

D7.3

Report on Joint Conference

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D7.3/Report on Joint Conference

Lead by Arctik

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Abstract

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1 Introduction

The 3rd International Conference on Natural Hazards and Risks in a Changing World was organised in Amsterdam on 12-13 June. The conference was jointly organised by [MYRIAD-EU](#), [NatRiskChange](#), and [Risk KAN](#).

The in-person format of this event, hosted at Rode Hoed in the heart of the city, fostered comprehensive discussions and engagements among a diverse group of stakeholders, including policymakers, scientists, practitioners, and organisations from disaster risk and climate change adaptation communities. The MYRIAD-EU project is funded by the European Union's Horizon 2020 programme, Climate, Climate Change and Society, and the conference was supported by the European Space Agency, the World Climate Research Programme, the European Commission, Risk KAN, and the University of Potsdam. The conference aimed to bridge gaps between different communities and advocate for an integrated approach essential for understanding and managing the risks posed by natural hazards and striving for a sustainable future.

2 Summary

The conference successfully brought together a wide array of experts and stakeholders to discuss compound and multi-hazard risks, drawing 260 participants, including 170 Early Career Researchers. Featuring a combination of plenary and parallel sessions, the event included keynote speeches from Dr Mariana Madruga de Brito (Helmholtz Centre



for Environmental Research), Dr Wim Thiery (Vrije Universiteit Brussels), Jenty Kirsch-Wood (UNDRR), and Juha-Pekka Jäpölä (DG ECHO European Commission & Faculty of Business and Economics of Antwerp). These sessions were designed to be interactive and engaging, promoting dynamic exchanges of ideas. Additionally, two Early Career Researchers (ECR) events were held on Thursday, 13 June, and Friday, 14 June, to further connect early career researchers.

The conference underscored the importance of collaboration and innovation in addressing the complex risks posed by natural hazards in a changing climate, playing a pivotal role in bridging silos between different sectors and promoting collaborative efforts.

The selection process for the conference involved a call for abstracts at the beginning of 2024, resulting in 504 submissions, with conveners selecting 202 oral and poster presentations. We achieved a balanced representation among the conveners, with an equal 50% for each gender. The organising committee composition was 45% female and 55% male, and the chairs were 2 female and 1 male. For the keynote speakers, we ensured gender parity, with two women and two men presenting.

3 Programme

Oosterhuis

Keizer

Grachten

08:30 - 09:00

Registration and coffee

09:00 - 10:45

Plenary opening session

10:45 - 11:15

Break

10:45 - 11:15

Break

10:45 - 11:15

Break

11:00 - 12:45

Dynamics, interdependencies and interactions of risk drivers

11:00 - 12:45

Learning from the past: historical perspectives and 'success stories' of DRR

11:00 - 12:45

Science for policy and practice: synergising disaster risk reduction and climate change

12:45 - 13:45

Lunch

12:45 - 13:45

Lunch

12:45 - 13:45

Lunch

13:45 - 15:15

How can stakeholder engagement and knowledge co-production enhance effective multi-risk management?

13:45 - 15:15

Dynamics, interdependencies and interactions of risk drivers

13:45 - 15:15

Assessing multi-hazard risk using earth-observation data

15:15 - 15:45

Break

15:15 - 15:45

Break

15:15 - 15:45

Break

15:45 - 16:45

How can stakeholder engagement and knowledge co-production enhance effective multi-risk management?

15:45 - 16:45

Health and disasters

15:45 - 16:45

Advancing critical infrastructure modelling in a complex world

16:45 - 17h45

Poster session

17:45 - 19:15

Networking drinks

Oosterhuis

Keizer

Grachten

08:30 - 09:00

Registration and coffee

09:00 - 11:00

General advances in disaster risk science and compound climate events

09:00 - 11:00

Artificial intelligence and machine learning for multi-risk assessment

09:00 - 11:00

Storylines and narratives for multi-hazard, multi-risk decision-making

11:00 - 11:30

Break

11:00 - 11:30

Break

11:00 - 11:30

Break

11:30 - 12:30

Poster session

11:30 - 12:30

Demonstration of tools and services

12:30 - 13:30

Lunch

12:30 - 13:30

Lunch

12:30 - 13:30

Lunch

13:30 - 15:30

General advances in disaster risk science and compound climate events

13:30 - 15:30

Nature-based Solutions for disaster risk reduction / Recent developments in multi-hazard early-warning systems

13:30 - 15:30

Systemic risk-assessing, modeling, coping

15:30 - 15:45

Break

15:30 - 15:45

Break

15:30 - 15:45

Break

15:45 - 17:15

Plenary closing session



MYRIAD-EU project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under Grant Agreement No. 101003276



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4 Sessions

The conference featured two plenary sessions, sixteen parallel sessions focused on specific topics, and two poster sessions. The plenary sessions included keynote speakers, panel discussions, and interactive and fun ways of engaging as a community, such as a quiz that included fun and serious questions.

Keynote speakers:

- Dr. Mariana Madruga de Brito – Helmholtz Centre for Environmental Research
- Dr. Wim Thiery – Vrije Universiteit Brussels
- Jenty Kirsch-Wood – UNDRR
- Juha-Pekka Jäppölä – DG ECHO European Commission & Faculty of Business and Economics of Antwerp

All the abstracts presented at the conference are stored in the booklet, available on the conference's website and Zenodo: zenodo.org/records/12744934

4.1 Opening plenary session



At the opening plenary session, the conference commenced with a welcome speech delivered by Philip Ward, Project Coordinator of MYRIAD-EU. This was followed by a series of insightful keynote presentations. Juha-Pekka Jäppölä presented on "Multi-risk Science for the European Commission," highlighting the importance of integrated risk assessment strategies at a European policy level.

Jenty Kirsch-Wood's keynote on "Multi-Risk Approaches for Reducing Disaster Risk in the Context of the Global Agendas" provided a global perspective on disaster risk reduction, emphasising the need for comprehensive risk management practices. Mariana Madruga de Brito's keynote presentation on "Tracking Adaptation Measures and Socio-Economic Impacts of Multi-Hazards Using Machine Learning and NLP" showcased advanced technological applications in disaster risk management, illustrating how innovative tools can enhance adaptive strategies. Wim Thiery posed a thought-provoking question in his keynote, "Will You Live an Unprecedented Life?", encouraging attendees to consider the profound impacts of climate change on future generations.

The session concluded with a panel discussion moderated by Marleen de Ruiter, featuring panellists Jana Sillmann, Annegret Thieken, Jenty Kirsch-Wood, Mariana Madruga de Brito, and Wim Thiery. The panellists engaged in a dynamic dialogue, sharing diverse perspectives and discussing interdisciplinary approaches to multi-risk management and resilience building.

4.2 Dynamics, interdependencies and interactions of risk drivers

This session, convened by Wiebke Jäger (Vrije Universiteit Amsterdam), Benjamin Poschlod (Universität Hamburg) and Tristian Stolte (Vrije Universiteit Amsterdam) highlighted the challenges and advancements in dynamic risk assessments, noting both quantitative and qualitative approaches. Quantitative studies, such as building-level vulnerability assessments and temporal dynamic storm damage assessments, are promising but limited by data availability and quality issues. Qualitative methods, like impact webs and causal loop diagrams, provide detailed risk insights but are often location-specific and hard to generalise. The speakers emphasised the importance of including socioeconomic trends and the influence of social norms on adaptation strategies, with adaptation measures sometimes leading to unintended socioeconomic impacts. Overall, future scenarios, despite their uncertainties, illustrate that present choices significantly shape future risks and outcomes. It featured the following presentations:

- Andreas TROJAND: Temporal dynamic vulnerability - Impact of antecedent events on residential building losses to wind storm events in Germany
- Hannah SCHUSTER: Mortality Risks of an Ageing and Warming Austria
- Malte VAN SZOMBATHELY: Hamburg Risk Map: Combined indexing of urban exposure, social vulnerability and urban flooding
- Sara NIETO: Coupled Evolution of Medellin City and Landslides
- Eva PREINFALK: Fuelling the fires - An exploration of the drivers and the scope for management of European wildfire risk under the Shared Socioeconomic Pathways
- Nele RINDFÜSER: Monitoring flood risk evolution in Switzerland
- Dominik PAPROTYN: Climatic and human drivers of flood losses in Europe in the Anthropocene
- Tailin HUANG: Unraveling Interconnected Risks: A Systemic Approach to Understanding Flood, Drought, and Land Subsidence in Choshui River Basin, Taiwan
- Edward SPARKS: Advancing our understanding of complex risks with conceptual models: lessons from case studies in Asia, Africa and Europe
- Ajay DEVDA: How coupled impacts of flood control infrastructure and socio-economic disparities exacerbate flood risk: A Hydrogeomorphic and Socio-Economic assessment of Kosi river embankment program, India
- Tang LUU: The role of social norms on the implementation of flood risk adaptation measures in Central Vietnam
- Sry Handini PUTERI: Monitoring flood risk evolution in Switzerland Comparing Scientific Flood Risks with Household Perception to Improve Preparedness Strategies in Lumbini Province, Nepal
- Hedwig VAN DELDEN: Integrating hazard, vulnerability and exposure to simulate dynamic risk profiles in support of strategic scenario development and risk reduction

Poster presentations:

- Anastasia VOGELBACHER: How does groundwater level influence the occurrence and frequency of heatwaves?

- Asrat Tekle ASRESU: Climate change multi-hazards impacts on transitional ecosystems and the role of nature-based solutions in maintaining water quality
- Lars DE RUIG: Assessment of multi-hazard disruption losses on road infrastructure – Case studies on three African countries
- Hunter QUINTAL: Wet Hot American Summer: Defining Temporally Compounding Hazards using Covariance Modeling and Event Coincidence Analysis
- Mohamed ABDELFAHATTAH: Enhancing Disaster Resilience with Multi-Agent Deep Reinforcement Learning: Incorporating Social Interdependencies in Community Recovery Strategies
- Srividya HARIHARAN SUDHA: Understanding hydrological response to wet and dry extremes: A case study in the Geul River basin (NL)
- Annika MAIER: Volcanoes and tsunamis – multi-risk scenarios for tourism in the Canary Islands
- Wiebke JÄGER: Integrating Exposure and Vulnerability Dynamics in Forward-Looking Multi-Hazard Risk Modeling: Examples of Qualitative and Quantitative Functions

4.3 Learning from the past: historical perspectives and ‘success stories’ of DRR

This session, convened by Annegret Thieken (Universität Potsdam), Heather Murdock (Universität Potsdam) and Marie-Luise Zenker (Universität Potsdam) aimed to dissect recent extreme events, compare them with historical data and evaluate various learning approaches to enhance forecasting, warning, and response systems for improved disaster risk management. Key challenges include climate change and urbanisation driving multi-hazard risks, and the necessity for strategic planning in response and recovery, such as evacuation facilities and long-term housing. Recommendations emphasise better integration of climate change considerations into assessment frameworks, enhancing water storage through green infrastructure, and improving public education for safety. Additionally, planning for "black swan" events and enhancing recovery strategies with more research input is crucial, alongside examining the role of insurance in flood recovery for companies. Reviewing past events and success stories can identify assessment gaps and improve future preparedness and adaptation efforts. It featured the following presentations:

- Benjamin POSCHOLD: Sub-daily extreme rainfall triggering multiple hazards in Alpine Germany in July 2021 – have we experienced “recent climate change”? Implications for local risk management.
- Ana M. PETROVIĆ: Recent Torrential Floods in Serbia from a view of a century-long story
- Mathilde BOSSUT: Financial recovery after a flood event: Evidence from French manufacturing SMEs
- Nithila Devi NALLASAMY: Impact of the disappeared water bodies on the rising flood risk in the Chennai Metropolitan Area in India
- Claudia BERCHTOLD: Synthesising wildfire event reviews: changes in wildfire regimes and resulting recommendations
- Md Moynul AHSAN: A Critical Analysis on Disaster Housing Policy Before and after Kahramanmaraş-Centred Earthquakes in Türkiye.

- Hamed SEDDIGHI: Disaster Risk Reduction in Iran in the last 100 years: A critical policy analysis
- Kun Arsanti DEWI: The availability of government public facilities that can be utilized in receiving and serving evacuees of volcano eruption, case study: the readiness of Magelang municipal government to accept evacuees of Merapi Volcano, central Java

Poster presentations:

- Nour SAMARO: Assessing Overheating Risks and Mitigation Strategies for an Existing Residential Building under Extreme Future Conditions
- Sara Carolina SOARES GUERRA FARDIN: Urban Multi-Hazard Research Analysis: Systematic Review
- Hendrik BRUNS: Improving the Evaluation of Civil Protection Exercises
- Ruben WEESIE: Learning from the past through participatory storytelling: history of droughts and floods in Eastern Kenya
- Heather J. MURDOCK: Flood early warning and flood damage: analysis of survey data for the July 2021 flood in Belgium

4.4 Science for policy and practice: synergising disaster risk reduction and climate change

This session, convened by Lydia Cumiskey (University College Cork), Stefan Schneiderbauer (United Nations University / Eurac Research / University of the Free State) and Philip Ward (Vrije Universiteit Amsterdam / Deltares), focused on the integration of Disaster Risk Reduction (DRR) and Climate Change Adaptation (CCA) through transdisciplinary research, highlighting participatory approaches, co-creation of knowledge, and risk communication to non-scientific actors. Key challenges discussed include managing multi-hazard risks with increasing complexity, aligning short and long-term planning timelines, and overcoming legal and political barriers. Innovative tools, such as system dynamics and agent-based modelling, were presented for developing multi-risk adaptation pathways, with nature-based solutions identified as cost-efficient yet hindered by existing barriers. Emphasis was placed on the necessity of addressing DRR and CCA together to avoid maladaptation and maximise synergies, requiring improved communication and mainstreaming of these integrated approaches. The following abstracts were presented in this session:

- Annegien TIJSSEN: Showcasing existing practices, tools and methods to enhance coherence and synergy between DRR and CCA
- Carolyn HAYLES: Embedding climate adaptation policy within the historic environment sector
- Julius SCHLUMBERGER: Unravelling the complexity of multi-risk systems and adaptation pathways
- Bethany LISS: Stay or leave? Mainstreaming in-situ upgrading vs. planned resettlement in high-risk contexts - Lessons from the Philippines
- Franziska Stefanie HANF: A system dynamics approach to understanding urban flood risk and barriers to adaptation under climate change using causal loop diagrams: Case study of the city of Hamburg, Germany
- Elena MCDONALD: How to consider climate change in flood risk management? – Current practices in Germany and the Benelux countries

- Sarah MICHAELS: Utilizing Variegated Uncertainty to Integrate Disaster Risk Reduction and Climate Change Adaptation
- Sepehr MARZI: Looking back, Looking forward: INFORM suite provides opportunity to design country tailored climate resilient pathways

Poster presentations:

- Lijie DONG: Urban Flood Risk Perception and Trust: Insights from a Survey in Wuhan, China
- Lydia CUMISKEY: Risk-Tandem Framework: enhancing risk governance through knowledge co-production with DRR and CCA actors
- Stefan KIENBERGER: Identifying tools and methods to co-create a climate risk service for managing drought risk in Austria - CRISDA
- Alexandra MALMSTRÖM: Disconnects between Climate Change Adaptation Research and Practice: Evidence from a Systematic Review of Urban Heat Island Modelling Research
- Michiel INGELS: Climate Risk Insurance Modeling: A Literature Review
- Shefali NAYAK: Circling the Policy Drain: A Systematic Review of Governance Strategies concerning Urban Planning for Water-Centric Circular Cities towards Climate Change Adaptation
- Annegret THIEKEN: Prioritizing measures and instruments for flood risk management – what do experts recommend after the devastating flood of 2021?
- Julie VAN DE VALK: Bridging between Natural Hazard Data, Science, and Policy to keep Canadians Safe
- Markus MOSIMANN: Exploring Interconnected Dynamics: Hydrometeorological Uncertainties in Impact-Based Flood Warning Systems and the Climate Change Sensitivity of Floodplains
- Ilyas MASIH: An analysis on the alignment of drought policy and planning guidelines with the SENDAI framework for disaster risk reduction 2015-2030

4.5 How can stakeholder engagement and knowledge co-production enhance effective multi-risk management?

This session, convened by Roxana Ciurean (British Geological Survey), Jaroslav Mysiak (Euro-Mediterranean Center on Climate Change), Simron Singh (University of Waterloo), and Lydia Cumiskey (University College Cork) focused on strategies and approaches for knowledge co-production and effective stakeholder in current and future research projects. Presentations discussed several challenges, from addressing accessibility by providing necessary funds for co-creation to the importance of ethical consideration in conflict settings where data and knowledge are sensitive. Clearly defining the purpose of knowledge co-production for advancing appropriate disaster risk assessment and management strategies was seen as crucial moving forward. Recommendations included the development of **agile and flexible processes** that integrate **local stakeholders as equal project partners**, building wider local capacity, and setting realistic expectations to ensure meaningful participation and practical outcomes. Moreover, embedded researchers can help bridge the gap between science, policy, and practice while maintaining legitimacy by aligning with existing legal frameworks. Finally, the session

highlighted the importance of investing time to build trustworthy relationships to facilitate effective dialogue and co-creation. Below are the presentations selected:

- Joel GILL: Working with stakeholders to construct regional multi-hazard interrelationship frameworks - an application to Guatemala
- Nicole VAN MAANEN: Conversations on multi-hazard risk: Qualitative and quantitative insights from MYRIAD-EU interviews on the dynamics of risk drivers and disaster risk reduction synergies in Europe
- Anke WESSELS: Interrupting the Cascades – How compound event thinking contributes to successful disaster risk reduction and climate change adaptation
- Markus GROTH: A transdisciplinary process model approach to integrate future climate change into corporate risk management strategies
- Juha-Pekka JÄPÖLÄ: Integrating stakeholder preferences with systemic multi-risk data on disasters and climate change: A stochastic decision-making analysis
- Pia-Johanna SCHWEIZER: Accounting for the multiple risks of transitioning towards low carbon emission scenarios
- Fabio BRILL: Integrating multi-faceted spatial perspectives from researchers to stakeholders on climate- and water-related risks
- Lotje BIJKERK: Enhancing Multi-Hazard Analysis in Conflict Settings: A Collaborative Approach with Red Cross Red Crescent Movement partners
- Marc HOMBERG VAN DEN: Examining Conditions for Sustained Integration of Different Knowledges within Climate Services
- Denise MCCULLAGH: Transboundary climate adaptation solutions: co-developing services to manage climate risks
- Balbina NYAMAKURA: Engaging plurality in the application of co-creation concepts in the development of climate services for disaster risk reduction

Poster presentations:

- John HILLIER: Open R-code to communicate the impact of co-occurring natural hazards
- Panagiotis ASARIDIS: Towards a Multi-Criteria Analysis for evaluating the effectiveness of risk reduction strategies in multi-hazard environments
- Haorui WU: Micro-, Mezzo-, and Macro-level Cross-sectoral Cooperation: An Innovative Approach to Support Animal Farming Community's Evacuation during the 2021 Pacific Northwest Floods in Fraser Valley, British Columbia, Canada
- Anna MSIGWA: Building Climate Resilience Northern, Tanzania: A Participatory Action Research Approach to Enhancing Effective develop Early warning system for drought and Rain.
- Iuliana ARMAS: Untapped potential: Integrating first responders' perspectives into Impact Chains
- Jaime ANDERSON: From Data to Disaster-Management Decisions: Intermediaries as Catalysts for Effective Climate Services
- Nathan CLARK: Building Disaster Resilient Societies: Towards a Disaster Reconstruction Support Framework

- Lou BRETT: Using co-production to understand compound and multi-hazard extreme weather risks for rural stakeholders: Scotland's National Parks
- Annemarie POLDERMAN: Engaging Stakeholders in Co-Creating Knowledge for Multi-Risk Adaptation Strategies
- Caroline MICHELLIER: The Kivu Citizen Observer network: creating and disseminating knowledge about natural hazard disasters to improve Disaster Risk Reduction
- Yim Ling SIU: Do participation and co-production help the water sector in multi-hazard risk management?
- Melanie DUNCAN: Stakeholder engagement and co-production of knowledge in complex interdisciplinary projects – the case of MYRIAD-EU

4.6 Assessing multi-hazard risk using earth-observation data

This session, convened by Cees van Westen (University of Twente), Colin Raymond (University of California UCLA), Christian Geiss (Deutsches Zentrum für Luft- und Raumfahrt DLR) and Maria Arango Carmona (Universität Potsdam UP) covered various hazards and geographies, emphasising the comparison of satellite products with different strengths. Advances in imaging technology and large-dataset analysis have enabled detailed earth science research at small scales, even in traditionally data-poor areas. Close collaboration with stakeholders was essential for guiding research and integrating qualitative local knowledge into quantitative risk assessments. Determining the additional risk posed by multi-hazards and attributing risk to different hazards were highlighted as significant challenges. Future directions include refining methodologies, focusing on high-impact events, increasing the use of satellites for disaster studies, and employing AI for multi-sensor comparison products to standardise multi-hazard risk assessments. Below are the abstracts featured in the session:

- Sara CLAUS: Multi-Sensor Data Fusion with Artificial Intelligence for Operational Flood Mapping
- Sébastien BIASS: Insights into the vulnerability of vegetation to volcanic hazards from interpretable machine learning and big Earth observation data
- Amelia LIN: Multi-scenario approach for seismic hazard assessments across New Zealand State Highways
- Giandomenico MASTRANTONI: The contribution of multi-frequency satellite InSAR data in multi-risk modelling of buildings exposed to ground instability hazards
- Eshrat FATIMA: Appraising the Potential Implications on Vulnerable GLOF Sites in High Mountain Asia through Geospatial Techniques: A Case Study of Northern Pakistan
- Axel DEIJNS: Regional landslide and flash flood compound event analysis in the African tropics
- Nadia TESTANI: Cloudiness variability and long-term decrease over a productive rice and vegetable region of South-Eastern South America: insights from Surface Observations and Satellite-Derived Data
- Sophie BUJIS: From Single to Multi-Hazard Recovery: A Statistical Approach Using Nighttime Light Satellite Data

- Saurav BHATTARAI: Assessing Cascading and Compound Climate Extremes and Associated Vulnerabilities Across the United States

Poster presentations:

- Micky MAGANINI: A Regional Intercomparison of Open Source Surface Water Extent Mapping Products and Packages
- Maria Isabel ARANGO-CARMONA: Using AI and traditional methods to map cascading torrential hazards in tropical regions
- Roxana CIUREAN: Exploring the use of remote-sensing data for impact assessment in areas affected by dry conditions compound events in the UK

4.7 Health and disasters

This session, convened by Marleen de Rooter (Vrije Universiteit Amsterdam), Nivedita Sairam (Helmholtz-Centre Potsdam) and Sophie Buijs (Vrije Universiteit Amsterdam), focused on integrating disaster risk and health research, which remains challenging but is improving, as evidenced by the high interest and diverse presentations featured. Speakers ranged from researchers using climate models to practitioners discussing real-life impacts, highlighting the need for actionable research. Discussions covered topics from mental health to systemic effects on healthcare, emphasising the importance of collaboration. Researchers are focusing not only on past risks but also on future health implications like intensified heat extremes and disease expansion. The session demonstrated the value of interdisciplinary collaboration and innovative tools to develop strategies for enhancing global health resilience against climate challenges. Below are the abstracts selected:

- Kelley DE POLT: Regional differences in the impact of heat on public health within Europe
- Marie-Luise ZENKER: Unveiling long-term mental health effects after flooding: Influence of spatiotemporal elements on recovery after the 2021 German floods
- Samuel LÜTHI: Storylines for heat-mortality extremes
- Martha VOGEL: Climate change and health: Insights from the humanitarian sector

Poster presentations:

- Thi Dieu My PHAM: Understanding the cumulative mental health impacts of frequent flooding and COVID-19 in Thua Thien Hue province, Central Vietnam
- Rozana HIMAZ: Understanding changes to mental health in the wake of natural hazards
- Gaia BONINI: One Health Approaches to Disaster Management: Insights from the Field
- Julien MAGANA: Including Local Initiatives and Behaviours in Health Disaster Response: A Case-Study Investigation of Patient Flow, Emergency, Health Services, and Community Engagement Following the 2021 European floods.
- Mikhail SIRENKO: Dynamic and adaptive epidemic control: A case study of anticipatory action to Cholera outbreaks in Cameroon

4.8 Advancing critical infrastructure modelling in a complex world

This session, convened by Elco Koks (Vrije Universiteit Amsterdam), Alexander Fekete (TH Köln - University of Applied Sciences) and Peter Priesmeier (TH Köln - University of Applied Sciences), featured a diverse array of topics and methodologies, covering various types of critical infrastructure (CI) and hazard scenarios. Transportation networks were prominently discussed alongside ports, health facilities, airports, and the electricity grid. The session highlighted a strong focus on natural hazards like floods, multi-hazard approaches, and investigations into volcanic eruptions and storms, although human-made hazards received less attention. Presentations included assessments of climate risks to critical mineral supply chains in Africa, vulnerabilities in hospital flood response systems in Germany, and systemic vulnerability assessments to volcanic eruptions. The session underscored the breadth and depth of research in CI modelling, reflecting substantial ongoing research needs and the evolving complexity of these systems. Below are the selected abstracts to contribute to the session:

- Raghav PANT: Assessing climate risks to critical minerals supply-chains in Africa due to multi-modal transport disruptions
- Jonas WASSMER: Hidden Vulnerabilities in Emergency Response Post-Flood Disasters
- Esther BARRIOS-CRESPO: Archetype-based methodology for climate risk characterisation in CI and adaptation decision-making
- Alana WEIR: Forensic systemic vulnerability assessment of interdependent critical infrastructure
- Colin MANNING: Improved prediction of power outages in windstorms with inclusion of rainfall preconditioning, wind direction and season

Poster presentations:

- Ruoqing YIN: Modelling interdependent critical infrastructure systems under multi-hazard conditions: some recent advances and forward-looking perspectives
- Alberto FERNANDEZ-PEREZ: Compound and cascading climate risks assessment in port and coastal infrastructures
- Xuhui LIN: Enhancing Urban Flood Response: Traffic Flow Prediction Using a Field Theory-Inspired Graph Neural Network Diffusion Model
- Edgar Daniel PEREGRINA GONZALEZ: Climate adaptation in critical infrastructure: A layered approach
- Elisa Grazia Lucia NOBILE: Modelling Flood Shocks Propagation in Economic Networks: An Agent-Based Model for Supply Chains
- Peter PRIESMEIER: Road network criticality model for emergency services: A case study of heavy rain impact on ambulance response time in Cologne, Germany
- Joë PELMARD: Learning from tropical cyclone Gabrielle: A framework for the modelling of flood response to extreme weather events across New Zealand

4.9 General advances in disaster risk science and compound climate events

This session, convened by Nicole van Maanen (Vrije Universiteit Amsterdam), Kai Kornhuber (Climate Analytics), Kelley De Polt (Max-Planck-Institute for Biogeochemistry), Christian Kuhlicke (UFZ Leipzig) and Axel Bronstert (University of Potsdam), encompassed a wide range of topics including impact assessment, crisis communication, societal impacts, adaptation strategies, and integrated approaches to disaster risk

reduction. It explored various types of hazards such as meteorological, hydrological, geohazards, societal, and biological risks, emphasising both single and multi-hazard scenarios. Cutting-edge statistical and modelling techniques were showcased for advancing multi-hazard analysis, with global case studies from regions like India and Africa providing diverse perspectives. Discussions also focused on hazard assessment, management strategies, and the development of impact chains and probabilistic approaches. Social and policy implications, including issues of social vulnerability and trust in institutions, were prominent themes. The session underscored the complexity of disaster risk science and highlighted the importance of interdisciplinary collaboration and effective communication strategies among compound risk communities and disaster risk reduction fields. Overall, it provided valuable insights, identified key challenges and opportunities, and demonstrated the effectiveness of integrated discussion forums in fostering deeper engagement and cross-topic connections. Below are the presentations that contributed to the session:

- Judith CLAASSEN: A European Perspective on Joint Probabilities Within Multi-Hazards
- Ali TAWALO: Probabilistic approach for assessing multi-site slope land displacements induced by groundwater fluctuations
- Dina Vanessa GOMEZ RAVE: Advanced Modelling of Compound Flooding in Estuaries
- Lisa KÖHLER: Compound hazard experience and its feedback on resilience and adaptive behavior
- Katharina KÜPFER: Clustering of impact-related compound meteorological extremes in southwest Germany
- Federica ROMAGNOLI: Combining Impact Chains with Forensic Analysis in the analysis of compound events: insights from the Vaia windstorm case study
- Christopher WHITE: Reclassifying historical disasters: from single to multi-hazards
- Abbas FATHIAZAR: Advancing Multi-Hazard Risk Reduction: A Catalog of Integrated Multi-hazard Mitigation Measures for flood and earthquake
- Jess DELVES: Investigating the 2016-2020 drought(s) in the water-rich mountainous area of Qwaqwa (South Africa) to support future adaptation
- Ekbal HUSSAIN: Prolonged multi-risk factors behind the 2023 Kahramanmaraş (Türkiye) earthquake disaster
- Ravi RANJAN: Compound Wind and Rainfall Extremes from Tropical Cyclones in India: A First High-Resolution Hazard Mapping
- Davide Mauro FERRARIO: Multi-Hazard assessment for present and future scenarios: a MYRIAD-EU case study in the Veneto Region
- Alberto FERNANDEZ-PEREZ: Long-term hazards variability in coastal areas: multi-scales, dependencies and exposure
- Steffen LOHREY: Inequality in exposure to extreme heat in an urbanized world
- Ponni MAYA: Integrative Analysis of Wave and Wind Climate Single Model Projections Using the CMIP6 Framework Under Shared Socioeconomic Pathways in Europe
- Ni LI: A new climate impact database using generative AI

- Lina M ERIKSSON: Crisis communication and trust: on the long-term individual effects of a disaster on public trust in societal institutions
- Samuel RUFAT: Experiencing more and learning less

Poster presentations:

- Joshua GREEN: A Comprehensive Review of Coastal Compound Flooding Literature
- Asif Uddin Bin NOOR: Improved Decision-Making with Cyclone Forecast Products: A Dynamic Approach
- Shaun WILLIAMS: Compounding Effects of Geo-Climatic Inundation Risks in the South Pacific Region: Towards Multihazard Decision Support Tools for Adaptive Resilience
- Alban DOKO: Modeling Sediment Dynamics in Seman River Basin: Implications for Water Resource Management in a Mediterranean Climate
- Paul VOIT: Flash Flood Hazard: A Counterfactual Analysis for Germany
- Alois TILLOY: Joint changes in flood and drought hazards in Europe from 1950 to 2020
- Tristian STOLTE: Indicators for urban vulnerability assessments: data availability and beyond
- Lina STEIN: Global biases in hydro-geomorphic hazard research emerge from the scientific literature
- Helge BORMANN: Model based assessment of climate change impact on inland flood risk in coastal areas caused by compounding storm tide and precipitation events
- Soheil MOHAMMADI: Enhancing recoverability of the urban system in a multi-risk environment: A multi-criteria decision-making approach for identifying the minimum urban system
- Doris VERTEGAAL COMPASS: towards climate and impacts attribution of complex extremes
- Carmen B. STEINMANN: Amplified agricultural impacts from increasingly sequential heat extremes
- Shuiqing YIN: Developing statistical downscaling methods to improve the simulation of compound drought-heatwave events
- Blanca Natalia CASTILLO BAUTISTA: Compound occurrence of heat waves and drought and associated impacts: a case study in Nice, France.
- Taís Maria NUNES CARVALHO: Language Models Uncover Natural Hazard Impacts
- Jana SILMANN: Current and future climatic drivers of low crop production years as treats to global food security

4.10 Artificial intelligence and machine learning for multi-risk assessment

This session, convened by Silvia Torresan (Euro-Mediterranean Center on Climate Change), Rene Orth (University of Freiburg), and Davide Ferrario (Euro-Mediterranean Center on Climate Change), highlighted diverse applications of AI in risk analysis, spanning hazard prediction, exposure and vulnerability assessment, and integrated multi-risk approaches. Key applications focused on leveraging AI methods like Convolutional Neural

Networks, Transformers, and ensemble models such as Random Forest and XGBoost for predicting hazards like floods, cyclones, heatwaves, and droughts. Multi-hazard susceptibility mapping was used to identify vulnerable areas globally, nationally (Germany, Sweden, Japan, Nigeria), and locally (e.g., Veneto coastal municipalities, Adige River basin). AI was also employed for downscaling income databases in Europe and creating global building characteristics databases, as well as for analyzing environmental impacts on water quality, ecosystems, and coastal municipalities under future climate scenarios. The session underscored the importance of explainability in AI models and discussed future directions including the role of Large Language Models and Generative AI in climate services, emphasising the potential of Deep Reinforcement Learning and Multi-Modal Generative ML for optimising adaptation strategies across multiple risks. The presentations that contributed to the session are listed below:

- Phillip HEINRICH: Automated Classification of Atmospheric Circulation Types for Compound Flood Risk Assessment: CMIP6 Model Analysis Utilising a Deep Learning Ensemble
- Jungching KAN: Seasonal advancing heatwave prediction using machine learning approach
- Ayodeji MAKINDE: Spatial and Temporal Dynamics of Drought and Flood Events in Nigeria: A Machine Learning Approach
- Jan SODOGE: Assessing Groundwater Conflicts in Germany and the Effects of Droughts Using Artificial Intelligence and text-as-data
- Mehdi MIKOU: Multi-hazard exposure of different income categories in Europe in a changing climate
- Timohty TIGGELOVEN: Exploring the World of Multi-Hazard Susceptibility Mapping With Deep Learning
- Maria Katherina DAL BARCO: A Machine Learning approach to support multi-risk assessment and climate adaptation planning in the Veneto coastal area
- Marcello SANO: A conceptual framework for an AI driven multi-hazard risk and resilience climate service
- Saman GHAFARIAN: Explainable and Responsible Artificial Intelligence for Disaster Risk Management
- Michele RONCO: Anticipating and Understanding Humanitarian Crisis with Explainable Artificial Intelligence

Poster presentations:

- Diep Ngoc NGUYEN: Water quality plays a pivotal role in shaping the ecosystem's health and directly/indirectly influencing water-use sectors.
- Seth BRYANT: Deep learning based super-resolution of hazard maps
- Kasra RAFIEZADEH SHAHI: Global Building Profiling: Unveiling Insights through Advanced Machine Learning
- Armin MOGHIMI: AI (Artificial Intelligence)-Driven Flood Extent Detection and Monitoring via RiverSnap, a Citizen Science Initiative
- Katharina HORN: Modelling Current and Future Forest Fire Susceptibility in North-East Germany

- Heloisa LABELLA FONSECA: Assessing multi-hazard hot and dry-related events through impact chains and machine learning in the Adige River Basin, Italy

4.11 Storylines and narratives for multi-hazard, multi-risk decision-making

The session, convened by Julia Crummy (British Geological Survey), Lara Smale (British Geological Survey), Melanie Duncan (British Geological Survey), and Dana Stuparu (Deltares), highlighted the use of narratives and storylines to explore complex and cascading risks, emphasising both direct and indirect impacts across different sectors and contexts such as humanitarian aid and wine production. Various hazards like droughts, volcanic eruptions, floods, and heat waves were examined through different frameworks and methodologies including narratives, elicitation, timelines, scenarios, and impact chains. Presentations drew from diverse locations including Mozambique, Austria, USA, Italy, Kenya, Peru, Niger, the Canary Islands, and France, underscoring the contextual nature of storyline development. Key themes included the intersectionality of physical and social sciences, emphasising the need for interdisciplinary approaches to address systemic risks in climate change storylines, integrating qualitative and quantitative data effectively, and the iterative nature of storyline development through stakeholder engagement. Below are the presentations that contributed to the session:

- Gabriele MESSORI: Socio-environmental storylines for multi-risk decision making
- Julia BEIER: Exploring social vulnerability through narratives: A mixed-methods approach to develop storylines of vulnerability for heat and flood related risk in Austria
- Gordon WOO: Downward counterfactual generation of Storylines
- Massimiliano PITTORE: Towards a storyline-based, ontologically structured approach for multi-risk assessment of urban areas
- Anne VAN LOON: Storylines of drought-flood events
- Martha VOGEL: Navigating climate risk in humanitarian action: The potential of storyline approaches
- Jasmina SCHMIDT: Disaster narratives in emergency services: Tools for crisis and disaster governance
- Henrique Moreno DUMONT GOULART: Storylines for (future) impact assessment: Hurricane Sandy's compound flood impacts on New York City
- Noemí PADRÓN FUMERO: Storylines approach to Multi-hazard Disaster Risk Management in Volcanic Islands: Lessons from the Canary Islands
- Justine PANEGOS: Retrospective narrative of climatic events in a wine cooperative system

Poster presentations:

- Luke HARRINGTON: Maximising the value of observations to understand future drought risk: evidence from Aotearoa New Zealand
- James CARRUTHERS: Storylines of future UK winter compound wind and rainfall extremes
- Cees VAN WESTEN: Multi-Risk Impact Chains: a new way of characterizing complex disaster events
- Vanessa BANKS: Multi-hazard risk storylines in the MYRIAD-EU project

- Mihai Ciprian MARGARINT: Different farm/farmers, different threats. Downscaled insights on the impacts of climate-related hazards in northeast Romania

4.12 Demonstration of tools and services

The session, convened by James Daniell (Risklayer) and Roxana Ciurean (British Geological Survey), spotlighted multi-hazard and multi-risk software tools in a hands-on science fair format, allowing attendees to engage with live demonstrations. Key themes included exploring interoperability, overcoming technological challenges, innovating risk visualisation, and learning from real-world success stories to enhance system resilience and adaptability. It highlighted several barriers to adopting new technology-based solutions for multi-risk assessment and management, including usability challenges, skills gaps, and issues of access and availability. Stakeholder engagement, understanding their interests, needs, and priorities, was emphasised as crucial for promoting tool use, exemplified by initiatives like the Disaster Risk Gateway. Addressing technological challenges through tutorials and early-stage demonstrations tailored to diverse stakeholders, especially non-technical users, can enhance engagement and gather valuable feedback. Customising development based on stakeholder needs, integrating tools like Digital Twins into planning processes, and maintaining a balance between profitability and disaster risk reduction objectives are key strategies for improving tool relevance and usability. The live demonstrations were held by:

- Scott WILLIAMS: Building an Integrated Decision Support System for Climate Change Adaptation: An Urban Digital Twin of Helsinki, Finland
- Luisa HOSSE: RiskScape: A multi-risk assessment software suite
- James DANIELL: Demonstrating Multi-Hazard Risk Assessment Tools through MYRIAD-EU: A Journey Through Software Interplay and Challenges
- Sarah RAUTENBACH: FloodAdapt - Empowering communities to make informed decisions on flood risk reduction strategies
- Marc HOMBERG VAN DEN: A Demonstration of an Integrated Multi-Hazard Analysis in Conflict Settings Platform in Myanmar
- Andreas SCHAEFER: A digital Bento box for natural disaster, climate and multi-risk data
- Lara SMALE: Disaster Risk Gateway: a crowdsourced catalogue of multi-hazard risk assessment and management frameworks, methods, models and tools

4.13 Nature-based Solutions for disaster risk reduction

This session, convened by Lea Appulo (Wetlands International European Association), Timothy Tiggeloven (Vrije Universiteit Amsterdam) and Paul Brotherton (Wetlands International European Association) highlighted research addressing several challenges surrounding Nature-Based Solutions (NBS), including understanding stakeholder beliefs and acceptance. NBS leverage natural processes like ecosystem restoration and protection to mitigate climate change impacts and reduce disaster risks, offering additional benefits such as health, recreation, and clean water. Despite their potential, gaps in knowledge hinder their full implementation. Dr. Sungju Han's research using Q-Methodology identified stakeholder narratives (idealists, reformists, sceptics), facilitating coalition building and NBS acceptance. Marco Cinelli's framework using Multiple Criteria Decision Analysis harmonised evaluation approaches for NBS performance. Silvia Torresan's poster illustrated applying new technologies to evaluate NBS in the Venice lagoon, integrating ecosystem services for risk reduction. The session underscored the

need for continued research on stakeholder attitudes and effective evaluation frameworks to enhance NBS implementation and resilience strategies.

- Sungju HAN: Unravelling stakeholder narratives on nature-based solutions for hydro-meteorological risk reduction
- Marco CINELLI: How can Multiple Criteria Decision Analysis support the evaluation of Nature-based Solutions?
- Md. Ehsanul HOQUE: Sustainable Land Management and Planning Reduced Disaster Risks for the Refugees
- Guillermo GARCIA ALVAREZ: Assessing the economic (co-) benefits of NbS

Poster presentation:

- Silvia TORRESAN: Evaluating the Potential of Nature-Based Solution for Disaster Risk Reduction and Climate Adaptation Pathways in Coastal Areas

4.14 Recent developments in multi-hazard early-warning systems

This session, convened by Robert Šakić Trogrić (International Institute for Applied Systems Analysis, IIASA), Marleen de Ruiter (Vrije Universiteit Amsterdam) and Marc van den Homberg (Red Cross 510), underscored several key challenges and opportunities in enhancing disaster preparedness and response, particularly in Small Island Developing States (SIDS). Challenges include the exclusion of SIDS from extensive early warning system (EWS) research efforts and the tendency within the research community to become overly focused on terminology rather than practical implementation. There is a clear need to expand EWS beyond natural hazards to incorporate human-induced and health-related risks. Embracing the First Mile approach advocated by UNDRR, which emphasizes local community engagement in disaster preparedness, emerged as a crucial opportunity for improving EWS effectiveness and relevance. Furthermore, achieving standardization across MH-EWS frameworks is essential to ensure consistency and interoperability among different systems globally. Overall, while progress is being made in developing MH-EWS, addressing these challenges and seizing opportunities will be critical in advancing resilience strategies, particularly for vulnerable regions like SIDS.

- Christopher IHINEGBU: Last- Mile Household preparedness for Future Disasters: An opportunity for integrating Disaster Justice into a new framework for multi-hazard early warning systems
- Fernando J. MENDEZ: An Efficient Early Warning System of Tropical Cyclone-Induced Impacts For Small Pacific Island Countries
- Maryam ROKHIDEH: Towards Achieving the Panacea of Effective Multi-Hazard Warning Systems for All
- Michele CALVELLO: Standard protocol for evaluating warning systems

4.15 Systemic risk-assessing, modeling, coping

This session, convened by Jana Sillmann (Universität Hamburg), Markus Reichstein (Max Planck Gesellschaft) and Pia-Johanna Schweizer (Research Institute for Sustainability Helmholtz Centre Potsdam), focused on how systemic risks can be captured quantitatively and qualitatively and how to integrate the data and approaches. Another guiding question was how we can base the models on empirical observations and what would be a good starting point for the cascading effects analysis. Together with modeling systemics, it is important to include distributive justice and make tools useful for policy makers and stakeholders. Below are the abstracts selected for this session:

- Nicholas CRADOCK-HENRY: Using systems thinking for managing complex, cascading and compounding risks: insights and experience from New Zealand
- Louis DELANNOY: The Global Production Ecosystem as a connector of global systemic crises
- Nkongho Ayuketang ARREYNDIP: Scenarios-based modeling of the economic impacts of weather-geopolitical coupled extreme events on the global food web: a case study of the Russian-Ukraine war and the 2022 summer heatwaves
- Lin MA: Socio-economic impacts of multi-hazards in Scandinavia: A case study of the 2018 heat-drought-fire event
- Liton CHAKRABORTY: Assessing distributive environmental injustices and socio-spatial heterogeneity to seismic risk in the built environment of Ottawa and Montreal
- Maurizio MAZZOLENI: Modelling the influence of risk perception on the impacts of droughts and floods
- Jasper VERSCHUUR: Systemic risks to port and countries due to maritime chokepoint disruptions
- Yue LI: Enhancing Systemic Resilience of Interdependent UK Infrastructure: A System-of-Systems Approach
- James DANIELL: Analyzing Tourism, Disaster Risk and Climate Change Data at the Sub-national Scale
- Nikita STRELKOVSKII: Assessing transboundary and intersectoral spillovers of multiple natural hazards in the Danube Region using a large-scale macroeconomic agent-based model
- Alexandre PEREIRA SANTOS: Integrating Broad and Deep Research: A Multi-Stressors Framework for Translating Across Scales and Disciplines

Poster presentation:

- Heidi KREIBICH: How can socio-hydrological data from paired hydrological extreme events enhance our knowledge of human-water systems?
- Shih-Yao LEE: Investigating multi-perspective interactions on groundwater extraction and evaluating its related risk in Taiwan by Bayesian network modeling
- Nivedita SAIRAM: Can Open Social Datasets Effectively Calibrate Socio-Hydrological Flood Risk Models?

4.16 Closing plenary session

After a brief summary of all the sessions, the closing plenary session featured an engaging game show, adding a dynamic, interactive element that underscored the collaborative spirit of the conference. Key themes and findings were highlighted in a panel discussion, with speakers such as Roxana Ciurean, Wiebke Jäger, Juha-Pekka Jäpölä, Kai Kornhuber, and Martha Vogel, and moderators Colin Raymond and Timothy Tiggeloven reflecting on the challenges and opportunities discussed throughout the sessions.

Their discussions focused on three critical questions, inspiring continued action and innovation in building resilience against future challenges. The first question addressed changes over the past five years and priorities for the next five years. Significant progress has been made in integrating diverse communities through work on compound events and standardised terminologies and leveraging AI to analyse large datasets and uncover interrelationships, as highlighted by Kai Kornhuber. Moving forward, Wiebke Jäger

emphasised the necessity of producing actionable information for decision-makers and embracing the complexity of multiple risks, particularly in socio-economic contexts. Roxana Ciurean underscored the importance of policies that bolster response, recovery, and preparedness efforts by governments, while Juha-Pekka Jäpölä pointed out the need for thorough policy and authority analysis to ensure



existing governmental activities are integrated and impactful. Simplifying complex data to make it actionable, as Kai suggested, remains a challenging but essential task. Additionally, Wiebke Jäger and Martha Vogel highlighted emerging priorities such as understanding new hazard combinations, including AI risks, and addressing hazards from both climate and humanitarian perspectives. Engaging stakeholders in co-creation processes and securing necessary expertise and funding are essential for advancing these priorities in the next five years.

The second question focused on the most effective strategies for sharing knowledge among the scientific field. Effective strategies include tailoring communication to the target audience, as Martha Vogel suggested, such as providing key messages for time-constrained politicians. Establishing a common understanding of problems by involving local knowledge and diverse stakeholders is crucial, as Roxana Ciurean emphasised, highlighting the importance of motivations, needs, and drivers. Juha-Pekka Jäpölä highlighted the strategy of repetition and targeted capacity building, while noting the structured approach of EU policy for incorporating research input. Success stories from the conference included fostering long-lasting relationships through time spent together and listening, as Wiebke Jäger reported, and using storytelling to engage stakeholders, as Martha Vogel advocated. Roxana Ciurean shared an example of a user-owned platform that underscored the importance of proximity to the local scale in knowledge sharing.

The third question addressed how to communicate risks to a non-expert audience. Strategies for improving communication include making messages relevant through localisation, contextualisation, and the use of visualisation tools, along with simplified language, as Roxana Ciurean suggested. Kai Kornhuber noted the challenge of conveying uncertainties and coping mechanisms, emphasising the need for more accurate models and clearer action plans. Viewing non-experts as equal partners and experts in their fields is crucial. Juha-Pekka Jäpölä and Roxana Ciurean stressed the value of directly asking the audience for feedback on reports and communication channels, recognising that different methods work for different people. Wiebke Jäger added that practising explanations with individuals from the target audience and engaging with media outlets outside one's usual comfort zone can enhance communication effectiveness.

The closing remarks, delivered by Philip Ward, provided a unified vision for moving forward, stressing the significance of integrated strategies and community engagement in shaping effective disaster preparedness and response frameworks.



5 Programme committee

Philip Ward

Prof. Philip Ward is Full Professor of Global Water Risk Dynamics at the Institute for Environmental Studies (IVM) at Vrije Universiteit Amsterdam, and Senior Advisor Disaster Risk Management at Deltares. He is currently the Principal Investigator of the MYRIAD-EU project: in this role he leads a consortium of 20 institutes developing state-of-the-art methods for assessing and reducing multi-hazard risk. He is also the science lead of the ESA-funded project EO4MULTIHA, in which the role of Earth Observations in reducing disaster risk is being investigated.

Annegret Thielen

Annegret Thielen is Full Professor of Geography and Disaster Risk Research at the Institute of Environmental Science and Geography at the University of Potsdam, Germany. With a background in Environmental Sciences, she has researched on water-related risks over the past 25 years addressing a broad range of topics in disaster risk management and climate change adaptation, e.g., analysis and modelling of flood losses, multi-risk studies, evaluation of flood risk mitigation measures and adaptive behaviour. Since 2019, she has been the speaker of NatRiskChange.

Jana Sillmann

Jana Sillmann is Full Professor for Climate Extremes at the University of Hamburg (Germany) and executive director of the Research Unit for Sustainability and Climate Risk. Her work focuses on relating physical aspects of weather and climate extremes to socio-economic impacts and questions related to risk assessment and decision-making. She is co-chair of the Risk KAN and represents the Risk KAN in the Future Earth General Assembly. She is also Lead Author of Chapter 12 “Climate change information for regional impact and for risk assessment” in the 6th Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) Working Group 1.

Timothy Tiggeloven

Timothy Tiggeloven is a postdoctoral researcher at the Institute for Environmental Studies (IVM) at Vrije Universiteit Amsterdam and is part of the management and coordination team of the MYRIAD-EU project. His ongoing research focuses on using novel methods, such as machine learning techniques, to detect multi-hazard risks and better understand the interaction of hazards and social vulnerability.

Marleen de Ruiter

Marleen de Ruiter is an Assistant Professor at the Institute for Environmental Studies (IVM) at Vrije Universiteit Amsterdam. Her research focuses on multi- and consecutive disasters, improving modelling capabilities and understanding of multi-hazard risk and assessing the (potential adverse) impacts of Disaster Risk Reduction measures across different hazards. She manages the MYRIAD-EU project and she co-leads the RiskKAN working group on early warning systems for systemic risk. Her PhD research focused on the temporal dynamics of disaster vulnerability. Before that, she obtained her MSc degree

in Environmental and Resource Management from the University of British Columbia (Canada) where she looked at disaster vulnerability of coastal communities and their post-disaster recovery.

Trevor Girard

Dr. Trevor Girard is a disaster resilience expert with a comprehensive background in architecture, project management, sustainability, and disaster risk reduction. Trevor is Chief Scientific Officer at Risklayer GmbH, where he develops and implements disaster resilience frameworks, standards and tools for enhancing urban resilience to natural hazards and climate change impacts. He is also a post-doctoral researcher at the Karlsruhe Institute of Technology's Center for Disaster Management and Risk Reduction Technology. Trevor holds a Doctorate from the Karlsruhe Institute of Technology, Germany, where his research focused on communication of disaster warnings and humanitarian information. He has a MSc in Disaster Management and Sustainable Development from Northumbria University, UK, and a Bachelor of Architectural Science from Ryerson University, Canada.

Karen Lebek

Karen Lebek is a postdoctoral researcher at the Institute of Environmental Science and Geography at the University of Potsdam, Germany. She has a background in environmental sciences and geography and has been doing research on water insecurity and rapid disaster analysis. Since 2022, she is scientific coordinator of the DFG-funded research training group NatRiskChange and also engages in science communication.

Colin Raymond

Colin Raymond is an Assistant Research Scientist at the University of California, Los Angeles, with a secondary affiliation at the NASA Jet Propulsion Laboratory. His work centers on better understanding how weather systems interact with geographical features to produce regional weather extremes, with a particular focus on heat stress, compound events, and related potentially multiplicative societal risks. He co-leads the Risk KAN Compound Events working group and engages in regular communication and media activities.

Markus Reichstein

Markus Reichstein is Director of the Biogeochemical Integration Department at the Max-Planck-Institute for Biogeochemistry and Professor for Global Geoecology at the University of Jena. Markus studied Ecology with Botany, Chemistry and Computer Science as minors and obtained his PhD in Plant Ecology at the University of Bayreuth, Germany. He has been serving as lead author of the IPCC special report on Climate Extremes (SREX), as member of the German Committee Future Earth on Sustainability Research, and the Thuringian Panel on Climate and as Chair of the Risk-KAN: Climate extremes and emergent risks (www.risk-kan.org).



6 Organisers



MYRIAD-EU is a H2020 project that aims to catalyse a paradigm shift in how risks are currently assessed and managed. Instead of addressing risks and hazards one by one, leading scientists from across Europe have co-developed the first harmonised framework for multi-hazard, multi-sector, and systemic risk management. Through its systemic and forward-looking approach, the project offers new ways to assess trade-offs and synergies between economic sectors, hazards and their scales. The MYRIAD-EU project has received funding from the European Union's Horizon 2020 research and innovation programme call H2020-LC-CLA-2018-2019-2020 under grant agreement number 101003276.



The Knowledge-Action Network (KAN) on Emergent Risks and Extreme Events serves as a comprehensive inter- and transdisciplinary hub for scientists, experts, and communities focusing on multi-hazard risks, disaster risk reduction, and governance of extreme events. As a Future Earth Global Research Network (GRN) and a joint initiative of the Future Earth, IRDR, WCRP, and WWRP programs, the Risk KAN actively promotes the exchange of information, knowledge, and data.



“Natural hazards and risks in a changing world (NatRiskChange)” aims to pursue the development of methods to improve hazard and risk analysis and quantification based on the transient, non-stationary nature of hazards and risks in response to changing natural and anthropogenically altered components of the Earth system. Key scientific aims are the development, testing, and pilot application of studies on identification, quantification (mechanisms) and prediction of transient natural hazards and associated risks. NatRiskChange receives funding from the Deutsche Forschungsgemeinschaft (DFG, Contract: GRK 2043/2)

7 Sponsors

Climate, Climatic Change, and Society is a Cluster of Excellence at the University of Hamburg. CLICCS has established a long-term program spanning the range from basic research on climate dynamics and climate-related social dynamics to the transdisciplinary exploration of human–environment interactions.

The European Space Agency is Europe’s gateway to space. Its mission is to shape the development of Europe’s space capability and ensure that investment in space continues to deliver benefits to the citizens of Europe and the world.

The World Climate Research Programme coordinates research around some of the most pressing scientific questions in relation to the compounded nature of the climate system, to find answers together with all nations, looking at it from a multitude of disciplines.

The European Commission’s Civil Protection and Humanitarian Aid Operations department (DG ECHO).

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The **University of Potsdam (UP)** was founded in 1991 and has established itself as a top-thirty Young University in the world and the number one Young University in Germany (Times Higher Education ranking of universities less than 50 years old). Key elements of the university’s research-development strategy are four research focus areas, among them Earth and Environmental Systems (EES). The research focus area EES joins forces for a better understanding of hydrological phenomena and extremes and provides improved knowledge transfer to society.

