



# 5<sup>th</sup> Global Summit of GADRI

## Engaging Sciences with Action

31 August to 1 September 2021  
Virtual Intercontinental Conference

Organised by the Global Alliance of Disaster Research Institutes  
together with the support of the Regional Alliances





Session	Coordinated Universal Time (UTC)	Japan Standard Time (JST)	Indian Standard Time (IST)	Central European Time (CET)	US-Eastern Daylight Time (EDT)	US - Pacific Daylight Time (PDT)
<b>Common Opening Session for All Participants</b>	31 August 2021	31 August 2021	31 August 2021	31 August 2021	31 August 2021	31 August 2021
	13:00 hours	22:00 hours	18:30 hours	15:00 hours	09:00 hours	06:00 hours
<b>Americas covering North and South America Regional Session</b>	31 August 2021	1 September 2021	31 August 2021	31 August 2021	<b>31 August 2021</b>	<b>31 August 2021</b>
	16:00 hours	01:00 hours	21:30 hours	18:00 hours	<b>12:00 hours</b>	<b>09:00 hours</b>
<b>Common Plenary Session for All Participants</b>	31 August 2021	1 September 2021	1 September 2021	1 <sup>st</sup> September 2021	31 August 2021	31 August 2021
	22:00 hours	07:00 hours	03:30 hours	00:00 hours	18:00 hours	15:00 hours
<b>Asia and Oceania Regional Session</b>	1 September 2021	<b>1 September 2021</b>	<b>1 September 2021</b>	1 September 2021	31 August 2021	31 August 2021
	00:30 hours	<b>09:30 hours</b>	<b>06:00 hours</b>	02:30 hours	20:30 hours	17:30 hours
<b>Europe with Africa and the Middle East Regional Session</b>	1 September 2021	1 September 2021	1 September 2021	<b>1 September 2021</b>	1 September 2021	1 September 2021
	07:00 hours	16:00 hours	12:30 hours	<b>09:00 hours</b>	03:00 hours	00:00 hours
<b>Parallel Sessions on Networking with Institutes and E-Posters – All Participants</b>	1 September 2021	1 September 2021	1 September 2021	1 September 2021	1 September 2021	1 September 2021
	13:00 hours	22:00 hours	18:30 hours	15:00 hours	09:00 hours 06:00	
<b>Common Final Plenary and Closing Session for All Participants</b>	1 September 2021	2 September 2021	1 September 2021	1 September 2021	1 September 2021	1 September 2021
	15:00 hours	00:00 hours	20:30 hours	17:00 hours	11:00 hours	08:00 hours



## Welcome to the 5<sup>th</sup> Global Summit of the Global Alliance of Disaster Research Institutes under the sub-theme of Engaging Sciences with Actions.

As you all know, our much anticipated face-to-face 5<sup>th</sup> Global Summit of GADRI to be held at the EC-JRC, Milan, Italy, unfortunately and sadly, had to be postponed to this summer and organise virtually due to the ongoing COVID-19 pandemic.

The summit is organised with the generous support and help of our regional alliances and hosts in Americas session with the North American Alliance of Hazards and Disaster Research Institutes (NAAHDRI); Asia and Oceania session with GADRI Secretariat and the newly established South Asian Alliance of Disaster Research Institutes (SAADRI); the European with Africa and the Middle-East session with the forthcoming European Alliance of Disaster Research Institutes (EUDRI) together with the Risk and Crisis Research Centre at Mid Sweden University, UK Disaster Research and the European Commission Joint Research Institute.

I am happy to inform you that as of Saturday, 28<sup>th</sup> August 2021, there were 608 participants from 68 countries who have registered to participate in the conference. This is our first time to hold a conference of this magnitude online. We thank all of you for your support and recognition of our activities and your willingness to contribute to disaster risk reduction.

The conference is divided into three time zone sessions:

- America covering North and South Americas will focus on Multidisciplinary Modeling Progress and the Role of Community Engagement in Resilience Planning.
- The Asia and Oceania session will be on Engaging Sciences with Action: Voices from Asia and Oceania.
- European Session with Africa and the Middle-East will continue with Exploring Solutions to Bridge the Gaps for Implementation of Science in Action.

The organizing teams have worked very hard and invited various and impressive array of speakers and panelists—all together there are 93 prominent speakers from various fields of specialisations. These stakeholders have agreed to share their views, guidance, suggestions and their expert experiences with the conference participants.

Although it is not very easy to conduct simultaneous discussions together, I hope you will enjoy the plenary and parallel discussion panel sessions. I hope you will actively engage in the preceding discussion sessions and contribute to achieve our goals and to the outcomes of the conference.

One important advantage of holding the summit online is that it will be possible for researchers and young scientists especially in developing countries, to participate, and share their opinions, research interests and engage in discussion with GADRI members and other global stakeholders.

The 5<sup>th</sup> Global Summit of GADRI aims to take stock of progress and achievements in DRR research from its members towards the targets of the Science and Technology Roadmap to implement the goals and priorities of the Sendai Framework for Disaster Risk Reduction. Furthermore, GADRI intends to share its contributions with international conferences such as the UN Climate Change Conference of the Parties (COP26) in Glasgow, November 2021 and the 7<sup>th</sup> Session of Global Platform for Disaster Risk Reduction in Bali, May 2022.

The scientific contribution from the members of GADRI towards disaster risk reduction, climate change mitigation and adaptation, and current and post-COVID-19 pandemic are needed to influence policy making and practice associated with these international frameworks.

In support of the above-mentioned purpose, the GADRI Secretariat carried-out a questionnaire survey to collate data on how GADRI members contribute to the intended outcomes of these agendas, and to help identify interlinkages and opportunities for strengthening pathways to impact, engaging science in action.

However, only a handful of the members responded and we intend to extend the deadline to enable replying to questionnaire beyond this summit. The analysis of the collected data will be made available as a contribution of GADRI members in the process of the above events.

During the last, 4<sup>th</sup> Global Summit of GADRI held at DPRI, Kyoto University, GADRI members made a voluntary commitment to strengthen the promotion of disaster risk prevention and report the status of disaster prevention science and technology research promoted through the respective institute; and to report the results at the biennial GADRI global summits. GADRI requested its members to send in their inputs on research knowledge, results and achievements in line with the common targets of the Science and Technology Roadmap for the implementation of the Sendai Framework.

In November, the Disaster Prevention Research Institute, Kyoto University will celebrate its 70<sup>th</sup> Anniversary. On this occasion, the GADRI Board of Directors are planning to get together and share the final outcomes of the 5<sup>th</sup> Global Summit of GADRI including the results of the survey and achievement report and formulate the Resolution of the 5<sup>th</sup> Global Summit of GADRI.

In addition, through the UKADR, GADRI will feed in its recommendations linking disaster prevention science to policies and disaster risk reduction from a scientific perspective to COP26 to be held in Glasgow, UK in November. In May 2022, GADRI will actively participate and contribute its recommendations at the UNDRR Global Platform for Disaster Risk Reduction (GP22) in Bali, Indonesia.

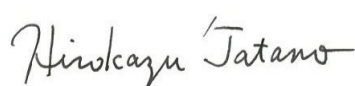
Since its inception in March 2015, GADRI has gained global recognition as a global network of a science community. Its members have grown to be 209 members from 53 economies.

GADRI's presence has become the foundation of an international joint research network, engaging to create a system for promoting disaster risk prevention and contributing to global agendas on science and technology roadmaps and action plans.

The GADRI Global Summit is a valuable opportunity to engage with GADRI members in a global context as well as on a regional basis. It also provides a global orientation on DRR research, contributions and achievement.

I hope you will take advantage of this opportunity and enjoy this online session of the 5<sup>th</sup> Global Summit of GADRI while sharing your valuable thoughts and inputs to the discussion sessions. I am anxiously waiting and looking forward to the final outcome of the summit.

Wishing you all the very best for a success participation and interesting deliberations.



Hirokazu Tatano

Secretary-General, Global Alliance of Disaster Research Institutes (GADRI);

Head, Social Systems for Disaster Risk Governance, DPRI, Kyoto University

# Common Opening Ceremony

## Welcome Greetings

### Paul Kovacs



Chair, GADRI Board of Directors; Institute for Catastrophic Loss Reduction at Western University, Canada

Paul Kovacs is the current Chair of the Board of Directors of the Global Alliance of Disaster Research Institutes (GADRI); and is founder and Executive Director of the Institute for Catastrophic Loss Reduction at Western University, Canada.

Since 1996 Paul has been a contributing author to the Intergovernmental Panel on Climate Change (IPCC), the world's leading forum for the study of climate issues. The Panel won the 2007 Nobel Peace Prize "for their efforts to build up and disseminate greater knowledge about man-made climate change". He is Canada's leading authority on insurance and

climate change and has been a contributing author to numerous international and Canadian reports on reducing the risk of loss from earthquakes, flood and severe wind.

For more than thirty-five years Paul has been a popular commentator on insurance, disaster safety and economic policy. He has written more than 200 publications and articles and he is a passionate champion for insurance, disaster resilience and adaptation to climate extremes. Paul has worked in private industry, the public sector and academia. He is Co-Chair of the Infrastructure and Housing Working Group of Canada's Adaptation Platform. He is Co-Chair of the Science and Technology Working Group of Canada's Platform on Disaster Risk Reduction. Paul is also a member of a number of Boards and Advisory Panels. He is a proud husband and father, with a growing collection of bow ties.

## Greetings

### Mami Mizutori



Special Representative of the UN Secretary-General for Disaster Risk Reduction

Mami Mizutori is the Special Representative of the United Nations Secretary-General for Disaster Risk Reduction, and head of the United Nations Office for Disaster Risk Reduction (UNDRR).

Prior to joining the UN, Ms. Mizutori was Executive Director of the Sainsbury Institute for the Study of Japanese Arts and Cultures, University of East Anglia, UK from 2011. Ms. Mizutori served for twenty-seven years in the Japanese Ministry of Foreign Affairs, in various capacities, including: Budget Director; Director of the Japan Information and

Culture Center (JICC) at the Embassy of Japan in London; Director of the National Security Policy Division, Director of the United Nations Policy Division; Director of the Status of US Forces Agreement Division; and Deputy Director of the Personnel Division.

Having graduated in law from Hitotsubashi University, Tokyo and obtained a Diploma in International Studies from the Diplomatic School of Spain, she has taught courses on governance in East Asia at Ritsumeikan Asia Pacific University and international studies at Waseda University, Tokyo. A Japanese national, Ms. Mizutori speaks fluent Japanese, English and Spanish. She is married to Barak Kushner and lives in Geneva, Switzerland.

## Objectives, Structure and Expected Outcomes of the 5th Global Summit of GADRI

### Hirokazu Tatano



Secretary-General, Global Alliance of Disaster Research Institutes (GADRI); and Head, Social Systems for Disaster Risk Governance, DPRI, Kyoto University

Hirokazu Tatano is Professor and Head of the Social Systems for Disaster Risk Governance, Disaster Prevention Research Institute (DPRI), Kyoto University, Japan. Since 2010, he has been serving as Vice-President of the International Society of Integrated Disaster Risk Management

(IDRiM Society). He was appointed as the Secretary-General of the of the Global Alliance of Disaster Research Institutes (GADRI) by its General-Assembly in 2015. Prof. Tatano has done pioneering research on economic consequence analysis with major focus on economic resilience to natural disasters at the levels of individual business, market, and regional economy. His further research interests focus on methodologies for integrated disaster risk management and governance. Through these academic and research activities, his aspires to contribute to establishing "implementation science" as a key area of science for disaster risk reduction.



## Plenary Session I: Systemic Risk and Current Action

The opening session will be in three parts. The first half will start with opening remarks and greetings followed by the first Plenary Session I on Systemic Risk and Current Action. The third part will include GADRI delegates who will share achievements, landmarks, and experiences of the global alliance and its vision and roadmaps for the future.

The Plenary Session I will include three keynote lectures dealing with emerging critical issues in disaster risk reduction – systemic risk and current action.

Disaster risk in the modern era is primarily part of systemic risk. Systemic risk is characterized as highly complex, uncertain, ambiguous, non-linear development and has cascading effects. Therefore, conventional risk management fails to deal with systemic risk issues effectively. It is critical to have integrated and comprehensive perspective evaluation criteria, different risk classes, and corresponding management strategies for the management of systemic risks.

Effective disaster risk reduction needs the active participation of different stakeholders, including local communities and disaster victims, local and regional government, researchers, and experts. Given the stakeholders' diverse elements of risks, values, and background, reducing conflict and building consensus, are an immense challenge but critical in disaster risk management. Trust, accountability, transparency, ownership, etc., play a vital role in ensuring effective risk management. A comprehensive perspective on the issues, challenges, and policy options of good governance is vital for the effective realization of DRR.

### Loretta Hieber Girardet



Chief, Risk Knowledge, Monitoring and Capacity-Development Branch, United Nations Office for Disaster Risk Reduction (UNDRR)

Loretta Hieber Girardet is the Chief of the Risk Knowledge, Monitoring and Capacity-Development Branch covering risk information and analytics, climate change, disaster loss and monitoring data and capacity-building for UNDRR globally.

Previously, she served as Chief of the UNDRR Asia-Pacific regional office, covering 38 of the world's most disaster-prone countries. Loretta served in various management positions at OCHA for over a decade before joining UNDRR, including overseeing the global Cluster coordination mechanism and having responsibility for IASC mechanisms on coordinated humanitarian needs assessments. She also has a background in public health and worked for the World Health Organization in various capacities, including in emergency contexts in Afghanistan, Pakistan and sub-Saharan Africa. Her experience in emergency contexts spans more than 25 years and she is the author of several publications including *Lifeline Media: Reaching Populations in Crises* which promotes greater accountability to people affected by disasters. Her academic background includes fellowships and degrees from the Harvard School of Public Health and University of Paris-Assas.

#### Abstract:

The past two years have shown us how little we really know about the composition of risk, the origins, the interconnections. We are paying for it now; COVID-19 is the manifestation of systemic risk realized. The IPCC Assessment Report 6 is the latest harbinger of the urgency of transformation required to meet the challenges we have created for ourselves. Risk science and research have helped us to see the impact of disasters across systems and are key allies in working toward both identifying and short-circuiting risk drivers. There is excellent research and good evidence that could support better policy making and there are many dedicated and overstretched policymakers and development partners trying to make evidence-based decisions in an increasingly uncertain and complex world. Connecting these actors for mutual support is critical but will require new ways of thinking and strengthened collaboration to ensure that no one is left behind and that we reach 2030 on a safer and healthier planet.

### COVID-19 and other hazards – science into action

#### Virginia Murray



Head, Global Disaster Risk Reduction, Public Health England (PHE), UK

Virginia is public health doctor committed to improving health emergency and disaster risk management as well as data access and transparency for effective reporting. She was appointed as Head of Global Disaster Risk Reduction (GDRR) for [Public Health England](#) in April 2014 and in 2020 has been working additionally as a Senior Public Health Advisor for COVID-19. She is a member of the [Integrated Research on Disaster Risk \(IRDR\)](#) scientific committee, co-sponsored by the International Science Council (ISC) and the [United Nations Office for Disaster Risk Reduction](#) (UNISDR) and Co-Chair of [IRDR's Disaster Loss Data \(DATA\)](#), and currently member of [CODATA Executive Committee](#). With IRDR support, she was asked to be the Chair of the UNDRR/ISC Hazard Classification and Review Technical Working Group, and the [report](#) was published in July 2020 with a supplement of 302 Hazard Information Profiles to be published shortly. She is a co-chair of the [WHO Thematic Platform Health and Disaster Risk Management Research Network](#). By working in collaboration with this network she has been one of the editors of the [WHO Guidance on Research Methods for Health and Disaster Risk Management](#), published in September 2020. She is a visiting/honorary Professor and fellow at several universities

#### Abstract:

The COVID-19 pandemic is a timely reminder of how hazards within the complex and changing global risk landscape can affect lives, livelihoods and health. Reflecting on COVID-19, it has emerged that the need for scientific research has been critical to provide evidence and data to inform guidance for policy makers.

Various global, national and local networks and organisations have delivered reviews of the COVID-19 pandemic and are providing suggested pathways for recovery and building back better and this debate continues at many levels. The World Health Organisation remains critical to engagement and delivery of COVID-19 response; and is also delivering on the WHO Health Emergency and Disaster Risk Management Framework, its research network and the publication of the guidance on research methods to reflect COVID-19 and other hazards and risks. As an example of global scientific engagement, the Sendai Framework all hazards approach has resulted in the publication of the UNDRR/ISC Hazard Definition and Classification Review (2020) and a supplement of 302 Hazard Information Profiles will be published soon. This all hazard approach is contributing to the science of disaster related statistics.

Increasingly the need for knowledge exchange hubs or centres are being suggested as they should share evidence to inform disaster risk reduction policies and practices. Such centres or hubs along with science strategies for data infrastructure, knowledge mobilisation, rapid learning systems and implementation science will help to identify further research gaps.

## Plenary Session I: Systemic Risk and Current Action

### Lessons of COVID-19 for systemic risk governance: Reconciling sustainability and resilience

#### Ortwin Renn



Scientific Director, International Institute for Advanced Sustainability Studies (IASS) in Potsdam

Ortwin Renn is scientific director at the *International Institute for Advanced Sustainability Studies (IASS)* in Potsdam (Germany) and professor for environmental sociology and technology assessment at the University and Stuttgart. He also directs the non-profit company *DIALOGIK*, a research institute for the investigation of communication and participation processes. Renn is *Adjunct Professor for "Integrated Risk Analysis"* at Stavanger University (Norway), *Honorary Professor* at the Technical University Munich and *Affiliate Professor for "Risk Governance"* at Beijing Normal University. His research interests include risk governance (analysis perception, communication), stakeholder and public involvement in environmental decision making, transformation processes in economics, politics and society and sustainable development. Ortwin Renn has a doctoral degree in social psychology from the University of Cologne. His career includes teaching and research positions at Clark University (Worcester, USA), the Swiss Institute of Technology (Zuerich) and the Center of Technology Assessment (Stuttgart). Among the many honours and awards he has received, in 2019, he was awarded the Order of Merit from the State of Baden-Württemberg for special achievements in scientific policy advice.

Renn is a member of the German National Academy of Sciences "Leopoldina", the Berlin-Brandenburg Academy of Sciences (Berlin), and of the Board of Directors of the German National Academy of Technology and Engineering (Acatech). Renn has many publications to his credit and his most prominent English publication is the book "Risk Governance. Coping with Uncertainty in a Complex World (London: Earthscan 2008).

#### Abstract:

When reviewing the most often repeated policy recommendations about the COVID-19 crisis over the last few weeks two statements predominate the public discussion in almost all countries: First, the recovery of the economy should be guided by sustainability criteria or more specifically the UN Sustainability Development Goals (SDGs) and, secondly, societies should invest more in resilience because the most needed infrastructure, particularly referring to healthcare and social services, was clearly at, often beyond its limits during the recent crisis. The adherence to sustainability and resilience is echoed in many comments and policy briefs but there is little clarity about the meaning of the two terms and, in particular, about the relationship between resilience and sustainability when applied to multiple hazard management. It is therefore useful to review the connections between the two concepts and highlight the opportunities of how these two concepts may offer guidance to political, economic and social actors as a means to respond to present and future crises.



## Reporting Items

- **Reporting on Achievements during the past two years Subhajyoti Samaddar**

Associate Professor, Social Systems for Disaster Risk Governance, DPRI, Kyoto University

- **Analysis of the GADRI Questionnaire Survey**

### Genta Nakano



Assistant Professor, Research Center for Disaster Reduction Systems, DPRI, Kyoto University

Genta Nakano is an assistant professor at Disaster Prevention Research Institute, Kyoto University. He obtained his PhD of informatics from Kyoto University in 2019. He majors in risk communication, DRR education and action research, and currently involved in the national and international interdisciplinary projects in Japan, Mexico and Nepal especially focusing

on earthquake and tsunami risk reduction and communication. He also worked as a member of JICA and NPOs in the field of DRR.

#### Abstract:

GADRI secretariat carried out the questionnaire survey for GADRI members with the aim of visualizing members' progress and achievements towards the targets of the Science and Technology Roadmap to implement the goals and priorities of the Sendai Framework for Disaster Risk Reduction (SFDRR). The presentation will summarize the result of the survey and discuss the potential input for international conferences such as the UN Climate Change Conference of the Parties (COP26) in Glasgow and the 7<sup>th</sup> Session of Global Platform for Disaster Risk Reduction in Bali.

- **Disaster and Risk Research – GADRI Book Series**

### Sameh Ahmed Kantoush



Associate Professor, Water Resources Research Center, DPRI, Kyoto University

Dr. Kantoush is currently an Associate Professor at the Disaster Prevention Research Institute (DPRI), Kyoto University. He received his Master's and Doctorate degrees in civil and environmental engineering from Saga University in Japan and the Swiss Federal Institute of Technology Lausanne (EPFL) in Switzerland, respectively. His specialties are river and dam engineering, with particular emphasis on integrated flood and sediment management for sustainable development in river basins. His

research interests span the fundamentals of shallow flow and sediment transport, flash floods, reservoir sustainability, Ecohydraulics, dam impacts and sediment management techniques. He is a member of many national and international organizations. Dr Kantoush served as a guest editor for Springer, Urban water and Water journals. He has contributed to several international associations and conferences. Dr Kantoush industrial expertise is predominantly pertinent to dam and reservoirs projects. His consulting engagements with multinational firms in many countries are exemplary of active applied research.

#### Abstract:

Disaster and Risk Research: GADRI Book Series is published under the auspices of the Global Alliance of Disaster Research Institutes (GADRI). GADRI book series offers a comprehensive and new paradigm for disaster

research directions. 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. 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, multi-stakeholder 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.

- **Navigating the Book- "Ecosystem-based Disaster and Climate Resilience- Integration of Blue-Green Infrastructure in Sustainable Development"**

### Mahua Mukherjee

Professor, Department of Architecture and Planning, Indian Institute of Technology Roorkee

Dr Mahua Mukherjee is Professor in the Department of Architecture and Planning, IIT Roorkee since 2003; a Joint Faculty and Ex-Head of Centre of Excellence in Disaster Mitigation and Management (CoEDMM), IIT Roorkee. Her



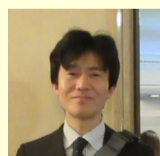
educational qualifications are B. Arch (Jadavpur University), M. Tech (Building Science and Technology) IIT Roorkee, and PhD in the field of sustainable urban development. She has pursued her career in Architecture Office and NGO before joining Teaching. Mahua is Secretary General to South Asia Alliance for Disaster Resilience Institutes (SAADRI) and UNDRR -APSTAG Board Member.

#### Abstract:

As part of the Disaster and Risk Research: GADRI Book Series, the Book on "Ecosystem-based Disaster and Climate Resilience- Integration of

Blue-Green Infrastructure in Sustainable Development" is now can be accessed by the readers. It's overall layout of content was meticulously planned so that it can help academics, researchers, practitioners, disaster managers and authorities. The support extended by each Authors' group resonated with the central theme of the publication well; and it became imminent that we affirm our belief on the strength of nature-based solutions as very important mitigation and adaptation methods.

- **Publication of the book "Disaster Risk Reduction and Resilience**



### Muneta Yokomatsu

Associate Professor, Disaster Risk Management, DPRI, Kyoto University

Muneta Yokomatsu received his Bachelor, Masters, and Ph.D. degrees from Kyoto University, Japan, in 1997, 1999 and 2003 respectively. He started his career at Tottori University as a research associate in 2001. He moved to Disaster Prevention Research Institute, Kyoto University as an associate professor in 2005. He stayed in University of Minnesota, USA, in 2008 as a visiting researcher. His research fields are economic analysis of disaster risk management, where he has developed the methods of cost-

benefit analysis of disaster prevention and infrastructure provision, and social network analysis, where he has worked on dynamics of network formation of people in local a community.

#### Abstract:

We published the book "Disaster Risk Reduction and Resilience (Yokomatsu, M., Hochrainer-Stigler, S., Eds.)", the idea for which was born in workshop discussions during the Third GADRI Summit in March 2017.

This book provides insight on how disaster risk management can increase the resilience of society to various natural hazards. The multi-dimensionality of resilience and the various different perspectives in regards to disaster risk reduction are taken explicitly into account by providing studies and approaches on different scales and ranging from natural science based methods to social science frameworks. For all chapters, special emphasis is placed on implementation aspects and specifically in regards to the targets and priorities for action laid out in the Sendai Framework for Disaster Risk Reduction. The chapters provide also a starting point for interested readers on specific issues of resilience and therefore include extensive reference material and important future directions for research.





# 5<sup>th</sup> Global Summit of GADRI

Engaging Sciences with Action

31 August to 1 September 2021

## Regional Session on Americas covering North and South America

Multidisciplinary Modeling Progress and the Role of Community Engagement in Resilience Planning

12:00 to 18:00 hours US Eastern Daylight Time (EDT), 31st August 2021



# Americas covering North and South America

## Multidisciplinary Modeling Progress and the Role of Community Engagement in Resilience Planning

31<sup>st</sup> August 2021 from 12:00 to 17:00 hours – US-Eastern Daylight Time

### Regional Organisers:

Prof. John van de Lindt, Colorado State University, USA ; Prof. Lori Peek, Natural Hazards Center, University of Colorado -Boulder, USA; Dr. Grace Yan, Center for Hazard Mitigation and Community Resilience, Missouri University of Science and Technology, USA; Prof. Jamie Kruse, HCAS Distinguished Professor of Economics and Past Director, Center for Natural Hazards Research, East Carolina University, USA, Prof. Paul Kovacs, The Institute for Catastrophic Loss Reduction (ICLR), Western University, Canada

### Regional Organising Committee

#### John van de Lindt



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

Dr. John W. van de Lindt is the Harold H. Short Endowed Chair Professor in the Department of Civil and Environmental Engineering at Colorado State University. Over the last two decades van de Lindt's research program has focused on performance-based engineering and test bed applications of building and other systems for earthquakes, hurricanes, tsunamis, tornadoes and floods. Professor van de Lindt is the Co-director for the National Institute of Standards and Technology-funded Center of Excellence (COE) for Risk-Based Community Resilience Planning headquartered at Colorado State University entering its seventh year. He has published more than 400 technical articles and reports including more than 200 journal papers, and currently serves as the Editor-in-Chief for the *ASCE Journal of Structural Engineering* and is a member of the GADRI Board of Directors.

#### Grace Yan



Associate Professor, Department of Civil, Architectural and Environmental Engineering, Missouri University of Science and Technology

Grace Yan is an Associate Professor in the Department of Civil, Architectural and Environmental Engineering of Missouri University of Science and Technology. She is the Director of Center for Hazard Mitigation and Community Resilience, in which 35 faculty members from 12 departments are affiliated. She is also the Director of Wind Hazard Mitigation (WHAM) Laboratory that is home to the largest tornado simulator of its type in the world. She is one of the eight Directors on NAAHDRI (North American Alliance of Hazards and Disasters Research Institutes) Board of Directors. She has been leading interdisciplinary and transdisciplinary research teams in addressing community resilience under a changing climate from different perspectives. Thus far, she has published more than 120 refereed journal and conference papers; She has secured 29 research grants, with the total amount of more than \$10M, from NSF, NOAA, DOT, NASA, and other

agencies. From the engineering perspective, she simulates different natural hazards (e.g., tornadoes, hurricanes, storm surge and floods, etc.) numerically and experimentally and investigates their actions on built environment, and studies vulnerability of communities to natural hazards.

#### Jamie Brown Kruse



HCAS Distinguished Professor of Economics and Past Director, Center for Natural Hazards Research, East Carolina University

Dr. Jamie Kruse HCAS Distinguished Professor of Economics and Past Director of the Center for Natural Hazards Research at East Carolina University. She is the Co-Director of the Center for Risk-based Community Resilience Planning headquartered at Colorado State University. She is recognized for her research in economics and decision making under uncertainty especially as it relates to natural hazards. She completed her doctoral work at University of Arizona under dissertation advisor, Vernon Smith (2002 Nobel Laureate in Economics). Dr. Kruse has authored more than seventy published and forthcoming refereed journal articles in addition to proceedings, abstracts and reports. Her work has been supported by National Aeronautics and Space Administration, National Science Foundation, US Geological Survey, US Department of Energy, National Oceanic and Atmospheric Administration, National Institute of Standards and Technology, Federal Emergency Management Agency, Department of Homeland Security, Federal Deposit Insurance Corporation, State of Texas and the State of North Carolina.



#### Paul Kovacs

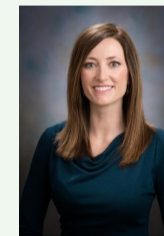
Chair, GADRI Board of Directors; and Founder and Executive Director of the Institute for Catastrophic Loss Reduction at Western University, Canada

Paul Kovacs is founder and Executive Director of the Institute for Catastrophic Loss Reduction at Western University in Canada. ICLR has been designated by the International Council for Science as an international centre of excellence for integrated research on disaster risk. Since 1996

Paul has been a contributing author to the Intergovernmental Panel on Climate Change, the world's leading forum for the study of climate issues. The Panel won the 2007 Nobel Peace Prize "for their efforts to build up and disseminate greater knowledge about man-made climate change". He is Canada's leading authority on insurance and climate extremes, and has been a contributing author to numerous international and Canadian reports on reducing the risk of loss from earthquakes, flood and severe wind to achieve disaster resilience.

For more than thirty-five years Paul has been a popular commentator on insurance, disaster safety and economic policy. He has written more than 200 publications and articles and he is a passionate champion for insurance, disaster resilience and adaptation to climate extremes. Paul has worked in private industry, the public sector and academia. He is Chair of Global Alliance of Disaster Research Institutes and Chair of Ontario's Advisory

#### Lori Peek



Director, Natural Hazards Center at the University of Colorado Boulder

Lori Peek is professor in the Department of Sociology and director of the Natural Hazards Center at the University of Colorado Boulder. She studies vulnerable populations in disaster and is author of *Behind the Backlash: Muslim Americans after 9/11*, co-editor of *Displaced: Life in the Katrina Diaspora*, and co-author of *Children of Katrina*. *Behind the Backlash* received the Distinguished Book Award from the Midwest Sociological Society and the Best Book Award from the American Sociological Association Section on Altruism, Morality, and Social Solidarity. *Children of Katrina* received the Best Book Award from the American Sociological Association Section on Children and Youth and the Alfred and Betty McClung Best Book Award from the Association for Humanist Sociologists and was named a finalist for the Colorado Book Awards. Peek also helped develop and write school safety guidance for the nation, which resulted in the publication of FEMA P-1000, *Safer, Stronger, Smarter: A Guide to Improving School Natural Hazard Safety*.



# Americas covering North and South America

## Multidisciplinary Modeling Progress and the Role of Community Engagement in Resilience Planning

31<sup>st</sup> August 2021 from 12:00 to 17:00 hours – US-Eastern Daylight Time

### Regional Organisers:

Prof. John van de Lindt, Colorado State University, USA ; Prof. Lori Peek, Natural Hazards Center, University of Colorado -Boulder, USA; Dr. Grace Yan, Center for Hazard Mitigation and Community Resilience, Missouri University of Science and Technology, USA; Prof. Jamie Kruse, HCAS Distinguished Professor of Economics and Past Director, Center for Natural Hazards Research, East Carolina University, USA, Prof. Paul Kovacs, The Institute for Catastrophic Loss Reduction (ICLR), Western University, Canada

### Session Description

Disastrous 2020 was mere a prelude to a looming climate crisis. In 2020, tropical storms in the Atlantic Ocean outnumbered the number of letters in the Latin Alphabet and we moved to the use of the Greek Alphabet, Alpha, Beta, ..., all the way through Iota, with 30 named storms in total, 13 of which progressed into hurricanes; Wildfires in California burned more than 4 million acres, and the two largest wildfires in Colorado's history occurred simultaneously. What we face will be more frequent and powerful hurricanes and flooding, more intense wildfires and more prolonged heat waves, along with long-term climate change projections (e.g., sea-level rise and coastal morphology). More coordinated, comprehensive climate actions are imperative to enhance community resilience. The North American Portion brings together national and international experts from academia, government and industry to discuss how to address the following four questions:

- What goal do we want to achieve? The goal is to enable resilience by preventing natural hazards from becoming disasters. (Session 1)
- How to achieve the goal by developing innovative approaches? (Session 2)
- How to reduce barriers in implementing the developed approaches? (Session 3)
- How to upgrade "resilience" into "equitable resilience" in order to reduce hazard impacts on marginalized populations? (Session 4).

It is featured by the keynote speech titled as "Multidisciplinary Modeling Progress and the Role of Community Engagement in Resilience Planning" by **Dr. John van de Lindt** of Colorado State University. In summary, it takes transdisciplinary research and initiatives, through a convergent approach by including all stakeholders, to win the battle of climate change; and it takes close national and international collaborations to address the grand challenge of climate change faced by the entire world.

### Parallel Session:

- **Session 1: Enabling Resilience: Preventing Disasters in Hazard-Prone Areas**
- **Session 2: Innovative Approaches in Disaster Resilience**
- **Session 3: Reducing Barriers for Scientists and Engineers to Enhance Resilience**
- **Session 4: Equitable Resilience: Addressing Social Justice in Disasters**



# Keynote Speech: Multidisciplinary Modelling Progress and the Role of Community Engagement in Resilience Planning

## John van de Lindt



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

Dr. John W. van de Lindt is the Harold H. Short Endowed Chair Professor in the Department of Civil and Environmental Engineering at Colorado State University. Over the last two decades van de Lindt's research program has focused on performance-based engineering and test bed applications of building and other systems for earthquakes, hurricanes, tsunamis, tornadoes and floods. Professor van de Lindt is the Co-director for the National Institute of Standards and Technology-funded Center of Excellence (COE) for

Risk-Based Community Resilience Planning headquartered at Colorado State University entering its seventh year. He has published more than 400 technical articles and reports including more than 200 journal papers, and currently serves as the Editor-in-Chief for the *ASCE Journal of Structural Engineering* and is a member of the GADRI Board of Directors.

### Abstract:

The study of community resilience is, at its very core, multi- and inter-disciplinary yet it requires exercising disciplinary expertise to ensure each component in a complex interacting model represents the best science. In turn, this requires a new type of research environment that balances contributions from disciplines to enable them to not just transfer ideas and algorithms, but to merge them into an idea or algorithm. In this presentation, I will highlight an approach to merge

engineering, social science/planning, and economics to form the Interdependent Networked Community Resilience Modeling Environment (IN-CORE). Then, imagine a community setting performance goals conditioned on the occurrence of a hazard event – performance goals for their economy such as household income and local tax revenue generation; for their population such as dislocation, school and healthcare access; and identifying the combination of engineering and social policies that enable these performance goals to be achieved - all at the planning stage prior to a hazard event. I'll close by showing how community engagement is integral to understanding paths resilience modeling should take going forward.

## I. Enabling Resilience: Preventing Disasters in Hazard-Prone Areas

Co-chaired by: Robert Weiss, Virginia Tech & Rachel Davidson, University of Delaware

Parallel Presentation Sessions – 12:40 – 14:30 hours – US – Eastern Daylight Time—(4 PPT @15min + 5 min Q&A)

Decades of work by scholars and practitioners have revealed critical factors associated with community and regional disaster resilience. In many cases, these efforts have focused on phases of disaster preparedness, response, recovery, and mitigation. More recently, advances in natural, physical, and social sciences, as well as engineering, have afforded important opportunities to address disaster prevention activities in hazard prone areas. This session shares research and insights about disaster prevention from various disciplines, including transdisciplinary and community engagement initiatives. Presentations highlight technological aspects of prevention, ranging from warning systems and evacuation planning to social dimensions such as policy and decision-support implementation, as well as community-based research and assessment projects.

### 1. Towards Joint Earthquake-tsunami Hazard Assessment for Urban and Evacuation Planning: Pilot Study in the Port City of San Antonio, Chile

#### Rodrigo Cienfuegos



CIGIDEN, Chile

Dr. Cienfuegos is a civil engineer from the Pontificia Universidad Católica de Chile (PUC), and earned a PhD in Earth Sciences from the Institut National Polytechnique de Grenoble in France. Since 2006, he has been in charge of undergraduate and graduate courses in fluid mechanics, hydraulics, sediment transport, and coastal engineering at the PUC School of Engineering. His research focuses on nearshore hydrodynamics and morphodynamics, numerical and experimental

modelling of shallow water flows for coastal and riverine applications. At present, he is the director of the Research Center for Integrated Disaster Risk Management funded by the ANID/Fondap program, where interdisciplinary teams develop applied research for disaster risk reduction and resilience. He has published more than 60 peer reviewed papers in international journals (Scopus index).

### Abstract:

Seismic energy continues to build up along the subduction zone of Central Chile since the last mega thrust earthquake that occurred there in 1730. This giant earthquake had an estimated magnitude of 9.1-9.3Mw and was followed by a

devastating tsunami. Hence, historical and scientific evidence support the potential occurrence of a similar event within a 30-year window ahead. In this talk we will summarize the characteristics of the 1730 earthquake and present the methodology we are using to generate stochastic finite fault seismic sources to study earthquake and tsunami risks in Central Chile. We will show some preliminary results where we analyze the consequences for the city of San Antonio located 130 kms West of Santiago. In particular, issues related with evacuation potential and urban planning will be discussed considering the large exposure that currently exists in the city.

### 2. Tsunami Early Warning in Chile: Rebuilding the System based on Science

#### Patricio Catalan



Universidad Técnica Federico Santa María, Chile

Patricio Catalan is a Civil Engineer by Universidad Técnica Federico Santa María, Chile (2000), Master of Ocean Engineering (2005) and Philosophy Doctor in Civil Engineering (2008), by Oregon State University, USA. He is currently Professor at Departamento de Obras Civiles (Civil Engineering), Universidad Técnica Federico Santa María. He is also an Principal Investigator of CIGIDEN.

His research interests focus on two main fields: tsunami science and nearshore processes in general, but with special emphasis on wave breaking. Regarding tsunamis, his research covers their hydrodynamic

processes and modeling, interaction with coastal bathymetry and infrastructure, and others, which he considers fundamental and required steps to improve preparedness. He is the PI of the projects that led to the new Tsunami Warning System in Chile. He has authored several peer-reviewed publications on tsunamis.

### Abstract:

The Mw 8.8 Maule Earthquake and Tsunami that struck at 3:43 AM on Feb. 27, 2010, awoke Chileans in many and sometimes devastating ways. It showed that although the 1960 Mw9.5 Valdivia earthquake had driven tsunami science and technology abroad, the intervening 50 years meant a gradual slowdown in adopting and maintaining that knowledge up to date. Critically, the tsunami warning system was outdated and not

up to the task at hand. In the time lapse between 2010 and today, the country has witnessed a significant change in paradigm, that has led to accelerated yet conscious development of a system that was brought up to standard, and then it has been expanded by incorporating the best available science into an operational system. In this talk, we review these developments, and discuss about the challenges developing countries such as Chile face in incorporating and maintaining systems like this.



## I. Enabling Resilience: Preventing Disasters in Hazard-Prone Areas

Co-chaired by: Robert Weiss, Virginia Tech & Rachel Davidson, University of Delaware

Parallel Presentation Sessions – 12:40 – 14:30 hours – US – Eastern Daylight Time—(4 PPT @15min + 5 min Q&A)

### 3. Integrated Modelling and Decision Support to Foster Effective Resilience Policy

#### Jamie Brown Kruse



HCAS Distinguished Professor of Economics and Past Director, Center for Natural Hazards Research, East Carolina University

Dr. Jamie Kruse HCAS Distinguished Professor of Economics and Past Director of the Center for Natural Hazards Research at East Carolina University. She is the Co-Director of the Center for Risk-based Community Resilience Planning headquartered at Colorado State University. She is recognized for her research in economics and decision making under uncertainty especially as it relates to natural hazards. She completed her doctoral work at University of Arizona under dissertation advisor, Vernon Smith (2002 Nobel Laureate in Economics). Dr. Kruse has authored more than seventy published and forthcoming refereed journal articles in addition to proceedings, abstracts and reports. She held faculty positions at the University of Colorado, Texas Tech University, East Carolina University and a visiting position at Eidgenossische Technische Hochschule (ETH) in Zurich, Switzerland. Her work has been supported by National Aeronautics and Space Administration, National Science Foundation, US Geological Survey, US Department of Energy, National Oceanic and Atmospheric Administration, National Institute of Standards and Technology,

Federal Emergency Management Agency, Department of Homeland Security, Federal Deposit Insurance Corporation, State of Texas and the State of North Carolina. In 2010 she held the position of Chief Economist at National Oceanic and Atmospheric Administration. At the interagency level, she was a member of the Whitehouse Office of Science and Technology Policy (OSTP) Subcommittee on Social, Behavioral and Economic Sciences and OSTP Subcommittee on Ocean Science and Technology. She is a past board member of North American Alliance of Hazards and Disaster Research Institutes.

#### Abstract:

The study of natural hazards and their impacts on the built and natural environment and society requires the expertise and perspectives of a wide range of scientific disciplines. In addition, many disciplines must integrate and converge to fully understand the challenges and impacts of policies designed to mitigate risk, reduce the negative impact of hazard events, and foster prompt recovery. Resilient regions and communities successfully implement such policies that improve well-being for all. This presentation presents two integrated modelling efforts designed to identify policies that improve resilience and regional/community well-being.

### 4. Enabling Resilience by Practicing Social Impact Assessment

#### Liesel Ritchie



Professor of Sociology and Associate Director, Center for Coastal Studies, Virginia Tech

Dr. Liesel Ritchie is a Professor of Sociology and an Associate Director of the Center for Coastal Studies at Virginia Tech. During her career, Ritchie has studied a range of disaster events, including the Exxon Valdez and BP Deepwater Horizon oil spills; the Tennessee Valley Authority coal ash release; Hurricane Katrina; and earthquakes in Haiti and New Zealand. Since 2000, her focus has been on the social impacts of disasters and community resilience, with an emphasis on technological hazards and disasters, social capital, and renewable resource communities, and she has published widely on these topics. Ritchie has more than 30 years of experience in research and evaluation. Prior to joining VT, she served as Associate Director of the Natural Hazards Center at the University of Colorado Boulder (2007-2018). Ritchie has worked with agencies including NASA, NIST, NSF, USGS, FEMA, U.S. Department of Agriculture, NOAA, and U.S. Department of the Interior. She currently serves as a Distinguished Senior Fellow with Northeastern University's Global Resilience

Institute. Ritchie was a National Institute of Standards and Technology Disaster Resilience Fellow, a member of the National Academies of Sciences Committee for Measuring Community Resilience, and served on the National Academies Gulf Research Program Advisory Board.

#### Abstract:

There are hundreds if not thousands of community resilience initiatives and activities ongoing across the U.S. and throughout the world. These important efforts are influencing how we consider and measure resilience, providing foundations to prevent disasters in hazard-prone areas. It is within this context that this presentation shares another way in which social scientists can support community resilience: Social Impact Assessment (SIA). Based on case studies with First Nations in western Canada, we suggest that SIA can serve as another approach—tool—to inform communities about steps to take in response to hazards associated with proposed energy development projects. These steps can help to reveal cumulative impacts of historical, systemic inequalities and exposure to multiple forms of social and physical hazards, providing information to enable community resilience. This conversation contributes to answering the question posed by Susan Cutter: Resilience to What? and Resilience for Whom?



### III. Reducing Barriers for Scientists and Engineers to Enhance Resilience - 12:40 – 14:30 hours – US – Eastern Daylight Time

Knowledge generation to enhance resilience is driven by a mix of basic and applied research in a wide spectrum of science and engineering disciplines. A better understanding of how to enhance resilience is inherently linked to interdisciplinary capacity building within and among the participating scientific and engineering disciplines but also requires a transdisciplinary component that enables stakeholders and decision-makers to connect with the scientific community and employ research products. Often, that translation fails. This session brings a set of speakers together from academia, industry, and government who will use their high-level perspective to shed light on the barriers for a better integration of science in resilience decision-making and for faster implementation of research product to enhance resilience.

#### 1. Barriers to Increasing Resilience: Ideological Blinders, Science, and Money

##### Walt Peacock



Professor, Department of Landscape Architecture and Urban Planning, Texas A&M; and Program Director, Humans, Disasters, and the Built Environment (HDBE), Engineering Directorate, National Science Foundation former NSF program officer

Walter Gillis Peacock conducts research on urban planning, sustainability and resiliency issues, natural hazards, hazards mitigation and adaptation, long-term disaster recovery and quantitative methods. He is internationally known for his research on disaster recovery, community resiliency, and social vulnerability. He has conducted research in Florida, Texas, California, Guatemala, Mexico, Peru, the former Yugoslavia, Italy, Turkey, and India.

He is professor of urban planning in the Department of Landscape Architecture and Urban Planning at Texas, where he has been a member of the faculty since 2002. He is currently program director of the Humans, Disasters, and the Built Environment (HDBE) in the Engineering Directorate at the National Science Foundation. Until the summer of 2019 he was director of the Hazard Reduction and Recovery Center at Texas A&M University. In 2009, he was awarded the Quarantelli Award for Social Science Disaster Theory, acknowledging significant

theoretical work in disaster and hazards research. Between 2008 and 2012, he was the holder of the Rodney L. Dockery Endowed Professorship in Housing and the Homeless and in 2012, he was awarded the Sandy and Bryan Mitchell Master Builder Endowed Chair at Texas A&M. In 2014, he received the Distinguished Achievement Award in Research from Texas A&M, an award sponsored by the Association of Former Students.

##### Abstract:

The pathways to increasing disaster resilience, whether speaking of hazard mitigation, climate adaptation, or robust disaster restoration and recovery policies, programs, and approaches have been difficult to traverse, are often thwarted by powerful interests, and are sometimes difficult to locate, if not missed entirely in our search. Unfortunately, the barriers are many, diverse, and significant. This presentation offers one longtime hazard researcher's perspectives on a number of these barriers roughly placed into three categories: ideology, science, and money/resources. These are not mutually exclusive categories, but show significant overlaps which represent powerful, multifold barriers to resilience. While there are not easy solutions to overcoming these barriers, limited, tentative steps are proffered.

#### 2. Bridging the Gap between Research and Operations: Engaging Practitioners in Research to Ensure Operationalization

##### Sean Griffin



CEO, Disaster Technologies, Inc.

Mr. Sean M. Griffin is founder and Chief Executive Officer of Disaster Tech, a public benefit corporation that builds technology to analyze, visualize, and communicate risk, on a mission to accelerate decision making for saving lives, protecting the environment, and reducing risk to communities and critical infrastructure. Prior to launching a successful company, Mr.

Griffin served in the Federal government for 13 years, which included service as Director for Incident Management Integration Policy at the White House National Security Council (NSC) for President Obama and President Trump.

##### Abstract:

In the field of disaster management, a trained emergency manager may never experience a large-scale or catastrophic disaster in their jurisdiction. This experience may be due to many factors, including high consequence, low probability hazards such as catastrophic seismic events. As a result, both researchers and operations have focused on geography and regions that experience acute and reoccurring disasters – or research conducted may be

lacking in geographies with less frequent events, creating gaps in our understanding of disaster risk. Disparity in research focus can distract from geographies exposed to disaster risk and leave out the practitioners responsible for managing or mitigating those risks.

Furthermore, even in the areas of acute disaster risk, research engagements in the disaster-affected area are bifurcated; research engagements are separate or poorly integrated into the practitioner operations such as planning, exercise, response, and recovery operations. Researchers and practitioners need to converge activities to gain perspective from practitioners on their needs and what tools they need to have a successful transfer of research, development, testing, and evaluation (RDT&E) into operations. Taking a human centered (e.g. research and development centered around practitioners and survivors/at-risk populations) approach to disaster research will help address this gap.

In this talk, Sean Griffin, CEO and co-founder of Disaster Tech, will discuss why we need a holistic, integrated approach to risk reduction and resilience research and the transition of that research into the practitioner's hands, benefiting the community itself and those who serve their communities. He will cover strategies and approaches to resolve this gap for ensuring that funded research has a greater return on investment to assist operators in reducing risk and building resilient communities.



### III. Reducing Barriers for Scientists and Engineers to Enhance Resilience - 12:40 – 14:30 hours – US – Eastern Daylight Time

#### 3. Building Coastal Resilience in Virginia ~ Connecting Research to Need

##### Ann C. Phillips



Rear Admiral, USN (Ret), Special Assistant to the Governor for Coastal Adaptation and Protection at Office of the Governor, State of Virginia

Ann C. Phillips is the Special Assistant to the Governor for Coastal Adaptation and Protection for the State of Virginia. Prior to joining the administration, she worked to address sea level rise and climate impact on national security at the regional, national and international level, and chaired the Infrastructure Working Group for the Old Dominion University-convened Hampton Roads Sea Level Rise Preparedness and Resilience Intergovernmental Pilot Planning Project.

Preceding her work on climate impact and sea level rise, Ann served nearly 31 years on active duty. She had the honor to commission and command USS MUSTIN (DDG 89) and to command Destroyer Squadron 28. Her final Flag command was as Commander, Expeditionary Strike Group TWO, including all the Amphibious Expeditionary Forces on the East Coast of the United States.

Ann earned a Master of Business Administration from The College of William and Mary - Mason School of Business, in 2016. She is a graduate of the University of North Carolina at Chapel Hill. In addition, she is a certified Chesapeake Bay Landscape Professional, Level 2.

##### Abstract:

In developing its first Coastal Master Plan, the Commonwealth has determined a need for a collaborative state-wide research process. This should include science and engineering - and other interdisciplinary academic outcomes. A collaborative process to connect research capacity and expertise with data development and research needs will be critical to ensure localities, regions, agencies of the Commonwealth, academia and other stakeholders have access to and the capacity to understand and apply the best possible science and engineering outcomes to adapt and protect our Coastal region, and the full Commonwealth. The many individual university coastal research centers, and the General Assembly legislated Commonwealth Center for Recurrent Flooding Resilience, are a start, but are not connected or collaborating in any formal way. How then can we better align and focus our considerable research expertise and capacity with the needs of Virginians?

#### 4. Performance-Based Engineering Approach to Design for Community Resilience

##### Greg Deierlein



John A. Blume Professor, Civil and Environmental Engineering, Stanford University

Dr. Gregory Deierlein is a John A. Blume Professor in Civil and Environmental Engineering at Stanford University. He is Co-Director of the NSF-supported Computational Modeling and Simulation Center for Natural Hazards, Director of the John A. Blume Earthquake Engineering Center at Stanford, and former Deputy Director of the Pacific Earthquake Engineering Research (PEER) Center. Deierlein's research focuses on performance-based earthquake engineering of buildings and civil infrastructure with emphasis on nonlinear analysis, design and behavior of structures. He has led major collaborative teams, involving researchers from the U.S., Japan, and Taiwan to develop and test innovative composite steel-concrete frame systems, self-centering braced frame systems, and light-frame residential construction; and he is active in the development of building code standards and policies to promote seismic resilience. Deierlein's research and professional activities have been recognized through several major awards, and he is member of the US National Academy of Engineering and a Distinguished Member of ASCE.

##### Abstract:

Performance-based engineering technologies enable quantitative assessment of earthquake risks to buildings and infrastructure, which can improve the design and retrofit of structures and help craft more effective building codes and policies. Continued developments to extend performance-based engineering to city-scale simulations provide emerging opportunities to engage urban planners, public officials, and other stakeholders in developing strategies to improve resilience to earthquakes and other natural hazards. This presentation will provide an overview of performance-based methods that are being employed to evaluate the seismic safety and functional recovery of buildings and communities, including examples of recent initiatives that have been implemented in California for resilience to earthquakes.



## II. Innovative Approaches in Disaster Resilience

**Co-Chaired by: Grace Yan, Director of Center for Hazard Mitigation and Community Resilience and Director of Wind Hazard Mitigation (WHAM) Laboratory, Department of Civil, Architectural and Environmental Engineering, Missouri University of Science and Technology; Brian Phillips, Department of Civil & Coastal Engineering, University of Florida; Xinyue Ye, Department of Landscape Architecture and Urban Planning, Texas A&M University**

**(8 PPT @ 15 min followed by 30 min Panel Discussion)**

Resilience largely depends on the ability of a community to deal with and adapt to unanticipated changes. Those changes will direct and influence the approaches taken by decision makers and scholars (e.g., changes in the intensity of hazard events, effects of climate change on coastal cities, dynamics of urban forests and parklands). Approach for Disaster Resilience is a multidisciplinary and multi-scale effort. A multidisciplinary collaboration will lead to a more resilient future of the built environment. We also need to adopt a holistic and integrated approach, bringing multiple disciplines, and examining the pressing resilient issues at the macro, meso, and micro scales. We should also actively engage the community to support our stakeholders' needs and create outcomes that are highly intelligent and resilient. This session aims to examine physical and spatial representations of Disaster Resilience with various interactions between socio-economic, technological, and environmental factors. Such disciplinary convergence across spatial science, computer science, and engineering science enables us to capture more complexity and facilitate systematic thinking across encountered Disaster Resilience plans.

### 1. Resilience in Recovery - Build Back Better

#### Paul Kovacs



Chair, GADRI Board of Directors; and Founder and Executive Director of the Institute for Catastrophic Loss Reduction at Western University, Canada

Paul Kovacs is founder and Executive Director of the Institute for Catastrophic Loss Reduction at Western University in Canada. ICLR has been designated by the International Council for Science as an international centre of excellence for integrated research on disaster risk. Since 1996 Paul has been a contributing author to the Intergovernmental Panel on Climate Change, the world's leading forum for the study of climate issues. The Panel won the 2007 Nobel Peace Prize "for their efforts to build up and disseminate greater knowledge about man-made climate change". He is Canada's leading authority on insurance and climate extremes, and has been a contributing author to numerous international and Canadian reports on reducing the risk of loss from earthquakes, flood and severe wind to achieve disaster resilience.

For more than thirty-five years Paul has been a popular commentator on insurance, disaster safety and economic policy. He has written more than 200 publications and articles and he is a passionate champion for insurance, disaster

resilience and adaptation to climate extremes. Paul has worked in private industry, the public sector and academia. He is Chair of Global Alliance of Disaster Research Institutes and Chair of Ontario's Advisory

#### Abstract:

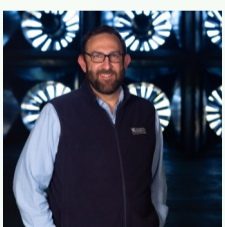
Recovery presents an opportunity to achieve transformative improvement in disaster resilience. Experience finds strong political and public support to build back better when recovering from a major loss. Introduction of current resilience knowledge when older structures are replaced by new buildings can significantly improve resilience. Small increases in cost can greatly enhance resilience.

Pre-disaster planning is critical to realizing resilience in recovery. There is a sense of urgency when recovery begins. Achievement of resilience objectives in recovery requires early and consistent messages about the importance of building back better. Pre-disaster recovery planning serves to minimize the risk of delay in recovery as improvements are anticipated.

The Sendai Framework for Disaster Risk Reduction identified scope to build back better as a priority for action, but experience finds that realizing this objective is challenging.

### 2. Bending the Curve: Resilience Success Stories

#### Ian Giammanco



Sr. Director, Product Design; and Lead Research Meteorologist, IBHS Research Center, Richburg, South Carolina

Dr. Ian Giammanco is the Sr. Director for Product Design and a Lead Research Meteorologist at the IBHS Research Center in Richburg South Carolina. Dr. Giammanco holds a

B.S. in Atmospheric Science from the University of Louisiana at Monroe, and an M.S. and Ph.D. from Texas Tech University in Atmospheric Science and Wind Science and Engineering respectively. Dr. Giammanco's responsibilities at the IBHS Research Center include leading the IBHS product development team which is responsible for developing content and materials to support our wide range of audiences and stakeholders. As a lead researcher he provides leadership in: disaster data analytics, the characteristics of severe convective storms and hurricanes along with instrumentation design and data collection.

Dr. Giammanco has over 18 years of meteorological field research experience. He currently serves as the principal investigator and field coordinator for the IBHS Characteristics of Hailstorms annual field research campaign. He and the IBHS team were the first group to publish results quantifying the strength of hailstones and pioneered the use of 3D laser scanning technology to create digital models of natural hailstones. He has participated in numerous hurricane,

severe thunderstorm, and tornado research projects over his career, including VORTEX 2. Dr Giammanco coordinated the Texas Tech University's Hurricane Research Team and Hurricanes at Landfall Project from 2005-2010. In addition to his position at IBHS, he is currently appointed as an Adjunct Faculty Research Associate at the National Wind Institute at Texas Tech University.

#### Abstract:

It has become commonplace now to hear the stories after a natural disaster of destruction, displacement and the disruption that so often happens. However, across the United States we have begun to see more and more success stories of resilience in action and the ability to bend down a community's risk curve. This presentation will focus on resilience successes in the face of hurricanes and severe convective storms. First, it will cover the success across coastal Alabama in implementing the Insurance Institute for Business & Home Safety's (IBHS) FORTIFIED building standards into local residential building codes and its biggest test from Hurricane Sally (2020). Building codes are often the most visible way in which our built-environment can adapt to extreme weather but improving the performance of the materials that our home's and businesses are constructed of is another avenue for change. This presentation will also cover the asphalt shingle market changes that have took place for the better over the past two years since IBHS developed and released its first asphalt shingle hail impact test ratings.



## II. Innovative Approaches in Disaster Resilience

**Co-Chaired by: Grace Yan, Director of Center for Hazard Mitigation and Community Resilience and Director of Wind Hazard Mitigation (WHAM) Laboratory, Department of Civil, Architectural and Environmental Engineering, Missouri University of Science and Technology; Brian Phillips, Department of Civil & Coastal Engineering, University of Florida; Xinyue Ye, Department of Landscape Architecture and Urban Planning, Texas A&M University**

**(8 PPT @ 15 min followed by 30 min Panel Discussion)**

### 3. Probabilistic Analysis and Metamodeling of Hurricane Coastal Hazards

#### Norberto C. Nadal-Caraballo, PhD



U.S. Army Engineer R&D Center (ERDC)

Dr. Norberto C. Nadal-Caraballo is a research civil engineer and leader of the Coastal Hazards Group at the U.S. Army Engineer Research & Development Center, Coastal and Hydraulics Laboratory (ERDC-CHL) in Vicksburg, Mississippi. Dr. Nadal-Caraballo's main areas of expertise are coastal storm hazard analysis, probabilistic modeling of hurricanes and extratropical storms, extreme storm climatology, flood risk assessment, and stochastic design of coastal structures. Dr. Nadal-Caraballo leads the U.S. Army Corps of Engineers' (USACE) Coastal Hazards System (CHS) program for quantifying coastal hazards including flooding, surge, waves, wind, and rainfall due to hurricanes and other extreme storms for most United States coastlines. He has also led and supported multiple coastal hazards and uncertainty quantification efforts by USACE, the Federal Emergency Management Agency (FEMA), the U.S. Nuclear Regulatory Commission (USNRC), and state and local agencies. Dr. Nadal-Caraballo also serves as adjunct faculty at the University of Puerto Rico - Mayagüez. Since joining USACE in 2007, he has received numerous professional honors and awards, including the Great Minds in STEM's 2015 Civil Engineering Award, and the 2016 ERDC Engineer of the Year Award. Dr. Nadal-Caraballo has authored or co-authored of over 70 technical publications and has contributed to development of coastal hazards guidance.

**Abstract:**

Coastal hazards such as storm surge, waves, currents, wind, and rainfall associated with hurricanes and other extreme storms can disrupt national economies, devastate coastal communities, and threaten the lives of millions of people. These risks have highlighted the need for accurate methods to quantify coastal storm hazards to support stochastic engineering design, coastal risk assessment, mitigation of coastal damages, and facilitation climate change adaptation and resilience. The Coastal Hazards System (CHS) is a national-scale effort for quantifying coastal hazards along all United States coastlines. The foundation of the CHS is its Probabilistic Coastal Hazard Analysis (PCHA) framework.

The PCHA is a comprehensive statistical and probabilistic framework for characterization of regional storm climatology, high-fidelity numerical modeling, metamodeling, and joint probability analysis of atmospheric forcing and primary storm responses, including associated aleatory and epistemic uncertainties. A major advancement of the PCHA framework is the capability to simulate up to millions of hurricanes and their corresponding coastal responses through the application of Gaussian process metamodeling (GPM). GPM is a cutting-edge machine-learning technology developed to emulate atmospheric and hydrodynamic numerical models to accurately and efficiently predict storm surge, waves, rainfall, riverine discharge, and sea level rise for efficient and robust quantification of coastal hazards.

### 4. Measuring, Mapping, and Communicating Flood Risk in TX

#### Samuel D. Brody



Regents Professor and holder of the George P. Mitchell '40 Chair in Sustainable Coasts, Department of Marine and Coastal Environmental Science, Texas A&M University, Galveston Campus

Samuel D. Brody is a Regents Professor and holder of the George P. Mitchell '40 Chair in Sustainable Coasts in the Department of Marine and Coastal Environmental Science at Texas A&M University, Galveston Campus. He is the Director of the newly formed Institute for a Disaster Resilient Texas and Director of Center for Texas Beaches and Shores. Dr. Brody is an adjunct professor in the Department of Civil and Environmental Engineering at Rice University and a Senior Fellow at the Water Institute of the Gulf. He was also the Lead Technical Expert for the Governor's Commission to Rebuild Texas in response to Hurricane Harvey. Dr. Brody's research focuses on coastal environmental planning, spatial analysis, flood mitigation, climate change policy, and natural hazards mitigation. He has published numerous scientific articles on flood risk and mitigation, and the book, *Rising Waters: The causes and consequences of flooding in the United States* published by Cambridge University Press.

**Abstract:**

The adverse impacts of repetitive flood disasters in Texas has sparked renewed interest in how to use scientifically derived data and associated analyses to inform more resilient decisions. This presentation will set forth a framework for converting scientific knowledge to policy actions to promote flood resiliency. Special attention will be paid to a four-year project that is developing novel ways to identify and communicate flood risk and impact in multiple local communities across Texas. This project will produce maps and other visuals that paint a more complete picture of flood risk by integrating multiple data sources and models. These data include advanced hydraulic models, insurance- and aid-based flood payouts, crowd sourced data, socioeconomic characteristics, and survey responses. Maps will also be shared with local stakeholders to obtain feedback on how to refine our products and make them most effective in helping localities prepare, mitigate, and recover from flood events. The implications of this study in the context of the new Institute for a Disaster Resilient Texas will also be discussed.



## II. Innovative Approaches in Disaster Resilience

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**(8 PPT @ 15 min followed by 30 min Panel Discussion)**

### 5. Design against Tornadoes to Enhance Tornado Resilience

#### Grace Yan



Associate Professor, Department of Civil, Architectural and Environmental Engineering, Missouri University of Science and Technology

Grace Yan is an Associate Professor in the Department of Civil, Architectural and Environmental Engineering of Missouri University of Science and Technology. She is the Director of Center for Hazard Mitigation and Community Resilience, in which 35 faculty members from 12 departments are affiliated. She is also the Director of Wind Hazard Mitigation (WHAM) Laboratory that is home to the largest tornado simulator of its type in the world. She is one of the eight Directors on NAAHDR (North American Alliance of Hazards and Disasters Research Institutes) Board of Directors. She has been leading interdisciplinary and transdisciplinary research teams in addressing community resilience under a changing climate from different perspectives. Thus far, she has published more than 120 refereed journal and conference papers; She has secured 29 research grants, with the total amount of more than \$10M, from NSF, NOAA, DOT, NASA, and other agencies. From the engineering perspective, she simulates different natural hazards (e.g., tornadoes, hurricanes, storm surge and floods, etc.) numerically and experimentally and investigates their actions on built environment, and studies vulnerability of communities to natural hazards.

#### Abstract:

Tornadoes have induced substantial structural damage, injuries and deaths in the USA. They occur in Mainland America, mainly "Tornado Alley" and Southeast of the USA, and contribute \$10B annually to the nation's loss portfolio. The devastation from recent tornadoes left no doubt as to the vulnerability of the central and south-eastern USA to tornadoes, and prompted an urgent need in developing and enforcing a tornado-resistant design for normal buildings. This requires in-depth understanding of tornadic wind effects. To find tornadic wind effects, what type of tornadoes should we look at? Tornadoes have different flow structures, single-celled single-vortex, double-celled single-vortex and multiple vortices; Even for a single tornado incident, the flow structure varies with time and location. Based on which type of tornado should the wind effects be used to modify the coefficients in the pressure calculation equation in ASCE7-16? Which type of tornadoes induce more unfavourable wind loading? Dr. Yan will share their research findings to answer these questions.

### 6. Recent Studies on the Resilience of Structural Systems Affected by Stationary and Nonstationary Wind Hazards

#### Luca Caracoglia



Associate Professor, Department of Civil and Environmental Engineering of Northeastern University, Boston, Massachusetts

Luca Caracoglia is an Associate Professor in the Department of Civil and Environmental Engineering of Northeastern University, Boston, Massachusetts, USA. He joined Northeastern University in 2005. Prior to this appointment, he was a post-doctoral fellow in the Department of Civil Engineering at Johns Hopkins University, Baltimore, Maryland (USA) in 2001-2002 and a post-doctoral research associate in the Department of Civil and Environmental Engineering at the University of Illinois (Urbana-Champaign, USA) in 2002-2004. He received his Ph.D. in Structural Engineering from the University of Trieste, Italy in 2001. His interests are in structural dynamics, random vibration, wind engineering, fluid-structure interaction of civil engineering structures, nonlinear cable network dynamics, energy harvesting systems in wind energy. Luca Caracoglia received the NSF-CAREER Award for young investigators in 2009. Luca Caracoglia was elected Fellow of the American Society of Civil Engineers in 2020.

#### Abstract:

The presentation will discuss recent study activities examining the response of tall buildings and tower structures against wind hazards. These structures are sensitive to fluid-structure interaction and susceptible to damage induced by wind loads. The common feature of the research is the quantification of uncertain wind loads, associated with both stationary synoptic winds (e.g., hurricanes) and localized, nonstationary events (e.g., downbursts and tornadoes). The talk will examine several methodologies for predicting structural response and damage, by accounting for modelling uncertainty and load estimation "errors", e.g. in a wind tunnel test. The investigated methods are both analytical, exploiting stochastic calculus, and numerical Monte-Carlo sampling. The ultimate research goal is the systematic assessment of wind-related damage over time in the context of risk analysis and structural resilience.



## II. Innovative Approaches in Disaster Resilience

**Co-Chaired by: Grace Yan, Director of Center for Hazard Mitigation and Community Resilience and Director of Wind Hazard Mitigation (WHAM) Laboratory, Department of Civil, Architectural and Environmental Engineering, Missouri University of Science and Technology; Brian Phillips, Department of Civil & Coastal Engineering, University of Florida; Xinyue Ye, Department of Landscape Architecture and Urban Planning, Texas A&M University**  
**(8 PPT @ 15 min followed by 30 min Panel Discussion)**

### 7. Adaption of Emerging Technologies for Infrastructure Resilience

#### Kenichi Soga



Donald H. McLaughlin Professor and Chancellor's Professor, University of California, Berkeley

Kenichi Soga is the Donald H. McLaughlin Professor and a Chancellor's Professor at the University of California, Berkeley. He is also a faculty scientist at Lawrence Berkeley National Laboratory. He obtained his BEng and MEng from Kyoto University in Japan and PhD from the University of California at Berkeley. He was Professor of Civil Engineering at the University of Cambridge before joining UC Berkeley in 2016. His current research activities are infrastructure sensing, performance based design and maintenance of infrastructure, energy geotechnics, and geomechanics. He has published more than 450 journal and conference papers. He is a Fellow of the UK Royal Academy of Engineering, the Institution of Civil Engineers (ICE) and American Society of Civil Engineers (ASCE). He is the recipient of several awards including George Stephenson Medal and Telford Gold Medal from ICE and Walter L. Huber Civil Engineering Research Prize from ASCE. He is a Bakar Fellow of UC Berkeley, promoting commercialization of smart infrastructure technologies.

#### Abstract:

Technologies are currently being developed for enhancing the resilience of the built environment, and particularly for establishing resilient features across different types of infrastructure. For example, recent advances in sensor systems offer intriguing possibilities to radically alter the methods of infrastructure condition assessment. Rich data obtained from such systems can act as a catalyst for new design, construction, operation and maintenance processes. The quantification of system resilience is a challenge for both stakeholders and service providers in the civil engineering industry. However, describing the contributions in a way that brings the provider and consumer together is critical to the widespread adoption of emerging technologies developed for improving infrastructure resilience. This talk discusses a methodology that systematically explores how emerging technologies can contribute to systems resilience.

### 8. Emerging Technologies for Resilient Infrastructure: Realizing the Opportunity

#### Mahmoud Reda Taha



Distinguished Professor, Regents' Lecturer and Chairman, Department of Civil, Construction & Environmental Engineering, University of New Mexico

Dr. Mahmoud Reda Taha, PE, F. ASCE, F. ACI is a Distinguished Professor, Regents' Lecturer and Chairman of Department of Civil, Construction & Environmental Engineering at the University of New Mexico where he has worked since 2003. Dr. Taha

has authored and co-authored more than 350 papers in refereed journals and conference proceedings, he has 10 issued US-Patents, and has advised more than 50 graduate students toward their MS and PhD. Dr. Taha is a Fellow of American Society of Civil Engineers, Fellow of American Concrete Institute (ACI), Section Editor of ASCE Journal of Materials in Civil Engineering, and Vice Chair of the ASCE Infrastructure Resilience Division and Co-Chair of ASCE Committee on Emerging Technologies. Dr. Taha is the Founding Director of UNM Resilience Institute. He is a bridge engineer by training and has worked as a licensed professional structural engineer in numerous projects in the US, Canada and worldwide.

#### Abstract:

Emerging technologies have become a part of our daily life and, thus, part of the engineering community work that impacts future infrastructure. A plethora of disruptive emerging technologies have been invented in the last two decades, and some inventions are making their way into the field. A few examples that civil engineers increasingly observe in their everyday jobs are smart and self-healing materials, sensing technologies, unmanned aerial systems, 3D printing, big data analytical methods, artificial intelligence, and machine learning. At the same time, infrastructure resilience has become a common theme in government and industry discussions and there is an obvious need for implementing methods to improve infrastructure resilience. Furthermore, resilience studies demonstrate the need to deploy innovative materials, utilize smart methods in construction technology, and deploy sensor networks to monitor infrastructure systems. Emerging technologies are thus expected to contribute to improving infrastructure resilience capacities, namely absorptive, adaptive, and restorative capacities. In this presentation, I will provide an in-depth conspectus on the opportunity emerging technologies offer to remarkably improve infrastructure resilience. I will discuss how we envision different technologies can contribute to the well-known characteristic elements (known as 4Rs) of infrastructure resilience: redundancy, robustness, rapidity, and resourcefulness. I will also discuss current research efforts to enable systematic assessment of emerging technologies to pave the way for incorporating these technologies in future infrastructure.



## IV. Equitable Resilience: Addressing Social Justice in Disasters - 15:00 – 17:00 hours – US – Eastern Daylight Time

Co-Chaired by: Michelle Meyer, Hazard Reduction and Recovery Center, Texas A&M University, Maria K. Dillard, National Institute for Standards and Technology, Kim Klockow McClain, National Oceanic and Atmospheric Administration, Sara Hamideh, Stony Brook University

(8 PPT @ 15 min followed by 30 min Panel Discussion)

A legacy of research indicates that disasters have more significant impacts on populations already marginalized in a society. The social stratification in a society – due to gender, race, ethnicity, nationality, language, ability, citizenship status, among many other factors – directly affects resilience. Marginalized populations are more likely to lose their lives, property, and livelihoods in disaster compared to more advantaged members of society, and are in fact often end up in a more precarious position due to the disaster. Addressing the inequities in society that are exacerbated by disaster requires attention to the whole community and the myriad of ways in which social status and access to resources and power impact resilience. This panel address this sweeping topic from several lens that range from foci on specific marginalized populations such as minority-owned businesses, public housing residents, migrants, and incarcerated persons to how equity and whole community programming can reduce hazard impacts to promote equitable resilience.

### 1. Resilience is a Team Sport

#### Jaleesa Tate



State Hazard Mitigation Officer (SHMO) and Branch Manager for the Maryland Emergency Management Agency (MEMA)

JaLeesa Tate is the State Hazard Mitigation Officer (SHMO) and Branch Manager for the Maryland Emergency Management Agency (MEMA). In this role, her primary focus is to identify and implement risk reduction strategies and policies. JaLeesa accomplishes this through fostering relationships with stakeholders and administering FEMA's Hazard Mitigation Assistance grant programs for the State. Prior to joining MEMA, JaLeesa served as the Coastal Resources Planner for Baltimore City and Environmental Planner for Wicomico County – City of Salisbury. In these roles, she focused on water quality improvement and environmental land use at the local level in urban and rural communities. She currently serves as Co-Chair of the Mitigation Committee for the Maryland Association of Floodplain and Stormwater Managers, Chair of the SHMO Subcommittee for the National Emergency Management Association, and is a member of FEMA's External Stakeholders Working Group. JaLeesa studied Geography and Geosciences and is a Certified Floodplain Manager by the Association of State Floodplain Managers.

#### Abstract:

Emergencies and disasters affect everyone. As a collective community we all share these risk and must work together to reduce and eliminate these risks. Including the 'whole community' is the optimal way to ensure a multi-disciplinary approach to building resilience that will increase the efficacy of our efforts.

Resilience requires individual and household preparedness as well as resources from the government and private sector. We can build buy-in and obtain more expertise by ensuring inclusion of non-profits, academia, and faith-based organizations.

Learn more about partnership building and the value a 'whole community' approach brings to increase the resilience of our communities.

### 2. The Role of Social Inequality in Measuring and Modeling Community Resilience

#### Maria Dillard



Associate Lead Technical Investigator, National Construction Safety Team (NCST)

Dr. Dillard serves as Associate Lead Technical Investigator of the National Construction Safety Team (NCST) investigating the impacts of Hurricane Maria on Puerto Rico and is a Research Social Scientist in the Community Resilience Program at the National Institute of Standards and Technology. Her research is focused on community response to hazards and chronic stressors and the development of methods for measurement and modeling community resilience, well-being, and vulnerability. Her work includes development and application of a measurement model for community well-being following the Deepwater Horizon oil spill, integrated assessments of community vulnerability to climate change for climate adaptation planning, and quantification of human use and dependence on natural resources. Maria has a PhD in Sociology from the University of Pittsburgh.

#### Abstract:

The National Institute of Standards and Technology's (NIST) Community Resilience Program is working to develop science-based tools for communities, professionals, and researchers to assess resilience and to support informed planning and decision making for improving resilience in communities of all sizes. Within the areas of resilience measurement and modeling, NIST researchers are working to represent communities as complex systems. Understanding how the characteristics of physical and social subsystems support resilience can improve planning, policy formation, and decision-making for hazards as well as chronic stressors. Examples of characteristics include income distribution, safe and stable housing, economic activity across the community, reliable electrical power and water infrastructure, and access to social services. These characteristics are among those being evaluated for evidence and efficacy in measuring resilience. Researchers are also tackling how to account for social inequality in the development of community resilience measures and models. Going a step further, researchers are asking the question "*can resilience measurement and modeling help reduce inequity?*". This talk will explore roles of social inequality in the measurement and modeling of community resilience, along with ideas about how resilience planning may support reductions of inequity and gains in the ability of communities to recover from disruptions.



## IV. Equitable Resilience: Addressing Social Justice in Disasters - 15:00 – 17:00 hours – US – Eastern Daylight Time

Co-Chaired by: Michelle Meyer, Hazard Reduction and Recovery Center, Texas A&M University, Maria K. Dillard, National Institute for Standards and Technology, Kim Klockow McClain, National Oceanic and Atmospheric Administration, Sara Hamideh, Stony Brook University

(8 PPT @ 15 min followed by 30 min Panel Discussion)

### 3. Doomed before the disruption? The inequitable amplification of complex event impacts on historically underrepresented group operated small businesses

#### Jennifer F. Helgeson



Applied Economics Office, Engineering Laboratory (EL), National Institute of Standards and Technology (NIST)

Dr. Jennifer Helgeson is a research economist in the Applied Economics Office of the Engineering Laboratory (EL) at the National Institute of Standards and Technology (NIST). She leads work on the "Economics of Community Resilience Planning." Her research interests are focused on survey assessments and economic analyses that consider behavioral aspects and approaches to dealing with environmental issues. Dr. Helgeson's research revolves around resilience to hazards (shocks and stressors) in the built environment, with consideration for cost-effectiveness of community-scale mitigation and adaptation efforts. At present, Dr. Helgeson is a member of the National Construction Safety Team (NCST) Technical Investigation of Hurricane Maria and its impacts on Puerto Rico. The NIST Hurricane Maria Program also includes NIST's National Windstorm Impact Reduction Program (NWIRP) Study to better understand recovery processes in Puerto Rico following Hurricane Maria. Under this NWIRP study, Dr. Helgeson leads a project to determine the impacts to and recovery of small and medium-sized manufacturers (SMMs), and retail and service industries. As part of her business resilience research, Dr. Helgeson leads a primary data collection effort in partnership with NOAA that considers complex events and the role of equity, in particular.

#### Abstract:

In the wake of the COVID-19 small businesses made headlines as hard hit by customer losses, revenue declines, and business closures. Yet, the impacts have been felt disproportionately by small businesses that suffered interruption due to pre-existing socioeconomic stressors and/or concurrent natural hazards experienced during the pandemic. To illuminate those compound impacts, we conducted a survey of ~1350 U.S.-based small businesses. Our findings indicate that those that experienced natural hazards during the pandemic had longer spans of stopped operations and decreased revenue across small business sectors and locations. But importantly, enterprises that are historically underrepresented group operated (HUGO)—minority, women, and veteran-owned businesses— saw largely amplified negative impacts from COVID-19 that far outweigh the compound impact of both a natural hazard and COVID-19 felt by non-HUGO businesses. Further compounded, when hit by a natural hazard in addition to COVID-19, a HUGO business, on average, experienced stopped operations 66 % more, and decline in revenue and customers 19% more, than their non-HUGO counterparts. Further work is required to address social inequity and economic fragility of HUGO businesses, especially those that face the complexity of additional shocks, such as natural hazards. Data collection via surveys is an important source of such data.

### 4. Designing a Thoughtful Social Science Presence in a Weather Laboratory: Raising Local Voices

#### Kim Klockow McClain



Research Scientist and the Societal Applications Coordinator, Cooperative Institute for Mesoscale Meteorological Studies (CIMMS)

Dr. Kim Klockow-McClain is a research scientist at the University of Oklahoma Cooperative Institute for Mesoscale Meteorological Studies (CIMMS) and the NOAA National Severe Storms Laboratory (NSSL). Her research involves behavioral science focused on weather and climate risk, especially informed decision-making to support warning response, and issues in the communication of forecast uncertainty. In addition to research pursuits, Kim is the team lead for the new Behavioral Insights Unit at CIMMS/NSSL. She serves as adjunct faculty for the OU Department of Geography and Environmental Sustainability and affiliate faculty for the OU Psychology Department. Kim previously worked at NOAA headquarters outside Washington, DC as a policy advisor for social science integration. She was the 2013-2014 AMS/UCAR Congressional Science Fellow, and worked in the office of Senator Jeff Merkley on issues such as natural hazards policy and finance, environmental policy, and natural resource management. Prior to her fellowship year, Kim earned her Doctorate in Hazards Geography and Masters of Professional Meteorology from the University of Oklahoma, and Bachelors degrees in Economics and Meteorology from Purdue University.

#### Abstract:

To date, severe weather research in the U.S. has been dominated by a technocratic philosophy: improvements in technology were seen as the path to improvements in societal outcomes, including reductions in damage and loss of life. Recent devastating events, however, began a process of reckoning with this perspective and re-evaluating what a weather research capability should consider in its work. This talk will provide an overview of some key policy advancements that have shaped the inclusion of social sciences in weather research in the U.S., and conclude with a look at the approaches that are being taken within the National Severe Storms Laboratory to thoughtfully include social sciences from end-to-end in its research programs.



## IV. Equitable Resilience: Addressing Social Justice in Disasters - 15:00 – 17:00 hours – US – Eastern Daylight Time

Co-Chaired by: Michelle Meyer, Hazard Reduction and Recovery Center, Texas A&M University, Maria K. Dillard, National Institute for Standards and Technology, Kim Klockow McClain, National Oceanic and Atmospheric Administration, Sara Hamideh, Stony Brook University

(8 PPT @ 15 min followed by 30 min Panel Discussion)

### 5. Public housing recovery and participation as indicators of social justice in disasters

#### Sara Hamideh



Assistant Professor, School of Marine and Atmospheric Sciences, Sustainability Division, Stony Brook University

Sara Hamideh is an assistant professor at the School of Marine and Atmospheric Sciences' Sustainability Division at Stony Brook University. Her research interests include post-disaster recovery and community resilience. She studies recovery of different housing types such as vacation seasonal homes and affordable housing, public participation in recovery, vulnerable populations and public housing through quantitative longitudinal modeling and qualitative analysis of planning decisions and processes. She is also a researcher in [Center of Excellence for Community Resilience at Colorado State University](#) funded by National Institute of Standards and Technology (NIST). She has conducted longitudinal and interdisciplinary modelling of housing recovery in seasonal and year-round housing markets in tourist-based communities based on physical and social vulnerabilities. In another line of research, she looks at the role of social vulnerability and stigma in access to recovery decision making and participation in planning processes. She has published on public housing after disasters, showing how being vulnerable implies less control and representation in decisions about one's recovery. In the rural Midwest, she studied resilience of small towns to shrinking population, developing a new paradigm for rural smart shrinkage in a collaborative project funded by the National Science Foundation. Her teaching courses include

disaster resilience, sustainable communities, environmental planning, and planning analytical methods.

#### Abstract:

This paper argues that one of the overlooked characteristics of social vulnerability and inequity in disasters is a diminished ability to participate in post-disaster decision-making. There are often few local advocates after disasters arguing for the preservation of public housing units and few remaining residents to speak up for themselves in the face of local reluctance or resistance to the restoration of affordable or public housing units or the return of public housing or other low-income residents. Drawing upon two case studies, I discuss the void of a strong and authentic local pro-public housing perspective in many communities creates an opening for various local voices and campaigns to claim that they know how to best benefit the poor. The disaster recovery under these conditions faces the risk of becoming an opportunity to remove or reduce affordable housing and public housing units and therefore, public housing and other marginalized residents.

### 6. Urban flood vulnerability according to migrant status: Lessons from Beira, Mozambique

#### Kelly J. Anderson



Professional Research Experience Program (PREP) Research Scientist, Community Resilience Group; and NIST Hurricane Maria Research Investigation team, Engineering Laboratory, National Institute of Standards and Technology (NIST).

Kelly Anderson is a Professional Research Experience Program (PREP) research scientist in the Community Resilience group and NIST Hurricane Maria Research Investigation team in the Engineering Laboratory at the National Institute of Standards and Technology (NIST). Dr. Anderson works on a National Windstorm Impact Reduction Program (NWIRP) project in the Hurricane Maria Program that is focused on the recovery of services provided by schools and hospitals and the role of these social institutions in the recovery of communities.

Dr. Anderson's research interests include poverty, urbanization, and the effects of climate change on environmentally vulnerable and economically marginalized communities of the developing world. Her research examines the intersections between extreme weather, vulnerability, and poverty that drive rural-to-urban migration and shape the experiences of migrants in new urban settings. Kelly holds a PhD in Geography from the University of Maryland and a BSBA in Economics from the University of Florida.

#### Abstract:

The Sendai Framework for Disaster Risk Reduction (SFDRR) identifies the need to include migrants as a distinct group of DRR stakeholders if equitable urban resilience is to be realized. Yet questions remain as to the extent to which rural-to-urban migrants exhibit specific patterns of vulnerability to urban environmental risk. To address this gap, this study explores the degree to which migrants are more vulnerable than non-migrants to flood risk in urban settings. This paper employs a largely qualitative approach to understand lived experiences of flood vulnerability and the factors that exacerbate vulnerability. Data are from a comparative case study of two low-income neighborhoods marked by environmental vulnerability in Beira, Mozambique. Semi-structured interviews and surveys were conducted with migrant (n=79) and non-migrant (n=79) households. Content analysis reveals that 1) migrants and non-migrants experience comparable levels of flood vulnerability, and 2) neighborhood characteristics are significant in shaping experiences of flood vulnerability. Results highlight the importance of conducting local-level case studies of environmental vulnerability informed by those who are at risk. Importantly, shared concerns related to environmental vulnerability may be an effective entry point for policy and planning initiatives that seek to bring about migrant-inclusive disaster risk management.



## IV. Equitable Resilience: Addressing Social Justice in Disasters - 15:00 – 17:00 hours – US – Eastern Daylight Time

Co-Chaired by: Michelle Meyer, Hazard Reduction and Recovery Center, Texas A&M University, Maria K. Dillard, National Institute for Standards and Technology, Kim Klockow McClain, National Oceanic and Atmospheric Administration, Sara Hamideh, Stony Brook University

(8 PPT @ 15 min followed by 30 min Panel Discussion)

### 7. Can't Beat the Heat - The Challenges of Heat Mitigation in Texas Prisons

#### J. Carlee Purdum



Assistant Research Professor, Hazard Reduction and Recovery Center, Texas A&M University

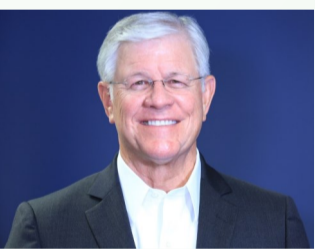
Carlee Purdum, Ph.D., is an Assistant Research Professor at the Hazard Reduction and Recovery Center at Texas A&M University. Her work focuses on the impact that hazards and disasters have on prisons and the social vulnerability of incarcerated populations. She currently leads the CONVERGE COVID19 working group studying the impact of COVID19 and other hazards in prisons. Her research partners include the organizations The Texas Prisons Community Advocates (TPC) and the Campaign to Fight Toxic Prisons (FTP) who she works with to study the impact that extreme temperatures and COVID19 have had on prisons and incarcerated persons in Texas.

#### Abstract:

Texas is one of 13 U.S. states that does not provide system wide temperature regulation (air conditioning and heating) in their prisons. Without temperature regulation, prison agencies develop policies to mitigate the impact of extreme heat on individual incarcerated persons. Policies typically include distributing additional resources like water, ice, cold showers, cooled respite areas, commissary items for purchase, and water breaks for workers. This study includes an analysis of surveys from 309 incarcerated persons in Texas about their experience with such heat mitigation policies between 2018 and 2020. Findings demonstrate how the structure of prisons and characteristics of imprisonment present significant challenges to incarcerated persons accessing such resources. Additionally, surveys collected in 2020 reveal how the COVID19 pandemic, which disproportionately impacted incarcerated populations, created additional challenges to heat mitigation in Texas prisons. These findings suggest that only system-wide hazard mitigation efforts would address the vulnerability of incarcerated persons to the impacts of extreme heat, including death. The need for temperature regulation in prisons is expected to grow due to an increase in extreme temperatures with climate change and growing public health threats such as pandemics.

### 8. Reduce Disaster Suffering

#### David I. Maurstad



FEMA Deputy Associate Administrator for Insurance and Mitigation; Senior Executive of the National Flood Insurance Program

David Maurstad is highly regarded for his transformative leadership in communicating disaster risk, closing the insurance gap and incentivizing mitigation actions against varied natural hazards with the primary goal of reducing disaster suffering for all communities. A veteran emergency manager, Mr. Maurstad currently serves as the Deputy Associate Administrator of FEMA's Insurance and Mitigation Administration and senior executive of the [NFIP, the world's largest single-peril insurance operation providing over \\$1.3 trillion in flood coverage to over 5 million U.S. policyholders.](#) David's expertise in emergency management and strategic risk communications stems from his substantial leadership roles in the private sector, and local and state government as a former Nebraska mayor, senator and lieutenant governor. Mr. Maurstad skillfully has navigated his team through the unprecedented COVID-19 pandemic, historic 2020 hurricane season and hundreds of high-profile disaster operations in his current role and while in past leadership positions within the Insurance and Mitigation Administration and as a former Region VIII Administrator.

The severity, frequency, and intensity of disaster events continue to increase year after year resulting in devastating impacts to households and communities, untenable disaster assistance costs, and lost economic activity. Disasters and climate change have a disparate impact on socially vulnerable or marginalized communities, making their road to recovery longer and more difficult. Nature is not waiting for us. The time to take action is now. David Maurstad, FEMA Deputy Associate Administrator for Insurance and Mitigation and senior executive of the National Flood Insurance Program, will share what FEMA's Federal Insurance and Mitigation Administration (FIMA) is doing to increase resilience and reduce disaster suffering across all communities, especially for those who most often suffer disproportionately after a disaster. Mr. Maurstad will present FIMA's commitment to make insurance and mitigation accessible for every person and community in United States to reduce their risk to natural hazards. He will share how Risk Rating 2.0: Equity in Action is correcting long-standing inequities in flood insurance and providing more fair and equitable rates, how the Building Resilience Infrastructure and Communities Program is changing the way the nation invests in resilience, and how FIMA's commitment to equity is reflected across insurance, mitigation, and floodplain management.

#### Abstract:



## Common Plenary Session for All Participants:

# How to engage science in the decision-making process within national governance and relate science into action?

Chair: Prof. Charles Scawthorn, Visiting Researcher, Univ. California at Berkeley and Principal of SPA Risk LLC

4 speakers @ 20min

### 1. Mobilizing science for disaster risk reduction and development safety - a decade quest of IRDR

#### Qunli Han



Executive Director, Integrated Research on Disaster Risk (IRDR)

Han Qunli is currently working as the Executive Director, International Programme Office of Integrated Research on Disaster Risk (IRDR-IPO). He worked for UNESCO during 1990-2017 and served at different positions, including Programme Specialist on Environmental Sciences at Division of Ecological Sciences in Paris, Senior Science Programme Officer of Asia-Pacific Science Bureau in Jakarta, Director of Tehran Cluster Office (Afghanistan, Iran, Pakistan and Turkmenistan), Director of Executive Office UNESCO's Natural Science Sector at the Headquarters. From these duty stations Qunli was involved in a number of UN disaster response operations. His last duty in UNESCO was the Director of the Division of Ecological and Earth Sciences and the Secretary of the Man and the Biosphere (MAB) Programme (2013-2017), during which he was responsible for the development of UNESCO's MAB Strategy 2015-2025 and the Lima Action for the World Network of Biosphere Reserves (WNBR) 2016-2025, and the supervision of the Section of Disaster Risk Reduction. Qunli started the current position in IRDR in September 2017.

#### Abstract:

Since 2010, IRDR has been actively engaged with researchers from a broad range of domains and disciplines to address the complex challenges of disaster risk. IRDR Compilation 2010-2020, published in June 2021, demonstrates through 89 concrete cases, that the program has advanced toward most of its initial research objectives and cross-cutting themes set by the Science Plan of ICSU of 2008. Advancement is especially on the understanding the characteristics of hazards, vulnerability and risk as well as their respective underlying drivers, but also on new models, scientific definitions and assessments, data standards and tools, and DRR policy recommendations for development. Clearly, these would not be possible without continued effort of IRDR in institutional capacity building. Further to its Scientific Committee, IRDR has 13 IRDR National Committees, 17 International Centres of Excellence and a Young Scientists Programme that is participated by over 160 young professionals from some 40 countries. This setting has enabled the connection of IRDR with different risk governance levels. It is anticipated that IRDR will continue under the overall new global DRR research framework of ISC, UNDRR and IRDR, with a notion that, if development is meant to be sustainable, it must be safe at the same time.

### 2. Disaster Risk Reduction in Small Nations

#### Selwyn E. Mahon



Medical Director of the Caribbean Center for Disaster Medicine based in St Maarten at the AUC School of Medicine

Selwyn E. Mahon MD, FACEP is a Board-Certified physician in Emergency Medicine and EMS (Prehospital Medicine). From years 2004 to 2013, he was the Territorial EMS Medical Director for the United States Virgin Islands. In 2010 he was deployed to the earthquake in Haiti. Thereafter Dr. Mahon embarked on a formal pursuit in the field of Disaster Medicine by the completion of the Disaster Medicine Fellowship at Harvard Medical School Affiliated, Beth Israel Deaconess Medical Centre, and to date remains an active faculty member. Dr. Mahon has been deployed to several other disaster zones including the Philippines and Nepal and actively participates in disaster training and preparedness activities Internationally. He is committed to disaster education, system building, and research. He is currently the Medical Director of the Caribbean Center for Disaster Medicine based in St Maarten at the AUC School of Medicine. In addition, he currently serves on the Board of the North American Alliance of Hazards and Disaster Research Institutes (NAAHDRI) and was one of the inaugural Board members elected in 2019.

#### Abstract:

Small nations are uniquely susceptible to disasters. While all countries are exposed to a variety of hazards, small nations' limited resources, increased frequency of disasters, and geographic isolation makes them more vulnerable and increases the potential of hazards to become disasters. Disaster risk reduction (DRR) is important to all nations but specifically necessary in small nations. Disaster Risk Reduction (DRR) is everything we do to reduce the damage caused by hazards through an ethic of prevention. Massive sudden-impact disasters can destroy communities instantly, while slow-onset disasters such as droughts and pandemics can erode them socio-economically month-by-month, year-by-year. Without disaster risk reduction many small nations will experience steady decline and recurrent impediments to growth.

Many small countries depend on international support during disasters. Sadly, most of this international funding goes toward disaster response and recovery work with very little going towards prevention and risk reduction. Disaster risk reduction is dependent on information. It should be data-driven. Small countries often need help with developing data infrastructures, historical and analytical capacities. Local research is necessary but less than 1% of the citations in PubMed addressed disasters in developing countries yet 85% of disasters and 95% of disaster-related deaths occur in the developing world. The majority of disaster-related research articles are generated and funded by wealthy countries. Increased collaboration and support to small nations are needed by these wealthy countries that also assist with disasters to increase local research and



# Common Plenary Session for All Participants: How to engage science in the decision-making process within national governance and relate science into action?

Chair: Prof. Charles Scawthorn

4 speakers @ 20min

## 3. Non-regret climate change adaptation with a paradigm-shift of the water-related disasters

### Eiichi Nakakita



Director, Disaster Prevention Research Institute (DPRI), Kyoto University, Japan

Prof. Eiichi Nakakita is the current Director of the Disaster Prevention Research Institute (DPRI) Kyoto, University. He started his career at the Water Resources Research Center at DPRI from 1985 to 1999 as a research associate, and later moved on as an Associate Professor. In 2000, he relocated to Department of Global Environment Engineering, a graduate school of engineering of Kyoto University. In 2004 he returned to DPRI as a professor at the Research Division of Atmospheric and Hydrospheric Disasters, and was also one of the directors for Planning & Strategy, Institute of Sustainability Science (ISS), Kyoto University. He is a recipient of the excellence in research awards from the Japan Society of Civil Engineers, the Japan Society of Hydrology and Water Resources, and the Japan Meteorological Society. He was the Vice-Director of DPRI from 2015 to 2017. He has been holding visiting researcher/professor positions at various national and international institutions, e.g. National Research Institute for Earth Science and Disaster Prevention (NIED), Japan; Tropical Marine Science Institute at National University of Singapore, and MARA University of Technology, Malaysia. Prof. Nakakita received his Bachelor, Master, and Dr. Eng. degrees from Kyoto University, Japan, in 1983, 1985, and 1990 respectively.

### Abstract:

In recent years, climate related disasters have become more severe. Immediate implementation of adaptation measures is warranted. While scientific research is underway for the better assessment of climate change and its impact, which could be used for formulation of adaptation measures, we must pay attention to the change in and speed of climate risk. There are uncertainties in predictions of climate change and its impacts. However, for 'no-regret adaptation', we should apply the precautionary principle, and the lack of scientific evidence or information should not be reasons for inaction. Action without delay is imperative. While bottom-up approaches based on local realities are essential, at national level, it is also necessary to enhance cooperation among relevant government agencies and promote collaboration with both academic and DRR communities.

## 4. Local service provision, key for a resilient future—Video Message

### Emilia Saiz Carrancedo



Secretary-General, United Cities and Local Governments (UCLG), Spain

Emilia Saiz is the Secretary General of United Cities and Local Governments (UCLG). She has worked with the international movement of local and regional governments in different capacities since 1997, leading programmes and initiatives on institutional capacity building, the participation of women in local decision-making and decentralized cooperation. She played a critical role in setting up the Global Taskforce of Local and Regional Governments, and has followed and represented local and regional governments in international processes such as the Rio and Beijing +20 as well as the Climate Agreement, the SDGs and Habitat III and facilitated the contributions from local constituencies to the United Nations process






# 5<sup>th</sup> Global Summit of GADRI

Engaging Sciences with Action

31 August to 1 September 2021



Regional Session on Asia and Oceania  
Engaging Sciences with Action:  
Voices from Asia and Oceania

09:30 to 15:45 hours Japan Standard Time (EDT), 1st September 2021

Organised by the Global Alliance of Disaster Research Institutes  
together with the support of the Regional Alliances



# Asia and Oceania

## Engaging Sciences with Action: Voices from Asia and Oceania

1<sup>st</sup> September 2021 from 9:30 to 15:45 hours – Japan Standard Time

**Regional Organisers:**

**GADRI Secretariat with the support of Prof. Mahua Mukherjee, the South Asian Alliance of Disaster Research Institutes (SAADRI)**

### Session Description

The Asia and Oceania region is considered the most disaster-prone region in terms of frequency, intensity, and community vulnerability. As the GADRI promotes, engaging science with action is critical to ensure the effective realization of the Sendai framework of actions. Engaging science with action is a challenging task in Asia and Oceania, considering the vast and diverse social, political, economic, and natural environment and background of the region. Given this challenge, it is critical to bring diverse voices and perspectives not only from academia but also from decision-makers and practitioners. The session would like to obtain a comprehensive perspective of the critical challenges, processes, and outcomes, cutting-edge technologies, mechanisms, and methods of engaging science with action for effective DRR in the region.

This session will start with keynote speeches of the pioneers, stalwarts, and personalities of the region involved in engaging science with action.

The speakers will highlight key issues, mechanisms, processes, and future directions for engaging science with action in the most disaster-prone region.

In the second half, there will be four parallel sessions on:

1. Regional Alliances: improving collaboration to support global stakeholders of DRR and DRM
2. Target E – Disaster risk governance and contribution for policymaking
3. Contribution to climate change adaptation
4. Implementation of sciences in Action

### Keynote

**Chair: Prof. Toshio Koike, Executive Director, International Centre for Water Hazard and**

### 1. Establishing IRDR I-CoE: Coherence among DRR, CCA, and SD by OSS-SR and Facilitators

#### Haruo Hayashi



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

Dr. HARUO HAYASHI is currently President of the National Research Institute for Earth Science and Disaster Resilience since 2015. He is also Professor Emeritus from Disaster Prevention Research Institute, Kyoto University where he has taught between 1994 and 2015. He received both his Bachelors and Master's degrees from Waseda University, and Ph.D. from the University of California at Los Angeles in the field of social psychology in 1983. He was appointed as an Assistant Professor from Hirosaki University in 1983 where he started his career as a disaster research when he studied responses of disaster victims toward the 1983 Nihonkai-chubu Earthquake and Tsunami. He moves to Hiroshima University in 1988 as an Associate Professor where he studied societal reactions to an urban Typhoon disaster in 1991. In nine months after moving to Kyoto University, he went through the 1995 Kobe earthquake in which he performed the scientific description and theorizing of the entire recovery processes. The general focus of Dr. Hayashi's work is on Societal and Human Reactions to Disasters, Risk Communication and Education, Information System for Disaster Management, Standardization of Emergency Operations, and Multi-hazard Risk Assessment.

#### Abstract:

IRDR Japan National Committee (Japan NC) or the Subcommittee for IRDR of the Science Council of Japan (SCJ) has supported the establishment of the Japan Hub of Disaster Resilience Partners (hereinafter JHoP) in 2019. JHoP is a unique entity which is composed of a total of 15 prominent universities, research institutions and general associations involved in disaster resilience in Japan to promote interdisciplinary and transdisciplinary research, education and social implementation, and to contribute to the creation of science-knowledge-based disaster resilient societies. J-HoP is going to establish "ICoE Japan: Coherence by the OSS-SR & Facilitator" based on JHoP for further strengthening coherence among disaster risk reduction (DRR), climate change adaptation (CCA), and sustainable development by integrative research and implementation through international cooperation which based on the SCJ Recommendation published in 2020 entitled as "Building a sustainable global society by strengthening disaster resilience: - Developing an "Online Synthesis System (OSS)" and fostering "Facilitators" to realize consilience –".

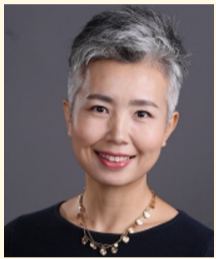
## Asia and Oceania

### Engaging Sciences with Action: Voices from Asia and Oceania

1<sup>st</sup> September 2021 from 9:30 to 15:45 hours – Japan Standard Time

#### 2. An introduction of the first national comprehensive disaster risk survey project of China

##### Saini Yang



Professor, Academy of Disaster Reduction and Emergency Management, Beijing Normal University

Dr. Saini Yang is a professor of the Academy of Disaster Reduction and Emergency Management at Beijing Normal University. She got her PhD in Civil Engineering at University of Maryland, specializes in infrastructure risk analysis, emergency management, complex system modeling and community-based disaster risk reduction. In recent 5 years, she has been the PI of more than 8 national and international research projects and published over 50 peer reviewed

papers, including Nature-Communications, Risk Analysis, Science of Total Environment and other academic journals. She is the director of the International Center for Collaborative Research on Disaster Risk Reduction, as well as the member of APSTAAG. Dr. Yang serves as the editorial member of International Journal of Disaster Risk Science, Progress in Disaster Science, Critical Infrastructures, etc. She is an expert member of the Commission of National Disaster Reduction of China, and the Committee of City Safety and Disaster Prevention of the Ministry of Housing and Urban-Rural Development.

##### Abstract:

The national comprehensive risk survey of natural disasters in China is the largest national risk

assessment project in the world so far. For the first time, China initialized this project in 2020 and it is expected to finished by the end of 2022. Risk assessment is the base stone of the capacity improvement for disaster risk reduction. Through the survey, we can collect and share the data of hazards, exposures and vulnerability across sectors and stakeholder groups, identify the disaster resistance capacity for various stakeholder groups and regions, quantitatively understand the risk level of disasters in the whole country and areas, and provide authoritative disaster risk information and scientific evidence for decision-making at all levels. These outcomes will effectively support disaster prevention and control activities and ensure the sustainable development of economy and society.

#### 3. Using science to support decision-makers to reduce risk from natural hazards events: some examples from Aotearoa New Zealand

##### Gill Jolly



Research Leader, Natural Hazards and Risk Science, GNS Science, New Zealand

Gill is a volcanologist from the UK, researching magma physics for her PhD, and then working at the British Geological Survey. After a few years exploring for gold and base metals in the UK, she was involved in the eruption of Soufriere Hills volcano, Montserrat from 1995 to 2005. In 2006 she moved to NZ where she led the Volcanology team at GNS Science through New Zealand and SW Pacific eruptions. Between 2014 and 2018, she was the Director of the Natural

Hazards Division and led the team through the science response to the 2016 M7.8 Kaikōura Earthquake. She is currently the Research Leader for Natural Hazards and Risk Science at GNS Science. In 2019 she was co-opted onto the Prime Minister's Chief Science Advisor's Forum to act as a conduit between the natural hazards research community and senior decision-makers.

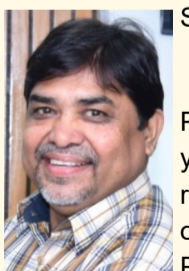
##### Abstract:

Aotearoa New Zealand is well known to its people as "the shaky isles" for good reason. This geologically young country sits astride a tectonic plate boundary in the "roaring forties" and as such is susceptible to a range of natural hazards including earthquakes, volcanoes, landslides,

tsunami and meteorological hazards. GNS Science is a crown research institute tasked under the national Civil Defence and Emergency Management Act to provide scientific advice on geological hazards to responding agencies and contribute to public information management. Over the last decade, there have been several notable geological hazard events and, in this talk, I will provide some reflections on the input of science during readiness, response and recovery. I will also outline some key lessons learnt to reduce risk to future events. The complexity of a risk management system provides challenges, which are best overcome through targeted research (both short and long term), collaboration between agencies and transparency of communication.

#### 4. Engaging Science with actions: A case for EEW in India

##### M. L. Sharma



SAADRI Programme Adviser

Prof. M. L. Sharma has more than 36 years of experience in teaching, research and consultancy in the area of Earthquake Engineering. He is Program Advisor for SAADRI and is Fellow of Indian Society of Earthquake Technology, Indian Geotechnical Society and Indian Geophysical Union. Prof. Sharma was President of Indian Society of Earthquake Technology during 2015-2019. He has rendered expert advice to more than 500 engineering projects regarding the seismic risk assessment and was associated with seismic microzonation of National Capital Region of Delhi, Dehradun city, Srinagar city (J&K), and Phuentsholing city in Bhutan. Prof. Sharma played key role in the deployment of the first Digital Telemetered Seismological Sample Array in

Garhwal Himalaya in 1985-86 and also initialized the Earthquake Early Warning system in India and was associated with the first EEW system deployed in 2015. He has been actively associated with international programs with Norway, Mexico and Taiwan for disaster mitigation. The lessons learnt through many damage surveys of earthquake carried out by him have resulted in advice for future in form of many of his international publications. Based on the contributions by Prof. Sharma in disaster mitigation he was awarded the A. S. Arya-IITR Disaster prevention award -2012.

##### Abstract :

The pursuance of SANDAI framework has encouraged scientists to demonstrate their plans for action towards implement-oriented science. The contribution of academia to natural disasters like earthquakes have been examined with respect to scientist's intervention and opportunities created by world bank and the Governments. While priority 1 of understanding earthquake disaster risk may be

considered as wonderfully experimented in Global Earthquake Model (GEM) which was otherwise more for the insurance and reinsurance, the pursuit to strengthen disaster risk governance has been well taken up by the Governments. Phase 2 of National Seismic Risk Mitigation Program of India intends to undertake suitable measures to mitigate earthquake disaster and aimed at reducing vulnerability of communities and their assets by taking appropriate mitigation measures and strengthen the capacity of national and state entities, a goal synergetic to SANDAI framework i.e., substantial reduction of disaster risk. The need of Earthquake Early Warning System can never be over emphasized. Some of the important steps has been already undertaken by NDMA and IIT Roorkee. The role of SAADRI in South Asia becomes more important in becoming a bridge in such cases where the disaster does not recognize international boundaries.



# Asia and Oceania

## Engaging Sciences with Action: Voices from Asia and Oceania

1<sup>st</sup> September 2021 from 9:30 to 15:45 hours – Japan Standard Time

**Panel Discussion Session – 1-1 - Regional Alliances: Improving collaboration to support global stakeholders of DRR and DRM - 11:30—13:00 hours Japan Standard Time, 1st September 2021**

**Focal Points: Hirokazu Tatano, Norio Maki, Kenji Kawaike, Wei-Sen Li, Gretchen Kalonji**

This session will introduce existing regional alliances and discuss alliance related questions.

This session will be held in two parts.

- The first session will introduce existing GADRI Regional Alliances and connections; and
- The second part will introduce viewpoints for improving regional activities.

Key points to be addressed:

- objectives and directions of alliances –
- how to strengthen connections between existing GADRI regional alliances
- how to develop a better way to collaborate with each other
- how to strengthen connections between GADRI and multiple other regional and global alliances related to DRR.

### 1.1 : Introducing current and existing alliances - (3 @15 min)

**Chair: Srikantha Herath, Co-Chair, SAADRI; and Kenji Kawaike, DPRI, Kyoto University**

## I South Asian Alliance of Disaster Research Institutes (SAADRI)

### Srikantha Herath



Co-chair, SAADRI

Dr. Herath has more than 40 years of experience in civil engineering, both in industry and in academia, specializing in flood risk reduction, urban water management and climate change and impact assessment, using mathematical models and spatial data.

His most recent assignment was the development of a center for integrated flood and water management for Metro Colombo as the Team Leader of the project since 2016 July till 2020 June, Metro Colombo Urban Development Project funded by the World Bank. He also served as a Senior Advisor to the Ministry of Megapolis and Western Development, Sri Lanka during that period. Prior to that he was Academic Director and Senior Academic Programme Officer at the Institute for the Advanced Study of Sustainability, United Nations University (UNU-IAS), (2002-2016), Associate Professor and Guest Foreign Professor at University of Tokyo (1991-2002), senior research engineer in industry, Tokyo (1988-1991). Dr. Herath holds a Ph.D. in Civil Engineering from the University of Tokyo. His current affiliations include, Director, Center for Transdisciplinary Research, Sri Lanka and Director, Envi Forecasting, co. Australia.

### Abstract:

Introducing SAADRI research part, integrated disaster management systems, different stakeholders have specific roles and how we would like to move forward. Introduce 5 working groups, mode of operation; how collaboration is being planning, publications, online tools and collaborative platforms, emphasis focus area, and how to establish collaborative mechanisms with each other; Highlighting one aspect, very much focussed on not only disaster research institutes, but young researchers. Specifically developing a platform to encourage people, bring in young researchers and to match research opportunities with students.)



## Panel Discussion Session – 1 - Regional Alliances: Improving collaboration to support global stakeholders of DRR and DRM - 11:30—13:00 hours Japan Standard Time, 1st September 2021

### 2. Opportunities and Challenges for AADRI since Inception

#### Desmond Manatsa



Full Professor and Dean, Faculty of Science and Engineering, Bindura University of Science

Prof. Manatsa is a full professor and dean of the Faculty of Science and Engineering at Bindura University of Science Education which he joined in 2004. His first employer was the Zimbabwe Meteorological Services as a Senior Meteorologist heading the Central Forecasting Office and later, the Climate Services Section. He did his first degree at the Russian State University of Hydrometeorology where he graduated as Engineer Meteorologist (with Excellence) before graduation with a Masters Degree in Ocean and Atmospheric Sciences at the University of Cape Town in South Africa (with a Distinction). At University of Tokyo in Japan where he did his PhD in Atmospheric Science, he was honoured with a gold medal award by his PhD Scholarship sponsors, the Japanese Society for the Promotion of Science (JSPS) Overseas Fellowships of Japan. As an academic, he has published 53 articles in scientific refereed journals, compiled a book on hazards which is being used in Zimbabwe secondary schools. He is also a reviewer of 12 scientific refereed journals and has done more than 10 international consultancies. He led the research to come with, 'New Agroecological Regions of Zimbabwe', 'Build Resilience to Climate Change using Cyclone Idai devastation as case study', develop the national adaptation process to feed into the National Adaptation Plan and develop 'Drought Early Warning System for Zimbabwe'. His main contribution to international scientific research was a paper which was published in the Journal of Nature as the first author on the 'Ozone hole warming of summer temperatures over southern Africa' which was the first published work to establish a link between the Ozone hole and the summer temperatures of southern Africa. His research interests are disaster risk reduction, the science of climate change and natural hazards.

#### Abstract:

AADRI was created in 2017 from the initiative of GADRI as independent alliance that is managed by voluntary contributions from the Africa's research community. Its main themes are Disasters Risk Reduction Climate Change Adaptation Sustainable Development where the forum advances disaster risk reduction knowledge through producing and sharing knowledge, promoting collaboration and partnership and providing a unified message for policy makers across Africa. AADR was formed in the African environment where DRR is being institutionalized by almost all African countries through regional bodies like Intergovernmental Authority on Development IGAD, the Economic Community for West African States, Economic Community for Central African State, East African Community and the Indian Ocean Community, Southern African Development Community. Several countries now have national plans, policies and strategies for DRR with DRR support from UN agencies like UNICEF, UNDP and UNEP. However, AADRI has made very little inroad into these institutions primarily due to the fact that these institutional frameworks for DRR at the regional, national and, in some cases, local/community level, are often underfunded and not coordinated. As a voluntary organization which owes its existence on the goodwill of its members, effort to raise funds for the operationalization of AADRI has also been hampered by lack of commitment from its members. COVID-19 restrictions have also furthered the difficulties of the membership drive which increased marginally in the past three years. However, there is a lot of commitment from the few current members to make AADRI expand and be fully functional. Many members and institutions have pledged to join AADRI once the current economic covid-19 related crunch has released their economic and functional standing.

### 3.

#### Akira Igarashi

Professor, DPRI, Kyoto University



## Panel Discussion Session – 1 - Regional Alliances: Improving collaboration to support global stakeholders of DRR and DRM - 11:30—13:00 hours Japan Standard Time, 1st September 2021

### Introducing Viewpoints: suggestions for improvement—

#### 4. Improving Collaboration for DRR and DRM in Small Island Developing States

##### Ian White



Emeritus Professor, Water Resources, Australian National University

Ian White is Emeritus Professor of Water Resources at the Australian National University. He is an elected Fellow of the Australian Academy of Technology and Engineering and an elected Fellow of the American Geophysical Union in Hydrology. In 2018 he was elected to the Water Engineering Hall of Fame by Engineers Australia for his work in Pacific Island Countries which has spanned aspects of hydrology through to development of national water policy and water resources legislation.

##### Abstract:

Small island developing states (SIDS) are some of the most vulnerable locations in the world. Earthquakes, tsunamis, volcanic eruptions, tropical cyclone impacts, floods, landslides, droughts, and island inundation during storm surges are common. Impacts of these extreme events are compounded by the limited economic reserves and the small number of disaster professionals in most island states. For almost all SIDS, collaboration in DRR and DRM both between SIDS and with larger countries is a necessity. This talk examines existing collaborative networks existing for Pacific Island Countries and explores how they might be improved, particularly with the threat of increased intensity of natural disasters due to climate change.

#### 5. Leveraging Academic Diplomacy for resilience and addressing cascading risks

##### Indrajit Pal



Assistant Professor and Chair, Disaster Preparedness, Mitigation, and Management Program, Asian Institute of Technology, Thailand

Dr. Indrajit Pal presently working as Assistant Professor and Chair at Disaster Preparedness, Mitigation, and Management program at the Asian Institute of Technology, Thailand. Prior to joining at AIT, Dr. Pal served as a faculty member at Centre for Disaster Management at Lal Bahadur Shastri National Academy of Administration, Mussoorie, India. Dr. Pal has done extensive work on capacity development of decision-makers, risk assessment and disaster risk governance. Dr. Pal has written 10 books and more than 85 articles in international and national peer-reviewed journals apart from supervising masters and doctoral research. Dr. Pal having about 18 years of experience in research and capacity development on Disaster Risk Management and Governance and Disaster Risk Science and Education.

##### Abstract:

The systemic risk to physical assets, especially critical infrastructure, is an emerging threat to the developed and developing economy due to climate change and other development stressors. Addressing systemic risk to achieve Sustainable Development Goals through multidisciplinary education and capacity development are paramount for regional cooperation.

Higher Education Institution network for disaster resilience and sustainable development (HEI-DRSD) initiated by Asian Institute of Technology, Thailand help in contemporary discourses and urged for a collaborative effort in addressing the ongoing issues of disaster resilience and sustainable development.

## Panel Discussion Session – 1-2 - Regional Alliances: Improving collaboration to support global stakeholders of DRR and DRM - 13:30—15:15 hours Japan Standard Time, 1st September 2021

### What should we do to encourage youth to engage in education?

Chair: Gretchen Kalonji and Wei-Sen Li

This session will focus on youth involvement in education and the importance of educational capacity development opportunities for youth.

What should we do to encourage youth to engage in education?

#### Key points to be addressed:

- Developing capacity development for the active youth participation in research and education
- Youth engagement with local communities' actual support for disaster recoveries, disaster risk assessment – case station, field campus research
- Cutting-edge research, data collection using experimental facilities

## 1. Introducing Viewpoints: Suggestions for Improvement

### Maria Antonia Y. Loyzaga



President, National Resilience Council

Ms. Loyzaga is the president of the National Resilience Council, a public-private partnership implementing the Sendai Framework for Disaster Risk Reduction, Sustainable Development Goals and Paris Climate Agreement. She is a member of the United Nations Office for Disaster Risk Reduction Science and Technology Advisory Group and Asia Pacific Science and Technology Advisory Group. She serves on the Science Advisory Board of the Integrated Research on Disaster Risk International Center of Excellence-Taipei. She is a Trustee of the Zuellig Family Foundation, Manila Observatory, and Ateneo de Naga University. She is a member of the board of directors of UNDRR's Alliance for Disaster Resilient Societies, and is Trustee and Treasurer of the Forest Foundation Philippines. Ms. Loyzaga is a technical advisor to the Philippine Disaster Resilience Foundation. Ms. Loyzaga was Executive Director of the Manila Observatory (2007-2016) and Trustee of Ateneo de Manila University (2007-2017). She was appointed as member of the Department of Science and Technology's Committee on Space Technology

Applications and UNESCO National Commission's Committee on Science and Technology. In 2013, she was given special recognition by the Armed Forces of the Philippines for her contributions to the Philippine military's emergency disaster response operations during Super Typhoon Haiyan.

#### **Abstract:**

We will provide reactions to the presentations of the speakers from the perspective of the National Resilience Council, Philippines. We highlight the need for multi-stakeholder coalition-building towards disaster risk reduction for resilience and capacity-building in adaptive leadership and evidence-informed systems-based risk governance. These are critical to alliance building between stakeholders and the utilization of science in decision-making, policy and action. We will also discuss the value of including stakeholders in formulating research questions as a way to enhance collaboration and ensure relevance, the need for more trans-disciplinary action research and risk communication

## 2. Building DRR capacity for youth: Practical Experience from Asia

### Bill Ho



Director, Strategic Planning, and Officer, Academy, Asian Disaster Preparedness Center (ADPC, Bangkok)

Bill has a background in project management in both the development sector and the private sector with over 20 years of working experience in the North America and Asia region. He is currently working as the Director of the Strategic Planning Department and Officer in Charge of the ADPC Academy of the Asian Disaster Preparedness Center (ADPC) located in Bangkok, Thailand where he is utilizing his experience to develop long term strategy for the organization in alignment with the Sendai Framework for Disaster Risk Reduction and the Sustainable Development Goals. He is leading the regional capacity development effort of ADPC on disaster resilience and he is also closely involvement in the promotion of private sector engagement on disaster risk reduction through business continuity plan. With a background in information technology, he also works on the application of technological innovations to risk-informed decision making process.

#### **Abstract:**

Youth is the future of our generation and a critical group for a disaster risk reduction initiative to be successful and sustainable. According to the United Nations, more than 13% of the world population in 2019 are youth and the youth population in the poorest countries is projected to increase by 62% by 2050. Therefore, engagement of youth and building their capacity on disaster risk reduction will not only strengthen disaster resilience at local communities but also amplify the impact of our work in the years to come. Asian Disaster Preparedness Center (ADPC) has been working in the Asian and the Pacific region to strengthen youth capacity on disaster risk reduction over the years through regional programs and working directly with schools to enhance their understanding of the subject. We would like to share some of our practical experience from the field to support the further development of youth engagement on disaster risk reduction.



## Panel Discussion Session – 1-2 - Regional Alliances: Improving collaboration to support global stakeholders of DRR and DRM - 13:30—15:15 hours Japan Standard Time, 1st September 2021

### 3. Transboundary and cross-generation disaster risk reduction knowledge co-creation platform

#### Yi-Chung Liu



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

Yi-Chung Liu is an associate researcher of the National Science and Technology Center for Disaster Reduction (NCDR) in Chinese Taipei. Her expertise includes disaster management, disaster resilience and post-disaster recovery. Dr. Liu has led multiple community-based disaster risk management efforts for disaster policy, programs, and practice for 20 years. She implemented international collaboration projects in Malaysia, Nepal, United Arab Emirates (UAE) and the Philippines, where she developed successful programs benefiting marginalized populations, volunteers and college students. She is also well recognized for her outstanding abilities to work collaboratively with multi-disciplinary researchers, public sectors, NGOs and grassroots organizations.

#### Abstract:

National Science and Technology Center for Disaster Reduction (NCDR) has been instrumental to promote a series of regional capacity building activities since 2005, which are closely in line with the “Hyogo Framework for Action 2005–2015” and the “Sendai Framework for Disaster Risk Reduction 2015–2030”. The NCDR has been providing fundamental skills and knowledge co-creation opportunities through its annual International Training Workshop for Natural Disaster Reduction (ITW), as a collaborative platform in order to motivate transboundary and cross-generation collaboration. All ITWs are designed for goals to focus on the most pressing issues to meet global or regional demands such as root causes of large-scale disaster and its physical or social vulnerabilities through impact assessment. The ITWs also share NCDR’s experiences of applying scientific innovations and management to build disaster resilience at national and community levels. To satisfy dynamic progresses in disaster management and different characteristics of disasters around the world, the ITWs have to be diverse and inclusive to address how science and technology can make broad-spectrum contributions to disaster risk reduction and emergency management. At delivering phase of ITWs, the organizers insist on out-of-the-box thinking, open-ended dialogues among multiple stakeholders, cross-cutting collaboration and public-private partnership. The ITWs work closely with a broad range of partners including disaster authorities, the science and technology community, NOGs, NPOs and international organizations. It provides a good platform to globally collect experiences, good practices and ideas for brainstorming. To encourage youth engagement, the ITWs also facilitate to promote a dynamic and interactive platform for international and domestic students to participate humanitarian assistance and disaster relief practices.

### 4. Alliance of youth and young professional in science, engineering, technology, and innovation for disaster risk reduction (U-INSPIRE Alliance): enabling factors and prospects

#### Mizan Bisri



Assistant Professor at the Graduate School of International Cooperation Studies, Kobe University; and Lead of U-INSPIRE Indonesia 2021-2023

Dr. Mizan Bisri is an assistant professor at the Graduate School of International Cooperation Studies, Kobe University, Japan. He is currently Lead of U-INSPIRE Indonesia 2021-2023, a platform for youth and young professional in the utilization of science-engineering-technology-innovation (SETI) for disaster risk reduction and support the establishment of U-INSPIRE Alliance. Dr. Bisri is the founder of caribencana.id (CARI! / SEARCH – Search Engine for Risk and Resilience): an end-to-end web-based knowledge management platform powered by spatial-analytics and machine-learning to harvest multiple knowledge bases on disasters in Indonesia.

Dr. Bisri’s research and professional portfolio ranging on disaster risk management, humanitarian studies, comparative regional cooperation with a focus on Southeast Asia, climate change adaptation, and science-technology-society. He received a PhD and MA in political science from Kobe University, with a research on inter-organizational modeling in humanitarian operations. With more than 10 years of experience in Asia-Pacific, he has worked for the AHA Centre, UNU-IAS, University of Tokyo, Asia Pacific Institute of Research, World Bank, ASEAN Secretariat, UN-ESCAP, and other development partners. He is also a member in key disaster networks including ASEAN-ERAT, UNDAC, International Humanitarian Studies Association, and IRDR.

#### Abstract:

This talk elaborates the story of rapid growth and recent impacts of U-INSPIRE Alliance and its 12 chapters in Asian region. In principle, U-INSPIRE is a platform of youth and young professionals working on Science, Engineering, Technology, and Innovation (SETI) for resiliency that supports DRR policy creation and action at the local, national, and international level in line with the SFDRR. The talk will briefly discuss genesis of the U-INSPIRE, its diffusion of ideas and showcase the actions by U-INSPIRE in resilience building in various locations.

Upon reflections, the following enabling factors contributed to the rapid growth and impacts of the U-INSPIRE identity and approach: 1) necessity to bridge inter-generational gaps and silos among DRR actors, 2) network of youth and young professionals (YYPs) leadership, 3) right mix of maturity and professional expertise, 4) entrepreneurial mindset, and 5) inclusive and favorable DRR ecosystems and policy processes. Given the ability of U-INSPIRE to mobilize SETI-related actions by YYPs at all phases of disaster risk management, and diffusion of ideas, potentially this approach can become a model on leveraging YYPs engagement in other sustainable development agendas. The presentation also outlines the roadmap of U-INSPIRE Alliance and prospects of short-term and long-term engagement with other stakeholders in the region.

## Panel Discussion Session – 1-2 - Regional Alliances: Improving collaboration to support global stakeholders of DRR and DRM - 13:30—15:15 hours Japan Standard Time, 1st September 2021

### 5. Roles of the University of the South Pacific and partners in re-building the culture of resilience in Pacific Island Countries

#### Viliamu lese



Senior Lecturer

Disaster Risk Management, Pacific Centre for Environment and Sustainable Development

University of the South Pacific (USP), Fiji

Lau Dr. Viliamu lese (Vili) is a Senior Lecturer – Disaster Risk Management at the Pacific Centre for Environment and Sustainable Development, at the University of the South Pacific (USP). Vili teaches Disaster Risk Reduction for Resilience, Disaster Response and Recovery and Food Security and Climate change. He has conducted research and published widely in the field of risk resilience in agriculture, food security, climate change loss and damage, and evaluation of adaptations and risk reduction actions in Pacific Island Countries. Vili is a member of the Pacific Resilience Partnership Task Force. Vili is co-leading the USP research team for the 1) EU Horizon 2020 RISE project on Family Farming, Lifestyle and Health (FALAH); 2) ACIAR Conservation Agriculture and Sustainable Intensification (CASI); and 3) UK Research and Innovation grant for Intervention Co-creation to Improve Community-based Food Production and Household Nutrition in Small Island Developing States (ICoFaN). Vili is the chairperson for the research pillar of the Pacific Soil Partnership. He is an expert reviewer for the IPCC WGII in AR5 and AR6. Vili is a Samoan by birth, Tuvaluan by citizenship and currently a resident of Fiji.

#### Abstract:

Historically, Pacific Island people have resilient characteristics that enabled their ancestors to navigate the largest ocean in the world and settled on the small islands which are some of the most beautiful places on earth but are also the most vulnerable to climatic, environmental hazards. A culture of anticipatory capacity of risks referred to as the “culture of resilience” enabled Pacific Island communities to survive and thrive in the Pacific Islands. However, the culture of resilience slowly disappeared and has been replaced by the culture of dependency and regrets. At the same time, the Pacific Islands are continuing to be more vulnerable, at risk countries in the world to climate change and natural hazards. The University of the South Pacific in partnership with development partners, national governments and communities have developed a unique capacity building program through postgraduate teaching and research, TVET pathways and community resilience building to re-engage, re-educate and rebuild the culture of resilience of people and the environment in Pacific Islands. The program has developed climate leaders, disaster risk managers and risk awareness community leaders in our beautiful blue Pacific.



## Panel Discussion Session – 2 - Target E - Disaster Risk Governance and Contribution for Policy Making - 11:30—15:15 hours Japan Standard Time, 1st September 2021

**Focal Points: Toshio Fujimi, Genta Nakano, Ritsuko Yamazaki-Honda, Dilanthi Amaratunga**

This session will discuss on disaster risk governance and contribution for policy making in line with the Sendai Framework. This session will be held in two parts.

- Progresses and challenges of DRR strategies
- Potentials of Scientific knowledge for DRR strategies

The first part will introduce the progresses and challenges of DRR policies. Key questions will address how national and local governments have adopted DRR policies so far in line with Sendai Framework; what are good practices of DRR policies in national and local levels; and what are challenges for making and implementing DRR policies.

The second part will focus on potentials of scientific knowledge for DRR policies. Key questions will address how scientific knowledge

can support national and local governments to make and implement DRR policies; how scientific knowledge can provide evidence for effective implementation of DRR policies; and how research institutions can contribute to capability buildings of national and local governments and practitioners in fields?

Key questions to be addressed:

2-1—Introducing progresses and challenges of DRR strategies

- How have national and local governments adopted DRR strategies so far in line with Sendai Framework?
- What are good practices of DRR strategies in national and local levels?
- What are challenges for making and implementing DRR strategies?

- What would you suggest how to mobilize stakeholders in the process of implementing DRR strategies?

2-2— Potentials of scientific knowledge for DRR strategies

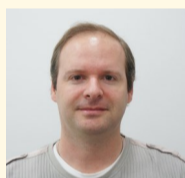
- How can scientific knowledge support national and local governments to make and implement DRR strategies?
- How can scientific knowledge provide evidence for effective implementation of DRR policies?
- How can research institutions contribute to capacity development of national and local governments and practitioners in fields?

**Key word:** good practices, evidence-based policy, disaster loss data base and monitoring, capacity development

### 2-1. Introducing progresses and challenges of DRR strategies

#### 1. Progress and achievement of Sendai Framework Target E in Asia Pacific countries

##### Timothy Wilcox



Officer-in-Charge, Program Management Officer (Asia and Pacific), United Nations Office for Disaster Risk Reduction (UNDRR), Bangkok, Thailand

The former Head of Office for UNDRR's Sub-Regional Office for the Pacific in Fiji for five years, Mr. Timothy Wilcox is now based in Bangkok, and manager of UNDRR activities in South-East Asia, leads UNDRR Private Sector resilience in Asia, and Sendai Framework Monitoring in Asia Pacific. Prior to UNDRR, he served in the Australian Public Service for 13 years and was posted to the

Australian High Commission in Fiji as Humanitarian Focal Point, and Team Leader of the Disaster Risk Management Team managing Australian disaster mitigation, response and recovery efforts in Fiji and the Pacific. In addition, he also managed Australian Aid Program humanitarian policy, disaster risk reduction, and regional pandemic and health programs in both Asia and Pacific regions. He served for seven years in the emergency services in Australia. He holds a Masters in Disaster Management from Florida International University, Graduate Certificate in Emergency Management from Florida State University, and has an additional Masters of Human Services with Honours.

##### Abstract:

The presentation will outline Asia Pacific regional progress in the achievement of Target E of the Sendai Framework for DRR, which is to substantially increase the number of countries with national and local disaster risk reduction strategies by 2020. It will examine challenges, particularly in reference to data collected via the online Sendai Framework Monitor and opportunities to strengthen data collection and utilize the online monitor to track implementation progress of national DRR strategies.

#### 2. Disaster Risk Reduction Strategies in Asia and the Pacific: Implementation Challenges in Post-Covid19 Landscape

##### Aslam Perwaiz



Deputy Executive Director (DED) of Asian Disaster Preparedness Center (ADPC)

Mr. Aslam Perwaiz is the Deputy Executive Director (DED) of Asian Disaster Preparedness Center (ADPC). He has substantive field work experience from more than 15 countries (Asia, Pacific and Africa) with national and sub national work programme development and implementation in emergency preparedness planning, post-disaster damage and loss assessment, recovery planning, private sector resilience, training and capacity building framework and curriculum development, resource mobilization and DRM institutional development. He has been involved in various global and regional initiatives on disaster resilience, business continuity planning and digital resilience. Among other notable

initiatives, he mentors the ADPC's private sector engagement "iPrepare Business" facility and post-disaster needs assessment initiative "Ready4Recovery". Prior to joining ADPC, he worked with UNDP, WWF, the and the Institute of Economic Growth (IEG) in India.

##### Abstract:

While the Sendai Framework priorities are well defined areas where action is needed, adoption of national and local strategies by 2020 (target (e)) and plans (27(b)) were a first critical step to achieving the other global targets by 2030. Not all countries have the necessary capacity to fulfill their responsibilities under the Sendai Framework in accessing, compiling and reporting back on the data necessary to measure our achievement. In the post-covid19 situation, the relevance of such strategies without considering the uncertainties in the disaster risk landscape poses serious

challenge in strengthening the overall Disaster Risk Reduction (DRR) governance by government institutions and other stakeholders at national, sub-national, and local levels.

The presentation 5 slides will focus on

- Redefining DRR policies, plans, strategies and frameworks in post-covid19 Landscape
- Risk-informed approaches in the Asia and the Pacific: Practices on Localization and regionalization
- Implementation Challenges at National and Local Levels
- Opportunities in the era of uncertainties and changing disaster risk landscape
- ADPC in improving DRR Governance through DRR Strategies

## Panel Discussion Session – 2 - Target E - Disaster Risk Governance and Contribution for Policy Making - 11:30—15:15 hours Japan Standard Time, 1st September 2021

Focal Points: Toshio Fujimi, Genta Nakano, Ritsuko Yamazaki-Honda, Dilanthi Amaratunga

### 3. JICA's Global Agenda for DRR & Development Support for Local DRR Strategies/Plans

#### Hideaki Matsumoto



Director, Disaster Risk Reduction Team, Japan International Cooperation Agency (JICA), Japan

Hideaki Matsumoto is a Director of Disaster Risk Reduction Team 2 at the Japan International Cooperation Agency (JICA). He joined JICA in 2000 and has held several Departments and overseas offices in Laos and Timor-Leste. Since 2002, he started working in the field of Disaster Risk Reduction at the Social Development Study Department and he was one of the members involved in Rehabilitation and

Reconstruction Project after the earthquake disaster at Bam in Iran which is one of the very first cases of seamless cooperation by JICA on emergency relief to Rehabilitation and Reconstruction. He was also involved in similar cases of Sri Lanka and Maldives Tsunami in 2004, Pakistan Earthquake in 2005, Thai Flood in 2011, Philippines Cyclone in 2013. In addition, he has been working on DRR projects such as flood control, earthquake resistance, hazard monitoring and early warning in meteorology and earthquake, coastal erosion, etc.

#### Abstract:

In this talk, the overall policy of JICA's DRR Cooperation and the position of the Target E in our policy will be explained and followed by an overview of Local DRR Plans and the necessity of developing them. In the latter half of the session, a guideline, so called 8steps, for developing Local DRR Plans that is being used in JICA projects will be introduced. This talk will be concluded with the sharing of an on-going case from the Philippines, which is actually using this "8steps" method to develop their Local DRR plans.

### 2-2 Potentials of scientific knowledge for DRR strategies

### 4. SENTINEL ASIA - Utilization Space Technology for DRR



#### Makoto Ikeda

Senior Researcher, Asian Disaster Reduction Center (ADRC), Japan

Dr./Mr. Ikeda Makoto is senior researcher of the Asian Disaster Reduction Center (ADRC), an institution established in Kobe, Japan in 1998, with a mission to enhance disaster resilience of the member countries, to build safe communities, and to create a society, where sustainable development is possible. In the past several years, he participated in diverse projects including the "Project for Assessment of Earthquake Disaster Risk for the Kathmandu Valley in Nepal," organized by the JICA in Nepal, and the "Research Project on Enhancement of Technology to Develop Tsunami-

resilient Community - Collaboration with Chile to Prevent Future Tsunami Tragedies -," organized by the SATREPS, etc. Currently, He is involved in projects regarding geospatial information for using space technology in DRR field.

#### Abstract:

The Asia-Pacific Regional Space Agency Forum (APRSAP) in 2005 proposed an initiative called SENTINEL ASIA, to showcase the value and impact of Earth observation technologies, combined with near-real-time internet dissemination methods and Web-GIS mapping tools for disaster management support in the Asia-Pacific region. SENTINEL ASIA has 111 JPT members which includes 94 organizations from 28 countries/regions and 17 international

organizations as of 2021. JPT members consists of Space agencies, disaster management organizations, universities, international organizations, etc. One of main activity of SENTINEL ASIA is "Emergency observation by earth observation satellites in case of major disasters". SENTINEL ASIA has been providing various satellite images and analyzed data-sets which are useful information for emergency response and recovery activity in affected area. SENTINEL ASIA received more than 300 Emergency observation requests from JPT members in past. In his presentation, Mr. Ikeda will introduce basic information about SENTINEL ASIA and share good practices of Emergency Observation activity, how to utilize these data for DRR in Asian region.

### 5. Potentials and challenges of randomized controlled trial for evidence-based DRR policies

#### Toshio Fujimi



Associate Professor, Disaster Prevention Research Institute (DPRI), Kyoto University

Toshio Fujimi got Ph.D. from Kyoto University in 2004. He worked in Kumamoto University from 2006 to 2021. Since April in 2021, he has been working as associate

professor in Disaster Prevention Research Institutes in Kyoto University. His research topic is to design and evaluate disaster mitigation measures with behavioral economics and decision theories under uncertainty.

#### Abstract:

Randomized Controlled Trial is critically important for Evidence-Based Policy Making (EBPM). However, it may cause ethical problems because it requires two groups of participants in a field experiment where one of the groups is intervened with a DRR policy while the other without it. This problem should be avoided or mitigated to promote EBPM.

### 6. Report on questionnaire survey to evaluate progress and achievements: S&T Roadmap to implement the goals and priorities of the Sendai Framework for Disaster Risk Reduction

#### Genta Nakano



Assistant Professor, Research Center for Disaster Reduction Systems, DPRI, Kyoto University

Genta Nakano is an assistant professor at Disaster Prevention Research Institute, Kyoto University. He obtained his PhD of informatics from Kyoto University in 2019. He majors in risk communication, DRR education and action research, and currently

involved in the national and international interdisciplinary projects in Japan, Mexico and Nepal especially focusing on earthquake and tsunami risk reduction and communication. He has also worked as a member of JICA and other NPOs in the field of DRR.

#### Abstract:

GADRI secretariat carried out the questionnaire survey for GADRI members with the aim of

visualizing members' progress and achievements towards the targets of the Science and Technology Roadmap to implement the goals and priorities of the Sendai Framework for Disaster Risk Reduction (SFDRR). The presentation will summarize the result of the survey and discuss the potential input for international conferences such as the UN Climate Change Conference of the Parties (COP26) in Glasgow and the 7<sup>th</sup> Session of Global Platform for Disaster Risk Reduction in Bali.



## Panel Discussion Session – 3 - Contributions to Climate Change Adaption—Action Orientated Agenda Regards Integrated Disaster Risk Reduction and Climate Change Adaptation for the Next Decade

11:30—15:15 hours Japan Standard Time, 1st September 2021

Focal Points: Tetsuya Takemi, Kenji Tanaka, Mahua Mukherjee; and Andrew Collins as Adviser

Action- oriented research will be in major focus in the upcoming COP26 to be held in UK in later part of 2021. It will be a chance to showcase GADRI member and other Asia and Oceania regional institutes' policy and research on aspects of climate change adaptation and mitigation. The global presence of GADRI members will ensure wider perspective of member institutes participation in risk reduction, adaptation and resilience.

The session will focus on key aspects of climate change adaptation and mitigation, evidence to constituted bodies and policymakers, engagements of countries in building up their activity towards COP26, and associated relevant aspects like Green Recovery, Mitigation Solutions, Adaptation & Resilience,

Finance, and Nature-based Solutions.

The session will seek to receive specific suggestions on following topics which will be forwarded to GADRI Secretariat for next stages of Action:

- a) To create a roadmap for Universities and Research Centres in support of the climate change research agenda
- b) To list measurable contributions of the Asia and Oceania Region towards the COP26.

The session will focus on various audience groups, including: policy and decision making, academics and students.

1.

### Sutat Weesakul

Director of Hydro-Informatics Institute, Ministry of Higher Education, Science, Research and Innovation, Thailand;

Chairman, ASEAN Hydro-informatics Data Centre

## 2. Some examples integrated research on climate-related geohazard risks, impacts of climate change and planning policy

### Choun-Sian LIM



Senior Researcher and Head, Geohazards Program, Southeast Asia Disaster Prevention Research Initiative (SEADPRI), Universiti Kebangsaan Malaysia

Dr. Choun-Sian Lim, Senior Researcher and Head of Geohazards Program in Southeast Asia Disaster Prevention Research Initiative (SEADPRI) from Universiti Kebangsaan Malaysia and Assistant Editor to Bulletin of the Geological Society of Malaysia. His main fields of expertise are landslide, flood, earthquake and natural/human-induced geohazards. Research focuses on Mountain and Urban Geohazards, Engineering Geology, Geomorphology, Disaster Science & Policy and GIS in Earth Sciences. Working mainly in Malaysia and Indonesia, involved in post-disaster investigation studies, i.e. landslides in Bukit Antarabangsa, tsunami in Malaysia (2004), Padang Indonesia earthquake (2009), Sabah Earthquake (2015); DRR education and training i.e. trainer to ASEAN Youth Volunteer Program (AYVP); and DRR policy for land use planning.

### Abstract:

Malaysia is susceptible to landslide and flood hazard events that have led to disasters. Surrounded by seas, Malaysia is also prone to coastal-related hazards i.e. storm surge and impacts of sea-level rise. The paper highlights selected case studies on landslides, coastal flooding, as well as cascading and natech hazard impacts of groundwater salination and pollutant transport from landfills, due to future climatic change hazards. The disaster risk assessments identify disaster-prone areas to enable localised and integrated approaches for forward planning toward people-centred disaster risk management and evidence-based land use planning policy. Problems on obstacles, gaps and data on local to regional scale climate change research will also be discussed.

## Panel Discussion Session – 3 - Contributions to Climate Change Adaption—Action Orientated Agenda Regards Integrated Disaster Risk Reduction and Climate Change Adaptation for the Next Decade

11:30—15:15 hours Japan Standard Time, 1st September 2021

Focal Points: Tetsuya Takemi, Kenji Tanaka, Mahua Mukherjee; and Andrew Collins as Adviser

### 3. Adapting to climate change and variability: Research and delivery of improved climate products and projections for India

#### Vijay Kumar Soni



Head, Environmental Monitoring and Research Centre and Head, Polar Meteorological Research Division, India Meteorological Department, India

Dr Vijay Kumar Soni obtained his M.Sc. (Physics) from Indian Institute of Technology - Roorkee (formerly University of Roorkee) and PhD in Atmospheric Sciences from University of Pune. He has worked at the India Meteorological Department (IMD) since 1998. Currently, Dr Soni is the Head, Environmental Monitoring and Research Centre and Head, Polar Meteorological Research Division, IMD, New Delhi. He contributed significantly to establish aerosol monitoring network in India. He has contributed immensely to setup a modern meteorological observatory at Bharati station in Antarctica. He has enormously contributed to setup first of its kind Air Quality Early Warning System in India. He was awarded Certificate of Merit in 2016 by Ministry of Earth Sciences for his outstanding scientific contributions in the field of Atmospheric Sciences. He has been prolific in his scientific efforts, publishing more than 70 research papers in peer reviewed journals, 6 Meteorological Monographs on various subjects and 4 chapters in books. His research interests include Climate Change, Atmospheric Aerosols, Solar Radiation and

Air Quality.

#### Abstract:

While climate change is global, the changes in climate are not uniform across the globe. The distinct topographical and geographical features of the Indian subcontinent provide the region with widely varying climatic zones ranging from the deserts in the north-west, Himalayan tundra in the north, humid areas in the southwest, central and northeastern parts, together with diverse microclimatic areas that spread across the vast subcontinent. Climate over the Indian subcontinent has varied significantly in the past century in response to natural variations and anthropogenic forcing. In recent times, there has been considerable progress in understanding the influence of anthropogenic climate change over the Indian subcontinent, particularly the regional monsoon. Meteorological services are a high priority in the country, which supports a population of more than 1.25 billion and the world's largest agricultural community across 127 different agro-climatic zones. This presentation provides an overview on climate change over India and adjoining regions, a brief description on changes that are projected for the future, uncertainties and knowledge gaps, and identification of areas that require greater research.

### 4. Application of Earth Observation for DRR in the Hindu Kush Himalayan Region

#### Mandira Singh Shrestha



Programme Coordinator, Climate Services, International Centre for Integrated Mountain Development (ICIMOD), Nepal

Dr. Mandira Singh Shrestha is a Programme Coordinator of Climate Services initiative at ICIMOD. She has over 25 years of research experience that cover broad areas of climate services, water related disaster risk reduction and water resources management. Her research interests center on transboundary flood forecasting and monitoring, application of satellite based products and end user engagement for reduced flood risks. Her current research focuses on localizing climate services for Agriculture and Tourism and institutional capacity building in Future Climate Change Projections. She has coordinated the development of a web based regional flood information system in the Himalayan region where the countries are sharing real-time data and information for flood risk reduction thereby strengthening regional cooperation. Ms. Shrestha holds a Doctor of Engineering from the University of Kyoto, Japan and a Masters in Civil Engineering, University of Washington, Seattle, USA.

#### Abstract:

Floods and landslides are the most frequently occurring natural hazards, particularly during the monsoon season and accounts for nearly half of the events recorded in the countries of the Hindu Kush Himalayan (HKH) region. In recent years, increasingly erratic and unpredictable monsoon rainfall patterns and increased climate variability have led to severe and frequent flood disasters in the region. For example, the 2010 floods in Pakistan killed 2000 people and affected more than 20 million and the floods in 2013 in Uttarakhand, India killed more than 5000 people. Often there is differential impacts of such disasters killing more women, children, elderly and physically-challenged people who are typically more vulnerable to the adverse effects of floods. In mountainous region access is a challenge along with availability of data through ground observing stations. Satellite based products provides an opportunity to better understand the hazards and risks for timely action. Thus early warning systems with sharing of timely data and information, utilize advance and emerging technologies, strong institutional mechanism, effective risk communication and education and awareness of the communities can be critical in saving lives and assets and strengthening the resilience of vulnerable communities.

### 5. Assessing the impacts of extreme weather on local-scale hazards in urban areas and complex terrains for climate change adaptation

#### Tetsuya Takemi



Professor, Disaster Prevention Research Institute (DPRI), Kyoto University, Japan

Dr. Tetsuya Takemi obtained a PhD degree in atmospheric sciences from the Graduate School of Science, Kyoto University in March 1999, and became an assistant professor at the Graduate School of Engineering, Osaka University in April 1999. Then he moved to Tokyo Institute of Technology as a lecturer and to Disaster Prevention Research Institute, Kyoto University as an associate professor. He is currently a professor in severe storm and atmospheric environment research at Disaster Prevention Research Institute, Kyoto University. He was a visiting scientist at National Center for Atmospheric Research in 2001-2002. He specializes in mesoscale and microscale meteorology, environmental fluid dynamics, mesoscale meteorological modeling, observation and numerical modeling of atmospheric turbulence and dispersion, extreme weather such as heavy rainfalls, strong winds, and tropical cyclones, and impact assessment of climate change on extreme weather. He serves as the Editor-in-Chief of *Scientific Online Letters on the Atmosphere*, and editors of international academic journals.

#### Abstract:

Understanding hazards and risks due to extreme weather phenomena is critically important in order to consider disaster risk reduction under climate change. Quantitative representations of meteorological hazards are critically important in order to assess the impacts of such hazards not only for past disastrous events but also as for anticipated extreme events under future global warming. Furthermore, hazard information at local-scales is required because the resulting phenomena occur depending on their local geographic features. In this presentation, we will talk about how the quantitative representation of meteorological hazards helps to assess the impacts of the hazards for climate change adaptation and disaster risk reduction. We will focus on tropical cyclones and heavy rainfalls as extreme weather and use a dynamical downscaling technique with a mesoscale meteorological model and a computational fluid dynamics model for the impact assessment studies. Past extreme weather that caused severe disaster can be regarded as a baseline to consider local-scale hazards. It will be shown quantifying local-scale hazards in urban areas and in complex terrains is useful for climate change adaptation research.



## Panel Discussion Session – 3 - Contributions to Climate Change Adaption—Action Orientated Agenda Regards Integrated Disaster Risk Reduction and Climate Change Adaptation for the Next Decade

11:30—15:15 hours Japan Standard Time, 1st September 2021

Focal Points: Tetsuya Takemi, Kenji Tanaka, Mahua Mukherjee; and Andrew Collins as Adviser

### 6. Climate change adaptation and disaster risk reduction: Space technology contribution

#### Shirish Ravan



Programme Officer, United Nations Office for Outer Space Affairs in Vienna, Austria; United Nations Platform for Space-based Information for Disaster Management and Emergency Response (UN-SPIDER) in Asia and the Pacific

Dr. Shirish Ravan works for the United Nations Office for Outer Space Affairs in Vienna, Austria. He coordinates activities of the United Nations Platform for Space-based Information for Disaster Management and Emergency Response (UN-SPIDER) in Asia and the Pacific. He is also involved in diverse initiatives of the United Nations for achieving SDGs, mainly to promote the benefits of space to humanity. His previous assignments include the Illicit Crop Monitoring Programme of the United Nations Office on Drugs and Crime in Afghanistan. He has extensively worked with the countries in Asia, the Pacific and Africa to offer technical advisory services and institutional strengthening for promoting applications of space-based technologies in building disaster resilience.

#### Abstract:

Climate change is triggering increasing number of disasters which are recently experienced in many parts of the World that includes forest fires in Greece, floods in USA, heat waves in Canada and droughts in Asia. There is an urgent need to guide the communities and decision-makers on how to adapt to these challenges. Advanced Earth observation satellites provide valuable information to monitor climate changes, related risks, and ways to adapt to climate change. Other space related technologies such as GNSS also provides useful tools to monitor climate change. However, effective use of the technologies is possible when indigenous knowledge, which is mostly linked to the nature-based solutions, is integrated with the data obtained from space. By promoting nature-based solutions to deal with climate risks, one promotes multifold benefits such as boosting biodiversity, protecting food systems and building resilience. The contribution of space-based technologies is enormous in providing inputs for these efforts.

### 7. Analysis on Surface Heating Field by Using Different Methods over the Tibetan Plateau

#### Weiqliang Ma



Director, Qomolangma Station for Atmospheric and Environmental Observation and Research Chinese Academy of Sciences

Prof. Weiqliang Ma is the Director of the Qomolangma Station for Atmospheric and Environmental Observation and Research, Chinese Academy of Sciences (QOMS/CAS). His research interests include Atmospheric boundary layer meteorology, remote sensing application and numerical model on land-atmosphere interaction in the Tibet Plateau. He obtained his PhD from the Chinese Academy of Sciences. He has contributed to over 50 publications to his credit. Dr. Ma was a visiting scholar at the International Centre of Water for Food Security (IC Water), Charles Sturt University; and engaged as researcher at the Disaster Prevention Research Institute (DPRI), Kyoto University and the Department of Civil Engineering, The University of Tokyo. He is currently engaged in the research grant projects of 2019-2023(Ongoing), Key Program of National Natural Science Foundation of China, and the 2018-2021 National Key Research and Development Project of China.

#### Abstract:

Based on the difference of model and in-situ observations, a series of sensitive experiments were done by using WRF. In order to use remote sensing products, a land-atmosphere model was initialized by ingesting AMSR-E RS products, and the results were compared with the default model configuration and with in-situ long-term CAMP/Tibet observations. Secondly, re-analysis data were also used to analyze the long-term land surface heating field. Our field observation sites will be introduced based on Institute of Tibetan Plateau Research, Chinese Academy of Sciences. Thirdly, a land-atmosphere model was initialized by ingesting AMSR-E products, and the results were compared with the default model configuration and with in-situ observations. The results showed that the soil moisture was sensitive to the specific model configuration. The results showed that the land surface fluxes agreed well with both the in-situ data and the results of the default model configuration. Therefore, the simulation can be used to retrieve land surface heat fluxes from an atmospheric model over the Tibetan Plateau. All of the different methods will clarify the land surface heating field in complex plateau, it also can affect atmospheric cycle over the Tibetan Plateau even all of the global atmospheric cycle pattern.

### 8. A National Action Plan for Climate Change Adaptation in Water and Energy Sectors

#### Ali Chavoshian



Director, Regional Centre on Urban Water Management under the auspices of UNESCO

Dr. Ali Chavoshian is director of the Regional Centre on Urban Water Management under the auspices of UNESCO since 2014. In the capacity of RCUWM Director, his main duties are capacity building, research and development in water security in human settlements in the West, South and Central Asia. He is also chair of the International Drought Initiative (IDI) a flag ship programme of the UNESCO Inter-governmental Hydrology Programme (IHP). Ali has started his career in the Ministry of Energy of Iran in 1995 and has served in various national and international capacities for more than 25 years. He has received his Ph.D. in 2007 from Japan and served at ICHARM from 2007 to 2012. Dr. Ali CHAVOSHIAN specializes in disaster risk management and climate change adaptation in developing countries and performed several projects on climate change study, water-related disaster, DX application in disaster risk management, capacity building and technology transfer in 17 overseas projects in Asia/Pacific, Africa and Latin America. He has also vast experience of contributing to the international and regional development programs and ODA

projects.

#### Abstract:

Iran is located in the southwest of Asia with a population of about 85 million and an area of more than 1.6 million km<sup>2</sup>. Iran has also been subject to the increasingly severe impacts of climate change like many other countries and experiencing unprecedented climate-related problems such as drying of lakes and rivers, dust storms, record-breaking temperatures, droughts, and floods. Record temperature highs within Iran have been reported nearly yearly, with the national high of 53.0 °C in 2016 being surpassed by almost one degree Celsius in 2017, being recorded as 53.7 °C. Furthermore, estimation models and recent trends indicate a significant decrease in annual precipitation but an increase in the concentration of precipitation. This study summarizes national action plan for climate change adaptation in section A) Water and Wastewater Affairs and section B) Electricity and Renewable Energy Affairs. Climate change has resulted in variable patterns in annual water cycle causing flood or drought and challenges in water resources management in arid and semi-arid areas. It also affects the peak energy demand in summer and winter for cooling and heating. The national action plan is a set of measures developed to address climate change adaptation in water and energy sectors.

## Panel Discussion Session – 3 - Contributions to Climate Change Adaption—Action Orientated Agenda Regards Integrated Disaster Risk Reduction and Climate Change Adaptation for the Next Decade

11:30—15:15 hours Japan Standard Time, 1st September 2021

Focal Points: Tetsuya Takemi, Kenji Tanaka, Mahua Mukherjee; and Andrew Collins as Adviser

### 9. Disaster Risk Reduction and Climate Change Adaptation: Bangladesh Context

#### Towhida Rashid



Professor and Chairman, Department of Meteorology, University of Dhaka

Dr. Towhida Rashid is Professor and founding Chairperson of the Department of Meteorology, University of Dhaka. Prior to this, she served as Assistant Secretary at Ministry of Industries and Ministry of Planning of the government of the People's Republic of Bangladesh from 1999-2004. She is a promising scientist in climate science and earth sciences. Prof. Towhida has a number of good publications in reputed international journals and has written a book on "Holocene Sea level scenario of Bangladesh" published by Springer, Netherlands. The 2011 Eugene LaFond Medal was awarded to **Dr. Towhida Rashid** from Bangladesh for her oral presentation "Holocene relative sea level change in Bangladesh" on July 1, 2011 in the IAPSO symposium "Global and regional sea-level change" during IUGG General Assembly "Earth on the Edge: Science for a Sustainable Planet" in Melbourne, Australia. She is a senate member of Dhaka University. She is now engaged in many societies and associations in country and abroad. She is a founding member of South Asian Meteorologists Association (SAMA).

#### Abstract:

Bangladesh is prone to natural disasters, like floods, droughts, tropical cyclones, land-slides and river erosions. It has experienced global warming of around 1.0 degree C during last 60 years. Intensity of floods and cyclones has increased over the decades and experienced multiple hazards within one calendar year (2020), which is an unusual trend that the country ever experienced. In the year 2020 there was four conjugative floods devastating thousands of settlements, outbreak of COVID-19 and a super cyclone Amphan. Climate change has battered the coastal zone of the country severely accelerating natural disasters. Bangladesh govt.'s (GoB) vision is to eradicate poverty and achieve economic and social well-being for all the people. This will be addressed through a pro-poor Climate Change Strategy, which prioritizes adaptation and disaster risk reduction, low carbon development, mitigation, technology transfer and the provision of adequate financing. Accordingly, GoB has developed and enacted the Bangladesh Climate Change Strategy and Action Plan (BCCSAP) in 2009. To address the severe climate change issues in building the national policies and plans of adaptation action and handle the climate change aspects in the world forum, it is highly imperative to have cohort of expert manpower in the relevant fields i.e., meteorology and climate science. With this vision, the Department of Meteorology has been working in the field of climate change and future climate projection of Bangladesh since its inception in 2016.

### 10. Resilient Infrastructure and NbS

#### Mahua Mukherjee



Professor, Department of Architecture and Planning, IIT Roorkee

Dr Mahua Mukherjee is Professor in the Department of Architecture and Planning, IIT Roorkee since 2003; a Joint Faculty and Ex-Head of Centre of Excellence in Disaster Mitigation and Management (CoEDMM), IIT Roorkee. Her educational qualifications are B. Arch (Jadavpur University), M. Tech (Building Science and Technology) IIT Roorkee, and PhD in the field of sustainable urban development. She has pursued her career in Architecture Office and NGO before joining Teaching. Mahua is Secretary General to South Asia Alliance for Disaster Resilience Institutes (SAADRI) and UNDRR -APSTAG Board Member. Her graduated research interest includes risk resilience to sustainable urban development, urban climate and climate responsive campus and housing design. Association with international academia like Lund University, Sweden through SIDA Fellowship and Penn State University as a Fulbright Fellow among others, influenced her intellectual pursuit. She was Visiting Associate Professor and Researcher with DPRI, Kyoto University in 2016.

#### Abstract:

Climate Change-induced extreme events are taking heavy toll on urban infrastructure. Urban authorities are facing problem with infrastructure and utility service provision, maintenance and rebuilding. Infrastructure's role in urban risk reduction is exponentially significant. Resilient Infrastructure development involves contextual planning and design. Nature-based Solutions can play important role in this. Implementation of GeoSM-NatE will add significant advantage towards the same.



## Panel Discussion Session – 4: Implementation Sciences in DRR

11:30—15:15 hours Japan Standard Time, 1st September 2021

Focal Points: Subhajyoti Samaddar, Masamitsu Onishi, Yuichi Ono

Disaster risk reduction discourse yield a growing supply of evidence-based preparedness countermeasures, but there is little evidence that such countermeasures are successfully implemented in a timely way. The implementation gap prevents us from creating resilient communities and cities, but damage and death tolls are accelerating, especially in Asia and Oceania. Therefore, ensuring the implementation of effective and innovative DRR interventions is an essential but challenging task, especially in a diverse socioeconomic and natural setting such as Asia and Oceania. Most information about implementation processes relies on anecdotal evidence, case studies, or highly controlled experiments that have limited external validity and yield few practical implications. Because of the pressing need to accelerate our understanding of successful implementation, concerted efforts are required to advance implementation science in DRR.

This session invites deliberate discussion from panelists and participants on –

- Key findings for enabling engaging science with action, in short, implementation science, in DRR
- Best practices and evidence of engaging science with action in Asia and Oceania
- Mechanisms, methods, techniques, and processes of engaging science with action.
- Recommendations to GADRI for engaging science with actions.

### 1. Roles of science and technology in enhancing disaster resilience and sustainability by all

#### Toshio Koike



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

Toshio Koike is the executive director of the International Centre for Water Hazard and Risk Management (ICHARM) under the auspices of UNESCO and a professor emeritus of the University of Tokyo. He has been the chair of the River Council of Japan since 2015, leading discussions on important river-related matters to advise the Minister of Land, Infrastructure, Transport and Tourism of Japan. In his capacity as a council member of the Science Council of Japan under the Cabinet Office since 2017, he has contributed to addressing various issues through science by making policy and other recommendations to the private and public sectors nationwide. After earning a bachelor, master's, and doctoral degree in Engineering in 1980, 1982, and 1985, respectively, from the University of Tokyo, he served as a research associate in 1985 and a lecturer from 1986 to 1987 there. Then, he was at the Nagaoka University of Technology, Japan, as an associate professor from 1988 to 1999 and a professor in 1999. In the same year, he returned to the Department of Civil Engineering, the University of Tokyo, and served as a professor until 2017. He has been the director of ICHARM since 2014. In 2019, he received the International Scientific Cooperation Award from the Chinese Academy of Sciences and the Friendship Award from the Chinese government,

also he won the 2020 GEO (Group on Earth Observations) Individual Excellence Award and received the International Lifetime Contribution Award of Japan Society of Civil Engineering (JSCE) in 2021.

#### Abstract:

The preamble of the 2030 Agenda says, "We are determined to take the bold and transformative steps which are urgently needed to shift the world onto a sustainable and resilient path." Two important words should catch our attention: sustainable and resilient.

Sustainable development and disaster resilience are closely and structurally interlinked. For this reason, it is necessary to understand their issues in a comprehensive manner beyond disciplines, study their causes thoroughly, and conduct planning, implementation and evaluation for resolution. Actions are required to duly understand the issues and produce new values through the practice of learning and improvement. Through such experiences, we should construct a cyclic structure to create a better future. To achieve those goals, more contributions of science and technology and more efforts of the whole society are essential to enhance sustainability and disaster resilience.

### 2. How can science support decision-making in risk assessment?

#### Gary Wilson



General Manager Strategy and Chief Scientist, GNS Science, New Zealand

Gary Wilson is General Manager Strategy and Chief Scientist at GNS Science in New Zealand. In that role he is responsible for leading science, research and innovation strategies and developing the strategic direction and investment for the organization. His research interests have been traditionally in the broad areas of geophysics, marine geology, climate change, carbon cycle dynamics and sea level changes. He has undertaken more than 30 seasons of fieldwork in Antarctica and has worked from research vessels around the South Pacific and Southern Ocean. Since taking up the role at GNS Science he has turned his attention more to the impacts of natural systems on society and the role of science in generating a better future for society. Before taking up the role at GNS Science he held academic positions at the University of Oxford and University of Otago, where he is still an Honorary Professor in Marine Science. He has held the Byrd Fellowship at Ohio State University and the Blaustein Visiting Professorship to Stanford University.

#### Abstract:

Scientific research strives to develop understanding of complex systems and often deals with limited observations, sparse data sets, and high levels of uncertainty. The uncertainty is often refined by the use and application of models. While this helps our level of understanding of the complex science systems, it does not always improve decision-making in risk assessment. In assessing risk, we are more interested in other parameters such as risk to life, injury and property and those decisions can be highly emotive. Furthermore, risk assessment with respect to Natural Hazard is often undertaken at a single point in time yet applied over a time continuum without accommodating the dynamic nature of the risk. At GNS Science, we have been taking a more quantified approach to risk by incorporating probability into our assessment as well as considering acceptable levels and likelihoods of impact associated with hazard. The latter we use to set boundaries and criteria for decision-making. In this session I will share how we have been incorporating probability into our risk assessments and how we are applying that in our decision-making.

## Panel Discussion Session – 4: Implementation Sciences in DRR

11:30—15:15 hours Japan Standard Time, 1st September 2021

Focal Points: Subhajyoti Samaddar, Masamitsu Onishi, Yuichi Ono

### 3. How can we better evaluate DRR researchers?

#### Yuichi Ono



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

Yuichi Ono received a Ph.D. in Geography (Climatology and Wind-related Hazard) at Kent State University, U.S.A. Between 2002-03, he worked with the World Meteorological Organization (WMO). He contributed to developing the disaster risk reduction programme. Between 2003 and 2009, with UN International Strategy for Disaster Reduction (ISDR), he worked on an early warning system and helped develop and manage the ISDR Scientific and Technical Committee. He is the former Chief, Disaster Risk Reduction Section, ESCAP, providing a regional platform for cooperation and policymaking for disaster risk reduction, with particular attention to developing countries and vulnerable social groups. Currently, He is a Professor at the International Research Institute of Disaster Science (IRIDeS), Tohoku University and a Director of the Global Centre for Disaster Statistics (GCDS) as well. He is a founder of the World Bosai Forum Foundation which convenes the World Bosai (Disaster Risk Reduction) Forum in Sendai, Japan.

#### Abstract:

DRR researchers, like those in other academic disciplines, are evaluated primarily on the basis of their academic performance. There are several ways to evaluate performance, but the most commonly used is the number of scholarly peer-reviewed papers and citations. However, some critics argue that these methods are outdated and hinder the progress of science. This is because researchers face stiff competition to publish as many papers as possible, making it difficult to fairly evaluate the quality of their work. Since disaster science spans various disciplines such as humanities, social sciences, science, and engineering, it is not easy to evaluate the quality of the results in a common way across the disciplines. The purpose of this discussion is to consider the introduction of an additional/new evaluation system in DRR research that includes the practical and results-oriented social implementation of researchers, which is not captured by the traditional evaluation system. First, we need to find out how each organization currently doing DRR research evaluates its researchers. One specific question is to consider what activities in social implementation are equivalent to publishing one peer-reviewed paper. Then, let us consider a GADRI-wide questionnaire to develop a new system.

### 4. Challenges and Requirements towards Implementing DRR Science in Public Sector Development: Experience from Bangladesh

#### Shibly Sadik

### 5. Capacity Building of Multi-stakeholders for Disaster Risk Reduction: Some Experiences from Malaysia

#### Minhaz Farid Ahmed



Fellow, Institute for Environment and Development (LESTARI), Universiti Kebangsaan Malaysia (UKM), Malaysia

Dr Minhaz Farid Ahmed is the Fellow at Institute for Environment and Development (LESTARI), Universiti Kebangsaan Malaysia (UKM), and he has obtained the PhD on Environment and Development from UKM. Dr Ahmed's research interest lies in Water Education, Management, Communication and Collaboration (WEMC<sup>2</sup>) in line with Integrated Water Resources Management (IWRM) and Sustainable Development via reducing the disaster risks. Dr Ahmed is also interested in Climate Change Adaptation and Mitigation particularly about access to safe water supply and climate-induced migration because of his previous involvement in many projects of the United Nations. Among the projects, the UNESCO AP-FAST, MUCP, and as such are very important to accelerate the implementation of IWRM for sustainable Development.

Disaster Risk Reduction (DRR) is one of the important approaches to ensure better planetary health because humanity still needs 1.6 planets to sustain it. Humans have overexploited natural resources in the name of development. Therefore, the disaster risks both for natural and man-made reasons are experienced frequently and it's damaged the balance between environmental and human health. Hence, Malaysia has been proactive to reduce the disaster risks via the national policies as well as implementations of it specially at the local level. For instance, the embark of National Water Sector Transformation (WST2040), Environmental Commission study, and as such by the government are aspired to build the capacity of multi-stakeholders specially of local government for better inclusion of science and technology as well as social science and humanities towards DRR via training. The concept of integrated water resources management in line with Sustainability Science, Asia-Pacific Facility for Accelerating Science and Technology, and as such are in practice at UNESCO HELP Langat River Basin, UNESCO Langkawi Global Geopark for sustainable development. The multi-stakeholders have also come forward to promote the zero-waste concept as well as pollution reduction via several projects and initiatives such as River of Life, River and Geo Trails, Friends of River, etc. Ministry of Environment and Water of Malaysia (KASA)'s Environmental Strategy 2020-2030 in line with SDGs 2030 for sustainable development where the capacity building of multi-stakeholders via special training should be one of the important keys for DRR while achieving the aspirations of sustainable development goals.

#### Abstract:



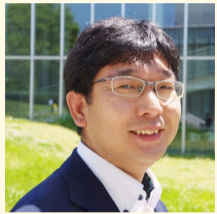
## Panel Discussion Session – 4: Implementation Sciences in DRR

11:30—15:15 hours Japan Standard Time, 1st September 2021

Focal Points: Subhajyoti Samaddar, Masamitsu Onishi, Yuichi Ono

### 6. Implementation science overcoming conflicts over science

#### Masamitsu Onishi



Associate Professor, DPRI, Kyoto University

Masamitsu Onishi is an associate professor at Disaster Prevention Research Institute of Kyoto University. His original academic interest is institutional systems for infrastructure procurement. But he has extended his academic interest to ‘risk governance’ including institutional design for enhancing resilience in community. He has been involved in research projects related to infrastructure resilience such as World Bank, collaboration research group of Japan Society of Civil Engineers and American Society of Civil Engineers.

#### Abstract:

There are various opinions among scientists about the pros and cons of scientists' involvement in practical activities in society, including political activities. For example, papers based on cases of practical activities are often dismissed as scientific knowledge by those in the scientific community who point out the lack of scientific methodology. On the other hand, practice-oriented groups criticize the social significance of discussions that are confined to the professional field. This shows that even within the scientific community, the concept of science and the norms of being a scientist are not necessarily shared. This conflict within the scientific community over science calls for a new conceptual framework for science. In my talk, I will discuss the necessity of implementation science and technology as a scientific methodology to systematize vast practical experiences in order to overcome the problem of conflict over science.

### 7. Social Science Perspectives on Policy, Practice and Assimilation of Scientific Data

#### John Clammer



Professor, Social Anthropology, O.P. Jindal Global University

Prof. (Dr.) John Clammer is Professor of Sociology in JSLH and has been on the faculty at JGU for the last four years. Prior to that he was Professor of Comparative Sociology and Asian Studies at Sophia University, Tokyo and then professor and advisor to the Rector at the United Nations University. He has taught and researched all around the world and has held regular or visiting posts at Oxford, Weimar, Australian National University, Buenos Aires, Pondicherry, Singapore and Warwick, and probably somewhere else that I have forgotten. He currently works mainly on the interface of culture and development, the sociology of the arts, and issues of sustainability, but in the course of his career has roamed through just about every area of sociology and anthropology.

#### Abstract:

Discussions of disaster prevention and management often take place in a language difficult for practitioners to incorporate. In this discussion I will touch on how a holistic social science perspective can fruitfully expand approaches to disaster prevention and in particular post-disaster recovery. I particular awareness of work in community studies, sociology, local economies, trauma and social psychology can usefully point to a holistic approach. Additionally, many practitioners (especially in NGOs) and policy makers (especially in government) find it difficult to understand or incorporate scientific and technical issues into decision making. The key issue then becomes that of science communication. The presentation will take a sociological approach to the incorporation of science into a comprehensive model of disaster management that blends social science and natural and applied science and the interfaces between them in order to greatly improve the efficiency of policy making and implementation. The presentation will draw on an extensive range of case studies and practical experience in the field.





# 5<sup>th</sup> Global Summit of GADRI

Engaging Sciences with Action

31 August to 1 September 2021



## Regional Session on Europe with Africa and the Middle-East

Exploring Solutions to Bridge the Gaps for Implementation of Science in Action

09:00 to 15:00 hours CEST, 1st September 2021



# Europe with Africa and the Middle-East

## Exploring Solutions to Bridge the Gaps for Implementation of Science in Action

1<sup>st</sup> September 2021 from 9:00 to 15:00 hours – Central European Summer Time (CEST)

**Regional Organisers:**

**Organising Committee: Dr. Jörgen Sparf, Prof. Andrew Collins, and Dr. Tom de Groeve**

### Session Description

This regional programme complements the earlier stages in the overall Summit programme and will emphasise solution building. As evident across the full summit, there is a wealth of research that pervades the global disaster research effort, active through multiple contributors both formalised and well-known, or more hidden. However, in spite of efforts to build large integrated research programmes such as the European Union's Horizon Europe funding programme for research and innovation, this myriad of contributions often remains less than the potential sum of their individual parts, and as we see it do not keep pace with a rapidly building demand for more impactful science sufficient for dealing with every day and rapid onset risk and sustainability challenges. This part of the event has selected four areas within which researchers worldwide may actively contribute to transitioning solutions for current demands, bridging gaps in collaboration, knowledge, policy and inter-generationally. Each also assumes the context of COVID-19 as pertinent to growing awareness.

To this end, Discussion Panel 1 focuses on the inevitable convergence of Disaster Risk Reduction and Climate Change Adaptation fields in the current era of climate emergency. Evidence-based risk reduction and adaptation research, policy and practice agendas inclusive of ecologically and socially informed prevention and response approaches and technological advances are pervasive. This session is also associated with the COP26 Adaptation and Resilience series of events led by UKRI Natural Environment Research Council, the UK, for which GADRI is a partner institution. The session will also explain the Mission on Climate Change Adaptation and Societal Transformation, a new mission-oriented approach to R&I in the European Union. The aim is that items from this session and other parts of the GADRI

Summit will feed into COP26 contributions through this collaboration. Discussion Panel 2 recognises that the global research community is only as effective as the usefulness and applications of its data. The session assumes the broadest definition of contributing forms of data, considering knowledge as active data and responding to the UNDRR 2019 Global Platform steer that "we need to make better use of existing data for information and action". Examples of ways of investing in this agenda are wide-ranging, and the session should serve as part of a process to include all facilitators and users of disaster-related data in a consolidated rethink of bridging gaps to greater levels of action. Discussion Panel 3 enables reflection on the tension between science in action that is evidence based, yet needing to be active in uncertainty, particularly alongside human behaviour and consequent policy environments otherwise driven. With governance systems in constant change, it is intended that this session will help researchers and the GADRI community to visualise new ways of working that bridge the inevitable gaps between science-based and politically driven cultures. Discussion panel 4 uses the opportunity of the summit to orient at the heart of risk and sustainability issues, the youth and the as yet unborn future. Global issues of survivability represented by disasters researchers get increasingly realised and speeded up further through youth engagement that no longer can be left on the periphery of science into action. Youth are already widely engaged, and the session will provide further impetus to research that will be followed up in GADRI actions on youth alongside its partners, including the UN Major Group on Youth.

# Europe with Africa and the Middle-East

## Exploring Solutions to Bridge the Gaps for Implementation of Science in Action

1<sup>st</sup> September 2021 from 9:00 to 15:00 hours – Central European Summer Time (CEST)

Regional Organisers:

Organising Committee: Dr. Jörgen Sparf, Prof. Andrew Collins, and Dr. Tom de Groeve

### Regional Organising Committee Members

#### Jörgen Sparf



Regional Organizing Committee  
Founding Member, Risk and Crisis  
Research Centre at Mid Sweden  
University

Dr Jörgen Sparf is an associate professor in sociology and a founding member of the Risk and Crisis Research Centre at Mid Sweden University. His main research interests revolve around resilience, collaboration and multi-organizational relations in crisis management and individual capacity and vulnerability issues. Jörgen is the Swedish representative in the European Science and Technology Advisory Group (E-STAG) of the United Nations Office for Disaster Risk Reduction (UNDRR).

#### Andrew Collins



Leader, Disaster and Development  
Network, Northumbria University

Andrew Collins is Professor in Disaster and Development at the Department of Geography and Environmental Sciences. Beyond his Northumbria based roles, he represents integrated disaster, development, health and well-being related research initiatives internationally. He led the establishment of the world's first disaster management and sustainable development postgraduate programme launched in 2000 that remains highly active, and the Disaster and Development Network (DDN) launched 2004. Prior to academic appointments, Andrew also worked internationally including through voluntary support roles to civic organisations in times of conflict. He services his subject area through policy and advisory roles, reviewing and commissioning boards of national and international organisations, conference series, academic journals and support to funding bodies.

#### Tom De Groeve



Deputy Head of Unit, Disaster Risk  
Management Unit, European  
Commission, Joint Research Centre  
(EC-JRC)

The **Joint Research Centre** is the European Commission's science and knowledge service which employs scientists to carry out research in order to provide independent scientific advice and support to EU policy. The mission of the **Disaster Risk Management Unit** is to strengthen the EU's resilience to crises and disasters and the EU's aim to promote stability and peace through its research in crisis management technologies and analysis. The Unit focuses on integrated systems for risk analysis, situational awareness, early warning and collaborative decision-making. It also works on improving the monitoring, evaluation, anticipation and communication of the impacts of current weather extremes and future climate change and to evaluate the effectiveness of policies and measures that reduce their risks towards sustainable development. The Unit coordinates the **Disaster Risk Management Knowledge Centre**, which provides a networked approach to the science-policy interface in disaster risk management across the JRC, the Commission, EU Member States and the community within and beyond the EU.

### Welcome Address

#### Jörgen Sparf



Regional Organizing Committee



## Keynote Presentations and Joint Discussion

Chair: Andrew Collins, Disaster and Development Network, Northumbria University

### Tom de Groeve



Deputy Head of the Disaster Risk Management Unit, European Commission's Joint Research Centre, Italy

The **Joint Research Centre** is the European Commission's science and knowledge service which employs scientists to carry out research in order to provide independent scientific advice and support to EU policy. The mission of the **Disaster Risk Management Unit** is to strengthen the EU's resilience to crises and disasters and the EU's aim to promote stability and peace through its research in crisis management technologies and analysis.

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### Nico Elema



Director, PeriPeri U, Stellenbosch University International, South Africa

Dr Elema is the Manager of the Centre for Collaboration in Africa (CCA) at Stellenbosch University, South Africa, where he manages a team of internationalisation practitioners to create an enabling environment for Stellenbosch University to partner and engage with various partners across the continent. Responsibilities in the centre include the administration of the Africa Collaboration Grant associated with the bilateral partners and the administration of various Intra-Africa mobility programmes. Moreover, the CCA host the secretariats of the AUDA-NEPAD Southern African Network of Water Centres of Excellence (AUDA-NEPAD SANWATCE), the AUDA-NEPAD Centre of Excellence in Science, Technology & Innovation (AUDA-NEPAD CoE in STI), and the Partner Enhancing Resilience for People Exposed to Risks (PERIPERI U). The CCA also support the secretariat of the African Research Universities Alliance CoE in Energy.

Over the years, he has gained extensive experience in the African higher education sector and has been working with various partners on project implementation, project evaluation and multi-lateral partner programmes that focus on thematic fields which include water and sanitation, Disaster Risk Reduction (DRR) and Science, Technology & Innovation (STI).

His education includes a Master in Business Administration (MBA) and a PhD in Science and Technology Studies at Stellenbosch University, South Africa.

## Discussion Panel – 1: Bridging the Collaboration Gaps: Integrating DRR and CCA for a Science in Action Agenda

10:30—11:15 hours CEST, 1st September 2021

Chair: Tom De Groeve, Deputy Head of Unit, Disaster Risk Management Unit, European Commission, Joint Research Centre (EC-JRC)

### Liviu Stirbat



Deputy Head, Adaptation Unit, European Directorate General for Climate Action; also representing Executive Vice-President Frans Timmermans, Head of Europe Green Deal

Liviu Stirbat, from Bucharest, Romania, is Deputy Head of Unit for Adaptation in the European Commission's Directorate-General for Climate Action, where he coordinates work on the new EU Adaptation Strategy. Previously, he was Deputy Head of Unit for Better Regulation in the Directorate-General for Research and Innovation.

### Deidre Brock



Member of Parliament Edinburgh North & Leith and SNP Westminster Spokesperson Environment, Food and Rural Affairs & COP26  
Scottish Government

Deidre is MP for Edinburgh North & Leith and SNP Westminster Spokesperson for Environment, Food and Rural Affairs & COP26. She has served on the Scottish Affairs Committee since 2017. Prior to becoming an MP she was a City of Edinburgh councillor and Depute Lord Provost, and worked at the Scottish Parliament. She grew up in Western Australia and made Scotland her permanent home in 1996.

### Desmond Manatsa



Full Professor and Dean, Faculty of Science and Engineering, Bindura University of Science, Zimbabwe

Prof. Manatsa is a full professor and dean of the Faculty of Science and Engineering at Bindura University of Science Education which he joined in 2004. His first employer was the Zimbabwe Meteorological Services as a Senior Meteorologist heading the Central Forecasting Office and later, the Climate Services Section. He did his first degree at the Russian State University of Hydrometeorology where he graduated as Engineer Meteorologist (with Excellence) before graduation with a Masters Degree in Ocean and Atmospheric Sciences at the University of Cape Town in South Africa (with a Distinction). At University of Tokyo in Japan where he did his PhD in Atmospheric Science, he was honoured with a gold medal award by his PhD Scholarship sponsors, the Japanese Society for the Promotion of Science (JSPS) Overseas Fellowships of Japan.

As an academic, he has published 53 articles in scientific refereed journals, compiled a book on hazards which is being used in Zimbabwe secondary schools. He is also a reviewer of 12 scientific refereed journals and has done more than 10 international consultancies. He led the research to come with, 'New Agroecological Regions of Zimbabwe', 'Build Resilience to Climate Change using Cyclone Idai devastation as case study', develop the national adaptation process to feed into the National Adaptation Plan and develop 'Drought Early Warning System for Zimbabwe'. His main contribution to international scientific research was a paper which was published in the Journal of Nature as the first author on the 'Ozone hole warming of summer temperatures over southern Africa' which was the first published work to establish a link between the Ozone hole and the summer temperatures of southern Africa. His research interests are disaster risk reduction, the science of climate change and natural hazards.

### Sarah Webb



[Associate Director, Natural Environment Research Council \(NERC\)](#), United Kingdom Research and Innovation – Associate Director Natural Environment Research Council and Chair of Adaption and Resilience COP26 preparative programme

As Associate Director at the Natural Environment Research Council (NERC), which is part of UK Research and Innovation, I have responsibility for developing new International research programmes. This catalyst role ensures that the UK remains international and we address the pressing challenges faced through climate change and biodiversity loss. *Having started life as a researcher (I love data and analysis) looking at genomics, proteomics as well as use of stable isotopes and archaeology (quite a mix!), I moved into a knowledge transfer role. I've worked in MRC, NERC and STFC and spent over 15 years in central government where I led various digital transformations before returning to NERC.* As a senior manager within the Civil Service I focused on programmes where there were complex problems requiring resolution. I've worked on various aspects of EU Exit to ensure businesses were prepared ahead of the deadline; prior to this I led the Mission Innovation Secretariat which focused on making clean energy accessible to all. I have over 16 years of experience in change management, programme management (including Agile and Waterfall), manipulation of large data sets and the development of IT solutions.

### Mark Pelling



Professor of Geography, King's College London

Mark Pelling is Professor of Geography, King's College London where he leads *King's Centre on Interdisciplinary Research on Risk and Resilience* and co-directs an MA programme on *Risk Analysis, Disasters and Resilience*. His research is on social and institutional analysis of climate change adaptation and disaster risk reduction with a focus on urban contexts. Research is often collaborative in particular with humanitarian agencies, community-based organisations and city authorities. Publications include *Adaptation to Climate Change: From Resilience to Transformation* and *The Vulnerability of Cities*, both with Routledge. Mark is a Founding Chair of the *UK Alliance on Disaster Risk* and Coordinating Lead Author for a chapter on Cities, Settlements and Key Infrastructure for the *Intergovernmental Panel on Climate Change Sixth Assessment Report* and sits on the development Team for the International Science Council *Knowledge Action Network on Extreme Events and Emergent Risks*. In 2015 Mark was awarded the *Burtoni Award* for contributions to climate change.



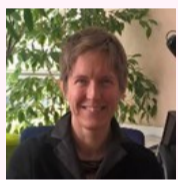
## Discussion Panel – 2: Bridging the Knowledge Gaps: Exploring Solutions for Transforming Data into Action

11:30—12:15 hours CEST, 1st September 2021

Chair: Andrew Collins

In 2021, the EU will launch a new element in the Union Civil Protection Mechanism: A Knowledge Network. The Knowledge Network is thought up as a solution for pooling knowledge, expertise and experience across Participating States, as well as a place for debate on knowledge gaps and foresight for future disaster risk management. It has two components: training and exercise, and science. Panellists will discuss the new Knowledge Network and three concrete examples of transforming data into action. A further aspect of the session is to consider how communication and media development enables the bridging of knowledge gaps through a whole of society objective, influencing social and behavioural change to enable disaster risk reduction. What are the keys to more comprehensive bridging of knowledge gaps through activating data and information for utilized knowledge? How might GADRI institutions use their disaster research data processes to have more impact in disaster risk reduction?

### Marzia Santini



Scientific Officer and Knowledge Manager, Joint Research Centre of the European Commission; also representing the Disaster Risk Management Knowledge Centre

More than 10 years of experience with science-based disaster risk management and civil protection, nationally and internationally. In particular through policy development, implementation of legislation, adaptations of EU initiatives to national regulations, and project management.

Currently employed by the European Commission Joint Research Centre as Contractual Agent in the Disaster Risk Management Unit of the Directorate Space Security & Migration (SSM).

Previously served in the Civil Protection Department (DPC) of the Italian Presidency of Council of Ministers (2010-2019). Have also worked on various international projects under the EU Civil Protection Mechanism, and the UNESCO-led Inter-governmental Coordination Group for the establishment of a tsunami warning and mitigation system in the North East Atlantic, Mediterranean and connected seas region (ICG/NEAM TWS).

Has a PhD in Geology, MSc in Coordination of Civil Protection Activities, MSc in Public Administration's Policies and Management, and MSc in Geology.

### Zuzana Stanton-Geddes



The World Bank

Zuzana Stanton-Geddes is a Disaster Risk Management Specialist with the World Bank's Europe and Central Asia region. She currently leads and co-leads regional and country-specific projects in Bulgaria, Croatia, Greece, and Romania.

Zuzana has over 10 years of experience working on development projects and analytics related to urban resilience, critical infrastructure, seismic and flood risk management, and post-disaster recovery, with country experience across East Asia and the Pacific. A native of Slovakia, she holds graduate degrees from Johns Hopkins School of Advanced International Studies (SAIS) and Humboldt University in Berlin, and a bachelor's from the University of Cambridge.

### Lisa Robinson

Head, Advisory and Lead on Resilience and Humanitarian Response, BBC Media Action



Lisa Robinson is Head of Advisory and Lead on Resilience and Humanitarian Response at BBC Media Action, the BBC's international development charity. She advises on media and communication strategies for mass audiences, particularly towards disaster risk reduction and emergency response. She works with partners across disciplines to understand the needs of people at risk and to inform media and communication that prompts dialogue and risk-informed decision making at multiple levels of society.

## Discussion Panel – 3: Bridging the Science-Policy Gaps: Contextualising Governance to Explore Opportunities for Action

13:30—13:45 hours CEST, 1st September 2021

Chair: Jörgen Sparf, Associate Professor in Sociology and a founding member of the Risk and Crisis Research Centre, Mid Sweden University

The idea that policies should be based on, or informed by, value-free facts and proofs is attractive. The use of mathematical modelling and statistical indicators, for instance, conveys an impression of precision, prediction and control. Evidence-based policies emerged in the health and medicine field in the U.S. post World War II, in which scientific facts are produced by experimental designs, using randomised controlled trials and the systematic reviews of their results. After gaining traction in social policy programs in the 1980s and 1990s, we have witnessed a significant expansion of evidence-based policy in other social policy areas since the turn of the millennium. At present evidence-based policy is intended to apply to virtually all policy areas. For DRR, this poses a problem since the field spans over the whole society and is highly contextual—geographically, biologically, socially, and politically. Still, science-based policy for DRR has become increasingly pronounced since the launch of the SFDRR. This session will discuss how science can be turned actionable in various contexts and governance systems to support the bridging of science-policy gaps.

### David Alexander



University College London

David Alexander is Professor of Risk and Disaster Reduction at University College London (UCL). He graduated in geography at the London School of Economics and obtained his PhD in Mediterranean geomorphology from UCL. From 1982 until 2002 he taught geomorphology, physical geography, natural hazards and disaster studies at the University of Massachusetts - Amherst (USA). Over the period 2003-7 he was Scientific Director of the Advanced School of Civil Protection of the regional government of Lombardy. As a Professor the University of Florence (2005-11) he was a leading member of the team that designed, launched and taught Italy's first Master of Civil Protection course. Alexander is Visiting Professor at the Universities of Bournemouth and Northumbria (UK), Coimbra (Portugal) and Lund (Sweden) and Research Fellow at the Global Risk Forum in Davos, Switzerland. Alexander's book *Natural Disasters* was published in London and New York in 1993 and has frequently

been reprinted. His subsequent books include *Confronting Catastrophe* (2000), *Principles of Emergency Planning and Management* (2002), *Recovery from Disaster* (with Ian Davis, 2015) and *How to Write an Emergency Plan* (2016).

David Alexander is the founder and Editor-in-Chief of Elsevier's *International Journal of Disaster Risk Reduction*, and was formerly Co-Editor of *Disasters* journal. He is a member of the editorial boards of 14 academic journals. He is Vice-President and Chairman of the Trustees of the Institute of Civil Protection and Emergency Management, which is the oldest learned society in the field of disaster reduction. In 2013 Alexander won the Distinguished Research Award of the International Society for Integrated Disaster Risk Management (IDRiM).

### Dzhergalbek Ukashev



The Center for Emergency Situations and Disaster Risk Reduction, Kazakhstan

Mr. Dzhergalbek Ukashev is currently a director of the Center for emergency situations and disaster risk reduction in Almaty, Kazakhstan.

He graduated from the Moscow Higher Command School for road and engineering forces (Civil defense faculty) in 1978. He completed high civil defence courses for officers in 1985 and 1988., trainings in USA, Germany, Switzerland, Sweden, Belgium, Russia, Japan, Korea.

Over the years, he held various supervising positions in the departments of the Ministry of emergency situations of the Kyrgyz Republic and he has been working with various international partners on project implementation, project evaluation and partner programmes that focus on thematic fields which include Disaster Risk Reduction (DRR), Climate change adaptation, PDNA and etc. He has experience as a coordinator, expert, consultant, trainer in the field of civil protection, in practice of working with projects of UNDP, UNDRR, OSCE, UNICEF, IOM, WB, OCHA, FAO, and others.

### Valeria Drigo



Global Network of Civil Societal Organisations for Disaster Risk Reduction (GNDR)

Valeria Drigo is the Policy Lead at the Global Network of Civil Society Organisation for Disaster Reduction (GNDR). Valeria is responsible for leading GNDR's policy activities globally and supporting members' advocacy: this includes developing policy positions and ensuring that our advocacy makes use of local evidence. She directly advocates for GNDR's goals of localisation and risk-informed development, and provides support to colleagues doing advocacy in the regions.

Valeria joined GNDR in 2018 after several years of experience working in disaster risk reduction within the United Nations system. Her area of focus is DRR capacity development through knowledge management and advocacy. Valeria's academic background is in International Relations.



## Discussion Panel – 4: Bridging the Generational Gaps: Catalysing Science in Action by Youth Engagement

13:30—13:45 hours CEST, 1st September 2021

Chair: Chipo Mudavanhu, Senior Lecturer, Bindura University of Science Education, Zimbabwe

Disaster learning and action has a generational divide in that younger people often command less influence on gatekeeping roles in education and research, and the social and political realms that can engage disaster prevention and response. Meanwhile the views about what matters for progress in reducing disasters and providing the means to better quality of life for future generations may be prioritised differently amongst younger generations than those in positions of greater influence. In a world of speeded up disaster threats and of mass communication the generational divide becomes more magnified. The gap between demand and supply of actions on disaster reduction in relation to young generational influences suggests that a way to catalyse greater steps towards the world becoming safer, healthier and free, is through its youth. This session opens the core topics covered in other sessions to a youth orientated discussion. How can current disaster research and advocacy support the young to become the change future generations need to become?

### Session Chair:

#### Chipo Mudavanhu

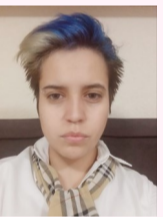


Senior Lecturer, Bindura University of Science Education, Zimbabwe

Chipo Mudavanhu is a senior lecturer at Bindura University of Science Education where she completed a PhD in Disaster Management. Her PhD focused on Reframing Children's Participation in Disaster Risk Reduction in Zimbabwe. She also holds a Master of Science Degree in Natural Resources Management and Environmental Sustainability, a Bachelor's Degree in Mathematics and Geography and other certificates in Disaster Risk Management and GIS.

She joined Bindura University in 2009 and currently she is teaching undergraduate and postgraduate courses in Disaster Risk Management, Climate Change and Sustainable Development and Natural Resource Management. She is also a member of the African Alliance for Disaster Research Institutes (AADRI). Chipo has more than 20 research articles in Disaster Management, Climate Change and Rural Livelihoods. She participated and facilitated a number of workshops in Climate Change and Disaster Management nationally and internationally. Chipo has also been working in disaster management for more than a decade with a speciality in children and disasters, resilience building, education, gender and climate change for sustainable development.

#### Alinne Olvera



Young Scientists Platform on DRR

**Alinne Olvera**, as an Earth Sciences and Integrated Disaster Risk Management Bachelor, advocates for science and technology-based resilience establishment. Given her understanding of collective behavior and skills in decision making, especially in goal-oriented interdisciplinary projects and assessment of social challenges caused by disasters, Alinne was selected by the Japanese Cabinet Office, Mexican Youth Institute, and Mexico's National Center for Prevention of Disasters to be Mexico City's delegate in the 8 – person Mexican delegation in The International Youth Development Exchange Program 2019. She is currently working on private sector alliances to integrate disaster risk management in SME dynamics.

#### Marie-Claire Graf



Youth Advocate, **YOUNGO** (Children and Youth constituency to United Nations Framework Convention on Climate Change)

Marie-Claire Graf is a youth advocate, change maker and public speaker for a just transition towards sustainable development and ambitious climate action through her diverse engagement in several initiatives on a local, national and international level. It's her aspiration to inspire and empower youth to take meaningful, impactful and positive actions to create a momentum for change. She was initiating and is leading several associations and movements around climate action, sustainable development, youth and women empowerment, food systems transformation and education such as Sustainability Week International or the Youth Constituency YOUNGO of UN Climate Change. Through her work, she has been recognized with different awards and prizes such as the United Nations Youth Climate Champion of Switzerland.

#### Fang Lian



Science Officer, IRDR Young Scientists Programme

As Science Officer of IRDR, Fang Lian assists with the planning and implementation of IRDR's mission. She serves as the primary contact for members of the IRDR community and helps with the design and organization of IRDR conferences, meetings, workshops and training. She is the focal point of IRDR Young Scientists Programme and devotes to promote the regional DRR capacity building and communication of the young professionals. She is the Core Group member of the Global Risk Science Research Framework initiated by ISC and UNDRR. She is also one of the major editors of the IRDR Working Paper Series. She works on science communication and education, co-design disaster risk reduction solutions toward multi-stakeholders, and science and policy dialogue. Before joining IRDR, her research focused on the disaster risk assessment and mapping especially on land degradation.

#### Ida Ngurah



Humanitarian and Resilience Program Manager, Plan International, Indonesia

Humanitarian and Resilience Program Manager in Plan Indonesia. She is also focal point for Education in Emergency and Community Engagement and Accountability (CEA) national coordinator, appointed by Ministry of Social Affairs. Ngurah holds master degree on environmental science from Universitas Gadjah Mada in Yogyakarta, Indonesia. She has been worked in development and humanitarian since 2006, in different agencies.



## 5th GADRI Summit : E-poster Presentations—1st Half

22:00-23:00 hours JST, 1st September 2021

No.	Title	Presenter	Institute
P1_01	Factors Shaping Safety Perception in the System Disaster Risk Reduction in Poland. Project Report	Pawel Gromek	The Main School of Fire Service
P1_02	The Hazard Terminology and Classification Review Hazard Information Profile Annex: one step closer to implementing the Sendai Framework for Disaster Risk Reduction (2015-2030), a UN landmark agreement	Maddie Weir	Public Health England
P1_03	Importance of integrated geohazard assessment for sustainable risk reduction in the High Mountain Asia	Basanta Raj Adhikari	Department of Civil Engineering, Institute of Engineering, Tribhuvan University
P1_04	“The Youth Voice and the Disaster and Development Society” – Giving Young People a Voice to Change and Learn: Disaster’s Education within the United Kingdom	Mark Ashley Parry	Northumbria University
P1_05	Institutional experiential learning in incident response	Simon D. Griffiths	Northumbria University
P1_06a	Assessment of the applicability of global policy frameworks for tropical agro-ecosystems resilience	Asitha De Silva	University of Huddersfield
P1_06b	Best practices of pandemic preparedness and mechanisms of integration in policies and governing structures of planning	Asitha De Silva	University of Huddersfield
P1_07	Capacity Building of Local Government via Training for Disaster Risk Reduction	Minhaz Farid Ahmed	Institute for Environment and Development (LESTARI), Universiti Kebangsaan Malaysia (UKM)
P1_08	A review of climate change impact on the coastal built environment	Shavindree Nissanka	University of Huddersfield
P1_9	Disaster, Climate and Development Nexus: Need for Policy Coherence for Risk-Informed Development	Sisira Madurapperuma	Asian Disaster Preparedness Center, Thailand / University of Huddersfield, UK
P1_10a	Modelling Climate Change Impact to The Streamflow of Langat River Basin	Nor Eliza Alias, Fara Aiza Md Sanin	Centre for Environmental Sustainability and Water Security
P1_10b	Fire Hot Spot - Heat Map Using Point Density Analysis of MODIS Fire Hotspot Data for Johor State	Nor Eliza Alias, Fara Aiza Md Sanin	Centre for Environmental Sustainability and Water Security
P1_11	Interpolation Methods to Produce a Spatially Continuous Map of PM2.5 and Its Contribution to Policy Making	Shinhye Han	Asian Disaster Preparedness Center
P1_12	Risk Reduction for Extreme Weather-related Natech events: A Review for the Natech Events caused by the Winter Storm Uri	Xiaolong Luo	Institute for Disaster Management and Reconstruction, Sichuan University
P1_13	Improving local capacities for Tsunami Early Warning	Nuwan Dias	Global Disaster Resilience Centre, University of Huddersfield
P1_14	A systematic review of strategies for urban planning in tsunami prone areas	Uduwarage Thisara Geethika Perera	Global Disaster Resilience Centre, University of Huddersfield
P1_15	Determination of Individual Building Performance Targets to Achieve Community-Level Social and Economic Resilience Metrics	Lisa Wang	Colorado State University
P1_16	Approaches to enhance Social Cohesion between displaced and host following a Disaster-Induced and Conflict-induced Displacement	Chathuranganee Jayakody	Global Disaster Resilience centre, University of Huddersfield
P1_17	Factors influencing the preparedness of the population for emergencies. Slovak case study.	Katarína Hollá	University of Zilina,
P1_18	Translating Urban Spaces as Strategic Risk Mitigation Measures: Tool for Action-Oriented Research	Atul Kumar	Indian Institute of technology Roorkee
P1_19	Women’s empowerment in the Sri Lankan disaster risk governance	Kinkini Hemachandra	University of Huddersfield
P1_20	Importance of using Satellite Remote Sensing in policy making	Eunbyul Kim	ADPC / Yonsei University
P1_21	Disaster Waste Management in the Philippines: A Policy Review	Glenn Fernandez	Institute for Disaster Management and Reconstruction, Sichuan University - Hong Kong Polytechnic University
P1_22	Thinking Service Design for Improvements in Emergency Preparedness and Response: Cases from Pakistan (Lahore, the Punjab and Azad Jammu and Kashmir, AJK) and the International Emergency Team UK	Richard Kotter	Northumbria University
P1_23	Regional Education and Research Center on Earthquake Risk Management and Resilience for West and Central Asia under the auspices of UNESCO in International Institute of Earthquake Engineering and Seismology (IIEES)	Kambod Amini Hosseini	International Institute of Earthquake Engineering and Seismology (IIEES)
P1_24	International Institute of Earthquake Engineering and Seismology, (IIEES) Tehran, Iran	Mohsen Ghafory-Ashtiany	International Institute of Earthquake Engineering and Seismology (IIEES)
P1_25	Impact of Water Quality Parameters on the Marine Fish Landings in Malaysia	Lubna Alam	LESTARI, Universiti Kebangsaan Malaysia





## 5th GADRI Summit : E-poster Presentations—1st Half

23:00-24:00 hours JST, 1st September 2021

No.	Title	Presenter	Institute
P2_01	Quezon City DRM Framework for COVID-19 Pandemic: Inclusive Unified Response, Recovery, and Rehabilitation Action Plan 2020-2030, Philippines	Tabassam Raza	Philippine School of Business Administration / Graduate School of Business/ Disaster Risk Management Unit
P2_02	The Duration of Effectiveness of Wireless Emergency Alerts in case of COVID-19	Dahye Yeon	Ulsan National Institute of Science and Technology
P2_03	Leveraging the Sendai Framework for Prevention and Response-Oriented Approach to COVID-19 Pandemic in Africa	Joseph Kimuli Balikuddembe	Institute for Disaster Management and Reconstruction, Sichuan University
P2_04	Multi-hazard preparedness and resilient cities: Challenges and lessons learnt from covid-19 pandemic in Sri Lanka	Thushara Kamalathne	University of Huddersfield
P2_05	Effects of temperature, humidity, and air saturation state on the transmission risk prediction of COVID-19 in typical scenarios	Mao Ning	Institute for Disaster Management and Reconstruction, Sichuan University
P2_06	Assessment of the Flood Aftermath of Water and Wastewater Utility Assets towards Developing Flood Resilience System	Azmi Aris	Centre for Environmental Sustainability and Water Security (IPASA)
P2_07	Downstream Consequences of Failure of Maithon Dam, Jharkhand, India	Bhanu Sharma	Indian Institute of Technology, Roorkee, India
P2_08a	Flood Inundated area for the downstream reaches of the Hirakud reservoir using HEC-RAS 2D unsteady flow analysis	Lingaraj Nath	Indian Institute of Technology, Roorkee, India
P2_08b	Drought Analysis at the Downstream of Hirakud Dam in Mahanadi basin	Lingaraj Nath	Indian Institute of Technology, Roorkee, India
P2_09	Moving beyond “weather alerts”: an analysis of disaster communication during monsoonal floods in Colombo	Lihini Prematilaka	University of Colombo
P2_10a	Mitigating hydrometeorological hazard impacts through improved transboundary river management in the Ciliwung River Basin.	Georgina Clegg	Global Disaster Resilience Centre, University of Huddersfield
P2_10b	Community participation in flood early warning systems	Georgina Clegg	Global Disaster Resilience Centre, University of Huddersfield
P2_11	Flood Risk Mitigation and Adaptation Analysis at the Community-Level Beyond Hazard Control Measures	Omar M. Nofal	Colorado State University
P2_12	Development of Emergency Response System of Aviation Transportation Against a Large Volcanic Eruption	Masamitsu Onishi	Disaster Prevention Research Institute, Kyoto University
P2_13	Nature-based Solutions (NbS), an innovative tool for Landslide Risk Management: A case study from Sri Lanka	G. A. Chinthaka Ganepola	Asian Disaster Preparedness Center (ADPC)
P2_14	Justification of seismic triggering of large prehistoric rockslides exemplified by the Seimareh rockslide (Iran) and similar case studies in Dagestan (Greater Caucasus, Russia)	Zieaoddin Shoaie	Soil Conservation and Watershed Management Research Institute
P2_15a	Governance Foundations for Reduced Risks to Water Supply in Island Countries: Kingdom of Tonga Case Study	Ian White	Australian National University
P2_15b	Drought Management Framework and National Water and Sanitation Policy for Vulnerable Atoll Island Countries: Tokelau Case Study		
P2_16	Content Analysis of Chinese Policies on Disaster Waste Management: Trends and Ways Forward	Yuewei Ling	Sichuan University-Pittsburgh Institute
P2_17	Findings from the Training Needs Assessment on Disaster Waste Management in Lautoka, Fiji	Sainimere Veitata	Kyoto University
P2_18	Performance of Rubberized Pozzolanic Concrete Filled Steel Tube under Lateral Cyclic Loading	Mariyana Aida Ab. Kadir	Universiti Teknologi Malaysia
P2_19	Sentinel-5P Air quality data analysis using Google Earth Engine	Gawon Lee	Asian Disaster Preparedness Center
P2_20	Aquifer storage and recovery: A Drought-Resistant Groundwater Solution for arid and semi-arid regions	Shubham Tiwari	Indian Institute of Technology, Roorkee, India
P2_21	Triggering of a Dry Convective Storm under a Heat Wave condition on 4 April 2021 over Bangladesh and Its Impacts on Boro Rice	Fatima Akter	University of Dhaka
P2_22	COP26 Targets: Curbing the increased level of Carbon Dioxide in atmosphere: Utilization of carbon dioxide and ash by producing an oxygenated compound “Dimethylcarbonate”	SURBHI DAHIYA	Indian Institute of Technology, Roorkee, India
P2_23	Participatory Risk Resilient Planning Framework for Sustainable Hill Habitat	Shivani Chouhan	Indian Institute of Technology, Roorkee, India



## 5th GADRI Summit : Networking with Institutes

22:00-24:00 hours JST, 1st September 2021

### 5th GADRI Summit : Networking with Institutes—1st Half

22:00-23:00 hours JST, 1st September 2021

No.	Title	Presenter	Institute
N1_01	Launched in 2016, the NCR is a cross sector partnership spanning Scottish universities, government and practice. It is committed to improving countrywide resilience to natural hazards in Scotland.	Ailsa Mackay	National Centre for Resilience University of Glasgow
N1_02	Justification of seismic origin of large-scale prehistoric rockslides and rock avalanches on the anticlinal ridges: challenges and solutions	Zieaoddin Shoaie	Soil Conservation and Watershed Management Research Institute, Iran
N1_03	INTEGRATING CLIMATE CHANGE PROJECTION INTO FLOOD RISK ASSESSMENTS AND MAPPING AT THE RIVER BASIN LEVEL. “Case Study of Flood Hazard and Risk Assessment for the Xedon River Basin in Southern part of the country”	Sonephet PHOSALATH	Department of Climate Change, Ministry of Natural Resource and Environment in Lao PDR.
N1_04	Advanced Seismic Hazard Modeling with Geodetic Data and Mapping with Uncertainty Visualization	Hiroyuki Goto	Disaster Prevention Research Institute, Kyoto University
N1_05	Building bridges between science, policy, first responders and the affected public in the field of disaster prevention research	Christian Resch	Disaster Competence Network Austria (DCNA)
N1_06	International Training Course (ITC) on Disaster Risk Management (DRM) of Cultural Heritage (CH): Our Progress and Challenges Towards New Normal	Lata Shakya	Ritsumeikan University, Institute of Disaster Mitigation for Urban Cultural Heritage (DMUCH)
N1_07	Wind Hazard and Infrastructure Performance	Kishor Mehta	Texas Tech University
N1_08	An interdisciplinary research project for the mitigation of megathrust-earthquake and tsunami disasters in Mexico	Yoshihiro Ito	Disaster Prevention Research Institute, Kyoto University

### 5th GADRI Summit : Networking with Institutes—2nd Half

23:00-24:00 hours JST, 1st September 2021

No.	Title	Presenter	Institute
N2_01	Humanitarian engineering in flood prone communities: Hydropower and early warning solutions for Dhuskun, Nepal and Aggitis, Greece	Garry Stevens	Humanitarian and Development Research Initiative (HADRI), Western Sydney University
N2_02	Multi-hazard modelling and risk assessment for rainfall induced natural hazards	Qihua Liang	School of Architecture, Building and Civil Engineering, Loughborough University
N2_03	Strength of the Department of Meteorology (DoM)	Towhida Rashid	Department of Meteorology University of Dhaka
N2_04	Advanced Technologies for Landslides (ATLaS)	Nicola Casagli	UNESCO Chair on Prevention and Sustainable Management of Geo-Hydrological Hazards, University of Florence
N2_05	Ocean Malaysia Partnership: potential collaboration at the regional level	Lubna Alam	LESTARI, Universiti Kebangsaan Malaysia
N2_06	Sediment Transport Modelling	Ekkehard Holzbecher	German University of Technology in Oman (GUtech)
N2_07	Assessing the Impact of Climate Change on Water Resources with Super-High Resolution Global Climate Model and Land Surface Model	Kenji Tanaka	Disaster Prevention Research Institute, Kyoto University

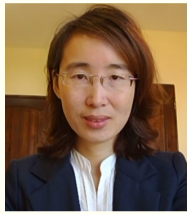


# Common Closing Session

15:00-16:00 UTC 1st September 2021

## Plenary Session III—Achievements and Recommendations by Regional Session Chair Person

### Grace Yan



**Americas covering North and South America Regional Session**

Grace Yan is an Associate Professor in the Department of Civil, Architectural and Environmental Engineering of Missouri University of Science and Technology. She is the Director of Center for Hazard Mitigation and Community Resilience, in which 35 faculty members from 12 departments are affiliated. She is also the Director of Wind Hazard Mitigation (WHAM) Laboratory that is home to the largest tornado simulator of its type in the world. She is one of the eight Directors on NAAHDRI (North American Alliance of Hazards and Disasters Research Institutes) Board of Directors.

### Mahua Mukherjee



**Asia and Oceania Regional Organising Committee**

Dr Mahua Mukherjee is Professor in the Department of Architecture and Planning, IIT Roorkee since 2003; a Joint Faculty and Ex-Head of Centre of Excellence in Disaster Mitigation and Management (CoEDMM), IIT Roorkee. Her educational qualifications are B. Arch (Jadavpur University), M. Tech (Building Science and Technology) IIT Roorkee, and PhD in the field of sustainable urban development. She has pursued her career in Architecture Office and NGO before joining Teaching. Mahua is Secretary General to South Asia Alliance for Disaster Resilience Institutes (SAADRI) and UNDRR - APSTAG Board Member.

### Jörgen Sparf



**Europe with Africa and the Middle-East Regional Organising Committee**

Dr Jörgen Sparf is an associate professor in sociology and a founding member of the Risk and Crisis Research Centre at Mid Sweden University. His main research interests revolve around resilience, collaboration and multi-organizational relations in crisis management and individual capacity and vulnerability issues. Jörgen is the Swedish representative in the European Science and Technology Advisory Group (E-STAG) of the United Nations Office for Disaster Risk Reduction (UNDRR).

## Final Remarks

### Jenty Kirsch-Wood



**Chief of Section, Global Risk Analysis and Reporting, UNDRR**

Jenty Kirsch-Wood is the Head of the Global Risk Analysis and Reporting Section in UNDRR. Previously she served as UNDP Deputy Resident Representative in Kyrgyzstan and advised the Viet Nam and Nepal Governments on climate change and disaster resilience issues. She also served as OCHA's climate and disaster policy focal point. She has nearly 20 years' experience working with UN agencies and non-governmental organisations in Iraq, Iran, Jordan, Azerbaijan, Indonesia, Bosnia and Herzegovina, Kenya and Somalia. Jenty holds a Master's Degree from the London School of Economics and a Bachelor's Degree from Harvard University.

### Qunli Han



**Executive Director, International Programme Office of Integrated Research on Disaster Risk (IRDR-IPO)**

Han Qunli is currently working as the Executive Director, International Programme Office of Integrated Research on Disaster Risk (IRDR-IPO). He worked for UNESCO during 1990-2017 and served at different and challenging positions in various countries. From these duty stations Qunli was involved in a number of UN disaster response operations. Qunli started the current position in IRDR in September 2017.

### Andrew Collins



**Leader, Disaster and Development Network (DDN), Northumbria University, UK**

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. He led the establishment of the world's first disaster management and sustainable development postgraduate programme launched in 2000, and Disaster and Development Network (DDN) launched 2004.

## Closing Remarks

### Paul Kovacs



**Chair, GADRI Board of Directors**

Paul Kovacs is founder and Executive Director of the Institute for Catastrophic Loss Reduction at Western University, Canada.

Since 1996 Paul has been a contributing author to the Intergovernmental Panel on Climate Change (IPCC), the world's leading forum for the study of climate issues. The Panel won the 2007 Nobel Peace Prize "for their efforts to build up and disseminate greater knowledge about man-made climate change". He is Canada's leading authority on insurance and climate change and has been a contributing author to numerous international and Canadian reports on reducing the risk of loss from earthquakes, flood and severe wind.

### Eiichi Nakakita



**Director, DPRI, Kyoto University**

Prof. Eiichi Nakakita is the current Director of the Disaster Prevention Research Institute (DPRI) Kyoto, University. He started his career at the Water Resources Research Center at DPRI from 1985 to 1999 as a research associate, and later moved on as an Associate Professor. In 2000, he relocated to Department of Global Environment Engineering, a graduate school of engineering of Kyoto University. In 2004 he returned to DPRI as a professor at the Research Division of Atmospheric and Hydrospheric Disasters, and was also one of the directors for Planning & Strategy, Institute of Sustainability Science (ISS), Kyoto University. Prof. Nakakita received his Bachelor, Master, and Dr. Eng. degrees from Kyoto University, Japan, in 1983, 1985, and 1990 respectively.



### List of GADRI Member Institutes

No.	Region	Economies	Organizations/ Institutes
1	Africa	Algeria	Faculty of Civil Engineering, Built Environment Research Laboratory (LBE), University of Science & Technology Houari Boumediene (USTHB)
2	Africa	Egypt	Faculty of Engineering, Alexandria University
3	Africa	Egypt	Geology Department, Faculty of Science, Assiut University
4	Africa	Egypt	German University in Cairo (GUC)
5	Africa	Egypt	Water Resources Research Institute (WRRI), National Water Research Center (NWRC), Ministry of Water Resources and Irrigation
6	Africa	Ghana	University for Development Studies (UDS)
7	Africa	Ghana	Department of Geography & Resource Development, University of Ghana
8	Africa	Ghana	Council for Scientific and Industrial Research (CSIR), Water Research Institute
9	Africa	Morocco	Faculty of Sciences and Technics of Mohammedia, University of Hassan II of Casablanca
10	Africa	South Africa	Disaster Management Training and Education Centre for Africa (DiMTEC), University of the Free State
11	Africa	Sudan	UNESCO Chair in Water Resources
12	Africa	Zimbabwe	Faculty of Science, Department of Geography, Bindura University of Science Education, African Alliance of Disaster Research Institutes (AADRI)
13	Americas	Argentina	Instituto de Geografía "Romualdo Ardisson" (PIRNA), Facultad de Filosofía y Letras, Universidad de Buenos Aires
14	Americas	Brazil	Hydraulic Research Institute (IPH), Federal University of Rio Grande do Sul (UFRGS)
15	Americas	Brazil	Federal University of Campina Grande (UFCG)
16	Americas	Brazil	Laboratório de Aerodinâmica das Construções, Universidade Federal do Rio Grande do Sul (UFRGS)
17	Americas	Canada	The Institute for Catastrophic Loss Reduction (ICLR), Western University
18	Americas	Chile	Centro Nacional de Investigacion par la Gestion de Desastres Naturales (CIGIDEN)
19	Americas	Colombia	Department of Chemical Engineering, and Industrial Engineering Department, Universidad de los Andes
20	Americas	Colombia	National Unit for Disaster Risk Management in Colombia (NGRD) (Unidad Nacional para la Gestión del Riesgo de Desastres de Colombia-UNGRD)
21	Americas	Colombia	Seismological and Geophysical Observatory of the Southwest (Observatorio Sismológico y Geofísico del Suroccidente (OSSO)), Valle University (Universidad del Valle)
22	Americas	Ecuador	Pacific International Center for Disaster Risk Reduction (PIC-DRR), Escuela Superior Politecnica del Litoral
23	Americas	Mexico	Institute of Geography, National Autonomous University of Mexico (UNAM)
24	Americas	Mexico	Civil Engineering Faculty, University of Michoacana de San Nicholas de Hidalgo
25	Americas	Mexico	Research Institute of Risk Management
26	Americas	USA	Center for Sustainable Infrastructure, The University of Alabama
27	Americas	USA	American Society of Civil Engineers (ASCE)
28	Americas	USA	Center for Emergency Management and Homeland Security (CEMHS), Arizona State University (ASU)
29	Americas	USA	Pacific Earthquake Engineering Research Center (PEER), University of California, Berkeley
30	Americas	USA	Resilient Communities Research Institute (RCRI), College of Architecture and Environmental Design, California Polytechnic State University
31	Americas	USA	Natural Hazards Center (NHC), University of Colorado Boulder
32	Americas	USA	Center for Risk-Based Community Resilience Planning, Colorado State University
33	Americas	USA	Disaster Research Center, University of Delaware
34	Americas	USA	Wind and Hurricane Impact Research Laboratory (WHIRL), Florida Institute of Technology (FIT)
35	Americas	USA	Center for Hazard Mitigation and Community Resilience, Missouri University of Science and Technology
36	Americas	USA	Program on Population Impact, Recovery and Resilience (PIR2), College of Global Public Health, New York University
37	Americas	USA	Nevada Seismological Laboratory, University of Nevada
38	Americas	USA	Global Resilience Institute (GRI), Northeastern University
39	Americas	USA	Center for Natural Hazards Resilience, The University of North Carolina at Chapel Hill (UNC)
40	Americas	USA	Advanced Radar Research Center, University of Oklahoma
41	Americas	USA	Center for Infrastructure, Transportation, and the Environment (CITE), Rensselaer Polytechnic Institute (RPI)
42	Americas	USA	Department of Industrial and Systems Engineering, Rensselaer Polytechnic Institute (RPI)
43	Americas	USA	Center for Risk and Economic Analysis of Terrorism Events (CREATE), University of Southern California
44	Americas	USA	Southern California Earthquake Center (SCEC), University of Southern California
45	Americas	USA	Hazard Reduction and Recovery Center (HRRC), Texas A&M University (TAMU)
46	Americas	USA	Center for Wind Hazard and Infrastructure Performance, Texas Tech University
47	Americas	USA	Geologic Hazards Science Center, U.S. Geological Survey
48	Americas	USA	Center for Coastal Studies, Virginia Tech
49	Americas	USA	Department of Environmental Studies, Resilience Institute, Western Washington University



50	Asia(excl. Japan)	Bangladesh	Institute of Water and Flood Management (IWFM) Bangladesh University of Engineering and Technology (BUET)
51	Asia(excl. Japan)	Bangladesh	Department of Disaster Science and Management (DSM), Faculty of Earth and Environmental Sciences, University of Dhaka
52	Asia(excl. Japan)	Bhutan	Royal University of Bhutan
53	Asia(excl. Japan)	China	Center for Energy and Environmental Policy Research (CEEP), Beijing Institute of Technology (BIT)
54	Asia(excl. Japan)	China	Integrated Risk Governance Project (IRG-Project), State Key Lab of Earth Surface Processes and Resource Ecology (ESPRE), Beijing Normal University
55	Asia(excl. Japan)	China	School of Environmental Science and Engineering, Chang'an University
56	Asia(excl. Japan)	China	Institute of Tibetan Plateau Research, Chinese Academy of Sciences (CAS)
57	Asia(excl. Japan)	China	Beijing National Earth Observatory, Institute of Geophysics, China Earthquake Administration (CEA)
58	Asia(excl. Japan)	China	State Key Laboratory of Geo-hazards Prevention and Geo-environment Protection (SKLGP), Chengdu University of Technology
59	Asia(excl. Japan)	China	Key Laboratory of Coastal Disaster and Defence (KLCDD), Hohai University
60	Asia(excl. Japan)	China	Institute for Disaster Management and Reconstruction (IDMR), Sichuan University
61	Asia(excl. Japan)	China	Natural Disaster Research Institute, Northeast Normal University
62	Asia(excl. Japan)	China	College of Engineering, Ocean University of China
63	Asia(excl. Japan)	China	College of Architecture and Environment, Sichuan University (SCU)
64	Asia(excl. Japan)	China	State Key Laboratory of Hydraulics and Mountain River Engineering (SKLH), Sichuan University
65	Asia(excl. Japan)	China	Shanghai Institute of Disaster Prevention and Relief, Tongji University
66	Asia(excl. Japan)	China	China Research Center for Emergency Management (CCEM), Wuhan University of Technology
67	Asia(excl. Japan)	Hong Kong	Hong Kong Jockey Club, Disaster Preparedness and Response Institute (HKJCDPRI)
68	Asia(excl. Japan)	India	Centurion University of Technology and Management (CUTM)
69	Asia(excl. Japan)	India	Department of Geography, Delhi School of Economics, University of Delhi
70	Asia(excl. Japan)	India	Disaster Mitigation and Management Centre (DMMC), Uttarakhand Secretariat
71	Asia(excl. Japan)	India	Humanities and Social Sciences Department, Indian Institute of Technology Bombay (IITB)
72	Asia(excl. Japan)	India	Research & Development, Indian Institute of Technology Gandhinagar (IITG)
73	Asia(excl. Japan)	India	Center of Excellence in Disaster Mitigation & Management, Indian Institute of Technology Roorkee (IITR)
74	Asia(excl. Japan)	India	Jindal School of Liberal Arts and Humanities, O.P. Jindal Global University
75	Asia(excl. Japan)	India	School of Ecology and Environment Studies, Nalanda University
76	Asia(excl. Japan)	India	School of Planning and Architecture (SPA), Delhi
77	Asia(excl. Japan)	Indonesia	Research Centre for Geosciences and Disaster, Brawijaya University
78	Asia(excl. Japan)	Indonesia	Gadjah Mada University, Faculty of Engineering, Center for Disaster Mitigation and Technological Innovation
79	Asia(excl. Japan)	Indonesia	Geological Agency (GA), Ministry of Energy and Mineral Resources of the Republic of Indonesia
80	Asia(excl. Japan)	Indonesia	JASA TIRTA I Public Corporation
81	Asia(excl. Japan)	Indonesia	Research Center for Disaster Mitigation, Institut Teknologi Bandung (ITB)
82	Asia(excl. Japan)	Iran	Soil Conservation and Watershed Management Research Institute (SCWMRI)
83	Asia(excl. Japan)	Iran	International Institute of Earthquake Engineering and Seismology (IIEES)
84	Asia(excl. Japan)	Iran	College of Agriculture and Natural Resources, University of Tehran
85	Asia(excl. Japan)	Israel	Institute of Earth Sciences, The Hebrew University of Jerusalem (HUJ)
86	Asia(excl. Japan)	Israel	National Knowledge and Research Center for Emergency Readiness, University of Haifa
87	Asia(excl. Japan)	Korea	International Water Resources Research Institute, Chungnam National University
88	Asia(excl. Japan)	Korea	Department of Disaster Prevention & Safety Engineering, Kangwon National University
89	Asia(excl. Japan)	Korea	Seoul National University
90	Asia(excl. Japan)	Korea	School of Urban & Environmental Engineering, Ulsan National Institute of Science and Technology
91	Asia(excl. Japan)	Lao PDR	Asia Research Center, National University of Laos (ARC-NUOL)
92	Asia(excl. Japan)	Lao PDR	Disaster Risk Reduction Division, Department of Climate Change (DCC), Ministry of Natural Resource and Environment
93	Asia(excl. Japan)	Malaysia	Institute for Environment and Development (LESTARI), Southeast Asia Disaster Prevention Research Initiative (SEADPRI-UKM), University of Kebangsaan Malaysia (UKM)
94	Asia(excl. Japan)	Malaysia	Universiti Kebangsaan Malaysia (UKM)
95	Asia(excl. Japan)	Malaysia	Universiti Sains Malaysia (USM)
96	Asia(excl. Japan)	Malaysia	Universiti Tenaga Nasional (UNITEN)
97	Asia(excl. Japan)	Malaysia	Centre for Coastal and Ocean Engineering (COEI), Universiti Teknologi Malaysia (UTM)
98	Asia(excl. Japan)	Malaysia	Centre for Environmental Sustainability and Water Security (IPASA), Research Institute for Sustainable Environment, Universiti Teknologi Malaysia (UTM)
99	Asia(excl. Japan)	Malaysia	Institute of Noise and Vibration, Universiti Teknologi Malaysia (UTM)
100	Asia(excl. Japan)	Malaysia	Malaysia Japan International Institute of Technology (MJIT), Universiti Teknologi Malaysia (UTM)
101	Asia(excl. Japan)	Malaysia	Disaster Management Institute (DMI), Universiti Utara Malaysia (UUM)
102	Asia(excl. Japan)	Myanmar	Department of Disaster Management, Min. of Social Welfare, Relief and Settlement, Rpublic of the Union of Myanmar



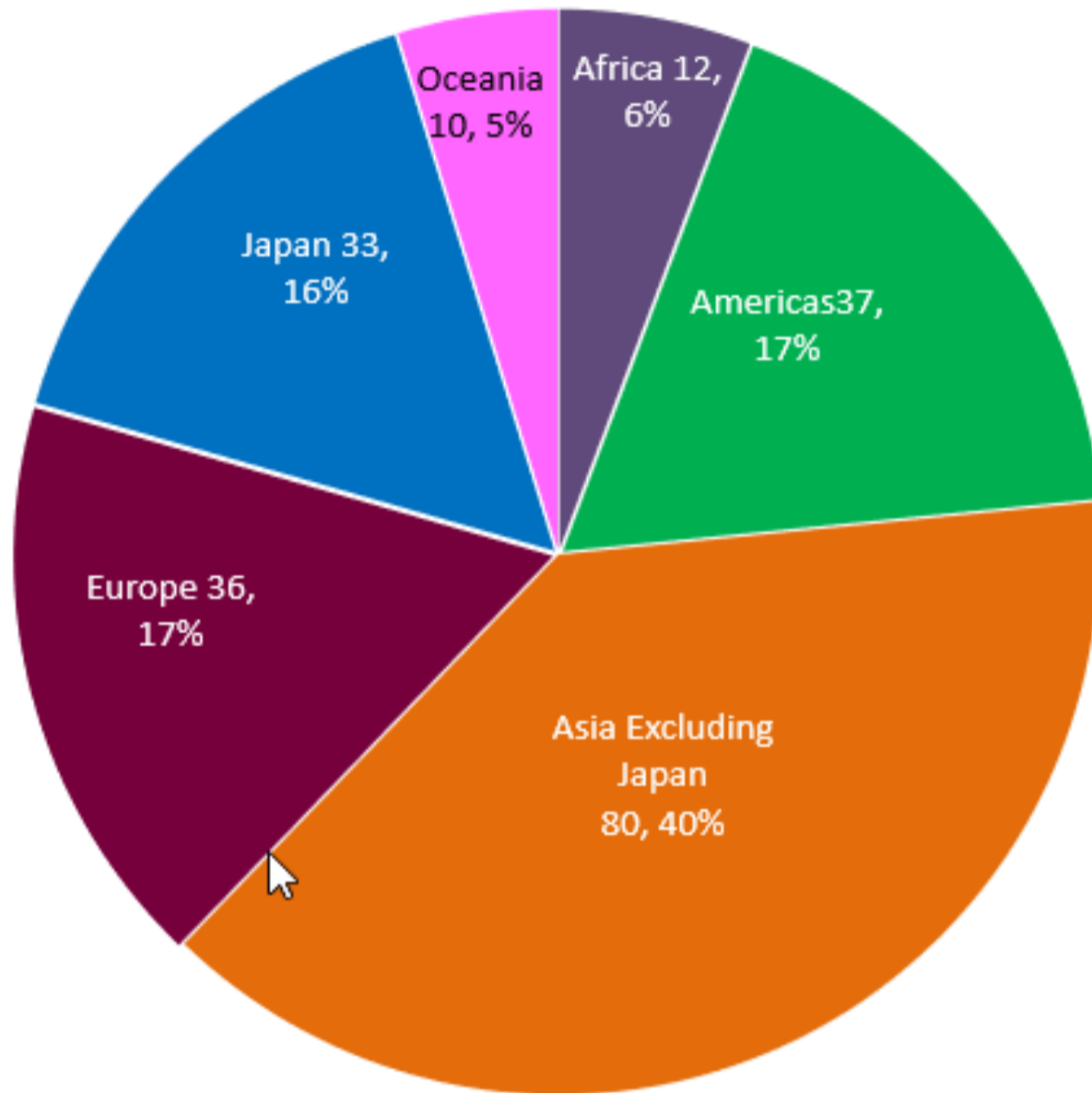
103	Asia(excl. Japan)	Nepal	International Centre for Integrated Mountain Development (ICIMOD)
104	Asia(excl. Japan)	Nepal	Institute of Engineering, Tribhuvan University
105	Asia(excl. Japan)	Oman	German University of Technology in Oman (GUTech)
106	Asia(excl. Japan)	Pakistan	University of Peshawar
107	Asia(excl. Japan)	Pakistan	Center for Disaster Management (CDM), University of Management and Technology
108	Asia(excl. Japan)	Philippines	Partnerships in Environmental Management for Seas of East Asia (PEMSEA)
109	Asia(excl. Japan)	Philippines	Disaster Risk Management Unit, Graduate School of Business, Philippine School of Business Administration
110	Asia(excl. Japan)	Philippines	National Hydraulic Research Center, National Engineering Center, University of the Philippines, Diliman Campus
111	Asia(excl. Japan)	Philippines	University of the Philippines Resilience Institute (UPRI)
112	Asia(excl. Japan)	Philippines	Philippine Society of Emergency Medical Technicians (PSEMT)
113	Asia(excl. Japan)	Singapore	Institute of Catastrophe Risk Management, Nanyang Technological University (NTU)
114	Asia(excl. Japan)	Sri Lanka	Natural Resource Management & Laboratory Services, Central Engineering Consultancy Bureau (CECB)
115	Asia(excl. Japan)	Sri Lanka	National Building Research Organisation (NBRO)
116	Asia(excl. Japan)	Sri Lanka	Center for Transdisciplinary Research, Center for Urban Water (CURW), International Network for Advancing Transdisciplinary Education (INATE)
117	Asia(excl. Japan)	Sri Lanka	Disaster Management, Ministry of Administration and Disaster Management
118	Asia(excl. Japan)	Sri Lanka	Sri Lanka Institute of Information Technology (SLIIT)
119	Asia(excl. Japan)	Sri Lanka	Faculty of Engineering, University of Moratuwa
120	Asia(excl. Japan)	T-Chinese Taipei	National Center for Research on Earthquake Engineering (NCREE), National Applied Research Laboratories
121	Asia(excl. Japan)	T-Chinese Taipei	Disaster Prevention Research Center (DPRC), National Cheng-Kung University (NCKU)
122	Asia(excl. Japan)	T-Chinese Taipei	Tainan Hydraulics Laboratory (THL), National Cheng Kung University (NCKU)
123	Asia(excl. Japan)	T-Chinese Taipei	National Science and Technology Center for Disaster Reduction (NCDR)
124	Asia(excl. Japan)	T-Chinese Taipei	Center for Weather Climate and Disaster Research (WCDR), National Taiwan University
125	Asia(excl. Japan)	Tajikistan	Mountain Societies Research Institute (MSRI), University of Central Asia
126	Asia(excl. Japan)	Thailand	Asian Disaster Preparedness Center (ADPC)
127	Asia(excl. Japan)	Thailand	Disaster Preparedness, Mitigation and Management (DPMM), Asian Institute of Technology (AIT)
128	Asia(excl. Japan)	Thailand	Disaster and Risk Management Information Systems Research Group (DRMIS), Chulalongkorn University
129	Asia(excl. Japan)	Turkey	Kandilli Observatory and Earthquake Research Institute, Bogazici University
130	Asia(excl. Japan)	Vietnam	Department of Geo-Environment, Vietnam National University (VNU), Hanoi
131	Oceania	Australia	Fenner School of Environment & Society, Australian National University (ANU)
132	Oceania	Australia	College of Health & Human Sciences, Charles Darwin University
133	Oceania	Australia	Humanitarian Response & Disaster Management Studies, School of Health, Charles Darwin University
134	Oceania	Australia	Centre for Disaster Studies, College of Science and Engineering, James Cook University
135	Oceania	Australia	Centre for Infrastructure Performance and Reliability, School of Engineering, The University of Newcastle
136	Oceania	Australia	Sustainability Research Centre, University of Sunshine Coast
137	Oceania	Australia	Science and Engineering Faculty, Queensland University of Technology
138	Oceania	Australia	Humanitarian & Development Research Initiative (HADRI), School of Social Sciences and Psychology, Western Sydney University
139	Oceania	Australia	School of Earth and Environmental Sciences/ SMAH, University of Wollongong
140	Oceania	New Zealand	GNS Science
141	Japan	Japan	Research Center for Potential Development of Disaster Prevention, Akita University
142	Japan	Japan	Asian Disaster Reduction Center (ADRC)
143	Japan	Japan	Center for Disaster Management Informatics Research, Ehime University
144	Japan	Japan	International Centre for Water Hazard and Risk Management (ICHARM) under the auspices of UNESCO
145	Japan	Japan	International Consortium on Landslides (ICL)
146	Japan	Japan	Iwate University
147	Japan	Japan	Crisis & Security Management Research Center, Kagawa University
148	Japan	Japan	Research and Education Center for Natural Hazards, Kagoshima University
149	Japan	Japan	Institute of Nature and Environmental Technology, Kanazawa University
150	Japan	Japan	Research Center for Social Safety Science, Faculty of Safety Science, Kansai University
151	Japan	Japan	Research and Development Center of Fire and Environmental Safety (RDFES), The University of Kita Kyushu
152	Japan	Japan	Research Center for Urban Safety and Security (RCUSS), Kobe University
153	Japan	Japan	Faculty of Nursing, Disaster as Global Nursing, University of Kochi
154	Japan	Japan	School of Systems Engineering, Kochi University of Technology
155	Japan	Japan	Implementation Research and Education System Center for Reducing Disaster Risk (IRESC), Kumamoto University
156	Japan	Japan	Institute of Disaster Area Revitalization, Regrowth and Governance (IDiARRG), Research Institute for Disaster Area Reconstruction, Kwansai Gakuin University
157	Japan	Japan	Disaster Prevention Research Institute (DPRI), Kyoto University
158	Japan	Japan	Graduate School of Global Environmental Studies (GSGES), Kyoto University
159	Japan	Japan	Disaster Risk Reduction Research Center, Faculty of Engineering, Kyushu University
160	Japan	Japan	Research Institute for Applied Mechanics (RIAM), Kyushu University





161	Japan	Japan	Center of Environmental Science and Disaster Mitigation for Advanced Research (CEDAR), Muroran Institute of Technology
162	Japan	Japan	Advanced Disaster Prevention Engineering Center (ADPEC), Nagoya Institute of Technology
163	Japan	Japan	Disaster Mitigation Research Center (DMRC), Nagoya University
164	Japan	Japan	National Research Institute for Earth Science and Disaster Resilience (NIED)
165	Japan	Japan	Research Institute for Natural Hazards & Disaster Recovery, Niigata University
166	Japan	Japan	Research Initiative for Natural Disaster Prevention of Oil and Gas Spill in Industrial Parks, Graduate School of Engineering, Osaka University
167	Japan	Japan	Graduate School of Human Sciences, Faculty of Human Sciences, Osaka University
168	Japan	Japan	Frontier Research Center for Natural Disaster Mitigation, Ritsumeikan University
169	Japan	Japan	Institute of Disaster Mitigation for Urban Cultural Heritage (R-DMUCH), Ritsumeikan University
170	Japan	Japan	Disaster Prevention Research Center for Island Regions, University of the Ryukyus
171	Japan	Japan	International Research Institute of Disaster Science (IRIDeS), Tohoku University
172	Japan	Japan	Center for Urban Earthquake Engineering (CUEE), Tokyo Institute of Technology
173	Japan	Japan	Earthquake Research Institute (ERI), The University of Tokyo
174	Europe	Austria	Center for Digital Safety and Security, Austrian Institute of Technology (AIT)
175	Europe	Austria	Disaster Competence Network Austria (DCNA)
176	Europe	Austria	International Institute for Applied Systems Analysis, (IIASA)
177	Europe	Belgium	One Health Platform
178	Europe	Bulgaria	Department of Information Technologies and Communications, University of National and World Economy
179	Europe	France	BRGM (Bureau de Recherches Geologiques et Minieres)
180	Europe	France	Council of Europe
181	Europe	France	Institut Des Sciences de la Terre (ISterre), Grenoble University
182	Europe	Germany	Center for Disaster Management and Risk Reduction Technology (CEDIM)
183	Europe	Germany	Disaster Research Unit, Department of Social and Political Sciences, Freie Universitat Berlin
184	Europe	Germany	Institute for Advanced Sustainability Studies (IASS)
185	Europe	Germany	United Nations University, Institute for Environment and Human Security (UNU-EHS)
186	Europe	Iceland	Earthquake Engineering Research Centre, University of Iceland
187	Europe	Italy	European Commission, Joint Research Centre (JRC)
188	Europe	Italy	Department of Earth Sciences, University of Florence (Universita degli Studi di Firenze)
189	Europe	Italy	Global Earthquake Model (GEM) Foundation
190	Europe	Poland	The Main School of Fire Service (SGSP)
191	Europe	Slovakia	Faculty of Security Engineering, University of Zilina
192	Europe	Sweden	Stockholm Environment Institute (SEI)
193	Europe	Sweden	Risk and Crisis Research Centre (RCR) Mid Sweden University
194	Europe	Switzerland	Global Risk Forum GRF Davos
195	Europe	Switzerland	Faculty of Geosciences and the Environment, University of Lausanne
196	Europe	UK	Bournemouth University Disaster Management Centre (BUDMC)
197	Europe	UK	British Geological Survey
198	Europe	UK	Cabot Institute, University of Bristol
199	Europe	UK	Evidence Aid
200	Europe	UK	Institute for Risk and Disaster Reduction (IRDR), University College of London
201	Europe	UK	Water Engineering and Development Centre (WEDC), Loughborough University
202	Europe	UK	Global Disaster Resilience Centre, School of Art Design and Architecture, University of Huddersfield
203	Europe	UK	School of Business, Dept. Management, Innovation and Technology Division, University of Leicester
204	Europe	UK	Disaster and Development Network (DDN), Department of Geography, Northumbria University
205	Europe	UK	Overseas Development Institute (ODI)
206	Europe	UK	Global Public Health, Public Health England (PHE)
207	Europe	UK	National Centre for Resilience (NCR), University of Glasgow
208	Europe	UK	Research Centre for Disaster Resilience, University of Salford
209	Europe	UK	Swansea University

**Geographical Distribution of Members of GADRI  
As of 31st August 2021**



Area	Members	Economies
Africa	12	7
Americas	37	8
Asia (Excluding Japan)	81	23
Europe	36	12
Japan	33	1
Oceania	10	2
<b>Total Institutes</b>	<b>209</b>	<b>53</b>
	<b>53 economies</b>	





# 5<sup>th</sup> Global Summit of GADRI

## Engaging Sciences with Action

31 August to 1 September 2021  
Virtual Intercontinental Conference



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together with the support of the Regional Alliances