ANNUAL REPORT 2020



GLOBAL ALLIANCE OF DISASTER RESEARCH INSTITUTES

The Global Alliance of Disaster Research Institutes (GADRI)

GADRI Secretariat is hosted by: Disaster Prevention Research Institute (DPRI) Kyoto University, Uji Campus, Kyoto, Japan 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.

In compliance with the recommendations of the 2011 Global Summit, the Global Alliance of Disaster Research Institutes (GADRI) was launched with a mandate to support the implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030 during Second Global Summit held at DPRI, Kyoto University, Uji Campus, Kyoto, Japan in March 2015 which was held soon after the UN World Conference on Disaster Risk Reduction (WCDRR, 2015) which took place in Sendai, Japan. The 2011 Global Summit paved the way to start the Global Summit series of GADRI.

Currently, GADRI members are involved in the Scientific and Technical Advisory Group (STAG), and the Global Risk Assessment Framework (GRAF) of the United Nations Office for Disaster Risk Reduction (UNDRR). GADRI works closely with the science and technology community collaborating in research, endorsing policies related to disaster risk reduction, disseminating and sharing cutting-edge and knowledge and information supported by evidencebased 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.

We thank and acknowledge support by all members for their inputs to the GADRI Annual Report 2020.

GADRI Secretariat

Disaster Prevention Research Institute (DPRI), Kyoto University

Uji Campus, Gokasho, Uji Shi

Kyoto 611-0011, Japan

Tel: +81-0774-38-4651

E-mail: secretariatgadri@dpri.kyoto-u.ac.jp Web: http://gadri.net

Contents

 Message from the Secretary-General, GADRI /// ///

- GADRI Activities in 2020
 - GADRI Book Series
 - 3rd GADRI Open Discussion Forum
- Keeping in touch with Members of GADRI
 - Americas
 - Asia
 - Japan
 - Oceania
 - Europe
 - Africa
- Geographical Distribution of GADRI

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GADRI Annual Report 2020





Message from the Secretary-General, GADRI

Judging from the activities, GADRI members are undeterred by the COVID-19 and have continued to sail though this phenomenal year of 2020.

We hope you are staying safe and keeping well.

I would like to start by thanking you for your continued support and contributions to the activities of GADRI and working together in our mutual cause to reduce disaster risk reduction and management. A special thank you is to our members of the GADRI Board of Directors and the Advisory Board. They have tirelessly contributed to GADRI activities and attended the meetings throughout the year.

This year has been exceptionally challenging for all of us. But we have been resilient and steadfast in our research as well as in personal lives too. We have also seen where the research gaps are and where we need to focus more and strengthen our research. We have used the occasion to gather data which will prepare us for future disasters.

Despite the lockdowns and with your help, GADRI continued to move forward.

- Held the 3rd Open Discussion Forum of GADRI in February 2020. Just before the pandemic.
- 2 In-person meeting of the GADRI Board of Directors and the Advisory Board in February 2020.
- 3. GADRI initiative to write a letter to the editor on the Corona Virus.
- Publication of the first book by Prof. Muneta Yokomatsu and Dr. Stefan Hochrainer-Stigler on Disaster Risk Reduction and Resilience under the Disaster Risk and Research: GADRI Book Series through Springer Japan - <u>https://www.springer.com/</u> <u>gp/book/9789811543197</u>

- 5. Published the GADRI Newsletter <u>https://</u> gadri.net/resources/publications/
- 6. Published the 2019 Annual Report of GADRI - <u>https://gadri.net/resources/</u> <u>publications/</u>
- The long-waited Proceedings of the 3rd Global Summit will be out in January 2020
- Held once a month online meeting of the GADRI Board of Directors and the Advisory Board
- Preparing to hold the 5th Global Summit of GADRI: Engaging Sciences with Action virtually from 31st August to 1st September 2021.

In addition, there were other committee meetings held in-person and via zoom with the faculty members at the Disaster Prevention Research Institute (DPRI), Kyoto University.

We are hoping that we will continue our efforts to expand our activities and explore new paths to promote disaster risk reduction around the world.

We take this opportunity to thank all of you for being part of GADRI.

Hinkayu Jatano

Hirokazu Tatano Secretary-General, GADRI; and Vice-Director, 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 road map, 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 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

The first book on "Disaster Risk Reduction and Resilience" by Dr. Stefan Hochrainer-Stigler and Dr. Muneta Yokomatsu was published by Springer.

This volume discusses how disaster risk reduction enhances resilience on different scales (global, regional, national, community, household) from various hazards. The introduction defines terms, followed by a section which examines the natural environment and how resilience flows from disaster risk reduction, across a wide

variety of natural hazards. Section II then examines the built and social environment. focusing on how resilience can be enhanced in the various aspects of these environments. Section III then provides cross-cutting case studies of enhanced resilience, across a wide variety of societies and applications. Lastly, Section IV concludes the volume with an overview of the current state of disaster risk reduction for resilience, and what is needed to achieve a resilient future.

Other Books Approved by the Publisher

1	Published in 2020: Proceedings of the 4th Global Summit of Research Institutes for Disaster Risk Reduction -
	Editors: Hirokazu Tatano, Andrew Collins, Wilma James,
	Title: Enhancing Risk Governance to Manage Disaster Risks
2	Proposed editors: Masamitsu Onishi, Yuichi Ono
	Coordinating editor: Masamitsu Onishi
	Title: Health and Disaster Risk and Management
3	Proposed Editors: Virginia Murray, Andrew Collins, Ryoma Kayano, Emily Chan
	Associate editors: Sakiko Kanbara, Sachiko Nakamura, Kevin Blanchard
	Coordinating editor: Virginia Murray
	Title: Global Disasters of 2017-2018
4	Editors: Charles Scawthorn and Mohsen Ghafory-Ashtiany
F	Strategic inclusion of Eco-system-based Disaster Resilience
Э	Editors: Mahua Mukherjee and Rajib Shaw
6	Deepening the Understanding of Risks: Atmospheric and Hydro-meteorological Disasters
	Proposed Editors: Wei-Sen Li, Kaoru Takara, Srikantha Herath, Tetsuya Sumi, Sameh Kantoush, Tetsuya Takemi, Kazuyoshi Nishijima
7	Social Dimensions of Disaster Risk
	Editors: Andrew Collins, Masamitsu Onishi, and Subhair Samaddar

Published



Proceedings of the 3rd Global Summit of Disaster Research Institutes for Disaster Risk Reduction

By Hirokazu Tatano and Andrew Collins

This book presents selected papers from the 3rd Global Summit of Research Institutes for Disaster Risk Reduction which focused on "Expanding the Platform for Bridging Science and Policy Making" which was held at the Disaster Prevention Research Institute (DPRI), Kyoto University, Uji Campus from 19 to 21 March 2017. The conference not only provided a platform for discussion and exchange of information on most important current and future research projects in disaster risk reduction and management but also promoted active dialogue through group discussion sessions that were held according to various disaster research disciplines. To facilitate the group discussion sessions, a prior survey was conducted to evaluate the current research status and identify the most important future research themes and projects. This document was shared with each group leader. The 3rd

Global Summit was organized by the Global Alliance of Disaster Research Institutes (GADRI) which was established soon after the second Global Summit and the UN World Conference Disaster Risk Reduction in March 2015, aims to support implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030.

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

By Hirokazu Tatano and Andrew Collins

The Fourth Global Summit of Research Institutes for Disaster Risk Reduction (4th GSRIDRR, 2019): Increasing the effectiveness and relevance of our institutes, sponsored by GADRI and Kyoto University, was hosted and held at the Disaster Prevention Research Institute (DPRI), Kyoto University, Uji Campus, Kyoto, Japan from 13 to 15 March 2019. The Global Summit series provided a platform for researchers, practitioners, policy makers, and other stakeholders in both government and non-governmental institutes involved in disaster risk reduction and resilience to come together to discuss, share and exchange ideas. It specifically focused on contributing inputs to the contextualization and revising the goals of the 2016 Science and Technology Roadmap to implementation of the Priority Areas of the Sendai Framework for Disaster Risk Reduction Agenda 2015-2030; and inputs for GADRI to move forward in its contributions to the science community in the world.

Enhancing Risk Governance to Manage Disaster Risks

By Masamitsu Onishi and Yuichi Ono

This book provides state-of-the-arts of researches in integrated disaster risk management fields specifically from the aspect of governance. The Sendai Framework 2015 addresses the significance of governance in managing disaster risks. Subjects relevant to the governance include different levels from the international and national level to the municipality or smaller community level. Mechanisms of governance at different levels are interrelated each other. Therefore, a variety of actual governance forms for DRR is observed in different contexts of hazards, geographical conditions and social norms. It implies the advantage of pursuing a governance pattern for DRR fitting for the hazard-specific and local-specific context rather than one-size-fits-all approach. To understand the variety in governance patterns, explicit knowledge on the compatibility between governance pattern and contexts is necessary.

GLOBAL DISASTERS OF 2017-2018

By Charles Scawthorn and Mohsen Ghafory-Ashtiany

The book is a compendium of papers from the 4th GADRI Summit, summarizing major disasters that occurred in 2017 and 2018 (see table of contents). The disasters range across the globe including Asia, North and South America and the Pacific.

A section also deals with the issues and current state of the art of global disaster databases. The volume is intended as the first of a biannual series on global disasters, compiled from GADRI Summits.

Health and Disaster Risk Management

By Virginia Murray, Andrew Collins, Ryoma Kayano and Emily Chan

- Health is a key element of the Sendai Framework and the other landmark 2015 agreements including the SDGs and Paris Climate Change Agreements. Emphasis will be placed on population vulnerability at all levels including those of that are marginalized, young, old, disabled, and those that have non-communicable diseases, are migrants and are of indigenous origin.
- Under the Sendai Framework agreement, building resilient health systems through integration of all-hazards disaster risk management within health care and wellbeing is essential
- Capacity development of health professionals at all levels in understanding disaster risk reduction and management is vital. |An all hazards approach demands an inclusive risk management system, of disaster preparedness for effective response to "Build Back Better" in recovery, rehabilitation and reconstruction as continuous quality improvement process of the health system.
- Research needs to deliver evidence informed Health and Disaster Risk and Management approaches that will be addressed in this book which will provide resource to facilitate how these goals can be addressed

Strategic inclusion of Eco-system based Disaster Resilience

By Mahua Mukherjee and Rajib Shaw

This book will aim to provide an introduction to critical role of Eco-system based Disaster Risk Resilience (Eco-DRR) for building community resilience to multiple environmental risks like rising heat, water stress, pollution etc. Blue-Green Infrastructure (BGI) are Eco-DRR tool which is an under-explored paradigm and can respond as one common strategy to targets set by Sustainable Development Goals (UNDP), Climate Agreements (UNEP), Sendai Framework (UNISDR) and New Urban Agenda (UNCHS).

The book is intended to be comprehensive beginning to systematic discussion on this emerging resilience tool. Our purpose is to introduce readers to the challenging context of development and opportunity creation for Eco-DRR. Role of policy, science research and implementations will be presented cohesively. An attractive proposition of this book is a bouquet of case-studies from different parts of the world where integration of BGI are experimented with various levels of success. It is envisaged that shared tacit experiences from the realm of practices will strengthen explicit knowledge further.

The book will deliberate on Need and Context Building, Policy and Science (investigation, analysis and design), Case studies and Future Road map in 4 successive parts. Each part will be self-sufficient yet linked to its predecessor and/ or successor as the case may be.

Social Dimensions of Disaster Risk

By Andrew Collins, Masamitsu Onishi, and Subhajyoti Samaddar

This book brings together contiguous and interrelated aspects of people centered disaster risk for better understanding amongst practitioners, policy makers, postgraduate and undergraduate students. It responds to increasing demands to address risk as both cause and consequence of human struggle. Using an array of examples, the book examines how people are responding to, and living with old and new risks that are partly understood. Sentient people mediate risk through social relations and actions stemming from varying systems of meaning. This is explored through the different social contexts and adjustments that occur in times of crises exemplifying how people in groups or as individuals negotiate future safety and security. The book presents an array of complex disruptive aspects of the people centred responses to living with risk, including conflict, health, mobility, communication, faith, capacity and politics. An outcome of this publication is to consolidate a contribution to decision making processes in disaster interventions that the series of chapter orient including through unique and co-produced analysis. The contributions herein represent smart accounts that combine underlying philosophical challenges of the subject with identifying what really addresses disaster risk. This involves studies of real world complex hazard, disaster and risk challenges and opportunities. It brings seemingly disparate chapter topics together into a common agenda of addressing humanity's social interaction with crises that can be both rare and a part of everyday life.

Deepening the Understanding of Risks: Atmospheric and Hydro-meteorological Disasters

By Wei-Sen Li, Kaoru Takara, Srikantha Herath, Tetsuya Sumi, Sameh Kantoush, Tetsuya Takemi, Kazuyoshi Nishijima

This book will focus on atmospheric & hydrometeorological disasters from scientific, engineering and implementation perspectives. The disasters could be caused by extreme meteorological phenomena at various spatial scales. Under changing climate, these extreme phenomena are anticipated to intensify and hence to become more disastrous. Therefore, a special emphasis is given on the impact assessment of changing climate.

The understanding of the risk is decomposed into the understanding of physical mechanisms for the responses of disaster-spawning extreme weather to global warming, changes in statistics of extreme hazard events, and responses of built environment to the extreme events. The chapters consist of contributions from scientists, researchers, engineers and practitioners.



GADRI Connections with UNDRR

GADRI is a member of the Science and Technology Advisory Group (STAG); and GADRI was elected as а member of the Expert Group on the Global Risk Assessment Framework (GRAF) and continue to closely support the works with the United Nations Office for Disaster Risk Reduction (UNDRR), Geneva, Switzerland.

Global Risk Assessment Framework (GRAF)

GADRI was elected as a member of the Expert Group on the Global Risk Assessment Framework (GRAF) which was established as an important global initiative to support the implementation of the Sendai Framework Agenda for 2015-2030. The establishment of the Expert Group was one of the principal recommendations of the

The initial responsibility of the Expert Group is to provide guidance and direction in the co-design and collaborative development of the GRAF, including strategic, technical, functional and operational aspects. The Expert Group will guide the development and co-creation of a preliminary implementation roadmap, including the definition and possible composition of the GRAF Sub-Working Groups that will need to be established to support the co-design and development process.

Further details available at GADRI Actions—<u>http://</u> gadri.net/resources/pdf/GA-Newsletter AugDec 2018.pdf



GADRI Lecture Series

The Spring Session of the GADRI Lecture Series was held at the Disaster Prevention Research Institute (DPRI), Kyoto University, Uji Campus, Kyoto, Japan on 25th February 2020. The following prominent professors delivered the lectures to DPRI students and faculty members. Prof. Andrew Collins and Prof. Gretchen Kalonji are members of the GADRI Board of Directors while Prof. John Clammer is a member of GADRI.





Prof. Andrew Collins, Leader, **Disaster and Development** Network, Northumbria Universitv Newcastle, United Kingdom

Andrew Collins is Professor in Disaster and Development, Department of Geography. Beyond research, local teaching and management responsibilities, he represents disaster, development and health related initiatives internationally. Beyond his regular research, teaching and management responsibilities, he represents disaster, development and health related initiatives internationally. He gained his PhD from King's College London in Human Geography.

Lecture title: Systematising and Desystematising the Societal Contributions to **Disaster Risk Reduction**

presentation focused people The on centred approaches to disaster risk reduction and the idea of systems analysis and what it means by different types of approaches using systems and sometimes but nonsystemic aspects as well. People are quite used to the idea of systems being fundamental to ther subject areas. There are many questions ahead as to why systems approach has got its limitations.

The lecture starts by looking at metanarratives there are about systems - there are world systems, and what is going on really in the subject area in terms of those world systems. It moves more towards looking at the management implications of the systems or nonsystemic approaches; and and other different types of systems and how it interprets them. Then the lecture

shifts beyond towards system-based risk assessment to

thinking about how societies actually engages with risks. It doesn't always fit into a neat systemic type of analysis. There is an increasing interest in systemic risk itself and usually that leads to some of the difficult questions as to how different systems interact with each other. The questions that come out of this is where should be systematized and what is beyond the system; where might the non-systemic be useful also to the systems that are currently in use.

There is a tendency to accept as a way forward trying to work out what can be achieved beyond the standards of the systems approach to DRR, and there is the need to think about how to go about achieving it. The talk start to discuss about learning processes and the experiential learning and non-experiential learning, that has been writing about in recent years. It also discussed about some of the barriers there are to developing the approach. Ultimately this all have to be applied. How might one engage with this approach going forward. Lot of answers to this is by looking around at what is already going on in the society. The societal contributions are there naturally and what we are trying to do is interpret it so that we can remove barriers to advance forward.



the Click link to watch the lecture at YouTube https://

Prof. Gretchen Kalonji, Dean, Institute for Disaster Management



and Reconstruction (IDMR), Sichuan University, China

Gretchen Kalonji is an American scientist and academic administrator. She is Dean of Sichuan University. Kalonji was previously the

assistant Director-General for Natural Sciences at UNESCO. She is a graduate of Massachusetts Institute of Technology (MIT), USA and obtained her D.Phil. on Materials Science and Engineering.

Lecture title: Innovations in Undergraduate Education Design of a New Major in "Integrated Disaster Sciences ad Management" - it addressed the following items:

- Why was this topic chosen and how is it related to the strategic development of our Institute for Disaster Management and Reconstruction (IDMR)?
- Comparison of the emerging field of "disaster sciences" with the historical evolution of the field of "materials science" – lessons and ongoing challenges; and details of the design for a new undergraduate major in "Integrated Disaster Sciences and Management"
- Prospects for international collaboration in a research-based, interdisciplinary undergraduate program

Click on the link to watch the lecture at YouTube - https://youtu.be/XMEmZXrbNqM

Prof. John Clammer, O. P. Jindal Global University, India

John Clammer is a Professor at Jindal School of Liberal Arts and Humanities. He comes to the university after a long period in Japan as Professor of Comparative Sociology and Asian Studies at Sophia University and formerly Director of the Graduate School of Comparative Culture there, and as



Visiting Professor at the United Nations University, Tokyo. He is a graduate of Oxford University and completed his D.Phil. degree there in Social Anthropology.

Lecture title: Culture, Sustainability and Disaster Recovery: A Sociological, Architectural and Cultural Approach discussed the following issues:

- Linking Natural Disasters, Humanitarian Crises and Climate Change
- Building a Holistic model of the relationships between natural disasters (prevention and recovery), humanitarian crises, climate change and sustainability.
- Which means:
 - \Rightarrow Deepening Theory and methodology
 - ⇒ Exploring social, cultural and psychological dimensions as well as scientific and engineering ones
 - ⇒ Analyzing cases studies for clues for both preparedness, short-term recovery and long term recovery and rehabilitation

Click on the link to watch the lecture at YouTube - https://youtu.be/XMEmZXrbNqM





Building Back Better: A Holistic Approach to Post-Disaster Recovery

By Prof. John Clammer, O. P. Jindal Global University, India

⇒Brief-Bio of Speaker: <u>http://jslh.edu.in/john-robert</u> -clammer/

Lecture title: Building Back Better: A Holistic Approach to Post-Disaster Recovery

Abstract: The concept of 'building back better" is well known. This lecture was designed to broaden the idea by incorporating a number of elements that are not always stressed. Many post-disaster situations have not involved architects in the design of new housing and other structures, but the evidence is that good and sustainable design, often beyond the capacities of NGOs and government appointed contractors, results in buildings that are enjoyed by the users, are well-maintained and provide psychological satisfaction. This is only true however when local cultures, social structure and gender norms are also taken into primary account in the design process. The lecture illustrated this with reference to a number of case studies, and also drew

attention to a number of other key factors, including the rebuilding and/or reimagining of the local economy (and relating rebuilding to these needs), local demography, and the well-known significance of involving the community in all stage of planning, design and execution. At the same time the lecture drew attention to the tendency to romanticize the idea of "community" and to not pay sufficient attention to social hierarchies, inequalities and local power structures. While stressing the importance of design for sustainability (including drawing on vernacular architecture and architects), thee lecture also drew parallels between post-disaster and postconflict situations, and suggested that the field of trauma studies is potentially very important in understanding the psychology of post-disaster recovery. In conclusion, the lecture suggested policy implications, including the importance of holism (involving architects, anthropologists, ecologists, engineers, geologists and others) in post-disaster planning) and the desirability of including disaster prevention and reconstruction in the educational curriculum, especially in schools of architecture and urban planning.

Artificial Intelligence Based Systems and Satellite Imagery in Disaster Risk Reduction (DRR)

By: Dr. Sudip Roy, IIT, Roorkee, India

Dr. Sudip Roy, Assistant Professor, Department of Computer Science and Engineering of Indian Institute of Technology (IIT) Roorkee, India

Dr. Sudip Roy is currently an Assistant Professor in the Department of Computer Science and Engineering

for disaster management. He has published 19 international peer-reviewed journal papers and 38 international peer-reviewed conference papers. He has authored one book, one book chapter and two granted US patents. He has received many awards and recently being the recipient of the Early Career Research Award from the Department of Science and Technology, Govt. of India in 2017.

of Indian Institute of Technology (IIT) Roorkee. India. He is also an associated faculty member of the Centre of Excellence in Disaster Mitigation and Management in Roorkee. India. He received his IIT bachelor of science degree in Physics and bachelor of technology degree in Computer Science and Engineering from the University of Calcutta, India, in 2001 and 2004, respectively. In 2009 and 2014, he received the master of science (by research) and PhD degrees in Computer Science and Engineering from IIT Kharagpur, India, respectively. His research interests include electronic design automation, modelling and simulation, optimization techniques, and ICT



Figure 1. 2013 Haiyan Super Typhoon of Folippines. (a) Pre-cusaster satellite image (b) Post-disaster satellite image. (b) Post-disaster satellite image. (c) Post-disaster satellite image. (

Lecture title: Artificial Intelligence Based Systems and Satellite Imagery in Disaster Risk Reduction (DRR)

Abstract: In recent years, many natural disasters are becoming more dangerous partly due to climate change, and their far-reaching impacts have negatively affected people and wildlife across the world. After a disaster, it is important to prioritize rescue operations, disaster response and coordinate relief efforts. These are to be carried out in a fast and efficient manner since resources are often limited in disaster-affected areas, and it is extremely important to identify the areas of maximum damage. In a postdisaster scenario, government agencies and nongovernmental organizations (NGOs) put their efforts to coordinate among themselves for effective and efficient disaster relief supply. Such kind of disaster response activities aim to fulfill humanitarian needs as early as possible.

However, in many developing and under-developed countries, most of the existing disaster mapping efforts are manual, which is time-consuming and often leads to erroneous results. Many times, it has been found hard to access the emergency data timely, as these data are generally fragmented and incomplete. Hence, the government agencies and NGOs require turning these data into useful information.

There are several disaster data available with us such as satellite data, sensor data, social media data, videos, etc. and with the help of artificial intelligence (AI) based techniques we can manage the activities related to disaster management more effectively to reduce the disaster risk and mitigate it. Moreover, satellite imagery and GIS maps can give emergency and disaster response officials a wealth of information for assessment, analysis and monitoring of natural disasters such as hurricanes, tornadoes and cyclone damage from small to large regions around the globe. The use of satellite imagery has become increasingly popular for disaster monitoring and response. Thus, it is essential to develop a satellite integrated robust classification system for surveillance of the disasteraffected areas, which can be used in route mapping for relief supply, fund release, biodiversity planning, damage mapping, and other disaster estimation For example, Figure 2 presents a postpurposes. disaster satellite image of an affected region and a kind of mapping of damage levels on that satellite image (Pink: no damage, Blue: major damage), which may be useful for relief logistics and recovery. In the first part of this talk, we discussed on several applications of AI based systems for effective management of both natural and human-made disasters. There are many different future challenges to explore the capabilities of AI-driven systems in different phases (preparedness, response, prevention/mitigation, and recovery) of the disaster management cycle.

It is required to explore how AI based systems for satellite imagery can be useful for disaster risk reduction (DRR). In order to identify the areas, which have been most severely affected by a disaster, we explored the use of AI based systems for satellite imagery. In the last part of this talk, we discussed about our recent work that was accepted for publication in a reputed international conference namely IEEE IGARSS 2020 (IEEE International Geoscience and Remote Sensing Symposium 2020). This framework will help to find the reason behind the widespread devastation in the remote area and enable emergency responders to gain lead-time for supplying emergency relief operations. We combined different image descriptors and it is able to achieve comparable results as obtained by the existing state-of-the-art methods. In addition, the proposed framework attains better results (in terms of accuracy) compared to the

As disaster sites are generally not easily accessible, therefore, the use of satellite imagery has become a valuable source of information for assessing the impact of devastating events. For example, Figure 1 shows the pre

and post-disaster satellite images captured for 2013 Haiyan super typhoon in Philippines.



Figure 2. (a) Post-disaster satellite image. (b) Same satellite image masked using multi-color with color coding representing damage level of buildings (Pink: No-damage, Blue: Major damage).



GADRI Board of Directors

25th February 2020



GADRI Board of Directors 25th February 2020

The 18th meeting of the GADRI Board of Directors and Advisory Board took place at the Disaster Prevention Research Institute (DPRI), Kyoto University, Uji Campus, Kyoto, Japan on 25th February 2020.

GADRI

Term of office of half of the members of the Board of Directors will come to an end as of 31st March 2020. The occasion was used to introduce the new members of the Board The meeting was attended by the new members of the Board who will start their term from 1st April 2020 for four years.

 The meeting was opened by Chair of the Board requesting all members to give a brief self-introduction. In addition to the Board members and the Advisory Board



nominate the institutes for the vacant positions and the second step was the voting of the institutes to the GADRI Board of Directors. The vacant positions were - two vacancies in Europe and Africa; two vacancies in Asia and Japan; and one vacancy in Americas for USA.

• Appointment of the Chair – the term of office of the current Chair of the Board was to come to an end as of 31 March 2020. It was proposed to receive nominations including self-nominations for the Chair of the Board by e-mail. The GADRI Secretariat will follow-up on this in due course.

• 5th Global Summit of GADRI: Preparations are underway for the 5th Global Summit of GADRI with the sub-theme on Engaging Science with Action" in Milan, Italy, in March 2021.

members, the meeting was joined by the new members of the Board who would take their term of office from 1 April 2020.

 Minutes of the last meeting - The minutes of the 17th Meeting of the GADRI Board of Directors was reviewed and approved by the members.

> Voting Results -The Secretary -General

of GADRI shared information on the voting process that took place between November 2019 to 1 February 2020 in two steps. The first step was to





Members of the GADRI Board of Directors 2020-2024

Name		Term	Institute				
Europe and Africa							
1	Prof. Ortwin Renn	1 April 2018 to 31 March 2022	Institute for Advanced Sustainability Studies (IASS), Germany				
2	Dr. Zita Sebesvari	1 April 2020 to 31 March 2024	United Nations University, Institute for Environment and Human Security (UNU-EHS), Bonn, Germany				
3	Prof. Peter Sammonds Prof. David Alexander	1 April 2020 to 31 March 2024	Institute for Risk and Disaster Reduction (IRDR), University College London, UK				
4	Prof. Andrew Collins (Chair of Board)	1 April 2016 to 31 March 2021	Disaster and Development Network (DDN), Department of Geography, Northumbria University, UK				
Asia a	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. Mahua Mukherjee	1 April 2018 to 31 March 2022	Indian Institute of Technology (IIT) Roorkee, India				
8	Dr. Indrajit Pal	1 April 2018 to 31 March 2022	DPMM) Asian Institute of Technology (AIT), Bangkok, Thailand				
Ameri	icas						
9	Prof. Paul Kovacs	1 April 2018 to 31 March 2022	Institute for Catastrophic Loss Reduction, Western University, Canada				
10	Prof. Rodrigo Cienfuegos	1 April 2018 to 31 March 2022	Centro Nacional de Investigacion par la Gestion de Desastres Naturales (CIGIDEN), Santiago, Chile				
11	Prof. John van de Lindt	1 April 2020 to 31 March 2024	Center for Risk-Based Community Resilience Planning, Colorado State University, USA				
GADRI Secretariat							
	Prof. Hirokazu Tatano	Secretary-General	DPRI, Kyoto University, Kyoto, Japan				





Members of the GADRI Advisory Board 2020-2024

1	Prof. Irasema Alcántara -Ayala	1 April 2018 to	Institute of Geography, National Autonomous University of Mexico (UNAM), Mexico
2	Dr. Walter Amman	1 April 2018 to	Global Risk Forum (GRF Davos), Switzerland
3	Prof. Mohsen Ashtiany	1 April 2018 to	Iranian Earthquake Engineering Association (IEEA), Iran
4	Dr. Tom de Groeve Dr. Elisabeth Krausmann	1 April 2020 to	European Commission, Joint Research Centre (EC-JRC), Italy
5	Dr. Stefan Hochrainer- Stigler	1 April 2018 to	International Institute for Applied System Analysis (IIASA), Austria
6	Prof. Fumihiko Imamura	1 April 2020 to	International Research Institute of Disaster Science (IRIDeS), Tohoku University, Japan
7	Prof. Wei-Sen Li	1 April 2018 to	National Science and Technology Center for Disaster Reduction (NCDR), Chinese Taipei
8	Prof. Khalid Mosalam	1 April 2018 to	Pacific Earthquake Engineering Research Center (PEER), University of California, Berkeley, USA
9	Prof. Yuichi Ono	1 April 2020 to	International Research Institute of Disaster Science (IRIDeS), Tohoku University, Japan
10	Prof. Lori Peek	1 April 2020 to	Natural Hazard Center (NHC), University of Colorado-Boulder, USA
11	Prof. Charles Scawthorn	1 April 2018 to	Pacific Earthquake Engineering Research Center (PEER), University of California, Berkeley, USA
12	Prof. Rajib Shaw	1 April 2018 to	Graduate School of Media and Governance, Keio University, Japan
13	Prof. Jörgen Sparf	1 April 2020 to	Risk and Crisis Research Centre (RCRC), Mid Sweden University, Sweden
14	Prof. Kaoru Takara	01-April 2018	Graduate School of Advanced Integrated Studies (GSAIS) in Human Survivability (Shishu-Kan), Kyoto University, Japan
15	Dr. Gary Wilson	1 April 2018 to	GNS Science, Natural Hazards Group, New Zealand
16	Ms. Ritsuko Yamazaki- Honda	1 April 2020 to	National Research Institute for Earth Science and Disaster Resilience (NIED), Japan
17	Prof. Qian Ye	1 April 2018 to	Integrated Risk Governance Project (IRG-Project), State Key Laboratory of Earth Surface Processes and Resource Ecology, Beijing Normal University, China
Regio	onal Alliances		
18	Prof. Mahua Mukherjee	December 2020	South Asian Alliance of Disaster Research Institutes (SAADRI), IIT, Roorkee, India
19	Prof. Andrew Collins (Chair of the Board of Directors; and Co-chair UKADR)	1 April 2020 to	UK Alliance of Disaster Research (UKADR), Disaster and Development Network (DDN), Northumbria University, UK
		1 April 2018 to	North American Alliance for Hazards and Disaster Research Institutes (NAAHDRI), Institute for Catastrophic Loss Reduction,
21	Prof. Desmond Manatsa, Chair	1 .April 2018 to	African Alliance of Disaster Research Institutes (AADRI), Bindura University of Science Education, Zimbabwe
22	Prof. Hirokazu Tatano	1 March 2015	GADRI Secretariat, Disaster Prevention Research Institute (DPRI), Kyoto University, Uji Campus, Japan





GADRI Op-Ed on COVID-19

The <u>Global Alliance of Disaster Research Institutes</u> (<u>GADRI</u>) promotes a collaborative platform for shared knowledge and networking on topics assisting disaster risk reduction and resilience, whereby combinations of research groups around the world become more influential by pulling together.

The current COVID-19 pandemic demonstrates anew the interconnected and systemic nature of risks and ongoing uncertainties affecting all societies in every part of the world. The GADRI Board of Directors and the Advisory Board—representing a membership of over 200 disaster research institutes worldwide recognise the challenges for improved science, policy and practice in our championing of knowledge and understanding in one of the great challenges of our times.

To overcome COVID-19 and similar threats going forward we recognise that the emergence of pandemic occurs in contexts of complex biophysical, exposure and capacity influences that predispose to disaster outcomes. Addressing hope in our research and actions in securing sustainable futures our children wish to experience requires an unending advance in disaster related specialist knowledge and integrated and multidisciplinary contributions.

GADRI encourages all it members and their extensive array of further networks to invest their efforts to recognise their roles in bringing about improvements in the way global emergencies, such as that caused by COVID-19, can be informed by high quality knowledge from all regions and disciplines that are able to contribute. This way we will answer back to the current global predicament, including through building up earlier our readiness and capacity to also address the wider array of hazards and risks and ongoing challenges that follow. Towards this end, GADRI is joining with the North American Alliance of Hazard and Disaster Research Institutes (NAAHDRI) to support the new COVID-19 Global Research Registry for Public Health and Social Sciences. The Registry is a collaborative initiative of the CONVERGE facility headquartered at the Natural Hazards Center at the University of Colorado at Boulder that involves partners from around the world. GADRI encourages all regional alliances of disaster research and their related to proactively share their further networks innovations and actions.

The next Global Summit of GADRI is due to take place in northern Italy 14th-19th March 2021, leading to which we will be consolidating an inevitable multiinstitute stimulus to new knowledge and what must be achieved going forward. We also intend to run a participatory Webinar shortly for member discussions and debate relating to COVID 19.

Wishing you all well in your many contributions for championing the purpose of the Alliance.

On Behalf of GADRI Board of Directors and Advisory Board.

Prof. Hirokazu Tatano, Secretary-General, GADRI

Prof. Andrew Collins, Chair, GADRI Board of Directors





Op-Ed: COVID-19 – Lessons from Disaster Research

Decades of disaster research provide important lessons that will help us through the COVID-19 pandemic. Speaking as one, the leaders and members of the <u>Global Alliance of Disaster Research</u> <u>Institutes</u>, the <u>North American Alliance of Hazards and</u> <u>Disaster Research Institutes</u>, <u>United Kingdom Alliance</u> <u>for Disaster Research and the Africa Alliance for</u> <u>Disaster Research Institutions</u> know that:

First, this global pandemic has been widely anticipated and foretold. Experts over many years forecast a pandemic with scale of illness, swiftness of spread, scarcity of critical medical resources and profound impact on society such as we are now experiencing. Current response efforts and decision-making are benefiting from previous pandemic and disaster research. Disaster research provides an essential science foundation for effective decision making before, during and after a crisis strikes.

Second, much of this knowledge did not translate into adequate preparedness. This is part of a larger phenomenon that experts have identified as "planning for the last disaster." We often invest in getting ready for the last disaster with a fading sense of urgency as time passes. Stockpiling of resources and redundancy in capacity is seen as wasteful and is eliminated rather than being recognized as preparedness for inevitable extreme weather, geophysical, epidemic or other hazards. Discounting future impacts over current circumstances may be characteristically human, but this myopia based on short-term, political or economic benefits is particularly common among persons and entities making decisions in the public-political arena who, moreover, don't bear the brunt of their decisions. We know from past studies that actions taken in advance to prepare for known risks consistently result in avoided losses many times greater than the cost.

Third, failure to prepare most impacts those who are marginalized and disenfranchised—the poor, the sick, minorities, immigrants, refugees, the uninsured and children. For nations where

social safety nets are frayed or nonwill depend on financial support and rescue packages from their government. Without coping and recovery mechanisms, resort is to reactive ad-hoc emergency spending rather than investments in community resilience that would avoid hardship in the first place.

Fourth, abiding by core principles of risk communication can save lives. Decades of research have established best practices for effective communications in a disaster. These include messages tailored to specific audiences from trusted sources on what to do and how to do it, especially for more vulnerable groups less likely to receive information through traditional channels. Many of these core principles are currently being violated. This must stop, as lives are being lost. We need to have effective risk communication.

Fifth, transparency, situational awareness and recovery planning are essential. Only when we truly understand the risk and most effective responses can we all contribute to the solution. Many fields of science rely on global and open exchange of data. A continuing stream of ambiguous and incomplete messages erodes public confidence and the ability to effectively manage the disaster. While the current priority is rightly focused on preventing the spread of COVID-19, responding to the needs of those infected and addressing the severe economic dislocations, it is also important to begin planning for recovery. As early as possible, a longer-term vision of the impact, recovery planning and endgame are needed so that people and businesses can plan, act and recover.

Sixth, extreme events evoke remarkable acts of altruism but also can bring about a disturbing lack of humanity. It is important to celebrate positive actions, including mutual support for friends and strangers in need. It is just as crucial that we remain watchful for abuse and wrongdoing at all levels of society and take action to confront inappropriate behaviour.

Lastly, as our global community struggles with the pandemic, we must also continue to be prepared for flooding, wildfires, hurricanes, tornadoes and other natural hazards, and not lose sight of the long-term issue of climate change. Moreover, COVID-19 requires that we adapt some established emergency management practices, like planning for emergency evacuation shelters.

Sound science is essential to good decisions. Disaster research finds that those who embrace evidence-based preparedness in their risk

Op-Ed was Written By: GADRI Secretary-General, Members of the GADRI Board of Directors, GADRI Advisory Board, and other members of GADRI

- Hirokazu Tatano, DPRI, Kyoto University, Japan
- Charles Scawthorn, University of California, Berkeley, USA
- Lori Peek, Colorado University, Boulder CO, USA
- Paul Kovacs, University of Western Ontario, Canada
- Andrew Collins, Northumbria University, U.K.
- Gretchen Kalonji, Sichuan University, China
- Manabu Hashimoto, DPRI, Kyoto University, Japan
- Renn Ortwin, Institue for Advances Studies (IASS), Germany
- Zita Sebesvari, Institute for Environment and Human Security, United Nations University, Germany
- Peter Sammonds, Institute for Risk and Disaster Reduction (IRDR), University College London, UK
- David Alexander, Institute for Risk and Disaster Reduction (IRDR), University College London, UK
- John van de Lindt, Colorado State University, USA
- Toshio Koike, Public Works Research Institute (PWRI), International Centre for Water Hazard and Risk Management (ICHARM) under the auspices of UNESCO, Japan
- Mahua Mukherjee, Indian Institute of Technology (IIT) Roorkee, India
- Indrajit Pal, Asian Institute of Technology (AIT), Thailand
- Rodrigo Cienfuegos, Centro Nacional de Investigacion par la Gestion de Desastres Naturales (CIGIDEN), Santiago, Chile
- Fumihiko Imamura, International Research Institute of Disaster Science (IRIDeS), Tohoku University, Japan
- Yuichi Ono, International Research Institute of Disaster Science (IRIDeS), Tohoku University, Japan

- Stefan Hochrainer-Stigler, International Institute for Applied System Analysis (IIASA), Austria
- Qian Ye, Earth Surface Processes and Resource Ecology (ESPRE), Beijing Normal University, China
- Khalid Mosalam, University of California, Berkeley, USA
- Wei-Sen Li, National Science and Technology Center for Disaster Reduction (NCDR), Chinese Taipei
- Mohsen Ghafory-Ashtiany, Iranian Earthquake Engineering Association (IEEA), Iran
- Jörgen Sparf, Mid Sweden University, Sweden
- Walter Ammann, lobal Risk Forum (GRF Davos), Switzerland
- Kaoru Takara, Graduate School of Advanced Integrated Studies in Human Survivability (Shishu-kan), Kyoto University, Japan
- Gary Wilson, GNS Science Te Pu Ao, New Zealand
- Desmond Manatsa, Bindura University of Science Education, Zimbabwe
- Tom de Groeve, European Commission, Joint Research Centre (JRC), Italy
- Rajib Shaw, Shonan Fujisawa Campus (SFC), Keio University, Japan
- Irasema Alcántara-Ayala, Institute of Geography, National Autonomous University of Mexico (UNAM), Mexico
- David Eisenman, University of California, Los Angeles, USA
- Melanie Gall, Arizona State University, USA
- Karl Kim, University of Hawaii, USA
- Jamie Kruse, East Carolina University, USA
- Selwyn Mahon, American University of the Caribbean School of Medicine, St Maarten
- Rich Olson, Florida International University, USA
- Jean-Paul Pinelli, Florida Tech, USA



Keeping in touch with members





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	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	American Society of Civil Engineers (ASCE)			
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)			
USA	Center for Risk and Economic Analysis of Terrorism Events (CREATE), University of Southern California			
	'Reduction and Recovery Center (HRRC), Texas A&M University (TAMU)			
USA	Geologic Ha. rds 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/

2020 was marked by the outbreak of the Covid-19 pandemics. As well known, Brazilian federal government has taken an irresponsible approach to deal with this major disaster. Therefore, states and municipal governments, public and private health services, as well as organisations of the civil society, universities and research institutes took the lead to convey the best management of the crisis and support to the population to deal with the disaster.

The Federal University of Campina Grande (UFCG) 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, high populated and socially and economically vulnerable to environmental hazards, such as land droughts, desertification, 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).

UFCG prompted its infrastructure and personal to be part of this collective front. The university hospital, laboratories and research groups adapted their facilities to support studies, produce materials and products to combat the pandemics. This included, in the early months of the year, manufacturing of protective equipment for health workers and other front-line personnel, adapting epidemiological monitoring systems and simulation models, training public agents to deal with the new disaster context.

Later, UFCG funded new initiatives to mitigate and manage the pandemic risk. Dozens of such initiatives were executed during 2020, mostly in the areas of Health, Biosecurity, Psychology, Mental Health, Education, Social Protection, Environment, Sanitation, Housing, Agriculture, Food and Nutrition, Human Rights, Information Technology, and Data Science. Many of these projects were implemented in cooperation and coordination with other Brazilian and international institutes and organisations.

Social media and online communication platforms were extensively used to support knowledge transfer and dissemination, as well as for improving scientific and technological cooperation. UFCG's online learning systems were extended and adapted to better support remote education, research, and development.

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





Information on healthy sanitation and housing, targeted to vulnerable settlements for preventing Covid-19 contagion.







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

https://www.cigiden.cl/en/home/

CIGIDEN highlights a few of the activities undertaken during 2020:

Commemoration of the 60th anniversary of the 1960 earthquake and tsunami in Chile.

- CIGIDEN was involved in a series of tsunami talks for children, a scientific tour of the 1960 earthquake and tsunami, a virtual meeting with citizens, the premiere of a short documentary and interventions by experts in social networks and media. This agenda was set up in collaboration with the NGO "Proyecta Memoria" to promote discussions, awareness, and the remembrance of the largest measured mega earthquake in history. This earthquake and its ensuing tsunami devastated nearly 40 cities and hundreds of settlements in central-southern Chile, changing forever the morphology of the Chilean coast and the seismic/tsunami science of the world.
- CIGIDEN and "Espacio Público" document with proposals of actions to deal with the Covid-19 crisis and to reinforce preparedness and awareness as the lock down measures were lifted. The report "Thinking about the pandemic with a new approach: 6 Proposals for Disaster Risk Management as a Framework for Pandemic Action and Recovery", proposes working with local communities and their needs, generating reports from the municipalities to identify sources of new infections. In addition, restructuring the risk communication strategy • and enhancing the role of science in the management of the pandemic.
- CIGIDEN Talks on Governance of Disaster Risk Management in the Context of Multi Hazards. In July 2020, the center began a series of talks with national and international guests to discuss risk governance, the challenges posed by new risks, the management of coastal areas, satellite

monitoring of volcanoes and the role of local knowledge in dealing with emergencies, among other topics. An average of 150 people connected to each webinar, from Mexico, Brazil, Costa Rica, Venezuela, Colombia, Peru, Ecuador, Argentina, Salvador, Bolivia, and different regions of Chile have participated in the meetings.

- International webinar on the Challenges of Governance for Coastal Zones in Chile. The meeting, which was attended by national and international guests, discussed topics associated integrated coastal with zone management, its regulations and institutional framework, the importance of local participation and the organized society in coastal management, the relevance of coastal science and the ancestral use of the coast. It was organized by the Coastal Observatory together with the Center for Integrated Disaster Risk Management CIGIDEN.
- Policy paper series 2020. This year CIGIDEN launched 3 new scientific and policy documents:
- Designing Emergency Information: Experiences in Managing Risk and Educating Resilience; Citizen Participation in Risk Management Policies in Latin America: Recommendations for the Chilean case and
- Why Chile Needs a Coastal Law. Towards a New Coastal Governance for the 21st Century

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

Various publications of CIGIDEN:



The report Proposals for Disaster Risk Management as a Framework for Pandemic Action and Recovery

Fieldwork CIGIDEN – UCN on Volcano Risk Management





There are more than 300 articles in the press, TV, radio and online media, from our researchers talking about natural hazards and disaster risk management.



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

https://converge.colorado.edu/

The Natural Hazards Center at the University of Colorado Boulder serves as the U.S. National Science Foundation-designated 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, policy makers, and local, state, and federal officials;
- Advance social science and interdisciplinary knowledge, with a special emphasis on the most 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://</u> <u>naahdri.org/</u>
- Maintained a global map and list of universitybased hazards and disaster research centers and published the data associated with the map and list. See: <u>https://hazards.colorado.edu/</u> resources/research-centers
- Hosted the 45th annual Natural Hazards Research and Applications Workshop, which involved over 850 researchers, local/state/ federal practitioners, policymakers, private and non-profit sector representatives, journalists, and students. The theme of the 2020 Workshop was "Active Hoe in an Era of Environmental Extremes." <u>https://hazards.colorado.edu/</u> workshop/2020

- Co-facilitated the annual Researchers Meeting, which involved over 450 hazards and disaster researchers from across the U.S. and around the world. The theme of the 2020 Researchers Meeting was "The Data Revolution: Ethical Imperatives and Methodological Considerations for Hazards and Disaster Research." <u>https:// hazards.colorado.edu/workshop/2020/</u> researchers-meeting/overview
- Hosted the monthly Making Mitigation Work webinar series. <u>https://hazards.colorado.edu/</u> <u>training/webinars/making-mitigation-work</u>
- Publishing the Research Counts series <u>https://</u><u>hazards.colorado.edu/news/research-counts</u> as well as a special collection of the publication focused specifically on Mass Sheltering and Disasters. <u>https://hazards.colorado.edu/news/research-counts/special-collection/mass-sheltering</u>
- Publishing Disaster Research—News You Can Use. <u>https://hazards.colorado.edu/disaster-</u> research/current
- Hosting the Disaster Grads listserve for undergraduate and graduate students in the hazards and disaster field. <u>https://</u> <u>hazards.colorado.edu/signup</u>





Researchers affiliated with the Natural Hazards Center and their CONVERGE facility produced the following journal article publications in 2020.

- 2020 Adams, Rachel M., Candace Evans, Mason Mathews, Amy Wolkin, and Lori Peek. "Mortality by Forces of Nature among Older Adults by Race/Ethnicity and Gender." *Journal of Applied Gerontology*, 10.1177/0733464820954676.
- 2020 Peek, Lori, Heather Champeau, Jessica Austin, Mason Mathews, and Haorui Wu.
 "What Methods Do Social Scientists Use to Study Disasters? An Analysis of the Social Science Extreme Events Research (SSEER) Network." <u>American Behavioral</u> Scientist 64(8): 1066-1094.
- 2020 Peek, Lori, Jennifer Tobin, Rachel Adams, Haorui Wu, and Mason Mathews. "A Framework for Convergence Research in the Hazards and Disaster Field: The Natural Hazards Engineering Research Infrastructure CONVERGE Facility." *Frontiers in Built Environment,* <u>https://</u> <u>www.frontiersin.org/articles/10.3389/</u> <u>fbuil.2020.00110/full</u>.
- van de Lindt, John, Walter Gillis Peacock, 2020 Judith Mitrani-Reiser, Nathanael Rosenheim, Derya Deniz, Maria Dillard, Tori Tomiczek, Maria Koliou. Andrew Shane Crawford. Graettinger, Kenneth Harrison, Andre Barbosa, Jennifer Tobin, Jennifer Helgeson, Lori Peek, Mehrdad Memari, Elaina Sutley, Sara Hamideh, Donghwan Gu, Stephen Cauffman, and Juan Fung. "Community Resilience-Focused Technical Investigation of the 2016 Lumberton, North Carolina Flood: An Interdisciplinary Approach." Natural Hazards Review. https://ascelibrary.org/doi/ pdf/10.1061/(ASCE)NH.1527-6996.0000387.
- 2020 Hines, Emmanuelle, Mason Mathews, and Lori Peek. "Global List and Interactive Web Map of University-Based Hazards and Disaster Research Centers." *Natural Hazards Review* 21(2), <u>https://</u> <u>doi.org/10.1061/(ASCE)NH.1527-</u> <u>6996.0000371</u>.

For	more	information,	visit:	<u>https://</u>
<u>hazard</u>	s.colorado	.edu/	and	https://
conver	ge.colorad	lo.edu/.		



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

http://resilience.colostate.edu

The year 2020 was a little challenging for the Center for Risk-Based Community Resilience Planning due to COVID 19, however there were still a large number of accomplishments throughout the year.

Publication

The Center's Lumberton Wave 1 report was published and has thousands of downloads. In early October 2016, Hurricane Matthew crossed North Carolina as a Category 1 storm, with some areas receiving 0.38-0.46 m (15-18 in.) of rainfall on already saturated soil. The NIST-funded Center for Risk-Based Community Resilience Planning teamed with researchers from NIST's Engineering Laboratory (Disaster and Failure Studies Program, Community Resilience Group, and the Applied Economics Office) to conduct a field study focused on the impacts of the Lumber River flooding in Lumberton, North Carolina. Lumberton is a racially and ethnically diverse community with higher than average poverty and unemployment rates, a typical civil infrastructure for a city of 22,000 residents, and a city council form of government. The field data described in this paper are from the first wave in an ongoing longitudinal research project documenting the impacts and subsequent recovery processes following the 2016 riverine flooding in Lumberton. The initial data collection for this longitudinal community resiliencefocused field study had two major objectives: (1) document initial conditions after the flood for the longitudinal study of Lumberton's recovery, with a focus on improving flood-damage and populationand develop dislocation models; (2) а multidisciplinary protocol providing a quantitative linkage between engineering-based flood damage assessments and social science-based household interviews that capture socioeconomic conditions (e.g., social vulnerabilities related to race, ethnicity, income, tenancy status, and education levels). This type of interdisciplinary longitudinal research is critical to better understand community processes in the face of disasters and ultimately provide data and inform best practices for enhancing resilience to natural hazards in US communities. This paper describes the development and implementation of this interdisciplinary effort and offers an example of combining an engineering assessment of flood

damage to residential structures and social science data to model household dislocation. Dislocation probabilities were primarily driven by flooding damage but also varied significantly among Lumberton's racial/ethnic populations and by tenure.

The NIST-funded Center for Risk-Based Community Resilience Planning teamed with researchers from NIST's Engineering Laboratory (Disaster and Failure Studies Program, Community Resilience Group, and the Applied Economics Office) to conduct a field study focused on the impacts of the Lumber River flooding in Lumberton, North Carolina. This paper is adapted from the final NIST report.

https://doi.org/10.1061/(ASCE)NH.1527-6996.0000387

Center of Excellence Renewal

The National Institute of Standards and Technology has renewed \$20 million а partnership for a Colorado State Universitv engineering center designed to improve community resilience planning for natural hazards. The funding will extend the center of excellence's work for another five years, allowing its researchers to apply the modeling system they've developed to actual communities. Over the last five years, the center has supported the implementation of the NIST Community Resilience Planning Guide, released in provides planning guidance to 2015. which communities as they consider pre- and post-event actions and investments to prevent future hazards from inflicting devastating consequences. The NIST guide focuses on buildings and infrastructure systems and addresses how to maintain social and economic functions. Work at the center will continue to support this sustained resilience effort at NIST.

Prof. John W. van de Lindt Co-Director E-mail: jwv@colostate.edu


GADRI Annual Report — Americas

Conceptual Structure of IN-CORE



The primary goal of the Center of Excellence in Years 6 – 10 is to advance community resilience

measurement science by creating a decision support system that facilitates community planning and the

adoption of best practices that promote community resilience. This decision support system will be embedded

in a state-of-the-art computational environment (IN_CORE) that integrates physics-based modeling of

buildings and other infrastructure, networks for transportation, energy, water, and communication exposed

to a spectrum of hazards and hazard intensities, models of socio-economic networks, and resiliencebased

performance criteria and metrics.

The center's multi-disciplinary team includes experts in engineering, economics, data and computing, and social sciences extending across from 13 collaborating institutions.

The Center's long termobjective is thatafter 10 years, thecomprehensivefully-integrated

modeling environment would be a cornerstone of community resiliency research and planning in the United States and will be recognized and used throughout the US and internationally for its capabilities. Nationwide user workshops, webinars, seminars, and other viable means of dissemination in coordination with NIST researchers, industry sector leaders, and other personnel) will be ongoing. The environment will be able to optimize resiliency solutions intelligently at multiple scales and resolutions based on user needs and imposed constraints. There will be active engagement between Center personnel and researchers and planners worldwide. The opensource environment will be used to calibrate new risk-informed codes and standards that allow communities to meet their resiliency goals. The data cloud will be the key source and

comprehensive repository for all data related to community resiliency planning and recovery in the

United States and will be viewed internationally as the standard against which multi-national

resiliency research, planning and execution will be measured.

Virtual semi-annual meeting

The Center held both the spring and fall 2020 semiannual meetings virtually. We had over 95 participants at the Fall 2020 meeting which was held two half days, November 5-6, 2020. The presentation material ranged from Updates within the Center, IN-CORE Web Interfacing and Community Engagement, Testbeds, Notebooks and User Communities, Complex System Modeling, Interdependencies, Uncertainties, Scalability and Resolution, and Decision Support for Community Mitigation and Recovery Planning.

Expanded EAP (External Assessment Panel) Members

The Center has been guided in its efforts by an External Assessment Panel (EAP), consisting of approximately one dozen subject matter and policy experts in the areas of the built environment, social and economic institutions and natural hazard mitigation. The EAP has attended the $1 \frac{1}{2} - day$ semi -annual Center meetings, reviewed the semi-annual reports on accomplishments prepared by the Center Leadership (Co-Directors and Task Leads), and conveyed their impressions and recommendations to Center leadership and NIST technical and managerial staff. In an effort for the CoE leadership to continue to rely on the EAP for strategic advice during Years 6 -10, and reconstituting its membership to reflect the shift emphasis during Years 6 – 10 toward in implementation of IN-CORE as a practical open source community resilience decision platform, we have broadened our EAP members. Please join us in welcoming 8 new EAP members to the NIST Center of Excellence.

Jeffrey Czajkowski

Director of the Center for Insurance Policy and Research (CIPR) for the National Association of Insurance Commissioners (NAIC)

Nancy Wilkins-Diehr

Former Associate Director, San Diego Supercomputer Center, retired

Royce Francis

Dr. Royce Francis leads the SEED research group-Strategic [urban] Ecologies, Engineering, and Decisionmaking

Scott Miles

Dr. Scott Miles is an expert on disaster risk reduction, community resilience, disaster recovery, simulation modeling, and human centered design.

James Newman

James (Jay) Newman is a Public Sector Specialist, specializing in disaster and climate resilience, at the World Bank Group (WBG).

Brenda Phillips

Brenda Philips is a Research Professor and Co-Director of CASA, the center for Collaborative Adaptive Sensing of the Atmosphere at UMass-Amherst, which was originally funded as an NSF engineering research center between 2003-2013.

David Rosowsky

David Rosowsky served for six years as Senior Vice President and Provost of the University of Vermont (2013-2019).

Rae Zimmerman

Rae Zimmerman is currently Research Professor and Professor Emerita of Planning and Public Administration at New York University's Wagner Graduate School of Public Service, following her previous full-time position as Professor of Planning and Public Administration at NYU-Wagner.





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



- 1. The ARRC's research expenditures were more than \$10M in FY2020 with funding from NSF, NOAA, NASA, DARPA, ONR, AFRL, private industry, and others.
- 2. ARRC host the second Industry and Government Days in February 2020. More than 90 participants from both industry and government agencies joined this event.
- 3. ARRC faculty and students have received a number of national and international recognition and awards.
- Prof. Justin Metcalf at ARRC and the School of Electrical and Computer Engineering (ECE) was elected to IEEE AES Society's Radar Systems Panel (RSP). Selection to the panel shows recognition from the IEEE radar community for sustained contributions and support of IEEE radar activities.
- Prof. Justin Metcalf at ARRC and ECE has received a Young Faculty Award from the Defense Advanced Research Projects Agency (DARPA), an agency of the U.S. Department of Defense.
- ARRC/ECE undergraduate student. Shane Flandermeyer, was selected for special recognition at the recently held AFRL Beyond 5G Software Defined Radio University Challenge Showcase.

Morgan Schneider. ARRC and an School of Meteorology (SoM) MS student, was selected the recipient of a Foundation Graduate National Science Research Fellowship. Fellows share in the prestige and opportunities of being selected, including a three-year annual stipend, opportunities for international research and professional development, and the freedom to conduct their own research at any accredited U.S. institution.

- 4. ARRC students and faculty also received a number of awards within the university.
- Prof. Guifu Zhang at ARRC and SoM has received the Sam. K. Viersen Presidential Professorship.
- ARRC/ECE PhD student, Arturo Umeyama, received the 2020 WeatherNews Scholarship.
- ARRC/ECE PhD students, Andrew Byrd, Rodrigo Lebron Garcia, and Javier Ortiz, Brian Sun, David Schvartzman, and Arturo Umeyama, received the Gallogly College of Engineering Dissertation of Excellence Awards.
- ARRC/ECE undergraduate researcher Nicole Palmer was awarded an Undergraduate Research Opportunities Program (UROP) grant from OU's Honors College.
- ARRC/SoM graduate student Noah Brauer received the School of Meteorology Outstanding Teaching Assistant Award.
- ARRC/ECE PhD student Andrew Byrd was named the recipient of the Tommy C. Craighead Award for Best Paper in Radar Meteorology.
- 5. A \$7.4 million grant awarded from the United States Office of Naval Research to the ARRC will fund the development of a scanner and innovative digital radar solutions to support research, prototyping and testing of advanced digital radar concepts for the Navy and the U.S. Department of Defense. A rendering picture of a mobile S-band all-digital polarimetric radar developed at the ARRC is shown in the figure. The project will also make OU home to the largest university-based scanner for nearfield measurements in the

nation.

Prof. Tian-you Yu **Director of Operations** E-mail: tyu@ou.edu



Rensselaer Politechnic Institute, USA

https://www.rpi.edu/

The institute continued its work on the two research grants it received as follows:

Rensselaer

EAGER: Operations and Systems Engineering Extreme Events Research (OSEER)

This EArly-concept Grant for Exploratory Research (EAGER) award will support the establishment of a network of operations researchers and a science plan to address cross-cutting methodological challenges in hazards and disaster research. An abiding challenge for decision making in the context of hazards and disasters derives from the need to provide prescriptive (decisional) guidance under dynamic conditions of sometimes profound uncertainty and risk. Addressing these challenge requires a renewed focus on identifying potentially high-impact research problems that lie beyond the boundary of existing disciplinary and interdisciplinary methods to address. This is particularly true for problems that involve large-scale, sometimes sustained interaction between human-machine systems and hazard-related phenomena within a broader policy and social context.

This project will establish the Operations and Systems Engineering Extreme Event Research (OSEEER) network, designed to marshal both traditional and nontraditional sources of expertise in order to accomplish three main objectives.

This award reflects NSF's statutory mission and has been deemed worthy of support through evaluation using the Foundation's intellectual merit and broader impacts review criteria.

https://www.nsf.gov/awardsearch/showAward? AWD_ID=1936967

EAGER: Joint Hazard Mitigation in the Era of COVID -19: Implications for Engineered Structures and Services

Much emphasis during the response to the ongoing COVID-19 pandemic has rightly been on traditional public health efforts at controlling it; however, less prominent but no less vital is the role of the built environment itself in both amplifying and suppressing the effects of COVID-19. In the former case, this

includes densely-packed, highly centralized physical work spaces, while in the latter this includes adaptive use of decentralized physical work spaces (such as private homes) or virtual ones (as for online learning). The prospect of co-occurrence of natural hazards (such as hurricanes, tornadoes and earthquakes) during the COVID-19 regime is likely to strain and possibly confound ongoing and future response efforts. Accordingly, this EArly-concept Grant for Exploratory Research (EAGER) will explore the role of engineered structures and services within the built environment in order to improve efforts to prevent pandemic joint hazards from becoming societal disasters. This will require basic research in exploring new theories, methods, data and technologies for supporting mitigation, together with collaborations with multiple organizations, including the NSF-supported Natural Hazards Engineering Research Infrastructure and its components (https://www.DesignSafe-ci.org). This project will contribute to NSF's role in the National Earthquake Hazards Reduction Program (NEHRP) and the National Windstorm Impact Reduction Program (NWIRP).

This project will develop and disseminate a research framework and corresponding research agenda to support improved understanding of the role of the built environment in mitigating or amplifying risks associated with pandemic joint hazards.

This award reflects NSF's statutory mission and has been deemed worthy of support through evaluation using the Foundation's intellectual merit and broader impacts review criteria.

https://www.nsf.gov/awardsearch/showAward? AWD_ID=2041666&HistoricalAwards=false

> Prof. David Mendonca Principal Investigator E-mail: mendod@rpi.edu



wards	Award Abstract #1936967 EAGER: Operations and Research (OSEER)	Systems Engineering Extreme Events	
arch Awards	NSF Org:	CMMI Div Of Civil, Mechanical, & Manufact Inn	
cent Awards esidential and Honorary	Initial Amendment Date:	July 25, 2019	
vards	Latest Amendment Date:	July 25, 2019	
w to Hanaoe Your Award	Award Number:	1936967	
ant Policy Manual	Award Instrument:	Standard Grant	
ant General Conditions operative Agreement nditions	Program Manager: Georgia-Ann Klutke CHMt Div Of Civil, Mechanical, & Manufact Inn ENG Directorate For Engineering		
Special Conditions Federal Demonstration Partnership Policy Office Website	Start Date:	August 1, 2019	
	End Date: July 31, 2021 (Estimated)		
	Awarded Amount to Date: \$299,947.00		
	Investigator(s):	David Mendonca mendod@rpl.edu (Principal Investigato	
	Sponsor:	Rensselaer Polytechnic Institute 110 8TH ST Troy, NY 12180-3522 (518)276-6000	
	NSF Program(s):	OE Operations Engineering	

	EAGER: Joint Hazard Mit for Engineered Structure	tigation in the Era of COVID-19: Implications is and Services	
Search Awards	NSF Org:	CHHI Div Of Civil, Mechanical, & Manufact.Inn	
Recent Awards Presidential and Honorary	Initial Amendment Date:	August 7, 2020	
Awards About Awards	Latest Amendment Date:	August 7, 2020	
How to Manage Your Award	Award Number:	2041666	
Grant Policy Hanual	Award Instrument:	Standard Grant	
Cooperative Agreement Conditions	Program Manager:	Joy Pauschke CMMI Div Of Civil, Nechanical, & Manufact Inn ENG Directorate For Engineering	
Federal Demonstration	Start Date:	September 1, 2020	
Policy Office Website	End Date:	August 31, 2022 (Estimated)	
	Awarded Amount to Date:	\$259,824.00	
	Investigator(s):	David Hendonca mendod@rpi.edu (Principal Investigator) Julio Ramirez (Co-Principal Investigator) Tracy Kipwaki-Cerres (Co-Principal Investigator) Ann-Margaret Esnard (Co-Principal Investigator)	
	Sponsor:	Rensselaer Polytechnic Institute 110 8TH ST Troy, NY 12180-3522 (518)276-6000	
	NSF Program(s):	ECI-Engineering for Civil Infr, COVID-19 Research	
	> vg. m Reference Code(s):	036E, 039E, 040E, 043E, 096Z, 1057, 1576, 7916, CVIS	



Asia Japan and Oceania







Asia Japan and Oceania



Asia — Members

Bangladesh	Institute of Water and Flood Management (IWFM), Bangladesh University of Engineering and Technology (BUET)
Bangladesh	Department of Disaster Science and Management (DSM), 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 Tibetan Plateau Research, Chinese Academy of Sciences (ITPCAS)
China	Beijing National Earth Observatory, 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	College of Architecture and Environment, Sichuan University (SCU)
China	Institute for Disaster Management and Reconstruction (IDMR), Sichuan University
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, China	Hong Kong Academy of Medicine, 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	Research & Development, Indian Institute of Technology Gandhinagar (IITG)
India	Center of Excellence in Disaster Mitigation & Management, Indian Institute of Technology Roorkee (IITR)
India	Jindal School of Liberal Arts and Humanities, O.P. Jindal Glob ו University
India	School of Ecology and Environment Studies, Nalanda University
India	School of Planning and Architecture (SPA), Delhi

1	
Indonesia	Brawijaya University
Indonesia	Gadjah Mada University, Faculty of Engineering
Indonesia	Geological Agency (GA), Ministry of Energy and Mineral Resources of the Republic of Indonesia
Indonesia	JASA TIRTA I Public Corporation
Indonesia	Research Center for Disaster Mitigation, Institut Teknologi Bandung (ITB)
Iran	International Institute of Earthquake Engineering and Seismology (IIEES)
Iran	Soil Conservation and Watershed Management Research Institute (SCWMRI), Agricultural Research, Education and Extension Organization
Iran	Department of Environmental Science, Faculty of Natural Resources, University of Tehran
Israel	Institute of Earth Sciences, The Hebrew University of Jerusalem (HUJ)
Israel	National Knowledge and Research Center for Emergency Readiness, University of Haifa
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	Institute for Environment and Development (LESTARI), University of Kebangsaan Malaysia
Malaysia	Center for Southeast Asia Disaster Prevention Research Initiative (SEADPRI-UKM), 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 Sustainable Environment, Universiti Technologi Malaysia (UTM)
Malaysia	Malaysia Japan International Institute of Technology (MJIIT), Universiti Technologi Malaysia (UTM)
Malaysia	Disaster Management Institute (DMI), Universiti Utara Malaysia (UUM)
	Prations Centre, Department of Disaster Management
wepal	International Centre r Integrated Mountain Development (ICIMOD)
Nepal	Institute of Engineering, Tribhuvan University
Oman	German University of Technology in Oman (GUTech)

Philippines	PEMSEA Resource Facility, Partnerships in Environmental Management for Seas of East Asia
Philippines	R&D, Graduate School, Philippine School of Business Administration
Philippines	National Hydraulic Research Center, National Engineering Center, University of the Philippines, Diliman Campus
Philippines	University of the Philippines Resilience Centre (UPRI)
Philippines	Philippine Society of Emergency Medical Technicians
Sri Lanka	Central Engineering Consultancy Bureau (CECB)
Sri Lanka	Center for Urban Water (CUrW)
Sri Lanka	National Building Research Organisation (NBRO)
Sri Lanka	Sri Lanka Institute of Information Technology (SLIIT)
Chinese Taipei	National Center for Research on Earthquake Engineering (NCREE), National Applied Research Laboratories
Chinese Taipei	Taiwan Typhoon and Flood Research Institute (TTFRI), National Applied Research Laboratories
Chinese Taipei	Disaster Prevention Research Center (DPRC), National Cheng-Kung University (NCKU)
Chinese Taipei	Tainan Hydraulics Laboratory (THL), National Cheng Kung University (NCKU)
Chinese Taipei	National Science and Technology Center for Disaster Reduction (NCDR)
Chinese Taipei	Center for Weather Climate and Disaster Research (WCDR), National Taiwan University
Tajikistan	Mountain Societies Research Institute (MSRI), University of Central Asia
Thailand	Global Environmental Studies/Management, Asian Disaster Preparedness Center (ADPC)
Thailand	Disaster Preparedness, Mitigation and Management (DPMM), Asian Institute of Technology (AIT)
Turkey	Kandilli Observatory and Earthquake Research Institute, Bogazici University
Vietnam	Department of Geo-Environment, VietNam National University (VNU), Hanoi



Institute of Tibetan Plateau Research, Chinese Academy of Sciences (ITPCAS), China http://ceep.bit.edu.cn/english/

JpGU-AGU Joint Meeting 202			
Neeting Website Schedule-at-a-glance	Events PAQ Contact La	ccupe IP-0442 - Lopout	
Zoom Live X-A 347 MICTOROMOREA	Session Information	iPoster Gallery	
Exhibitors		Tutorials	
Web App	Policy & Regulations	¥JpGUAGU2020	

S-IT30: Tectonic collision systems in continents and oceans

Time: July 15 (Wed.) 2020 10:45-11:35 am Tokyo Time

10:45-10:48 Brief introduction to the session

*Ling Bai, James Mori, Xiaodong Song, Yuzo Ishikawa

Under the cooperation agreement between ITPCAS and DPRI, the two sides carried out fruitful cooperation research activities. Prof. Ling Bai from ITPCAS and Prof. James Mori from DPRI jointly organized a session on the 2020 JpGU-AGU meeting, entitled 'Tectonic collision systems in continents and oceans'. A new international cooperative project let by Prof. Bai and Prof. Mori is funded by CAS (see details below).

Project:

International research project supported by CAS, International team on the study of crustal and mantle structure beneath the Himalayan Orogenic belt and its shallow response, Primary investigators: Prof. Bai, Prof. Mori (No. GJTD-2019-04), 2020.01.01~2022.12.31.

团队名称 (项目编号)	依托单位	团队成员(第一位 为团队负责人)	工作单位
進山带壳幔结构及 浅部响应国际团队 (编号:GJTD-2019-04)	青藏高原 研究所	白玲	青藏高原研究所
		裴顺平	青藏高原研究所
		田小波	地质与地球物理研究所
		徐涛	地质与地球物理研究所
		张 衡	青藏高原研究所
		徐强	青藏高原研究所
		James Mori	Kyoto University, Japan
		Simon Klemperer	Stanford University, US
		Paul Tapponnier	The Institut de Physique du
		77	Globe de Paris, France
		Md Moklesur	Jessore University of Science
		Rahman	and Technology, Bangladesh

Projects



Prof. Yaoming Ma

E-mail: ymma@itpcas.ac.cn



College of Architecture and Environment Sichuan University (SCU), China

http://www.scu.edu.cn/acem/

Participated and organized the 3rd International Conference on engineering innovation and seismic mitigation of bridges.

In 2020, we participated in the organization of the 3rd International Conference on Engineering Innovation and Seismic Mitigation of Bridges from November 21, 2020 to November 22, 2020. The online conference was aims to promote the scientific development of bridge structures in the field of earthquake prevention and disaster reduction and engineering innovation, provide important theoretical and technical support for bridge construction and engineering safety, to promote bridge structure design and construction and multi-hazard resilience research, teaching, design, to exchange and cooperation of personnel in production-related fields, and to improve bridge structure design and multihazard prevention theory, test, Calculation, design, construction, and application.

Held an online cooperation and exchange meeting on "Resilience-based industrial building seismic design and post-earthquake evaluation".

The online meeting with the topic "Resilience-based seismic design and post-earthquake

evaluation of industrial buildings" was held September 28, 2020. Professor Dai Kaoshan, Dr. Wang Jianzi and other Chinese members of the team and Professor Fabrizio Paolacci from the University of Rome, Italy, Professor Oreste S. Bursi from University of Trento, Italy and other colleagues from Italy joined the meeting. Both teams exchanged their experiences, discussed and determined research topics that could be collaborated in the near future.







GADRI Annual Report - Asia



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



In 2020, IDMR made progress in the following directions: 1) continuing to develop our innovative, research-based, interdisciplinary educational programs; 2) contributing directly to COVID-19 response, in collaboration with Sichuan University's Medical School, and in particular through our disaster nursing program; 3) strengthening our contributions to the major international initiatives in which we play leadership roles, and; 4) continuing to build the strength of our faculty with many exciting hires in key interdisciplinary areas for our strategic future.

Continued work on curricular innovation: Our most exciting development is the successful launching of our undergraduate "International Class on Disaster Risk Reduction and Emergency Management Innovation". The basic structure is that we accept students at the beginning of their sophomore years, from all majors in the university, in a highly competitive process, to join a three-year undergraduate research program. The student teams (3 - 5 students/team) work under the guidance of teams of faculty members, both Chinese and foreign, including from our partner universities and from international organizations. For the 2020 cohort, the 8 research themes include: disaster mental health (with a focus on mental health of university students and of nurses in the context of COVID-19); mapping of international research and education on DRR (with a focus on geographical and knowledge-graph mapping of worldwide activities); disaster education (focusing on low-cost sustainable methods for connecting local communities DRR to

information resources); climate stress and urban resilience (with a focus on flooding and urban heat islands); water,

disaster and culture (looking at disaster resilience of protected sites, with a focus on heritage sites in Sichuan Province); earth sciences for sustainable development (with a focus on landslides and early warning systems); post-disaster environmental management (focusina on technologies for air and water purification as well as on disaster waste management), and; resilience of health care systems (focusing on capacity of these systems to sustain

shocks and recover). We are happy to share our work on this innovation class, which is closely linked with IDMR's research priorities, with other GADRI partners.

In terms of COVID-19 response, IDRM worked actively with our Medical School, including the Schools of Emergency Medicine, Public Health and Nursing in realtime response to the crisis. Our disaster nursing masters students were particularly heroic, spending months on the frontline in Wuhan, building on the training in our Institute and mobilizing far broader networks of nurses in China to share information and provide mutual support online.

IDMR continued to work actively with the High-Level Panel on Water and Disasters (HELP) and on our effort to build the Alliance of Alliances (AoA). Together with HELP and other global partners we contributed to the development of "Principles to Address Water-Related Disaster Risk Reduction under the COVID-19 Pandemic". We also contributed to multiple high-level international conferences on this topic and others. We also continued to develop our work with the Alliance of National Science Organization on the belt and road efforts on DRR, ANSO-DRR, and to our work with U-INSPIRE, a network of youth and young professional in DRR research, now expanded to 12 countries in Asia with more than a thousand members.

We were successful in hiring 8 outstanding new faculty members, in highly strategic areas, and will be continuing our aggressive hiring campaign in 2021.

> Prof. Gretchen Kalonji Dean



E-mail: Gretchen.kalonji@gg.com

urban



Hong Kong Jockey Club Disaster Preparedness and Response Institute (HKJCDPRI), Hong Kong, China

http://www.hkjcdpri.org.hk/

Contribution to enhancing city's response capacity

Incident Command System Training For the Fire Services Department of the Hong Kong Special Administrative Region (HKSAR) Government

To enhance the capability of frontline fire personnel in handling fire and emergency incidents, the HKJCDPRI joined hands with the Fire Services Department to organise the Incident Command System training on 10 July 2020 at the Fire and Ambulance Services Academy. With the aid of VR technology, a simulation of a fire breaking out in an industrial building was created. Participants had to play the role of incident commander, assessed the on-site environment and situation, and performed command tasks. Comparing with traditional tabletop training, VR simulation training not only provides participants with immersive visual and auditory effects, but also enriches their learning experience and effectiveness through realistic interactive scenarios.



Community Engagement

New Disaster Education Drama for Primary School Students

HKJCDPRI launched a new disaster education drama "Preparing Kids for Disasters" in collaboration with Drama Gallery, continuing its teaching to children on different kinds of disasters, as well as disaster risk reduction, mitigation and response. The programme was completed in November 2020, a total of 11,293 students from 50 primary schools watched the drama via Zoom or onsite performance. Students enjoyed the show with



Students enjoying the drama

thunderous laughter and students responded to characters' questions with great enthusiasm.

Launch of Chinese Version of COPE Children's Books

COPE, a series of children's books, aims at teaching children how to "Get Ready and Be Prepared for Disasters". The books were originated in English. In collaboration with the Hong Kong Observatory; Dr. Kwan Che Ying, Associate Professor, Centre for Advancement of Chinese Language Education and Research, and The University of Hong Kong, the HKJCDPRI translated the book to Chinese with content for local readers. The Chinese version of the books, the "Earthquake!" and "Get Up To High Ground (for Tsunami) ", were published.

Coping with the COVID-19 Disease

In response to the outbreak of COVID-19, HKJCDPRI has taken a number of initiatives, sharing professional knowledge and updated information with the community and professionals from different sectors. A webpage, "Useful Information on COVID-19" was established in early 2020.





Centre of Excellence in Disaster Mitigation & Management Indian Institute of Technology (IIT) Roorkee, India

https://www.iitr.ac.in/centers/COEDMM/ pages/Home.html

The CoEDMM Associated Faculty, **Dr. Sudip Roy**, is visiting the Disaster Prevention Research Institute (DPRI), Kyoto University, Uji Campus, Kyoto, Japan as a Visiting Research Scholar since February 1, 2020 till date. Dr. Roy is currently visiting and working in collaboration with Prof. Hirokazu Tatano and Dr. Subhajyoti Samaddar in the "Research Section of Social Systems for Disaster Risk Governance" under the "Research Division of Disaster Management for Safe and Secure Society" of DPRI under the

Graduate School of Informatics, Department of Social Informatics, Kyoto University, Uji Campus, Kyoto, Japan.

Students' Participation in Social Innovation Online Hackathon (SIOH)

Indo-Japan Laboratory (Keio University, Japan), CoEDMM-IIT Roorkee, IIT Hyderabad, VNIT Nagpur, NIT Durgapur and RIKA India launched Social Innovation Online Hackathon (SIOH) 2020 on 16th June 2020. ARISE-India supported the initiative and

Dainik Bhaskar was the media partner. SIOH aimed to provide a unique virtual platform to student innovators and mission-driven entrepreneurs from different fields to collaborate and develop innovative solutions for tackling the issues of pandemic and future disasters. This innovative Indo-Japan multi-institute event is conceived by Professor Rajib Shaw from Keio university Japan where he is Director of Indo Japan Lab. This was instituted as a 10 week+ programme during lockdown periods due to the

Pandemic, so that young talents can be engaged in positive activities during this critical od. To ensure the wider faceibility, of inpovetive, ideas (adutions

period. To ensure the wider outreach and feasibility of innovative ideas/solutions, thematic mentors guided the specific groups (through weekly sessions). Emphasis of the event is to develop implementable solutions and prototype development. Students of SIOH got the support from Prof Rajib Shaw from India Japan laboratory Keio university, Japan, Prof Mahua Mukherjee and many more. Academic institutes (IITs & NITs), business organizations and media partnership blended in this SIOH. Professor Sudip Roy, Professor Saptarshi Kolay and Professor Inderdeep Singh represented IIT Roorkee in the Mentors' group. This was highly appreciated and attended by high officials including Ambassadors,



India & Japan, business houses, eminent entrepreneurs from both the countries.

It is an extreme delight for the Centre that the all three teams selected for Final pitching had the students from IIT Roorkee and teams have already started their application developments.

For more information, please visit webpage:

https://nagrikdialogue.in/pitchevent-social-innovation-onlinehackathon-2020/

> Prof. Mahua Mukherjee Director

E-mail: coe_dmm@iitr.ac.in



The CoEDMM, IIT Roorkee is now part of the Organizing Team of the **5th Word Congress of Disaster Management** (WCDM-2020) as a knowledge partner; the Conference is now scheduled to be held in 2021.

The CoEDMM was a Co-organizer for the First Α. S. Arya Memorial Lecture held on 1st September, 2020. Professor Μ L Sharma, Joint Faculty to the CoEDMM delivered the First A S Arya Memorial Lecture. Professor Mahua Mukherjee paid tribute to the legendary Professor A S Arya in the programme. Professor A S Arya (1931-2019), first Sasakawa Laureate from India, has worked tirelessly in the field of earthquake safety and risk resilience.

The CoEDMM organized D'Conscientia 2020 on 13th October 2020



The D'Conscientia 2020 was the 4th edition of the Annual Students' Event organized in the Centre of Excellence in Disaster Mitigation and Management

(CoEDMM), Indian Institute of Technology Roorkee, India to create awareness among the students. scholars, disaster managers, professionals, other stakeholders and the community about the preparedness initiatives for climate-change-induced disaster and Risk Resilience building. It was organized to commemorate the occasion of "International Day for Natural Disaster Reduction 2020", which falls on Tuesday, October 13, each year the CoEDMM will organized an Online Industry-

Academia Interactive Meet on "Industry, Innovation and Risk Reduction in Post-COVID -19 Period". Industry, is among the hard-hit sectors, after the Pandemic Covid-19. So, this time, the D'Conscientia 2020, was around the topics relevant towards Post- COVID-19 resilience initiatives primarily. COVID-19 gave us an opportunity to re-think the disaster risk governance, focusing on one of the seven global goals of the Sendai Framework for Disaster Risk Reduction 2015-2030. aligned with the Sustainable Development Goals (SDGs) and the Paris Agreement on Climate Change. This time the programme was designed as to align important aspects like students' aspiration, industry and expert feedback on academic process in risk resilience, post-COVID complexity, etc. It was a pleasure for the department to have extremely revered guests and speakers present for the event to share their experiences and knowledge on the theme topic. The Expert talk was delivered by Mr. Manu Prakash from TARU Leading edge, India and Mr. Rubaab Sood from FICCI, India. Both of them - Champions in their respective fields. For Guest of honor, we had the privilege of having. Anil Sinha, Retd. IAS and former Vice Chairman, BSDMA, India- one of the main Architect, who guided the High-power Committee Report 2001.

The guest lecture was delivered by **Professor Tatano, Chief Guest of the programme.** He has championed the case of global networking of Research Academic Institutes who are working in Risk field. He represents **GADRI (Global Alliance of Disaster Research Institutes)**.

For more information, please visit webpage:

https://www.iitr.ac.in/centers/COEDMM/

pages/D_Conscientia.html



GADRI Annual Report 2020-52

Online Certificate Training on Risk Management of Biological Hazards in the context of pandemics during 12-16 October 2020

An online Certificate Training on "Risk management of Biological Hazards in the context of pandemics was organized (dates) by Indo-Japan Laboratory of Keio University, Japan, CoEDMM- IIT Roorkee, RIKA-India, ARISE-India and GIDM, Gujrat. Approximately 200 participants from diverse sectors including state disaster management agencies, disaster response forces, academic institutes, participated in the training workshop. Prof Mahua Mukherjee and Prof Ranjana Pathania from the COEDMM at IIT Roorkee delivered lectures for Module 2 and Module 4. On 13th October, 2020 Prof Mukherjee talked on "Multi-hazard risk Assessment nd management" and Prof Pathania talked on "Principles of biohazard risk management". Prof Pathania talked about various biological hazards, risks associated with them, various matrices that are employed to assess and quantify these risks and measures to be taken in infectious agent biohazards

citing various examples including the ongoing COVID-19 pandemic.

Professor Mukherjee as part of Module 4 Challenges and way forward for Micro, Small and Medium Enterprises (MSMEs) discussed the lessons learnt from the Pan India case studies on 15th October, 2020. At the end of these sessions the participants interacted with the speakers and answered quiz questions.



2020 Asia Pacific Science and Technology Confer- Kuala Lumpur, and organized by UKM, APSTAAG and ence for Disaster Risk (eAPSTCDRR) Conference

Professor Mahua Mukherjee, an APSTAAG BoD member, took part in the 2020 Asia Pacific Science and Technology Conference for Disaster Risk Reduction (eAPSTCDRR) Conference as part of the Organizing Team. The Conference was held in hybrid mode i.e. both physical meet and the virtual mode were in use. This was held at

Reduction UNDRR on 15th October 2020. This time the eAP-STCDRR held the Science-Policy Dialogue for Implementation of the Sendai Framework; and at the end of the day could bring out the Kuala Lumpur Consensus on S&T for Disaster Risk Reduction. Professor Mukherjee co-moderated the Technical Session III: Climate Risk and Local Action.

The CoEDMM organized the First JKML of the Professor Jai Krishna Memorial Lecture (JKML)



Series on November 6, 2020.

The CoEDMM, being a platform to nurture multidisciplinary interactions aiming resilience from disaster and climate change-induced risks, and responsibly engaged in developing techno-managerial capacity towards comprehensive disaster risk reduction, initiated the CoEDMM Memorial Lecture Series in the name of Professor Jai Krishna, a luminary engineer and educator. Contributions of Professor Jai Krishna to multiple disciplines of Engineering and Science, is befitting with the multi-hazard risk resilience mission of the CoEDMM. His dynamic, insightful and enterprising leadership shaped the contemporary Engineering Education and Profession in India and beyond to reach a newer height. This is privilege and honour for the CoEDMM, IIT Roorkee to dedicate its Endowment Lecture Series to Professor Jai Krishna. The CoEDMM organised the First Professor Jai Krishna Memorial Lecture (JKML) on Friday, November 6, 2020, as an Online Event. The First Memorial Lecture was delivered by Dr. Pramod Kumar Mishra, 2019 Sasakawa Laureate and Principal Secretary to the Prime Minister of India. His discourse was on "COVID-19, Black Swan Events, and the Future of Disaster Risk Management in India".

Dr P K Mishra's far-sighted talk generated interest and stimulated discussion among DRR professionals, both at national and international level. His thoughtful rendering of black swan events of past and the present COVID-19 pandemic situation brought forward the criticality of the context in right perspective. Ms Mami Mizutori, Head - UNDRR and Special Representative of the UN Secretary-General (SRSG) attended the First JKML Event and put forward her comments on the First JKML delivered by Dr P K Mishra. She shared her wisdom with the audience while commenting on Dr Mishra's lecture as practical, far-sighted and intellectually rich. Her presence made the First JKML a milestone event, not only for IIT Roorkee but also for the country. The Event was organized in WebEx platform and simultaneously on YouTube Platform. The First JKML was broadcasted LIVE at DD News, DD Urttarakhand, and DD Udisha. The First JKML was organized by Prof. Mahua Mukherjee, Prof. Sudip Roy, Prof. Anil Kumar Gourishetty, and Prof. Saptarshi Kolay.

For more information, please visit webpage:

<u>Mis-</u>

https://www.iitr.ac.in/ pages/ centers/COEDMM/

cellaneous+JKML_Series.html

The South Asia Alliance of Disaster Research Institutes (SAADRI) formed at CoEDMM, IIT Roorkee 13th November 2020

The South Asia Alliance of Disaster Research Institutes (SAADRI) is formed at the Centre of Excellence in Disaster Mitigation and Management (CoEDMM), IIT Roorkee, India on 13th November 2020. On 6th November 2020 during the First Jai Krishna Memorial Lecture hosted by the CoEDMM, IIT Roorkee, the IIT Roorkee Director, Professor A K Chaturvedi announced the commencement of SAADRI in CoEDMM. IIT Roorkee. Other dignitaries present were Ms Mami Mizutori, UNDRR Head & Special Representative to UN Secretary-General, Dr P K Mishra, Sasakawa Laureate of UNDRR and Principal Secretary of PM of India, and 500 plus dignitaries & participants online. The SAADRI aims to deepen the understanding of disasters in the South Asia Region including climate change impact, learn from evidence-based lessons, investigate and resolve implementation challenges, to achieve better resilience, infrastructure and technology adoption systems, improved livelihood of people, and promote societal safety culture by integrating knowledge and technologies. At the formation stage SAADRI will start with members from 5 South Asian countries: Bangladesh, Bhutan, India, Nepal and Sri Lanka. And it will co-opt members from other countries too. The SAADRI Secretariat can be reached at SAADRI@iitr.ac.in and SAADRI.iitr@gmail.com.

SAADRI Program Advisors:

- Professor B. Misra Emeritus Professor, School of Planning and Architecture, New Delhi
- Professor M. L. Sharma, Professor, Department of Earthquake Engineering and Joint Faculty at CoEDMM, IIT Roorkee

SAADRI Secretary-General:

 Professor Mahua Mukherjee, Department of Architecture and Planning and Joint Faculty at CoEDMM, IITRoorkee

For more information, please visit webpage:

https://www.iitr.ac.in/centers/COEDMM/pages/ SAADRI.html

The CoEDMM is an organizing partner for the Urban Thinker Campus 5.0 to be held at Nagpur, India during December 9-11, 2020.

The CoEDMM is co-organizing the UN-Habitat's Urban Thinker Campus 5.0 from 9-11 December 2020 with prime theme on TACTFUL (Think innovAte aCT For Urban cLimate-change) in joint collaboration with Keio University, Japan; VNIT, Nagpur; RIKA India; Arise-India; FICCI; IRDR-ICoE; IRDR-RCS and RUPO. The event is spread through three days and participants will witness range of scholarly engagements. There will be Urban Labs and plenary sessions on sub-themes on Research & Practices for managing impacts of Urban Heat & COVID-19 in Urban Areas; Showcasing the urban climate change initiatives in Asia. A competition titled The Campus Innovation Challenge with cash prices along with opportunity for incubation of the presented ideas for the winning entries is also hosted by the UTC 5.0 team. The chief guest of event will Honorable Minister Mr. Nitin Gadkari, Cabinet Minister for Road Transport & Highways and the Minister of Micro, Small and Medium Enterprises, Gol. Special address would be delivered by Ms. Mami Mizutori, SRSG and Head, UNDRR. The event will include key speakers Prof. Rajib Shaw, Professor and Director, India Japan Lab, Keio University, Japan and Co-Founder RIKA India; Dr. Mazlan Othman, Director Regional Office for Asia and the Pacific, International Science Council, Malaysia; Dr. Emily Ying-Yang Chan Director, Collaborating Centre for Oxford University and CUHK for Disaster and Medical

Humanitarian Response, Hong Kong, China; Dr. Rosa T. Perez, Member of the National Panel of Technical Experts of the Climate Change Commission, Philippines; Mrs. Norliza Hashim, Chief Executive in URBANICE Malaysia, Ministry of Housing & Local Government, Kuala Lumpur, Malaysia; Mr. Ram Joshi, Additional Commissioner, Nagpur Municipal Corporation, Nagpur; Mr. Jürgen Baumann, Program Head of Sustainable Urban Transport for Smart Cities in India, GIZ India; among others. Professor Ajanta Goswami and Professor Harshit Lakra are representing the CoEDMM, IIT Roorkee and will engage in the event through delivering talk and advising in the challenge. For more information, please visit webpage: https://www.worldurbancampaign.org/ urban-thinkers-campus





GADRI Annual Report — Asia



Liberal Arts and Humanities O.P. Jindal Global University, India

http://www.jslh.edu.in/

Anticipation!



- Rebuilding progressively before a potential disaster. Retrofitting and new construction in areas of mixed buildings. Recognizing the hazards that one building can imply for neighboring ones.
- Vietnam as an example: typhoon preparedness and simple design modifications to existing and traditional housing.
- Vernacular architecture and the expertise of vernacular architects.
- Other anticipations: the living and the dead! Ancestors and memories and commemoration and archives.
- Thinking about future climate change and future energy needs and ways that these have been managed in the past, especially via. vernacular architecture.

O.P. Jindal Global University is one of India's youngest and fastest growing universities. Just ten years old, it has grown from a single school (Law) into a fully-fledged social science and humanities based university with schools of Law, International Affairs, Government and Public policy, Banking and Finance, Architecture, Liberal Arts and Humanities, Journalism, Business and, most recently, a new school of Environment and Sustainability. This latter programme, which has its origin in a smaller Centre, is now being expanded into an independent school with both undergraduate and post-graduate degree courses.

A major change has been the creation of a full school of Environmental Studies and Sustainability in 2020 emerging from the smaller research institute that preceded the formation of the School. Issues of Disaster Prevention and Management are integrated into a number of the new undergraduate classes and while there is as yet no specific course on the subject, it is considered integral to the class content throughout the School. One member, Professor John Clammer, has spent the year 2020-21 at the Kyoto University Disaster Prevention Research Institute as

> a visiting professor, and taught a course on the "Culture,

subject Sustainability and Disaster Recovery" for both undergraduate and graduate students, delivered a public lecture on the occasion of the GADRI annual conference, and another on the

of

theme of "Building Back Better"" and participated in graduate classes at DPRI. In addition, he undertook a research project on a holistic approach to disaster management and recovery, due to be completed in early 2021. The next step at O.P. Jindal Global University will be the development of advanced courses in disaster management in the new School of Environment and Development which are under discussion and the development of inter-disciplinary work which is in the planning stage with the Schools of International Affairs, Government and Business at the university.



Prof. John Clammer E-mail: jrclammer@jgu.edu.in GADRI Annual Report — Asia



International Institute of Earthquake Engineering and Seismology (IIEES), Iran

http://www.iiees.ac.ir/en/



In 2020, the main following activities were undertaken:

- 1. Establishment of the Regional Education and Center Earthquake Research on Management and Resilience for West and Central Asia, as Category 2 Centre under the auspices of UNESCO;
- 2. Commissioning the largest Advanced Earthquake Engineering Laboratory in the Middle East at IIEES;
- sectors in Social. Infrastructure. Productive and Cross-Cutting Fields;
- 4. Developing Rapid Assessment of Iran Seismic Events (RAISE) for real time estimation of earthquake parameters;
- 5. Invention of High Frequency Image Processing System (AFRA) for real-time displacement measurement (winner of Kharazmi International Festival Award);
- 6. Organizing 22nd National Earthquake and Safety Drill;
- 7. Seismicity and 3D crustal structure of Central Alborz, Iran Using Local Earthquake Dataset
- 8. Deep structure of Iranian plateau from seismic, gravity, and thermal modeling.
- 9. Expansion of IIEES National Broadband Seismic Network from 28 to 32 stations.

- 10. Lithosphere and Upper Mantle Structure beneath the Zagros and Alborz Collision Zones.
- Risk 11. Comprehensive Earthquake and Tsunami Hazard Assessment of the Makran subduction zone.
 - 12. Developing guidelines for: Post-Earthquake Rapid Assessment of buildings, repair of damaged buildings after earthquakes, Design of base isolated highway bridges, risk assessment of buildings and infrastructure.
- 3. Developing National PDNA Guidelines for 19 13. Seismic vulnerability studies of Tehran Sewer Network Transmission Lines.
 - 14. Hazard zonation and stabilization of landslides triggered by 2019 floods and heavy rainfall in 17 villages of Lorestan and Semnan Provinces.

Prof. Mohsen Ghafory-Ashtiany **Special Adviser** E-mail: ashtiany@iiees.ac.ir; mohsen.ashtiany@gmail.com



























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

http://muchanut.haifa.ac.il

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. In 2020 we continued with 8 multi-disciplinary long term research projects (<u>See here</u>) but the bulk for the new research is on COVID-19.

The Center's contribution to the COVID-19 effort is twofold: 1) Streaming insights, data, and recommendations for decision makers and supporting teams, based on research on coping with epidemics in general, and Covid-19 in particular. 2) Characterizing issues that require addressing and answering decisionmakers' questions (in the National Security Council (NSC), Ministry of Science; National Emergency Management Administration (RACHEL), and other think tanks).

COVID-19 Research - short, medium and long term projects:

- "The day after" multi-disciplinary strategies for coping, gradual exit and crisis recovery, including the following:
- From SARS/MERS to COVID-19: A Comparative Overview of Policy Learning in Four East-Asian Polities (S. Korea, Taiwan, Hong Kong, Singapore) and Israel
- The Impact of COVID-19 on Well-being (Collaboration with the International Institute for Applied Systems Analysis (IIASA), Laxenburg, Austria) and the impact of COVID-19 on well-being in Israel
- Comparative Study of European Strategies (Switzerland, Austria, Italy, Greece)
- Survey of Israeli Public Health Professionals Reactions to Policies (May 2020)
- Using crowd- sourcing surveys for input from the public on the ongoing crisis management

- Smart and portable autonomous structures to deal with epidemic - a reserve of isolation and treatment facilities
- Building social resilience and trust in the era of the Corona virus epidemic and global risks: an integrative approach of man and society
- The domino effect in the tourism industry of the Corona virus: analysis and recommendations
- Corona epidemic characteristics among lowincome, refugee and new immigrant populations
- Agent-based simulation of the spatial spread of the Corona virus in major cities in Israel
- Corona epidemic estimating the economic costs of various coping measures. sensitivity analysis
- Personal, community and national resilience in Israel during the Corona crisis
- Post-traumatic stress response, uncertainty, world assumptions and loss of resources in the end and after the corona epidemic
- Is it possible to study at such a time? Examining the relationship between parents' meta abilities and learning ability from their children's home during the corona pandemic
- Poverty in the Corona: Challenges and struggles of people living in poverty following the Corona epidemic
- The interplay between government and public in an emergency
- Developing community-urban resilience in local authorities and planning urban space in emergencies
- A legal-regulatory series on dealing with emergencies in Israel

Dr. Michal Ben Gal Research Coordinator E-mail: brnichal@geo.haifa.ac.il GADRI Annual Report — Asia



3 May 2020 round table: the Scientific Basis for Preparedness to COVID-19 and Other Pandemics (in collaboration with Haifa University School of Public Health



Prof. Halberthal, General Director of Rambam Health Care Campus talk about Hospital Readiness in Corona Times: Challenges and Solutions in one of the Center's seminar talks



Institute for Environment and Development (LESTARI-UKM)

University of Kabangsaan Malaysia, Malaysia http://www.ukm.my/lestari/ms/



Malaysia is a maritime nation, blessed with 29th longest coastline comprising of two distinct parts of Malaysia, namely, the Peninsular Malaysia bounded by Malacca Strait and the East Malaysia surrounded by the South China Sea. Because of the large coastline and ocean oriented life, the ocean contributes significantly to the country and communities. As a consequence, more than 60% of the total population lives near the coastal area of Malaysia as well as the maritime sector of Malaysia contributes about 40% to the gross domestic product. However, the healthy growth in the maritime industry is not free from challenges, where pollution, disaster and food security play significant roles. Considering this, the Ocean Malaysia Partnership has been proposed to address emerging pressures linked to Malaysia's coastal and ocean region. Ocean Malaysia partnership is a brand-new idea initiated in LESTARI through the collaboration of the Scientific director of Ocean Canada, Prof. Rashid Sumaila, who has been appointed as a distinguished international professor in LESTARI in 2020. The Ocean Malaysia is inspired by Ocean Canada and in-line with the newly proclaimed "Decade of Ocean Science for Sustainable Development (2021-2030)" by the United Nations. The principal goal of Ocean Malaysia is to find benefits of humanity through understanding and addressing threats facing Malaysia's West coast, East coast and Borneo Region and seek opportunities to develop a shared vision for the future of our oceans and community. The Ocean Malaysia partnership initiative is highly interdisciplinary, and the research will integrate a wide range of expertise from many

Inaugural Meeting of the Ocean Malaysia Partnership (15 December 2020)

fields of study, including economics, law, geography, ethics, fisheries science and oceanography. The virtual inaugural meeting of Ocean Malaysia partnership has been successfully organized by LESTARI on 15th December 2020 involving the scientific director of Ocean Canada, participants from various universities, research institutions, government and non-governmental organizations and

policy makers across the country. Ocean Malaysia is very fortunate to have more than 20 highly recognized and influential researchers in the team.

Furthermore, LESTARI has played an important role in the formation of adaptive management approach for the Langkawi UNESCO Global Geo-park (LUGG), where the deterioration of coral reefs is at a critical level. The overall objective of this project is to develop ecosystem approaches to fisheries management for biologically-globally significant and commerciallyimportant areas beyond national jurisdiction. Under this project, a focus group discussion has been conducted on 2nd February 2020, involving participants from several fisheries communities. The focus group discussion has recommended a number of adaptation options including, awareness raising in conserving marine life among the local fishing communities; reviewing the roles of enforcement agencies; introducing seasonal fishing system to enable the survival of marine life, deploying artificial reefs as an alternative fishing location; and recoordinating previously planned activities to foster the trust and participation of the local fisheries community in the EAFM program.

Prof. Dato' ChM Mazlin bin Mokhtar Director & Principal Fellow, LESTAR UKM

E-mail: mazlin@ukm.edu.my



The Ocean Malaysia Partnership Goal: proposed by Dr. Lubna Alam (Coordinator Ocean Malaysia)



Geo-Coral Adoption Program, coordinated by Mr. Jamil Tajam



Southeast Asia Disaster Prevention Research Initiative (SEADPRI-UKM) University of Kabangsaan Malaysia, Malaysia

http://www.ukm.my/seadpri/



Since 2016, SEADPRI-UKM was awarded as Integrated Research on Disaster Risk (IRDR) International Centre of Excellence (ICoE) for Disaster Risk and Climate Extremes. Hence SEADPRI-UKM is now one of the 17 ICoEs at the global level, which aims to promote DRR activities and programmes within the respective regions. The ICoE represents, in this case of SEADPRI-UKM, the South East Asian region, focusing on strengthening localised inputs to address regional DRR related matters. SEADPRI-UKM will continue to capitalise on this partnership framework to further advance work related on DRR.

Since 2019, SEADPRI-UKM hosted the U-INSPIRE Malaysia Chapter, under the auspices of the Asian Network for Climate Science and Technology (ANCST), with supports from the National Disaster Management Agency Malaysia (NADMA) and Malaysian National Commission for UNESCO. This platform involved an alliance of youth and young professionals in Malaysia, who shared an interest in DRR and climate change.

A new project on "Promotion of Social Entrepreneurship in Disaster Risk Reduction to Build Community Resilience" funded by the International Development Research Centre (IDRC) for a duration of 3-years was officially launched on 21 Jan 2020. The Project aims to foster long-term community climate resilience in Malaysia and Cambodia by empowering young female social entrepreneurs to develop disaster resilience plans supported by community engagement and citizen science on an open-access digital platform. The project is led by SEADPRI-UKM, and the key partners include the Royal University of Phnom Pehn (RUPP), Geological Society of Malaysia (GSM) and Malaysian DRR Service Organization (MDRRSO).

On 15 October 2020, the virtual 2020 Asia-Pacific Science and Technology Conference for Disaster Risk Reduction (eAPSTCDRR) was convened by the Government of Malaysia and the UNDRR, in partnership with SEADPRI-UKM, Academy of Sciences Malaysia and International Science Council. The eAPSTCDRR brought together around 200 participants from across the Asia-Pacific region, to discuss how to strengthen science-based DRR policy development for building the resilience of communities and infrastructure. An outcome document - 'KL Consensus on Science & Technology for DRR' was produced with due consideration from the Sendai Framework to "build back better" in this window of opportunity, as the region moves to recover from the COVID-19 pandemic.

> Assoc. Prof. Goh Choo Ta Head, SEADPRI, UKM E-mail: seadpri@ukm.edu.my



At the eAPSTCDRR, Malaysia also announced its development on National Risk Register under the aegis of the National Disaster Management Agency Malaysia (NADMA), with technical support from SEADPRI-UKM. It is an augural effort to chart the mechanism of disaster risk management in the country, risk profiling and establish a comprehensive disaster data repository. The repository will utilise the DesInventar, a software promoted by the UNDRR as a disaster information management system.

Biosensor holds an enormous potential for clinical diagnosis of genetic or infectious diseases, for detection of food-contaminating organisms, for environmental monitoring and industrial process control and in criminal investigations. A new project on

"Nanomaterials based-Genosensor for Improved Detection Method of SARS-CoV-2 RNA as Rapid COVID-19 Diagnosis Strategy" was funded by International Centre for Genetic Engineering and Biotechnology (ICGEB) Research Grants Programme 2020. The one-year project will develop biosensor that enable COVID-19 non-invasive human bodily fluids screening, without the need for peripheral equipment, for rapid early diagnosis of infections.



At the launch event of the project on "Promotion of Social Entrepreneurship in Disaster Risk Reduction to Build Community Resilience" funded by the International Development Research Centre (IDRC): Project Advisor and Vice President of the Academy of Sciences Malaysia, YM Tengku Mohd Azzman Shariffadeen (far right) presented a token of Canada in Malaysia, with Tuan Ahmad Fairuz representing the Selangor Chief Minister.

ICIMOD

International Centre for Integrated Mountain Development, Nepal

https://www.icimod.org/

The International Centre for Integrated Mountain Development (ICIMOD)

The recent flood in Chamoli district of Uttarakhand in India was a starkly tragic reminder of the dangers that can be present in mountain environments across the Hindu Kush Himalaya region where ICIMOD works. Our colleagues have recently produced a report on understanding the Chamoli flood: Cause, process, and context of rapid infrastructure impacts, development. Despite early news pieces surmising that the flood was caused by a glacial lake outburst flood (GLOF) event, it was later confirmed that this was not the cause. Rather, it was caused by a massive rockslide and infrastructure in the flood path, particularly hydropower projects, exacerbated the impact of the flood. This makes more than clear the importance of comprehensive monitoring of mountain environments and also that infrastructure development in fragile mountain environments should consider a sustainability framework, including environmental sustainability.

New Director General Announcement

In 2020, the Board of Governors of the International Centre for Integrated Mountain Development (ICIMOD) <u>announced the appointment of a new Director General</u>, <u>Dr Pema Gyamtsho</u>. Succeeding Dr David Molden at his retirement from the Director General position in which he served for nearly a decade with his depth and breadth of intelligence, wisdom and gracious, peopleoriented leadership, Dr Gyamtsho took up the role on 15th October 2020.

HKH Ministerial Mountain Summit



On that date, ICIMOD facilitated an historically significant <u>Ministerial Mountain Summit</u> where the gathering of Ministers from across all eight of the Hindu

Kush Himalayan (HKH) countries culminated in the signing of an historically significant <u>declaration</u> agreeing to strengthen regional cooperation in the HKH; to promote a united voice for the HKH at regional, global and UN platforms; to enhance the uptake of scientific evidence for improving policies in the region focusing on mountain environments and livelihoods; and to assess the feasibility of establishing a regional institutional mechanism.

This declaration is the culmination of a process begun as part of the Hindu Kush Himalaya Assessment. Styled after the Intergovernmental Panel on Climate Change (IPCC) reports, the HKH Assessment underscores the significance of the HKH as a vital regional lifeline and global asset, but also provides the scientific evidence that human drivers and climate change pose immediate threats to the region's livelihoods, biodiversity, and ultimately, sustainability. Among the most significant of these drivers are climate change, demographic changes, growing demand for nature resources, rapid economic growth, unregulated urbanization, and widespread poverty in the mountainous regions. Food and nutritional insecurity remains a serious challenge in the HKH region; more than 30% of the population suffers from food insecurity and around 50% face some form of malnutrition, with women and children particularly vulnerable.

The ministerial declaration recognizes and supports the <u>HKH Call to Action</u>, which was drafted through a consultative process in all eight HKH countries based on the key findings of the HKH Assessment. This process aimed to jointly identify and develop a roadmap towards a more prosperous, healthy, peaceful, and resilient HKH region, for the 240 million people living in mountains and hills, and the 1.9 billion people living in the mountains and river basins downstream. Country-specific actions and solutions were identified during the consultations and six urgent actions were tailored at the local, national, and regional levels, generating a roadmap for collective ownership by the eight countries and actions at multiple scales.

Dr. Basantha Raj Shreshta Director , Strategic Cooperation E-mail: <u>Basanta.Shrestha@icimod.org</u>

GADRI Annual Report — Asia

Hindu Kush Himalaya Ministerial Mountain Summit 2020



New Climate Services Initiative

This new initiative focuses on catering to information needs of HKH individuals and institutions to anticipate and manage climate-related shocks and opportunities effectively. It builds on emerging weather and climate modelling facilities, information dissemination platforms and will focus on strengthening both regional development of weather and climate services and nationally by supporting improved capacity and capability in the HKH countries. Since ICIMOD facilitates the implementation of the Global Framework for Climate Services (GFCS) within the HKH region, it aims to strengthen the institutional and technical capacities of various stakeholders, particularly to improve the generation, processing, and use of climate services and co-develop appropriate solutions. ICIMOD thus provides a regional platform to facilitate knowledge sharing and cooperation on science and data; and provides opportunities for collating, curating, and sharing data for improved climate services.

DRR-related new ICIMOD publications in 2020:

- Landslide development within 3 years after the 2015 Mw 7.8 Gorkha Earthquake, Nepal
- Application of geospatial technologies in developing a dynamic landslide early warning system in a humanitarian context: the Rohingya refugee crisis in Cox's Bazar, Bangladesh
 - Flood inundation mapping- Kerala 2018; harnessing the power of SAR, automatic detection method and Google Earth Engine
- <u>Methodology for future flood assessment in terms</u> of economic damage: Development and application

for a case study in Nepal

- Flood risk assessment in the Kosi megafan using multi-criteria decision analysis: A hydrogeomorphic approach
- <u>Adapting to urban flooding: a case of two cities in</u> <u>South Asia</u>
- <u>Reaching the most vulnerable: Community-based</u>
 <u>flood early warning system (CBFEWS)</u>
- <u>Risks of glaciers lakes outburst flood along China</u>
 <u>Pakistan economic corridor</u>
- <u>Distribution of glacial lakes in Afghanistan and</u> observed changes (1990–2015)
- Inventory of glacial lakes and identification of potentially dangerous glacial lakes in the Koshi, Gandaki, and Karnali river basins of Nepal, the Tibet Autonomous Region of China, and India
- <u>Proceedings of the Koshi Disaster Risk Reduction</u> <u>Knowledge Hub Nepal country consultation:</u> <u>Building a resilient Koshi basin</u>
- <u>Proceedings of the Koshi Disaster Risk Reduction</u> <u>Knowledge Hub: Building a resilient Koshi basin –</u> <u>India country consultation</u>
- Proceedings of the regional knowledge forum on drought: Earth observation and climate services for food security and agricultural decision making in South and Southeast Asia
- <u>Proceedings of the regional knowledge forum on</u> early warning for floods and high-impact weather events



German University of Technology, Oman

https://www.gutech.edu.om/

Despite restrictions due to the pandemic Prof. Holzbecher and Dr. Hadidi continued with ongoing research and publication during 2020. Prof. Holzbecher participated at the 5th International Symposium on Flash Floods in Wadi Systems (ISFF5) held at Kyoto University, on February 25-28. In the preparation phase together with Dr. Hadidi he was involved in reviewing contributions to the symposium. His oral presentation entitled 'On Watershed Delineation for Flood Modelling in Lowlands' gave important clues about various delineations methods. He was also chosen as member of the Scientific Committee for the Student & Young Researchers Award, offered to young participants.

During his stay in Kyoto Prof. Holzbecher availed himself of the opportunity to participate at the GADRI 3rd Open Discussion Forum 'Changing Expectations of Natural Hazarda: Lessons from Recent Disasters', on February 26th. At the campus in Oman the team of Prof. Holzbecher continued work on flood tracing at in an experimental trench on GUtech campus. Two experiments with an artificial flooding were conducted, on November 29th and December 1st. Several sensors were installed in the soil below the trench, recording saturation, temperature and salinity during the experiment. The flow was measured by V-notches at the inlet and outlet of the trench. Students participated measuring water level and other parameters in the flowing water (see Figure 1).

Several contributions were finalized for journal and book publications.

- Hadidi A., Holzbecher E., Molenaar R., Flood mapping in face of rapid urbanization: a case study of wadi Majraf-Manumah, Muscat, Sultanate of Oman, Urban Water Journal, Vol. 17, No. 5, published online: 10.1080/1573062X.2020.1713172
- Holzbecher E., Hadidi A., Volp N.D., de Koning J., Al Badi H., Al Khatri A., Al Barwani A., Advanced Tools for Flood Management: An Early Warning System for Arid and Semi-Arid Regions, in: Sumi T., Kantoush S., Saber M. (eds), Wadi Flash Floods, Springer Publ., to appear
- Holzbecher E., Hadidi A., Sediment Transport in Shallow Waters as a Multiphysics Approach, in: Sumi T., Kantoush S., Saber M. (eds), Wadi Flash Floods, Springer Publ., to appear



Prof. Ekkehard Holzbecher

E-mail: Ekkehard.holzbecher@gutech.edu.om



Figure 1: Students participating in the field at the experimental trench on GUtech campus





CUrW Centre for Urban Water, Sri Lanka

https://www.curwsl.org/



During the year concluded an extensive report on the damage assessment on past and future flood scenarios.

Introduction and the structure of the report

1.1. Introduction to the damage assessment report

This report will explain the methods adopted by the Centre for Urban Water (CUrW) for the loss estimations for the simulated past and future flood scenarios. The losses will generally occur in the following aspects.

- Structural damage for buildings (Damages to the building structural elements such as walls/ roof)
- Content damage for buildings (Damages to the things inside the building such as sofas/ television/refrigerator)
- Damages to the economic activities (Damages occur from not conducting the economic activities such as interruptions to businesses etc.)
- Damages to the prominent infrastructure (such as bridges, roads, culverts, telephone connection points and poles, electrical infrastructure, flood protection structures etc.)
- Damages to the vehicles

Expenditure for relief (cost borne for the relief requirements of the flood affected people, which is usually born by the relevant governmental authorities such as Disaster Management Centre, National Disaster Relief Services Centre. Municipal councils, Urban Councils and **Divisional Secretariats**)

There are more types of damages that can be seen in a disaster, which are not easily captured by a physical property, such as the value of a (lost) human life and the extent of a disease outbreak which is due to the cascading effect of the flood event.

Currently, CUrW adopts damage functions prepared for the structural damages and the content damages, which were prepared based on the field surveys carried out by the internal staff of CUrW, in order to calculate the respective damages. At the same time, CUrW seeks opportunities to develop relevant damage curves for the other types of the aforementioned damage categories, through possible partnerships, methodologies and workarounds.

1.2. Structure of the report The rest of the report will initially explain the concept behind damage assessment, the methodology adopted for the calculation damage and the structural development of the damage curves for the damages, the methodology structural of development of the content damage functions, computational methods for the damage calculation and how CUrW has adopted rapid calculation methodologies for the damage assessments.

> Prof. Srikantha Herath Director



E-mail: herath.unu@gmail.com

2. Damage assessment-concept

2.1. Introduction Flood damages are assessed considering the flood hazard, exposure of the assets (buildings in this case) and the vulnerability of the exposed structures, by the following formula.

Here, the flood hazard is expressed by the flood inundation maps, which are often the results of the flood simulation exercises. Flood inundation maps for a particular flood scenario produce two important information: flood extent (area of inundation) and the flood depth at the inundated locations.

Exposure is the placement of the assets, buildings in this case (if the people at risk is concerned, the exposure would be the peoples' locations). Alongside, the building properties are considered in this stage such as structural properties for the structural damage calculation and the building use categories for the content damage calculations. There are five structural damage categories and nine building use categories considered in assessing damages in this study, as mentioned in the Section 3. These exposure maps are available in the form of vectors (shapefiles), having attributes of building structural fabrication and the building use, for each of the individual buildings.

Vulnerability is contextualized by the vulnerability (damage) functions and the base damage values for each of the building exposure category as discussed in section 3. These functions can be modelled in the Geographic Information System (GIS) modelling software, in order to calculate the damage for a given flood. Figure 1 demonstrates the concepts of hazard and exposure, where the

flood map (hazard) is

with

the

overlaid

floods.

3.

for

Since

methodology of derivation of the damage curves and many more information is presented in the aforementioned study, only a summary of the methodology will be explained under this section. The full paper is annexed to this report at Annex 7.1. 3.1.

Data collection

For this study, data is collected as a questionnaire survey in the flood affected areas for the recent flood events. There have been 297 respondents. who are mainly adults who have a clear memory of the recent flood events. Data on the replacement cost and the repair cost of the damaged structural items were collected in this survey, alongside with the flood depths and the type of the building in the relevant flood event.

The basic types of the buildings are taken as (A) Unreinforced masonry bearing walls, (B) Concrete frame with unreinforced masonry fill walls, (C) Wooden structures, (D) Commercial buildings as identified by the World Agency of Planetary Monitoring and Earthquake Risk Reduction (WAPMERR) and as documented by United Nations office of Disaster Risk Reduction (UNISDR). Here, it is assumed that the commercial buildings are built with concrete frames and unreinforced masonry walls as well, however the finishes and the furnishes would be different from the general residential buildings. Furthermore, one more building category was identified as (E) Watta, in order to comply to the local conditions. The category Watta usually contain densely populated dwelling units often made with temporary building materials or with unreinforced masonry bearing

Appl Geomat





National Center for Research on Earthquake Engineering (NCREE), Chinese Taipei

https://www.ncree.org/



The Vertical Addition of the Taipei Research Building of the National Center for Research on Earthquake Engineering

Preparations began for the National Center for Research on Earthquake Engineering (NCREE) Taipei research building and the large-scale structural laboratory in March 1990. The ground breaking started in August 1993, and the building use permit was obtained in December 1997. The original research building consisted of six levels above ground along with a basement level. After the official opening of NCREE, to meet the needs of earthquake disaster prevention research and applications, business increased dramatically, the number of staff in NCREE increased from 24 to more than 200 people. Fortunately, the founding director, Professor Chau-Shioung Yeh and his team foresaw the future growth of NCREE and designed the foundation and structure based on the standards for 12-level reinforced concrete (RC) buildings, allowing for the possibility of future additions to the building.

After understanding the reasons and preliminary ideas for the vertical addition of the research building, the president of Ruentex Group, Yen-Liang Yin agreed to donate the vertical addition project. The assessment of the vertical addition suggested that an additional steel structure design could be added up to the thirteenth floor. In addition, the vertical addition project adopted the NCREE's patented buckling-restrained braces and steel panel dampers. Donations of velocitydependent dampers were also received from the US Taylor Devices and Sinodynamics Enterprise, KYB from Japan, and the Well Link Industry from Taiwan, allowing the NCREE research building to various he one that integrates seismic technologies. The construction of the extended NCREE research building was finally started on October 23, 2019, with the topping out ceremony on May 27, 2020. On November 9, 2020, the construction was officially completed (Fig. 1) and the opening ceremony was held (Fig. 2). The extended building responds to three visions as follows:

- (1) Research space: a comfortable research environment and office space is provided for colleagues of the NCREE, the Department of Civil Engineering, National Taiwan University (NTU), and the NCREE-NTUCE Joint Artificial Intelligence Research Center.
- (2) Technology display: dampers, seismically isolated raised floor, seismic resistant ceiling and other smart disaster related prevention technologies are installed on-site for display in the research building, and the exhibition space for future research results of NCREE and the NTU Department of Civil Engineering is also provided. The venue is expected to be an exchange center for international earthquake engineering disaster prevention and mitigation technology.
- (3) Experimental specimen: the extended building itself is a large specimen. The installed multiple sensors will monitor the structure and the immediate response of key facilities, which is valuable to verify the effectiveness and accuracy of NCREE's research results in the future.

Prof. Shyh-Jiann Hwang Director-General



E-mail: sjhwang@ncree.narl.org.tw
Fig. 2. The opening ceremony was hosted by Dr. Chung-Ming Kuan (President of NTU, left), Dr. Kuang-Chong Wu (President of NARLabs, center) and Dr. Yen-Liang Yin (President of the Ruentex Group, right).



Service platform of earthquake engineering for offshore wind turbine and multi-axial seismic test

National Center for Research on Earthquake Engineering (NCREE) established the offshore wind turbine (OWT) support structure and multi-axial seismic test (MAST) system platform in the Tainan Laboratory. With the outstanding facilities, NCREE is capable of implementing dynamic test on larger scale OWT supporting structure model and seabed ground model to verify the dynamic response and soil-structure interaction of OWT structures. Furthermore, in order to maintain the functionality of wind turbine under seismic hazard, the seismic resistance of the critical parts needs to be testified as well. The table motion of the MAST system equipped

in Tainan laboratory is capable of reproducing floor response, so that it's suitable for testifying nonstructural components. NCREE provides both hardware and software services to develop experimental technique for OWT supporting structure, and will collaborate with research facilities, industries, and the government to establish the domestic design guideline of the supporting structure and critical parts of the wind turbines.



Fig. 3. Multi-axial seismic test (MAST) system

GADRI Annual Report 2020-73

GADRI Annual Report — Asia



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

https://www.ncdr.nat.gov.tw/



2020 International Training Workshop - Youth Leadership Camp on Disaster Risk Management

Through simulation hands-on scenario to operations, the National Science and Technology Center for Disaster Reduction (NCDR), the Tzu Chi Foundation (Tzu Chi) and International Cooperation and Development Fund (Taiwan ICDF) collaborate to organize the 2020 International Training Workshop - Youth Leadership Camp on Disaster Risk Management (2020 ITW) focusing on capacity building for potential your leaders in disaster preparedness.

There were 82 participants who study in diverse fields of disciplines in Taiwan are originally coming from 21 countries, including Belize, Bangladesh, Colombia, France, Guatemala, Haiti, Honduran, Hungary, India, Indonesia, Malaysia, Myanmar, Nepal, The Philippines, Paraguay, Poland, St Vincent and Grenadines, South African, Turkey, Taiwan and Viet Nam.

The expected goals of the 4-day training program are aimed at participants' capacity building on: 1) Understanding of disasters from impacts to operations, 2) Exploring the needs of the affected people, 3) Picturing the "situation awareness" after a scenario earthquake which could trigger a series of aftermaths, 4) learning decision making to deliver feasible solutions and allocate resources for coping with challenges, 5) Streamlining the data, photo and information collected for situation assessment on cross-cutting issues for integrated communications, 6) Mobilizing the tangible and intangible resources for emergency preparedness, 7) Integrating team efforts on the scenario simulation for operations, and 8) Delivering effective and efficient operation.

The participants tried to operate online disaster information systems that designed and developed by NCDR, to know how to integrate multiple information for emergency decision making as well as applying these systems to develop an overview of affected area. All participants were divided into 6 teams to conduct assigned missions which reflect possible difficulties or situations amid each phase of a developing disaster.

> Ms. Kiri Chan Assistant Researcher E-mail: khc@ncdr.nat.gov.tw



Publish the "Plant Back Better Toolkit"

Based on the APEC project of "Capacity Building and Emergency Preparedness for Sustainable Development at Agricultural Communities through "Plant Back Better" (PBB) Initiatives" (Jan 2018 ~ Dec 2019) that was implemented by NCDR and APEC Emergency Preparedness Capacity Building Center (EPCC).

The team has been working with the Philippines based on public private partnership to conduct a pilot project - the Best Practice at Barangay Lanit, Jaro Iloilo City, the Philippines, and published the "Plant Back Better Toolkit" in 2020. More information about Plant Back Better, please refer to:

APEC Emergency Preparedness Capacity Building Center:

https://www.apec-epcc.org/programs-and-events/ programs/plant-back-better-pbb/





APEC Project: EPWG 03 2017A d by Li, Yanling Lee, Yi-Ching Liu, Ke-Hui Chen, Chi-Ling Ch y Preparedness Capacity Building Center ncdr@gmail.com sophiancdr@gmail.com

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2020 ITW function teams worked for scenario simulation



GADRI Annual Report — Asia

Japan







Japan



Japan and Oceania

Research Center for Potential Development of Disaster Prevention, Akita University

Asian Disaster Reduction Center (ADRC)

Center for Disaster Management Informatics Research, Ehime University

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

International Consortium on Landslides (ICL)

Crisis & Security Management Research Center, Kagawa University

Research and Education Center for Natural Hazards, Kagoshima University

Institute of Nature and Environmental Technology, Kanazawa University

Research Center for Social Safety Science, Faculty of Safety Science, Kansai University

Research and Development Center of Fire and Environmental Safety (RDFES), The University of Kita Kyushu

Research Center for Urban Safety and Security (RCUSS), Kobe University

Implementation Research and Education System Center for Reducing Disaster Risk (IRESC), Kumamoto University

Institute of Disaster Area Revitalization, Regrowth and Governance (IDiARRG), Research Institute for Disaster Area Reconstruction, Kwansei Gakuin University

Disaster Prevention Research Institute (DPRI), Kyoto University

Graduate School of Global Environmental Studies (GSGES), Kyoto University

Disaster Risk Reduction Research Center, Faculty of Engineering, Kyushu University

Research Institute for Applied Mechanics (RIAM), Kyushu University

Center of Environmental Science and Disaster Mitigation for Advanced Research (CEDAR), Muroran Institute of Technology

Advanced Disaster Prevention Engineering Center (ADPEC), Nagoya Institute of Technology

Disaster Mitigation Research Center (DMRC), Nagoya University

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

Research Institute for Natural Hazards & Disaster Recovery, Niigata University

Research Initiative for Natural Disaster Prevention of Oil and Gas Spill in Industrial Parks, Graduate School of Engineering, Osaka University

Graduate School of Human Sciences, Faculty of Human Sciences, Osaka University

Frontier Research Center for Natural Disaster Mitigation, Ritsumeikan University

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

Disaster Prevention Research Center for Island Regions, University of the Ryukyus

International Research Institute of Disaster Science (IRIDeS), Tohoku University

Center for Urban Earthquake Engineering (CUEE), Tokyo Institute of Technology

Earthquake Research Institute (ERI), The University of Tokyo







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

http://www.icharm.pwri.go.jp/

International Centre for Water Hazard and Risk Management (ICHARM) shared excerpts of a booklet that was completed during 2020. The booklet on Collection of Critical Situations during Flood Emergency Response was by Miho Ohara and Masakazu Fujikane.

The International Centre for Water Hazard and Risk Management (ICHARM) under the auspices of published a booklet entitled UNESCO has "Collection of Critical Situations during Flood Emergency Response," aiming to improve the emergency response capacities local of governments for more effective management of flood disasters. The collection consists of the main content, "local government response," and an appendix, "local government response under COVID-19." It is downloadable in PDF file format on website (https://www.pwri.go.jp/icharm/ the special_topic/20200625_flood_response_collection_ e.html).

Several local governments in Japan have recently published after-action review reports (post-disaster reports), in which they review their emergency response during a disaster and identify lessons to improve their efforts based on their disaster experience. These reports include plenty of wise feedback from personnel members who offer their contrition and improvement proposals about cases where the response to a disaster did not go well, of which many of the case study examples serve as advice to other local governments on how to combat disasters. Indeed, there are reports of similar critical situations experienced by numerous local governments. And, many of the other affected local governments would doubtless express regret if they did not know about these cases in advance.

Defining critical situations in which local government officers have a hard time making sensible decisions because they panic, don't know what to do, are confused or in dilemma, etc., during an emergency response effort, ICHARM collected typical critical situations from the review reports of past flood disasters in Japan. As a result, some 500 cases offering instructive lessons to be learned were collected from the 2,000 or so pages in the 30 documents read. The booklet features 28 typical cases of critical situations, each printed on a twopage spread with lessons in terms of "Facilities,"

"Procedure," and "Skill" to assist local government officers in taking more practical measures.

In emergency response during a flood disaster amid the COVID-19 crisis, it is important to conduct infection prevention measures in guiding residents' evacuation and admitting them to evacuation centers, in addition to the measures taken in conventional flood disaster response. To this end, the "Appendix for local government response under COVID-19" describes 28 possible critical situations and necessary countermeasures in case of a flood disaster under the plague in terms of "Facilities," "Procedure," "Public relations" and "During disaster response." Here, the classification of "Public relations" is used instead of "Skill" raised in the main content "local government response" as fomenting the "Skill" requires time under the urgent risks of flooding under COVID-19. Nevertheless, continuing to push the "public relations" perspective will help to foment "human skills". The appendix refers to several guidelines issued by the Cabinet Office and the Ministry of Health, Labour and Welfare of Japan, and "A guideline for the creation of countermeasures against flood disasters during a pandemic situation (COVID-19)", which was coauthored by Associate Professor KOYAMA Maki of Gifu University and Professor KANBARA Sakiko of the University of Kochi.

Since flood emergency response under COVID-19 is new experience for local governments, this publication aims to provide some hints for them to plan necessary countermeasures considering their needs and situations, including the prevalence of the disease among the residents.

We hope that this publication can help local government officers to cope with disasters, not as something distant from their reality but as their immediate problem, and enhance the response capacity of their organizations against disasters.



E-mail: koike@pwri.go.jp



Figure 1 Cover pages of the main content and appendix



Figure 2 Sample page of the appendix on local government response under COVID-19



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

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



Fast permeability of the firefighting agent (left) relative to water (right)

plants. The second presentation was regarding the negative effects of the use of firefighting foams on the investigation of the origin and cause of fire. Both presentations suggested that the negative effects of the soap-based firefighting foam were small both on the harvesting of agricultural products and the fire investigation the country.

The Center for Disaster Countermeasures has disseminating knowledge involved in on the environmentally friendly firefighting foam that was developed by a joint venture of Kitakyushu City Government, private companies, and the University of Kitakyushu. This year, our center held a one-day seminar on this firefighting foam on Dec 19 and 25 local firefighters participated in the event. Knowledge on the scientific mechanism of extinguishing fire, physical properties of this soap-based firefighting foam, ecological impacts when the foam was released to the environment and skills for effective use of the foam were shared among the participants.

The seminar started at the main factory of Shabondama Soap Co. which was the producer of the firefighting foam. The participants joined a guided tour of the factory and then conducted an experiment that showed improved permeability of the firefighting foam relative to water. Then the members moved to Kitakyushu Science and Research Park and Prof. UEZU Kazuya gave a lecture on the mechanism of extinguishing fire and how this firefighting foam improved the efficiency of heat removal. Prof. KAWANO Tomonori gave the next lecture on the methods for measuring ecological impacts of firefighting agents and the results from his research. These lectures were followed by two presentations by the firefighters of the Kitakyushu Fire and Disaster Management Bureau. The first presentation was about the research results that compared effects of spraying different types of firefighting foams at tomato and egg



Lecture on physical characteristics of the firefighting foam by Prof. Uezu

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



Disaster Prevention Research Institute (DPRI) Kyoto University, Japan http://www.dpri.kyoto-u.ac.jp/en/



Typhoon Disasters in Japan in 2019 By Dr. Tetsuya Takemi

In recent years, East Asia and Japan has suffered from severe damages due to heavy rainfalls and typhoons; e.g., the heavy rainfall in northern Kyushu in July 2017, the heavy rainfall in July 2018, the heavy rainfall due to Typhoon Hagibis (2019), and the rainfall event in 2020. After these events, In July 2020, heavy rainfall occurred throughout the Japanese islands, especially in the western and central parts of Japan (figure below, showing the total rainfall amount during the first 10 days in July 2020) The record-breaking rainfall caused widespread flooding and landslides, leading to severe damages. A special research program on the disasters spawned by the heavy rainfall that occurred in Kyushu, in the western part of Japan, has been launched, funded by Japan Society for Promotion of Sciences. A number of scientists who belong to the GADRI member institutes in Japan has joined this special program, and has been conducting investigations on the meteorological factors for the occurrence of this heavy rainfall event,

the mechanisms and computational modeling of landslides, the mechanisms for the occurrence of flooding, analysis of damages to houses, and the evacuation behaviors during the event. The recordbreaking rainfall amount was due to significant amount of moisture content in the atmosphere, with very saturated and unstable conditions, which was formed along the Baiu front. The study will be summarized into a report published in March 2021. Furthermore, the impacts of climate change on the occurrence of recent heavy rainfall events were investigated with the use of dynamical downscaling approach, showing the increase of rainfall amounts due to the increase in the moisture content. Lessons learnt from the findings of the special research program on the heavy rainfall event in July 2020 would contribute to increasing people's awareness of consequences of extreme weather events and to climate change adaptation and mitigation strategy.





Dr. Tetsuya Takemi

E-mail: takemi@storm.dpri.kyoto-u.ac.jp



Disaster Prevention Research Institute (DPRI) Kyoto University, Japan http://www.dpri.kyoto-u.ac.jp/en/



2019 DPRI Annual Meeting, Kyoto University, Japan 20 to 21February 2020

Prof. Andrew Collins - Honoured with the 6th DPRI Award Kyoto University, Japan



Prof. Andrew Collins, Chair of the GADRI Board of Directors from the Northumbria University, UK was recognized as the recipient of the 6th DPRI Award for Outstanding Contributions to Research and Education The Award was presented by Prof. Manabu Hashimoto, Director, DPRI, Kyoto University on 20th February 2020 during the DPRI Annual Meeting held at DPRI, Obaku Plaza, Kyoto, Japan between 20th to 21st of February 2020. To commemorate the occasion, Prof. Collins delivered a presentation on the "Progress and Prospect for *Action Data* in People Centred Disaster Risk Reduction and Resilience Building".

Further details can be found at GADRI homepage. http://gadri.net/ resources/2020/03/test.html







Disaster Prevention Research Institute (DPRI) Kyoto University, Japan http://www.dpri.kyoto-u.ac.jp/en/



GADRI 3rd Open Discussion Forum Changing Expectations of Natural Hazards: Lessons from Recent Disasters

DPRI, Kyoto University, Kyoto, Japan on 26 February 2020

The GADRI 3rd Open Discussion Forum took place at the Collaborative Research Hub-Conference Hall 301, Disaster Prevention Research Institute (DPRI), Kyoto University, Uji Campus, Kyoto, Japan on 26th February 2020.

The Open Discussion Forum is organized:

- to introduce GADRI activities, and the members of GADRI Board of Directors
- to facilitate discussion between GA-DRI members and important stakeholders in disaster risk reduction; and
- to find directions for GADRI to proceed in the next few years and provide opportunity for participants to interact with the presenters.

The 3rd Open Discussion Forum focussed on the "Changing Expectations of Natural Hazards: Lessons from Recent Disasters". Theme of the session discussed about changing hazards –and characterised briefly what are the changes and what have not changed over the last decade in a particular area. Are these changes caused due to actual hazard changing or due to societal fact? What sort of background is behind the changes that we see now and we expect in





the next few decades.

Speakers within GADRI and DPRI presented their views on the subject.

- Prof. Andrew Collins, Leader, DDN, Northumbria University, UK talked on Revisiting Infectious Disease Risk Reduction in the Context of Current Emergencies;
- Prof. Gretchen Kalonji, Dean, Institute for Disaster Management and Reconstruction (IDMR), Sichuan University, China presented on the Disaster Health Sciences at IDMR – Background and News from the Front in Hubei;
- Prof. Eiichi Nakakita, DPRI, Kyoto University presented on the Perspectives on Disaster Related Climate Change Impact Assessment and Adaptation in Japan (II);
- Mr. Kazuhiko Fukami, International Centre for Water Hazard and Risk Management (ICHARM) under the auspices of UNESCO, Japan talked on the Japanese Policy Evolution Responding to the Recent Catastrophic Floods.

- Dr. Tom de Groeve, European Commission, Joint Research Centre (EC-JRC), Italy Understanding Risk: the key to preparedness and crisis management; and
- Prof. Charles Scawthorn, PEER, University of California, Berkeley, USA presentation was on the Wildland-Urban Fire—the risk and its mitigation (online).
- Prof. Jim Mori, DPRI, Kyoto University, on earthquakes and volcanoes .



The Panel session covered the following topics:

- On infectious disease risks if we focus on the hazard, the exposure factors are to do with places and with your vulnerabilities including the biological susceptibility to the hazards. There are two dynamics to the situation: one is the physical proximity to the hazard and the other is the susceptibility to the hazard. The change in the hazard pathogen, is a result of the change in its environment. What we do know is that this is something which we could recognize as an extensive risk. Because as you can see what happens in one part of the world immediately is an issue to another part of the world as well. It is completely interconnected and could be regarded as extensive risk.
- On adaptation adaptation requires populations to move around but then it increases multi-risk levels as well – risk to more marginal environments which are more prone to flooding, more prone to perhaps nutritional insecurities, and that can raise the vulnerability levels. If we think about multi hazards, as well as multi risks, and the one which is usually left out and which is actually critical in looking at is the infectious disease risk, particular the old infectious diseases; what we call endemic diseases - is often associated with areas with lot of conflict. Another factor is conflict risks reduction and other forms of disaster risk reduction which could work together. Ultimately vulnerability seems to be the biggest risk we all face.

- On urbanization urbanization enhance vulnerability – for example increased intensity in rainfall and urban flooding issues which are quite prominent in the recent years around the world. Not only the fact that the urbanization is increasing, this exacerbated by massive infrastructure development which in turn leads to poor planning or lack of insufficient attention to planning or resilience against urban flooding. That could be significant in urban areas.
- On health risks, one of the huge health risks is the air pollution especially in industrialized countries. It is a human induced risk. It is having an horrendous impact on many aspects of human health especially for children. If that problem is not drastically dealt with more effectively, there could be another looming health disaster.
- In the area flood management and especially in this case dam construction, etc. - during the past few decades, we have encountered with many changes. Few factors that have greatly contributed are the limitation of budget and human resources. With the Internet, people have easy access to information and communication among the researchers and decision-makers have become scarce especially when decisions are concerning multistakeholders and multi-disciplinaries. In the past, if it is a problem in engineering, a decision could be reached just by consulting the specialist of river management or river engineering. Now with administrations, there are so many limitations and many administrative constraints. Another factor is communication with the local people who are residing in the areas affected by the disaster and it is important to understand the situation from their standpoint. They do have much important information that are useful for research too. Global initiatives such as the Sendai Framework, therefore, are needed to grip on such communications and share data.







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- Regarding the changing nature of disaster and hazards by rainfall – there seen been serious hazardous disasters caused by heavy rainfall. It

has seen gradual or sometime rapid changes due to climate change. For example, we have experienced and seen an increase in rainfall intensity, increase in total volume, length and amounts which in turn induce inundation in larger scale. Future projections of heavy rainfall follow the characteristics of global warming simulations.

- Hazards are not changing much but the rest of the situations have changed - the risk is being in the intersection of natural hazards, society, and technology or the natural built social environment. Global warming may be changing all that and certainly this, senses, severity in frequency of probable cyclones and probably going to increase.
- The world population is increasing and it will peak later this century. Increased population extending into flood prone areas or wildlife interface, volcanic areas create a problem. Rapid urbanization, and people moving and farmers becoming industrialized, thereby creating voice for labourers. Then they cannot live on the farms, hence move to cities, and cause an enormous increase in towns.





- On changing expectations of natural hazards; in a certain way it is not because of the hazard itself that has change, but also due to climate change. Perhaps climate change is aggravating certain natural hazards. But a lot of it depends on more exposure, complicity, interconnectedness and interdependent, including social media and social network and connectivity. For example, with the social media, people are more aware of what is happening everywhere. It is easy to spread true or false panic, as we have seen now about the corona virus.
- Another important fact is that mitigation does pay. It is essential to prepare for design and beyond. One of the issues is resources. Decision making is slow and it will be - as may science. These issues are all very important.
- This all comes down to understanding the risks risks is what we are looking at and what can affect and it is a combination of the hazard, vulnerability, and exposure. We need to move regulations for example, require the governments to disclose information to its citizens although we may not have all the answers. How can we systematically extract important knowledge from

the type of events we have encountered?

- Within the GADRI community, if it is possible to find a mechanism to extract such kind of information, even as an abstract, and collect data on the type of event, for example how it happened, what was implemented, what are the successes and what are the failures, lessons learned, etc. and share among members.
- GADRI could play an important global role by having a more exclusive focus on science policy issues that are having to deal with disaster risk reduction. The challenge would be how to make the long, detailed papers on science policy lessons bite size and comprehensible. It is an interesting challenge and GADRI could really make a difference.













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



http://www.r-dmuch.jp/en/



Pic. 1 The presenters, moderators, and staffs of the webinar



Pic.2 The presenters, commentators, and moderators of the workshop

The Institute of Disaster Mitigation for Urban Cultural Heritage at Ritsumeikan University (R-DMUCH) has been working and focusing on organizing international symposiums, training, researches, information dissemination, and building both scientific and practitioner networks, in the field of disaster risk management and of disaster mitigation of cultural heritage.

The "UNESCO Chair International Training Course on Disaster Risk Management of Cultural Heritage" (ITC) started from 2006 as one of our important educational activities. Until 2019, 152 professionals from 62 countries have been trained through this annual course.

Unfortunately, "on site" ITC 2020 is canceled because of COVID-19 and as the alternative projects, we implemented Webinar series "Capacity Building for Disaster Risk Management of Cultural Heritage: Challenges and Opportunities in Post COVID Times" on 27th June and 4th July 2020, and we conducted the Workshop on "Good Practices for Disaster Risk Management of Cultural Heritage" for our former ITC participants through 8th to 10th October 2020.

The webinar series aimed to discuss the future directions of cultural heritage management through presentations by resource persons of ITC. Webinar was structured with two parts. The first webinar focused on "Disaster mitigation and Preparedness" and the second webinar focused on "Disaster response and recovery". There were more than one hundred participants in each webinar.

The workshop aimed to showcase various projects on disaster risk management of cultural heritage undertaken by the former participants after ITC in every year. It also aimed to review the activities of

ITC since 2006 and worked towards building a stronger network among the ITC resource persons and the former ITC participants. The six presenters and one Exemplary presenter were selected through the review of the 27 applications that were submitted. Two presenters were selected for the Best Practice Award. Approximately 150 persons participated in the workshop days. A video message from Prof. Kenzo Toki, a founding father of ITC, and video messages of former ITC participants memories of the ITC program were shared during the workshop. The workshop was very successful in providing us very useful feedback on the achievements as well as needs that we aim to address through future ITC initiatives in coming years.

The webinar series and the workshop were organized through close collaboration with ICCROM and with support of ICOM, ICOMOS/ICORP and various national and international organizations. We will continue this outreach activities and dissemination of our research outcomes to the international society.

The details of the webinar series and workshop, and Call for application for the ITC2021 will be announced at our website:

http://www.r-dmuch.jp/en/project/itc.html



This vear also Ritsumeikan University cooperated with the Japanese experts. So, the trainees could learn a study of risk management for both immovable and movable cultural heritage from last disasters in Japan and comprehensive countermeasures and approaches. As the details of the course, the trainees learned the disaster risk management of cultural heritage from the various kind of disasters, and the emergency response for movable cultural heritage through the lectures in the institute, the practical exercises in the Kyoto National Museum, and site visits on the temples and the Ponto-cho district in Kyoto. In addition, they learned about the flood disaster occurred in the Takeda, Asago-shi and Hirafuku, Sayo-cho and also a long-term recovery process in Kobe area from the Great Hanshin-Awaji (Kobe) Earthquake in 1995.

The training course is organized in cooperation with the UNESCO, ICCROM, ICOM, ICOMOS/ ICORP and relevant institutions of the government of Japan. We will continue this outreach activities and dissemination of our research outcomes to the international society.

Call for application for the ITC2020 will be announced at our website:

http://www.r-dmuch.jp/en/project/itc.html



A Site Visit to Kiyomizu-dera World Heritage Site, Kyoto





The mission of Earthquake Research Institute, the University of Tokyo, since its beginning in 1925, is to promote scientific research on earthquakes and volcanic eruptions and to develop methods for mitigating related disasters. To achieve this goal, about 80 faculty members with other staff of ERI conduct wide variety of research such as studies on the basis of geophysical observations in Japan and abroad, structure and dynamics of the Earth's interior which drive earthquakes and volcanic eruptions, multidisciplinary research of science and literature

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



<u>Seabed seismographs, pressure sensors to investigate conditions inside</u> <u>New Zealand's largest fault | Stuff.co.nz</u>

on historical earthquakes with Historiographical Institute, real-time delivery and analysis of large amount of seismic data using Science Information Network, earthquake hazard assessment by merging big data and high performance computation.

Regarding the international collaboration, ERI has signed agreements with about 20 foreign organizations, and conducts or participates collaborative research projects such as International Muography Cooperative Research Organization, Next generation Neutrino Science Organization, international marine geophysical observation networks such as Pacific Array. ERI invites foreign researchers as visiting faculty or researcher, educates graduate or internship students from countries outside Japan, and organizes international summer schools for both undergraduate and graduate students. Every year, more than 100 international researchers and students study in ERI.

Research activities during 2020, particularly those with domestic fieldwork or being conducted overseas , have been limited due to the current COVID-19 pandemic. However, we successfully deployed a seafloor geophysical observation network along the central part of Hikurangi subduction margin, the North Island of New Zealand in November 2020. The network consists of 10 ocean bottom seismometers from our institute, and 12 bottom pressure recorders from GNS Science, New Zealand. The Nankai and Hikurangi subduction margins show substantial similarities in seismogenic behaviors. Comparative studies between these subduction plate boundary zones will significantly improve our understanding of generation mechanisms of megathrust earthquakes. Our collaboration with New Zealand scientists also contributes to disaster mitigation programs in New Zealand. Our studies and results have been well introduced by an NPO, East Coast LAB (http:// eastcoastlab.org.nz), and coastal communities are becoming much more aware of the importance of preparing for earthquakes and tsunamis. The deployed ocean bottom seismometers will be recovered in 2021. We anticipate that our observations will reveal, for the first time, details of the offshore seismicity in the central part of the Hikurangi subduction margin.

Articles on NZ research activities:

https://www.eastcoastlab.org.nz/home/article/189/back -to-back-voyages-focus-on-hikurangi-subduction-zone-?t=featured&s=1



GADRI Annual Report — Oceania

Oceania

Australia	Fenner School of Environment & Society, Australian National University (ANU)
Australia	College of Health & Human Sciences, Charles Darwin University
Australia	Humanitarian, Emergency and Disaster Management, College of Indigenous Futures, Arts and Society, Charles Darwin University
Australia	Centre for Disaster Studies, College of Science and Engineering, James Cook 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





Centre for Disaster Studies (CDS) James Cook University, Australia https://www.jcu.edu.au/centre-for-disaster-studies

Consistent with the significant impacts of COVID-19 globally, the fieldwork/research and staffing capacity of the Centre for Disaster studies was limited in 2020. In adapting to new, changing, and challenging was environments, there а greater emphasis on applied research and expanding resilience approaches in teaching disaster management online.

With the early proliferation of the pandemic in the first half of 2020, the Centre undertook an online survey to assess Community Awareness of COVID-19 in Australia, to understand the levels of information awareness, access, preparedness, behavior, and impacts - with implications and recommendations for current and future pandemic planning. From over 1250 respondents an infographic of preliminary results was publicly released (via traditional and social media) with findings widely distributed to emergency services, health and community. Final results and analysis have been integrated into a book chapter that is currently in publication.

Reflecting the expansion and value of online learning the Centre was also recognised for its active contribution in the development and teaching of "Disaster Resilience for a Changing Climate Grand Challenge. A Queensland Virtual STEM Academy – Thuringowa High collaboration with Townsville City Council and James Cook University which was declared the 2020 Winner of the Resilient Australia National School Award. Book chapters published during this time reflect some of the more practical and socio-economic considerations of planning for disasters with a case study approach.

- Gurtner Y & King, D. (2021). "Travelling Safely in an Unsafe World – A Shared Responsibility" In Wilks, J., Pendergast, D., Leggatt, P., & Morgan, D. (Eds) *Tourist Health, Safety and Wellbeing in the New Normal.* Springer, New York, 2021
- Gurtner, Y & King, D (2021) "Socio-economic vulnerabilities to natural disasters and social justice" in Chaiechi, T (ED) Economic Effects of natural Disasters: Theoretical Foundations, Methods and Tools. Elservier https:// doi.org/10.1016/B978-0-12-817465-4.00029-7
- King, D & Gurtner, Y (2020) "Planning for Demographic Change and Population Loss: land use planning for demographic change after disasters in New Orleans, Christchurch and Innisfail" in Karacsonyi, D., Taylor, A. & Bird, D. (Eds) *Demography of Disasters: Impacts for Population and Place*. Springer https:// doi.org/10.1007/978-3-030-49920-4_6



E-mail: yetta.gurtner@jcu.edu.au



Thuringowa State High School National resilient Australia School Award







GNS Science New Zealand https://www.gns.cri.nz/

GNS Science is a New Zealand Government-owned research organisation that unlocks environmental, social, cultural, and economic benefits through its works across four science themes. They are -Natural Hazards and Risks; Environment and Climate, Energy Futures; and Land and Marine Geoscience. GNS Science employs 450 staff at five sites in New Zealand and we can draw on a heritage of 150 years of excellence in Earth sciences.

With New Zealand sitting astride an active plate boundary, GNS Science has a national leadership role for monitoring and research on the causes, risks, and impacts of geological hazards.

We have extensive scientific knowledge in Earth processes, and globally and nationally recognised expertise in hazard and risk modelling, forecasting socio-economic impacts of events, and system modelling of consequences and resilience options. We apply our social science capability to increase community resilience, improve risk communication and develop tools for hazard preparedness.

Natural hazards and their consequences are part of the 'DNA' of New Zealand. Increasingly the risks imposed by earthquakes, volcanoes, tsunami and landslides are compounded by weather events and the additional stresses of climate change. At the same time, the impacts of hazard events are intensifying through population growth, urbanisation, and business vulnerabilities of fast-moving consumer goods and just-in-time supply chains. Risk is increasing and New Zealand's ability to manage future impacts from natural hazards is being tested.

Through its GeoNet project, GNS Science operates a national network of instruments to monitor

earthquakes, tsunami, volcanoes, and landslides. This world-class operation is paired with our National Geohazards Monitoring Centre, which provides 24/7 active monitoring of New Zealand's geological hazards.

Our research aims to generate critical scientific knowledge for the benefit of New Zealand and drive its uptake and use to improve resilience to natural hazards at national, regional, business, community and individual levels. Our five outcome-oriented programmes span the full value chain of information, from underpinning knowledge to better understanding New Zealand's natural hazards, through to risk management options to help communities mitigate their destructive effects and advise on policy and regulation.

We are currently revising and updating our National Seismic Hazard Model which assesses the likelihood and strength of earthquake shaking occurring in various parts of New Zealand over given time spans. We are also part of a crossgovernment initiative that is deploying 12 DART buoys to the north and east of New Zealand. They are significantly boosting New Zealand's end-to-end arrangements for monitoring and detecting tsunamis and issuing warnings about them.

> Dr. Gill Jolly Director



E-mail: g.jolly@gns.cri.na

We are also developing the capability to forecast the likely location and size of earthquake and rainfall-induced landslides to provide rapid information for responding agencies and infrastructure operators.

For volcanoes, we are working with our university partners to assess a technique that uses computer analysis of volcanic earthquakes to assess the risk of an eruption. The technique could potentially be a useful addition to our volcano monitoring toolbox. The technique is not accurate enough yet to give a firm prediction of an eruption happening at a particular time, nor do it indicate the size or potential impact. But it remains under active evaluation



Screen shot from Dr. Gary Wilson's YouTube talk on the—The Ice cube at the bottom of the planter—TEDxScotBase—https://www.youtube.com/watch?v=rnKB7TNcmGI





Europe Africa



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 (UNWE)
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 University Berlin
Germany	Institute for Advanced Sustainability Studies (IASS)
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	GEM Foundation
Poland	The Main School of Fire (SGSP)
Slovakia	Faculty of Security Engineering, University of Zilina
Sweden	Stockholm Environment Institute (SEI)
Sweden	Risk and Crisis Research Centre (RCRC), 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	School of Business, Dept. Management, Innovation and Technology Division, University of Leicester
UK	Institute for Risk and Disaster Reduction (IRDR), University College of London
UK	Loughborough Water Engineering Group (LWEG), School of Architecture, Building and Civil Engineering, Loughborough University
UK	Global Disaster Resilience Centre, School of Art Design and Architecture, University of Huddersfield
UK	Disaster and Development Network (DDN), Department of Geography, Northumbria University
UK	Overseas Development Institute (ODI)
UK	Global Public Health, Public Health England (PHE)
UK	Contre for Disaster Resilience, University of Salford
	ersity

DCNA

Disaster Competence Network Austria (DCNA) Austria http://dcna.at/



2020 was marked by the COVID-19 pandemic where science, technology and innovation is playing an essential role. DCNA developed a repository of solutions to mitigate the crisis, which is accessible via website.

DCNA hosted in 2020 the Disaster Research Days (#DRD20). The event was organized virtually due to the Corona pandemic and was held as a webinar series, taking place from 13th to 22nd of October. Strengthening networking between the individual scientific disciplines and subject areas in disaster management was the central topic. National and international keynotes as well as talks on the topics of disaster risk, critical infrastructure, public health, floods, extreme weather situations and mass movements were given. The presentations were selected via a call for abstracts and will be provided in a book of abstracts.

About 300 people were registered for the online event.

Activities within the working groups were continued. Five groups were already established in 2018: (1) Mass movements and earthquakes, (2) Floods, (3) Extreme weather conditions, (4) Critical infrastructure and industrial hazards and (5) Socio-economic disaster aspects. Additionally, in 2020 a new working group started to work on (6) public health having a current focus on COVID-19. Again, two meetings (spring and winter) were organized in 2020 to develop research proposals, for networking and evolvement of new project consortia for open calls and to prepare contents and the modus for the DRDs.



Dr. Christian Resch E-mail: christian.resch@dcna.at DCNA is currently participating in several scientific projects covering topics from avalanche warning systems, supraregional radiological emergencies, evaluation of civil protection exercises, public warning systems to disaster robotics. An updated list of projects is available via the DCNA webpage: <u>https://www.dcna.at/index.php/de/</u>

The development of a new curriculum with involvement of four Austrian universities is under development "masters in public safety and security". Recently DCNA has 18 full members and 10 associated members. In 2020 the following ones joined the network: Stadt Innsbruck, Stadt Graz, RIOCOM, Medical University of Medical University of Graz, Innsbruck, University of Klagenfurt, University of Veterinary Medicine, Vienna, Technical University of Munich, SBA research.







University of National and World Economy (UNWE) Bulgaria

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

10TH INTERNATIONAL CONFERENCE ON APPLICATION OF INFORMATION AND COMMUNICATION TECHNOLOGY AND STATISTICS IN ECONOMY AND EDUCATION (ICAICTSEE 2020)



10th IFIP ICAICTSEE-2020 , University of National and World Economy, Sofia, Bulgaria, November 27 – 28th, 2020—<u>http://icaictsee.unwe.bg/</u>

The **SRCDRR** organized two conferences, which were conducted fully online due to the COVID-19 pandemic. Both conferences are officially registered by the International Federation for Information Processing (IFIP, <u>https://ifip.org/</u>).

The 10th Anniversary International Conference on Application of Information and Communication Technology and Statistics in Economy and Education (ICAICTSEE-2020), November 27 – 28th, 2020, UNWE, <u>http://</u> icaictsee.unwe.bg/. The conferences included topics, such as Business Information Systems, Big Data, Internet of Things, Cloud Computing, Mobile Computing, Software Engineering, Biomedicine, BI, AI, XR, etc. More than 75 papers were presented.



Prof. Dimiter Velev

Director

E-mail: dgvelev@unwe.bg

The 5th IFIP Conference on Information Technology in Disaster Risk Reduction (ITDRR 2020), December 3 – 4th, 2020, UNWE, http://itdrr.unwe.bg/. The conference included topics, such as: Advanced ICT and disasters, Big Data and disasters, Climate change and disaster risk, Communications in disasters, Disaster information processing, Disaster prevention and mitigation, Disaster relief, resilience and research, Hazard vulnerability and risk mapping, etc. The Program Committee received 49 paper submissions, out of which 25 research papers were finally accepted and presented at the conference. The ITDRR-2020 Proceedings will be published IFIP AICT series by Springer, as the previous four volumes.

Two **SCRDRR** members were guest editors in the Special Issue on "*IT in Disaster Risk Reduction – Issues and Challenges*" in Information System Frontiers *-A Journal of Research and Innovation,* Springer, <u>http://</u> <u>siitdrr.unwe.bg/</u>. The journal received 22 submissions and 9 papers were accepted to the special issue.

The **SCRDRR** continued its R&D activity on disaster risk reduction with a special focus on disaster preparedness training with investigating the use of XR, 5G and AI. More than 10 papers were published in different conferences worldwide.



5th IFIP ITDRR-2020

University of National and World Economy, Sofia, Bulgaria

December 3 – 4th, 2020

http://itdrr.unwe.bg/



Electricity injection to measure the depth and thickness of the clay layer by electrical tomography (ERT) (Chaingy, Centre-Val de Loire Region, France). © BRGM - A. Burnol

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.

This year, BRGM was involved in several ongoing projects concerning risk reduction. Among them is the European project H2020 SERA (Seismology and Earthquake Engineering Research Infrastructure Alliance for Europe). For this project, BRGM contributed to the 2020 European seismic risk model. The contribution focused on a simplified mapping of lithological site effects on a European scale (1: 1,500,000), and led to the production of several maps, including lithologic and stratigraphic maps.



Another BRGM project involve long-term monitoring to study the shrinkage and swelling of clays. Since 2017, the experimental site of Chaingy (Centre-Val de Loire Region, France), an area highly exposed to the shrinkage and swelling of clays, is monitored with a combination of in situ observations using extensometers and humidity sensors, and temporal acquisitions from the Sentinel-1 and SMOS satellites of ESA (European Space Agency). The first results allow considering an innovative method to characterize the shrinkage and swelling of clays using remote sensing methods.

One of BRGM's roles is to provide decisionmakers with diagnostic and decision-making tools to support risk prevention and sustainable rural and urban planning. As such, BRGM has provided support to two African countries in the area of sustainable development. In the Central African Republic, the BRGM-INSUCO-ONFI consortium delivered five tools for the environmental and social safeguard of the Natural Resources Governance Project (PGRN). notably contributed to The BRGM the and social environmental management framework, to the pesticide management plan, and to the functional framework. In Morocco, BRGM is a stakeholder in the Franco-Austrian twinning for "Support for the implementation of the National Charter for the Environment and

Sustainable Development". The BRGM is involved in activities related to strategic environmental assessment, environmental auditing, as well as the environmental police for industrial pollution.

BRGM also provided support for diagnostic when BRGM conducted expert appraisals on behalf of the Brazilian chemical and mining group BRASKEM. The aim of this project was to determine the origin of an earthquake and land movements that affected parts of the city of Maceio. Attributed to mechanical instabilities of cavities in a salt formation nearly 1000 m deep, these events led to a critical analysis of the geophysical methods implemented to image geological formations as well as structures and cavities.

This year, BRGM also provided technical support to the French institute DRIEE (regional and interdepartmental directorate for the environment and energy) on two occasions, for the management of pipeline leaks. The objective was to estimate the propagation time of pollutants in order to estimate the urgency of implementing measures to cut off transfer routes, and to provide recommendations on the management of these pollution.



A ruptured pipeline caused oil pollution of rivers in France. The BRGM was asked to support the management of this pollution. © SDIS 78 - F.B oubet - L. V. Bolivia-Kahn



Risk Reduction Technology (CEDIM), Germany http://www.cedim.de/english

COVID-19 | Coronavirus



Fig.: Current cases of the COVID-19 pandemic on the new CEDIM/ Risklayer-Explorer (as of 12/18/2020).

The Center for Disaster Management and Risk Reduction Technology (CEDIM) is an interdisciplinary research center in the field of disaster and resilience research. By synergistically combining competences from different disciplines, CEDIM develops new models and concepts for novel solutions in the fields of natural disasters, hazards and resilience. Within the current research focus on near-real time Forensic Disaster Analysis (FDA), CEDIM investigates the dynamics and interrelations of disasters, identifies major risk drivers, estimates the impact as fast as possible, and infers implications for disaster mitigation.

Already since February this year, CEDIM and Risklayer (CEDIM spin-off), together with many volunteers, have been collecting current Covid-19 case numbers on a subnational level via crowd sourcing. The numbers are processed globally using the CATDAT database and distributed via the new CEDIM/Risklayer Explorer (<u>http://www.risklayerexplorer.com</u>), which was launched online ahead of schedule. A pandemic shows many parallels to natural disasters, which are normally the focus of CEDIM's work. In both cases, resilience concepts adjusted to the local scale are crucial for mitigation of impacts. Also in both cases, valid, up-to-date, and high-resolved data and information are the basis for important decisions – be it on relief measures or on measures to prevent the spread of coronavirus. The interest in these data is considerable: in addition to being used in future research projects, they are processed by various media and feed into the Johns Hopkins University dashboard.

In the current funding phase of CEDIM R&D <u>projects</u>, the focus is on the impact of heatwaves and droughts in Central Europe in relation to society, economy and ecology. Research on this topic is urgently needed given the large adverse that heat waves and droughts have even in industrialized areas such as Europe. Additional knowledge will help to increase resilience and to develop appropriate adaptation measures.

Prof. Michael Kunz CEDIM Spokesman E-mail: info@cedim.de





Institute for Advanced Sustainability Studies (IASS), Germany https://www.iass-potsdam.de/en

The Role of Public Participation in Energy Transitions

Edited by Ortwin Renn Frank Ulmer Anna Deckert

> The rampant global pandemic caused by COVID-19 poses serious societal challenges to the entire international community. The events of recent months have made clear that the global community was ill-prepared for the crisis. Despite clear warnings of an impending pandemic for over a decade (shortly after the SARS-CoV-2 outbreak), very few countries had established serious pandemic plans and taken precautionary measures. Thus, in the first phase, IASS activities were limited to framing the pandemic in the context of global risks and challenges, especially in the media. This involved, on the one hand, the relative risk posed by COVID-19 compared to other health risks, such as influenza, and, on the other hand, the social consequences of the pandemic, such as the differential burden on women and men.

> As the crisis progressed, it quickly became clear that analyzing the consequences of the measures introduced and assessing their proportionality required interdisciplinary expertise and systematic judgment from the

environmental, economic, and social sciences. With its interdisciplinary expertise, the IASS was able to provide important impulses for policymakers, particularly with regard to the interactions of social and political actions on the natural and social environment. For example, the IASS prepared several expert reports on the effects of the pandemic on energy and climate policy as well as on air quality. The Systemic Risk Research Group developed evidence-based operational plans for effective crisis communication for government agencies and ministries.

Among the many activities of interdisciplinary policy advice, it is worth mentioning that the IASS took an initiative on behalf of the IASS-supervised science platform "Sustainability 2030" to write a bundled compilation of analyses and recommendations from the scientific community entitled: "Sustainably Out of (https://www.wpn2030.de/ the Corona Crisis" nachhaltig-aus-der-corona-krise/) for the German government. Another major contribution has been the IASS's participation in the official statements of the German Academy of Engineering and Technology to the German Chancellor's Office.

In the area of "Democratic Transformations," a highly attended internet-based Town Hall Meeting on civil society strategies for coping with the Covid 19 pandemic in the particularly affected countries of Latin America was organized with international partners, which brought actors and affected groups from government, civil society, and citizens into a lively communicative exchange. These learning experiences show that transdisciplinary sustainability research must be ready to design and promote transdisciplinary procedures of inclusive crisis management already in the run-up to future global crises.

> Prof. Ortwin Renn Scientific Director



E-mail: Ortwin.renn@iass-potsdam.de



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



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, postdoc fellows, PhD students, collaborators and visiting fellows. Since 2005 the DST-UNIFI was appointed as Centre of Competence on Geo-Hydrological Risk by the Italian Civil Protection Department. Its functions were transferred to the Civil Protection Center of the University of Florence (https:// www.protezionecivile.unifi.it), which is an operational structure of the National Service of Civil Protection founded in 2018 and recognized in the role of Competence Center in the same year. This is the only Italian university structure with an internal Civil Protection Center. At an international level in the field of Landslide Risk Reduction the DST -UNIFI was entitled in 2008 as a World Centre of Excellence (WCoE) (2008-2011) by the Global Promotion Committee of International Programme on Landslides (IPL) of UNISDR. This recognition was reaffirmed three times over for 2011-2014, 2014-2017 and 2017-2020.

In 2020 the activities of Civil Protection Centre continued the scientific support of the security of University of Florence, with the idealization and drafting of the University's Civil Protection plan, organized dissemination and training events, and was involved by the National Civil Protection Service in several emergency operational activities for the technical support in the geo-hydrological life hazards treating human and infrastructures. In particular, the research activities carried out in 2020 focused on: i) the use of innovative multi-sensor technologies (i.e., Ground-based SAR interferometry, UAV, Laser Scanning) for analysis of risk scenarios to support emergencies situations; ii) EO (Earth Observation) data and technology to detect, map, monitor and forecast ground deformations; iii) Regional landslide forecasting models. Several landslide sites are monitored in Italy by means of the aforementioned techniques. These research activities have been carried out in the framework of national and international multidisciplinary projects in different scales of activity and temporal extension. The main scientific outcomes relative and the description of useful products in the technical field were published in about 60 published papers in peer-reviewed scientific journals.



Prof. Nicola Casigli E-mail: nicola.casagli@unifi.it
The DST-UNIFI is founding member of the International Consortium on Landslides (ICL) since 2002. Within this framework the DST-UNIFI continued the activities related to the organization of the 5th World Forum on landslides (WLF 5), which due to the COVID-19 pandemic was postponed from 2-6 November 2020 to November 2-6, 2021 in Kyoto (Japan). In particular, the Center of Competence coordinated the activities of Theme 3: Monitoring and rapid warning of landslides.

As part of the organization of WLF 5, the staff of the competence center participated in numerous virtual meetings with the scientific committee of the World Forum on Landslides. In September 2019, during the 14th session of the Global Committee of the International Program on Landslides (IPL) at the UNESCO headquarters in Paris, the Civil Protection Centre, together with 58 signatories (including UNESCO, UNU, IRDR, WFEO, GRF Davos, IGS, the National Department of Civil Protection and other government organizations) preliminarily signed the Kyoto Commitment 2020 (KLC2020) for the global promotion of the understanding and reduction of the risk of landslides. The Kyoto commitment was definitively approved during the virtual launching session that took place on 2, 3, 4 and 6 November 2020. During the conference Prof. Paolo Canuti, Chair Holder of the UNESCO Chair on Prevention and Sustainable Management of Geo-hydrological Hazards, funded in 2016 at the DST-UNIFI, was awarded with the Varnes Medal for 2020 (the highest career award for professional excellence in landslide research from the ICL). In the same conference Prof. Nicola Casagli and Prof. Veronica Tofani were elected President and Vice President of ICL. respectively. Meantime, the Center of Competence also began organizing the 6th World Landslide Forum (WLF 6), which will be hosted in Florence in November 2023 (Fig. 1).

Between January 13th and 15th 2020 the Center of Competence, in collaboration with the Joint Research Center of the European Commission (JRC), the Department of Civil Protection, the Directorate General for Civil European Protection. Humanitarian Aid Operations (DG ECHO) and the International Network for Government Science Advice (INGSA), organized intensive and the international professional training course for civil protection operators, entitled "Evidence and Policy Disaster Risk Management School". This course was held at the Novoli University Campus of the University of Florence.

The UNESCO Chair on Prevention and Sustainable Management of Geo-hydrological Hazards (UNESCO Chair), based at the DST-UNIFI, has the mission of carrying out research and development (R&D) for the prevention and management of landslides, in order to support policies and actions of risk reduction (https:// www.unesco-geohazards.unifi.it). The UNESCO Chair, in line with the activity carried out in the framework of the WCoE and the IPL projects is contributing to some priority actions of the Kyoto 2020 Commitment (Actions 1, 2, 3, 6, 9). Furthermore, despite the COVID-19 pandemic the UNESCO Chair keeps promoting the protection of cultural heritage threatened by geo-hydrological hazards, with special regards to UNESCO world Heritage sites and developing countries (Madagascar, Georgia, Saudi Arabia), providing technical support and by means of scientific dissemination.



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



TREQ Project team during a virtual training on OpenQuake engine software

The year 2020 was a milestone year for GEM, because of the significant advances made in capacity development, new projects and partnerships, products released and participation in virtual events, which were accomplished during a difficult period of time due to an ongoing pandemic.

Close to 300 risk professionals were trained online on seismic hazard and risk analysis using OpenQuake engine software under the USAIDsupported <u>TREQ project</u> – officially launched in Quito, Ecuador in March. The online training workshops given in Spanish and English versions reached more than 30 countries worldwide.

GEM collaborated with <u>ADB</u>, <u>EdF France</u>, <u>AXA/</u> <u>IDF</u> and the <u>World Bank</u> for various new projects that ranged from developing a new disaster risk transfer facility in Central Asia, to an advanced approach for seismic risk assessment of nuclear power plants; and from building capacity and risk understanding in Georgia to building a publicprivate partnership to protect public schools from natural hazards in Peru. Five new partners teamed up with GEM to work in several related but different areas of research and application: innovative disaster resilience; enhancement of loss modelling capabilities for better decision making; utilization of seismic sensors to assess building vulnerability; and development of high-performance computing in the field of geophysical hazards. Four public and private institutions also renewed their respective commitments to support GEM in the years ahead.

> Prof. John Schneider Secretary-General



E-mail: john.schneider@globalquakemodel.org

GLOBAL SOCIAL VULNERABILITY & RESILIENCE MAPS

Economic

These recently released collaborative products aim to present the current state of social vulnerability modelling at the global scale, and to kickstart an in-depth discussion of the future work needed to downscale the global social vulnerability modelling effort at the sub-country and city levels and to expand this effort to hazards beyond earthquakes.

John Schneider, GEM Secretary General

"



Social Vulnerability

Reco

Economic Vulnerability

Recovery Potential

Due to the ongoing pandemic, GEM has put together an <u>experimental map combining</u> <u>COVID-19 statistics over the GEM global</u> <u>earthquake risk map (2018)</u> to show areas where a damaging earthquake could cause increases in COVID-19 cases due to displacement of people from damaged

buildings or where health care systems may be further stressed due to human injuries.

GEM launched its <u>products and services</u> <u>strategy</u> to reach a wider range of stakeholders. A new <u>Products page</u> was launched in April and has accumulated more than 2800 downloads of open products as of November.

On UN's IDRR Day, GEM released <u>seven</u> regional and national earthquake models giving open access to seismic hazard and risk data to the public, including <u>16 peer-reviewed papers</u> documenting the <u>GEM2018 earthquake mosaic</u> <u>of models</u> published in Earthquake Spectra. On World Bank's Understanding Risk Forum 10th year anniversary, GEM launched three global earthquake social vulnerability and resilience maps aimed at better understanding the various socio-economic factors that can exacerbate the impact of earthquakes. In addition, GEM also released population and building exposure data for more than 40 countries under the METEOR project.

GEM also contributed to two major publications: two case studies on risk analytics and seismic hazard assessment for the IDF Development of Risk Analytics Report, and the Hazard Definitions Report: Understanding Hazards to Reduce Risk co-published by UNDRR and the International Science Council.

This year also marked the <u>10th year anniversary</u> of GEM's flagship product: the OpenQuake engine software. A webinar participated in by 250 individuals marked the celebration. GEM released three OpenQuake engine software updates adding various features to enhance performance and capability to analyze multiperils.



EARTHQUAKE MODELS

October 2020 Release

Introduction

The GEM (Global Earthquike Model) Foundation develops hazed and risk models for the calculation of human and ecco losses due to earthquales. These models are important for a wide range of risk management applications, including stan for the design of buildings and infrastructure, insurance/risk transfer, national risk assessments, as well as public risk aware and education

In line with GEM's mission to support disaster risk reduction efforts toward a world that is safe from earthquakes, GEM is now releasing publicly hazard and risk models for Arabia, the Carbibean and Central America, South America, Indonesia, Continental Southeast Asia, Taiwan and South Africa. These models are released in a format compatible with the GEM's freely available OpenQuake Engine <u>https://www.gboblquakemodel.org/op.gets.started</u>). GEM is also releasing its global exposure database (Da dministration Level 1) and global unlenability database for residential, commercial and industrial bulghtings. The updated models and databases underpin GEM's Global Seismic Hazard and Risk maps launched in December 2018. All of these products may be downloaded from GEM's new Products page (<u>https://www.gboaruakemodel.org/oproducts</u>). In addition, a number of other products are being made available for non-commercial, public-good use by request, including the global hazard map doital dataset.

To date GEM and its partners have released a wide range of datasets and models that contributed to the 2018 global hazard and risk maps. By the end of the year, all endeds and databases developed for the global model will have been released openly or will be available for non-commercial, public-good use upon request.



How we built the models

e newly released seismic hazard models include contributions from various national geological survey groups and deemic institutions, local experts and scientists in Indonesia, Taiwan, South Africa, Southeast Asia, Anabia, South renca and the Caribbean & Central America.

For the seismic risk models, GEM developed exposure and vulnerability models for human population and for residential, commercial and industrial buildings. Exposure and vulnerability were combined with the global hazard model to estimate economic and human losses. Collectively, the models and resulting hazard and risk rmaps represent the most comprehensive resource for risk assessment and loss estimation in the countries and regions included in this release.

For what purpose and for whom

The earthquake hazard and risk models are based on the latest scientific data and represent a major step in understanding earthquake risk. The results can be used to understand earthquake risk at the sub-national, national and regional level, and as the basis for developing custom models and risk profiles at higher resolution, e.g., at city level. The results can bu used by engineers and scientists for in-depth bazard and risk analysis, as well as by risk managers, urban planners, emergency responders and humanitarian agencies for input to a wide range of disaster risk reduction activities, including anticipatory actions, building codes, building retrofits, land-use planning, insurance/risk financing, and education.

Brochure on the release of seven regional and national earthquake models

WWW.GLOBALQUAKEMODEL.ORG



<u>16 peer-reviewed papers</u> documenting the <u>GEM2018</u> earthquake mosaic of models published in Earthquake Spectra available by subscriptions



THE OPENQUAKE 10 YEAR 22 October 2020 1600 - 1730 CEST ANNIVERSARY WEBINAR



A DECADE OF SERVING OQ ENGINE TO ANALYZE SEISMIC HAZARD & RISK TO REDUCE LOSS OF LIVES AND PROPERTIES FOR A SAFER AND RESILIENT FUTURE.

REGIONS AND COUNTRIES WHERE OPENQUAKE ENGINE HAS BEEN APPLIED TO ASSESS HAZARD OR RISK









OpenQuake engine online training participants







Szkoła Główna Służby Pożarniczej The Main School of Fire (SGSP) Poland https://www.sgsp.edu.pl/

In 2020 four organizational units of the Main School of Fire Service (Szkola Glowna Sluzby Pozarniczej, SGSP) 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 Units of SGSP. Consequently, during the first full year of participation in GADRI, SGSP covered research, educational and operational areas of the reduction, also in the pandemic conditions.

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

- Improving Disaster Risk Reduction in Transcarpathian Region, Ukraine — ImProDiReT, EU Civil Protection Mechanism.
- 2. Community Safety Action for Supporting Climate Adaptation and Development (CASCADE).
- DRiving InnoVation in crisis management for European Resilience (DRIVER+), 7th Framework Programme.
- 4. SAFEguard of Critical heAlth infrastructure (SafeCare), Horizon 2020.

European Sensor System for CBRN Applications (EU-SENSE), Horizon 2020.

Furthermore, SGSP initiated a national research task which has been funded by the National Science Centre in MINIATURA4 Program. The task titled 'Factors shaping safety perception in the system disaster risk reduction in Poland' is dedicated directly to DRR and reflects a holistic approach to societal dimension of the reduction.

The Scientific Papers of the Main School of Fire Service (<u>https://zeszytynaukowe-sgsp.pl</u>) stated a place of knowledge exchange in DRR as well as other safety and security-related issues. It was especially important due to the open access formula of the publications.

In addition, doctoral dissertations which had been initiated in security studies (in social sciences) and in environmental engineering, mining and power engineering (in technical sciences) were continued in the direction to finalize them in 2021.





Pic. 1. Operational test in the EU-SENSE project (August 2020) Source: <u>https://www.sgsp.edu.pl/?page_id=17266</u> GADRI Annual Report — Europe



Faculty of Security Engineering, University of Žilina Slovakia

http://fbi.uniza.sk/en/



In the current emergency situation connected with the measures against the COVID 19 infection the Faculty has been addressed by several crisis management levels to cooperate with and support the activities of various characters.

In cooperation with the Crisis Management Section of the Ministry of Interior of the Slovak Republic the Faculty has started registering the volunteers for the needs of this Ministry. The activity scope is very large. The students worked in the quarantine centres for repatriated persons. Others provided the general public with information in the call centres according to the manuals who to contact in the case of a suspicion of the infection, when to go for a check and where and a lot of other information. We are regularly given feedbacks from the Crisis Management Section of the Ministry of Interior of the Slovak Republic - the authorities are very satisfied and the most important thing is that the students utilise the knowledge acquired during the study.

Member of the Central Crisis Staff, addressed the Faculty of Security Engineering with a demand to provide student volunteers who could be involved in the groups realising the community services if the limitations of the movement of the persons in Slovakia are tightened with the goal of minimising the spread of the COVID 19.

Voluntary Activities of the Student Associations at the FSI UNIZA during Emergency Situation

The Territorial Association of the Slovak Red Cross is active in Žilina. The FBI UNIZA students are also members of this association and work in the Local Association of the Slovak Red Cross at the FSI UNIZA. They are not only in Žilina but also all over Slovakia - approximately 30 students are active here. In the framework of the COVID 19 activities they deal not only with making the protective masks (from procuring the material up to distribution to particular clients) but also with classifying the patients in front of the hospitals and measuring the body temperature at the hospital entrance in various districts of Slovakia and with distributing the food aid for the socially weaker groups of the inhabitants. The make the protective masks free of charge and have aimed at the most endangered groups of people - they are e.g. the children at the Faculty Hospital in Žilina, Emergency Services Falck, senior houses and homeless people.

> Dr. Katarina Holla Associate Professor



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





The FBI UNIZA students and employees also helped with the planning process of moving of all students from the student dormitories. They established check points in the UNIZA dormitories where they checked the persons entering the premises by the thermovision camera and thermometers. digital

They utilised the thermovision camera Micro-epsilon Tim 450 belonging to the labs of the Security Management

Department. The Faculty students also ensured the security of the persons who move in the dormitories.

Although the largest attention is paid to coping COVID with the 19 emergency situation, the FSI UNIZA participates in solving other crisis phenomena according to the need. On Monday, 6th April 2020, the Regional Operation Centre of Fire-Protection and Emergency Žilina addressed the Voluntary Fire-Protection Brigade Žilina and UNIZA whose majority part is created by the students and employees of the Faculty with a requirement for help during the liquidation of the forest fire by the village Považský Chlmec extinguishing the and local centres of the fire.









Institute of Earth Sciences, University of Lausanne, Switzerland https://wp.unil.ch/risk

The group risk at the Institute of earth Sciences University of Lausanne, as any others have been affected by the pandemic. The field works were limited. New projects such as the study of large instability in Ticino (CH) was initiated, it consists to study the different risk scenarios linked to a large potential rockslide and debris flows.

The main axis of research is linked to a better understanding of rock slope failure hazard. We are especially working on the thermal effect of rock fatigue, but we initiated research on the impact of weathering on rock fatigue. Different local and regional studies are completed or ongoing in Yosemite and in the Alps.

We also initiated research in Nepal linked to the resilience of the population linked to climate changes and natural hazards.

On the side of computational sciences, a code related to slope movements are developed using MPM method, which will allow very high resolutions using GPU with CUDA.

Twelve publications about different aspects of landslides such as their hazard, their modelling, and their characterization, were published in 2020.



Prof. Michel Jaboyedoff E-mail: michel.jaboyedoff@unil.ch



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

Evidence Aid has excelled this year, thanks to the amazing work of our core team (with particular mention to Margaret Anderson, Zbys Fedorowicz, Anish Jammu, Ahmad Firas Khalid, Alexa Phillips, Jiewon Lim, Christine McKee and Jo Wood) and our numerous volunteers, particularly for our COVID evidence collection which currently includes summaries covering information from almost 600 systematic reviews (at end November 2020). The summaries are written by volunteers (including professors, doctors, nurses, medical writers, PhD students and undergraduates) all around the world. They are quality checked by a panel of experts, are intended for use by anyone - both in high and low resource settings. They are freely available to anyone and the website is mobileoptimised. To ensure the relevance to low resource settings articles are reviewed by volunteers in those settings who can assess the applicability to their health care delivery. The volunteers are not only summary writers, but also take part in screening, searching for relevant records, administrative support and website maintenance.

Unsurprisingly, some of the most popular resources are those on the effectiveness of facemasks and quarantine, although this often changes related to what is a much-discussed topic in the world media and in specific countries. Studies summarised and translated on the open access website range from infection prevention and control (including for healthcare workers) to social issues, mental health and the impact on levels of domestic violence. The collection includes summaries of systematic reviews that might be relevant to the direct impact of COVID-19 (including reviews of emerging research as well a reviews of relevant treatments) on health and other outcomes, the impact of COVID-19 response on other conditions and longer terms issues to consider for the recovery period after COVID-19.

Frontline workers and decision makers in countries around the world are crying out for information they can swiftly absorb and apply immediately in clinical settings. Most of these workers don't have time to read through,

what is now, thousands of research papers. In fact, evidence from the work Evidence Aid has done suggests many may only have time to engage with posts on social media. We need to give them the information they need, in the format need, in the language they need at the time that they need it. These summaries have been routinely translated into Arabic, Chinese, French, Portuguese and Spanish, and, for some, into Italian and German. Some **400,000** people have now seen these summaries this year, most of them in lower- and middle-income countries. We'd like to say a huge thank you to everyone who has helped create this unique platform, which is being widely used to inform decisions about the direct and spill-over effects of this world-wide pandemic.

Since the pandemic broke, over 75,000 scientific papers have been published on COVID-19 across the world and a new one is appearing **every three minutes** in November. Those needing guidance on what to do have been presented with such a plethora of information, it has been impossible for them to sort out the good from the bad and to find what should matter most to them. The situation has led to a 1000% increase in visitors to the Oxford based Evidence Aid website. Evidence Aid has systematically checked thousands of papers to refine the latest scientific findings and summarise them for use by healthcare practitioners.

In addition to the COVID pandemic work (which has taken most of our time), we have migrated our website to a new more easily searchable platform, increased our social media engagement over different communication channels, worked with interns and volunteers to add to our Refugee evidence collection, worked with Public Health England on a drought report and with Oxford PharmaGenesis to engage pharma companies in our work on plain language summaries and evidence collections.



Ms. Claire Allen Operations Manager E-mail: callen@evidenceaid.org



Institute for Risk and Disaster Reduction (IRDR) University College of London, United Kingdom http://www.ucl.ac.uk/rdr



Multi-hazard-prone Rohingya refugee camp in Bangladesh

The Institute for Risk and Disaster Reduction (IRDR) became UCL's newest formal academic department following a decision by UCL Council.

BSc Global Humanitarian Studies new degree programme was approved by UCL Education Committee starting in 2021.

We welcomed the appointments of Dr Punam Yadav and Dr Jessica Field as Lecturers in Humanitarian Studies. We responded to the coronavirus crisis with initiatives including the IRDR Covid-19 Laboratory, #MyLockdownJournal and the European-wide perceptions survey: 'COVID-19 Emergency, Recovery and Improvement'



Prof. Peter Sammon 's Director E-mail: p.sammonds@ucl.ac.ur IRDR Centre for Gender and Disaster launched the Gender Responsive Resilience and Intersectionality in Policy and Practice (GRRIPP) project funded by the UKRI Collective Fund Networking Plus Partnering for Resilience for £5 million, 2020-24 led by Prof Maureen Fordham and Dr Punam Yadav,

Prof Ilan Kelman won a Belmont Forum award, Climate, Environment and Health Collaborative Research Action, Community collective action to respond to climate change influencing the environment-health nexus, EUR 1.3 million, 2020-22.

Prof Patty Kostkova won a Belmont Forum award, Mosquitoes population modelling for early warning system and rapid response, EUR 1.3 million, 2020-22.

The IRDR hosted the Humanitarian Institute UN STG Evening Conference on Natural Hazards, Conflicts and Disasters in the Himalaya events, hosted in collaboration with the University of Kashmir, attended bay 160 people and Humanitarian Masterclass on Earth Observation and Natural Hazards, in February 2020.

The IRDR and Dhaka University, Centre for Genocide Studies, hosted the 2nd International Conference on the Rohingya Crisis in Comparative Perspective, attended by 300 people, with keynote addresses by H.E. Ms Saida Muna Tasneem (Bangladesh High Commissioner to the UK) and Mr Robert Chatterton Dickson, British High Commissioner to Bangladesh, in December 2020.

Prof Patty Kostkova won the Innovator of the Year by Computing Women in Tech Excellence Awards for her COVID-19 My Lockdown Journal app project.

Some notable publications:

- <u>Alam, A., Sammonds, P.</u> and <u>Ahmed, B.</u>, 2020. Cyclone risk assessment of the Cox's Bazar district and Rohingya refugee camps in southeast Bangladesh. *Science of The Total Environment*, 704, p.135360.
- Chinkin, C., Kaldor, M. and <u>Yadav, P.,</u> 2020. Gender and new wars. *Stability: International J Security and Development*, 9(1). doi: <u>http://</u> <u>doi.org/10.5334/sta.733</u>
- <u>Kelman, I.</u>, 2020. Disaster by Choice: How our actions turn natural hazards into catastrophes. Oxford University Press.
- <u>Pescaroli, G., Velazquez, O.,</u> Alcántara-Ayala, I., Galasso, C., <u>Kostkova, P.</u> and <u>Alexander, D.,</u> 2020. A Likert Scale-Based Model for Benchmarking Operational Capacity, Organizational Resilience, and Disaster Risk Reduction. *Int J of Disaster Risk Science*. doi:10.1007/s13753-020-002769

Water Engineering and Development Centre (WEDC)
Loughborough
University
University
University
University
United Kingdom
https://www.lboro.ac.uk/research/wedc/

The year of 2020 was a challenging year because of the Covid-19 pandemic. During the year, the Water Engineering and Development Centre (WEDC) of Loughborough University continued to deliver several disaster-related research projects amid unprecedented challenges. In these research projects, the Loughborough University researchers work in international and multi-disciplinary teams to build resilience to disasters and achieve sustainable development.

- The NERC funded 'River basins as 'living laboratories' for achieving sustainable development goals across national and subnational scales' project (February 2019-January 2021) Total £400,000 (£130,000 for Loughborough) [involving Qiuhua Liang, Lee Bosher, Xilin Xia, Huili Chen and Jiaheng Zhao]
- The NERC funded 'Valuing the benefits of blue/green infrastructure for flood resilience, natural capital and urban development in Vietnam' project (January 2019-July 2021) Total £500,000 (£185,000 for Loughborough) [involving Lee Bosher, Qiuhua Liang and Jiaheng Zhao]
- The NERC funded 'FUTURE-DRAINAGE: Ensemble climate change rainfall estimates for sustainable drainage' project (February 2019 – June 2021) Total £280,000 (£138,000 for Loughborough) [involving

Qiuhua Liang, Xilin Xia, Huili Chen and Xiaodong Ming]

- The UK Met Office funded 'Weather and Climate Science for Service Programme: Building a Flood Impact Model for India' project (September 2019 – April 2021) Total £585,000 (£185,000 for Loughborough) [involving Xilin Xia, Qiuhua Liang and Syed Kabir]
- Thew NERC funded 'PYRAMID: Platform for dYnamic, hyper-resolution, near-real time flood Risk AssessMent Integrating repurposed and novel Data sources' (August 2020 – August 2022) Total £787,200 (£182,838 for Loughborough) [involving Qiuhua Liang]
- The 'Gender Responsive Resilience and Intersectionality in Policy and Practice (GRRIPP) - Networking Plus Partnering for Resilience' (UKRI-GCRF, Total: £4.8mln, led by Prof Maureen Fordham, UCL) [involving Ksenia Chmutina]



E-mail: q.liang@lboro.ac.uk

Prof. Qiuhua Liang

Despite the halt of international travel, the members of • WEDC have continued to disseminate their research in difference ways such as giving invited talks via Zoom.

- Lee Bosher became member of the WHO Thematic Platform for Health EDRM Research Network (2020 – 2021)
- Ksenia Chmutina and Lee Bosher have been invited to give two ICCROM/UNESCO webinars (2020 – 2021)
- Ksenia Chmutina and Lee Bosher became members of UNDRR expert group on traditional knowledge in DRR (2020 – 2021)

- Qiuhua Liang and Huili Chen gave invited talks at the virtual Annual Dialogue of the Koshi DRR Knowledge Hub on 'Assessing GLOF exposure using high-performance hydrodynamic modelling and open-source data' (2020)
- Ksenia Chmutina co-authored the paper 'Protecting Crowded Places: Challenges and Drivers to Implementing Protective Security Measures in the Built Environment' [doi: 10.1016/ j.cities.2020.102891]



Lee Bosher and Ksenia Chmutina giving invited talks at ICCROM/ UNESCO via Zoom



Global Disaster Resilience Centre (GDRC) University of Huddersfield, United Kingdom

http://www.hud.ac.uk/gdrc

In 2020, academics and researchers at the Global Disaster Resilience Centre, University of Huddersfield, UK have been successful in receiving key international grants, awards, esteemed positions and with key publications.

- 1. ISC-UNDRR Expert Review Group (ERG) for the Development of a new Global Disaster Risk Reduction Research Agenda towards 2030 and beyond. Prof. Dilanthi Amaratunga has been invited to be a member of the ISC-UNDRR Expert Review Group (ERG) for the Development of a new Global Disaster Risk Reduction Research Agenda towards 2030 and beyond. ERG members are expected to provide their views, insights, suggestions, written contributions, and recommendations for the Research Agenda, and in particular, to help to identify critical research gaps, strategic directions and areas of cooperation between scientific communities and between science, policy and other She is representing the stakeholder groups. European Commission's Joint Research Center and UNDRR European (JRC) Science & Technology Advisory Group (E-STAG) at the ERG.
- 2. Prof. Dilanthi Amaratunga has been appointed as a Steering Committee Member of the UK's Frontiers Programme, which is the joint programme of the UK four national Academies: The Royal Academy of Engineering, the Academy of Medical Sciences, the British Academy, and the Royal Society
- 3. Professor Richard Haigh and Professor Dilanthi Amaratunga are formally appointed international experts of IOC UNESCO Intergovernmental Coordination Group for the Indian Ocean Tsunami Warning and Mitigation System (ICG/IOTWMS) Intersessional Meeting of Task Team on Tsunami Preparedness for a Near Field Tsunami Threat (TT-Near Field). The Task Team will work towards enhancing Tsunami preparedness for near-field tsunami hazard including improving end-to-end national warning chains learning from the recent tsunami events. The Task Team will report to the Group and be composed Steering of representatives from WG-1, WG-2, WG-NWIO, IOTIC, interested Member States and international experts with a Chair and Vice-Chair.
- Professor Dilanthi Amaratunga was the formally appointed International observer for Sri Lanka for the UNESCO IOTWMS Indian Ocean Tsunami

Exercise (IOWave20) held on the 13th October 2020. IOWave20 simulated all Indian Ocean countries being put in a tsunami warning situation and required the National Tsunami Warning Centre (NTWC) and the National and/or Local Disaster Management Offices (NDMO/LDMO) in each country to implement their Standard Operating Procedures (SOPs). She also shared the key points with the rest of the 28 Indian Ocean countries during the workshop : "IOTWMS-IOTIC Post-IOWave20 Lessons Learnt during Exercise Indian Ocean Wave 2020", held from November 2020, organised by UNESCO IOTWMS

5. Professor Dilanthi Amaratunga was appointed by UNDRR as a panellist to formally review DRR National Strategy Assessment of Bulgaria. Other panellists included representatives from Government of Bulgaria (Director of State Control and Preventive Activity Directorate; Head of Preventive Activity Department; Head of Disaster Risk Reduction); Sendai National Focal Point – Sweden; Sendai Technical Focal Point – Serbia; 100 Resilient Cities Initiative – Local level resilience; Joint Research Centre of the European Commission; the World Bank.

GDRC has been successful with the following funded projects during 2020:

1. Integrating epidemic and pandemic preparedness into disaster risk reduction. This GCRF funded project explores how Biological hazards (e.g. epidemics and pandemics) such as COVD 19 can be integrated in development planning, including in the development of national and local disaster risk reduction strategies (target E of the Sendai Framework), and in enhancing preparedness for early and better recovery. The project has 6 international partners.

> Prof. Dilanthi Amaratunga Head E-mail: <u>d.amaratunga@hud.ac.uk</u>



- 2. "Integrating pandemics, tsunami and other multihazard preparedness into early warning and urban planning" research proposal has been successful and is funded by QR/GCRF. Our partners include: Ministry of Health, University of Colombo, Peradeniya, and Moratuwa; State Ministry of Urban Development, Sri Lanka; Federation of Local Government Authorities, Sri Lanka; Intergovernmental Oceanographic Commission (IOC) of UNESCO: Intergovernmental Coordination Group for the Indian Ocean Tsunami Warning and Mitigation System (ICG/IOTWMS): Chamber of Commerce, Sri Lanka; Disaster Management Centre, Sri Lanka; Bandung Institute of Technology, Indonesia; Asian Disaster Preparedness Centre (ADPC), Thailand; United Nations Office for Disaster Risk Reduction (UNDRR).
- 3. GDRC at the University of Huddersfield is an International Expert and a Co-I, Australian Research Council (ARC) funded Research Hub for Transformation of Reclaimed Waste Resources to Engineered Materials and Solutions for a Circular **Economy**. This grant is valued at \$ 12.4 million cash + \$ 6 million in kind. Project investigators are from: RMIT; The University of Melbourne; UNSW, Sydney; The University of Queensland; Deakin University; The University of Adelaide; Western Sydney University; and University of Technology, Sydney; University of Huddersfield, UK; University of Texas, USA; 7. Strengthening Hokkaido University, Japan; Lulea University of Technology, Sweden. And it has 32 industrial partners
- 4. Improving COVID-19 and pandemic preparedness and response through the downstream of multihazard early warning systems. GDRC leads the UKRI/GCRF/EPSRC funded Improving COVID-19 and pandemic preparedness and response through the downstream of multi-hazard early warning systems project with the following partners: University of Moratuwa, Sri Lanka; University of Colombo, Sri Lanka; Ministry of Health, Sri Lanka; Disaster Management Centre, Sri Lanka; Federation of Sri Lankan Local Government Authorities, Sri Lanka; The Association of Disaster Risk Management Professionals of Sri Lanka (ADRiMP); The Asian Disaster Preparedness Centre, Thailand; UNDRR (The United Nations Office for Disaster Risk Reduction) & ESTAG (Science & Technology Advisory Group) of UNDRR; Greater Manchester Combined Authority (GMCA), UK; Public Health England; The Intergovernmental Coordination Group for the Indian Ocean Tsunami Warning and (ICG/IOTWMS) Mitigation System of The Intergovernmental Oceanographic Commission of UNESCO (IOCUNESCO), Working Group 1: Tsunami Risk, Community Awareness and Preparedness. We

will address two, inter-related challenges on the pandemic-natural hazard hybrid scenario: How to cope if a major natural hazard occurs during the COVID-19 pandemic? and How can pandemic preparedness make use of the existing infrastructure for tackling other hazards?

- 5. REGARD Rebuilding AfteR Displacement -Euripean Commssion Erasmus+ Strategic Partnerships for higher education funded REGARD is led by GDRC. Grant Amount is € 389,000. Our partners include: Tallinn University (Estonia), Lund University (Sweden) and University of Colombo (Sri Lanka) . REGARD project aims to develop competencies in rebuilding communities following disaster and conflict induced mass displacements from the perspective of the built environment.
- 6. BEACON (Built Environment leArning for Climate adaptation). Its value is € 449,455.00 and the GDRC is leading this project with partners from: University of Huddersfield (lead); Lund University, Sweden; UNIVERSIDAD DE CANTABRIA, Spain; UNIVERSITA TA MALTA, Malta; University of Colombo, Sri Lanka and University of Moratuwa, Sri Lanka. Funder is Euripean Commssion Erasmus+Strategic Partnerships for higher education. In BEACON, we will tackle climate change and built environment nexus.

Strengthening University-Enterprise Collaboration for Resilient Communities in Asia (SECRA) - SECRA too has been successful recently. It is valued at € 1 million and is led by Mid Sweden University, Sweden. GDRC is a core partner of SECTRA consortium. There are 13 core partners and 15 associate partners in SECTRA. It is funded by the European Commission Erasmus+ CBHE. The overarching aim of SECRA is to contribute to more resilient communities in Asia through institutionalized, systematic, monitored, innovative, and inclusive university–enterprise collaboration (UEC) in climate change action and disaster resilience (DR).

8. Research Network in tackling climate change as an underlying disaster risk driver (CCA-DRR) "Research Network in tackling climate change as an underlying disaster risk driver (CCA-DRR)" has been successful and will be funded by the European Commission. Addressing the dual and inter-related challenges of CAA and DRR is one of the most critical necessities for the sustainable development agenda beyond 2015. Our planned research programme will bring together a bi-lateral cohort of experts from UK and Sri Lanka, aiming to aims to advance the dialogue between the CAA and DRR communities. GDRC is leading this project with 8 Sri Lankan universities, and is a three year project.

Publications

GDRC members have been publishing their research output and our vision have been to invest their efforts in generating high quality publications that are internationally outstanding, displaying a very high level of originality, significance and rigour, innovative and potentially agenda setting, and is, or is likely to be, an essential point of reference for work in its field. Publications

written by GDRC members include the following : Books and book chapters; Refereed research papers; Editorials; Conference proceedings; Vision papers, Briefing Papers, and Research reports, and are available at: <u>https://pure.hud.ac.uk/en/organisations/</u> <u>global-disaster-resilience-centre</u>

We very successfully held the International Symposium on Tsunami and Multi Hazard Risks, Early Warning and Community Awareness in supporting the implementation of Sendai Framework for Disaster Risk Reduction 2015-2030 - To promote and support the availability and application of research, science and technology to Policy, Practice and decision-making in Disaster Risk Reduction, from 16th to 18th December 2020. The event was jointly organised by the Disaster Management Center from the Government of Sri Lanka, the University of Huddersfield in the UK, the Asian Disaster Preparedness Center, and the University of Moratuwa in Sri Lanka, with the input from several other partners. Event co chairs were : Professor Dilanthi Amaratunga and Professor Richard Haigh from GDRC, Major General (Retd) Sudantha Ranasinghe & Sunil Jayaweera, Disaster Management Centre, Sri Lanka; and Dr Chandana Siriwardena, University of Moratuwa, Sri Lanka.

The three-day event, held in Colombo, Sri Lanka, as a hybrid face to face and online, brought together over 2500 participants from the Sri Lankan Government, the third and private sector, and higher education. They examined how research, science and technology could be used to support efforts to reduce to support the implementation of Sendai Framework for Disaster Risk Reduction towards 2030. Due to the pandemic, many Sri Lankan and international participants took advantage of an online platform to join the event remotely.



At the culmination of an International Symposium on Wednesday 16th December 2020, thirty-two national, regional and international agencies responsible for tackling disaster risk in Sri Lanka, came together to agree the Colombo Declaration of Multi-Hazard Early Warning and Disaster Risk Reduction.

The Symposium programme included a combination of four keynote addresses and five panel discussions that involved leading national and international policy makers and scientists. These were complemented by twenty technical sessions where 157 detailed scientific, policy and practical applications were presented and shared.

These wide-ranging interventions provided the basis for a Declaration by the Disaster Management Centre, Government of Sri Lanka, together with other key stakeholders responsible for disaster risk reduction in the country, region, and beyond, to work together to tackle the priority issues identified and addressed during the Symposium. It is a key milestone for the Disaster Management Practice Community in Sri Lanka, adopting the Colombo Declaration, which will reshape, rephrase and accelerate the implementation of National strategies supported by Global and regional instruments.

The Declaration expresses deep concern at the growing frequency and intensity of extreme weather and climate-related challenges, and their continuing impact of disasters, resulting in an unacceptable loss of human lives and livelihoods, displacement of people, and environmental and economic damages in Sri Lanka and across the world.

The Declaration sets out fifteen key priorities and actions that must be taken by stakeholders in order address these challenges.

The Declaration also recognises the devastating impact of COVID-19 around the world and the threat posed by future epidemics and pandemics. It stresses the need to focus on developing a holistic understanding of societal challenges, risks and drivers, like poverty, climate change, loss of protective eco-systems and biodiversity, rapid urbanisation and unplanned development in hazard prone areas, socioeconomic inequalities, and population growth along with their interactions. It underlines the need to build resilience against all hazards, including emerging and unforeseen hazards such as biological, human-animal transfers of diseases, hormones and microplastics.

The Declaration was inspired by the UN Sendai Framework for Disaster Risk Reduction, agreed by UN member states in 2015. It includes a strong call for higher education and science to support the understanding of disaster risk and promote riskinformed decisions and risk sensitive planning from the local to the global levels. The goal is to strengthen the evidence-base in support of the implementation of the new framework. The Declaration recognizes the importance of ensuring coherence among the global frameworks the 2030 Agenda for Sustainable such as Development, the Paris Agreement on Climate Change, the Sendai Framework for Disaster Risk Reduction, and the New Urban Agenda among others. There is an urgent need to strengthen and mainstream the inclusion of the research, science, and technology applications. There is also a need to build a community of practice that crosses scientific disciplines, and links science, policy and practice. This Declaration provides an important step in roadmap for achieving this and protecting people at risk.

Fifty-four scientific contributions from the conference will also be published in a peer reviewed book, titled: "Multi-Hazard Early Warning and Disaster Risks [Amaratunga, D., Haigh, R,. & Dias N. (Ed.)], to be published by Springer Nature in 2021.







Northumbria University NEWCASTLE

The Disaster and Development Network (DDN) produces knowledge and skills that engage hazards, disasters and complex emergencies from the perspective of different development debates and experiences. It examines the current and future survivability and resilience of people in the face of climate, economic, and political changes. DDN originated from multiple activities of the previous Disaster and Development Centre (DDC) launched 2004 as part of Northumbria University's Department of Geography and

Environmental Sciences. The DDN operates as a cross-disciplinary externally facing network of the Universities inter-related initiatives of the Disaster, Development and Resilience (DDR) research group, student led Disaster and Development Society (DDS), inter-Faculty research cluster for Geographies of Development and Disasters (DDG) and a Northumbria University multi-disciplinary sustainable development thematic initiative. Some achievements and timely reporting for 2020 include:



Prof. Collins visited Zimbabwe and Mozambique partners (early year, pre-COVID lockdown) for post project impact assessments of 'Infectious Disease Risk Reduction' (DFID, British Council, WHO, UNICEF Moz Govt. and ICDDR,B) following the Cyclone Idai

Disaster and Development Network (DDN) Northumbria University Newcastle, United Kingdom

https://www.northumbria.ac.uk



disruptions at Beira Mozambique, and in relation to 'Disaster Education for Community Resilience' (British Council, Bindura) and the 'Zambezi Valley Advocacy Project' (DFID, SCF, Basilwizi Trust) in Zimbabwe.

In February (also early year, pre-COVID lockdown) Prof. Collins was honoured with the 6th DPRI Award for Outstanding Contributions to Research and Education recognition. The Award was presented by Prof. Manabu Hashimoto, Director, DPRI, Kyoto University on 20th February 2020 during the DPRI Annual Meeting held at DPRI, Obaku Plaza, Kyoto, Japan. To commemorate the occasion, Prof. Collins delivered a lecture on "Progress and Prospect for Action Data in People Centred Disaster Risk Reduction and Resilience Building", as well as two additional lectures on "Systematising and Desystematising the Societal Contribution in Disaster Risk Reduction" and "Revisiting Infectious Disease Context Risk Reduction in the of Current Emergencies" during the visit.

> Prof. Andrew Collins Leader



E-mail: and rew.collins@northumbria.ac.uk

New research grants include those of Drs. Katie Oven, Francis Massé and Kevin Glynn who gained leading positions in multi-million pound UKRI Global Challenges Research Fund (GCRF) partnership investment for the following projects:

Katie Oven – "Sajag-Nepal–Planning and preparedness for the mountain hazard and risk chain in Nepal": 2020-2023

Francis Massé – "Identifying and mitigating the impacts of COVID-19 on legal and sustainable wildlife trade in LMICs": 2020-2022

Kevin Glynn - "Ixchel: Building understanding of the physical, cultural and socio-economic drivers of risk for strengthening resilience in the Guatemalan cordillera": 2021-2024

Collins and Becky Richardson advanced new work within the UKRI-NERC, GCRF "Tomorrow's Cities, Multi-hazard Urban Risk Transitions" research hub, that includes a new fully funded PhD Scholarship to support DDN work on 'people-centred risk and well-being engagement and communication transitions in fragile neighbourhoods', focused initially on Nairobi, Kenya.

Richard Kotter led an initiative for Northumbria in Pakistan; an example of DDN external engagement work on the ground with the Emergency Services Academy, governmental organisations as well as in the field and with national media outings, focussing on well -established and foundational work with the International Emergency Team of the United Kingdom (of which he is also an invited trustee) and the Punjab Emergency Service (aka Rescue-1122) to progress multi-levelled planning, training and field actions for integrated emergency and disaster management. This also included guest lecturing to disaster management, city and regional planning and community wellbeing students at the University of Engineering and Technology (UET) in Lahore.

The year 2020 marked the 20th Anniversary of the MSc Disaster Management and Sustainable Development, the first postgrad program in the world with this focus, with a global alumnus of approaching 400 people, of which many have also successfully completed PhDs and to which many staff have contributed. The Department's specialist final year optional undergraduate module in this area in 2020 again received the highest number of student selections (80).

The immediate staff, researchers, PhD scholars and affiliates of the DDN have published multiple papers in high-ranking journals and other outputs throughout the year. One policy leading example included the Northumbria-led, UNDRR Data Working Group that calls for data to be more active in achieving the intended outcomes of the Sendai Framework for Disaster Risk Reduction: <u>https://www.undrr.org/publication/stag-data-working-group-report</u>





Overseas Development Institute, United Kingdom https://www.odi.org/

ODI's **Global Risks and Resilience Programme** published a range of reports, toolkits, briefing and working papers in 2020. Visit <u>www.odi.org/our-work/</u> <u>programmes/global-risks-and-resilience</u>

- <u>Risk-informed approaches to humanitarian funding:</u> using risk finance tools to strengthen resilience
- In pursuit of resilience: assessing threats and trade -offs for risk-informed development in Myanmar and Niger
- Integrating 'anticipatory action' in disaster risk management
- The evidence base on anticipatory action
- <u>Strengthening forecast-based early action in the</u> <u>Caribbean</u>
- <u>Anticipatory action for livelihood protection: a</u> <u>collective endeavour</u>
- <u>The 'triple dividend' of early warning systems:</u> evidence from Tanzania's coastal areas
- <u>Reducing the risk of protracted and multiple</u> <u>disaster displacements in Asia-Pacific</u>
- <u>The influence of the physical environment on self-</u> recovery after disasters in Nepal and the <u>Philippines</u>
- <u>Climate change, conflict and fragility: an evidence</u> review and recommendations for research and action
- Enhancing women-focused investments in climate and disaster resilience
- <u>Livestock markets in the Sahel: market integration</u> <u>and the role of climate and conflict in price</u> <u>formation</u>
- <u>The impact of Covid-19 on climate change and</u> disaster resilience funding: trends and signals
- <u>Economic Pulse 1: Covid-19 and economic crisis –</u> <u>China's recovery and international response</u>
- <u>The humanitarian impact of combined conflict,</u> <u>climate and environmental risks</u>
- Using mobile phone surveys to track resilience and post-disaster recovery: a how-to guide
- Several <u>blogs exploring Covid-19 in the context of</u> <u>climate change and conflict.</u>

Projects

The programme is working on numerous multi-year projects/initiatives, including:

- leading research and strategic knowledge management for <u>Building Resilience and</u> <u>Adapting to Climate Change in Malawi (BRACC)</u> (2020-2023)'s Knowledge and Policy Hub: <u>www.resilience.mw</u>
- research lead and communications lead for <u>Supporting Pastoralism and Agriculture in</u> <u>Recurrent and Protracted Crisis (SPARC)</u> (2020 – 2025), which aims to generate evidence and address knowledge gaps to build the resilience of pastoralists, agro-pastoralists and farmers in sub-Saharan Africa and the Middle East.
- <u>Adaptation Without Borders</u>, an ODI, SEI and IDDRI collaboration supporting policymakers and planners to more effectively identify, assess and manage transboundary climate risks: <u>adaptationwithoutborders.org/about-adaptation-</u> <u>without-borders</u>
- ODI's Global China 2049 Initiative: <u>www.odi.org/our-</u> work/china
- Dr Emily Wilkinson supporting the Climate Resilience Execution Agency for Dominica (CREAD) as Chief Scientific Adviser.



<u>Events</u>

Media highlights

- Katie Peters chaired "<u>Humanitarian impact of</u> <u>combined conflict, climate and environmental risks</u>" at <u>UNGA 75</u> and Dr Rebecca Nadin chaired the "<u>Reimagining risk and resilience for a global future</u>" webinar as part of <u>UNGA's SDG Action Zone</u>
- Katie Peters chaired the joint contribution by ODI, ICRC, GIZ, World Bank <u>"Crossroads: Managing</u> <u>Intersecting Risks of Conflict, Violence, Disasters</u> <u>and Climate Change</u>" at the <u>2020 Understanding</u> <u>Risk conference</u>
- Dr Rebecca Nadin delivered a keynote on transboundary climate risks at the <u>HKH to Glasgow:</u> <u>Climate action in the Hindu Kush Himalaya</u> webinar
- Dr Rebecca Nadin discussed adaptation and resilience as part of the <u>UK-Bangladesh Climate</u> <u>Partnership Forum</u> virtual series
- Dr Rebecca Nadin chaired and Paul Sayers presented at a British Embassy in Moscow event on <u>'Nature-based solutions: the IUCN global standards</u> <u>and programmes in Russia'</u>
- Paul Sayers presented on nature-based solutions at the <u>Moscow Clean Country Forum</u>

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- The <u>Financial Times</u>, the <u>China Times and Les Echos</u> cited ODI's first <u>Economic Pulse : Covid-19 and</u> <u>economic crisis – China's recovery and international</u> <u>response</u>
- DownToEarth referenced "Climate change, migration and displacement: the need for a risk-informed and coherent approach"
- <u>The Economist cited "The evidence base on</u> <u>anticipatory action"</u>
- <u>CDKN</u> featured <u>"Climate change, conflict and fragility:</u> an evidence review and recommendations for research and action"
- We produced a video on '<u>How to take early action in</u> <u>the eastern Caribbean to avoid climate extremes</u> <u>becoming disasters</u>'
- Letters / opinion pieces:

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- Financial Times: <u>"What will the carbon footprint be</u> of the AI revolution?" Devex: <u>"To finance resilience</u> in small states, governments and development partners must take some risks"
- <u>Thomson Reuters Foundation News: "What</u> lockdown looks like when you can't get home: displaced communities and COVID-19" and "Dealing with COVID-19 in conflict zones needs a different approach"

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GADRI Annual Report — Europe

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GADRI Annual Report 2020-132



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/



Most of the 2020 was not as active as most of the previous years. The majority of the countries work under lockdown where there were intermittent travel restrictions and encouragement to stay at home order in to contain the spread of the COVID-19. These restrictions were enforced particularly to flatten the peak of both the first and second waves.

Pre-season 2020 by the local disaster team in preparations for the tropical cyclone season in Chimanimani, a tropical cyclone prone area in Zimbabwe.

Of note is that in Africa the pandemic did not ravage the continent as was expected. The death rates from COVID-19 even for the most affected like South Africa and Egypt were significantly lower than that of Europe and the Americas. Tanzania, whose president declared the country a no covid-19 zone thereby allowing local institutions to operate as if covid-19 does not exist did not become an epicentre for the spread of the disease. No masking, no social distancing and washing of hands etc. were enforced. This unexpected show of events regarding the covid-19 impacts on Africa still remains an area of research.



Prof. Desmond Manatsa Email: dmanatsa@gmail.com

GADRI Annual Report — Africa

Below are some of the AADRI activities which occurred before the COVID-19 restrictions:



Young women in the Tropical Cyclone prone region of Chimanimani (Zimbabwe) discussing challenges faced by women during disasters/emergencies

AADRI's

disaster risk reduction team which carries awareness activities in disaster prone AADRI areas. The president Prof Desmond Manatsa is warring a hat whilst the vice president Dr. Chipo is on the left first row.

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GADRI Annual Report 2020—137

Geographical Distribution of



Members of GADRI as of 31 December 2019





GADRI Secretariat, Disaster Prevention Research Institute (DPRI), Kyoto University



GADRI SECRETARIAT

Disaster Prevention Research Institute (DPRI) Kyoto University Gokasho, Uji-shi, Kyoto 611-0011, Japan

Tel: +81-774-38-4651

E-mail: secretariat-gadri@dpri.kyoto-u.ac.jp

Website: http://gadri.net/