRI. Namely, Prof. Nagahiro Minato, President, Kyoto University;

Ms. Mami Mizutori, SRSG, UNDRR; Ms. Atsuko Nakamura, Mayor, Uji City Office; and Prof. Eiichi Nakakita, Director, DPRI.

Five Committees were created by the Board of Directors of GADRI to carry out the implementation of the five broad objectives of GADRI. Through the 6th Global Summit of GADRI, it was envisaged to align these objectives towards the following three area to achieve a sustainable and resilient society against hazards and prevent disasters.

 Disaster risk should not be treated in isolation but should be integrated with health risks, climate change, and environmental risks;

- DRR objectives and vision should be integrated with sustainable development goals to foster a resilient world;
- Short-term DRR objectives need to be integrated with a long-term vision and plans for a resilient society.























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Plenary Sessions introduced an expert array of keynote speakers from various fields and specializations. Plenary Session One noted the current disasters, especially the recent Türkiye devastating earthquakes and, to find ways to integrate disaster risks preventions to present and future disasters. The session was chaired by Prof. Rajib Shaw and Prof. Virginia Murray.

- The state of Disaster Risk Reduction and the Transformations Needed to Ttake the World from Risk to Resilience, Mami Mizutori, UNDRR, Switzerland
- What Happened on 6 February 2023 Earthquakes in Türkiye, Mustafa Erdik, Emeritus Professor, Dept. Earthquake Engineering, Kandilli Observatory and Earthquake Research Institute, Boğaziçi Üniversitesi, Türkiye
- Climate Science for Action, Masahide Kimoto, President, National Institute for Environmental Studies (NIES); and Professor Emeritus, The University of Tokyo, Japan
- The Potential for Recovery to Support Transformative Improvement in Disaster Risk Reduction, Paul Kovacs, Chair, Board of Directors of GADRI; and Executive Director, Institute for Catastrophic Loss Reduction (ICLR), Western University, Canada.

Plenary Session Two focussed on visions to mitigate climate change and increase resilience through DRR objectives with SDGs. The Session was chaired by Prof. Yuichi Ono, IRIDeS, Tohoku University, Japan; and Dr. Tom De Groeve, Activing Head, European Commission, Joint Research Centre (EC-JRC), Italy.

 The Climate Crisis is a Health Crisis - Climate Change and Public Health - links to the Sendai Framework, the Paris Agreement and the SDGs, Virginia Murray, Head, Global Disaster Risk Reduction, UK Health Security Agency, UK

- Digital Twinning of Communities for Disaster Risk Reduction: Climate Adaptive Solutions, John van de Lindt, Harold H. Short Endowed Chair Professor, Co-Director, Center for Risk-Based Community Resilience Planning, Colorado State University, USA
- Addressing Climate Change and Disaster Risks in the Context of Sustainable Development in Southern Africa, Chipo Mudavanhu, Vice-President, AADRI; and Senior Lecturer, Bindura University of Science Education, Zimbabwe

Plenary Session Three was on Systemic Risks and Emerging Future Challenges.

Part One of the session was chaired by Prof. Charles Scawthorn, Emeritus Professor, University of California, Berkeley, USA; and Ms. Ritsuko Yamazaki-Honda, NIED, Tsukuba

 Online - Risk Communication and Governance in a Post-Truth Environment, Ortwin Renn, Retired Scientific Director, International Advanced Science Studies (IASS), Germany

Part Two of the Plenary Session Three was chaired by Prof. Wei-Sen Li, NCRD, Chinese Taipei; and Prof. Gretchen Kalonji, IMDR, Sichuan University, China.

- Anticipation, Integration and Impact Three Elements for Tackling Future Risks, Tom De Groeve, European Commission, Joint Research Centre (EC-JRC), Italy
- Disaster Science: Updating Theory to Guide Disaster Risk Reduction in the Future, David Alexander, Professor, Institute for Risk and Disaster Reduction (IRDR), University College London, UK



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To facilitate discussions, following group discussion sessions were organized;

• Committee on Networking - Fostering Networking to Enhance Global DRR

Chaired by Prof. Charles Scawthorn, Emeritus Professor, University of California, Berkeley, USA; and Co-chaired by Ms. Ritsuko Yamazaki-Honda, NIED, Tsukuba, Japan. Supported by Prof. Kenji Tanaka and Prof. Tetsuya Sumi, DPRI, Kyoto University, Japan.

Panelist were: Prof. Rajib Shaw, Dr. Ronan Sato, Energy and Environment Investment, Tokyo, Japan; Prof. Jean-Paul Pinelli, Florida Institute of Technology, USA; Prof. Hiroyuki Goto, DPRI, Kyoto University, Japan

• Committee on S&T Roadmap

Chaired by Prof. Hirokazu Tatano with co-chairs Prof. Toshio Koike, and Prof. Selim Gunay. Supported by Dr. Yuki Matsushi, DPRI.

Panelists consisted of: Prof. Toshio Koike, ICHARM, Japan; Prof. Qunli Han, IRDR, China; Prof. Yuichi Ono, IRIDeS, Tohoku University, Japan; Prof. Mahua Mukherjee, IIT, Roorkee, India; Dr. Guirong Grace Yan, Missouri University of Science and Technology, USA; and Prof. Selim Gunay, PEER, USA

· Committee on Institutional Capacity Building

Chaired by Prof. Wei-Sen Li, Secretary General, NDRC, Chinese Taipei; and Co-chaired by Prof. Desmond Manatsa, AADRI, Bindura University of Science Education, Zimbabwe; and Prof. Gretchen Kalonji, IMDR, Sichuan University, China. Supported by Dr. Subhajyoti Samaddar, Prof. Tetsuya Takemi, and Prof. Kenji Kawaike, DPRI, Kyoto University, Japan. This session started with a keynote lecture by Prof. Reini Wirahadikusumah, Rector, Insitute of Technology Bandung (ITB), Indonesia (online)

Other panellists were: Mr. Bill Ho (online); Prof. Ailsa Holloway (online), Stellenbosch University, South Africa; Prof. G. Mukwada (online), Free State University, South Africa; and Prof. Dimiter Velev (online), University of National and World Economy, Bulgaria.

• Committee on Data and Information Sharing

Chaired by Prof. Andrew Collins, DDN, Northumbria University, UK; and Dr. Tom De Groeve, EC-JRC, Italy; and Co-chaired by Prof. Philipp Ulbrich, University Glasgow, UK; and Prof. Hiroyuki Goto, DPRI, Kyoto University, Japan

Panellists were: Prof. Norio Maki, DPRI, Kyoto University, Japan; Prof. Jean-Paul Pinelli, Dr. Rebecca Richardson, Northumbria University, UK and Prof. Hiroyuki Goto.

 Committee on Advocacy—Science Technology and Innovation linked to Advocacy

Chaired by Prof. Rajib Shaw; and co-chaired by Prof. Irasema Alcantara-Ayala, Institute of Geography, UNAM, Mexico; and Prof. Paul Kovacs. Supported by Prof. Masamitsu Onishi, DPRI, Kyoto University, Japan.

Panellists: Ms. Antonia Loyzaga (video), DENR Philippines; Prof. Joy Pereira (video), UKM, Malaysia; Prof. Takeshi Komino, ADRRN, and CWS, Japan; and Prof. Sayaka Irie, Matsumoto University, Japan.





On Panel Discussion two on New Challenges for Action by GADRI, focussed on the following:

• Big Science for DRR: Large-scale Experiment

Chaired by Prof. Nobuhito Mori, and Co-chaired by Prof. Shinichi Matsushima, DPRI, Kyoto University, Japan

Panelists were Prof. Nelson Pulido, National Panelists were Prof. Nelson Pulido, National Research Institute for Earth Science and Disaster Resilience (NIED), Tsukuba, Japan; Prof. Kojiro Suzuki, Director, Dept. Coastal Hydraulic Engineering, National Institute of Maritime, Port and Aviation Technology, Port and Airport Research Institute, Japan; and Prof. Kentaro Tabata, National Research Institute for Earth Science and Disaster Resilience (NIED), Tsukuba, Japan

 Sustainable DRR: Integrating climate action, SDGs and Field DRR & Data (experience) Sharing - New Challenges for Actions by GADRI

Chaired by Prof. Tetsuya Takemi, DPRI, Kyoto University, Japan; and Co-chaired by Prof. John van de Lindt, Colorado State University, USA.

Panelists included: <u>Prof. Weiqiang Ma, ITP Chinese</u> <u>Academy of Science, China</u>; Prof. Fatima Akter, University of Dhaka, Bangladesh; Prof. Mahua Mukherjee, IIT, Roorkee, Indid; Dr. Novvria Sagita, DPRI, Kyoto University, Japan

 Gender and Inclusivity in DRR Policy and Practice

Chaired by Prof. Peter Sammonds, Institute for Risk and Disaster Reduction, University College London, UK; and Co-Chaired Prof. Ana Maria Cruz DPRI, Kyoto University, Japan; and Dr. Guirong Grace Yan, Missouri University of Science and Technology, USA. Panellists consisted of Prof. Punam Yadav, IRDR, University College London, UK; Prof. Miwako Kitamura, IRIDeS, Tohoku University, Japan; Prof. Shigeo Tatsuki, Doshisha University, Kyoto, Japan, and Prof. Ana Maria Cruz.

• Putting Health into Disaster Risk Reduction (DRR) and Recovery

Chaired by Prof. Virginia Murray, UKHSA, UK; and Co-chaired by Prof. Andrew Collins, DDN, Northumbria University, UK; and Dr. Ryoma Kayano, WHO Kobe Office. Supported by Dr. Genta Nakano, DPRI, Kyoto University.

Panellists were: Dr. Ryoma Kayano, Dr. Genta Nakano, and Prof. Virginia Murray

 Young Scientists Session on Youth and DRR; The Role of Youth and Young Professionals in data and knowledge sharing in disaster risk management

Chaired by Prof. Gretchen Kalonji, IRDR, Sichuan University, China; and Co-chaired by Prof. Wei-Sen Li, NCDR, Chinese Taipei. Supported by Dr. Huan Liu, DPRI, Kyoto University, Japan.

Panellists were: Dr. Mizan Bisri, Kobe University, Japan; Dr. Ryo Tsuchida, Kyoto University, Japan; Dr. Nuraini Rahma Hanifa (online), U-INSPIRE, Indonesia; and Dr. Ranit Chatterjee,RIKA, India; Dr. Maria Camila Suarez Pablo, UNGRD, Colombia; and Dr. Chipo Mudavanhu, AADRI, Bindura University of Science Education, Zimbabwe.



In addition, there was a regional session to showcase the activities of the regional alliances of GADRI. A chance of given, especially to young researchers and scientists to demonstrate through poster presentation session, their current and ongoing research projects. A Networking Session on Seeds and Needs was organized to share, exchange and collaborate information among institutions.

GADRI Questionnaire

A pre-conference GADRI survey collected data from all of its members to submit as a collective report to the UNDRR Sendai Mid-Term Review meeting in New York, USA in May 2023.

Wrap-up:

Concluding the summit, a final resolution was drafted collecting the outcomes and recommendation from the ten panel discussion session which was shared by Board of Directors of GADRI with the UNDRR meeting on the Mid-term Review of Sendai Framework to be held in New York, USA in May 2023.

The 6th Global Summit of GADRI was attended by nearly 200 participants from 30 economies.

Detailed descriptions, summaries of outcomes can be found in the newsletter, GADRI ACTIONS, Spring 2023 - <u>https://gadri.net/resources/publications/</u>. Complete reports and outcomes will be published in the Proceedings of the 6th Global Summit of GADRI to be published under the Disaster and Risk Research: GADRI Book Series, Springer. <u>https://www.springer.com/</u> <u>series/16177</u>

Closing Banquet

The final closing banquet was held at the Rihga Royal Hotel, Kyoto. Prof. Kyoko Inagaku, Vice-President, Kyoto University; and Mr. Kadokawa, Mayor, Kyoto City delivered congratulatory remarks.



Side Event on the Sendai Midterm Review – MTR-SF - Viewpoints and Discussion for the Next Seven Years 14 March 2023

A side event was organized to discuss a action plan and recommendations to be submitted to the Sendai Mid-Term Review meeting to be held in New York, USA in May 2023.



13:00	Registration	
13:15- 15:00	Greetings – Hirokazu Tatano , Secretary-General, GADRI; Professor, Disaster Prevention Research Institute (DPRI), Kyoto University, Japan	
	Results of the GADRI Survey—Genta Nakano, Assistant Professor, DPRI, Kyoto University, Japan	
	Yuki Matsuoka, Head, UNDRR Kobe Office, Japan	

	Presentations and Panel Discussion I: Learning the current situation/status of the MTR
	Chair: Chipo Mudavanhu, Senior Lecturer, Bindura University of Science Education, Zimbabwe; and John van de Lindt, Co-Director, Harold H. Short Endowed Chair Professor, Colorado State University, USA
	Transformative Steps to Shift the World onto a Sustainable and Resilient Path
	Toshio Koike , Executive Director, ICHARM, Japan – G-Science covering CC, Ocean and Health, Japan
	Science Technology and Innovation: Mid-term review from Asia Pacific Perspectives
	Rajib Shaw, Professor, Keio University, Japan – Asia Scientific and Technological Advisory Group (A-STAG), Japan
	Message from Health and Sendai Framework Mid Term Review
	Virginia Murray, Head, Global Disaster Risk Reduction, UK Health and Security Agency
	Managing the Changing Risk Landscape: IRDR Perspective Actions Toward an Inclusive, Safe, and Sustainable Development
	Qunli Han, Executive Director, Integrated Research on Disaster Risk (IRDR), China
	Message from Sendai to the Midterm review on the Sendai Framework for Disaster
	Risk Reduction
	Yuichi Ono, Director and Professor, IRIDeS, Tohoku University, Japan
15:00-15:15	Coffee Break
15.15 46.20	Presentations and Panel Discussion II: How can we/GADRI contribute to the remaining/next 7 years of the SF
	Chair: Tom De Groeve, Acting Head, DRM Unit, European Commission Joint Research Centre, Italy
	Engaging Systemic Risk in Under-Resourced and Highly Exposed Settings
	Andrew Collins, Leader, DDN, Northumbria University, UK
	Progress on the Implementation of the Sendai Framework: Challenges for the Science and Technology Community in the Americas and the Caribbean
	Irasema Alcantara-Ayala, Professor, UNAM, Mexico
	Introduction to Fostering Networking to Enhance Global DRR
	Charles Scawthorn , Professor Emeritus, University of California, Berkeley, USA
	Sendal Midterm Review – Next Step
	Paul Kovacs, Executive Director, Institute for Catastrophic Loss Reduction (ICLR), Western University, Canada
	Use of Multi-modal Data-based Methods for Increasing Resilience
	Selim Gunay, Visiting Scholar, PEER, USA (on behalf of Khalid Mosalam, Director and
	Wrap-up at a Closing
16:30-17:00	Charles Scawthorn—Short summary to be shared during the Summit (to be prepared in advance
	Hirokazu Tatano—Closing Remarks

3rd General Assembly of GADRI Campus Plaza Kyoto, Kyoto Station, Japan—15 March 2023

The 3rd General Assembly of GADRI was held at the Campus Plaza Kyoto, Kyoto, Japan on the last day of the 6th Global Summit of GADRI, 17 March 2023. Participation was limited to member institutes of GADRI. Nearly 40 members from 33 GADRI Member Institutes joined the 3rd General Assembly of GADRI held at the Campus Plaza Kyoto, Kyoto Station, Japan on 17 March 2023 from 16:00 to 17:00h.

The meeting was chaired by Prof. Paul Kovacs, Chair, Board of Directors of GADRI; and Prof. Hirokazu Tatano, Secretary-General, GADRI.



Courtesy Visit by the Croatian Centre for Earthquake Engineering, University of Zagreb



A delegation headed by Prof. Josip Atalic, Head of HCPI, Associate Professor in the Department of Engineering Mechanics of Faculty of Civil Engineering University of Zagreb and head of the new branch office **Croatian Centre for Earthquake Engineering**., paid a courtesy visit to the Disaster Prevention Research Institute (DPRI), and the Global Alliance of Disaster Research Institutes (GADRI) Secretariat, Uji Campus, Kyoto University on 13 September 2023.

The group was greeted by Prof. Ryosuke Uzuoka, Vice-Director, DPRI, Kyoto University, and Prof. Hirokazu Tatano, Secretary-General, GADRI; and Professor, DPRI, Kyoto University.

After presentations on DPRI and the Croatian Centre for Earthquake Engineering and the University of Zagreb, they were given a detailed tour of the DPRI research facilities— especially of the Centrifuge Lab and the Earthquake Simulation Lab.

The Centre for Earthquake Engineering and the University of Zagreb is currently processing an application for the membership of GADRI which is initiated by Prof. Atalic.



GADRI Lecture Series

GADRI Secretariat organizes the GADRI Lecture Series by utilizing theo oprotunities presented by the visiting professors who either visit the Disaster Prevention Research institute (DPRI), Kyoto University or the GADRI Secretariat.

Lectures are delivered by the visiting professors on a subject of their interest for one and a half hours followed by a question and answer session.

The lectures are opened to the DPRI faculty members and students.

In 2023, there were six such lectures organized by the GADRI Secretariat.



An Assessment of Economic Impact due to Disasters: The case of India

Dr. Subir Sen, Associate Professor, Department of Humanities and Social Sciences, Indian Institute of Technology Roorkee, Roorkee, India, delivered a lecture to the students and faculty of DPRI on 3 August 2023.



How Social Infrastructure Builds Resilience?

Prof. Daniel Aldrich, Department of Political Science and School of Public Policy and Urban Affairs, Director, Security and Resilience Studies Program, and Co-Director, Global Resilience Institute, Northeastern University, Boston, MA, USA, delivered a lecture to the students and faculty of DPRI on 3 August 2023.



How Social Infrastructure Builds Resilience?

Modelling Barriers and Enablers to Participatory Risk -Sensitive Urban Developments in Sri Lanka

Dr. Kaushal Keraminiyage, Associate Professor, Centre for Disaster Resilience, School of Science Engineering and Environment, University of Salford, UK was visiting the Kyoto University to lecture at the Intensive Courses offered by ILAS, Kyoto University Kyoto as a "Distinguished Visiting Professor". He took the opportunity to contribute a lecture to the GADRI Lecture Series as well. The lecture was delivered to DPRI students and faculty members on 12 September 2023.





Accelerating Earth Observation Services for Resilient Development - the Digital Earth Partnership

Dr. Caroline Gevaert, Assistant Professor, Faculty of Geo-Information Science and Earth Observation (ITC), University of Twente, Netherlands, delivered a lecture to the students and faculty of DPRI on 5 October 2023.



Recent Research Activities: An overview and Extended Q&A Dialogue

Prof. Charles Scawthorn delivered a lecture to the Disaster Prevention Research Institute (DPRI), Kyoto University faculty and students during his visit to DPRI on 22 November 2023.

PEER Overview & NLP Approach for Rapid Earthquake Reconnaissance

During his sabbatical stay at DPRI, Kyoto University, Prof. Khalid Mosalam, Director, Pacific Earthquake Engineering Research (PEER) Center, University of California, opportunity to deliver faculty and students on NLP Approach for Rapid Earthquake Reconnaissance on 1 December 2023.





Members of the GADRI Board of Directors

2020-2024

	Name	Term	Institute				
Europe and Africa							
1	Dr. Zita Sebesvari	1 April 2020 to 31 March 2024	United Nations University, Institute for Environment and Human Security (UNU-EHS), Bonn, Germany				
2	Prof. Peter Sammonds Prof. David Alexander	1 April 2020 to 31 March 2024	Institute for Risk and Disaster Reduction (IRDR), University College London, UK				
3	Dr. Kaushal Keraminiyage	1 April 2022 to 31 March 2026	Research Centre for Disaster Resilience, University of Salford, UK				
Asia and Oceania							
5	Prof. Gretchen Kalonji	1 April 2020 to 31 March 2024	IDMR, Sichuan University, Chengdu. China				
6	Prof. Toshio Koike	1 April 2020 to 31 March 2024	International Centre for Water Hazard and Risk Management (ICHARM) under the auspices of UNESCO, Tsukuba, Japan				
7	Prof. Yuichi Ono	1 April 2022 to 31 March 2026	International Research Institute of Disaster Science (IRIDeS), Tohoku University, Japan				
8	Mr. Bill Ho	1 April 2022 to 31 March 2026	Asian Disaster Preparedness Center (ADPC), Thailand				
America	as						
9	Prof. Paul Kovacs (Chair)	1 April 2018 to 31 March 20224	Institute for Catastrophic Loss Reduction, Western University, Canada				
10	Prof. John van de Lindt	1 April 2020 to 31 March 2024	Center for Risk-Based Community Resilience Planning, Colorado State University, USA				
11	Mr. Luis Carlos Barreto	1 April 2022 to 31 March 2026	Unidad Nacional para la Gestión del Riesgo de Desastres de Colombia-UNGRD, Colombia				
12	Prof. James Kendra	1 April 2022 to 31 March 2026	Disaster Research Center, University of Delaware, USA				
GADRI	GADRI Secretariat						
13	Prof. Hirokazu Tatano	Secretary-General	DPRI, Kyoto University, Kyoto, Japan				

Regional Alliance

1.	Prof. Desmond Manatsa	African Alliance of Disaster Research Institutes (AADRI), Bindura University of Science Education, Zimbabwe
1.	Prof. Andrew Collins Co-chair UKADR	UK Alliance of Disaster Research (UKADR), Disaster and Development Network (DDN), Northumbria University, UK
2.	Prof. Lori Peek	North American Alliance for Hazards and Disaster Research Institutes (NAAHDRI), Natural Hazards Center (NHC), University of Colorado, Boulder, USA
3.	Prof. Mahua Mukherjee	South Asian Alliance of Disaster Research Institutes (SAADRI), IIT, Roorkee, India
4.	Prof. Toshio Koike	Japan Science Council

New Members of GADRI

	TTT ERSITY	
	Humanitarial Enegineering Lab, RMIT University, Australia	Prof. Spyros Schismenos
اکادیمیة ربدان Rabdan Academy	Rabdan Academy, Abu Dhabi	Dr. Matthew Ellis Program Chair, BCM and IEM
	Planning and Development Research Foundation Inc. (PLANADES) , Philippines	Dr. Tabassam Raza, DBA, Ph.D., P.E. Executive Director
NOVA APERIO	National Crisisonomy Institute, Chungbuk National University, Korea	Prof. Jae Eun Lee, Director Dr. Junho Choi
	公立大学法人 神戸市看護大学 Disaste: Nursing and Global Nursing section of Fundamental Nursing, Kobe City College of Nursing , Japan	Prof. Sakiko Kanbara

Keeping in touch with members

Americas



Americas



Americas—Members

Argentina	Environment and Natural Resources Research Program (PIRNA), Instituto de Geografía "Romualdo Ardissone", Facultad de Filosofía y Letras, Universidad de Buenos Aires		
Brazil	Department of Civil Engineering, Centre for Technology and Natural Resources, Federal University of Campina Grande		
Brazil	Instituto de Pesuisas Hidraulicas (IPH), Universidade Federal do Rio Grande do Sul (UFRGS)		
Canada	The Institute for Catastrophic Loss Reduction (ICLR), Western University		
Chile	Centro Nacional de Investigacion par la Gestion de Desastres Naturales (CIGIDEN)		
Colombia	Department of Chemical Engineering, Universidad de los Andes		
Colombia	National Unit for Disaster Risk Management in Colombia (NGRD) (Unidad Nacional para la Gestión del Riesgo de Desastres de Colombia-UNGRD)		
Colombia	Seismological and Geophysical Observatory of the Southwest (Observatorio Sismológico y Geofísico del Suroccidente (OSSO)), Valle University (Universidad del Valle)		
Ecuador	Pacific International Center for Disaster Risk Reduction (PIC-DRR), Escuela Superior Politechnica del Litoral		
Mexico	Institute of Geography, National Autonomous University of Mexico (UNAM)		
Mexico	Structures Laboratory, University of Michoacan		
Mexico	Research Institute of Risk Management, University of Michoacan		
USA	Center for Emergency Management and Homeland Security, Arizona State University (ASU)		
USA	Pacific Earthquake Engineering Research Center (PEER), University of California, Berkeley		
USA	Resilient Communities Research Institute (RCRI), College of Architecture and Environmental Design, California Polytechnic State University		
USA	Natural Hazards Center (NHC), University of Colorado Boulder		
USA	Center for Risk-Based Community Resilience Planning, Colorado State University		
USA	Disaster Research Center, University of Delaware		
USA	Wind and Hurricane Impact Research Laboratory (WHIRL), Florida Institute of Technology (FIT)		
USA	Center for Wind Hazard and Infrastructure Performance, Texas Tech		
USA	Dept. of Business Information Technology, Virginia Tech		
USA	Program on Population Impact, Recovery and Resilience (PiR2), College of Global Public Health, New York University		
USA	Nevada Seismological Laboratory, University of Nevada		
USA	Global Resilience Institute, Northeastern University		
USA	Coastal Resilience Center (CRC), University of North Carolina at Chapel Hill (UNC)		
USA	Advanced Radar Research Center, University of Oklahoma		
USA	Center for Infrastructure, Transportation, and the Environment (CITE), Rensselaer Polytechnic Institute (RPI)		
USA	Department of Industrial and Systems Engineering, Rensselaer Polytechnic Institute (RPI)		
USA	Southern California Earthquake Center (SCEC)		
1164	Center for Risk and Economic Analysis of Terrorism Events (CREATE), University of Southern		
	Hazard Reous, n and Recovery Center (HRRC), Texas A&M University (TAMU)		
USA	Geologic Hazards Science Center, U.S. Geological Survey		
USA	Department of Environmental Studies, Resilience Institute, Western Washington University		



Federal University of Campina Grande (UFCG), Brazil

https://portal.ufcg.edu.br/

The Federal University of Campina (UFCG) Grande conducts studies, research and intervention on environmental disasters in a broad sense, spanning several areas. This is partly motivated by the institution's location in the semiarid region of Brazil, populated socially high and and economically vulnerable to environmental hazards, such as desertification. droughts, land degradation, flash floods. health vulnerability, leading to social inequality. Our present interests are on understanding local and regional needs and the social aspects of Disaster Risk Reduction (DRR).



😻 eduepb

Book 'The lesson of cistern' (https:// eduepb.uepb.edu.br/e-books/)



Among such activities, we highlight, in 2023, the ones related to the role of rainwater harvesting in DRR. Rainwater harvesting in this region of Brazil is an important alternative source of water supply for urban and rural human settlements. On the other side, in urban areas it has the additional role of storing rainfall volumes and, thus, reducing the magnitude and impacts of flash floods.

A major 20-year program on construction of rainwater harvesting systems in the rural semi-arid region, the One Million Cisterns Program (P1MC), was featured in the 2023 UN World Water Development Report. The Report theme is 'Partnerships and cooperation for water', and emphasizes the decentralized and participative character of P1MC, and the strong community involvement. P1MC has built over traditional experiences in rainwater harvesting in the region, to cope with recurrent droughts. Rainwater has been secularly used for human, livestock and agricultural supply. P1MC has scaled-up the implementation of such systems in regionally dispersed households and communities.

The vulnerability of P1MC systems under climate change was analyzed in a research project, simulating scenarios for 2050 and 2100. The results show a decrease of the capacity of the systems in supply water for the current demands. However, simple adaptation measures, such as increasing the rainfall catchment areas, can mitigate the adverse climate impacts.

> Prof. Carlos de Oliveira Galvao E-mail: carlos.galvao@ufcg.edu.br





Climate change impacts and adaptation measure simulation on rainwater harvesting systems in the Brazilian semi-arid region (https://doi.org/10.9771/gesta.v9i3.42910)

professor, containing several analyses by researchers Encyclopedia of Water Policy, Economics and from UFCG and other institutions, on the lessons from Management P1MC. This book provides multidisciplinary perspectives doi.org/10.4337/9781802202946.00055). of the program and points to improvements and new directions

Another ongoing cooperative initiative regarding rainwater harvesting has involved UFCG, the Research Group on Rainwater Harvesting of the Federal University of Pará, located in the Amazon region, and the School of Geographical Sciences of the University of Bristol (UK), on comparative analysis of such systems in the contrasting semi-arid and Amazon regions of Brazil. A first product of this effort

In 2023, a new book was edited by an emeritus UFCG is an entry on Rainwater Harvesting in the Elgar (https://

> For urban areas, another study simulated the effectiveness of rainwater harvesting for flash flood attenuation in dense precarious settlements. Among four sustainable urban drainage systems, it was the most suitable technique, since it can be integrated in private lots inside such denser settlements. Besides the potential to minimize stormwater runoff, it can increase water supply for indoor usage. Rainwater harvesting is particularly effective during extreme precipitation events of short duration.



Simulation of implementation of rainwater harvesting as sustainable urban drainage system (https://doi.org/10.1080/27678490.2021.2016024)



Instituto de Pesquisas Hidraulicas (IPH), Federal University of Rio Grande do Sul (UFRGS), Brazil

https://www.ufrgs.br/iph/



Field survey of the GPDEN/IPH/UFRGS in Muçum city, Taquari-Anta watershed, in September

The Technical Committee of Disasters (CTD) of Brazilian Association of Water Resources (ABRHidro) consists of some members of the Research Group on Natural Disasters (GPDEN) of IPH of Federal University of Rio Grande do Sul (UFRGS). This CTD held the III National Meeting of Disasters (in-person event) in Niterói city, Rio de Janeiro State, during the period March 6 to 9. At the event, one important book on disasters in Brazil was launched: Zanandrea, F. et al. (orgs.) (2023) Desastres e água: eventos históricos no Brasil. Porto Alegre: ABRHidro, 398p. (https:// www.abrhidro.org.br/SGCv3/publicacao.php?

PUB=5&LIVRO=257&TITULO=desastres_e_agua eventos_historicos_no_brasil)

Some of Master's and PhD students in the Graduate Program of Water Resources and Environmental Sanitation (PPGRHSA) of IPH of Federal University of Rio Grande do Sul (UFRGS) organized one commemorative and scientific seminar (hybrid mode) "IV Student Seminar on Water Sciences" on March 22nd (World Water Day). (https://www.ufrgs.br/sdca/?page id=968) Overviewing the first three versions (2020, 2021 and 2022), the event organizers published the event report paper: Vanelli, F.M. et al. (2023) Student Seminar on Water Sciences: Youth protagonism through university extension. Interfaces – Revista de Extensão da UFMG, v.11, n.2, p.136-149.

In June and July, some members (undergraduate course students) of GPDEN, together with the Geopark "Caminhos dos Canions do Sul" (<u>https://</u>canionsdosul.org/) registered by UNESCO in 2022, carried out one training course "Handmade rain gauge for Disaster Risk Reduction" (4 hours) at 6 different primary schools in two states (Rio Grande do Sul and Santa Catarina). This course was offered to pupils aged 10-15. It was a kind of university extension activity.



E-mail: masato.kobiyama@ufrgs.br

Prof. Masato Kobiyama

Rio Grande do Sul state, where the IPH is located, suffered from several natural hazards in 2023. Among them, the flood disaster occurred in Taguari-Anta watershed on September 4th and 5th was the most severe in the state, with more than 40 human deaths. This tragedy was also historically the most severe tragedy for local inhabitants within this watershed. Due the magnitude of the severity, the IPH expressed its opinion through its note (https:// www.ufrgs.br/iph/nota-sobre-a-cheia-na-bacia-dorio-taquari-antas-4-e-5-de-setembro-de-2023/) Furthermore, after field survey (https:// www.ufrgs.br/iph/gpden-iph-visita-locais-afetadospelo-desastre-hidrologico-ocorrido-em-setembro/), the GPDEN also expressed its opinion through its note (https://www.ufrgs.br/gpden/wordpress/wpcontent/uploads/2023/09/Nota-Tecnica-Taguari.pdf)

During the period October 18th to 20th, the GPDEN organized one in-person course "Reduction of hydrological disasters (flood, landslide and debris flow) with an emphasis on computational mapping" (20 hours) with 10 participants who were civil defense officers of Garopaba City Hall. This course addressed hydrogeomorphological modeling

(SHALSTAB, MORPHO2DH, HEC-RAS, and HAC-HMS) in order to computationally represent floods, mass movements and associated processes. The course had a half-day field trip to sevel places where mass movements and floods have recently occurred. The objective of this course was to teach techniques as well as to construct a network of disasters managers and researcher in Brazil

In order to align science and practice to improve the management of climate events, the Brazilian government, via the Public Calling CNPq/MCTI N° 15/2023, approved the project "Development of the Early Warning System for Landslides (*Desenvolvimento do Sistema de Alerta Antecipado para Deslizamentos* – SALAD) whose coordinator is Dr. Gean Paulo Michel, leader of the GPDEN. The project is on-going and consists in 6 universities, 2 research institutes and 1 management institute.



ABRHidro 45

Instituto de Desenvolv Sustentável Mamiraus Zanandrea, F. et al. (orgs.) (2023) "Desastres e água: eventos históricos no Brasil" (= Disasters and water: Historical events in Brazil, in English). Porto Alegre: ABRHidro, 398p



Centro de Investigación para la Gestión Integrada del Riesgo de Desastres (CIGIDEN), Chile

https://www.cigiden.cl/



Patrimony day:

Invited Outreach Talk from the geologist Francisca Roldán in the "Congreso del Futuro"

17 January 2023

Participation of Francisca Roldán, CIGIDEN researcher and coordinator of the Research Line "Solid Earth Processes and Associated Hazards" in the *"Congreso del Futuro"* addressing the relevance of scientific research, technological development and innovation for Disaster Risk Management.

More info.

Watch her presentation.

Participation in the "Paseo por la ciencia de Puerto de Ideas" in Antofagasta

20 April 2023

The art installation "Aluvión", developed by CIGIDEN Disaster and Art unit (DESARTES), aimed to raise awareness of flood risk in the Chimba basin was presented in this venue. Besides this artwork, a projection of a potential flood on a three-dimensional scale model of the basin was displayed in the event.

More info.

Integrated Coastal Zone Management for Chile International Seminar

3 May 2023

This event featured the participation of Dr Juan Manuel Barragán, an integrated coastal zone management international expert and scholar of the Universidad de Cadiz, who commented on his experience of Spain on integrated coastal zone management, and a roundtable regarding the role of the community in coastal governance. The CIGIDEN lead researcher, Carolina Martinez, held the seminar.

<u>More info.</u>

Watch the seminar.

Patrimony day

28 May 2023

Celebration of the patrimony national day in the historic facilities of the Hydrographic and Oceanographic Service of the Chilean Navy (SHOA by its initials in Spanish). The aim was to raise awareness of the tsunami risk and highlight the relevance of the National Tsunami Alarm System (SNAM by its initials in Spanish), ranked among the five most advanced and critical warning centers, according to the UN. During the day, two scaled models exhibition "¡Chile, territorio part of the en movimiento!" (Spanish for "Chile, territory in motion!") portraying the 2010 earthquake and floods in Constitución and what would happen in Valparaíso Bay with a 1730-like seismic event were presented. Additionally, the Tsunami lab platform was exhibited.

More info.



Dr. Rodrigo Cienfuegos Director E-mail: director@cigiden.cl

Design 4 Emergency 3rd roundtable: «Design After Disaster»

7 June 2023

The third roundtable was conducted by the UC Design School scholar and CIGIDEN researcher Rodrigo Ramirez, with Notre Dame University professor Clinton Carlson, around participative design in an emergency.

More info.

Closure of the FONDEF project "ASISTE: Análisis Sismo-Tsunami-Evacuación" (Spanish for *Assist: Analysis Earthquake-Tsunami-Evacuation*). Fondef IT2010054

27 June 2023

ASISTE is the Spanish acronym of the "Análisis Sismo-Tsunami-Evacuación" project. It is an earthquake and tsunami risk exposure visualization platform for Chilean coastal cities. The project addresses the challenges of strengthening prospective risk diagnosis and its incorporation in the decision-making for territorial plan instruments through risk studies, as well as having a stronger link between varied instruments requiring risk study.

More info.

Watch the seminar.

Disaster-flood reconnaissance team, 1st group of researchers

From 3 to 5 July 2023

Post-flood fieldwork in the Maule region during June. It was conducted by CIGIDEN director Rodrigo Cienfuegos, CIGIDEN lead researcher Manuel Tironi, and CIGIDEN PhD students Katherine Campos and Ivan Ojeda, among other professionals.

Watch the video

Disaster-flood reconnaissance team, 2nd group of researchers

From 12 to 16 July 2023

This was the second trip to the Maule region to conduct post -June floods fieldwork. It involved the participation of CIGIDEN researchers Carolina Martinez and Jorge Quense and the CIGIDEN professionals Simon Inzunza, Nikole Guerrero, and Malcolm Bonet, who gathered geographic data and interviewed Licantén's residents.

Watch the video

"Meeting of Experts on Tsunami Sources and Hazards in southern Peru and northern Chile"

25 August 2023

During four days, CIGIDEN researchers Patricio Catalán (USM), Juan González (UCN), and Rafael Aranguiz (UCSC) took part in the expert meeting organized by Universidad de Tarapacá, in collaboration with UNESCO



and the Intergovernmental Geographic Commission.

Read the note.

Seminar «Disaster risk reduction in Chilean informal settlements: Challenges and proposals with territorial, intercultural and gender perspectives» («Reducción de Riesgos de Desastres en Asentamientos Informales de Chile: Desafíos y propuestas con perspectiva territorial, intercultural y de género» in Spanish)

26 September 2023

This activity was organized by the Faculty of Architecture and Urbanism of the Universidad de Chile and TECHO Chile, where the CIGIDEN PhD student, Katherine Campos, presented the camps and disaster risk national report as a collaborator.

More info.

CIGIDEN post-disasters report after the floods of 2023 June 21-26 for the Mataquito, Maule, and Maipo river basins.

13 October 2023

The hydrometeorological event from June 21 to June 26 of 2023 affected the south-central area of Chile, causing floods in different cities. During this event, basins experienced a significant increase in surface runoff due to rainfall in pre-mountain range zones with high temperatures. To understand this disaster, CIGIDEN researchers focused on post-disaster data collection in the basins of the Maipo, Mataguito, and Maule rivers. With this information, two reports were delivered with an interdisciplinary approach to risk assessment and proposals for the government agencies.

Watch the video.

"Manual para una gestión de riesgos de desastres situada" (Spanish for "Situated disaster risk management manual")

18 October 2024

The presentation of the document addresses how to manage disaster risk with a participative approach based on the active engagement of communities' representatives, local and regional authorities, and other territorial agents with interest in the topic. This initiative belongs to the CIGIDEN research line «Disaster culture and risk governance».

More info.

Disaster Risk Management» («Hacia un modelo geosocial para la Gestión del Riesgo de Desastres» in Spanish)

19 October 2024

CIGIDEN researchers shared concrete experiences of inter and transdisciplinary research to strengthen a geosocial agenda in the Antofagasta region.

Watch the seminar.

International Seminar "From observation to impact: New technologies for data and image collection on disaster risk management" ("De la observación al impacto: Nuevas tecnologías de captura de datos e imágenes para la gestión del riesgo de desastres" in Spanish)

22 November 2024

This activity was organized by researcher Alejandra Gubler, as part of the project www.proyectochile3d.cl aimed to provide an open platform of LIDAR images for the scientific community and technical public institutions involved in disaster risk management.

More info.

II Conferencia Internacional Ciudades Resilientes desde el Sur Global 2023 (Spanish for Il International Conference Resilient cities from the Global South)

28. 29 and 30 November 2023

II International Conference Resilient Cities from the Global South was organized by the FONDAP research centers CIGIDEN and CEDEUS, with venues in Santiago, Valparaíso, and Concepción cities in succession with open access for the general public.

See the summary report.

Seminar «Extreme decentralization of sanitary («Descentralización systems» Extrema de los sistemas Sanitarios» in Spanish)

23 November 2023

This virtual seminar, held by CIGIDEN researcher Maria Molinos Senante, discussed the technical and economic viability of implementing decentralized systems for both drinking water and sewage treatment.

More info.

installation Immersive scenic **«Afectos** del Desastre» (Spanish for «Affections of the Disaster»)

23, 24, and 25 November 2023 in Valparaíso

30 November and 1, 2, and 3 December 2023 in Santiago

This immersive installation explores the affective dimension of the human experience facing socio-Regional seminar «Towards a geosocial model for environmental disasters associated with economic practices. The artwork combines a performance piece with a new media installation to vividly portray the experience of three disasters that occurred in Chile. This was put on by 'DESARTES' director Ignacio Gutierrez.

More info.

Know Desartes project here

Seminar «Lessons for Forest Fire Prevention and Recovery in Chile» («Lecciones para la Prevención y Recuperación ante Incendios Forestales en Chile» in Spanish)

13 December 2023

This seminar was co-organised by CIGIDEN, the UC Public Policy Centre and the UC Vice-rectorate of Research. There, CIGIDEN released the policy paper titled "After the emergency: keys to sustainable recovery in fire-affected areas at the wildland-urban interface" ("Después de la emergencia: claves para una recuperación sostenible en zonas afectadas por incendios en la interfaz urbano -forestal" in Spanish).



After the emergency: keys to sustainable recovery in fire-

affected areas at the wildland-urban interface" front cover:



Después de la emergencia: claves para una recuperación sostenible en zonas afectadas por incendios

bas Lein. Hegistera Vitarle Hegistera Gi. Canstinus Gozalez-Hetikoan

en la interfaz urbano-forestal

Seminario Regional Hacia un modelo geosocial para la Gestión del Riesgo de Desastres



Seminar «Towards a geosocial model for Disaster Risk Management»:

Sala K121C, Universidad Católica del Norte, Antofagasta.

> Universidad Andres Bello

Universidad Católica del Norte

CIGIDEN



Platform Assist: Analysis Earthquake-Tsunami-Evacuation:

Post-flood field trip, 1st group of researchers:







Institute of Geography, National Autonomous University of Mexico (UNAM), Mexico

GADRI Annual Report — Americas

https://www.geografia.unam.mx/geoigg/





The Institute of Geography at UNAM conducted numerous research projects and activities in 2023. The topics covered in these projects ranged from addressing global warming as a factor to consider in protecting cultural heritage to developing an app that guides what to do in case of earthquakes. The Institute also focused on strengthening volcano research from an integrated perspective and implementing a geographical agenda to guide institutional management action for the next two decades. Other efforts were made to reinforce preventive measures against possible mega-fires, to strengthen water management from a more conservative and safe approach, to see reconstruction processes as an opportunity to address and prevent disaster situations, and to value and implement longterm planning to face future emerging situations better.

UNAM's television channel broadcasted the series "Anthropocene in Mexico: Stories of Evolution, Biodiversity, and Climate Change." Additionally, researchers developed a new dynamic model that analyses the risk of floods from a multifactorial, multiscale, and multitemporal context with an efficiency of 89%. This model reduces costs and enables the creation of scenarios that cities could face in the present and future. The University published the collection "The COVID Decade in Mexico: The Challenges of the Pandemic from the Social Sciences and Humanities." The Geography Institute contributed to this collection by addressing urban poverty, which is one of the biggest problems in cities. The low-income population is the least resilient due to detrimental conditions associated with health, housing, tourism, population, and economic issues.

> Prof. Irasema Alcántara-Ayala E-mail: ialcantara@geografia.unam.mx




Landslide Research and Technology Volume 2 Issue 2, 2023

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In light of global climate problems such as fires, floods, and displacement of populations, experts from the Institute of Geography and other research centres from UNAM gathered at the International Conference "Urban Transformations: Towards Resilient Cities" to discuss whether cities need to be more resilient or must transform. Furthermore, several Diploma courses, such as the annual Diploma in Geomatics, were organised to strengthen the development of skills, competencies, and professional aptitudes aimed at deepening and acquiring new knowledge in management, analysis, and interpretation of spatial data through the use of methodologies and tools focused on the new fields of scientific and technological knowledge.

On October 24, 2023, Prof. Irasema Alcántara Ayala was awarded the "Benito Juárez" Medal by the Academy of Geography of the Mexican Society of Geography and Statistics during the opening ceremony of the XXV National Congress of Geography. This recognition was given to her for her exceptional contributions to the field geographical science. In of addition, on November 14. 2023, during the VI World Forum on Landslides in Florence, Italy, she was bestowed the Varnes Medal 2023 by the

International Landslide Consortium (ICL). This prestigious recognition is the highest honour awarded to academics who have demonstrated professional excellence in the field of landslide research. Prof. Alcántara was awarded this award for her exceptional work in risk reduction of landslide disasters.

Several research articles, book chapters and books related to disaster risk reduction were published. Among them is the book Disaster Risk, published by Routledge, London, and Progress in Landslide Research and Technology, Volume 2 Issue 1, and Volume 2 Issue 2, 2023, Springer Cham, Switzerland.





Natural Hazards Center University of Colorado, Boulder, USA <u>https://hazards.colorado.edu/</u> https://converge.colorado.edu/



The Natural Hazards Center team hosted the 48th Annual Natural Hazards Research and Applications Workshop in Boulder, Colorado in 2023!

The Natural Hazards Center at the University of Colorado Boulder serves as the U.S. National Science Foundationdesignated information clearinghouse for the societal dimensions of hazards and disasters. The mission of the Center is to:

- Translate and share hazards and disaster research and information;
- Build connections between researchers, nonprofit and private sector professionals, the media, policymakers, and local, state, and federal officials;
- Advance social science and interdisciplinary knowledge, with a special emphasis on the most socially vulnerable populations and places; and
- Train and mentor, a diverse next generation of hazards and disaster professionals.

The team at the Natural Hazards Center led several initiatives during the reporting period including:

- Served as the Secretariat for the North American Alliance of Hazards and Disaster Research Institutes (NAAHDRI). <u>https://naahdri.org/</u>
- Maintained a global map and list of university-based hazards and disaster research centers and published the data associated with the map and list. See: <u>https://hazards.colorado.edu/resources/research-</u>

<u>centers</u>

- Hosted the 48th annual Natural Hazards Research and Applications Workshop, which involved more than 650 researchers, local/state/federal practitioners, policymakers, private and non-profit sector representatives, journalists, and students. The theme of the 2023 Workshop was "Ethical Action for Disaster Risk Reduction." <u>https://</u> <u>hazards.colorado.edu/workshop/2023</u>
- Co-facilitated the annual Researchers Meeting, which involved more than 350 hazards and disaster researchers from across the U.S. and around the world. The theme of the 2023 Researchers Meeting was "New Frontiers of Disaster Research: Action-Oriented Approaches to Solve Complex Challenges." <u>https://hazards.colorado.edu/workshop/2023/</u> researchers-meeting/overview



- Hosted the monthly Making Mitigation Work webinar series. <u>https://hazards.colorado.edu/training/webinars/</u> <u>making-mitigation-work</u>
- Published the Research Counts series <u>https://</u> <u>hazards.colorado.edu/news/research-counts</u>, including a new special collection focused on The Disaster Cycle <u>https://hazards.colorado.edu/news/</u> <u>research-counts/special-collection/disaster-cycle</u>.
- Published Disaster Research—News You Can Use. <u>https://hazards.colorado.edu/disaster-research/</u> <u>current</u>
- Hosted the Disaster Grads listserve for undergraduate and graduate students in the hazards and disaster field. <u>https://hazards.colorado.edu/signup</u>

During this reporting period, the CONVERGE facility completed the following activities:

- Released the 11th CONVERGE Training Module in our series <u>https://converge.colorado.edu/resources/</u> <u>training-modules/</u>.
- Continued to add to the CONVERGE Training Modules Assignment Bank, which now also includes an introductory webinar. <u>https://</u> <u>converge.colorado.edu/resources/training-modules/</u> <u>assignment-bank/</u>
- Released additional Annotated Bibliographies through CONVERGE. <u>https://converge.colorado.edu/</u> <u>resources/training-modules/annotated-bibliographies/</u>
- Published additional Extreme Events Research Check Sheets <u>https://converge.colorado.edu/resources/</u> <u>check-sheets/</u>.
- Hosted Webinars https://converge.colorado.edu/ category/webinars/, Virtual Forums https:// converge.colorado.edu/category/virtual-forums/, and • Social Science Fridays sessions https:// converge.colorado.edu/category/social-sciencefridays/ through CONVERGE.
- Funded researchers through the CONVERGE Data
 Ambassadors program <u>https://converge.colorado.edu/</u> <u>data/data-ambassadors/</u>.

Researchers affiliated with the Natural Hazards Center and the CONVERGE facility produced the following books, journal articles, and review publications in 2023:

Zorich, Zach, Laurie J.
 Schmidt, Lori Peek,
 Champeau, Jennifer
 Tobin, Shi-Kai Huang,
 Sudha Arlikatti, eds. 2023.
 Collection on the Disaster Cycle. Volume 5, *Research Counts.* Boulder, CO: Natural Hazards Center,

University of Colorado Boulder, <u>https://</u> <u>hazards.colorado.edu/news/research-counts/special-</u> <u>collection/disaster-cycle</u>

- Adams, Rachel M., Candace M. Evans, and Lori Peek. 2023. "CONVERGE Training Modules: A Free Online Educational Tool for Hazards and Disaster Researchers and Practitioners." *Frontiers in Built Environment*, 9. <u>https://www.frontiersin.org/</u> articles/10.3389/fbuil.2023.1096204/full
- Adams, Rachel M., Candace M. Evans, and Lori Peek. 2023. "Defining, Collecting, and Sharing Perishable Disaster Data." *Disasters.* <u>https://</u> <u>doi.org/10.1111/disa.12592</u>
- Beaven, Sarah, Dijillali Benouar, Mihir Bhatt, Terry Gibson, and Lori Peek. 2023. "Post-Disaster Research: Challenges and Opportunities Conversation on Disasters: Deconstructed on 11th of June 2021." *Disaster Prevention and Management* 32 (3): 384-399. <u>https://doi.org/10.1108/DPM-11-2022-0233</u>
- Crayne, Jenny, Carla Herrán, Danielle F. Sumy, Marcie Benne, Todd Shaggot, and Lori Peek. 2023.
 "Public Education About ShakeAlert® Earthquake Early Warning: Evaluation of an Animated Video in English and Spanish." *International Journal of Science Education, Part B: Communication and Public Engagement.* <u>https://</u> doi.org/10.1080/21548455.2023.2238872
- Chisty, Musabber Ali, Nesar Ahmed Khan, Syeda Erena Alam Dola, Israt Arif Sumaya, and Md. Mostafizur Rahman. 2023. "Knowledge, Attitude, and Practice Toward Flood Volunteerism in Bangladesh: A Gender-Based Analysis with Policy Implications." Global Social Welfare, <u>https://doi.org/10.1007/s40609</u> -023-00276-9
- Peek, Lori. 2023. "Living in an Age of Extremes," Review of The Devil Never Sleeps: Learning to Live in an Age of Disasters by Juliette Kayyem. American Scientist 111(2): 122-124.
- Villarreal, Melissa. 2023. "Long-Term Housing Recovery Among Mexican Immigrants: How Service Providers Navigate Racialized Anti-Immigrant Disaster Recovery Policies." International Journal of Mass Emergencies and Disasters 41(1): 133-149. <u>https://doi.org/10.1177/02807270231171359</u>
- Villarreal, Melissa and Nnenia Campbell. 2023. "Scholars From Underrepresented Groups in Engineering and the Social Sciences (SURGE) Capacity in Disasters: The Benefits and Challenges of Mentoring for Racial and Ethnic Minority Graduate Students." Higher Learning Research Communications 13(1): 70-92. https://

Researchers affiliated with the Natural Hazards Center and the CONVERGE facility produced the following data publications, reports, online publications, and training materials in 2023:

- Austin, Jessica, Heather Champeau, and Lori Peek. "2021 Social Science Extreme Events Research (SSEER) Census," in Social Science Extreme Events Research (SSEER) Network Data, Survey Instrument, and Annual Census. DesignSafe-CI. <u>https://doi.org/10.17603/ds2-jw4k-6w60</u>
- Champeau, Heather, Jessica Austin, and Lori Peek.
 "2022 Social Science Extreme Events Research (SSEER) Census," in Social Science Extreme Events Research (SSEER) Network Data, Survey Instrument, and Annual Census. DesignSafe-CI. https://doi.org/10.17603/ds2-4qek-wg82
- Mordy, Meghan, Rachel M. Adams, and Lori Peek. 2023. "Public Health Disaster Research Award Program Evaluation Report," in *Public Health Disaster Research Award Program Evaluation*. DesignSafe-CI. <u>https://doi.org/10.17603/ds2-zxsem028</u>
- Peek, Lori, Mary Angelica Painter, Gina Eosco, Alison M. Agather, Jonathon Mote, Cassandra Shivers-Williams, Jennifer Tobin, Jolie Breeden, and Open Data Workshop Participants. 2023. "Final Report of the Workshop on Open Data and Reuse in Social Science Weather Research." Natural Hazards Center, University of Colorado Boulder. <u>hazards.colorado.edu/research/weather-readyresearch/open-data-workshop</u>
- Adams, Rachel M., Meghan Mordy, and Lori Peek. "Public Health Disaster Research Award Program Evaluation Questionnaire," in *Public Health Disaster Research Award Program Evaluation*. DesignSafe-CI. <u>https://doi.org/10.17603/ds2-8dtb-9k68</u>
- Adams, Rachel M., Meghan Mordy, and Lori Peek. 2023. "Public Health Disaster Research Award Program Evaluation Survey Invitation," in *Public Health Disaster Research Award Program Evaluation*. DesignSafe-CI. <u>https://</u> <u>doi.org/10.17603/ds2-wjf8-8b13</u>
- Adams, Rachel M., Meghan Mordy, and Lori Peek.
 "Public Health Disaster Research Award Program Evaluation Survey Data," in *Public Health Disaster Research Award Program Evaluation*. DesignSafe-Cl. <u>https://doi.org/10.17603/ds2-ana0-kf03</u>
- Painter, Mary, Melissa Villarreal, and Lori Peek. "2016-2021 State Hazard Mitigation Plans and Social Vulnerability," in *State Hazard Mitigation*

Plans and Social Vulnerability. DesignSafe-CI. <u>https://doi.org/10.17603/ds2-sc34-as63</u>

 Peek, Lori, Heather Champeau, and Jessica Austin. "2022 Social Science Extreme Events Research (SSEER) Network," in Social Science Extreme Events Research (SSEER) Network Data, Survey Instrument, and Annual Census. DesignSafe-CI. <u>https://doi.org/10.17603/ds2-arw3-</u> 9z86

Major active grants and contracts at the Natural Hazards Center include:

- 2018-23 Lori Peek, Principal Investigator, "CONVERGE: Coordinated Social Science, Engineering, and Interdisciplinary Extreme Events Reconnaissance Research." Funded by the National Science Foundation, Award #1841338. (\$5,041,204)
- 2017-23 Lori Peek, Principal Investigator, "A Clearinghouse on Natural Hazards Applications." Funded by the National Science Foundation, Award #1635593. (\$8,413,801)
- 2022-23 Lori Peek, Principal Investigator, "NSF INTERN." Funded by the National Science Foundation, Supplement to Award #1841338. (\$38,238)
- 2021-23 Lori Peek, Principal Investigator, "Reducing Social Vulnerability in Disaster: An Assessment of What Works." Funded by the Margaret A. Cargill Philanthropies. (\$421,820)





Center for Risk-Based Community Resilience Planning Colorado State University, USA

http://resilience.colostate.edu



IN-CORE and DesignSafe Workshop—15 November 2023

Co-Directors: Prof. John van de Lindt; and Prof. Jamie Kruse

The year 2023 covered many milestones for the Center for Risk-Based Community Resilience Planning. There were many accomplishments over the 13-university partnership headquartered at Colorado State University, but the three major events were: (1) Project IN-CORE (Interdependent Networked Community

Project IN-CORE is a sponsored project through Community Initiatives, Oakland, California. Project IN-CORE and its partners provide support and services based on the IN-CORE platform (Interdependent Networked Community Resilience Modeling Environment), which is a state-of-the-science cloud platform that models the interconnected impacts of natural hazards to help communities make scienceinformed planning and policy decisions to lessen the impacts of hazards and enhance community resilience.

IN-CORE is an open-source computational environment that enables users to model communities and investigate alternative policies using "what if" scenarios and their interconnected impacts upon communities. IN-CORE Resilience Modeling Environment); (2) the IN-CORE ASCE INSPIRE workshop (3) the continuation of the Midwest Tornado Field Study and other pilot communities. Details for these achievements within the Center are provided below.

has the capability of computing resilience metrics at the user-defined, community level. The IN-CORE platform is publicly available and includes IN-CORE Lab, a customized Jupyter Lab with Python libraries installed and hosted on a cloud system provided by the National Center for Supercomputing Applications (NCSA). With an IN-CORE account, users can <u>develop, run, or test</u>

models in their own workspace.

Prof. John W. van de Lindt Co-Director



E-mail: jwv@colostate.edu

IN-CORE is science-based to support informed community decision making: IN-CORE maps a communities' individual households, its population demographics and income levels. Models can anticipate population dislocation down to the household-level, as well as changes to income as a result of natural hazards and during recovery. Additionally, models can depict disruptions to employment by industry-type, individual businesses, and by location.

IN-CORE uniquely models equity and predicts the impacts of natural hazards across population demographics. This nuance allows for decision making that optimizes recovery and resilience for the most vulnerable populations. IN-CORE enables decision optimization related to equity by linking redlined areas with infrastructure, housing, and household income to identify the most effective interventions that promote equity.

Project IN-CORE and the NIST-funded Center of Excellence for Risk-Based Community Resilience Planning is working with pilot communities to enhance their resilience. To read more about the pilot communities and how they are using IN-CORE, please visit <u>www.in-core.org</u>.

Colorado State University was awarded a contract from California Office of Emergency Services to apply IN-CORE with the Objectives and Scope of work to understand how to compare the metrics/losses of a more affluent community of similar size to show any inequities with a rural and poorer community. The ultimate question we will address is: "How does an impoverished rural community even begin to help its citizens?" This is a fundamental and often never addressed state of disaster recovery.

The methodologies and algorithms developed in IN-CORE will provide the quantitative and science-based approach to community resilience assessment. IN-CORE will be used to analyze metrics of population dislocation, total damage/loss, and economic metrics for comparison. The analysis of metrics and attributes will provide information critical for decision support. The most vulnerable communities and especially those that do not meet FEMA's threshold for a Federal Declaration need a framework and playbook to become resilient.

Project IN-CORE is working to submit proposals to various agencies. Our strategic partners have expressed a keen interest and urgency to use IN-CORE for climate resilience at the community level. This is mainly because the fully integrated modeling approach within IN-CORE is unmatched by other platforms, and requires training that will produce a cadre of certified professionals that can provide the expertise necessary to "drive" this powerful tool. Our proposed training aspects will include best practices of community engagement and to train practitioners – with the ultimate intention of making communities more resilient.

IN-CORE Newsletter December 2023



Beginning in 2015 and funded by the National Institute of Standards in Technology (NIST), the Center of Excellence for Risk-Based Community Resilience Planning was formed as a collaboration of 14 universities, headquartered at Colorado State University. University researchers, faculty, post-doctoral scholars, and students developed the Interdisciplinary Networked Community Resilience Modeling Environment (IN-CORE) as a solution to enhancing community recovery and resilience to natural hazards. Teams of researchers have piloted IN-CORE within various published studies and within several communities.

In the upcoming year, there will be the addition of Project IN-CORE, a non-profit to increase community engagement and continue developments in the IN-CORE modeling platform. Project IN-CORE will offer communities support in using IN-CORE to enhance resilience planning. Many of the same rese, rchers and staff will continue developing capabilities of the IN-CORE modeling platfo, and hope to engage other researchers across various disciplines to contribute as web. "sit www.in-core.org for more information about IN-CORE!



The Center for Risk Based Community Realience Planning is a NIST-fundo. Unded Hrough a cooperative agreement between the U.S. National Institute of Standarduran rectinology and Coorado State Uniterity (NIST Financia Kassiance Award Numbers: 70.NANI 514044 a 70.NANI 2014003). The Views supressed are those of the presenters, and may not represent the official position of the National Institute of Standards and Technology or the U.S. Department of Commerce.

Midwest Tornado Field Study

Ongoing field studies for the Midwest tornado field study continued in 2023. Below is an example of the Field Step 2: Run damage analysis based on existing building Study Procedures and IN-CORE Modeling Results. One of the main objectives and outcomes of our research is that we can prove the benefits of IN-CORE such as the unique nimbleness of the platform and how we can very readily provide policy and code information from which a community can start to rebuild.

Step 1: Create a model in IN-CORE that is reflective of Mayfield's building structures and design model of the EF4 tornado wind fields based on historical data and

recreate the approximate the 2021 tornado path in Mayfield.

stock and document the damage.

Step 3: Include proposed changes to building code (provided by R. Drane) and update residential buildings specific levels of strength, with stiffness, and performance and re-run the simulation and damage analysis.

Step 4: Provide Mayfield with a comparison of damage analyses with and without proposed changes to building code to support decisions on changes in building code.

Comparisons of damage (figures 1 and 2) with dark blue indicating a greater chance that buildings will become nonfunctional





Figure 2. Probability of Non-functional Buildings under Proposed Building Design for an EF4 tornado, showing improvements in functionality

Analysis indicates a 24% reduction in nonfunctional buildings under improved building codes after an EF 4 tornado, resulting in 62% of buildings becoming nonfunctional, versus 86% under current design.



Wind Hazard and Infrastructure Performance (WHIP), USA



https://ww.whipc.org

The WHIP Center's mission is to pursue research of interest to industry and government agencies to enhance the resiliency of buildings and infrastructure to extreme windstorms such as hurricanes and tornadoes.

Between the three universities, listed below, faculty and students represent the following disciplines:

- Civil engineering
- Mechanical engineering
- Aerospace engineering

- Computer science
- Atmospheric science
- Economics
- Social science

All three universities have laboratory and field facilities to test the impact of wind on building and other infrastructure components. These facilities have been developed over the years and are well equipped with necessary instrumentation. A brief description of the laboratory and field facilities for the three institutions is given below.

FLORIDA INTERNATIONAL UNIVERSITY



• Wall of Wind (WOW) Experimental Facility (EF) under FIU International Hurricane Research Center (IHRC) is a legacy of Hurricane Andrew

• Wind Engineering Program since 2005;

since

>70

GADRI Annual Report 2023 -44

Facultv

12-Fan WOW

4

2012:

members:

Figure 1- Wall of Wind Experimental Facility

refereed journal publications on wind engineering; 2 patent; 16 PhDs in the area of wind engineering (plus current Ph.D. candidates); 2 post-Docs.

• EF Team has conducted >\$10M in research and industry projects since 2012.

TEXAS TECH UNIVERSITY

• One of the two largest tornado simulators in the world; VorTECH support studies of tornadoes and tornadic loading on structures.





- Sticknet instrumentation platform to measure windspeed, direction, etc. in land-falling hurricanes and in-land tornadoes.
- Ka-Band Doppler Radars to measure speed and direction in windstorms.

FLORIDA INSTITUTE OF TECHNOLOGY

- Florida Public Hurricane Loss Model used by insurance industry.
- Portable Zephir300 Lidar system for nearsurface wind profile



Figure 3 - Portable Lidar



Prof. Kishor Meł.'a Center Director WHIP Center has effectively involved multiple students in its functions and research activities. These students not only carried out research in the broader area of Natural Hazards Engineering, but also had a unique opportunity to interact and directly communicate with leading industry experts:

- Year 1: 7 graduate students
- Year 2: 6 graduate students
- Year 3: 11 graduate students
- Year 4: 10 graduate students

Number of students recruited by member companies: 2.

WHIP Center Research Webinars

The WHIP Center successfully organized a series of webinars that were attended by a broad audience, including academics, industry representatives and state and federal agency officials. The attendees represented 214 businesses/organizations from thirty different countries

- The WHIP Center, why it makes good "cents" to be a member; presenters Dr. Tim Doggett, BHSI and Dr. Kishor Mehta, Texas Tech University, November 2022
- Laboratory and numerical studies of tornado loading on buildings, presenter Dr. Delong Zuo, Texas Tech University, February 2023
- Multi-Hazard vulnerability modeling- An example of wind and rain vulnerability of mid/high-rise buildings during hurricane events; presenter Dr. Jean-Paul Pinelli, Florida Tech; May 2023
- Wind-driven rain and wind-induced vibrations effects on curtain wall systems; presenters Dr. Amal Elawady and Dr. S. J. Lee, Florida International University, September 2023
- 5. Wind and surge damage to buildings by hurricane; presenter Dr. Doug Smith, Texas Tech University, October 2023
- 6. Wind-induced loads on irregular-shaped low-rise buildings; presenter Dr. Ioannis Zisis, Florida International University, November 2023

Research Projects (2022/2023)



Doggett (BHS), Marc Levitan and Dan Rhee (NIST), and Tim Johnson (Verisk)

- Prediction of wind and surge damage to buildings by hurricane, PI: Doug Smith – Mentors: Eric Haefli (State Farm Insurance), Tim Doggett (BHS), Karthik Ramanathan and Tim Johnson (Verisk), GAF, and NIST
- Wind effects on ballasted rooftop photovoltaic systems, Co-PIs: Arindam Chowdhury, Ioannis Zisis, Amal Elawady – Mentors: Erica Sherman (GAF) and NIST
- Wind-induced loads on irregular shaped buildings, Co -PIs: Ioannis Zisis and Arindam Chowdhury – Mentors: Abby Scott and Chris Kang (State Farm Insurance), Verisk and NIST
- Integration of field damage, hazard, and exposure data for potential use in risk models – Co-PIs: Nezamoddini-Kachouie Nezamoddin and Jean-Paul Pinelli – Mentors: Karthik Ramanathan and Tim Johnson (Verisk) and Eric Haefli (State Farm Insurance)
- Empirical vulnerability model to assess impact of windborne tree debris on low-rise construction. PI: Amal Elawady, Co-PI: Jean-Paul Pinelli – Mentors: Tim Johnson (Verisk), Abby Scott and Chris Kang (State Farm Insurance), Tanya Brown-Giammanco and Dan Rhee (NIST) and Daniel Diaz (USAA)

WHIP Center Members

The <u>WHIP Center</u> is supported by the National Science Foundation under award Numbers 1841523 and 1841503. Research at the Center is funded by membership fees from the industry members of the Center, including:

- Berkshire Hathaway Specialty Insurance
- ENSTALL
- <u>GAF</u>
- <u>NIST</u>
- State Farm Insurance
- <u>USAA</u>
- Verisk Analytics



Global Resilience Institute at Northeastern University

Global Resilience Institute Northeastern University, USA https://globalresilience.northeastern.edu/



USAID Caribbean Community and Climate Resilience Project Field Visit

to Saint Lucy Parish, Barbados, Sep 29, 2024

Events:

- Stephen Flynn and Angie Valencia co-hosted, attended, and presented in Salinas, Puerto Rico during the Salinas Community Collaborative Session in July, part of <u>NASA</u> ROSES.
- Kristin Raub created/hosted and presented alongside National Oceanic Atmospheric а Administration in National Water Model Conference in October.
- Kristin Raub attended and presented (in-person, poster presentation) at the AGU23 Annual Conference; SY43F – Understanding the Societal Value and Use of Earth Science Information.
- Kristin Raub and Ciaran Hedderman attended (inperson) the Vermont State and Local Municipal Day, hosted by the Vermont Agency of Natural Resources in Montpelier.

Publication:

 Raub, K.B., Laufer, J., Flynn, S.E., Daniels, S., Sivalingam, T. 2023. Harnessing Climate Services to Support Community Resilience Planning: Lessons learned from a community-engaged approach to assessing NOAA's National Water Model. *Climate Services*, in review.

Research Grant Projects:

For 2023, the work of the Global Resilience Institute at Northeastern University has been primarily focused on two lines of effort: (1) engaging with underserved communities in the United States and the Caribbean region on efforts to enhance community and climate adaptation, and (2) undertaking this work with local university collaborators so as to expand the capacity for locally adopting and scaling community resilience best practices. 3 major projects animated these efforts:

Dr. Stephen E. Flynn



Founding Director and Professor of Political Science

E-mail: s.flynn@northeastern.edu

"Advancing Community Climate Resilience Planning in the Caribbean Region."

Barbados and Dominica Partnership Grant, May 2023

With funding from USAID, the project is advancing community resilience and climate adaptation for managing the risks associated with extreme weather events and sea level rise, while also advancing the development of blue and green economies. The project team includes senior researchers from the University of the West Indies (UWI), the University of Hawai'i at Mānoa (UH), and the Global Resilience Institute at Northeastern University who are working with students and faculty at universities and colleges who are members of the Caribbean Islands Higher Education Resilience Consortium (CIHERC). Through regional collaborations, the project is building capacity for the CIHERC higher education partners to play a support role in assisting Caribbean Islands States in undertaking efforts to mitigate and adapt to the effects of climate change.

"Leveraging Earth Observation Data to Support Environmental Justice: A Puerto Rico Coastal Community Case Study"

With funding from NASA, the project involves a collaboration with Puerto Rico Science & Technology

Research Trust and the municipality of Salinas, Puerto Rico that experienced devastating flooding during Hurricane Maria (2017) and Hurricane Fiona (2022). The project examines how NASA Earth observation (EO) data can inform actionable steps that both small communities and NASA can take to leverage NASA EO data to address environmental justice concerns and to articulate the process through which communities would like to be engaged in responding to climate adaptation challenges.

"An Analysis and Demonstration of the National Water Model's Applicability to Community Resilience Planning"

With Funding from NOAA, the project involves a collaboration with the Consortium of Universities for the Advancement of Hydrologic Science, Inc (CUAHSI). The project provides a better understanding of the landscape of how communities apply (or could apply) NOAA's National Water Model to resilience planning, demonstrates a set of applications with local communities, and investigates how the National Water Model can help address the prevalent lack of capacity that some communities face that prevents them from engaging in resilience planning.



USAID Caribbean Community and Climate Resilience Project briefing on

U.S. Capitol Hill with Jamaica Ambassador to the United States Aubrey Marks

on Nov 16, 2023



University of Oklahoma Advanced Radar Research Center (OU, ARRC), USA <u>https://arrc.ou.edu</u>



The University of Oklahoma has developed and now deployed the most advanced weather radar in the world. Led by a team of engineers and weather experts, and with funds from NOAA's National Severe Storms Laboratory, the Advanced Radar Research Center at OU has launched "Horus," an all-digital polarimetric phased array radar capable of obtaining data with unprecedented quality and temporal resolution to help understand and predict the formation of severe weather.

- The ARRC's research expenditures continued increasing and are over \$10M USD in FY2023 with funding from NSF, NOAA, NASA, DARPA, ONR, AFRL, private industry, and others.
- The University of Oklahoma (OU) extended the memorandum of understanding between the Disaster Prevention Research Institute (DRPI) and Research Institute for Sustainable Humanosphere (RISH) from the Kyoto University and the College of Atmospheric and Geographic Sciences at OU to March 27, 2028.
- 3. ARRC faculty and students have received a number of national and international recognition and awards.
 - Dr. Jay McDaniel has been selected as the recipient of the 2023 IEEE Instrumentation and Measurement Society Outstanding Young Engineer Award.
 - Dr. Nathan Goodman was elevated to the status of Fellow in the Institute of Electrical and Electronics Engineers (IEEE) organization.

- Dr. Jorge Salazar has been selected as the Technical Coordinator for the 2024 IEEE Antenna Measurement Techniques Association (AMTA) meeting and symposium. In addition, he has also been elected to the 2024 AMTA Board of Directors.
- Dr. David Schvartzman received the "2022 IEEE R5 Outstanding Young Professional" Award.





- Dr. Justin Metcalf has received the 2023 Fred Nathanson Memorial Radar Award from the Aerospace and Electronic Systems Society of the IEEE.
- Dr. Jay McDaniel has received a prestigious Faculty Early Career Development (CAREER) Program award from the National Science Foundation's Office of Polar Programs.
- ARRC graduate students Rylee Mattingly and Shane Flandermeyer were placed first and third respectively in the Student Paper Competition at the IEEE International Radar Conference held November 6-10 in Sydney, Australia.
- ARRC PhD student Sam Emmerson was awarded the 2023 Weathernews Scholarship.
- ARRC graduate student, Alexis Oblitas, who was awarded third place for his paper "Enhancing On-Chip Antenna mmWave Calibration: A Hybrid Multi -Axis Scanner Enabling Near-Field and Far-Field Measurements for Over-the-Air Calibration" at the IEEE Antenna Measurement Techniques Association (AMTA) Symposium held in Seattle. WA. Oct. 8-13.

- ARRC PhD student Sam Emmerson received third place in the poster contest at the AMS 40th Conference on Radar Meteorology, held recently in Minneapolis, MN.
- ARRC PhD Jon Knowles was awarded an FY2023 Department of Defense (DoD) National Defense Science and Engineering Graduate (NDSEG) Fellowship.
- ARRC graduate student Cora DeFrancesco was awarded and selected into the National Science Foundation (NSF) Graduate Research Fellowship Program (GRFP).



ARRC Lights It Up During 2023 Homecoming Parade: The ARRC put on a festive light display during OU's Homecoming parade Friday night. Even the radar trucks got in on the action.



Center for Infrastructure, Transportation, and the Environment, Rensselaer Politechnic Institute, USA https://www.rpi.edu/





The team used the data collected by a large-scale international data collection effort to capture the effect of the Covid-19 pandemic on households' purchasing patterns.

In 2023, the team continued researching various aspects related to such data collection efforts. To start, the team investigated the underlying motivations influencing purchasing pattern changes. One of the objectives has been to identify mechanisms to mitigate panic buying.

To this end, the team proposed freight demand management programs to reduce the amount of panic buying. This work, entitled "The Role and Potential of Trusted Change Agents and Freight Demand Management in Mitigating "Panic Buying" Shortages," was published [1]. A complementary article quantifying the willingness to Limit "Panic Buying" purchases was submitted for publication and is in the final round of reviews [2].

The team also published an important paper [3] that quantifies the performance of the different humanitarian logistics networks originally identified by [4], using numerical experiments based on the 2011 Port-au-Prince earthquake. The experiments verified the superiority of the local "Collaborative Aid Networks (CANs) over the more structure Agency-Centric Efforts (ACEs) and Partially Integrated Efforts (PIEs).

A second objective has been assessing the impact of purchasing patterns changes on households' inventories. As part of this objective, the team focused on the interconnection between the shortages experienced during the beginning of the COVID-19 pandemic, the changes in purchasing behaviors in response to the crisis, and the households' inventory levels in Latin American countries. A manuscript for this work was submitted for publication.

The team has been sharing the research results on various venues, including the 2023 Transportation Research Board Annual Meeting.

- Holguín-Veras, J., et al., *The Role and Potential* of *Trusted Change Agents and Freight Demand Management in Mitigating "Panic Buying" Shortages.* Transportation Research Interdisciplinary Perspectives, 2023. **19**: p. 1-19.
- Calderón-Quevedo, O., J. Amaral, and J. Holguín -Veras, Willingness to Limit "Panic Buying" Purchases During the COVID-19 Crisis. (in review), 2024.
- H Liao, J. Holguín-Veras, and O. Calderón, Comparative analysis of the performance of humanitarian logistic structures using agentbased simulation. Socio-Economic Planning Sciences 90, 101751, 2023. 90.
- Holguín-Veras, J., M. Jaller, and T. Wachtendorf, Comparative performance of alternative humanitarian logistic structures after the Port-au-Prince earthquake: ACEs, PIEs, and CANs. Transportation Research Part A: Policy and Practice, 2012. 46(10): p. 1623-1640.

Prof. José Holguín-Veras Willian H. Hart Professor; and Director E-mail: jhv@rpi.edu





Statewide California Earthquake Center (SCEC), University of Southern California (USC),USA

https://www.scec.org

2023 was a very challenging year that tested the resilience of many communities worldwide to earthquakes and other natural & human-induced disasters. SCEC had its share of challenges, losses, but also gains. In California 2023 earthquake activity was moderate, fortunately, with the highest rate of seismicity in the offshore region of the Mendocino triple junction. This area, which accommodates the transition from the San Andreas fault system to the Cascadia subduction zone, is not well understood and deserves further research.

2023 there were very important positive In developments for SCEC, including the start of a new Statewide phase for the Center with a natural laboratory that includes the entire transform plate boundary in California as well as the western Basin and Range and northernmost Baja California. SCEC has been conducting components of our research, education, and public preparedness activities over the entire state of California and beyond, but the formal change to a Statewide center provides strong impetus for focused activities outside southern California. This is reflected in the RFP for the 2024 SCEC science collaboration, which was released to the community in early November, with an aim to extend the available knowledge on community earth models and seismic hazards across all portions of the plate-boundary, with a special focus in 2024 on northern California.

Also in 2023:

The SCEC Annual Meeting was held in September with more than 500 attendees sharing their SCEC-funded research progress and other work. The meeting included a presentation on new CyberShake results, which combine detailed models of fault structures and physics-based seismic velocitv with along computational modeling using the Summit supercomputer at Oak Ridge National Laboratory to produce information about where strong shaking is most likely to occur. See

image below.

UC Berkeley was SCEC's 26th Core Institution.

approved

On October 19, SCEC and the <u>Earthquake Country</u> <u>Alliance</u> (which SCEC leads statewide) coordinated another very successful <u>Great Shakeout Earthquake</u> <u>Drill</u> with 10.25 million participants in CA, 19.3 million in the US, and 56.4 million globally (includes national/ regional drills). SCEC also coordinates ShakeOut globally.

• On November 27, the SCEC directors, Advisory Council member Steve Bohlen, and the director of NHR3 Yousef Bozorgnia had a productive meeting in Sacramento with representatives of several state agencies (CalOES, CGS, DWR, CEC, CPUC) to advance a vision on developing a *Coalition for Earthquake Resilient California*.

On December 15, SCEC opened applications for <u>Summer 2024 internship programs</u>.

• In December we received additional support from PG&E, submitted a major 2-year proposal to the USGS to fund activities of the Statewide Center, and submitted a modest 3-year proposal to NASA to fund collaborations of SCEC and NASA researchers.

In closing, we wish to congratulate members of our community who received Medals, Awards and Prizes in 2023. These include Norm Abrahamson (the Gilbert F. White Award and Distinguished Lecture of AGU), Ramon Arrowsmith and Chelsea Scott (the Open Science Recognition Prize of AGU), Alice Gabriel (AGU Macelwane Medal and AGU fellow), Lucy Jones (the Gutenberg Lecture of AGU), Valere Lambert (the Keiiti Aki Early Career Award of AGU), Eric Fielding (AGU fellow), Francois Renard (AGU fellow), and Daniel Trugman (the Charles F. Richter Early Career Award of SSA).

> Prof. Mark Benthien Director E-mail: benthien@usc.edu



as



This CyberShake Study 22.12 seismic hazard model shows the Southern California regions (in reds and yellows) expected to experience strong ground motions at least once in the next 2,500 years.

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Asia Japan and Oceania



Asia Japan and Oceania



Asia — Members

Abu Dhabi	Rabdan Academy
Bangladesh	Institute of Water and Flood Management (IWFM) Bangladesh University of Engineering and Technology (BUET)
Bangladesh	Department of Meteorology Faculty of Earth and Environmental Sciences, University of Dhaka
China	Center for Energy and Environmental Policy Research (CEEP), Beijing Institute of Technology (BIT)
China	Integrated Risk Governance Project (IRG-Project), State Key Lab of Earth Surface Processes and Resource Ecology (ESPRE), Beijing Normal University
China	School of Environmental Science and Engineering, Chang'an University
China	Institute of Geographic Sciences and Natural Resources Research, Chinese Academy of Sciences
China	Disaster Risk Reduction Knowledge Service of International Knowledge Centre for Engineering Sciences and Technology under the auspices of UNESCO (IKCEST-DRR), Chinese Academy of Sciences
China	Institute of Tibetan Plateau Research, Chinese Academy of Sciences (CAS)
China	Beijing National Earth Observatory, Institute of Geophysics, China Earthquake Administration (CEA)
China	State Key Laboratory of Geo-hazards Prevention and Geo-environment Protection (SKLGP), Chengdu University of Technology
China	Key Laboratory of Coastal Disaster and Defence (KLCDD), Hohai University
China	Natural Disaster Research Institute, Northeast Normal University
China	College of Engineering, Ocean University of China
China	Institute for Disaster Management and Reconstruction (IDMR), Sichuan University
China	College of Architecture and Environment, Sichuan University (SCU)
China	State Key Laboratory of Hydraulics and Mountain River Engineering (SKLH), Sichuan University
China	Shanghai Institute of Disaster Prevention and Relief, Tongji University
China	China Research Center for Emergency Management (CCEM), Wuhan University of Technology
Hong Kong	Hong Kong Jockey Club, Disaster Preparedness and Response Institute (HKJCDPRI)
India	Centurion University of Technology and Management (CUTM)
India	Department of Geography, Delhi School of Economics, University of Delhi
India	Disaster Mitigation and Management Centre (DMMC), Uttarakhand Secretariat
India	Humanities and Social Sciences Department, Indian Institute of Technology Bombay (IITB)
India	Bearch & Development, Indian Institute of Technology Gandhinagar (IITG)
	Center or L. ^u ence in Disaster Mitigation & Management, Indian Institute of Technology Roorkee (IITR)
India	South Asia Alliance of Disaster Research Institutes (SAADRI), IITR
India	Jindal School of Liberal Arts and Humanities, O.P. Jindal Global University
India	School of Ecology and Environment Studies, Nalanda University

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India	School of Planning and Architecture (SPA), Delhi
Indonesia	Research Centre for Geosciences and Disaster, Brawijaya University
Indonesia	Gadjah Mada University, Faculty of Engineering, Center for Disaster Mitigation and Technological Innovation
Indonesia	JASA TIRTA I Public Corporation
Indonesia	Research Center for Disaster Mitigation, Institut Teknologi Bandung (ITB)
Iran	Soil Conservation and Watershed Management Research Institute (SCWMRI)
Iran	International Institute of Earthquake Engineering and Seismology (IIEES)
Iran	College of Agriculture and Natural Resources, University of Tehran
Iran	Natural Disasters Research Institute (NDRI)
Israel	Institute of Earth Sciences, The Hebrew University of Jerusalem (HUJ)
Israel	National Knowledge and Research Center for Emergency Readiness, University of Haifa
Korea	National Crisisonomy Institute, Chungbuk National University
Korea	International Water Resources Research Institute, Chungnam National University
Korea	Department of Disaster Prevention & Safety Engineering, Kangwon National University
Korea	Seoul National University
Korea	School of Urban & Environmental Engineering, Ulsan National Institute of Science and Technology
Lao PDR	Asia Research Center, National University of Laos (ARC-NUOL)
Lao PDR	Disaster Risk Reduction Division, Department of Climate Change (DCC), Ministry of Natural Resource and Environment
Malaysia	Southeast Asia Disaster Prevention Research Initiative (SEADPRI-UKM), University of Kebangsaan Malaysia (UKM)
Malaysia	Institute for Environment and Development (LESTARI), Universiti Kebangsaan Malaysia (UKM)
Malaysia	Universiti Sains Malaysia (USM)
Malaysia	Universiti Tenaga National (UNITEN)
Malaysia	Centre for Coastal and Ocean Engineering (COEI), Universiti Technologi Malaysia (UTM)
Malaysia	Centre for Environmental Sustainability and Water Security (IPASA), Research Institute for Systainable Environment, Universiti Technologi Malaysia (UTM)
Malaysia	Institute of Noise and Vibration, Universiti Teknologi Malaysia (UTM)
Malaysia	Malaysia Japan International Institute of Technology (MJIIT), Universiti Technologi Malaysia (UTM)
Malaysia	Disaster Management Institute (DMI), Universiti Utara Malaysia (UUM)
Myanmar	Department of Disaster Management, Min. of Social Welfare, Relief and thement, Republic me

Nepal	International Centre for Integrated Mountain Development (ICIMOD)
Nepal	Central Department of Geology, Tribhuvan University
Oman	German University of Technology in Oman (GUTech)
Pakistan	University of Peshawar
Pakistan	Center for Disaster Management (CDM), University of Management and Technology
Philippines	Partnerships in Environmental Management for Seas of East Asia (PEMSEA)
Philippines	Disaster Risk Management Unit, Graduate School of Business, Philippine School of Business Administration (PSBA)
Philippines	National Hydraulic Research Center, National Engineering Center, University of the Philippines, Diliman Campus
Philippines	Planning and Development Research Foundation Inc. (PLANADES)
Philippines	University of the Philippines Resilience Institute (UPRI)
Philippines	Philippine Society of Emergency Medical Technicians (PSEMT)
Singapore	Institute of Catastrophe Risk Management, Nanyang Technological University (NTU)
Sri Lanka	Natural Resource Management & Laboratory Services, Central Engineering Consultancy Bureau (CECB)
Sri Lanka	National Building Research Organisation (NBRO)
Sri Lanka	Center for Transdisciplinary Research
Sri Lanka	Sri Lanka Institute of Information Technology (SLIIT)
Sri Lanka	Faculty of Engineering, University of Moratuwa
T-Chinese Taipei	National Center for Research on Earthquake Engineering (NCREE), National Applied Research Laboratories
T-Chinese Taipei	Disaster Prevention Research Center (DPRC), National Cheng-Kung University (NCKU)
T-Chinese Taipei	Tainan Hydraulics Laboratory (THL), National Cheng Kung University (NCKU)
T-Chinese Taipei	National Science and Technology Center for Disaster Reduction (NCDR)
T-Chinese Taipei	Center for Weather Climate and Disaster Research (WCDR), National Taiwan University
Tajikistan	Mountain Societies Research Institute (MSRI), University of Central Asia
Thailand	Asian Disaster Preparedness Center (ADPC)
The "	- Preparedness, Mitigation and Management (DPMM), Asian Institute of Technology (AIT)
ailand	Disaster and the Management Information Systems Research Group (DRMIS), Chulalongkorn University
Turkey	Kandilli Observatory and Earthquake Research Institute, Bogazici University
Vietnam	Department of Geo-Environment, Vietnam National University (VNU), Hanoi



Fig. 1 Plate tectonic background with earthquakes (colored circles) and the HTHH volcano (red triangles) in the Tonga subduction zone

publication of two internationally renowned articles in Earth-Science Reviews and the Bulletin of the American Meteorological Society, along with contributions to other professional journals such as ESSD, JGR, and JH. Additionally, the establishment of the first three-dimensional observation network platform for atmospheric water and energy over the Tibetan Plateau. This platform offers continuous observational data, serving as a cornerstone for weather and climate monitoring, prediction, disaster weather warnings, and climate environment forecasts in the Tibetan Plateau and its surrounding regions. The observational data and platforms mentioned above play a crucial role in advancing disaster prediction and early warning capabilities.

Another is a powerful eruption of the Hunga Tonga-Hunga Ha'apai (HTHH) volcano that occurred in Tonga on 15 January 2022, produced strong vibrations in the atmosphere, ocean, and solid Earth. This eruption

In 2023, our significant achievements included the generated an ash plume that reached the mesosphere publication of two internationally renowned articles in at nearly 60 km altitude with a maximum diameter of Earth-Science Reviews and the Bulletin of the 600 km. Tsunami waves had a height of up to 15 m American Meteorological Society, along with near HTHH and were still over 1 m high along all coasts contributions to other professional journals such as of the Pacific Ocean.



Prof. Ling Bai led a study to identify infrasound waves traveling with an apparent velocity of 0.31 km/s up to 10,000 km from Tonga in seismic and tsunami recordings. Clear signals of these infrasound waves with a fundamental model of Lamb wave are evident before the shallow-water gravity wave and after the Rayleigh and body waves. The pressure amplitudes of the infrasound waves at stations of 400–1000 km from the eruption is 5–10 hPa. The infrasound wave generated trans-Pacific tsunami waves to arrive 4–5 h earlier than the gravity waves of regular tsunami in the populated countries near the Pacific oceans.

Numerical simulation methods are also used for the oceanic plate subduction zone in Tonga to estimate the pressure-temperature fields and the desulfurization at shallow depths. The simulated total sulfur dioxide released during the eruption ranges from 0.4 to 2.0 Tg. This is small in comparison with previous studies of comparable infrasound pressures. The total emission and sulfur dioxide amounts may have been controlled by the amount of sulfur contained in the subducted plate as well as the pressure and temperature conditions of the subduction zones.



Fig.2 TPE Integrated Three-dimensional Observation and Research Platform (TPEITORP)

Projects:

 the President's International Fellowship Initiative (PIFI) program of the Chinese Academy of Sciences (No. 2024PVA0024), Primary investigators: Prof. Ling Bai, Prof. MM Rahman, 2023-2024

Papers:

- Bai, L.*, Liu, C., Ji, Y. Zhu, W., 2023. Infrasound waves and sulfur dioxide emissions caused by the 2022 Hunga volcanic eruption, Tonga. Frontiers in Earth Science, 11:1144496.
- Rahman, M.M., Bai, L.*, 2023. Seismic hazard maps of the eastern Himalayan syntaxis by integrating the surface topography and site effects. Pure and Applied Geophys-

ics,

s00024-023-03396-7.

 Rahman, M.M., Haque, T., Mahmud, A., Amin, M.A, Hossain, M.S., Hasan, M.Y., Shaibur, M.R., Hossain, S., Hossain, M.A., Bai, L.*, 2023. Drinking water quality assessment based on index values incorporating WHO guidelines and Bangladesh standards. Physics and Chemistry of the Earth, 129, 103353.

- Yaoming Ma*, T.Yao, L.Zhong*, B.Wang*, X.Xu, Z.Hu, W.Ma, F.Sun, C.Han, M.Li, X. Chen, J.Wang, Y.Li, L.Gu, Z.Xie, L.Liu, G.Sun, S.Wang, D.Zhou, H.Zuo, C.Xu, X.Liu, Y.Wang, Z.Wang,2023,Comprehensive study of energy and water exchange over the Tibetan Plateau: A review and perspective: from GAME/Tibet and CAMP/Tibet to TORP, TPEORP, and TPEITORP, Earth-Science Reviews, 237, 104312, doi: 10.1016/j.earscirev.2023.104312.
- Yaoming Ma, Z.Xie*, W.Ma*, C. Han , F.Sun, G,Sun L.Liu, Y.Lai, B.Wang , X.Liu , W. Zhao, W.Ma, F.Wang, L.Sun, B.Ma, Y.Han, Z.Wang, Z.Xi,2023,QOMS: A Comprehensive Observation Station for Climate Change Research on the top of the Earth,Bulletin of the American Meteorological Society, 104(3), E563-E584, doi:10.1175/ BAMS-D-22-0084.1

https://

doi.org/10.1007/

Disaster Risk Reduction Knowledge Service of International Knowledge Centre for Engineering Sciences and Technology under the auspices of UNESCO, Chinese Academy of Sciences (IKCEST-DRR), China

http://drr.ikcest.org

联合国教育、

国际工程科技知识中心 学及文化组织 由教科文组织支持



Disaster Risk Reduction Knowledge Service 防灾减灾知识服务

International Training on Resource & Environment Scientific Data Sharing along the "Belt and Road" - 欧 地区资源环境科学数据共享国际培训班



medical national economy. care. conditions and other data.

4. International training. From November 4 to 18, 2023. the International Training workshop on Resource & Environment Scientific Data Sharing along the "Belt and Road" was successfully held at the Institute of Geographic Sciences and Natural Resources Research, Chinese Academy of Sciences (IGSNRR, CAS). The training class lasted 14 days, and 20 students from 7 countries participated in the training. A total of 23

The overall progress in 2023 is as follows:

1.Disaster Risk Reduction Knowledge Service of International Knowledge Centre for Engineering Sciences and Technology under the auspices of UNESCO (IKCEST-DRR) entered the index of open science platforms selected by UNESCO, becoming a UNESCO open science demonstration platform In 2023. The demonstration platform has been showcased on the UNESCO website at: https://www.unesco.org/en/ open-science/knowledge-sharing.

2. IKCEST-DRR provides platform, technology, data, education and other knowledge services for current global disaster risk reduction (http://drr.ikcest.org). By the end of 2023, the data volume of the Platform had reached more than 4.6 million records, with a data volume of more than 800 GB. The platform's web page visits totaled 2,248,000 times, and the number of users totaled 902,000 (international users visited 667,000, accounting for 54.5%).

3. Emergency disaster relief data sharing services. Provide disaster emergency data sharing services for the earthquakes in Turkey and Syria, hurricanes in Libya, and earthquakes in Morocco, which occurred in 2023, and provide 123 shared datasets. The data includes remote sensing imagery, historical disasters, basic geography, land cover, meteorology and climate, agriculture, administrative divisions, population, society,

lecture reports and 6 technical visits were organized.

5. International Workshop on Disaster Risk Reduction Knowledge Service. The 7th International Workshop on Disaster Risk Reduction Knowledge Service & 2023 "Belt and Road" Forum on Digital Earth -Big Data-Driven Disaster Risk Reduction Knowledge Services Session was held in Beijing on December 6, 2023. This workshop was hosted by the Disaster Risk Reduction Unit and Science, Technology and Innovation Policy Section, Natural Sciences Sector, UNESCO, and the International Knowledge Centre for Engineering Sciences and Technology (IKCEST) under the Auspices of UNESCO, organized by the Institute of Geographic Sciences and Natural Resources Research, Chinese Academy of Sciences (IGSNRR, CAS) and the Disaster Risk Reduction Knowledge Service of IKCEST (IKCEST-DRR). The event attracted top scientists, engineers, government officials, educators, entrepreneurs, and representatives from international organizations from countries along the "Belt and Road" initiative and other nations.





Natural Disaster Research Institute, Northeast Normal University

China

http://www.ndri.nenu.edu.cn/



Participated in the Academic Annual Meeting of Natural Disaster Risk and Comprehensive Disaster Reduction Committee of Geographical Society of China in 2023, Chengdu, China, 2023.9.16

- The National Key Research and Development Program of China: Research on multi-temporal and spatial scale fine risk assessment and zoning of crop drought, high and low temperature disasters. 2022.11 -2025.12.
- 2. The National Key Research and Development Program of China: High-intensity forest fire risk factor monitoring and assessment technology. 2022.11-2025.10.
- The National Natural Science Foundation of China: Research on multi-hazards meteorological disasters risk early warning, prediction and adaptation strategy system in Songliao maize belt. 2022.01-2025.12.
- 4. The Major Science and Technology Program of Jilin Province: Optimize the distribution of regional ecological industries and intelligent decision support platform. 2023.01-2025.12.
- 5. The Major Science and Technology Program of Jilin Province: Multi-hazards comprehensive risk early warning based on Space-air-ground Integrated and "scenario-response" type emergency intelligent decision-making technology and product development. 2023.01-2024.12.

6. Published the academic monograph "Research on Meteorological Disaster Risk Assessment and Comprehensive Prevention Technology for Major Cash Crops".2023.11.

- 7. Over 16 academic papers related to disasters were published in high-level international academic journals.
- 8. Instructed students to win the gold medal in the 9th Jilin "China Construction Bank Cup" internet plus university student innovation and entrepreneurship competition. The director of Natural Disaster Research Institute won the title of excellent instructor.
 - As the convener of the comprehensive disaster risk of agriculture and forestry system sub-meeting, participated in the academic annual meeting of natural disaster risk and comprehensive disaster reduction committee of Geographical Society of China in



Prof. Jiquan Zhang Director

E-mail: zhangjq022@nenu.edu.cn



The academic monograph "*Research on Meteorological Disaster Risk Assessment and Comprehensive Prevention Technology for Major Cash Crops*".



Instructed students to win the gold medal in the 9th Jilin "China Construction Bank Cup" internet plus university student innovation and entrepreneurship competition.

The director of Natural Disaster Research Institute won the title of excellent instructor.



Participated in 2023 Academic Annual Meeting of Agricultural Disaster Prevention and Mitigation Professional Committee of China Agricultural Green Development Research Society and High-end Forum on Agricultural Disaster Prevention and



Institute for Disaster Management and Reconstruction, Sichuan University (SCU), China http://www.idmr.scu.edu.cn/



Young Students in Emergency Training

IMDR made considerable progress in 2023, in terms of our human capacity development, strengthening our research portfolio, infrastructure development, continued innovations in disaster-related curricula, enhanced service to Sichuan Province, and in our leadership roles in numerous international collaborations.

In terms of human capacity development, in 2023 we were successful in hiring four new faculty members, each of which has significant international experience at prestigious universities worldwide. They significantly enhance our capacity in such core areas as: Evaluation of long-term seismic hazards and design of early warning systems based on GNSS/InSAR approaches to block kinematics and dynamics; Hydrological modelling, focusing on the Water, Food, Environment Nexus, particularly in the context of water-related disasters; Disaster evacuation strategies, focusing on human behavior and its implications for infrastructural design; and, Artificial intelligence applications for disaster risk reduction, with a focus on landslides. This brings the number of faculty members with full-time IDMR affiliation to 30, with an additional 40 faculty members from other colleges and schools who serve as IDMR araduate student

advisors and in other **N** roles at IDMR.

As for research

accomplishments and infrastructure development, our mostly young faculty members have been successful in winning multiple awards and national and provincial research grants. In fact, our research funding level for 2023 increased over that of 2022 GADE Geograf 2023 –63 publications in high-level journals continue to increase and span a wide variety of disaster-related fields, including disaster health sciences; natural sciences; disasters and the built environment; and disaster social science and policy.

As for research infrastructure, we were successful in obtaining generous funding from the Hong Kong Jockey Club for a new building, which is almost fully completed. This and new building, of 6 floors approximately 8,600 sq meters floor space, will be devoted to collaborative research on topics

including: geohazards (with a focus on landslides); on flood mitigation; on nature-based solutions for DRR; on urban and rural planning for DRR; on human behavior in disaster evacuation situations; on high performance computational applications for seismological research; and on emergency management information systems.



Prof. Gretchen Kalonji Dean



E-mail: Gretchen.kalonji@qq.com

In terms of innovative disaster-related curricula, we continued to refine the curricula of our Masters' and PhD programs in "Safety Science and Disaster In addition, we worked on continued Reduction. development of our research-intensive undergraduate "innovation class", on "Interdisciplinary Disaster Sciences and international Collaboration", a three-year program in which teams of students, starting in their sophomore year, work with mentors both in China and worldwide on interdisciplinary team projects. The first batch of our "innovation class" graduated in summer 2023. 88% have gone on to graduate studies, most of them directly to PhD programs (bypassing the masters) and with significant scholarship support. They have been accepted to such international universities as Stanford, Northwestern, Duke, NYU, Carnegie Mellon, Imperial College, Delft University, and University College London (UCL), to the Hong Kong Polytechnic University, as well as to PhD programs in prestigious Chinese universities, such as Tsinghua and Zhejiang. We are excited about sharing lessons learned from our research-intensive undergraduate program with other In addition, we have played GADRI partners. leadership roles within our university, within our province, and nationally on short-term training "Safety Science and Emergency programs on Response Skills" for thousands of students, in coordination with our IDMR's hosting role for the national Ministry of Education Key Laboratory on Disaster Education for Youth.

In terms of support to Sichuan Province on DRR, IDMR undertook two main tasks in 2023, both in collaboration with the provincial Department of Emergency Management. Firstly, we continued to carry out research and development of mountain disaster monitoring and early warning technologies, cooperating with the governments of Ya'an City and Ganzi Prefecture to carry out experimental applications, and we obtained two patent authorizations for this work. The second major provincial service task for 2023 was to serve as the core technical force for the first natural disaster risk census in Sichuan Province. We undertook the development of indicator weights for risk assessment and zoning, conducted training for the technicians of the province, and took the lead in the acceptance of the assessment report. In addition, IDMR sent staff to participate in the verification of this year's national-level Comprehensive Disaster Risk Reduction Demonstration Communities and conducted guidance for 70 communities in Sichuan Province. Through the verification, IDMR summarized the difficulties faced by communities in different regions in disaster prevention, refined the excellent practices and formed the "Guidelines for Preparation of Reduction Comprehensive Community Disaster Planning in Sichuan Province", which provides strong enhancement support for the of grassroots communities' capacity in disaster reduction.

In terms of international leadership roles, we continue to work closely with HELP, the High-Level Experts and Leaders Panel on Water and Disaster (http:// wateranddisasters.org), for which we host the Secretariat of HELP's flagship initiative, the AOA, the Alliance of Alliances for Research and Education on Water and Disasters. We also co-lead a major Chinese Academy of Sciences initiative on disaster reduction on the Belt and Road called ANSO-DRR. This has just been renewed for another 3 years; in fact, we were the top-ranked among 21 Belt and Road projects funded by the Chinese Academy of Science in their first round. In addition, we have played key leadership roles in 2023 in the International Center for Big Data for the SDGs (CBAS), a major initiative by China but with extensive global participation (http://cbas.ac.cn/en).

We have also continued to prioritize collaboration with UNESCO on the development of U-INSPIRE, a network which currently encompasses more than 1,000 young DRR researchers from 14 countries (<u>https://uinspirealliance.org/</u>). In addition we established a specific collaboration with Turkish academic and governmental partners to share experiences on mega-disaster response, recovery and reconstruction.



IMDR-Sichua University and Turkiye Collaboration Seminar

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7th International Symposium on Natural Hazard Triggered Technological Disasters (NaTech)

As for international conferences, IDMR hosted the 7th International Symposium on Natural Hazard Triggered Technological Disasters (NaTech) from June 29th to 30th, 2023. More than 70 scientists and practitioners in Natech risk management and reduction from 11 countries attended the meeting via a hybrid way to discuss "Strategies to Address Challenges of Climate Change under a Post-Covid-19 Era".

In terms of other international conferences, IDMR contributed to the organization of several major events at the UN in New York, including: co-organization of the science and technology panel at the 6th Session of the UN General Assembly on Water and Disasters on March 21, 2023; and, co-moderating with CBAS an event on "Big Earth Data for Sustainable Development" at the UN STI Forum, on May 2, 2023. In conjunction with the 3rd International Forum on Big Data for the

SDGs (FBAS) in Beijing from September 6 – 8, IDMR organized two major sessions: an open session of CBAS's International Advisory Committee focusing on the roles of higher education in big data for the SDGs, and a session on the roles of youth and young professionals. Lastly, IDMR played active roles in design and preparation for the "Bandung Spirit Water Summit" to take place in conjunction with the 10th World Water Summit in Bali in May 2024, and co-organized by HELP, the Government of Indonesia, and the Asian Development Bank. Our preparatory activities included a planning meeting in Madrid on June 26 and 27, 2023, co-organized by HELP and the Club de Madrid.

For further details, visit the IDMR website: https:// wudo.scu.edu.cn/info/1015/2437.htm





Centre of Excellence in Disaster Mitigation & Management, IIT, Roorkee, India

http://www.https://iitr.ac.in/Centres/Centre%20of% 20Excellence%20in%20Disaster% 20Mitigation%20and%20Management/Home.html



- The Centre of Excellence in Disaster Mitigation and Management has organized a training Programme on "FOREcaSting and Early Warning of Extreme Events and Disasters" (FORESEED 2023)", by Prof. Piyush Srivastava during 2-8 January 2023 sponsored by the Department of Science & Technology, Government of India.
- The Centre of Excellence in Disaster Mitigation and Management has organized a Course on "Disaster Risk Reduction on Museums and Heritage Safety in the Himalayan Region" by Prof. Sumit Sen from 24-25 February 2023, sponsored by Global Rescue Foundation, and National Disaster Management Authority (NDMA).
- The Centre of Excellence in Disaster Mitigation and Management and SAADRI organized a 2-day "Technical Workshop on Earthquake Early Warning System" together with the National Science and Technology Center for Disaster Reduction Taiwan from 10-12 April 2023.

- The group of 9 research scholars participated and presented their research work in the European Geosciences Union General Assembly in April 2023, at Vienna Austria.
- Ms. Chanda Kumari, Ms. Sakshi Goyal, and Mr. Joshal Bansal, Ph.D. students of the Centre of Excellence in Disaster Mitigation and Management got the prestigious Prime Minister Research Fellowship (PMRF) through the lateral entry channel (May 2023 cycle).



- The Centre of Excellence in Disaster Mitigation and Management has organized an International Conference "IDRiM 2023, 13th Conference -Integrated DRR for Inclusive Sustainable Development: Science, Policy, and Practice Dialogues [InSPIRE-Dialogue]," held at IIT Roorkee during 28th to 30th September 2023.
- An Agreement between the International Centre for Integrated Mountain Development (ICIMOD) Nepal, and the Indian Institute of Technology, Roorkee was signed for the purpose of "Organize a session at the IDRiM - 2023 Conference titled" Strengthening the HUC Network for Safeguarding Hill Heritage".
- CoEDMM at IIT Roorkee developed the "Earthquake Early Warning System for North India". Under this project, 165 pAlert type EEW sensors have been installed in Garhwal and Kumaun regions of Uttarakhand.



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School of Environment and Sustainability, O. P. Jindal Global University, India

https://www.jgu.edu.in/



O.P. Jindal Global University continues to expand its work in the School of Environment and Sustainability, including work on disaster prevention and post-disaster recovery.

The main work has been studying natural disasters in India, especially earthquakes (Gujarat and Kashmir and recent ones in nearby Nepal), the effect of cyclones in the Bay of Bengal, and the slow but on-going effects of climate change on Indian agriculture, food security and availability of water, many areas of the country already being water-stressed before obvious effects of climate change and in particular warming became so evident. The School is concerned to integrate disaster awareness and mitigation into all courses wherever appropriate. The School delegated one faculty member (Prof. John Clammer) to attend the GADRI Summit held at the Uji campus of Kyoto University in March 2023, and the same faculty person is also the author of a forthcoming book published by Springer on the subject of "Vulnerability, Risk and Sustainability: Culture and Sociology in Disaster Management and Recovery".



Prof. John Clammer E-mail: jrclammer@jgu.edu.in

South Asia Alliance of Disaster Research Institutes (SAADRI (SAADRI), India

https://www.saadri.net/

Co-Organizing Partner for Workshops/ Webinars

FORESEED Workshop

A one-week workshop for "FOREcaSting and Early Warning of Extreme Events and Disasters" (FORESEED 2022) under the 'Accelerate Vigyan Scheme' of DST, India by IIT Roorkeefrom 02 to 08 January 2023.

Disaster Awareness Training Program

SAADRI-Young Professional Platform has conducted a Disaster Awareness Training Program for"Primary and Secondary Education Intervention" in association with Unnat Bharat Abhiyan, RCI, IIT Roorkee on 28 January 2023.

Critical Writing Workshop

The Critical Writing Workshop is being co-organized by SAADRI, U-Inspire, and India Japan Lab-Keio University, every six months, aimingat capacity building of Young Professionals in Disaster Management. The second Edition of the Workshop was held on 08 June 2023.

The third Edition of the Workshop was held on 14 December 2023.

 Technical Workshop: Earthquake Early Warning System

SAADRI and the Centre of Excellence in Disaster Mitigation and Management (CoEDMM) IIT Roorkee organized a 2-day "Technical Workshop on Earthquake Early Warning System" together with the National Science and Technology Center for Disaster Reduction Taiwan.

AALAAP Pre-conference event at IDRiM 2023
 Conference

The IDRiM 2023 Conference, hosted by the CoEDMM, IIT Roorkee, took place from September 28 to 30, 2023. Experts and scholars from 18 countries have participated in this conference. SAADRI partnered with the IDRiM 2023 and organized a Pre-conference event titled "AALAAP" on 27 September 2023. Prof David Alexander delivered a lecture on "Disaster Risk Reduction: Is the Past a Guide to the Future?", followed by a panel discussion "Collaborative Strategies for Enhancing

Resilience in the Himalayan Region". The panelists were Prof Amod Dixit, Prof. Tilak Hewawasam, Prof Harshit Lakra, and Prof M.A Abedin, and the session was moderated by Prof M.L Sharma.







Prof. Mahua Mukherjee Secretary-General



E-mail: <u>saadri@iitr.ac.in;</u> mahuafap@iitr.ac.in

Participation in Conference/Summit/ Webinar/ Workshop

• Participation in the 6th Global Summit of GADRI

The 6th Global Summit of GADRI was organized at the Disaster Prevention Research Institute (DPRI), Kyoto University, Uji Campus, Kyoto, Japan from 15th to 17th March 2023.

The Summit consisting of plenary sessions, panel group discussions, and poster sessions was attended by the SAADRI members, Prof. Mahua Mukherjee, Prof. Rajiv Shaw, Dr. Wei-Sen Li, and Dr. Gretchen Kalonji, to name a few.

 The Nepal Geological Society (NGS) Webinar Series 2023

Prof. Mukherjee, Secretary General of SAADRI delivered a talk on 'Transboundary Efforts in Disaster Risk Reduction by Regional Alliance' as part of the webinar series of Nepal Geological Society.

 International Training Workshop 2023 by NCDR Taiwan



The National Science and Technology Center (NCDR) Taiwan has been hosting a series of International Training Workshops (ITW). The purpose of the Workshop was to empower youth leadership on humanitarian assistance and disaster relief (HADR) by highlighting the role of science and technology in decision-making, ranging from situation assessments to field operations. Two Young professionals from SAADRI Young Professional Platform (SAADRI-YPP), Khshitij Kacker and Debaleena Roy participated in the workshop. The Hands-on workshop has given an experience in how to lead Disaster response as a team systematically. UNDRR Training for Korean School Safety
 Programme

A Training Programme on Korean School Safety Programme towards a Culture of Disaster Prevention was held in GIFT CITY, India. The program was attended and observed by the SAADRI members.



World Congress on Disaster Management

The 6thWorld Congress on Disaster Management was held from 28 November to 01 December at Dehradun, Uttarakhand, India. Prof. Mukherjee, Secretary General of SAADRI delivered a talk on 'Food and Nutritional Security in Emergency Preparedness and Response' as part of the webinar series.



Knowledge partner and/or co-organizing partner for conferences:

• Special Session Webinar

Avoidable Deaths Network (ADN) conducted a Special Session Webinar Series on 'Women's Stories of Survival, Innovation, Resilience, and Development'

on 31 May 2023.Prof. Deepthi Wickramasinghe, on behalf of SAADRI, facilitated the event. Two SAADRI-Young Professional Platform members Ms. Debaleena Roy and Ms. Vihanga Amarakoon also presented during the seminar.

• SAADRI AGM

SAADRI conducted the 2nd Annual General Meeting on 27th September in a Hybrid mode.



अापदा जोखिम न्यूनीकरण के लिए CRISES Could FRAMEWORK FOR DISASTER RISK REDUCTION

बच्चों के लिए

- SAADRI Publication
- SAADRI Quarterly Newsletter

The first issue of the quarterly SAADRI Newsletter was published on International Mother Language Day, on 21 February 2023 considering the role of vernacular languages in preparedness for disaster risk response. Subsequently, SAADRI Newsletter is published every quarter.



Translation of book in collaboration with UNDRR

SAADRI facilitated the translation of the book 'SFDRR for Children' by collaborating with UNDRR. The book is an important component of the school children's awareness program, and hence based on the need to reach out to the children of vulnerable communities in the Himalayan region, the book has been translated to Hindi.



In 2023. the Natural Disasters Research Institute (NDRI) mainly emphasized expanding international cooperation with offices and UN international The institutes. NDRI coordinated Midterm the Review report of the Sendai Framework in



Natural Disaster Research Institute (NDRI)

Iran http:/www.en.ndri.ac.ir

The Workshop on Traditional and Indigenous Knowledge and Disaster Risk Reduction

I.R.Iran and actively participated in the meetings of the UN Sustainable Development Framework, UNSDCF (2023-2027). Moreover, NDRI has obtained the Special Consultative Status with ECOSOC.

1-The special consultative status with ECOSOC

The meeting of the ECOSOC Committee of Non-Governmental Organizations was held on May 15-23, 2023 at the United Nations headquarters in New York, where the files of 204 organizations from around the world were reviewed. In this meeting, the granting of a special consultative status to the Natural Disasters Research Institute (NDRI) was approved. In Iran, the NDRI is the first organization in the field of natural disasters that has achieved this status.

(https://en.ndri.ac.ir/ECOSOC)

2- Traditional and Indigenous Knowledge and Disaster Risk Reduction

The Natural Disasters Research Institute (NDRI) and UNESCO Chair on Natural Disaster Management, in collaboration with the UNESCO office in Tehran organized the Participatory Workshop on Traditional and Indigenous Knowledge and Disaster Risk Reduction. This event took place on December 12 and 13, 2023, in the rural district of Siakh-Darengun, located in Shiraz Country, Fars Province, Iran. The workshop witnessed the active participation of approximately 85 individuals including rural women and men, academia, local government officials, community facilitators of local development plans, as well as experts from NDRI and UNESCO.

The recommendations raised by the five group activities can be summarized as follow:

- Identifying and introducing indigenous knowledge;
- An emphasis on traditional and indigenous knowledge is vital (traditional and indigenous knowledge has to be highly considered in the development plans), using the principles of rethinking development;
- Let's learn from the nomads how they managed their land;
- Combining indigenous knowledge with new technologies;
- Holding collaborative workshops by the people themselves to transfer local knowledge with the participation of the young generation and elders;
- Building trust through continuous communication with local people and forming collaborative workshops to solicit opinions on the implementation of development projects;
- Emphasis on people's participation as well as watershed and aquifer management, preservation of vegetation were among the most important recommendations.

Mr. Masoud Hamedani E-mail: hamedani@ndri.ac.ir


3-Fighting Inequality for a Resilient Future

On the commemoration of the International Day for Disaster Risk Reduction with the theme "Fighting Inequality for a Resilient Future" was held with the presence of a group of Officials, professors and those interested in this field in-person and online and with the presence of Golda El-Khoury, director of the UNESCO Office in Tehran, Lalini Veerasamy, Chief of the International Organization for Migration (IOM) in Iran, Letizia Rossano, director of the Asia and Pacific Center for the Development of Disaster Information Management (APDIM), Nejad Jahani Deputy head of NDMO, Osamu Tanaka, Chief representative of Japan International Cooperation Agency (JICA) office in Iran, Venco Elisabetta Maria, Research fellow at the University of Pavia, Italy, Masoud Hamedani, director of the International Department at the NDRI, Hiroki Nishi, head of the department Economic Cooperation of the Japanese Embassy in Iran, South Korean Deputy Ambassador Kim Joon, Gulbahor Nematova and Adi Mohammad, Indonesian Embassy, Julia Flore, Head of the Commercial Department of the Italian Embassy, Mohammad Aftab, the Embassy of Pakistan.

Seyed Amirhossein Garakani, head of the Natural Disasters Research Institute (NDRI) mentioned that Disasters are an increasing threat to sustainable development. We must seize this moment to transform how we manage risks.

(https://en.ndri.ac.ir/iddrr-day-2023)



Fighting Inequality for a Resilient Future



4-Lessons learned in disaster management from the 2023 Earthquake in Türkiye

Seved AmirHossein Garakani, head of the NDRI, share his view on his recent trip to Türkiye that: The disaster management system in Türkiye enjoy transparency, simplicity and integrity. The vision of crisis management in Turkey was not based on the rapid repatriation of people and the rapid reopening of shops and stores, and largely emphasized the evacuation of the city. It seems that this view in metropolises is a correct procedure that we should pay attention to.

(https://en.ndri.ac.ir/unesco-chair-Lecture-29)

5-Lessons learned from Iran, Japan, and Mexico

In this webinar, Dr. Yoshihiro Ito, Professor of the DPRI, and Dr. MohammadReza Ghayamghamian, Professor of the International Institute of Earthquake Engineering and Seismology presented their speeches.

Yoshihiro Ito initially noted the difference between slow earthquakes and normal earthquakes and highlighted the effects of the 2011 Tohoku earthquake and tsunami in Japan. Then he described the 8.2 magnitude earthquake and tsunami of 1932 in Jalisco, Mexico.

Ghayamghamian also pointed out the main challenges in big cities and Tehran. Then he discussed the earthquake history in Iran. He pointed out that southern districts of Tehran are more exposed to risk based on studies.

(https://en.ndri.ac.ir/unesco-chair-Lecture-138-news)



Lessons learned in disaster management from the 2023 Earthquake in Türkiye



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Israel National Knowledge and Research Centre for Emergency Readiness University of Haifa, Israel

http://muchanut.haifa.ac.il



מרכז הידע והמחקר הלאומי בתחום ההיערכות למצבי חירום National Knowledge and Research Center for Emergency Readiness

The National Knowledge and Research Center for Emergency Preparedness was established in January 2018 with 90 researchers divided among 8 disciplinary research teams: Law; Public Policy; Social Science; Public Health and Emergency Medicine; Welfare and Social Work; Engineering, Technology and Planning; Risk Assessment and Management; and Environment.

The research at the Center in 2023 focused on:

- Continued research on the Impact of COVID-19 on Well-being in Israel
- The role of local authorities and the way they coped with the challenges of the pandemic
- Measuring resilience: indicator-based tool for measuring regional resilience in localities in Israel (for the Prime Minister's Office)
- Regulatory and Policy Frameworks for a Mid and Long-term Recovery after a Major Earthquake, as well as other major disasters, such as the war in Israel with Hamas in Gaza and Hezbollah in Lebanon

Following October 7th Hammas attack on Israel from Gaza, the Center was involved in a few activities towards physical and social rehabilitation in Israel:

- Cooperation with Shmuel Neeman institute at the Technion in forming policy papers on (1) Construction, rehabilitation and physical and environmental development (2) Strengthening trust, resilience and a sense of personal and community security (3) Rehabilitation of economic/ industrial/agricultural activities.
- Round tables meetings with various groups aimed to improve the delicate relations between Arabs and Jews in Israeli society.
- Short guide neighborhood organization during emergencies: a how-to guide.
- Short guide for families to communicate with soldiers coming home after experiencing the horrors of war.

The Center holds weekly seminar talks (most are in Hebrew), all are streamlined on Facebook, recorded and uploaded to YouTube.

A full list of the talks is available on our website here: <u>https://muchanut.haifa.ac.il/index.php/en/events</u>

2023 selected publications:

- Blitstein-Mishor, E., Vigoda-Gadot, E., & Mizrahi, S. (2023). Navigating Emergencies: A Theoretical Model of Civic Engagement and Wellbeing during Emergencies. *Sustainability*, *15*(19), 14118. <u>https://www.mdpi.com/2071-1050/15/19/14118</u>
- Grinberger, A. Y., & Felsenstein, D. (2023). Agentbased simulation of COVID-19 containment measures: the case of lockdowns in cities. *Letters in Spatial and Resource Sciences*, *16*(1), 10. <u>https://link.springer.com/article/10.1007/s12076-023-00336-w
 </u>
- Mishor, E., Vigoda-Gadot, E., & Mizrahi, S. (2023). Exploring civic engagement dynamics during emergencies: an empirical study into key drivers. *Policy & Politics*, 1-23. <u>https:// doi.org/10.1332/030557321X16886470793447</u>
- Vigoda-Gadot, E., Mizrahi, S., Cohen, N. et al. Citizens' reactions to global crises: a longitudinal study during the COVID-19 pandemic in Israel. SN Soc Sci 3, 24 (2023). <u>https://</u> doi.org/10.1007/s43545-023-00610-0



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National Crisisonomy Institute (NCI) Chungbuk National University, Korea

http://www.ncemri.re.kr/english/



National Crisisonomy Institute Chungbuk National University





In particular, we signed the MOU in June with DPRI where GADRI headquarters is located, and we are very happy to have newly joined GADRI in November.

NCI's major achievements in 2023 can be broadly divided into 1. Events, 2. Projects, 3. Publications. A summary of these achievements are as follows:

2023 was a very meaningful year for the National Crisisonomy Institute, Chungbuk University (NCI). This is because NCI has active in hosting events and winning largescale research projects since its establishment in 2006.

Prof. Jae Eun Lee Director E-mail: jeunlee@chungbok.ac.kr



1. Events (conferences, workshops, seminars, etc)

1) Co-hosting regular academic conferences

Title		Schedule	Location	
	Spring Academic Conference	April 28, 2023	Chungbuk National University, Korea	
KAD (The Korean Association for Disastronomy, since 2023)	(since 2023) Fall Academic Conference	October 20, 2023	Kangwon National University, Korea	
	(since 2023) Winter academic conference	December 15, 2023	Wonkwang University, Korea	
KACEM	Spring Academic Conference	May 12, 2023	Incheon National University, Korea	
Crisis and Emergency Management since 2009)	Fall Academic Conference	November 24-25, 2023	Dongeui University, Korea	
The 11 th National Crisisonom	y Forum (since 2020)	July 6, 2023	Korea Press Center, Korea	
2023 ACC (Asian Conference on Crisisonomy, since 2021)		July 19-20, 2023	Jeju National University, Korea	
The 11 th Global Crisisonomy Symposium (since 2015)		October 28, 2023	Campus Plaza Kyoto, Japan	
The 17 th ICCEM (International Conference on Crisis and Emergency Management, since 2007)		December 9-10, 2023	Chinese Academy of Sciences, China	
The 1st Online Meeting on Crit Management in the Curr (with TNDR and	ical Infrastructure Crisis ent Climate Crisis d ADPC	December 14, 2023	Online Meeting	
since 202	23)			
National Community Crisisonomy UCC, Monitoring Competition		December 22, 2023	Chungbuk Viewer Media Center, Korea	
(Since 200	07)			



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2) NCI workshops inviting scholars (held at Chungbuk National University, Korea)

Workshop Title	Instructor (Affiliation)	Schedule
Efficient operation and management plan for disaster management resources	Prof. Gigeun Yang Department of Fire Administration,, Wonkwang University	May 4, 2023
Government organization management, culture and disasters in Pakistan	Prof. Muhammad Azam Department of Structures and Environmental Engineering, PMAS Arid Agriculture University	May 22, 2023
Environmental economics and environmental justice	Prof. Dohyeong Kim Director of Geospatial Health Research Group, University of Texas at Dallas	June 19, 2023
ADPC Special lecture on GIS for training Crisisonomy experts -To respond to the climate crisis in the Chungbuk region and build a safe society-	Mr. Bill Ho Director, ADPC (Asian Disaster Preparedness Center)	August 27-31, 2023
Energy system risk in the era of climate crisis	Prof. Bonjun Koo Center for Creation of Symbiosis Society with Risk, Yokohama National University	October 11, 2023
Chungcheongbuk-do 2030 Plan to respond to climate crisis	Mr.Yeonjun Kim Special Assistant to the Governor of Chungcheongbuk-do	December 28, 2023

3) Occasional seminars

Name	Title	Schedule	Location
Seminar commemorating the open- ing of Cheongju Carbon Neutrality Support Center	Strategy Workshop for Car- bon Neutrality Implementa- tion	April 17, 2023	Chungbuk National University, Korea
Joint academic seminar with Research Institute for the Tam- la Culture	Cultural Diversity and Disas- tronomy	May.31- June 1, 2023	Jeju Research Insti- tute, Korea
The kick-off symposium on DPRI and NCI Collaboration	Seminar commemorating the signing of MOU on NCI and DPRI	June 26, 2023	Kyoto University, Ja- pan
Joint academic seminar with KAD and Chungbuk Research Institute	How should we respond to extreme rainfall disasters in the era of climate crisis?	September 22, 2023	Chungbuk Research Institute, Korea
Extreme disaster response strategy forum in the era of climate crisis	How should we respond to extreme rainfall disasters in the era of climate crisis?	November 29, 2023	Jikji Global, Korea
ICW 2023 Workshop	International Clustering Workshop	December 19-20, 2023	Ton Duc Thang Uni- versity, Vietnam

2. Projects—1) Project starting in 2023

Project title	Ordering agency	Period	Research grant (USD)
Consignment Project of Cheongju Carbon Neutrality Support Center	Cheongju city, Korea	March, 2023- December, 2025	About 150,000
Humanities and Social Research Institute support project	National Research Foundation, Korea	November 1, 2023 – August, 21, 2029	About 1,250,000
Chungbuk Disaster and Safety 2030 Vision	Chungcheongb uk-do, Korea	December 19, 2023	About 71,000

3.Publications

'Contingencies and Crisis Management Review' is an academic journal hosted and published by NCI since 2017. It is published twice a year (June and December), and Volume 7, Issues 1 and 2 have been published in 2023.

2) Project completed in 2023

Project title	Ordering agency	Period	Research grant (USD)
Development of technology for efficient operation and management of disaster management resources	Ministry of Public Administration and Security, Korea	April 2020 – December 2023	About 1,270,000
Development of a crisis management resilience strengthening model to make a safe community	National Research Foundation, Korea	September 2020 – August 2023	About 450,000



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In this 2023 report, the Institute for Environment and Development (LESTARI), Universiti Kebangsaan Malaysia (UKM) reports selected activities, as below:

(A) Performance of LESTARI in the context of SDGs

The Institute for Environment and Development (LESTARI) was established on 1st October 1994, 2 years after the United Nations Conference on Environment and Development held in Rio de Janeiro, Brazil. LESTARI aims to be the centre of excellence in research and training on matters pertaining to environment and development in Malaysia and the Asia Pacific. As LESTARI has been established for 29 years, it was noticed that the research outputs of LESTARI are relevant to sustainable development, even before the commencement of Sustainable Development Goals (SDGs). In this regard, we have carefully examined LESTARI's performance in the context of SDGs, and we found that since 1994, a total number of 415 research projects led by LESTARI was completed, with the total

RM

LESTARI has also produced 1,373 journals, and conducted 823 activities at university, national and international levels. A total number of 148 PhD and 93 master students have graduated from LESTARI. For more details, please visit https://www.ukm.my/lestari/wp-content/ uploads/2023/07/pamplet SDG-1.pdf

(B) Research strengths of LESTARI

LESTARI focuses on multi-disciplinary and interdisciplinary research. Hence, we have compiled the expertise areas among the research fellows in LESTARI, and this can be found at <u>https://</u> www.ukm.my/lestari/wp-content/uploads/2024/02/ expertiseLESTARI 2023 compressed.pdf Furthermore, two LESTARI's research groups were recognised as University Research Group (or

Kumpulan Penyelidikan Universiti KPU), namely the Malaysian Research Network for Climate, Environment and Development (MyClimate) and the Chemicals Management Research Group (CMRG).

> Dr. Goh Choo Ta Director E-mail: gohchoota@ukm.edu.my



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amount of research grant

57,509,175.

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SDG	Number of Activities	University	N	ational I	nternatio	nal
SDG 1	12	75%		25%		%
SDG 2	24	7	9%		13%	8%
SDG 3	7	43%		43%	1	4%
SDG 4	72	32%		64%		4%
SDG 5	3	67%	0		33%	, 5
SDG 6	89	51%		38%	5	11%
SDG 7	8	63%	6		37%	
SDG 8	49	53%		37%	5	10%
SDG 9	21	48%		29%	23	%

SDG	Number of Activities	University		National	Internati	onal
SDG 10	12	42%		50%		8%
SDG 11	122	34%		56%		10%
SDG 12	87	38%		51%	6	11%
SDG 13	69	22% 59%			19%	
SDG 14	19	42%			53%	5%
SDG 15	144	53	3%		33%	14%
SDG 16	33	39%		42%	6	19%
SDG 17	52	19%	46	5%	35	5%
		Total n	umber	of acti	vities	823

hniah

Ketua Kumpulan: Prof. Dr. Joy Jacqueline Pereira

Ahli Kumpulan: Prof. Dr. Rozita Hod Prof. Madya Dr. Sharina Abdul Halim Prof. Madya ChM. Dr. Tan Ling Ling Gs. Dr. Nurfashareena Muhamad

Malaysian Research Network for Climate, Environment & Development (MyClimate) **LESTARI UKM**

kerana telah ditubuhkan dan diiktiraf sebagai

Kumpulan Penyelidikan Universiti (KPU)

LEST

pada 27 Jun 2023



NARATIF BAHARU UKM

Ketua Kumpulan: Prof. Madya ChM. Dr. Goh Choo Ta

Ahli Kumpulan:

Prof. Emrts. Dato' ChM. Dr. Mazlin Mokhtar Prof. Dr. Mohd Talib Latif Prof. Ts. Dr. Lee Khai Ern Prof. Madya ChM. Dr. Tan Ling Ling Prof. Madya Dr. Chan Kok Meng Ts. Dr. Murnira Othman Dr. Lubna Alam Dr. Minhaz Farid Ahmed Dr. Aziemah Zulkifli En. Mohamad Mahathir Amir Sultan

Tahniah

Chemicals Management Research Group (CMRG) LESTARI UKM

kerana telah ditubuhkan dan diiktiraf sebagai Kumpulan Penyelidikan Universiti (KPU)

pada 27 Jun 2.23





National Science and Technology Center for Disaster Reduction (NCDR), Chinese Taipei



2023 International Training Workshop (ITW) for Youth Leadership on Humanitarian Assistance and Disaster Relief in Hualian, Chinese Taipei

In 2023, the National Science and Technology Center for Disaster Reduction (NCDR) continued its commitment to capacity building and fostering privatepublic collaboration in disaster risk reduction efforts.

From August 25th to 28th, the 2023 International Training Workshop (ITW) for Youth Leadership on Humanitarian Assistance and Disaster Relief took place at the Taiwan Hualian Tzu Chi Jing Si Hall. Coorganized by NCDR, the Buddhist Tzu Chi Charity Foundation, and Tzu Chi University, this marked the 18th iteration of the ITW, a tradition initiated in 2015. Notably, 2023 saw the first participation of overseas delegates in Taiwan following the Covid-19 pandemic. Among the main participants were students from prestigious institutions such as National Taiwan University, National Cheng Kung University, National Central University, Kyoto University, the Asian Institute of Technology, Indian Institute of Technology Roorkee, Sunway University of Malaysia, and other academic establishments across the Pacific region. The workshop drew 65 participants from 19

Countries, including Zimbabwe, Nigeria, Malawi, Portugal, Sri Lanka, Myanmar, Nepal, Bangladesh, Thailand, India, Indonesia, Malaysia, the Philippines, Vietnam, Pakistan, the U.S., Colombia, Palau, and Taiwan. The workshop's focal point lay in enhancing capacity for Humanitarian Assistance and Disaster Relief (HADR), particularly in the context of typhoon scenarios. Training sessions were tailored to equip participants with the necessary skills in humanitarian assistance planning, technological applications, and disaster relief operations. The curriculum employed a multifaceted approach encompassing lectures, hands-on exercises, brainstorming sessions, and collaborative teamwork to foster creativity and practical skill development.

The HADR Hands-on Exercise immersed participants in real-life disaster relief operations. Tasks included constructing temporary shelters, operating mobile kitchens to prepare hot meals, ensuring access to clean water and lighting, and devising inclusive shelter configurations and operational plans.

> Ms. Kiri Ke Hui Chen Assistant Researcher



E-mail: khc@ncdr.nat.gov.tw

During the Typhoon Scenario Exercise, participants engaged in team discussions to conduct disaster risk analysis and develop emergency operations, preparedness, and recovery plans. Utilizing a simulated typhoon scenario as a backdrop, participants assumed roles within an international disaster relief organization and devised strategies for various phases of a typhoon's impact.

In the concluding session, three participant teams showcased their acquired knowledge and creativity by presenting final reports and sharing reflections on the workshop. Mr. George T. Chang, Deputy Chief Executive Officer of Tzu Chi Foundation, and Dr. Hongey Chen, Director of NCDR, delivered closing remarks. Director Chen emphasized the importance of cross-border cooperation and highlighted the need for multiparty collaboration in leveraging science, technology, and training initiatives to enhance disaster resilience. This collaboration marked the third international training endeavor between NCDR and Tzu Chi Charity Foundation, underscoring their commitment to fostering "Cross-boundary Synergies" aimed at integrating science, technology, disaster reduction, relief efforts, humanitarian assistance, and international initiatives. NCDR reaffirmed its dedication to driving innovative approaches to address the challenges posed by natural disasters.



HADR Hands-on Exercise- operating mobile kitchens



HADR Hands- constructing temporary shelters

HADR Hands- planning shelter operations



CICIPC Asian Disaster Preparedness Center (ADPC) Thailand https://www.adpc.net/igo/?



ADPC supported the Ethiopia Public Health Institute to build the capacity of their middle level managers and other relevant stakeholders on public emergency health management leadership.

In 2023, the Asian Disaster Preparedness Center (ADPC) continues to boost disaster and climate resilience throughout Asia, achieving key milestones in climate change adaptation, risk management, and capacity enhancement. Through partnerships with national and local government agencies, international organizations, NGOs and CSOs, and local vulnerable communities, ADPC has effectively mobilized efforts across high-risk areas, driving significant advancements in sustainable development and strengthening the resilience of communities, governmental bodies, and organizations amidst the intensifying challenges posed by climate change.

The following highlights ADPC's accomplishments, insights gained, and progress made in 2023, underscoring its pivotal role in shaping disaster preparedness and response

strategies in Asia.

The SERVIR-Southeast program, backed by USAID, NASA, and ADPC, has significantly boosted climate

resilience in the Lower Mekong region. It provided improved access to data and tools, developed decision support tools, trained over 3,100 people, and influenced climate and disaster resilience policies. These initiatives have strengthened the region's ability to tackle climate challenges sustainably. The tools developed by Servir-Southeast Asia included the Mekong Air Quality Explorer Tool to monitor and forecast air quality in Thailand, Rainstorms Tracker for the Mekong River Commission, and the Cambodia Protected Area Alerts System for near real-time monitoring of protected areas in the country.

> Mr. Bill Ho Director



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Kick-off meeting of the Second Phase of the Bangladesh Preparedness Partnership with the Ministry of Disaster Management and Relief, Bill and Melinda Gates Foundation, and ADPC.

- The "Urban Resilience to Climate Extremes in Southeast Asia (URCE)" program, funded by Norad from 2018 to 2023, aimed to strengthen the resilience of urban systems and communities in Southeast Asia's deltaic and coastal cities against climate extremes and disasters. Focused on Vietnam, the initiative enhanced the capacity of city officials and stakeholders in urban planning, early warning response, disaster risk management, mental health support, and nutrition in emergencies. It also developed hazard maps for floods, strong winds, cold, and heatwaves to improve governance, community readiness, and sectoral preparedness in targeted cities. Moreover, the program supported Vietnam's Meteorological and Hydrological Administration in establishing an Impact-based Forecasting and Warning system in two cities.
- Launched in 2017 with support from ADPC, the Bill & Melinda Gates Foundation, and USAID, the Asian Preparedness Partnership (APP) involves Cambodia, Laos PDR, Myanmar, Pakistan, Philippines, Nepal, and Sri Lanka. Its mission is to boost resilience by promoting local disaster risk management efforts. APP • facilitates collaboration among government bodies, local humanitarian groups, and the private sector, offering training and networking to enhance disaster response and risk management. It fosters communityled preparedness and recovery, leveraging improved coordination and capacity building. It has established National Preparedness Partnerships across its member states, advocating for a localization approach where local and national actors lead DRM activities. The partnership's achievements include fostering local disaster preparedness actions, introducing costeffective DRM innovations, and contributing to a supportive environment for humanitarian system transformation at both regional and global levels.
- The Climate Adaptation and Resilience (CARE) project, collaboration between the Asian Disaster Preparedness Center (ADPC) and the World Bank, significantly advances climate resilience across Bangladesh, Nepal, and Pakistan. Over four years, ADPC has worked with thirty-seven ministries and departments, plus nearly 30 new regional entities, enhancing sectoral policies and cooperation. ADPC's efforts include integrating climate risk data into advisory services, promoting gender-sensitive policies, and improving standards for climate resilience. Bangladesh has upgraded road and bridge design standards for climate resilience with the Local Government Engineering Department and supported climate-smart agriculture initiatives. Nepal has seen a successful review of climate public expenditure, infrastructure enhancement with the Department of Roads, and the development of a Climate-Smart Agriculture Investment Plan. In Pakistan, ADPC has bridged federal and provincial communications on climate change, underscoring the project's regional impact and collaborative approach.
- Working with the Ethiopia Public Health Institute, ADPC developed a Public Health Emergency Management Leadership Training for managers in the public health sector to strengthen their ability to manage emergency events more effectively and efficiently. Topics covered included leadership skills, risk communication, community engagement, and resource management.





ADPC organized a tailored DRM course for senior NEMA Mongolia officials in Bangkok, Thailand to strengthen their capacity in disaster and climate resilience





ADPC organized a technical workshop session titled 'From Innovation to Impact: Emerging Technology and Locally-led Solutions to Address Community Adaptation and Resilience.' at the 17th International Conference on Community-Based Adaptation to Climate Change (CBA17)



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- 22. https://www.facebook.com/SHECU2560/ posts/4174643522622078



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Japan and Oceania

Japan	Research Center for Regional Disaster Prevention and Mitigation, Akita University
Japan	Asian Disaster Reduction Center (ADRC)
Japan	Center for Disaster Management Informatics Research, Ehime University
Japan	International Centre for Water Hazard and Risk Management (ICHARM) under the auspices of UNESCO
Japan	International Consortium on Landslides (ICL)
Japan	Crisis & Security Management Research Center, Kagawa University
Japan	Research and Education Center for Natural Hazards, Kagoshima University
Japan	Institute of Nature and Environmental Technology, Kanazawa University
Japan	Research Center for Social Safety Science, Faculty of Safety Science, Kansai University
Japan	Research and Development Center of Fire and Environmental Safety (RDFES), Center for Disaster Countermeasures (CDC), The University of Kita Kyushu
Japan	Research Center for Urban Safety and Security (RCUSS), Kobe University
Japan	Disaster Nursing and Global Nursing section of Fundamental Nursing, Kobe City College of Nursing
Japan	Implementation Research and Education System Center for Reducing Disaster Risk (IRESC), Kumamoto University
Japan	Institute of Disaster Area Revitalization, Regrowth and Governance (IDiARRG), Research Institute for Disaster Area Reconstruction, Kwansei Gakuin University
Japan	Disaster Prevention Research Institute (DPRI), Kyoto University
Japan	Graduate School of Global Environmental Studies (GSGES), Kyoto University
Japan	Disaster Risk Reduction Research Center, Faculty of Engineering, Kyushu University
Japan	Research Institute for Applied Mechanics (RIAM), Kyushu University
Japan	Center of Environmental Science and Disaster Mitigation for Advanced Research (CEDAR), Muroran Institute of Technology
Japan	Advanced Disaster Prevention Engineering Center (ADPEC), Nagoya Institute of Technology
Japan	Disaster Mitigation Research Center (DMRC), Nagoya University
Japan	National Research Institute for Earth Science and Disaster Resilience (NIED)
Japan	Research Institute for Natural Hazards & Disaster Recovery, Niigata University
Japan	Research Initiative for Natural Disaster Prevention of Oil and Gas Spill in Industrial Parks, Graduate School of Engineering, Osaka University
Japan	Graduate School of Human Sciences, Faculty of Human Sciences, Osaka University
Japan	Frontier Research Center for Natural Disaster Mitigation, Ritsumeikan University
Japan	Institute of Disaster Mitigation for Urban Cultural Heritage (R-DMUCH), Ritsumeikan University
Japan	Disaster Prevention Research Center for Island Regions, University of the Ryukyus
	Research Institute of Disaster Science (IRIDeS), Tohoku University
pan	Center for Urba, Carthquake Engineering (CUEE), Tokyo Institute of Technology
Japan	Earthquake Research Institute (ERI), The University of Tokyo

Open Campus Day 2023 Disaster Prevention Research Institute (DPRI), Kyoto University, Uji Campus, Kyoto, Japan























Asian Disaster Reduction Center (ADRC)

Japan

https://www.adrc.asia/



A study visit to 2023 Türkiye Earthquake-affected areas

The Asian Disaster Reduction Center (ADRC) conducted activities in the fields of (1) information sharing, (2) human resource development and (3)

building community capabilities in cooperation with stakeholders.

The following are brief of some of the activities.

- In October, the Asian Conference on Disaster Reduction (ACDR) 2023 was held in Dushanbe, Tajikistan as well as on line. More than 200 participants attended the meeting titled "Effective Implementation of DRR Measures —Enabling Digital Transformation in DRR—."
- In October, ADRC, in collaboration with the Disaster and Emergency Management Presidency (AFAD) of Türkiye, University of the Ryukyus, and Hacettepe University, conducted a study visit to the 2023 Türkiye Earthquake-affected areas to observe the impacts, challenges, and lessons from the earthquake disaster; to gain insights on improving the DRR plans of ADRC member countries; and to facilitate knowledge and information exchange.
- In November, ADRC's Online Tsunami Seminar held on 15 November 2023 dwelt with the "State and Challenges of Community-Based Tsunami Preparedness."
- In December, GLIDE Steering Committee Meeting was held online with the participation of 25 experts from 9 SC member organizations including UN, international and regional organizations and research institutes. GLIDE, Global disaster

IDEntifier, is a global program proposed by ADRC and cooperated by partner organizations, produces identifiers to disasters in the world and contributing to disaster information management for more than 20 years.

• Turkey-Syria Earthquakes (6 February 2023)]

Strong 7.8 magnitude earthquake strikes in Turkey near Syrian border. Massive quake hits near southern city of Kahramanmaras and is felt in Syria and Lebanon, with fears of widespread destruction and casualties. The first satellite images from the DPN were provided on December 7, images of 1 day after the occurrence of the disaster. Finally, 107 satellite images were provided by DPNs and 71 VAPs were provided by DANs. A lot of valuable information was provided and it was utilized to inform the situation in the affected area. After this disaster event, ADRC and JAXA visited in Ankara (Turkey) and had a workshop related to the Sentinel Asia in December 2023.



Senior Researcher E-mail: ys-shiomi@adrc.asia Utilization of Space Technology for DRR in Asian countries -Sentinel Asia-

Natural hazards have been on the rise worldwide, including the Asia-Pacific region. The Asia-Pacific region suffers from different types of hazards, such as earthquakes, cyclones/typhoons, floods, landslides, droughts, tsunamis, volcanic eruptions and forest fires. Several of them are large-scale, devastating disasters. Given the high population level (about 3 billion) as well as the high frequency and severity of hazards in the region, an integrated use of space technology, such as earth observation satellite data and geographic information systems, can be an effective means to reduce the magnitude of the severity, or provide timely management in the event of a large-scale natural hazard or disaster.

In light of the increasing frequency of hazards and an elevated loss of lives and properties from these events, Sentinel Asia was conceptualized in 2005, and begun to operate in 2007. It is engaged in activities to share and provide disaster-related information, including earth observation satellite images via the internet, to contribute toward disaster management in the Asia-Pacific region. Space agencies from the member countries of the Asia-Pacific Region Space Agency Forum (APRSAF), cooperate in forming a Joint Project Team (JPT) and promoting SA. As of December 2023, it consists of 114-member organizations, including 97 agencies from 29 countries/regions and 17 international organizations.

And Sentinel Asia is composed of two Nodes (Data Provider Node, and Data Analysis Node) and four Working Groups. The Data Provider Node (DPN) provides their own satellite imagery and other relevant data to JPT members upon an Emergency Observation Request (EOR) from a JPT member, to the extent permitted by the data policy of each DPN when a disaster occurs, while the Data Analysis Node (DAN) analyzes the satellite data provided by DPN, makes a value-added product and uploads and shares the result through the new Sentinel Asia EOR system "OPTEMIS" which started to operate in 2019. Between 2006 and 2022, about 451 EORs have been made or accepted, providing data and products to its members to support disaster management. And 27 requests were accepted in 2023.

[For more activities and details, please visit ADRC's website (https://www.adrc.asia/)



GADRI Annual Report 2023 -93

GADRI Annual Report — Japan

International Centre for Water Hazard and Risk Management under the auspices of UNESCO (ICHARM), Japan

<complex-block>

Innovative Research: Development of an analysis model for sediment and driftwood laden floods

ICHARM has developed a rainfall sediment-runoff (RSR) model to assess the amount of sediment and driftwood discharged from a basin during a heavy rainfall event. This model combines rainfall-runoff analysis with slope stability analysis, debris tracking using equations for a system of particles, and sediment and driftwood runoff analysis using a unit channel model to analyze water, sediment, and driftwood runoff at any point in a basin. The model was applied to the 2017 Akatani River flood disaster in Japan to calculate the discharge of water, sediment, and driftwood. Using these results, a planar two-dimensional analysis was conducted for the flooded area, and the results are shown in Fig. 1. The analyses found that the flooded area can be more accurately calculated by considering sediment and driftwood, indicating that these methods are useful for creating hazard maps and evacuation plans. (Fig. 1)

Effective Capacity Building: Follow-up Seminar for the graduates of the ICHARM master's and PhD's programs

As of December 2023, 182 students completed the master's program, and 17 received a doctoral degree. On February 22, 2023, ICHARM held the Follow-up

Fig.1 A comparison in the water depth the peak discharge between water only (left) and water with sediment and driftwood (right)

(The white dotted line indicates the flooded area interpreted from aerial photos)

Seminar at ICHARM to help graduates brush up their skills and knowledge and to gain feedback to improve our programs. Seventeen graduates who were visiting Japan to attend ICFM9 participated in the seminar along with faculty members, current students, and other invited guests. Executive

students, and other invited guests. Executive Director KOIKE delivered the keynote address sharing five guiding principles that he keeps in mind as a scientist; he encouraged young scientists to keep scientific curiosity, respect diversity, cherish a reciprocal relationship with fellow scientists, work together, and be humble by always reflecting on one's actions. There were two interactive sessions, one for listening to voices from the graduates and the other for questions and answers between former and current students. An enthusiastic discussion took place in response to questions raised by current students, which were mainly related to the experiences the graduates had in practicing what they had learned at ICHARM in their countries or organizations. (Fig. 2)



Prof. Toshio Koike Executive Director E-mail: <u>t-koike@pwri.go</u>



Fig.2 Participants in the Follow-up Seminar

Efficient Information Networking: Ninth International Conference on Flood Management (ICFM9)

On February 18-22, 2023, GRIPS and ICHARM cohosted ICFM9. The overall theme of ICFM9 was set as "River Basin Disaster Resilience and Sustainability by All - Integrated Flood Management in the Post COVID-19 Era." The plenary session, held at the Tsukuba International Conference Center from the 19th to the 21st, was attended by 394 flood experts from 41 countries and regions, including Japan. Under its grand theme, presentations and discussions took place on important issues to be addressed in the post-corona era, including how to rebuild a flood-resilient society and how to transform the current flood management into comprehensive and multi-layered water-related disaster risk reduction that combines hard and soft measures and takes climate change impacts into account. Despite the lingering effects of the corona crisis, the number of participants was almost double the expected number, and each session and project was successful. (Fig.3)



Fig. 3 Participants in ICFM9



Institute of Education, Research and Regional Cooperation for Crisis Management, Shikoku (IECMS), Kagawa University, Japan http://www.kagawa-u.ac.jp/iecms_english/



基調講演:田中里沙氏

Kagawa University Crisis Management Symposium

You Tubeオンライン配信

We have been selected by the International Science and Technology Cooperation Program for Responding to Global Issues (SATREPS) conducted by JST and JICA, and are currently conducting the following research.

(1. Outline of the research topic) This research will be carried out in collaboration with MARTEST of Gebze University of Technology in Turkey, an earthquakeprone country, to significantly contribute to the development and dissemination of earthquakeresistant technology to reduce damage as earthquake risk related to the North Anatolian Fault increases. It is something that contributes. MARTEST aims to develop new technologies, test and evaluate existing technologies, and disseminate the technologies to greatly contribute to the creation of earthquakeresistant cities that are resilient to disasters in Turkey and neighboring countries. In addition, we aim to build a society that is resilient to disasters from both hardware and software perspectives by conducting earthquake monitoring research, earthquake and tsunami occurrence scenario research, and developing a disaster mitigation education system using DX. Specifically, by providing seismic engineering technology through structural experiments from Japan, we will aim to improve the level of seismic engineering in Turkey, and through MARTEST, we will disseminate and educate the knowledge to Turkey and neighboring countries. We will also propose an earthquake and tsunami damage mitigation system using advanced observation systems and simulations.

 Kagawa University Crisis Management Symposium

1. Heading) "Inclusive disaster prevention for a diverse society - A guidepost towards making our town resilient"

2. Purpose: In the Shikoku region, where the declining birthrate and aging population are progressing rapidly, the diverse human resources of the region In order to promote resilience by making the most of the city and developing human resources that suit the characteristics of the region, while ensuring that no one is left behind.

3. Date and time: December 4, 20203 (Monday) 13:00 -16:45

4. Venue: Kagawa International Conference Center (Takamatsu Symbol Tower Tower Building 6th floor) (simultaneously distributed online)



• Selected for NICT FY2025 commissioned research]

1. Heading: Research and development to build a next -generation recovery model created by AI development ~ Modeled on Takamatsu City

Regional efforts

2. Purpose: This research aims to explain how, in past large-scale disasters, it took a long time to issue disaster victim certificates due to delays in diagnosing damaged buildings. Taking advantage of the lessons learned from delays in support, we envisioned a largescale disaster using Takamatsu City as a model area, and developed rapid damage estimation and understanding methods using cutting-edge science and technology such as AI. The aim is to contribute to the rapid rebuilding of lives in the affected areas by creating a next-generation reconstruction model that realizes the issuance of disaster victim certificates, the disbursement of support funds, and the reconstruction of housing. • Graduate School of Emergent Science, Department of Emergent Science (Doctoral Program)]

The Ministry of Education, Culture, Sports, Science and Technology has notified us of permission to establish the Department of Emergent Science (doctoral course) at the Graduate School of Emergent Science on August 31, 2023. As part of the university's graduate school reform, in April 2022, four graduate schools, the Graduate School of Education, the Graduate School of Law, the Graduate School of Economics, and the Graduate School of Engineering, will become the parent graduate school, and the Graduate School of Emergent Science (Department of Emergent Science) will be established. Master's program) has been established. Based on the idea of "emergent science" of the graduate school's master's program, the Graduate School of Engineering considers the knowledge, abilities, techniques, etc. required in the region as "integrated knowledge", and has established the Graduate School of Engineering as a training program for doctoral personnel who can integrate fields. Based on the doctoral program, we plan to establish the Graduate School of Emergent Science Department of Emergent Science (doctoral program) in April 2024. Accordingly, the current Graduate School of Emergent Science Department of Emergent Science (master's program) will be renamed to the Graduate School of Emergent Science Department of Emergent Science (master's program), and this graduate school will have a sectional doctoral program. This is the first time that a doctoral degree (crisis management) has been established at a national university in Japan.



Center for Disaster Countermeasures (CDC) The University of Kitakyushu, Japan

http://www.env.kitakyu-u.ac.jp/ja/shoubou/

Seminar on environmentally friendly soap-based firefighting agent

The Center for Disaster Countermeasures has been activelv disseminating knowledge on the environmentally friendly firefighting agent that was developed by a joint venture of the Kitakyushu City Government, private companies, and the University of Kitakyushu. This natural soap-based firefighting agent enhances the efficiency of firefighting and reduces the amount of water use while minimizing its environmental and ecological impacts. This soapbased firefighting "Miracle Foam" is categorized as a Class A firefighting agent that is used for dealing with fire cases involving ordinary solid combustibles such as paper, wood, cloth, and some plastics. In 2023, our center held a half-day online seminar on this firefighting agent on Feb 7. More than 200 firefighters and experts from 186 fire departments across Japan joined this seminar.

The seminar started with the introduction of the firefighting agent by Shabondama Soap Co., which is a Kitakyushu-based natural soap company, and followed by an online visit to its factory. Then, an experiment showed the great permeability of the water mixed with the firefighting agent. This enhanced permeability enables more water to reach the surface of burning materials to effectively remove the heat of fire, resulting in fast extinguishing of the fire with a smaller amount of water. This introduction part was followed by a presentation by the firefighters from the Kitakyushu Fire and Disaster Management Bureau. They shared the results of the experiment where this soap-based firefighting agent was used to extinguish a simulated wildfire in the Hiraodai field, Kitakyushu. This experiment was conducted as part of the yearly grassland burning to sustain the landscape of this quasi-national park. Then, Prof. Uezu Kazuya gave a lecture on the scientific theory of extinguishing fire and how this firefighting agent improved the efficiency of heat removal. Prof. Kawano Tomonori then gave a lecture from the perspective of a biologist. He introduced the history of wildfire and human society, and then he defined the criteria for environmentally friendly firefighting agents. The difference between natural soap-based and artificially synthesized firefighting agents was explained. Then, he aired some videos of his

experiments showing the good performance of the soap-based firefighting agent in saving the lives of fish, microorganisms, protozoa, and soil organisms.

The lecture session was followed by an active discussion session. The topics discussed include the following and more.



Firefighting agent—Miracle Foam

- A comparison of the Foam effectiveness of the firefighting agent used as foam and water solution.
- Maximum possible length in storing the firefighting agent both in an unopened or in an opened bottle.
- Capability of the firefighting agent in dealing with Class B fire cases or fire cases involving flammable or combustible liquids and gases.
- Citizens' responses and understanding of the impacts of firefighting foam on the environment. Possible strategies for disseminating the environmental friendliness of the firefighting agent among citizens.

Details of this seminar can be found here.

https://office.env.kitakyu-u.ac.jp/ kangiken/center/center01/



Prof. Takaaki Kato E-mail: <u>tkato@kitakyu-u.ac.jp</u>



Kobe City College of Nursing, Japan

http://www.kobe-ccn.ac.jp/english/

The Future of Nursing 2020-2030: Global Applications to Advance Health Equity

Susan Hassmiller Ashley Darcy Mahoney Kenya Beard Editors

2 Springer

The Kobe City College of Nursing houses a specialized field within the Basic Nursing Science area, focusing on Disaster Nursing and International Nursing. This field is dedicated

to the development of theory, as well as the advancement of education and research practices in disaster nursing in Japan. Our recent research efforts have expanded to include care strategies that address the impacts of climate change and environmental challenges, integrating the concepts of Planetary Health and the Social Determinants of Health.

Japan's practice and culture of disaster nursing are regarded as advanced by international standards. This recognition is underscored by the inclusion of our approaches in the American Academy of Medicine's National Academy of Medicine consensus study, "The Future of Nursing 2020-2030: Charting a Pathway to Achieving Health Equity," particularly in the context of health equity during disasters and public health emergencies in Asia.

Our commitment to education is further demonstrated through our participation in a JICA training course on health crisis management and leadership aimed at "Improving Nursing Management Capacity to Achieve UHC." This course has attracted faculty from nursing universities and government officials from eight countries, including Bangladesh and Cambodia. Additionally, our students have engaged in a summer seminar at the WHO Kobe Centre to discuss health crisis management

and have participated conferences,

in international broadening their perspective

and expertise.

The master's program at Kobe City College of Nursing is recognized as a Certified Nursing Specialist (CNS) program. It is designed to equip students with

Kanbara, S., Pandey, A., Mashino, S. (2023). The Nurse's Role in Achieving Health Equity in Disasters and Public Health Emergencies in Asia. In: Hassmiller, S., Darcy Mahoney, A., Beard, K. (eds) The Future of Nursing 2020-2030: Global Applications to Advance Health Equity. Springer, Cham. https://doi.org/10.1007/978-3-031-29746-5_9

> advanced skills in disaster management through lectures by leaders in disaster nursing, practical experience in disaster center hospitals, and community practice. These components are integral to our basic nursing education, emphasizing self-help, mutual aid, and the pivotal role of nursing.

> In a novel approach to nursing education, we collaborate with local residents who volunteer as guest speakers, mock patients, and participants in various educational activities. This interaction not only enriches the learning experience for our students but also revitalizes educational activities by incorporating real-world perspectives, particularly through narratives from survivors of the Great Hanshin-Awaji Earthquake. Such engagements underscore the importance of disaster nursing education and preparedness.

> Before graduation, our students also undergo comprehensive training in disaster management, including managing evacuation centers and triage postdisaster. This training is complemented by lectures from experienced professionals, such as the deputy chief nurse of the Kobe City Hospitals, who share insights on disaster response and preparedness.

> Looking ahead, Kobe City College of Nursing is proud to host the 8th World Congress of Disaster Nursing. This event marks a significant milestone, celebrating our growth from seven founding countries into a robust global network actively contributing to the SDGs and the Sendai Framework for Disaster Reduction.



Prof. Sakiko Kanbara

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Poster; the 8th World Society of Disaster Nursing

ences. These experiences allow them to engage in meaningful dialogues on health crisis management with peers from around the world.

The Kobe City College of Nursing offers a Certified Nursing Specialist (CNS) program within its master's course, focusing on producing disaster management experts. The program includes lectures by disaster nursing leaders, hands-on practice in a disaster center hospital, and community engagement. This compre-

The congress will address the challenges of the post-Corona era and aims to foster sustainable community well-being through a hybrid format of sessions. It will highlight the critical role of disaster nursing in the context of climate change and promote global health and social sustainability.

Kobe, with its history and commitment to disaster response, provides an ideal setting for this gathering.

The Kobe City College of Nursing, through its Disaster Nursing and International Nursing Field within the Basic Nursing Science area, stands at the forefront of disaster nursing education and research practice in Japan. Our curriculum is built on a foundation of theory and practical application, integrating cutting-edge research on care strategies influenced by climate change, environmental concerns, and global health perspectives, including Planetary Health and Social Determinants of Health.

Our innovative approach in disaster nursing is recognized globally, notably referenced by the American Academy of Medicine's National Academy of Medicine in their study "The Future of Nursing 2020-2030: Charting a Pathway to Achieving Health Equity." We take pride in our contribution to shaping the role of nursing in health equity, particularly during disasters and public health emergencies in Asia.

We have extended our expertise beyond the classroom, engaging faculty and government officials from various countries through a JICA training course on health crisis management and leadership. Our efforts are aimed at improving nursing management capacity to support Universal Health Coverage, with a diverse international participation.

Our students have the unique opportunity to gain realworld insights by participating in seminars, such as those held at the WHO Kobe Centre, and international conferhensive training is integral to the basic education provided by our School of Nursing.

The importance of self-help and mutual aid is emphasized in our compulsory basic education courses. A hallmark of our educational model is the involvement of local residents as educational volunteers. They actively participate as guest speakers, mock patients, and in various practical training exercises. This collaboration not only enriches the learning experience but also revitalizes our educational activities.

We also have a unique approach to learning from history. By inviting individuals affected by the Great Hanshin-Awaji Earthquake, our students gain a profound understanding of disaster impact and the variability of needs based on location, age, and the nature of support provided. These testimonies are invaluable for students, many of whom have not personally experienced a disaster, enabling them to reflect on their role in disaster nursing.

Before graduation, our students are thoroughly trained in managing evacuation centers and triage through our Disaster Nursing II elective course. This training includes special lectures from experienced nursing professionals and allows students to create their own district disaster management plans.

The College not only attracts students with a predisposition for disaster nursing but also encourages active participation in disaster management activities, as evidenced by the response to the Noto Peninsula earthquake.

Looking ahead, the Kobe City College of Nursing is honored to host the 8th World Congress of Disaster Nursing next year. This Congress is a testament to the growth of the WSDN, which has evolved into a vital global network since its inception in Kobe in 2008. The conference aligns with the SDGs and the Sendai Framework for Disaster Reduction, addressing the post-





International Agreement of Exchange concluded Between the Pacific Earthquake Engineering Research Center, University of California, Berkeley, USA; and the DPRI, Kyoto University

The Disaster Prevention Research Institute (DPRI), Kyoto University and the Pacific Earthquake Engineering Research (PEER) Center at the University of California, Berkeley, USA entered into an International Agreement of Exchange. The Agreement was signed by Prof. Eiichi Nakakita, Director, DPRI, and Prof. Khalid Mosalam, Director, PEER on 19 December 2023.

The two institutes have been engaged in a wide range of research in the field of earthquake engineering since 2002. Prof. Mosalam is currently on a sabbatical at the Research Division of Earthquake Disasters, Earthquake Resistance Structures Division, DPRI, Kyoto University. It is envisaged that the two institutes will closely work together on areas such as structure maintenance and monitoring technology, large-scale structural experiments and simulations, disaster information collection using AI, and early disaster warning information systems.

From: news_en/20133/ https://www.dpri.kyoto-u.ac.jp/



Source: DPRI, Kyoto University Home Page







Signing of an International Agreement of Exchange with the Faculty of Science and Engineering, Swansea University, UK

Prof. Harshinie Karunarathna, Faculty of Science and Engineering, Swansea University visited the Disaster Prevention Research Institute (DPRI), Kyoto University to renew the International Agreement of Exchange between the two institutes. The Agreement was signed by Prof. Karunaratne and Prof. Eiichi Nakakita, Director, DPRI Kyoto University on 13 December 2023.

The Agreement was entered into force in 2013 between the Faculty of Engineering, now the Faculty of Science and Engineering, Swansea University and DPRI, Kyoto University. Since then, they have continued to engage in research exchanges in the field of coastal disaster research under the leadership of the Deputy Director, Prof. Nobuhito Mori who is also serving as honorary professor at Swansea University. The two institutes will work in close cooperation in the areas of coastal disaster mitigation and climate change using Eco-DRR/ Nature-based Solutions.

From: https://www.dpri.kyoto-u.ac.jp/ news_en/20133/



Source: DPRI, Kyoto University Home Page







A paper on the Kanto Daikasai following the 1923 Earthquake by Associate Professor Tomoken Nishino et.al. was published in a special issue of the Bulletin of the Seismological Society of America



Source: DPRI, Kyoto University Home Page

Associate Professor Tomoken Nishino co-authored a paper with Dr. Charles Scawthorn (University of California), Professor J. Charles Schencking (University of Hong Kong), and Assistant Professor Janet Borland (International Christian University) "Kantō Daikasai: The Great Kantō Fire following the 1923 Earthquake" which was published in the Special Issue of the Bulletin of the Seismological Society of America for the Centennial of Great 1923 Kanto Earthquake, Japan.

This paper focuses on the simultaneous large-scale fires that occurred in Tokyo City following the Kanto Earthquake that occurred on September 1, 1923, and summarizes the actual and estimated aspects of fire occurrence, spread, and the effects of fire air currents. At the same time, by touching on the recent trends in earthquakes and fires in Japan as well as the latest research results on damage prediction and risk assessment, emphasize that the risk of we earthquakes and fires remains significant even in modern times and should not be

overlooked.

As Japan approached the 100th anniversary of the Great Kanto Earthquake, it is hoped that the lessons learned from Japan's historic earthquakes and fires will once again be widely shared internationally and be utilized for future disaster prevention in earthquake -prone countries.

- <u>C. Scawthorn, T. Nishino, J. C. Schencking, and J.</u> Borland (2023). Kantō Daikasai: The Great Kantō Fire Following the 1923 Earthquake, Bulletin of the Seismological Society of America 113, 1902–1923. [SSA]
- <u>News [Seismological Society of America] Largest</u> <u>Historic Fire Death Toll Belongs to Aftermath of</u> <u>1923 Japan Earthquake [SSA]</u>
- https://www.dpri.kyoto-u.ac.jp/news_en/19877/



Assoc. Prof. Tomoaki Nishino E-mail:





Paper on As Global Warming Progresses Extreme and Linear Precipitation will Increase



A research group led by Prof. Nobuhito Mori conducted a large number of high-resolution climate simulations covering all of Japan, based on the "d4PDF: largeensemble and high-resolution climate simulations for global warming risk assessment".

The paper "Identifying robust changes of extreme precipitation in Japan from large ensemble 5-km-grid regional experiments for 4K warming scenario" analysis showed that the frequency and intensity of once-every-50-year heavy rainfall events and linear precipitation zones in Japan will increase as global warming progresses, as will the heavy rainfalls associated with typhoons.

This data will be made public through the Data Integration and Analysis System (DIAS). The data will be useful for analysis of future disaster prevention in Japan against extreme weather events such as heavy rainfall but also extreme heat and heavy snowfall. This data will also be useful for the formulation of global warming adaptation measures.

The research results were published in the international "Journal of Geophysical Research-Atmosphere" on 19 September 2023.

- Journal: Journal Geophysical of Research – Atmosphere
- Paper Title: Identifying robust changes of extreme precipitation in Japan from large ensemble 5-km-grid regional experiments for 4K warming scenario
- Authors: Hiroaki Kawase1, Masaya Nosaka1, Shunichi I. Watanabe1, Koudai Yamamoto2, Tomoya Shimura2, Yukari Naka2, Y.-H. Wu2, Hiroki Okachi3, Tsuyoshi Hoshino4, Rui. Ito5, Shiori Sugimoto5, Chieko Suzuki5, Shin Fukui1, Tetsuya Takemi2, Youichi Ishikawa5, Nobuhito Mori2, Eiichi Nakakita2, Tomohito J. Yamada3, Akihiko Murata1, Tosiyuki Nakaegawa1, and Izuru Takayabu1
- Source: DPRI, Home page-https://www.dpri.kyotou.ac.jp/news_en/19862/





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Institute of Disaster Area Revitalization, Regrowth and Governance, Kwansei Gakuin University, Japan

https://www.kwansei.ac.jp/fukkou/about/index_en.html



Project activities;

During 2023, the institute continued to implement the following research activities.

• International comparative study on disaster recovery and revitalization policies.

International study group on sustainable regional revitalization since 2020. Recovery from catastrophic disasters needs a long-term, sustained community effort. It is important to pass on the experience of past major disasters as systematic wisdom and knowledge and to conduct policy research to prepare for future major disasters. The group brought together researchers, practitioners, and administrators from Japan and abroad to exchange knowledge.

• International comparative study of community revitalization after nuclear disaster

The Fukushima nuclear power plant accident caused by the 2011 Great East Japan Earthquake required a completely different type of disaster and response. The Japanese government, including the national and local governments, has been promoting reconstruction policies, but there is a gab in the perception of revitalization as perceived by local communities and In July 2023, the institute and Pusan residents. National University's Slow Disaster Life Research Group jointly hosted Korea-Japan а international seminar on the

> topic of community revitalization after a nuclear disaster

and conducted a field survey.

https://www.kwansei.ac.jp/cms/ kwansei_fukkou/ file/publications/letter/fukkou_052.pdf



Events;

 An annual network meeting "Round Table Cafe" and forum

The institute organized an annual network meeting of disaster-affected areas in Japan from January 7-8, 2023. The theme was: 100 years after the Great Kanto Earthquake, let's talk about "revitalization" again. This time, on the 100th anniversary of the Great Kanto Earthquake, when the word " revitalization" began to be used with important meaning, we held a philosophy cafe-style discussion about " revitalization " once again.

 International symposium and joint study group on the theme of "Thinking about new collaboration in East Asia" is held every year since 2016. On March 23, 2023, a study group held an online symposium with researchers from various fields from Japan and South Korea regarding Seoul Halloween crowd crush that occurred in Itaewon, Seoul, South Korea on October 29, 2022.

https://www.kwansei.ac.jp/cms/kwansei_fukkou/file/ publications/letter/fukkou_051.pdf



Dr. Yoshiyuki Yama Director E-mail: yyama@kwansei.ac.jp

Institute of Disaster Mitigation for Urban Cultural Heritage (R-DMUCH), Ritsumeikan University Japan

立命館大学 歴史都市防災研究所 Institute of Disaster Mitigation for Urban Cultural Heritage. Ritsumeikan University http://www.r-dmuch.jp/en/

The Institute of Disaster Mitigation for Urban Cultural Heritage at Ritsumeikan University (R-DMUCH) has been acting as a focal point for organizing international research, training and information network in the field of cultural heritage risk management and disaster mitigation. The UNESCO Chair Programme on Cultural Heritage and Risk Management - 17th International Training Course (ITC) on Disaster Risk Management of Cultural Heritage 2023 was held online for 3weeks from 14 August to 1 September 2023, and onsite for 2 weeks from 11 September to 24 September 2023 with 13 participants from Hungary, Israel, Malawi, Pakistan, Philippines, Republic of Korea, Saudi Arabia, Spain and USA. Participants were managers of cultural heritage, disaster risk management experts, decision makers



KVPT, Loughborough University etc. We would like to

thank all colleagues for supporting us and participants

This year, the course was conducted in a hybrid format,

online and onsite. Firstly, in the online training program,

we conducted live sessions twice a week for 2.5 hours

each and one session per week was designated as a

feedback session, providing an opportunity for students

to consult with instructors regarding their individual

projects. The onsite course started on 11th September

and lasted for 2 weeks. It was focused on exercise-

based lectures, various site visits related with the

the

world.

over

and government officials involved in cultural heritage conservation or disaster management.

We are very fortunate to have resource persons from national organizations such as Agency for Cultural Affairs with Tokyo National Research Institute for Cultural Properties and Cultural Heritage Disaster Risk Management Center, the Association for the Preservation of National Temple and Shrine Roof Construction Techniques, Aichi University, Kyoto University, National Institute of Technology Akashi College, Kyoto City Fire Department, Kyoto Prefectural Board of Education, Kyoto National Museum, Nohmi Bosai Ltd., Yuasa-cho Board of Education, Kobe City Culture and Sports Bureau Cultural Properties Division and international organizations such as ICHCAP,

The book titled 'Good Practices for Disaster Risk Management of Cultural Heritage' has been published this year. It is a compilation of 12 different good practices from past ITC participants and has been edited by current UNESCO Co-Chair (https://www.routledge.com/Good-Practices-for-Disaster-Risk-Management-of-Cultural-Heritage-Practices/Jigyasu-Kim-Shakya/p/ book/9781032411446) -ji



from

course theme.

all

Good Practices for Disaster Risk Management of Cultural Heritage Practices of ITC Participants

EDITED BY ROHIT JIGYASU, DOWON KIM AND LATA SHAKYA



Prof. Shinta Yoshitomi Director E-mail: rekibou@st.ritsumei.ac.jp



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Final day with the participants with their certificates in their hands

Exercise of Hiwadabuki roof installment at the Kyoto City Cultural Property Building Conservation Technology Training Center



The theme for this year's international training was " Safeguarding and Utilization of Intangible Cultural Heritage for Disaster Risk Management of Cultural Heritage". It delved into the traditional techniques, skills, and knowledge of wooden architecture as intangible cultural heritage (ICH), festivals (including mountain, float, and street events), and the origin of Japanese cuisine - soy sauce. This deepened our understanding of the necessity of utilizing and preserving intangible cultural heritage in the prevention, restoration, and reconstruction of cultural heritage. The onsite course included various site visits related with ICH lectures and hands-on experience with roofing work by traditional craftsmen at Kyoto City Cultural Heritage Preservation Technology Training Center, inspection and lectures on the Gion Festival and its operational base, a site visit to the traditional building preservation district of Yuya-cho known for its soy sauce, and an inspection and lecture on "Inamura no Hi" in Hirogawa-cho as a disaster memory, along with a site visit and lecture on the prerecovery plan in Kainan City, Wakayama.

We learned about the role of ICH, such as Japan's traditional techniques and festival mechanisms, in supporting the restoration of tangible cultural heritage and disaster recovery. Simultaneously, we gained insights into Japan's unique and advanced initiatives on

disaster prevention measures, including preserving disaster memories and preparing for future disasters through pre-recovery plans.

On the final day of the international training program, we hosted an international expert panel discussion titled "Good Practice to Disaster Risk Management of Cultural Heritage". In July of 2023, our ITC team successfully published a book as series of the Routledge Studies in Hazards, Disaster Risk and Climate Change. This panel discussion was also conducted as a book launch event of the book. During this panel discussion, we deliberated on the future direction of capacity building program ITC with panelists. Details are available in our website https://rdmuch-itc.com/category/events/.

The training course is organized by the Institute of Disaster Mitigation for Urban Cultural Heritage, Ritsumeikan University in collaboration with ICCROM, contributed by UNESCO, ICOM & ICOMOS/ICORP, and relevant institutions of the government of Japan. We will continue these outreach activities and dissemination of our research outcomes to the international society.



Professor Sato's lecture on an ICH "Gion Festival" and its emerged community at "Ofuneboko Chokaisyo"

The annual proceedings are available in our website https://rdmuch-itc.com/resources/



Sharing good practices with our former participants

SCIENCE FOR RESILIENCE



National Research Institute for Earth Science and Disaster Resilience (NIED), Japan

http://www.bosai.go.jp



Group photo from the International Conference on Science and Technology for Sustainability 2023

The National Research Institute for Earth Science and Disaster Resilience (NIED) has been functioning as the secretariat of the Japan Hub of Disaster Resilience Partners (JHoP), a research network established in 2019 consisting of 17 partners including universities, research institutes, and other organizations in Japan, involved in disaster risk reduction (DRR) for building a resilient and sustainable society based on scientific knowledge. In 2021, with the approval from the Scientific Committee of the Integrated Research on Disaster Risk (IRDR), JHoP established IRDR ICoE-Coherence to promote international DRR research for issues including sustainable development and climate change.

2023 has been a significant year for JHoP/ICoE-Coherence because of several milestone events implemented to promote its agenda. NIED played an essential role in the success of these events as the secretariat. For example, on 7 and 8 September, the "International Conference on Science and Technology for Sustainability 2023 - Transforming Society to Resilient beyond Become and Sustainable Catastrophic Disasters" was jointly organized by Science Council of Japan, JHoP and NIED to commemorate the 100th anniversary of the Great Kanto Earthquake and to reflect on Japan's experiences and its accumulated knowledge over the past century, together with the lessons learned by other countries and regions.

The objective of this conference was to explore the role of science and technology in advancing various efforts to achieve the goals of the Sendai Framework for Disaster Risk Reduction, Sustainable Development Goals (SDGs), and the Paris Climate Agreement through close coordination of stakeholders and measures to transform our current societies to be more sustainable, resilient, and inclusive for effective recovery after catastrophic disasters.

The discussions of the conference were summarized in the Tokyo Statement 2023, in which four key recommendations were stipulated as below.

- (1) Elucidating disaster risk
- To establish science and technology for improving disaster resilience and the sustainability of societies with three ultimate goals: 1) maintaining and improving the physical, mental, and social well-being of individuals, 2) reinforcing the capacity for mutual support in communities; and 3) the coherent realization of disaster risk reduction, climate change adaptation, and sustainable development in society.
- To develop a disaster management system with an all-hazards approach, conversing multidisciplinary knowledge covering all phases of disaster management, including forecasting, prevention/mitigation, early warning, emergency response, and recovery/restoration.




1st Scientific Advisory Board (SAB) Meeting of ICoE-Coherence

 To realize the consilience of knowledge for disaster resilience using information infrastructure to disseminate to society according to the Recommendation titled "Developing an Online Synthesis System (OSS) and fostering Facilitators to realize consilience" from the Science Council of Japan in 2020.

(2) Establishing new governance to manage disasters

- To establish the governance contributing to the transition to an autonomous, decentralized, and cooperative society as suggested by the irreversible changes caused by the COVID-19 pandemic.
- To ensure transnational resilience, where multiple countries cooperate in improving the national resilience of land and sea, sovereignty, and the people of each country.
- To stimulate risk communication on catastrophic disasters nationally and globally, starting with discussions at the Science Council of Japan.

(3) Ensuring investment in financial expenditure, capacity development, and technological development during disasters

- To establish the role of investment in reducing human activities and asset accumulation at risk exposed to disasters such as medium to long-term spatial reorganization plans and maintenance of critical social infrastructure.
- To promote the concentrated investment in (1) improvement of qualitative and quantitative enhancement of market services to improve selfhelp capacity and (2) enhancement and diversification of insurance and mutual aid programs to provide mutual assistance aid based on the system.
- To enhance individual and grassroots community resilience capabilities to deploy strategic capacity

development programs to further respond to disasters more efficiently and effectively utilize digital transformation (DX).

(4) Establishing proactive measures to enable "Build Back Better"

• To reinforce the transformative capacity to further build a new society after a disaster with the awareness that "in an emergency, we can only do what we normally do," as well as a system that promotes proactive measures using DX.

• To present a vision of society after a catastrophic disaster (sustainability, green energy/zero carbon, national spatial planning, transition to an autonomous decentralized and cooperative community in terms of finance, economy, industry, international cooperation, etc.)

On 5 September, ICoE-Coherence held its first Science Advisory Board (SAB) meeting to discuss topics including IRDR Phase II (2022-2031) and multi-year action plan for ICoE-Coherence from 2023, inviting IRDR IPO and overseas SAB members. The action plan suggested consists of 4 pillars: (a) to provide policy/strategic recommendations, (b) to support standardizing DRR measures, including disaster databases, (c) to build the capacity of disaster researchers and practitioners, and (d) to facilitate international alliances and partnerships, such as with ICoE- Taipei.

Link to reports and videos of the International Conference on Science and Technology for Sustainability 2023 can be seen here: <u>https://</u> www.scj.go.jp/ja/int/kaisai/jizoku2023/index.html



Brochure for International Conference on Science and Technology for Sustainability 2023 – Transforming Society to Become Resilient and Sustainable beyond Catastrophic Disasters



International Research Institute of Disaster Science (IRIDeS), Tohoku University, Japan http://www.irides.tohokuu.ac.jp/eng/



New Director of IRIDeS, Tohoku University, Prof. Shinichi Kuriyama

Professor Shinichi Kuriyama became the Third Director of the IRIDeS as of April 2023. He is a physician specializing in disaster public health. Public health is the science and practice of preventing disease and promoting the health of groups of people. In the aftermath of the 2011 disaster, he was engaged in relief activities in disaster areas. He has also led large-scale, medium - to long-term surveys on the disaster. Those study results have shown that people affected by the disaster still face adverse health issues. IRIDeS will continue to address the problems in the affected areas, including those revealed by these studies.

The goal of Public Health is to encourage people to lead healthy lives. He would like to apply its methodology to disaster risk reduction to encourage citizens to actually practice disaster mitigation measures. Public health has contributed to a national health movement using various means, such as epidemiological surveys on health status, learning, legislation, and the establishment of healthy behaviors as part of public culture. Also, in disaster risk reduction, he aims to advance people's disaster preparedness and response with similar methods, including reaching out to those indifferent to disaster risk reduction and those who have not yet put disaster risk reduction into practice despite being aware of its importance. With the keywords "prepare, evacuate, and recover," he wishes to connect IRIDeS's varied undertakings to the broader disaster risk reduction movement.

IRIDeS researchers attended the High-Level Meeting of the General Assembly on the Midterm Review of the implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030 from 18-19 May 2023 at the United Nations Headquarters in New York. Having reached the halfway point of implementation of the Sendai Framework, City of Sendai and IRIDeS have conducted a joint assessment of the progress of implementing the Framework in the case of the City of Sendai. Mayor, Ms. Kazuko Kohri was invited to be a speaker.

> Prof. Yuichi Ono E-mail: yono@irides.tohoku.ac.jp

Of the seven 'Global Targets', for the reduction targets (Targets A-D), there has been a decreasing trend in disaster damage from the first half of the assessment period (2005-2014) to the second half (2015-2021), confirming that the targets have been achieved for all assessment indicators. By type of disaster, damage caused by earthquakes and tsunamis peaked after the Great East Japan Earthquake and Tsunami in 2011 and has been on a downward trend. Although no tsunami damage has occurred since the Great East Japan Earthquake and Tsunami in Sendai, damage has been kept to a minimum despite the fact that the country has been hit by several magnitude 7-class earthquakes, and it is considered that the initiatives in the four 'priority actions' play an important role in achieving the reduction targets (targets A to D). Steady progress on the increase target (Targets E-G) was also confirmed through quantitative analysis of the status of the formulation of Sendai's disaster management strategy and evacuation center operation manuals, the number of foreign visitors

and trainees, and changes over time in access to early warning and disaster risk information from among the four priority actions. Based on the above, the Global Targets are assessed as being in the process of being achieved at the turnaround point of the Sendai Framework for Disaster Risk Reduction.

Moving forward, City of Sendai and IRIDeS will continue to cooperate with each other and other related parties to disseminate information on disaster risk reduction efforts from Tohoku and Sendai. Working with others, our aim is to consider ways of responding to new disaster-related risks, accumulate knowledge, and make a contribution to disaster risk reduction on a global level.





Earthquake Research Institute (ERI) The University of Tokyo, Japan http://www.eri.u-tokyo.ac.jp/en/



Tsunamis are mainly caused by large submarine earthquakes, but submarine volcanic processes can also trigger tsunamis, as highlighted by recent tsunami events related to the 2022 eruption of Hunga Tonga– Hunga Ha'apai volcano in Tonga, or the 2018 eruption of Anak Krakatau volcano in Indonesia.

It has been known for long that peculiar moderatesized volcanic earthquakes only with a seismic magnitude M < 6 that took place every decade in a submarine volcano in Japan, called Sumisu Caldera, generated notable tsunami waves. Despite the moderate earthquake sizes, the maximum wave heights of the tsunamis were about a meter, which has made it challenging to forecast tsunamis based on earthquake observations. Their source mechanism has been controversial for the last four decades since the first recognition of the earthquake and tsunami in 1984.

Sandanbata et al. (2022) analyzed tsunami waveform data recorded by ocean bottom pressure gauges and long-period seismic waveform data by regional seismic networks of a recent earthquake at Sumisu Caldera in May 2015. Through the interdisciplinary approach combining tsunami and seismic data, we suggested that the submarine caldera caused brittle rupture of the fault system within the caldera structure every decade, due to overpressure of magma accumulating in a shallow magma reservoir (Figure a). This so-called "trapdoor faulting" mechanism abruptly uplifted its caldera floor by meters and excited large tsunamis. The trapdoor faulting model (Figure b-c) explained the tsunami and seismic waveform data well at the same time. We also revealed that the complex source mechanism that occurred at a very shallow depth of $< \sim 3$ km can efficiently cause tsunamis without significant seismic wave radiations, explaining the gap between the tsunami and earthquake sizes.

Although the trapdoor faulting had been previously found only at a subaerial caldera in Galapagos Islands, the study (Sandanbata et al., 2022) suggested, for the first time, the occurrence of trapdoor faulting under the ocean and its high potential for tsunami generation. The decadal recurrence of trapdoor faulting reflects active volcanism of the submarine caldera, indicating its potential for submarine eruptions in the future. Furthermore, similar tsunami events due to submarine trapdoor faulting were also suggested for two other submarine calderas: Curtis Caldera in New Zealand (Sandanbata et al., 2023) and Kita-loto Caldera in Japan (Sandanbata & Saito, in press). These new and global findings suggested that trapdoor faulting is a more universal phenomenon in calderas, which underscores our needs to examine and monitor submarine calderas for assessing volcanic tsunami hazards.

> Prof. Takashi Furumura Director E-mail: director@eri.u-tokyo.ac.jp



Reference

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- Sandanbata, O., Watada, S., Satake, K., et al. (2023). Two volcanic tsunami events caused by trapdoor faulting at a submerged caldera near Curtis and Cheeseman Islands in the Kermadec Arc. *Geophys. Res. Lett.*, *50*(7), e2022GL101086.

https://doi.org/10.1029/2022gl101086

Sandanbata, O., & Saito, T. Quantifying Magma Overpressure Beneath a Submarine Caldera: A Mechanical Modeling Approach to Tsunamigenic Trapdoor Faulting Near Kita-loto Island, Japan. *J. Geophys. Res., [Solid Earth]*, 129(



Source mechanism of volcanic earthquakes causing disproportionately large tsunamis: Trapdoor faulting in the submarine Sumisu caldera, south of Japan

https://www.eri.u-tokyo.ac.jp/en/research/5323/

Figure. (a) Schematic illustration of the *trapdoor faulting* mechanism proposed for the 2015 earthquake and tsunami at Sumisu caldera, which involves a large reverse slip of an intra-caldera fault and deformation of a horizontal crack filled with magma, driven by high magma pressure. This uplifts the caldera floor and the seawater by several meters, causing tsunamis. (b-c) Source model of the 2015 earthquake viewed from (b) southwest, and (c) above. This trapdoor faulting model, composed of the reverse-slipping ring fault and deformation of a magma reservoir,



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Australia	Fenner School of Environment & Society, Australian National University (ANU)
Australia	College of Health & Human Sciences, Charles Darwin University
Australia	Humanitarian Response & Disaster Management Studies, School of Health, Charles Darwin University
Australia	Centre for Disaster Studies, College of Science and Engineering, James Cook University
Australia	Humanitarial Enegineering Lab, RMIT University
Australia	Centre for Infrastructure Performance and Reliability, School of Engineering, The University of Newcastle
Australia	Sustainability Research Centre, University of Sunshine Coast
Australia	Science and Engineering Faculty, Queensland University of Technology
Australia	Humanitarian & Development Research Initiative (HADRI), School of Social Sciences and Psychology, Western Sydney University
Australia	School pf Earth and Environmental Sciences/ SMAH, University of Wollongong
New Zealand	GNS Science



Humanitarian Engineering Lab, RMIT University Australia

https://www.rmit.edu.au/



Prof. Matt Duckham presenting on the workshop goals, which includes a discussion of the Capability statement

Brief Profile

The Disaster Research Network (DRN) at RMIT University is dedicated to disaster management at the local, national and international levels. Coordinated by Professor Matt Duckham, A/Professor Erica Kuliqowski and Dr Spyros Schismenos, the RMIT DRN connects over 80 researchers and across diverse disciplines, who collaborate with communities and emergency practitioners to strengthen disaster resilience in Australia and internationally.

2023 Outcomes

2023 proved to be a fantastic year for the DRN! Its members actively organised and participated in workshops and conferences related to disaster management. A standout event was the 'Natural Hazards Research Forum', that was held from May 1 to May 3, 2023, organised by NHRA (Natural Hazards Research Australia) and hosted at RMIT University. The Forum attracted a diverse group from research, government, industry, and communities, and created opportunities for knowledge sharing and insights into the natural hazards research. The Forum was a mixed event that included keynotes, presentations, panel discussions, and active workshops tailored for natural hazards researchers and industries. For more information, visit: https://www.naturalhazards.com.au/ nhrf23



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Dr. Spyros Schismenos

Prof. Erica Kuligowski capturing the larger themes/challenges by breakout groups



The DRN also organised a number of researcher workshops through the year. On July 10, 2023, the DRN hosted the '**RMIT Disaster Research and Response Network Capability and Collaboration Workshop**' to further enhance collaboration and discuss future directions. The event was led by Professor Matt Duckham and A/Professor Erica Kuligowski.

The Workshop helped to solidify three main goals that are shaping the DRN's future directions:

- 1. The completion of the RMIT Natural Hazards and Disaster Resilience Research Capability Statement, which summarises the Network's identity and capabilities.
- The exploration and co-design of larger collaborative research projects and proposals to strengthen cross-disciplinary initiatives involving different RMIT departments and external stakeholders.

 The discussion and planning of next steps for the Network, including leadership of Victorian and national initiatives in disaster resilience, enabling coordinated actions for disaster management at local and state levels.

The first of these goals, the **RMIT Natural Hazards** and **Disaster Resilience Research Capability Statement**, was completed and recently released, which highlights three interlocking capabilities across the Network:

 Resilient Infrastructures and Environments, focusing on understanding, designing, and maintaining environments that support disaster resilience, including digital and cyber-physical systems.



- Resilient Communities and Governance, concentrating on factors contributing to individual, family, and community resilience, reducing disaster risk, and empowering decision-makers.
- Whole-of-Society Resilience, emphasising the integration of diverse methodologies, technologies, and approaches for sustainable and community resilience.

Notable research projects within these themes are mentioned below. Please visit the following link for additional information:

https://www.rmit.edu.au/research/centres-collaborations/ disaster-research-and-response-network/capabilities

Reaching out to engage in new opportunities!

The DRN has a rich history of innovation and partnership in disaster resilience research. It includes various expertise areas, such as green infrastructure, satellite mapping of bushfires, evacuation modelling, resilient recovery design, and humanitarian engineering. Please contact us if you want to know more about our work and wish to collaborate.

Dr Spyros Schismenos, Lecturer in Humanitarian Engineering

(DRN's point of contact for GADRI Members) <u>spyros.schismenos@rmit.edu.au</u>

Example Past Projects by DRN researchers:

- Cost-effective mitigation strategy for flood prone buildings <u>https://www.bnhcrc.com.au/research/</u> <u>floodpronebuildings</u>
- Enhancing resilience of critical road infrastructure: <u>https://www.bnhcrc.com.au/research/</u> <u>roadinfrastructure</u>
- Enhancing the Australian Gridded Climate Dataset rainfall analysis using satellite data <u>https://</u> www.nature.com/articles/s41598-022-25255-6
- Preparing emergency services for operations in a climate-challenged world: <u>https://</u> <u>www.bnhcrc.com.au/research/understanding-and-</u> <u>mitigating-hazards/8023</u>



Larger group and breakout discussions on how the Disaster Research Network can support RMIT researchers in the future







Europe Africa



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Austria	Center for Digital Safety and Security, Austrian Institute of Technology (AIT)
Austria	Disaster Competence Network Austria (DCNA)
Austria	International Institute for Applied Systems Analysis, (IIASA)
Belgium	One Health Platform
Bulgaria	Department of Information Technologies and Communications, University of National and World Economy
Croatia	Croatian Centre for Earthquake Engineering (CCEE), Faculty of Civil Engineering, University of Zagreb
France	BRGM (Bureau de Recherches Geologiques et Minieres)
France	Council of Europe
France	Institut Des Sciences de la Terre (ISTerre), Grenoble University
Germany	Center for Disaster Management and Risk Reduction Technology (CEDIM)
Germany	Disaster Research Unit, Department of Social and Political Sciences, Freie Universitat Berlin
Germany	Research Institute for Sustainability - Helmholtz Center Potsdam (RIFS)
Germany	United Nations University, Institute for Environment and Human Security (UNU-EHS)
Iceland	Earthquake Engineering Research Centre, University of Iceland
Italy	European Commission, Joint Research Centre (JRC)
Italy	Department of Earth Sciences, University of Florence (Universita degli Studi di Firenze)
Italy	Global Earthquake Model (GEM) Foundation
Norway	Nord University
Poland	The Main School of Fire Service (SGSP)
Slovakia	Faculty of Security Engineering, University of Zilina
Sweden	Stockholm Environment Institute (SEI)
Sweden	Risk and Crisis Research Centre (RCR), Mid Sweden University
Switzerland	Global Risk Forum GRF Davos
Switzerland	Faculty of Geosciences and the Environment, University of Lausanne
UK	Bournemouth University Disaster Management Centre (BUDMC)
UK	British Geological Survey
UK	Cabot Institute, University of Bristol
UK	Evidence Aid
UK	National Centre for Resilience (NCR), University of Glasgow
UK	Global Disaster Resilience Centre, School of Art Design and Architecture, University of Huddersfield
UK	School of Business, Dept. Management, Innovation and Technology Division, University of Leicester
UK	Institute for Risk and Disaster Reduction (IRDR), University College of London
LIK.	ut stor Engineering and Development Centre (WEDC), Loughborough University
	Disaster a. 'Development Network (DDN), Department of Geography, Northumbria University
UK	Overseas Dever אר Institute (ODI)
UK	Global Disaster Risk Reduction, UK Health Security Agency
UK	Research Centre for Disaster Resilience, University of Salford
UK	Swansea University

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Austrian Institute of Technology (AIT) Austria https://ait.ac.at

In 2023 AIT Austrian Institute of Technology GmbH continued and increased its scientific activities in the fields of civil protection exercise evaluation, management of disaster relief volunteers, and decision-support for crisis management.

Civil Protection Exercise Evaluation

This field focusses on the validation and testing of emergency response capabilities, to increase national and international resilience. Two projects were conducted within this thematic field:

INEGMA-E² developed a standardized approach for Civil Protection Exercises, mainly within the Union Civil protection Mechanism. This includes:

- developing a strong and versatile evaluation methodology to address the range of exercises.
- exploring the existing tools used for data collection throughout the exercises.
- creating an international pool of evaluators which can be accessed by all relevant institutions.

AIT contributed by identifying user requirements of exercise evaluation staff and developing an online platform to match planned EU civil protection exercises with competent evaluators.

INEGMA-E² was funded by Directorate-General for European Civil Protection and Humanitarian Aid Operations (DG ECHO). The project was finished in 2023.

More information can be found here: <u>https://civil-protection-knowledge-network.europa.eu/projects/inegma-e2</u>

MEASURE is a national Austrian project, specializing on the validation of emergency exercises in the context of ambulance and fire services. Its approach is to increase objective and valid evaluation, by supporting evaluation staff through technological means (sensors, dashboards, data models) The project includes:

• Conceptualization and prototyping of a model-based toolbox

- Identification of ethical and legal circumstances
- Evaluation of sensor technologies and algorithms
- Development of a proof-of concept of a planning and evaluation tool

Analysis of potential for adaptation

With MEASURE (Monitoring Exercises using AI-Support for Reliable Evaluation), AIT coordinates a national project, which sets the goal to develop an intelligent, technical support tool for easier planning, implementation and evaluation of exercise scenarios for emergency services. This tool enables faster, more objective evaluation and more individualized feedback with higher validity.



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Mr. Bernhard Bürger

With an integrated development of sensors, data modelling mechanisms and artificial intelligence, it provides technical support for the observation during the exercise as well as subsequent evaluation afterwards. In this manner the tool facilitates sustainable objective comparison and thus, at best, enables emergency services to improve. The interaction of the individual project partner organizations ensures user-oriented technology development and insight into application processes for science and technology.

MEASURE is funded by the security research funding program KIRAS, through the Ministry of Finance and will end in Oct 2024.

 More information can be found here: <u>https://</u> <u>at.linkedin.com/showcase/measure-monitoring-</u> <u>exercises-using-ai-support-for-reliable-</u> <u>evaluation/?trk=affiliated-pages</u>

Management of Disaster Relief Volunteers

CERTIFIER

In 2023 AIT started project CERTIFIER. The project aims to improve the inclusion of informal volunteers in crisis and disaster response through digital certification of competencies of volunteers. It includes demands of authorities and first relief organizations in the context of civil protection and provides volunteers with the opportunity for selfpresentation and verification of their profiles.

It applies a holistic approach to the competencebased inclusion of volunteers. CERTIFIER develops a proof of concept which utilizes digital innovations like self-sovereign services to document, validate, and verify volunteers' competencies and coordinate them in the context of disaster response. Innovative technologies will be examined for the use of easy registration. The project builds upon previous findings, solutions and concepts, such as the Austrian "Freiwilligenpass" (volunteer pass) and

> includes interfaces to existing

systems within volunteer management.

The project CERTIFIER is promoted or financed within the framework of the KIRAS program by the Federal Ministry of Finance and is managed by the Austrian Research Promotion Agency. It will run until Oct 2024.

More information can be found here: <u>https://</u> www.linkedin.com/company/certifier-oesterreich/

Decision-Support for Crisis Management

TeamAware

The Project aims to develop an integrated and costefficient situational awareness system for first responders from different sectors with heterogeneous and hardly interoperable sensor units including drone mounted, wearable, and external sensor systems.

TeamAware has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No 101019808. The project will run until May 2024.

More information can be found here: <u>https://</u> www.teamaware.eu/index.html

Disaster Competence Network Austria (DCNA) Austria Disaster Competence Network Austria Disaster Competence Network Austria



Bridging the gap between research and practice: The Competence Network Austria (DCNA) Disaster continued its unwavering commitment to this mission, and we take pride in announcing that we are firmly on course. Our events successfully brought together a diverse spectrum of professionals, including researchers, emergency responders, civil protection agencies, policymakers, and industry practitioners. Furthermore, our podcast has resonated with thousands of individuals keen on disaster research, offering insights into topics ranging from earthquakes and disaster robotics to drones, industrial hazards, VR, and digital transformation in emergency response organizations. Additionally, we are dedicated to nurturing the next generation of researchers through our DCNA Young Scientist program.

In 2023, the DCNA experienced significant growth, with 22 ordinary members and 9 associate members, including 8 new additions to the network. Our team,

now comprising 15 members with diverse expertise, actively engaged in over 20 national and international disaster and security research projects throughout the year. Notably, our international involvement extended to UCPKN projects such as INEGMA-E², COLLARIS, CREXDATA, and COVALEX.

Dr. Christian Resch Managing Director



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analysis workstations, and advanced technical equipment, empowers researchers at Graz University of and the University of Technology Natural Resources and Life Sciences Vienna to swiftly provide their expertise in the event of disasters or in high-risk areas. Additionally, a ground-based robot with cameras and fire sensors ("Husky" robotics platform) and an unmanned aerial vehicle with a laser scanner and regular and thermal imaging camera ("Matador" drone) enhance the capabilities of the infrastructure.

International events

DCNA mobile research infrastructure

The milestone of our five-year anniversary in 2023 was commemorated with a groundbreaking initiative-the launch of our innovative mobile research infrastructure. Made possible through the Higher Education Infrastructure Funds project, funded by the Austrian Federal Ministry of Education, Science, and Research, and developed in collaboration with our founding universities, this infrastructure is designed to facilitate on-site research directly at disaster sites. The mobile research infrastructure, featuring a laboratory bus, a pick-up truck, and a trailer equipped with essential technology, was unveiled at our annual disaster and security research conference with about 130 participants, more than 30 presentations, two panel discussions and countless insightful conversations. The event and the presentation of our mobile research infrastructure garnered significant attention, with esteemed guests including the Austrian Minister of Education, Science, and Research Martin Polaschek,

Governor of the Federal State of Styria Christopher Drexler, and the presidents of Montanuniversität Leoben, Graz University of Technology, and the University of Natural Resources and Life Sciences Vienna as well as the University of the Bundeswehr Munich.

This mobile research infrastructure,



The DCNA actively participated in numerous national and international events centered around disaster risk reduction and management. A notable highlight was our presence at the Humanitarian Networks and Partnerships Week in Geneva in April, the annual CERIS-DRS event, and the UNDRR Stakeholder Groups Roundtable – both in December.

At the CERIS-DRS event our managing director Christian Resch moderated a panel discussion on "Tools and technologies for monitoring, surveillance and rescue", bringing together experts to talk about innovation and technology in disaster management and emergency response.

He also took part in the UNDRR Stakeholder Groups Roundtable which resulted in a set of recommendations for the policy makers for 2024 EFDRR. Representing the European Science and Technology Advisory Board of UNDRR, he was a panelist in an interactive session discussing good practices in managing risks related to industrial and chemical hazards.



INEGMA-E² – evaluation standards for civil protection exercise evaluation

INEGMA-E² was an EU-funded research initiative focused on standardizing civil protection exercise evaluation and building a community of experts dedicated to further improve exercise evaluation. The project was wrapped up in 2023 and we are happy to present the results: Market research was done to assess the availability of IT solutions that could be used for exercise evaluations. With these results, a webbased tool was designed and later tested during the Host Nation Support Tabletop Exercise in Moldova. Furthermore, a training concept for exercise evaluators was developed and tested during the FORMATEX23 project and applied during the UCPM full-scale exercise in Austria in September 2023. Finally, a web-based pool of evaluation experts that can be used by the EU civil protection community when organising and conducting exercises was built and experts as well as aspiring evaluators can register to be part of the pool of evaluators. The INEGMA-E² outcomes have been gathered in a guidance booklet for exercise organisers and evaluators.

As we reflect on the accomplishments of 2023, we extend our gratitude to all those who have contributed to our endeavors. The DCNA remains steadfast in its commitment to advancing disaster competence, promoting collaboration, and driving impactful research that enhances global resilience. Together, we look forward to even greater strides in the years to come.



Links:

- DCNA on LinkedIn: <u>https://www.linkedin.com/</u> <u>company/disaster-competence-network-austria/</u>
- Video of the 2023 annual disaster and security research conference: <u>https://www.youtube.com/</u> <u>watch?v=z5pFIsCV4rU</u>
- INEGMA-E2: <u>https://civil-protection-knowledge-</u> network.europa.eu/projects/inegma-e2





Science Research Center for Disaster Risk Reduction (SRCDRR), University of National and World Economy (UNWE), Bulgaria

http://www.unwe.bg/en/

1. SMART RISK MANAGEMENT FOR BUSINESS FROM ADVERSE EVENTS AND NATURAL DISASTERS, (2021-2025), funded by the National Science Fund of Bulgaria

The project develops an innovative methodology for integrated risk assessment, which includes new and modified classical and smart methods and models. Each method and model is adapted to the specifics of the specific business at the level of economic sector and individual company, taking into account the specific impacts of potential adverse events and natural disasters in the specific region. The main result of the project will be the developed general framework for smart risk management of adverse events and natural disasters based on an innovative methodology for integrated risk assessment.

So far the following developments have been achieved:

- An approach is proposed to analyze the vulnerability (an element of risk analysis) of various businesses and the associated critical infrastructure to adverse events and natural disasters.
- An approach is proposed for analyzing the impact of adverse events and natural disasters on the economic efficiency and profitability of businesses (specifically, businesses in the sphere of production, trade and services).
- An approach is proposed to manage business risk from adverse events and natural disasters by adapting amortization methods. The idea is to use the funds accumulated through depreciation to repair or purchase new fixed tangible assets.
- The characteristics and applicability of Cloud Computing, Social Networks, Internet of Things, Big Data, 5G technologies, Artificial Intelligence, Virtual and

Augmented Reality are analyzed, as well as the integration of

modern information technologies with 5G in

smart risk management for business from adverse events and natural disasters.

- The proposed approaches and analyses can be successfully used by managers to make informed decisions about adequate measures to adapt business to climate change and reduce negative consequences.
- RESEARCH ON THE APPLICATION POSSIBILITIES OF THE METAVERSE IN BUSINESS AND EDUCATION, (2023 - 2024), funded by the University of National and World Economy.

The SRCDRR organized the 13th INTERNATIONAL CONFERENCE ON APPLICATION OF **INFORMATION** AND COMMUNICATION TECHNOLOGY AND STATISTICS IN ECONOMY AND EDUCATION (ICAICTSEE-2023), December 15 - 16th, 2023, UNWE, <u>http://icaictsee.unwe.bg/</u>. The conference was coorganized together with 20 international universities and it is officially registered as an International Federation for Information Processing (IFIP, <u>https://ifip.org/</u>) event. The conference covered topics, such as Biomedicine, Big Data, IoT, AI, VR, etc. More than 70 papers were presented.

> Prof. Dimiter Velev Director



E-mail: dgvelev@unwe.bg



The SRCDRR director, prof. Velev, took part in the annual conference of the Resilience Platform -RESILab^{ex} - Enhancing the Resilience to Disasters for Sutainable Development - a project co-financed under Venezia Guilia Regional funds (L.R.18/2011) - CEI-FVG operative programme 756/2021. The SRCDRR is a member of the RESILab^{ex}. The event took place at the International Centre for Mechanical Sciences (CISM) at the University of Udine, Italy, November 6 - 7, 2023. The participants in the project are from 11 European countries. The Director of **SRCDRR**, Prof. Dr. Dimiter Velev, took part in 8 international conferences, in which he has delivered 2 keynote an 2 invited speeches. The topics covered different aspects of the application of advanced ICT, as well as in disaster risk management.





Croatian Centre for Earthquake Engineering (CCEE), Faculty of Civil Engineering, University of Zagreb Croatia

http://www.hcpi.he/



CCEE committee members (left) and PhD students and researchers with the head of the CCEE (right)

Croatian Center for Earthquake Engineering (CCEE), a new scientific branch of the Faculty of Civil Engineering (FCE), University of Zagreb, in 2023 had a committee of 20 members (full professors, associate professors, and assistant professors), two researchers and seven PhD students. The CCEE is forefront in Croatia in most activities related to earthquake engineering, especially in seismic risk assessment, reconstruction process after the 2020 earthquakes and earthquake risk management. CCEE collaborates with numerous researchers from other universities and institutes in the region, Europe and worldwide.

One of the objectives of CCEE is to **support authorities** and decision-makers in disaster preparedness and to reduce the seismic vulnerability of buildings and infrastructure, improving the response capacity to disaster events and making the community more resilient. To achieve these objectives, nine projects were launched in 2023, funded entirely by the government/ CCEE. The topics that are being covered by the projects are:

- Structural health monitoring,
- Development of program packages and standards for out-of-plane mechanism calculations according to Eurocode 1998-3,
- Development of a tool based on VR (virtual reality) to train engineers for efficient and rapid damage assessment using,

Advanced numerical modelling and masonry

 Preliminary and rapid analysis of the seismic resistance of existing structures using visual programming,

structural analysis of

buildings in aggregates,

- Damage assessment using unmanned aerial vehicles (UAV),
- Development of an improved digital form for visual damage assessment, considering experience from past earthquakes,
- Development of form for damage assessment of bridges,
- Seismic risk assessment of educational buildings in Croatia.

Achievements:

One of the research achievements of the CCEE team in 2023 is the successful completion of the project "Seismic Risk Assessment of the City of Zagreb" (2021 – 2023), funded by the European structural and investment funds. The project's primary goal was to develop methodology for all seismic risk assessments in Croatia (a pilot project) including a detailed exposure model created through building-by-building collection of data and seismic risk analysis for City of Zagreb. The results were presented to the city authorities and emergency services and were recognized as the foundation for reducing seismic risk and planning immediate response and recovery.



Dr. Josip Altić Professor and Head E-mail: josip.altic@grad.unizg.hr

- The CCEE team created the document "Report on Seismic Risk Assessment of Emergency Response Facilities in Croatia – Supporting disaster resilience in Croatia", with the World Bank, 2023.
- Two days after the devastating earthquakes in Turkey in February 2023, two members of the CCEE participated in search and rescue operations. Our experts
 - provided expertise on damaged buildings, especially initial judgment of the stability of the





Members of CCEE in Turkiye 2023

buildings/elements, possible safe entrances/exits etc.

- In April 2023 research team attended the Earthquake Engineering Research Institute EERI annual meeting held in San Francisco. Main goal was knowledge transfer but in the framework of the meeting, they also participated in the Early Carrer Workshop and Reconnaissance Training Workshop that included lessons and a full-day field exercise.
- Collaboration with the Department of Civil Protection in the "Towards Disaster Risk Reduction" project resulted in the set up of the virtual laboratory – a truck trailer containing actuators for earthquake shaking simulation with visual effects.

Organization of conferences, symposiums, and workshops:

Organization of the <u>2nd Croatian Conference on</u> <u>Earthquake Engineering</u> (2CroCEE), 22 - 24 March 2023, Zagreb, Croatia. The conference was a complete success, with over 300 participants from 26 countries worldwide. While the first conference had gathered all stakeholders in Croatia and many experts from abroad (over 700 participants) with intention to support post-earthquake activities; with this conference, we wanted to establish a new tradition where earthquakes are not forgotten (even if they do not occur very often) and where knowledge is passed on to new generations. This was a unique opportunity for technical visits to the

- From 9 September to 16th, 2023, the CCEE's research group visited Japan including the Tokyo Disaster Prevention Centre, attended a meeting at the Earthquake Research Institute (ERI), Disaster Prevention Research Institute (DPRI) at Kyoto University, and Kansai University. They also toured the E- Defence and E-Isolation laboratories and
 - visited the Great Hanshin-Awaji Earthquake Memorial Museum.



Organization of lecturers and training for experts and engineers in 2023:

 CCEE organized invited lectures for experts and engineers held by eminent scientists and experts such as Paulo Bazzuro (University School for Advanced Studies IUSS Pavia), Dimitrios Vamvatsikos (National Technical University of Athens), Ljupko Perić (MWV Bauingenieure AG). We also have to mention the organization of the Training school: Assessment of existing masonry and timber structures with several lectures.



earthquake-affected areas and reconstruction sites in Zagreb and Petrinja.

 In September 2023, the Global Earthquake Model (GEM) team visited CCEE and held a fruitful workshop on the seismic hazard and risk assessment using the OpenQuake.

New post-graduate program:

 In 2023, a new post- graduate specialist study entitled "Earthquake Engineering" began for the first time, with 15 students enrolled. Study is created to raise the level of knowledge and to create specialists in the field of

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The chair of the conference giving a speech at the opening ceremony (left) and the organization committee (right



Most significant publications in 2023:

- The December 2020 magnitude (Mw) 6.4 Petrinja earthquake, Croatia: seismological aspects, emergency response and impacts, Bulletin of Earthquake Engineering
- Seismic Retrofitting of Dual Structural Systems—A Case Study of an Educational Building in Croatia, Buildings
- Vulnerability assessment of historical building aggregates in Zagreb: implementation of a macroseismic approach, Bulletin of Earthquake Engineering

Professional projects of seismic performance and retrofitting of damaged buildings in 2023:

• Zagreb Cathedral; National Theater Building; Palace of Justice, etc.

(3CroCEE), scheduled from March 19th to 22nd, 2025, in Split, one of Croatia's most astonishing historical cities. More information on the event will be available on the conference's web page: <u>https://</u>crocee.grad.hr/.

- Professor Amr Elnashai (University of Illinois at Urbana Champaign Illinois / University of Houston) will held a Specialist course "EARTHQUAKE ENGINEERING", in Zagreb in April.
- "Seismic Risk Assessment of City of Zagreb" project is intended to be a pilot project for the seismic risk assessment for the entire Croatian territory. Knowledge and experience gained through this project will be disseminated in the framework of future projects planned to start in 2024.
- Main focus will be on the development of the 9 projects that started in 2023 to support authorities and decision-makers in this critical period for Croatia.

Plans for 2024:

 Organization and planning of the following 3rd Croatian Conference on Earthquake Engineering





French Geological Survey (BRGM) France

http://www.brgm.eu/

BRGM is a French public institution in Earth Science, employing over 700 engineers and researchers. BRGM research brings practical responses to the major challenges facing society and arising in particular from climate change, increasing mineral resource scarcity, new energy needs, natural risks and soil and water pollution.

BRGM was involved in the PHUSICOS projet (2018-2023) together with 14 other instituts from 7 differents countries. The ojective of this H2020 project is to demonstrate that Nature-Based Solutions (NBS) or inspired by nature to reduce the risk of phenomena induced by meteorological events (flooding, avalanches, land movements, etc.) are technically viable and profitable, as well as applicable at the regional scale. The objective is to show that these solutions increase the ecological, social and economic resilience of local communities. This project is designed for vulnerable areas, such as mountainous and rural areas. A lot of documentation and inventory work on NBS was carried out. This work was published in a web platform dedicated to the evaluation of NBS. Furthermore, the project enabled the realization of 15 experiments implemented on three large-scale demonstration sites (Serchio River basin in Italy, the Pyrenees in Spain and France and the Gudbrandsdalen valley in Norway) or conceptualized for two other sites (Isar basin in Germany and Kaunertal valley in Austria). Eleven experiences correspond to the construction of SFN works while four experiences correspond to educational and awareness-raising activities (serious

HUSICOS Displaying 1 - 10 of 152 Information filters Creation of a Park for water retention: The Cloudburst Management Plan, Validation filters ng 2011 floods, th ciplinary plans bridge the gap between planning and site-spec s through the application of a typology-based Cloudburst Toolkit. The "Cloudburst Management Plan" addresses 8 central city catc nts (Norrebro, Ladegards-aen and Ves ro, Valby & Vanlose) ing a total area of 34 km². It includes 300 separate projects that are ex se of the next 20 yes Creating a Periurban Park in Prague: the CONFLUENCE Project cal interests and the v penetrable suburban areas with alive flowing river, side by side agriculture, integrated flood protection ent, and economic and sport acti

Figure: PHUSICOS database and home page (<u>https://</u><u>phusicos.brgm.fr/</u>). The "Add a solution" button (top right) provides access to the form to suggest new entries

games, consultations, etc.). At the end of the project, the project partners addressed the issue of the sustainability of certain products developed within the framework of the project and the main obstacles to the implementation of NBS (lack of regulations for this type of solution, unsuitable financing methods, need to document the aging of the structures, etc.). A review of additional research and actions to be carried out to facilitate the use of NBS was proposed. The web plateform is available here: <u>https://phusicos.brgm.fr/</u>

The PHUSICOS website is available here: <u>https://</u> www.phusicos.eu/

Waste from old metallurgical sites (old aggregated materials with a high metal content, white and black slag, etc.) are considered sources of pollution, costly to manage and eliminate. The NWE-REGENERATIS project transforms this fact into an opportunity, by developing tools facilitating the recovery of materials and metals on former steelworks sites using urban mining techniques, thus promoting the reduction of rehabilitation costs. BRGM contributed to many key stages of this project, including:

 the evaluation of the most relevant geophysical techniques for mapping the materials and metals disseminated on the project study sites (3 pilot sites and 6 additional sites distributed between France, the United Kingdom and Belgium);



- the development of a new strategy for characterizing volumes and types of materials, including geophysical field measurements and geochemical analysis of samples, on former metallurgical sites, in collaboration with the University of Liège;
- the development of an open source decision support tool NWE-SMARTX, which offers innovative recovery solutions for materials present on old metallurgical sites and deposits, depending on the characteristics of the site.

All these developments were carried out in collaboration with the University of Liège, IXSANE, SPAQUE and the Technical University of Cologne. The recovered materials can be minerals, metals and ecocatalysts. For more information, the project website is <u>https://vb.nweurope.eu/projects/project-search/nwe-regeneratis-regeneration-of-past-metallurgical-sites-and-deposits-through-innovative-circularity-for-raw-materials/#tab-1</u>

The closures of coal mines in Europe and the flooding of these underground works are at the origin of seismic activity described as post-mining. This seismicity, often felt by local populations, sometimes causes damage to vulnerable structures and critical infrastructure, sometimes threatening the safety of people. The PostMinQuake project made it possible to develop methods to better characterize and manage this seismic hazard. The most notable outcome of the project is the development of transnational guidelines on how to address and mitigate this hazard. BRGM actively contributed to the project by providing and developing its expertise on (i) hydromechanical modeling of microseismicity (ii) quantification of surface deformations by satellite radar interferometry, (iii) methods for characterizing seismic hazard and the associated risk (study of seismic sources, seismic movement attenuation relationship, ground movement mapping, risk scenario). The published guidelines are available at https://delibra.bg.polsl.pl/dlibra/ publication/86577/edition/77017/content.

The BRGM published in the American journal PNAS, with French scientists from LSCE and Japanese scientists from NIES and IER, a study to quantify the radioactive elements still present in the environment surrounding the former Fukushima plant following the nuclear accident in March 2011, after one of the largest decontamination programs in the world. The study showed that post-disaster decontamination efforts were very effective in removing cesium-137, but much of this radioactive contaminant persists in forests that were not treated. The PNAS publication is available here : <u>https://www.pnas.org/doi/10.1073/pnas.2301811120</u>



Figure. Example of a restitution page for the evaluation of an NBS from PHUSICOS web plateform (<u>https://phusicos.brgm.fr/</u>).

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Center for Disaster Management and Risk Reduction Technology (CEDIM) Germany

http://www.cedim.de/english



Center for Disaster Management and Risk Reduction Technology As part of its near-real time Forensic Disaster Analysis (FDA), CEDIM investigates the dynamics and interrelations of disasters, identifies major risk drivers, estimates the impact (damage, fatalities, displaced), and infers implications for disaster mitigation.

In 2023, CEDIM produced several reports on hazards and disasters around the world. Tw major catastrophic events were considered in more detail: The Kahramanmaraş & Elbistan earthquake in Turkey and Syria in February, and the Northern hemisphere heat wave during the summer. For the former, the rapid damage estimates from the CATDAT model of CEDIM/ Risklayer estimate the possible fatalities to be expected with a range of 11,800 to 67,010 (about 60,000 two days later). The model projects total damage (including buildings and infrastructure) to exceed USD 10 billion. Looking at the event in a historical context, the CEDIM FDA Task Force estimates that it might be one of the 20 deadliest earthquakes (globally since 1900; as of 8 Feb. 2023). In addition, we provided an outlook of the weather conditions in the days following the EQ because people on site suffered from the low temperatures aroud the freezing zone, which complicated relief measures. We found that a large number of aftershocks additionally increased the damage and further increased the overall intensity. Pre-damaged buildings from the main earthquake could also collapse as a result of weaker aftershocks.

KIT - The Research University in the Helmholtz Association

www.kit.edu

the updated CEDIM flyer is here: Flyer_CEDIM_2022_english_web.pdf (kit.edu) Prof. Dr. Michael Kunz CEDIM Spokesperson E-mail: info@cedim.de



The early summer and summer of 2023 CEDIM'S FDA task force investigated were characterised by a series of heat waves of varying length and intensity, some of which occurred simultaneously in different regions of the northern hemisphere. In some areas, previous all-time temperature records were clearly exceeded, while elsewhere new daily or monthly records were set. A consideration of the exposure of the population to the heat shows that in Germany around 7 million people were affected by daily maximum temperatures of over 25 °C (around 40 % more than the average 1980 – 1999). The number of people exposed to daily temperatures of 35 °C and more also doubled (to about 206,000 people). Compared to the summers of 2000 to 2019, the average daily heat exposure was only slightly above average. In the additional examined, such as Italy, Greece, Spain, the USA, China or India, a significant increase in heat exposure during the summer months compared to previous decades is also generally observed.

A short report was released for the heavy rain and flooding events in Greece and Libya in October 2023.

CEDIM scientists were involved in the "Risk sharing for Loss and Damage: Scaling up protection for the Global South" report, which was presented during the climate conference COP28.

CEDIM researcher were also present in the media with interviews in newspapers, radio, or TV. Details can be found in the news archive: : CEDIM - About CEDIM - News archive - since 2017 (kit.edu)

CEDIM's current research focus program, which provides funding for PhD students, is on "Impacts of heat waves and droughts in Central Europe on society, economy, and ecology" and currently addressing the following topics:

• Capturing the effects of drought and heat waves on forests in Central Europe;

• Perception of hot spells in public spaces: Discrepancy of measurement and subjective perception in a societal context;



• Impact of recent and future drought events on river discharge and fluvial transport sector for the Rhine River in Germany;

• Potential and feasibility study on the extension of the use of reservoirs in the federal State of Baden-Württemberg (SW Germany) for real-time management of heat, drought and flood.

The new real-world lab ERNIE (Real-time decisions in the presence of risky ignorance in the impact prediction of extreme events) including a tandem of two professorships is currently being established at KIT in close collaboration with CEDIM. ERNIE focuses on forecasts and analyses of the impact of short-term extreme events as well as long-term climate changes and their interactions with society, economy, and the environment in urban areas. The way society deals with risks and uncertainties is of particular importance here.

The CEDIM news page can be found here: CEDIM -About CEDIM - News archive - since 2017 (kit.edu);

Earthquake Engineering Research Centre University of Iceland, Iceland https://www.eerc.hi.is



EARTHQUAKE ENGINEERING RESEARCH CENTRE FACULTY OF CIVIL AND ENVIRONMENTAL ENGINEERING

Austurvegur 2A, 800, Selfoss, Iceland Tel. +354 525 4141 e-mail: eerc.hi.is

The EERC completed the second year of a grant of excellence funded by the Icelandic Centre for Research. It also completed a research project on strong ground motion related to volcanic eruptions in the Reykjanes Peninsula. An important milestone in sharing strong motion data was completed by preparing methods and protocols for transferring Icelandic strong motion data to a large -scale data repository (<u>https://esm-db.eu/#/home</u>). Most of the Icelandic data is now freely available for download through this repository. Researchers from the EERC attended and presented their research at many international conferences such as SAHC 2023 (<u>https:// sahc2023.org/</u>), COMPYDYN 2023 (<u>https://2023.compdyn.org/</u>), ICSID 2023 (<u>https:// icsid2023.fsb.hr/</u>) and EURODYN 2023—

(https://eurodyn2023.dryfta.com/).





Source: website-https://sahc2023.org/



Source: website-https://eurodyn2023.dryfta.com/

Prof. Rajesh Rupakhety Director E-mail: rajesh@hi.is



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European Commission Joint Research Centre, Italy https://www.joint-research-cente.ec.europa.eu/index_en

The increasing complexity of the disaster landscape today calls for continued cooperation, investment and innovations in science and technologies. The Disaster Risk Management unit of the European Commission's Joint Research Centre continues to lead the way in offering provision of early warning systems, risk models, situational awareness tools, guidance, and best practices for risk assessment covering both natural and man-made hazards. These initiatives are aimed at assisting Member States and preparing for potential impacts of future and emerging risks, ultimately contributing to the progress of disaster research, resilience, and risk reduction.

 The upgrade of GloFAS with enhanced spatial resolution (from 5Km to 10Km) allowing a sharper precision and the production of more detailed maps for assessing the impact of predicted flood events and designing long-term flood management strategies. The Copernicus Emergency Management Services, a key component of the JRC's proactive efforts, provide early warning services and situational awareness such as the Global and European Flood Awareness Systems (GloFAS / EFAS), the European Forest Fire Information System (EFFIS) and the Global Wildfire Information System (GWIS), the Global and European Drought Observatories (GDO /EDO), the Global Human Settlement Layer project (GHLS) and the on Demand Mapping service. Relevant achievements of 2023 include:



GloFAS 4.0 system upgrade.

 The <u>European Drought Risk Atlas</u> that offers a detailed and disaggregated view on the risks posed by droughts to our societies and ecosystems, as well as the underlying drivers of these risks, thanks to an innovative approach, combining expert knowledge and machine learning.

Dr. Tom De Groeve Head of Unit

E-mail: tom.de-groeve@ec.europa.eu

Data are without any doubt the essential building block of any **risk assessment**. the Disaster Risk Management Unit blends open-source intelligence, innovative AI applications, statistical analysis of official statistics, geospatial information and social media to monitor risks of humanitarian crisis (<u>INFORM suite</u>), forecast armed conflicts (<u>Global</u> <u>Conflict Risk Index</u>) and for assessing risks to public health (<u>Epidemics Intelligence from Open Source</u>). Acknowledging the importance of moving from global to local, the GHSL project produces data on population and built-up at unprecedented scale and with a fully automated satellite image processing, supporting the monitoring of international frameworks such as the 2030 Development Agenda. In addition, the <u>Risk Data Hub</u> acts as the central hub for EUwide risk information and a repository of damage and loss data. The most recent development in that context is the implementation of a cross-scale vulnerability composite indicator, which provides insights into regions' susceptibility to disasters at different administrative levels and allows monitoring changes over time.

Climate and socio-economic scenario (RCP 8.5 + SSP3)

Change in risk (2050-baseline)

INFORMCLIMATE CHANGE

Looking back, looking forward



Caption: Historical risk trends and climate change: a comparison of risk trends over the last 10 years from the INFORM Risk Index with the vulnerability gap in 2050 from INFORM Climate Change (get more results <u>here</u> and navigate the data in the new <u>Map Explorer</u>)

As evident from these examples, the emphasis on **innovation and the harnessing of AI potential** was a central theme in 2023's work, and will continue to be a driving force in 2014. This focus was particularly pronounced in the activities of the European Crisis Management Laboratory (ECML), where new techniques for collecting, analyzing, and making sense of vast amounts of data from various sources are explored and trialed. The ECML also serves as the gateway to the JRC's extensive capabilities for anticipating crises, providing comprehensive

analyses of their effects and for situational awareness technology, including the Global Disaster Alert and Coordination System (<u>GDACS</u>).



Caption: The case of the Nova Kakhovka dam breach as an example of scientific support to situational awareness and disaster preparedness (read full story <u>here</u>)

The impact of these activities and data would not have been possible without а robust knowledge management strategy. In a recent paper published in Springer, we outlined the role of the Disaster Risk Management Knowledge Centre (DRMKC) hosted in our unit and its networked approach to the sciencepolicy interface in disaster risk management. It brings together various European Commission services, EU countries, and the disaster risk community to apply the all-hazards, multi-stakeholder approach emphasized by the Sendai Framework. The DRMKC acts also as Science Pillar of the <u>Union Civil Protection Knowledge</u> <u>Network</u>, and in this capacity promotes awareness initiative and events such as the successful <u>7th</u> <u>DRMKC Annual Seminar</u>, co-organized with DG ECHO. The last seminar highlighted existing strategies for disaster resilience, reinforced partnerships, and raised awareness on solutions and tools for achieving the Union Disaster Resilience Goals, setting the stage for future research priorities.

the

I leave you with some interesting reports produced in 2023, enjoy the reading!



Caption: Selected JRC publications: Anticipatory analysis of the El Niño – Southern Oscillation (<u>here</u>), Advance Report on Forest Fires in Europe, Middle East and North Africa 2022 (<u>here</u>), Exploring an approach for monitoring the implementation of the European Union's disaster resilience goals (<u>here</u>), Cross-border impacts on Networks due to natural hazards (<u>here</u>).



Department of Earth Sciences University of Florence, Italy https://www.unescogeohazards.unifi.it

<section-header><text>

The Department of Earth Sciences of the University of Florence (DST-UNIFI; https://www.dst.unifi.it) is a recognized center for international research and higher training in Italy, with an Engineering Geology group counting almost over than 60 persons among professors, researchers, technicians, post-doc fellows, PhD students, collaborators and visiting fellows.

The Civil Protection Centre of the University of Florence (CPC-UNIFI https:// www.protezionecivile.unifi.it) is part of the National Italian Service of Civil Protection, as it is Centre of Competence for Civil Protection in the field of geological risk prevention. The Center promotes the dissemination of the culture of civil protection, information and knowledge on natural and anthropogenic risks, and the improvement of community resilience in line with the objectives of the United Nations Sendai Framework for Disaster Risk Reduction 2015-2030. In 2023 the activities of CPC-UNIFI continued by organizing dissemination and training events, and by the involvement with the National Civil Protection Service in several emergency operational activities for the technical support in the geo-hydrological hazards treating human life and infrastructures.

Management of Geo-hydrological Hazards (UNESCO Chair https://www.unesco-geohazards.unifi.it), established in 2016 and renewed in 2020 has the mission of carrying out research and development (R&D) for the prevention and management of geohydrological hazards, in order to support policies and actions of risk reduction. The Chair has been signatory and promoter of the Kyoto 2020 Commitment (KLC2020) for global promotion of understanding and reducing landslide disaster risk. The Kyoto 2020 Commitment is a duty to the Sendai Landslide Partnerships 2015-2025, the Sendai Framework for Disaster Risk Reduction 2015-2030, the 2030 Agenda Sustainable Development Goals, the New Urban Agenda' and the Paris Climate Agreement.



The UNESCO Chair on Prevention and Sustainable

The UNESCO Chair, formerly as DST-UNIFI, was entitled in 2008 as a World Centre of Excellence (WCoE) by the Global Promotion Committee of International Programme on Landslides (GPC/IPL). This recognition after the first triennium (2008-2011) was reaffirmed five times 2011-2014, 2014-2017, 2017-2020, 2021-2023 and for 2024-2026. The research activities carried out as a WCoE were performed in the framework of the project ATLaS (Advanced Technologies for LandSlides) project, which objective is develop new methodologies and advanced to technologies for landslide risk reduction.

The UNESCO Chair has organized the 6th World Landslide Forum, which was held in Florence from the 14th to the 17th of November 2023 (https://wlf6.org). The Forum was entitled "Landslide Science for Sustainable Development" and was jointly organized by the International Consortium on Landslides (Kyoto, Japan), the International Programme on Landslides (IPL) and the UNESCO Chair on Prevention and Sustainable Management of Geohydrological Hazards.

The aim of the Forum was to provide a common platform to foster cooperation among scientists, practitioners and policy makers concerned with landslides, to define shared priority actions for landslide risk reduction at the global level.

More than 1,200 participants from 69 different countries, representing the global landslide community, discussed the latest advances in research, technology, and policies for risk mitigation, from monitoring and early warning systems, to modeling, risk assessment and mitigation techniques, as well as relationships with climate change.

The General Conference on Landslide Risk Reduction, at the Opening Plenary Session on 14 November, addressed the latest strategies to help achieve the global targets of the Sendai Framework for Disaster Risk Reduction.

The High-Level Panel Discussion on the same day adopted the Florence Declaration on Landslide Risk Reduction, to share information and best practices, support research and development of new technologies, and build capacity at all levels to improve landslide preparedness and response.

From 15 to 17 November parallel scientific sessions have taken place with 853 scientific contributions, including 643 oral reports and 210 posters, divided into 47 scientific

sessions.

In 2023, the UNESCO Chair has participated to several research projects funded by national and international organizations in the field of prevention and management of geohydrological hazards with special emphasis to landslides, subsidence, and floods.

Furthermore, the UNESCO Chair has been involved in research, development and cooperation activities for the prevention and reduction of geo-hydrological hazards in view of conservation of UNESCO World Heritage List sites in Italy, as well as in many other countries around the world. In this context the members of the Chair have promoted and participated in many national and international projects and joint missions with official partners for the protection and conservation of cultural heritage threatened by geo-hydrological hazards in, among the others, Madagascar (high City of Antananarivo), Georgia (Rock cut sites of Vardzia, Uplithsikhe and David Gareja), Saudi Arabia (AlUla Old Town, Dadan, Hegra), providing technical support, capacity building and scientific dissemination to local authorities, agencies, and research centers.

In 2023 the UNESCO Chair has organized for the UNESCO Regional Office for Southern Africa (ROSA) an introductory course on landslide risk assessment, monitoring and forecasting to equip DRR experts and researchers working in the Biosphere Reserves in Southern Africa.

More than 40 scientific papers were published on peer reviewed ISI international scientific journals, dealing with landslide analysis, mapping, monitoring, modelling and prediction, remote sensing, geophysics, geotechnics, volcanic flank instability, subsidence, natural risk assessment, resilience to natural disasters, hydrogeology, and environmental geology.

In 2023 the UNESCO Chair, as member of International Consortium on Landslides (ICL), has contributed to the Open Access book series "Progress in Landslide Research and Technology" published by Springer (https://www.springer.com/series/16796). The series provides a common platform for the publication of recent progress in landslide research and technology for practical applications and the benefit for the society contributing to the Kyoto Landslide Commitment 2020. The contributions include original and review articles, case studies, activity reports and teaching tools for the promotion of understanding and reducing landslide disaster risks.





Global Earthquake Model (GEM) Foundation, Italy https://www.globalquakemodel.org



Launch of the new Global Earthquake Hazard and Risk maps and other products in Bergamo, Italy.

The year 2023 was marked by significant milestones and achievements for the Global Earthquake Model (GEM) Foundation, reflecting its ongoing commitment to seismic hazard and risk reduction worldwide.

Leadership Transition

A pivotal moment came in August 2023 when John Schneider handed over the leadership reins to Helen Crowley, who assumed the role of Secretary General. Helen Crowley brings with her <u>a vision for a resilient</u> <u>future</u>, guiding GEM towards its mission with renewed vigour.

Product Releases

June 2023 witnessed the unveiling of the updated <u>Global Earthquake Hazard and Risk Maps in</u> <u>Bergamo, Italy</u>, offering important seismic hazard and risk information for disaster risk management agencies and professionals. Subsequently, on International Day for Disaster Risk Reduction (DRR), October 13, 2023, <u>GEM released the underlying data</u>, including seismic risk profiles and exposure and vulnerability models. Moreover, <u>a new products page</u> <u>was launched</u>, enhancing stakeholder accessibility to vital hazard and risk resources.

Project Highlights

Throughout the year, GEM spearheaded various projects aimed at advancing seismic hazard and risk assessment. Notable endeavours included the successful activities of the <u>FORCE Project</u> technical workshops and training sessions on the OpenQuake Engine and tools in collaboration with El Salvador's MARN.

Additionally, the <u>METIS project</u> concluded with a workshop presenting the progress in site-specific seismic hazard assessment for the safety of nuclear power plants (NPP), while other projects focused on training a new generation of seismic hazard scientists to tackle the challenges of earthquake forecasting (<u>TREAD</u>), and enhancing <u>multi-hazard risk</u> assessment in <u>Malawi</u>. Collaborative efforts in earthquake risk assessments in <u>Bangladesh</u> and <u>Albania</u> were also carried out.

Partnerships

GEM welcomed Gallagher Re as a new sponsor and celebrated the return of Zurich, alongside renewals from Geoscience Australia and SERI-Switzerland, underscoring sustained support for GEM's mission. PartnerRe also upgraded its sponsorship from Advisor to Private Governor, emphasising commitment to GEM's strategic objectives. Further strengthening its network, GEM partnered with dClimate to advance transparent earthquake risk assessment, while NERC (UK) and NIED (Japan) renewed their respective sponsorships, reaffirming dedication their to GEM's

initiatives.

Prof. Helen Crowley Secretary-General



E-mail: helen.crowley@globalquakemodel.org

GADRI Annual Report — Europe



Helen Crowley welcoming Iwan Stalder, Zurich official representative to the Governing Board

OpenQuake Engine

A series of milestones were achieved with the release of <u>OpenQuake Engine</u> versions 3.16 LTS, 3.17, and 3.18, signifying continued progress in seismic hazard and risk modelling. To support user engagement and proficiency, <u>an online OpenQuake</u> <u>Training course for beginners</u> was conducted, complemented by the release of the <u>OpenQuake</u> <u>Engine Online Manual</u> with support from USAID BHA.

Webinars

GEM participated in a series of international webinars addressing critical topics in earthquake risk reduction, climate risk assessment, and seismic hazard and risk reduction. Noteworthy events included discussions on <u>seismic risk management in</u> <u>Turkey</u>, as well as <u>the role of geological survey</u> <u>organizations in risk reduction actions</u>, fostering knowledge exchange and collaboration among stakeholders.

OpenQuake Engine v3.18

OPENQUAKE ENGINE V3.18 IS HERE!

What's New: Memory & space savings, faster calculations, AEP/OEP curves, infrastructure risk,

improved liquefaction models.

Download it today!

#OpenQuakeEngine #SeismicHazard #SeismicRisk

Publications

GEM contributed to the body of knowledge on seismology and earthquake engineering through the publication of 14 peer-reviewed papers covering diverse aspects of earthquake risk assessment and mitigation. Topics ranged from fault source models earthquake and early warning systems to infrastructure seismic risk assessment and innovative approaches to building damage detection.

Additional Highlights

Insights gained from the <u>2023 Turkey-Syria</u> <u>Earthquake Reconnaissance Mission</u> and GEM's recognition by WFP as <u>one of ten innovators for a</u> <u>hunger-free and resilient world</u> underscored the organisation's impact and leadership in the field of disaster risk reduction.

In summary, the year 2023 epitomised GEM's firm dedication to advancing seismic hazard and risk reduction globally, paving the way for a more resilient and safer future for all.



GEM leadership handover June 2023 Governing Board meeting.



FORCE project training in El Salvador



Fire University, Poland

https://www.apoz.edu.pl



In accordance to scientific promotion the Main School of Fire Service (Szkola Glowna Sluzby Pozarniczej, SGSP) changed its formal name on Fire University (Akademia Pożarnicza, APoż). The university organizational units actively participated in disaster risk reduction (DRR) due to natural hazards and man -made events. There were the Institute of Safety Engineering, the Institute of Internal Security, the Faculty of Safety Engineering and Civil Protection and the Firefighting Rescue Unit of APoż. Consequently, during the fourth full year of participation in GADRI, APoż covered research, educational and operational areas of the reduction, also considering societal tensions related to situation on Polish-Belarus border and military conflict in Ukraine.

In the period reported, APoż was conducting research in following international projects related to DRR aspects:

- Integrated Technological and Information Platform for wildfire Management (SILVANUS), Horizon 2020.
- 2. Protection System for large gatherings of People in Religious Sites (ProSPeReS), Horizon 2020.

. Ground robots tested during Australian pilot in SILVANUS project

- Comprehensive Hazard Identification, and Monitoring systEm for uRban Areas (CHIMERA), Horizon Europe.
- Developing resilience against extreme weather threats caused by climate change at local level in Central Europe (LOCALIENCE), Interreg Central Europe
- 5. Civil Protection Mechanism in case of a Wildfire, Polish Ministry of Science and Higher Education.

Doctoral dissertations were carried out in security studies (in social sciences), environmental engineering, mining and power engineering (in technical sciences), and safety engineering (in technical sciences).

As regards to SILVANUS project, APoż participated in set of international pilots for technologies used regarding to wildfire risk reduction. The pilots were organized in Australia, Indonesia, Czech Republic, France, Slovak Republic, and Greece.

APoż, as an organizational unit of the State Fire Service, actively supported Ukrainian refugees on Ukrainian-Polish border and in refugee centers in Poland. University also helped Ukrainian emergency services as an international hub for delivering rescue equipment from European countries and entity which co-organised common scientific events.



Prof. Pael Gromek E-mail: pgromek, 곗apoz.edu.pl



Faculty of Security Engineering, University of Žilina Slovakia https://www.fbi.uniza.sk/en/



In 2023 the University of Žilina was undergoing accreditation and the study programmes at the Faculty of Security Engineering were upgraded (crisis management, emergency management and security management). In addition to these significant changes, the Department of Crisis Management continued to implement innovative forms of education in selected courses. Virtual and mixed reality scenarios are available for students and practitioners based on collaboration with the private sector and scientific research activities (FightaARs project https://fight-ar.com/ and the new SAFAR project - situational awareness training of firefighters within an immersive XR training site).



We also organized conference "Crisis situations solution in specific environment", from 17th to 18th of May 2023. It was to present new trends, prevention procedures, experience and good practice, current knowledge gained from scientific research and practical

experience in crisis management in companies and public as well as current issues related security situation.

Dr. Katarina Holla Associate Professor:

Vice-Dean, International Relations and Marketing

E-mail: katarina.holla@fbi.uniza.sk

From 09 to 14 July 2023, the FBI UNIZA civic association organized a residential camp called "Summer School Young Rescuer". The residential camp was held in the beautiful surroundings of the eco -resort Vendelín in Podskalí. 19 children aged from 8 to 13 years participated in the Summer School Young Rescuer. Selected activities were also provided for disadvantaged children from other residential camps . The residential camp was closed with a graduation ceremony attended by parents, family members and other guests, at which the children received the Young Rescuer award.

ISEM Institute in cooperation with UNIZA made successful completion of other training modules for colleagues from India within the EU project called ESIWA. Practical exercises in the area of sampling CBRN materials, as well as the use of virtual reality in crisis management, and modelling the spread of contamination were among the other training modules implemented by ISEM Institute in cooperation with the us. The training is part of the ESIWA project implemented by the German GIZ and Expertise France and co-funded by the European Union.

Experts from the National Center for Disaster Prevention Mexico (CENAPRED) visited UNIZA on 26 -27 September 2023. During their two-day stay, they shared with our staff their experience in crisis management and risk management in Mexico and Slovakia. Among other things, the discussion included selected topics in the field of crisis management in Slovakia and the EU, risk management of industrial processes, application of methods and techniques in the process of risk management and other professional topics covered by the Department of Crisis Management.






Stockholm Environment Institute Sweden <u>https://www.sei.org/</u>

SEI Stockholm Environment Institute

SEI's work on disaster risks is always embedded in our overall mission of providing integrated knowledge for bridging science and policy. It is highly relevant to the key impact areas for the current (2020-2024) as well as the coming SEI Strategy (2025-2029): i) reducing climate risks; ii) sustainable resource use and resilient ecosystems; and iii) improved health and well-being. Our research recognizes that disaster risk and development are closely linked: it is development processes that largely determine who and what is exposed to risk as well how much, and how effectively they can respond. SEI works to integrate disaster risk reduction with equitable, sustainable, and resilient development.

Below are only a few examples to show a wide array of ongoing activities during 2023.

The Adaptation Without Borders partnership is founded on the belief that the global effects of climate change require solutions beyond the adaptation efforts of any single government. The partnership brings together the research capacities and convening powers of a range of partners to explore the global implications of transboundary climate risks, create opportunities to strengthen international cooperation and pave the way towards genuine global resilience. Examples of publication and events include <u>Understanding 10 transboundary climate risks: the</u> <u>need for global adaptation</u> and a related webinar on 20 April 2023 - <u>Understanding transboundary climate</u> <u>risks: the need for global adaptation</u>

SEI is part of the EU-funded Horizon Europe project, **DIRECTED** (<u>Disaster resilience for extreme climate</u> <u>events through improved data accessibility</u>, <u>communication and risk governance</u>), which seeks to reduce vulnerability to extreme weather events, and to foster disaster-resilient societies. The project aims to design a new system that integrates climate riskassessment tools, disaster-warning systems and disaster-communication approaches. The goal is to help emergency agencies better prepare for and respond to such crises.

Led by the Water, Coast and Ocean Team at SEI HQ,

the **CrisAct** project - <u>Science for a secure society:</u> <u>Hydro-climatic hazard, risk, and crisis management in</u> <u>Sweden</u>, aims at providing a comprehensive sciencebased framework for monitoring and managing hydroclimatically driven natural hazard crisis and disaster response, in order to protect society against droughts, floods, and heat waves, occurring separately or in combination or sequence.

Focusing on compound, cascading impacts from multiple hydro-meteorological hazards in Sweden and implications for resilience of critical infrastructure and social groups, the <u>HydroHazards</u> project contributes to Swedish DRR policies and practices with a specific focus on the management of multiple water hazards and potential mitigation and adaptation strategies.

Right- and equality-based approaches are essential for SEI's work on disaster risks. For example, in collaboration with the Youth Innovation Lab, Nepal, the <u>Integrating rights and equality in land-use planning</u> for risk-informed development amid COVID-19 in <u>Bharatpur Metropolitan City, Nepal</u>, that examined ways to undertake inclusive urban development to reduce biological hazards and disaster risks.

Lastly, I would like to draw your attention to '<u>a (love)</u> <u>letter to disaster risk reduction</u>', a perspective piece written by Ms. Minh Tran, a Research Fellow at SEI Asia, right before the UN SFDRR midterm review meetings in NY.



Dr. Guoyi Han E-mail: guoyi.hn@sei.org

Evidence Aid, United Kingdom https://www.evidenceaid.org/

Evidence Aid has continued to expand their resources this year, thanks to the work of a core team of staff and volunteers.

evidence aid

In June 2020, we started working with the Pan American Health Organization on the evidence collection relating to Resilient Health Systems with a particular focus on low and middle income countries. At the end of December 2023, we had worked on three phases of the project and the collection now contains more than 270 summaries of systematic reviews. All summaries have been translated into French, Portuguese and Spanish. We are planning to work with them again in 2024 to work on Phase 4 of the collection. This project ended with a webinar titled: Strategic Approaches to Implementing Resilient Health Systems Frameworks in the Context of Emergencies and Disasters: insights from Advisors of the Resilient Health System evidence collection. The webinar featured an insightful panel discussion with advisors of the Resilient Health Systems collection, led by Xavier Bosch-Capblanch from Swiss Tropical and Public Health Institute. The panelists included Verônica Abdala and Juan Pablo

Pagano from PAHO, Felipe Cruz Vega from the Mexican Institute of Social Security, and Jesse Uneke from <u>Ebonyi State University</u>. The webinar is available <u>here</u>.

We are working on translating the summaries in all our collections from English into Arabic, Chinese, French, German, Italian, Portuguese and Spanish.

Continuing our work from June 2021, throughout 2022 and 2023, we worked with the World Health Organization, Kobe Centre to develop new dissemination materials which are included in a dedicated <u>Knowledge Hub</u>. The work centred around the online book <u>WHO Guidance on Research</u> <u>Methods for Health Emergency and Disaster Risk</u> <u>Management</u>'. In 2022 and 2023, a small team ensured all chapters of the book had slideshows with video and podcasts and a webinar was held to promote the existence of the materials.

In September 2023, Evidence Aid was represented at the Cochrane Colloquium in London, UK by Claire Allen, and Ana Pizarro. They <u>presented two posters</u> and took part in the 'Library of People' event.





Ms. Claire Allen Operations Manager E-mail: callen@evidenceaid.org In October, Evidence Aid took part in two webinars – the first titled '<u>Summarising systematic reviews for</u> <u>decision-makers in the humanitarian sector</u>' and the second '<u>How evidence can help urban health</u> <u>preparedness</u>'. Given that urban settings are vital for prevention, preparedness, response, and recovery before, during, and after health emergencies. As highlighted in the WHO *Framework for strengthening health emergency preparedness in cities and urban settings*, evidence is one of the key areas of focus for strengthening health emergency preparedness in cities and urban settings. Available evidence can be used to guide efforts to improve preparedness and health system resilience. It can also help monitor impact and assess the effectiveness of response measures.

In May 2023 Evidence Aid took part in two further webinars, both with similar content. The first was in partnership with Evidence Synthesis Ireland titled 'Summarising systematic reviews for decision-making in the humanitarian sector' and the second alongside the African Community for Systematic Review Methodology titled '<u>Translating systematic reviews to</u> plain language summaries'.

We were lucky to have 3 interns from McMaster University who worked on business development and funding opportunities. We have had other interns who have worked with us throughout the year and details can be found <u>here</u>. We aimed to publish a newsletter and a bulletin each month which can be read <u>here</u>.

In June 2023, we recruited Epa La Bella, Sumra Ali, Cristian Mansilla, Ana Pizarro, Jane McHugh, Jawaria Karim, and Yasmeen Saeed to work on Phase 3 of the PAHO project. They have been supported by hardworking volunteers.

We would like to take this opportunity to thank all our interns and volunteers without whom we would not have had such a successful year.



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Institute for Risk and Disaster Reduction (IRDR) University College London, United Kingdom

https://www.ucl.ac.uk/risk-disaster-reduction/



IRDR Centre for Gender and Disaster visited the Institute Women of the Amazon (IMAMeeting with the trainees from the course in project management, Rio Branco – Acre, credit: IMA

2022–2023 has been an exciting year for the Institute for Risk and Disaster Reduction with our research, engagement and impact, and education agendas focussed on providing evidence-based critical reflection, education and inspiration to ask and tackle the pertinent questions and challenges facing risk, disaster and humanitarianism today and in the future.

Over the past year, we have collectivelv published over 135 peer-reviewed research papers in topics spanning the full breadth or risk and disaster reduction from so many angles, including a paper freshwater capture quantified on in Bangladesh featured on the front page of Science. Our engagement and impact has included public events such as the IRDR Annual Conference 'Risk Without Borders' and Humanitarian Summit 'Doing Even more with Even Less', our monthly seminars, industry-focused events, and studentfocused events, media engagement, policy-focused initiatives, as well as several

impact-focused projects ranging from supporting the <u>Women of the Amazon midwives projects</u>to have autonomy, to <u>developing risk calculation data and</u> <u>tools</u> for use by practitioners in industry. 2022-2023 has seen success for the Department in the <u>UCL and</u> <u>Faculty Education Awards</u> and we hope to build on this going forward into the 2023–2024 academic year as we move to having the full complement of taught students with our inaugural BSc Global Humanitarian Studies cohort entering their third and final year.



Prof. Peter Sammonds Director E-mail: irdr-enquiries@ucl.ac.uk The IRDR Annual Conference 'Risk Without Borders' and Humanitarian Summit 'Doing Even more with Even Less', have highlighted that the risk reduction and humanitarian sectors need optimism and to keep trying if progress is to be made, for if we do not try then we will not achieve. Panellists reflected that there may be initiatives that need to stop and change, and we need to act on these. However, we may need to reconcile that it may be the right decision to continue with some imperfect initiatives if still good and able to make a positive difference. This prompts a continued need for data and evidence with appropriate analysis to allow learning from history, with independent monitoring and evaluation, to make informed decisions on practice in the present and future. Furthermore, we need to utilise technology, encourage and support engagement and collaboration with local actors, and to get through geopolitical and funding barriers. Such topics and their interdependencies are discussed, researched and taught within our PhD, Master's and undergraduate programmes. We hope our current students, alumni, staff, partners, members and all those in the IRDR community will answer the plea from one of the panellists to provide new voices and new thoughts, particularly to large national and international organisations. We can ask the right questions ready to be tackled with an interdisciplinary perspective. Thus, although the continued call to do more with less and the existence of borders and barriers does not seem to have an end date, the IRDR will continue strive to tackle these issues, learning with our partners and communities to achieve this - please join in and work with us.

To help achieve this, we have welcomed several new academic, research and professional services staff who have helped broaden and strengthen our collective expertise. Mark Pelling, Professor of Disaster Risk Reduction, and Fatemeh Jalayer, Professor of Geophysical Hazard Risks, have joined our professoriat helping to drive our research agenda and taking the lead in our impact and inclusion strategies respectively. Our new lecturers Haines (Disaster Risk Dan

Response), Sarah Dryhurst (Risk Perception and Communication) and Stefan Leeffers (Disaster and Crisis Risk Finance), bring new research expertise in history, psychology and economics respectively; these new staff are adding new perspectives on our taught programmes as programme leader for the MSc Risk, Disaster and Resilience, programme leader for the MRes Risk and Disaster Reduction, and Deputy Ethics Chair. We have two new Associate Lecturers (teaching) in Risk, Disaster and Humanitarianism, Myles Harris and Caroline (Caz) Russell, who have been focussing on our taught programme assessments and digital accessibility respectively, as well helping to implement new initiatives around fieldwork safety and research ethics. We have welcomed Susannah Fisher, who holds a UKRI Future Leaders Fellowship in Climate Change Adaptation, and several staff on various grant-funded projects. This year we have further benefitted through a significant strengthening of our professional services team to meet the demands and aspirations of a growing department. New members include Department Manager Nidhi Rathod, Engagement, Networks and Partnerships Manager Sian Rees-Jones, Senior Research and Finance Officer Kamariyah MBamba, Senior Education Administrator Paula Ktorides, Education Administrator Jose Delgado, and Operations Administrator Dhashvini (Dhash) Ramanathan.

From the IRDR Annual Report 'Welcome' by Prof Joanna Faure Walker

www.ucl.ac.uk/risk-disaster-reduction/about-irdr/irdrannual-report-2023/welcome



GADRI Annual Report — Europe



Water Engineering and Development Centre (WEDC) Loughborough University United Kingdom https://www.lboro.ac.uk/research/wedc/



During the year, several noteworthy events unfolded in the domain of multi-hazard risk reduction collaboration. A pivotal face-to-face project dissemination workshop in Bhutan facilitated valuable stakeholder feedback for the FLASH project, enhancing local and national government insights into challenges and solutions. The inauguration of the UNESCO Chair in Informatics and Multi-hazard Risk Reduction at Loughborough University marked a significant milestone, with international experts offering profound perspectives on disaster risk reduction. The launch of the Global Partnership for Smart Informatics and Multi-hazard Reduction (SIMR) marked another significant milestone in the collective endeavours of global academics to tackle the challenges presented by the evolving multi-hazard risks and climate change in today's world. The 23rd Annual General Meeting of the UK China Association of Resources and Environment (UK-CARE) provided a dynamic platform for academics, fostering exchanges and discussions on disasters and the environment. Collectively, these events showcased our commitment to advancing knowledge, fostering partnerships, and addressing challenges in the realm of multi-hazard risk

reduction.

Events

Face-to-face project dissemination workshop in

Bhutan

In February 2023, a face-to-face dissemination workshop took place in Bhutan, an ODA-eligible country, to showcase and receive stakeholder/user feedback for our FLASH project outputs. The local and national governments of Bhutan benefited directly from the enhanced understanding and better awareness of the challenges potential solutions, and and recommendations for the current, future development of Amochhu Basin and Phuentsholing Township Development (PTDP) area (FLASH study area). Furthermore, the workshop provided training for incountry partners to use the latest data and modelling tools to support their ongoing research and

practice in multi-hazard risk modellina and assessment. In addition, the UK team has held faceto-face meetings with the Vice Chancellor, Registrar of the Royal University of Bhutan, and Presidents of its eight subordinate schools, to explore continuous collaboration through joint programmes for PhD research, training and staff exchange, and the exploration of further funding opportunities from UKRI and other funders (e.g., EU/WB/ADB). Fieldwork has also been conducted in typical landslide and debris flow areas to help the UK team gain a better understanding of the practical challenges associated with rainfall-induced multi-hazard risk management in Bhutan. This information can inform future research collaborations and provide additional material to support joint publications.



Prof. Qiuhua Liang E-mail: g.liang@lboro.ac.uk



• The Launch of Global Partnership for Smart Informatics and Multi-hazard Reduction (SIMR)

On September 24, 2023, the Global Partnership for Smart Informatics and Multi-hazard Reduction (SIMR) was officially launched during the XIV Congress of the International Association for Engineering Geology and the Environment (XIV IAEG Congress 2023). This initiative is a joint effort between the UNESCO Chair in Informatics and Multi-hazard Risk Reduction (IMRR) at Loughborough University and the State Key Geohazard Prevention Laboratory of and Geoenvironment Protection (SKLGP) at Chengdu University of Technology, China. Over 40 worldleading experts in informatics and multi-hazard risk reduction from more than 20 countries, including the UK, China, France, Greece, Italy, the Netherlands,

Loughborough University and UNESCO launched the UNESCO Chair in Informatics and Multi-hazard Risk Reduction

On August 18, 2023, a momentous online gathering brought together approximately 300 participants from 23 countries as Loughborough University and UNESCO joined forces to inaugurate the UNESCO Chair in Informatics and Multihazard Risk Reduction. Professor Qiuhua Liang assumed the esteemed role of chairholder. Additionally, the event featured three keynote speeches from internationally renowned scientists who provided profound insights into the current and future landscape of global disaster risk reduction research and practice.



New Zealand, Japan, India, Nepal, Malawi etc, were invited to participate in the launch meeting, to discuss the future development of SIMR. The event has garnered extensive coverage in national media outlets, evidenced by the news reports below:

1)<u>http://home.china.com.cn/txt/2023-09/26/</u> content_42537440.htm

2)<u>https://news.sciencenet.cn/</u> htmlnews/2023/9/509309.shtm

3)<u>https://www.163.com/dy/article/</u> IFKT3SC905561JOC.html



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• The 23rd Annual General Meeting of the UK-CARE

On December 9, 2023, the 23rd Annual General Conference of the UK China Association of Resources and Environment (UK-CARE) took place at Loughborough University in the UK. The event witnessed the active participation of 50 academics who delivered 21 speeches, covering a diverse array of topics centered around disasters and the environment. The conference served as an exceptional platform for Chinese academics engaged in relevant fields, whether working or visiting the UK, to exchange experiences, expand their professional networks, and explore potential collaboration opportunities.



Research grant project (funded in 2023)

- 'Standardising High-Performance Integrated Hydrodynamic Modelling System (HiPIMS) for flood modelling and RIsk managemenT (SPIRIT)' funded by The EPSRC Impact Acceleration Account (IAA) (Professor Qiuhua Liang as PI and Dr Huili Chen as Col)
- Representative Journal publications
- Xia, X, Jarsve, KT, Dijkstra, T, Liang, Q, Meng, X, Chen, G (2023) <u>An integrated hydrodynamic model</u> for runoff-generated debris flows with novel formulation of bed erosion and <u>deposition</u>, Engineering Geology, 326, ISSN: 0013-7952. DOI: <u>10.1016/j.enggeo.2023.107310</u>.
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 Tong, X, Lai, X, Liang, Q (2023) An improved non-point source pollution model for catchment-scale hydrological processes and phosphorus loads, Journal of Hydrology, 621, pp.129588-129588, ISSN: 00221694. DOI: 10.1016/j.jhydrol.2023.129588.

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- Chmutina, K and Von Meding, J (2023) Editorial: Introduction to the Special Issue on "Conversations with Disasters: Deconstructed", Disaster Prevention and Management: An International Journal, 32(3), pp.381-383, ISSN: 0965-3562. DOI: 10.1108/DPM-06-2023-422.
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Global Disaster Risk Reduction (GDRR) UK Health Security Agency United Kingdom https://www.gov.uk/

UK Health Security Agency

UKHSA Science Strategy 2023 to 2033 Securing health and prosperity



Agency's (UKHSA) annual report and accounts for the financial year 2022 2023, laid to before Parliament 25 Januarv on 2024. The remit for the Agency is to provide strong national and international professional leadership of public health security and health protection and grow the science

UK Health Security

on which these capabilities are founded. This includes developing a cohesive health protection response in communities across England including close collaboration with our devolved partner agencies across the UK; supporting and embedding effective clinical, scientific, and operational functions and capabilities in the public health system; and helping other countries to improve their own defences to better tackle health threats to the public which affect us all. The COVID-19 pandemic shone a light on the critical importance of effective health protection systems.

The hazards to health which UKHSA protects against are:

- infectious diseases (covering the main routes of transmission which can give rise to epidemics or pandemics: gastrointestinal; respiratory; sexual / blood-borne; touch; and vector-borne;)
- chemical, biological, radiological and nuclear hazards
- other environmental hazards, such as weather events

health

such as

hazards

major

that arise from disasters fires or accident

The <u>UKHSA science strategy 2023-2033 – securing</u> <u>health and prosperity</u> shares our vision of how, through science, we will secure health and prosperity. It describes how we can develop our current scientific disciplines and infrastructures to meet the current and future health threats both nationally and globally. The UKHSA protects our communities from infectious diseases and the impact of chemical, radiological and other environmental health hazards. Our work depends on generating and applying the best scientific evidence. Through investment in scientific workforce and deeper partnerships with industry and academia, the strategy sets out UKHSA's ambitions to:

- predict and anticipate health threats, through investing in genomics, data science and surveillance, including disease vector (such as mosquitoes and ticks) surveillance
- create a more secure environment, by enhancing our understanding of the threats in the environment and building scientific defences against these hazards
- reduce and eliminate health threats, by strengthening the scientific evidence underpinning health protection programmes – at home and abroad
- act on the scientific evidence, translating data, knowledge and insights into practical actions
- unlock the potential of scientific assets, and secure the legacy from the pandemic to increase the impact of our science on health and economic prosperity, strengthening vaccine and diagnostic development and evaluation and data science

Prof.. Virginia Murray



GADRI Annual Report 2023 —155

UKHSA is a <u>research active organisation</u>. Research, and the translation of its findings into innovations both inform and support public health policy, practice and services. Over 300 members of UKHSA staff undertake R&D within internal / external networks and in 2019 published almost 900 articles in the peerreviewed scientific and clinical literature using £17 million of external research funding. the <u>UKHSA</u> <u>Research Portal</u> has details on our research, expertise and outputs.

As an example of research outputs, the UKHSA has published its <u>first Health Effects of Climate Change</u> (HECC) report, drawing together the latest evidence on how our changing climate is already impacting on the nation's health and publishing future projections based on a plausible worst case scenario. The report contains 15 chapters written and peer-reviewed by a wide range of experts from academia, industry and government, providing detailed analysis on climate change issues that will inform further research, public health practice and policy decisions going forward. It demonstrates that the evidence base on the health effects of climate change has grown significantly, with health threats from heat, mosquitos, flooding and food security becoming more significant in the near future. Both at home and across the world, the health effects of increasingly extreme weather are being seen. In the summer of 2022, the UK saw temperatures reach above 40°C for the first time on record, with nearly 3,000 excess deaths recorded across the period, while many other countries have experienced bouts of intense and prolonged heat in recent months.

UK Health Security Agency

Health Effects of Climate Change (HECC) in the UK

State of the evidence 2023





Global Disaster Resilience Centre (GDRC) University of Huddersfield, United Kingdom http://www.hud.ac.uk/gdrc



A Projects:

GDRC has been successful with the following funded projects during 2023:

Disability inclusive higher education for disaster risk reduction in Indonesia

This project will strengthen disability inclusion in DRR by promoting equal access and opportunity for learners with disabilities on related undergraduate, postgraduate, research and continuous professional development programmes in Indonesian HE. In doing so, it will help persons with disabilities to be active participants and not overlooked in disaster preparedness, relief and response actions

Scheme: **UK-Indonesia** Disability Inclusion **Partnerships Grant**

Countries: UK and Indonesia

HUR Role : project lead

Partners: ITB, Indonesia, 4 partners



Technology-based community knowledge; achieving disaster resilience in urbanised areas

The aim of the project is to accelerate the integrative and collaborative approach between researchers and practitioners from various disciplines, including social scientists. applied technology, construction management, and structural engineers. This is expected to be achieved through a series of activities that help raise awareness of the importance of disaster community-based knowledge in the digital era and to Identify innovative ideas for technology-based disaster community knowledge.

Scheme : RAENG Frontiers Champion grant

HUD Role : Project lead (Dr Ezri Hayat)

Countries: UK and Indonesia, 4 partners

Raising awareness and understanding of nature inspired solutions (NIS) for disaster risk reduction (DRR)

It focuses on raising awareness among built environment professional bodies, of the potential for using nature inspired solutions to reduce disaster risk. It also as a component which is focused on two case studies to understand how nature's forms, processes, and ecosystems have helped to reduce disaster risk related to tsunamis and landslides. These will be used as a basis to inform/inspire the development of solutions in the built environment to address the same/ similar hazards in other contexts.

Our role : Project lead Funder: ASRI Projects 2021 HUD role: Project lead Partnership: 12 partners from 5 countries





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B) Events

There have been a large number of events organised/ partners by GDRC during 2023. [Moderator/panelists of international in 29 instances ; 28 international workshops delivered as facilitators/organiser ; and 8 international conferences (co-organiser/partner)]Some key examples are listed below :

International Symposium on Tacking Climate Change as an Underlying Disaster Risk Driver, University of Huddersfield, UK

This international symposium was organised as part of the Research Training Network on Tackling Climate Change as an Underlying Disaster Risk Driver (CCA-DRR). CCA-DRR is a European Commission funded Erasmus+ International Credit Mobility (ICM) project which supports student and staff mobility to and from countries outside Europe. Accordingly, this research training programme and Symposium was designed as research capacity-building and awareness а programme targeting the climate change and disaster management researchers in 8 higher education institutions in Sri Lanka. The Symposium programme was designed with the expectation of developing a roadmap that reviews the current state of CAA and DRR and sets out the work required and major challenges and opportunities to advance the dialogue between the CAA and DRR communities.

Organised by: Global Disaster Resilience Centre, University of Huddersfield UK & DRR CAA Network

Our role: conference organiser, Conference co-chairs

Dates: 27-28 June 2023



United Kingdom Alliance for Disaster Research (UKADR) 2023 Conference. University of Huddersfield, United Kingdom.

UK Alliance for Disaster Research (UKADR) Annual Conference 2023: 2030 and beyond: Risk-informed decision making, investment, and behaviour. Special features: Posters and abstracts presentations, Keynote speeches, Panel discussions on selected topics, Early career development pathways, UKADR Annual General Meeting, Networking session and drinks reception. The conference is inspired by the Mid-term Review of the Implementation of the Sendai Framework 2015-2030 (MTR SF), which emphasizes the importance of disaster risk management. While progress has been made since its implementation in 2015, our planet's increasing instability carries significant risks.

Organised by: Global Disaster Resilience Centre, University of Huddersfield UK

Our role: Conference Co-chairs, overall organisation

Dates: 18th - 19th December 2023



Official launch of the Research Brief on the Key Insights and Recommendations: Public Health Information Sharing among Underprivileged Groups and Vaccine Hesitancy during the COVID -19 Pandemic in Sri Lanka

Richard Haigh (moderator), Dilanthi Amaratunga, Thushara Kamalrathne and Lahiru Kodituwakku ("Panellists)

An international study was carried out to: investigate social factors that affected vaccine hesitancy during the COVID-19 pandemic in Sri Lanka; and, explore the challenges of public health information sharing epidemic pandemic during an or among underprivileged groups in Sri Lanka. This study involved a survey covering 26 divisional secretariats in 9 districts in Sri Lanka. The field study was designed to cover estate, rural, urban, semi-urban and urban sectors. A total of 3,330 households were covered by the study. This research provides deep insights into the vaccination programme conducted in Sri Lanka, especially with regard to public response to the vaccination programme, vaccine hesitancy, vaccine preference and status of public health information sharing among communities.

Organised by: Sri Lanka Medical Association

Date: 25th July – 28th July 2023





Training of school children, first responders and other public and private stakeholders relevant to the early warning dissemination.

Colombo International School training and Maharaja Institute training

These events were conducted in response to the requests from school principals view clearly that the education system in Sri Lanka is ill prepared to respond to natural hazards. There are opportunities to involve existing safety committees in school preparedness and in the development of evacuation plans; and to exploit existing regular teacher curriculum training events to develop capacities in emergency response and evacuation. Importantly, experiences from a past tsunami drills in particular with Sri Lankan communities emphasise the importance of holding regular school practice drills

Organised by: Disaster Management Centre of Sri Lanka

Facilitator: Ravi Jayaratne

Days: January and February 2023

a 2 week international CCA-DRR Staff Exchange Programme for 24 academics representing 8 universities in Sri Lanka

This staff exchange was organised as part of the Research Training Network on Tackling Climate Change as an Underlying Disaster Risk Driver EU funded research project The training schedule included: seminars, workshops, Symposium and panel discussions, guest lectures, field trips, and social events. CCA-DRR is designed to develop capacities amongst academic staff members of UK and Sri Lanka, in "tackling climate change as an underlying disaster risk driver"

Our role: Organiser and host (Chamindi Malalgoda, Thanya Weerasinghe, Dilanthi Amaratunga, Richard Haigh)

Dates: 26th June to 7th July 2023, University of Huddersfield

What comes next after you're done with your research?

Workshop in scientific writing and publishing for researchers in disaster risks and related subjects

Why publish, publication or article type, selecting a journal, writing philosophy, publishing ethics, Q & A

Organised by: National Building Research Organisation (NBRO), Sri Lanka

Our role : workshop facilitators (Dilanthi Amaratunga and Richard Haigh)

Date: Tuesday 24th July 2023

C) key notes

In 2023, GDRC members were invited to deliver, 9 high profile key note speeches and 33 invited taks . Sisira Madurapperuma Some examples are listed below:

Disaster Risk Reduction 2015 - 30: Progress, South Asia Challenges, and Opportunities

Richard Haigh

Conference on Disaster Risk Title of the event: Reduction and Management in Sri Lanka: Science, Policy Date: 13 December 2023 and Practice

Organised by: General Sir John Kotelawala Defence University, Ratmalana, Sri Lanka

Date: 25th July 2023

Disasters and public health nexus: Protecting at risk communities

Dilanthi Amaratunga

Title of the event: Sri Lanka Medical Association (SLMA) 136th International Anniversary Medical Congress

Organised by: Sri Lanka Medical Association (SLMA)

Date: 25th - 28th July 2023, BMICH, Colombo



Sustainable National Anticipatory Actions: South **Asia Perspectives**

Title of the event: Regional Launch "Sustainable National The Midterm Review of the Sendai Framework for Anticipatory Actions through Preparedness (SNAP) in

> Organised by: Asian Disaster Preparedness Center (ADPC) in collaboration with the USAID Bureau for Humanitarian Assistance







There have been 40 appointments to national/ international organisations and committees, and strategic advisory bodies. Some examples are listed below:

Working Group member, MCR2030 - RCC thematic semesters Risk Financing Working Group on Financing a Transition towards Climate Resilience", UNDRR

Dilanthi Amaratunga

Exchange of experiences from cities, financial service providers and investors and stakeholders on the implementation of disaster resilience plans and projects. Making Cities Resilient 2030 initiative: Challenges and opportunities in mobilising funding for building resilience to shared and contextual challenges of cities in the region. Practical solutions for project development and implementation

Honorary Assistant Secretary, Convener of the

Expert Committee on Disaster Management and Resilience, and Planetary Health and Climate Effects at the Sri Lanka Medical Association

Lahiru Kodituwakku

Sri Lanka Medical Association (SLMA)is the country's premier professional body for doctors, aiming to lead the medical community to achieve the highest standards of medical professionalism and ethical conduct, and to be an advisory body on health policy to the Sri Lankan government and community. It was initially the Ceylon Branch of the British Medical Association, which was started on 26th February, 1887, with with 65 members and by 1898 the membership had almost doubled with 113 members. It was one of the largest branches in the British colonies.

Steering Committee Member for Commonwealth Youth for Sustainable Urbanisation - CYSU

Malith Seneviratne

Appointed as a steering committee member for CYSU -Commonwealth Youth for Sustainable Urbanisation. Led by young professionals from across the Commonwealth countries, CYSU aims to Empower Youth and Young Professionals to support, collaborate and contribute to, and advocate for sustainable urbanisation. We want to look at ways in which cities and human settlements can better reflect the needs of young people and of diverse communities. CYSU believes in communities empowered to design their homes and cities.

http://commonwealthsustainablecities.org/youth

Appointment to the Advisory Council of Asian Disaster Preparedness Centre (ADPC)

Dilanthi Amaratunga

Advisory Council engages eminent individuals in DRR and CR to provide advice to ADPC in support of its strategy, policy and activities. This includes identification of future priorities and opportunities to be pursued by the Center, and the development of clear plans of action to address these priorities and opportunities, integrating activity across thematic areas and cross cutting issues. In so doing, the advisory council will advise on the partnership (member countries, development partners and other stakeholders), required to

implement ADPC's program and projects in accordance with its strategy. The Advisory Council identifies disasterrelated needs of countries and communities throughout the region and to provide strategic guidance in support of ADPC's institutional growth. Asian Disaster Preparedness Center (ADPC) is an autonomous international organization for cooperation in and implementation of disaster risk reduction and building climate resilience in Asia and the Pacific. As of January 2020, ADPC is operating as an autonomous international organization governed by the Board of Trustees. (<u>https://www.adpc.net/igo/</u> <u>Default.asp</u>)

E). Publications

Like with the previous years, there have been a large number of publications written by our members during 2023, including: 7 Books/edited books; 9 book chapters; 12refereed research papers; 3 conference proceedings; 13 Research reports, and are available at: <u>https://pure.hud.ac.uk/en/organisations/global-disaster-</u> resilience-centre

Some examples are listed below :

 Hamza, M., Amaratunga, D., Haigh, R., Malalgoda, C.,Jayakody, C., & Senanayake, A. (Eds.) (2023). Rebuilding Communities After Displacement: Sustainable and Resilience Approaches. (1st ed.) Springer, Cham. <u>https://</u> doi.org/10.1007/978-3-031-21414-1



 Kodituwakku, L. & Amarasekara, J. (2023). Scenario based training on multi hazard situations and complex emergencies : A handbook for grassroot level public health workers and first responders. A joint publication of National Dengue Control Unit of Ministry of Health, Sri Lanka, Disaster Preparedness and Response Division of Ministry of Health, Sri Lanka, nd World Food Programme. ISBN: 978-624-5719-67-9. <u>https:// reliefweb.int/report/sri-lanka/scenario-basedtraining-multi-hazard-situations-and-complexemergencies-handbook-grassroot-level-publichealth-workers-and-first-responders
</u>



Amaratunga, D., Haigh, R., Senevirathne, & Μ. and Clegg, G. (2023). (Ed.)Book of Abstracts: United Kingdom Alliance for Disaster Research -Annual Conference 2023 2030 AND BEYOND: Riskinformed decision makina. investment and behaviour University of Huddersfield, UK



- Malalgoda, C., Amaratunga, D. and Haigh, R. (edited.) (2023). Book of Abstracts. International Research Symposium on Tacking Climate Change as an Underlying Disaster Risk Driver. ISBN. 978-1 -86218-222-6
- Contributor, UNDRR Regional Assessment Report on Disaster Risk Reduction 2023 for Europe and Central Asia – Nov 2023



 Amaratunga, D., Haigh, R., Hemachandra, K. & Kamalrathne, T., 20 Feb 2023, 17 p. Disaster Risk Reduction new dimensions: COVID-19 Preparedness at local level. <u>https://pure.hud.ac.uk/</u> <u>en/publications/disaster-risk-reduction-new-</u> <u>dimensions-covid-19-preparedness-at-l</u>



T., •



Jayasekara, R., Kodituwakku, L., Ariyasinghe, U.. Ranaweera, P., Herath, Η., Rupasinghe, C., Rathnayake, S., Amaratunga, D., Haigh, R., Siriwardana. C., Fernando., N., Jayasinghe, N. (2023),Key Insights and **Recommendations:** Public Health Information Sharing

Kamalrathne.

among Underprivileged Groups and Vaccine Hesitancy during COVID-19 Pandemic in Sri Lanka: Sri Lanka Medical Association and University of UK.http://www.pandemic-mhew.org/ Huddersfield. images/2023/08/11/ spmedia thumbs/ Covid2Book V2.pdf

Contributors - Research Roadmap on Building Resilience to the Impacts of Climate Change and Other Disaster Risks in Sri Lanka, July 2023. This Research Roadmap on Building Resilience to the Impacts of Climate Change and Other Disaster Risks in Sri Lanka was compiled based on the proceedings of the International Staff Exchange and Training activity : 'CCA-DRR Erasmus+ ICM programme' conducted and led by the Global Disaster Resilience Centre (GDRC), University of Huddersfield, United Kingdom.Participating Institutions are: University of Huddersfield (HUD), UK - Project Lead; University of Moratuwa (UOM), Sri Lanka; University of Colombo (UOC), Sri Lanka; University of Peradeniya (UOP), Sri Lanka; University of Ruhuna (UOR), Sri Lanka; South Eastern University of Sri Lanka (SEUSL), Sri Lanka; University of Sri Jayewardenepura (USJ), Sri Lanka; University of Kelaniya (UOK), Sri Lanka; Sabaragamuwa University of Sri Lanka (SUSL), Sri Lanka.

F). Awards

- There have been 9 awards for recognition of . excellence by GDRC members in 2023. Some examples are provided below:
- Shavindree Nissanka has been named as one of . the Women of the Future 50 rising stars in ESG (Environmental, Social and Governance). Women in ESG: 50 Stars Changing the World seeks to celebrate the talented female trailblazers and role models aged 35 and under from around the world who are at the forefront of ESG. Each year, the campaign will showcase 50 rising stars across different aspects of ESG who have made a lasting and positive impact on their organisations, environment, and wider society.





Building ONE LIGHT a Legacy ONE AT A TIME



Kindness & Leadership, 50 Leading Lights campaign seeks to shine a great big spotlight on leaders who are impacting others through kindness. We see this campaign as a unique chance to build a new status quo, sharing advice and expertise from leaders and recognising the contribution of kind leaders to business, the economy and society. https:// www.kindnessrules.co.uk





- Lahiru Kodituwakku Global award for Education at the International Society for Neglected Tropical Diseases (ISNTD) Festival, London 2023 for the handbook on scenario based learning for grassroot level health care workers and first responders on multi hazard situations and complex emergencies.
- Lahiru Kodituwakku, Sudath Samaraweera, Indika Weerasinghe, Vinya Ariyaratne, Thushara Kamalarathne, Richard Haigh, Dilanthi Amaratunga - Best Poster Presentation at the UKADR Research Conference for the poster titled, "Engaging Communities for Prevention of Climate Sensitive Disease Outbreaks: A Sri Lankan Experience". This poster was based on a

community driven dengue prevention campaign conducted collaboratively by the National Dengue Control Unit, World Health Organization (WHO), country office Sri Lanka and Sarvodya Shramadana Movement.





Northumbria University NEWCASTLE

Disaster and Development Network (DDN) Northumbria University United Kingdom

https://www.northumbria.ac.uk/ddn



The Disaster and Development Network (DDN) spans research, enterprise and teaching orientated by the disaster management and sustainable development nexus. Operating from Northumbria University's Department of Geography and Environmental Sciences since 2000, the network engages the work of the Disaster and Development Centre (DDC)(2004-2012), Disaster and Development Postgraduate study (2000-present), programme of Disaster, Development and Sustainability (DDR) research group (2012-present), affiliated student led Disaster and Development Society (DDS)(2015-present), and an inter-Faculty Geographies of Development and Disaster (DDG) Research Excellence Framework (REF) cluster (2018-present).

The predominant effort of the DDN is to progress the knowledge and skills that engage hazards, disasters and complex emergencies from the perspective of intersecting disasters and development experiences and narratives spanning science, practice and policy environments. It is committed to delivering impact on future survivability and resilience of people and systems facing critical levels of rapid and slow onset environmental, economic, and political change. Some achievements and updates for 2023 include:

Indicative research:

 Katie Oven – UKRI-NERC GCRF "Sajagand preparedness for the mountain hazard and risk chain in Nepal". This includes one full time researcher, Amy Johnson, a PhD Researcher, Bina Limbu and new Research Fellow, Katherine Arrell.

- Francis Massé "Identifying and mitigating the impacts of COVID-19 on legal and sustainable wildlife trade in LMICs". This includes a new PhD Scholarship, Mridula Paul, supervised by Francis and Andrew.
- Becky Richardson's research focusing on "childcentred approaches to health risk communication in Nairobi schools" involved a further period of field research in Kenya during the Autumn".
- Mark Ashley Parry, working as an Associate Lecturer of the wider Department and for the Disaster and Development Network is developing a new initiative on climate and disaster education in the UK.
- Kevin Glynn progressed aspects of the UKRI GCRF project "Ixchel: Building understanding of the physical, cultural and socio-economic drivers of risk for strengthening resilience in the Guatemalan cordillera".
- Richard Kotter advanced new initiatives for local and external engagement within UK and South Asia based Emergency Services focussed on collaborations in Pakistan.

A process initiated by the DDN to gain accreditation of Northumbria University to the UNFCCC COP series has led to Northumbria gaining COP28 and subsequent rounds observer status.

Northumbria DDN has been re-elected by the GADRI membership to serve a further term as part of the GADRI board of directors. This will be represented by Andrew, but who expects to engage another full-time member of Northumbria staff to support this work. The DDN also remains active in the United Kingdom Alliance for Disaster Research, providing a x1 Advisory Board role and x1 Early Career Researcher role..



Prof. Andrew Collins

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The collaboration of the DDN with allied areas of research at Northumbria University that contributed to Northumbria's achievement of highest increase in Research Power across all UK universities in the REF exercise of 2021 has led to mergers internally. The Geographies of Disaster and Development theme is represented as an amalgam of interests at the university, most prominently focused in the Department of Geography and Environmental Sciences which produced 'World Leading' research impact case studies linked to this theme. One example we wish to build upon further is the work on "embedding a people-centred approach to health in Disaster Risk Reduction at the Local and International scales". A summary version of that impact is at: https://www.northumbria.ac.uk/research/researchimpact-at-northumbria/societal-impact/new-peoplecentred-global-policies-prepare-communities-better-fordiasasters/

Andrew has been in Southern Africa following up further on past research investments during the Autumn term in support of this objective.

The wider merged activity includes our now integrated teaching programmes and research interests with the Centre for Global Development. Full details of the work of the wider grouping can be followed at the three web sites provided in the heading of this report. The collaborative working across the University in multidisciplinary research themes is likely to have contributed to the achievement of the Times Higher Education (THE) Award of UK **University of the Year in 2022** that the University has considered running into 2023!

Developments in Research and Practice based Teaching and Learning:

The **MSc Disaster Management and Sustainable Development (MSc DMSD)** established 24 years ago (2000), has research a recruitment of 500 postgraduates from all over the world. Whilst postgraduate studies in this field aims as small groups, a significant number of the students now also select the additional "Advanced Practice" route, which increases their final credits to 240 instead of 180 and involves a 2nd year of registration. The range of modules on offer is also expanding with the collaboration of a further Masters programme in international development that came to us with the transfer of allies subject staff into the Department from a different Faculty.

Some indicative 2023 publications:

 <u>Tatano H. and Collins A.E (eds) (2023)</u> <u>Proceedings of the 4th Global Summit of Research</u> <u>Institutes for Disaster Risk Reduction:</u> Increasing the Effectiveness and Relevance of Our Institutes. GSRIDRR 2019. Disaster and Risk Research: GADRI Book Series. Springer. 330 pages. <u>https://</u> <u>link.springer.com/book/10.1007/978-981-19-5566-</u> <u>2</u> ISBN: 978-981-19-5565-5

- Pelling M., Amaratunga, D., Bucher, A., Buller, S.,
 Collins, A.E, Dawson, R., Deshpande, T., Donovan
 A., Heintz, M., Intepe, D., Marsden, K., Morin, J.,
 Murray, V., Phillips, J., Sargeant, S. (2023) Editorial:
 'International Development and Disaster Risk
 Reduction Research: A UK research practitioner
 stocktake', International Journal of Disaster Risk
 Reduction, pp. doi.org/10.1016/j.ijdrr.2023.103981.
- <u>Alam, E., Collins, A.E., Islam, Md. A.R.T., Paul, A.</u> and Islam, Md. K. (2023) 'Change in cyclone disaster vulnerability and response in coastal Bangladesh', <u>Disasters, pp.</u> doi.org/10.1111/disa.12608
- Kadia, R.S, Kadia, B.M and Collins, A.E. (2023) 'Usefulness of disease surveillance data in enhanced early warning of the cholera outbreak in Southwest Cameroon', *Conflict and Health*, 17:1, pp. doi:<u>10.1186/s13031-023-00504-1</u>.
- Richardson, R. and Collins, A.E. (2023) 'Infectious disease risk communication and engagement using puppetry and related approaches for improving handwashing with soap in an informal settlement of Nairobi', *International Journal of Disaster Risk Reduction*, 84, pp. doi:10.1016/j.ijdrr.2022.103477.
- Enns, C., van Vliet, N., Mbane, J., Muhindo, J., Nyumu, J., Bersaglio, B., Massé, F., Cerutti, P., Nasi, R. (2023) 'Vulnerability and coping strategies within wild meat trade networks during the COVID-19 pandemic', *World Development*
- Kincey, M., Rosser, N., Densmore, A., Robinson, T., Shrestha, R., Pujara, D., Horton, P., Swirad, Z., Oven, K., Arrell, K. (2023) 'Modelling post earthquake cascading hazards: Changing patterns of landslide runout following the 2015 Gorkha earthquake, Nepal', *Earth Surface Processes and Landforms.*
- **Taylor, S**., Booth, D. and Irudayarajan, R. (2023) 'Diasporic Engagement and the Climate Crisis in Kerala: Inclusive Disaster Relief and Reconstruction ?', *South Asian Diaspora*, 15: 2.





Disaster Resilience Research Group University of Salford United Kingdom

https://www.salford.ac.uk/uprise-centre-for-disaster-resilience/



In 2023 we continued to expand our research work on climate change and disaster risk reduction through the TRANSCEND project. This project is funded through the UK Research and Innovation Global Challenges Research Fund and we thank them for continuous support for our investigative work into socio-technical systems that help risk-sensitive urban development. Our partners in Sri Lanka, Pakistan, and Malaysia continue to collaborate with local stakeholders to implement our research and create an impact.

During this year, the group has been working on strengthening our publication profile, implementing our research in local settings and enhancing our partner relationships.

One of the first seminars we conducted in 2023 as a part of our TRANSCEND seminar series was by Mr. Kishan Sugathapala, Director, Human Settlements

Planning & Training Division, National Building Research Organisation, Sri Lanka. The title of the seminar was "TRANSCEND Seminar: The ground reality of **success** in resettlement projects"

Another TRANSCEND seminar titled "City/Science Intersections: A Scoping Review of Science for Policy in Urban Contexts: was conducted by Prof. Marie-Christine Therrien. This scoping review was focusing on identify the existing research on urban science for policy, specifically the context for its emergence, the actors involved, the structures and mechanisms used to strengthen links between researchers and decision -makers, its challenges, and results.

We welcomed Assoc. Prof. Sr. Dr. Noralfishah from our Malaysian TRANSCEND partner UTHM at the THINKLAB, University of Salford, United Kingdom as a visiting scholar that participated specifically in the research activities associated with the MOBILISE and TRANSCEND projects. Discussions were based on Commercialisation meeting, licencing agreement and learning MOBILISE System, Platform Application in the UK at THINKLab, University of Salford.



Prof. Kaushal Keraminiyage

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TRANSCEND seminar series continued with a presentation from Prof. Md. Anwarul Abedin at Bangladesh Agricultural University, The seminar titled, "Climate change impacts on agriculture" organised by THINKLab, University of Salford.

Prof Terrance Fernando from Thinklab recently contributed to a special episode of the WeatherPod. In Episode 26: Anticipatory Action, the panel, including Irene Amuron from the Red Cross Red Crescent Climate Centre and Paul Davies from the UK Met Office, joined forces with Terrence to tackle the question: "How do we improve outcomes for everyone at risk from the impact of hydrometeorological hazards?

We expanded our research to investigate the disasters beyond physical vulnerabilities and looks into the vulnerabilities created by the digitalization. Prof Kaushal Keraminiyage received funding in 2023 to research on Digitally Sustainable Communities in the face of Risks to Digital Infrastructure.

We congratulate Dr Devindi Geekiyange, Dr Pavithra Ganeshu, and Dr Ahmed Farhan, our prominent researchers for completing the Doctoral studies in 2023.

We continue to make impact nationally and internationally, and we are delighted to feature in a recent Ordnance Survey article: "Building resilience to respond to extreme weather events". This article give reference to our MOBILISE platform and the work carried out by the THINKIab team with the Greater Manchester Resilience Forum, Ordnance Survey, Salford City Council, the Environment Agency, and other partners.

We continued to disseminate our research through academic publications. Following are some of the publications for year 2023:

- Ganeshu, P., Fernando, T., & Keraminiyage, K. (2023). Barriers to, and enablers for, stakeholder collaboration in risk-sensitive urban planning: a systematised literature review. Sustainability, 15(5), 4600.
- Geekiyanage, D., Fernando, T., & Keraminiyage, K. (2023). Modelling interrelationships of the factors impeding community engagement in risk-sensitive urban planning: evidence from Sri Lanka. Sustainability, 15(20), 14662.
- Munasinghe, D., Fernando, T., Keraminiyage, K., & Karunawardena, A. (2023). A Review of the Disaster Risk Assessment Perspectives. Progress in Landslide Research and Technology, Volume 2 Issue 2, 2023, 323-340.
- Ganeshu, P., Fernando, T., Therrien, M. C., & Keraminiyage, K. (2024). Inter-Organisational Collaboration Structures and Features to Facilitate Stakeholder Collaboration. Administrative Sciences, 14(2), 25.





Africa





Africa



Africa

Algeria	Faculty of Civil Engineering, Built Environment Research Laboratory (LBE), University of Science & Technology Houari Boumediene (USTHB)
Egypt	Faculty of Engineering, Alexandria University
Egypt	Geology Department, Faculty of Science, Assiut University
Egypt	German University in Cairo (GUC)
Egypt	Water Resources Research Institute (WRRI), National Water Research Center (NWRC), Ministry of Water Resources and Irrigation
Ghana	University for Development Studies (UDS)
Ghana	Department of Geography & Resource Development, University of Ghana
Ghana	Hydrology and Water Resource Engineering, Water Research Institute, Council for Scientific and Industrial Research (CSIR)
Morocco	Faculty of Sciences and Technics of Mohammedia, University of Hassan II of Casablanca
South Africa	Disaster Management Training and Education Centre for Africa (DiMTEC), University of the Free State
Sudan	UNESCO Chair in Water Resources
Zimbabwe	Geography Department, Bindura University of Science Education African Alliance of Disaster Research Institutes (AADRI)





Africa Alliance for Disaster Risk Institutions (AADRI), Bindura University, Zimbabwe

https://www.aadri.org.zw/



This report provides a summary of disaster management activities undertaken in Southern Africa during 2023. AADRI does not take responsibility for owning these projects but wants to recognise that its members are taking part in these sponsored projects in their capacities. The report focuses on key areas of emphasis in disaster management efforts across the region that are being executed under the various projects.

The Road Ahead:

The recovery process will be long, but the collective spirit of Malawi and the support of international organizations offer hope for a more resilient future. This highlights example the multifaceted approach Southern African countries are taking to rehabilitation and recovery, focusing on immediate needs. long-term solutions, and empowering communities.

Figure 5: Since the onset of the tragedy, the UN in Malawi, including 60 agencies, has worked with the Government to provide immediate life-saving assistance. Photo: © UN Women/ Faith Mvula

Enhancing Early Warning Systems

2023 saw considerable advancements in strengthening early warning systems across Southern Africa. The focus was on improving the accuracy and timeliness of alerts, particularly for floods, droughts, and cyclones. This involved:

- Installation of advanced monitoring technologies
- Strengthening meteorological and hydrological services
- Establishing community-based early warning systems



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Ongoing projects in Southern Africa in which AADRI members are taking part:

- Strengthening Early Warning Systems for Disaster Risk Reduction in Southern Africa Project (Executing Agency: SADC Regional Early Warning Centre)
- 2. Community-Based Flood Early Warning System Project (Executing Agency: National Meteorological and Hydrological Services in collaboration with local communities)
- Regional Climate Services Enhancement Project (Executing Agency: SADC Regional Climate Services Centre)

Strengthening Disaster Preparedness Structures and Systems in Southern Africa: Case of Zimbabwe

This project is bolstering preparedness systems in districts prone to disasters across Manicaland, Mashonaland Central, and Matabeleland provinces. Funded by the European Union Civil Protection Operations in collaboration with Zimbabwe's Department of Civil Protection, the initiative aims to:

• Strengthen Civil Protection Structures: The project works to improve the efficiency and effectiveness of Zimbabwe's Civil Protection (CP) structures, leading to a more coordinated and impactful response during disasters.

• **Cash Preparedness and Stockpiling:** The project establishes sustainable systems for cash assistance and stockpiling essential supplies in disaster-prone areas. This ensures communities have immediate resources to meet basic needs during emergencies.

• Emergency Non-Food Items (NFIs): Improved access to essential non-food items like blankets, shelter materials, and hygiene kits is a key focus.

• **Evacuation Center Management:** The project enhances the safety, security, and overall management of designated evacuation centers, creating safe havens for displaced communities.

• **Early Warning Systems:** The initiative prioritizes rolling out inclusive, community-led early warning and early action plans, particularly in locations vulnerable to rapid-onset disasters like floods and cyclones.

By working closely with key stakeholders like the Civil Protection Unit, Meteorological Services Department (MSD), and Zimbabwe National Water Authority (ZINWA), the project fosters a collaborative approach to disaster preparedness, empowering communities and strengthening Zimbabwe's overall disaster response capabilities.

Community Preparedness and Education

Extensive efforts were made in 2023 to improve community preparedness and education regarding disaster management. Initiatives included:

• Awareness campaigns on disaster preparedness, evacuation procedures, and first aid techniques

• Training programs to empower communities with the skills and knowledge for effective emergency response

Strengthening Disaster Preparedness in Southern Africa: Case of Muzarabani Zimbabwe

A pilot project using the Anticipatory Response Program (ARP) was implemented in Muzarabani, Zimbabwe. This initiative aimed to enhance disaster preparedness at the local level.



Figure 1: Installation of the automatic weather station at Cloudland in Ward 33, situated within the Vumba area of Mutare Districts *in Manicaland, Zimbabwe in 2023, under the project entitled Strengthening Disaster Preparedness Structures and Systems in Southern Africa. (photo by Pauline Huringudo)*



Figure 2: For the project Strengthening Disaster Preparedness in Southern Africa. Cantas Zimbabwe, a local NGO, was identified as a crucial partner for generating data and maps for disaster preparedness in Muzarabani. The pictures show a group of dedicated participants in Muzarabani District, marking the culmination of rigorous training during the workshop. . Photo Courtesy of Rachel Chinyanga, Caritas Zimbabwe

Data Collection and Multi-Hazard Contingency Plans

The project involved data collection and analysis, resulting in the creation of Multi-Hazard Contingency Plans (MHCPs) for each ward in Muzarabani. These plans serve as a valuable resource for ward leaders, partners, and first responders.

• **Risk Assessment:** The MHCPs identify potential hazards in each ward, including strong winds, droughts, floods, and diseases. The plans also consider vulnerable populations like women, children, and the elderly.

• Actionable Strategies: The plans outline specific strategies to address these hazards. For example, the Kairezi Ward plan tackles flood risks by proposing the construction of evacuation centers, infrastructure improvements, and water harvesting structures.

• **Decentralized Approach:** The MHCPs align with Zimbabwe's National Development Strategy, emphasizing resource decentralization and inclusivity.

Enhancing Community Awareness

The MHCPs also raise awareness among community members about potential hazards. This empowers them to anticipate risks and participate in disaster response efforts.

Successes and Challenges

The Muzarabani pilot project yielded positive results:

• **Improved Data and Maps:** The project generated detailed hazard maps with more information than traditional paper maps. This data supports contingency planning and decision-making.

• Increased Capacity: Caritas Zimbabwe staff and volunteers gained valuable skills in using open-source

geospatial tools for data collection and mapping. This improves their disaster preparedness capabilities.

• **Digital Shift:** The project facilitated a shift towards using digital maps and data, offering improved accessibility and a safer repository for information compared to paper maps.

Despite these successes, the program identified some areas for improvement:

• **Program Expansion:** Stakeholders suggested utilizing learnings from Muzarabani in other districts.

• **Community Engagement:** Greater involvement of local communities in identifying evacuation centers and data collection was deemed crucial.

• **Capacity Building:** More training for local residents on using digital maps for disaster response was recommended.

• **Communication:** Clear communication with communities before deployments regarding personnel and purposes was emphasized.

• **Secondary Hazards:** The project highlighted the need to consider secondary hazards like waterborne diseases triggered by floods.

Looking Ahead: Building Regional Resilience

The success of the Muzarabani pilot paves the way for expanding ARP across Zimbabwe the and other disaster-prone regions. In a world facing increasing climate change challenges, data -driven approaches like the ARP will be critical for building

resilience and protecting vulnerable communities.

Infrastructure Development

Significant investments were made to enhance disaster resilience through infrastructure development. This included constructing flood-resistant buildings, bridges, and roads in vulnerable areas. The emphasis was on incorporating climate-resilient design principles and technologies to minimize the impact of disasters on critical infrastructure.

Africa's Mega Infrastructure Projects: Transforming a Continent

Here we highlight nine transformative infrastructure projects currently underway across Africa that are of interest to AADRI. These ambitious initiatives aim to address critical needs, boost economic growth, and position Africa for a brighter future.

1. Grand Inga Dam (Democratic Republic of the Congo):

- World's largest proposed hydropower project on the Congo River.
- Goal: Provide power for nearly half of Africa (40,000 MW).
- Estimated cost: US\$80 billion, requiring continent-wide transmission lines.

2. Dangote Oil Refinery (Nigeria):

- On track to become the world's largest single oil refinery (650,000 barrels per day).
- Expected to boost economic growth and create jobs.
- Estimated cost: US\$14 billion.

3. Bagamoyo Port (Tanzania):

4.

- Set to become East and Central Africa's largest port.
- Collaboration between Tanzania, China, and Oman.
- Estimated cost: US\$10 billion, with full potential expected in 30 years.
- Capacity: Handle twenty times more cargo than Tanzania's current largest port.

New Capital City (Egypt):

• A "smart city" under construction east of Cairo to address overcrowding issues.

- Features include recreation parks, solar energy farms, and artificial lakes.
- Phase 1: Attract a population of 7 million.

5. Konza Technology City (Kenya):

- A smart city project modeled after Silicon Valley.
- Aims to create jobs in IT, business services, and research.
- Estimated cost: US\$14.5 billion.

6. Standard Gauge Railway (Kenya):

- One of Africa's largest infrastructure projects: a 969-kilometer railway from Mombasa to Malaba.
- Total cost: US\$9.9 billion.
- Phases completed: Mombasa-Nairobi and Nairobi-Naivasha.

Future extension planned: Nairobi to Kisumu.

7. New Railway: Lagos-Calabar (Nigeria):

- A major 1,400-kilometer railway project connecting key Nigerian cities.
- Estimated cost: US\$10 billion.
- Project currently under US management after initial Chinese involvement.

8. Mambila Hydroelectric Power Project (Nigeria):

- One of Africa's largest construction projects: a mega dam on the Donga River.
- Goal: Increase Nigeria's energy production (3,050 MW).
- Estimated cost: US\$5.8 billion.

9. Grand Ethiopian Renaissance Dam (Ethiopia):

- Africa's largest planned hydroelectric power plant (6,000 MW) on the Blue Nile River.
- Currently 70% complete, facing water filling and downstream country concerns.

These projects showcase Africa's commitment to progress and development. By overcoming challenges and fostering regional collaboration, Africa can unlock its full potential and emerge as a global powerhouse.

Rehabilitation and Recovery

Post-disaster rehabilitation and recovery efforts were a key focus in 2023. Initiatives aimed to support affected communities in rebuilding their lives and infrastructure. This included:

- Reconstruction of homes, schools, and healthcare facilities
- Implementation of livelihood restoration programs to help communities recover economically from disasters

Southern Africa's Rehabilitation and Recovery Efforts: A Case Study of Malawi's Response to Cyclone Freddy

Cyclone Freddy's devastation in Malawi serves as a powerful example of Southern Africa's ongoing efforts in rehabilitation and recovery. Here's a breakdown of the key actions undertaken:

Immediate Relief:

- Coordinated Response: The UN Resident Coordinator, alongside over 60 agencies and NGOs, led a collective effort to support the government's response.
- Emergency Assistance: The UN Central Emergency Response Fund provided US\$5.5 million for immediate needs like shelter, food, and medical care.
- **Reaching Isolated Areas:** Helicopters were used as a lifeline to deliver aid to remote communities.

Education Amidst Crisis:

- **Temporary Learning Spaces:** Collaboration with local partners ensured nearly 1.3 million affected children could continue their education through temporary learning spaces and school supplies.
- School Feeding Programs: The Home-Grown School Feeding initiative (supported by the EU)

provided nutritious meals to over 38,000 children in affected districts.

Protecting the Vulnerable:

- **Psychological Support:** Providing Psychological First Aid (PFA) to help survivors cope with the emotional impact of the cyclone.
- Child Protection: Setting up community-based childcare centers and promoting awareness programs on child protection issues, including sexual exploitation and abuse, early marriage, and child education rights.
- **Psychosocial Support:** Implementing programs to address the mental health toll of the disaster.

Building Long-Term Resilience:

- Post Disaster Needs Assessment (PDNA): A comprehensive assessment conducted by the government, UN, and partners identified critical areas for recovery and resilience building.
- Disaster Risk Reduction (DRR): Increased focus on DRR measures and early warning systems to improve preparedness for future disasters.
- Community Training: Empowering communities through training programs on disaster preparedness and response.
- Resilience Building Policies: Implementing long-term policies on sustainable land and water management, climate adaptation strategies, and infrastructure improvements. This includes building resilient housing, improved drainage systems, and reinforced community shelters.

Conclusion

The year 2023 marked significant progress in disaster management activities across Southern Africa where several members of AADRI participated in their capacities but riding on the funding provided by international and local support bodies. In this way, concerted efforts were undertaken to strengthen early warning systems, conduct risk assessments, enhance community preparedness and education, develop resilient infrastructure, establish efficient emergency response mechanisms, and support postdisaster rehabilitation and recovery. These activities, carried out by various stakeholders including government agencies, international organizations, and local communities, demonstrate a collective commitment to building resilience and reducing the impact of disasters in the region.



Figure 3. Left The Grand Inga Dam is the world's largest proposed hydropower project, and it is being built on the Congo River in the Democratic Republic of the Congo. (Image : MARC JOURDIER/AFP) Right Artist impression of the Konza Technology City project that will be built Kenya's country's east.



Geographical Distribution of



Members of GADRI as of 31 March 2024





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