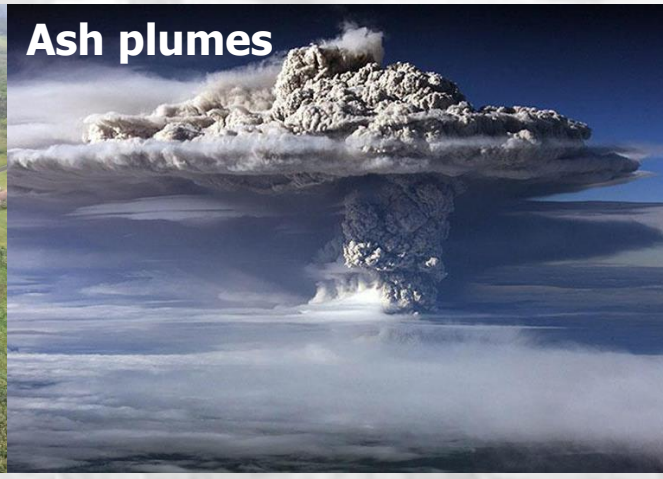
1st IAVCEI-GVM Workshop

From Volcanic Hazard to Risk Assessment

Geneva, 27-28 June 2018

Motivation

➡Volcanic unrest, volcanic eruptions and their aftermath are associated with multiple primary and secondary hazards, which pose short- to long-term threats to people and property



⬇ Fuego 2018 ⬇ Kilauea 2018 ⬇ Cordon Caulle 2011

Motivation

➡ Volcanic unrest, volcanic eruptions and their aftermath are associated with multiple primary and secondary hazards, which pose short- to long-term threats to people and property

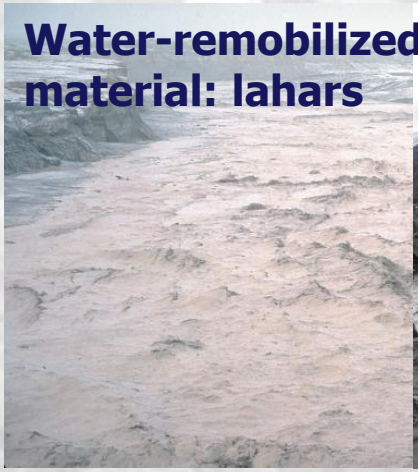
Landslides/Tsunamis

Stromboli 2002

Wind-remobilized ash: ash storms

Cordon Caulle 2011

Water-remobilized pyroclastic material: lahars



Pinatubo 1991

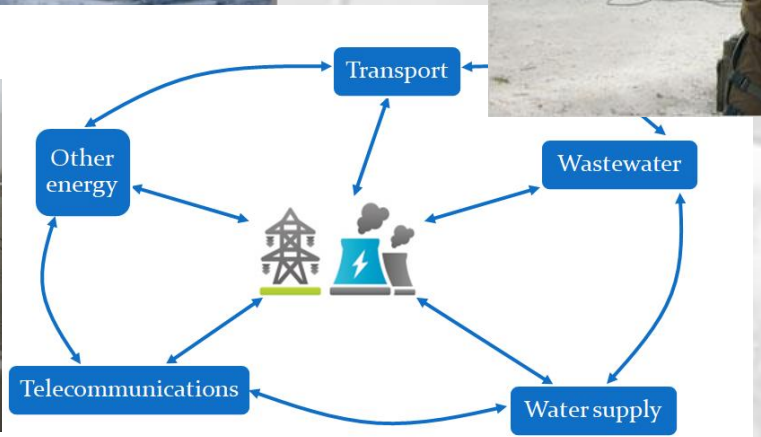
Cordon Caulle 2011

Motivation

➡ Policies of risk reduction should be developed based on:

→ comprehensive analysis of volcanic risk encompassing the full spectrum of volcanic primary hazards (e.g. pyroclastic density currents, lava flows, tephra accumulation and dispersal, gas emissions)
and secondary / interacting hazards (e.g. lahars triggered by intense rainfall)

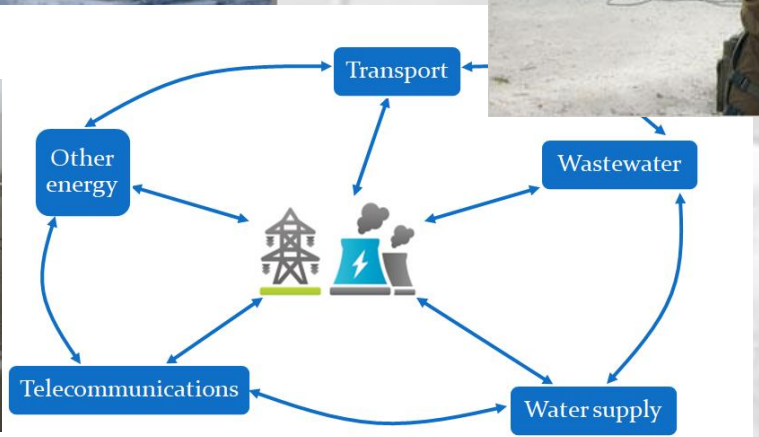
→ associated vulnerabilities (physical, systemic, social, economic, institutional)



Motivation

➡ no comprehensive methods for vulnerability and risk analysis exist

some models identify individual interactions between volcanic hazard and vulnerability, but the absence of multiple dimensions of vulnerability in risk analysis limits our understanding of the real volcanic risk faced by society and the development of efficient and timely mitigation measures



Why 1st IAVCEI – GVM workshop on volcanic risk?

➡ harmonize the currently fragmented volcanic risk community in order to optimize our risk reduction effort

➡ initiate a series of regional / thematic workshops to address specific needs

IAVCEI is the **International Association of Volcanology and Chemistry of the Earth's Interior** (part of the International Union of Geodesy and Geophysics, IUGG). It is the primary international focus for research in volcanology and for efforts to mitigate volcanic disasters.

- Committee on Cities and Volcanoes (Leader: Carolyn Driedger; Executive: Thomas Wilson, Graham Leonard, Natalia Deligne, Gustavo Villarosa)

aims to provide a linkage between the volcanology community and emergency managers, to serve as a conduit for exchange of ideas and experience between "volcano cities", and promote multi-disciplinary applied research, involving the collaboration of physical and social scientists and city officials

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front line between academic research and governmental organizations. The focus is on understanding, quantifying and communicating the hazards, the extent and likelihood of their occurrence and assessing their impacts and the societal vulnerabilities they create from near to far-field

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GVM is the **Global Volcano Model**: a network of scientists whose goal is to inspire and support a global effort to build resilience and reduce volcanic disaster risk.

It was initiated by the University of Bristol and BGS with NERC funding. It is voluntary, collaborative, a successful 'brand'. BGS is proposing to support a GVM secretariat from 2018.

- Contact: S. Loughlin (BGS)

Why 1st IAVCEI – GVM workshop on volcanic risk?

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Main goal of 1st IAVCEI – GVM workshop

➡ gather experts in the field of volcanic hazard, exposure, vulnerability and risk assessment in order to evaluate the state of the art of risk assessment in volcanology, investigate current gaps and identify research priorities

Specific objectives

- identify the benefits of risk assessment/s for decision makers, current gaps and potential improvements (what has worked and what can be done better?) → *complex process that will be explored across multiple workshops with multiple decisions makers*

complementary assessments might be needed as different products might suit different users, e.g. qualitative, quantitative

individual in a community, private sector, NGOs, local or national authorities …

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Specific objectives

- identify the benefits of risk assessment/s for decision makers, current gaps and potential improvements (what has worked and what can be done better?)
- identify key vulnerability aspects that need to be assessed for a comprehensive and efficient risk assessments
- identify the key vulnerability aspects that need to be considered in a multi-hazard context
- identify the optimum hazard and vulnerability products necessary for risk assessments at different scales

Main product

- Consensual document

Organizing committee

Costanza Bonadonna, Dpt of Earth Sciences, University of Geneva, Switzerland

Corine Frischknecht, Dpt of Earth Sciences, University of Geneva, Switzerland

Susan Loughlin, British Geological Survey, UK

Scira Menoni, Dpt of architecture and urban design, Politecnico di Milano, Italy

Chris E. Gregg, Dpt of Geosciences, East Tennessee State University, USA

Thomas Wilson, School of Geological Sciences, University of Canterbury, New Zealand

Susanna Jenkins, Earth Observatory of Singapore, Singapore

Sébastien Biass, Earth Observatory of Singapore, Singapore

Shinji Takarada, Geology Survey of Japan, Japan

Eliza Calder, School of Geosciences, University of Edinburgh, UK

Program

27 June, Morning

8:00 – 8:30	**REGISTRATION**	
8:30 – 8:45	Welcome and Workshop Opening (Costanza Bonadonna)	
	THEME 1: Volcanic risk assessment: current perspectives	
8:45 – 10:30	Talks: ➢ Sue Loughlin (BGS, GVM) "Needs for volcanic risk assessment worldwide" ➢ Pascal Peduzzi (GRID-Geneva) "The GAR approach to risk assessment" ➢ Sahar Safaie (Canada, Sage Risk Management) "Relevance of Understanding Volcanic Risk: From Sendai Framework Implementation to Planning My Life In Guatemala" ➢ Guðrún Jóhannesdóttir (CP, Iceland) "From risk assessments to mitigation measures for volcanic eruptions" ➢ Domenico Mangione (CP, Italy) "Risk assessment from a civil protection perspective"	Moderator: S. Takarada Rapporteurs: A. Bear-Crozier; P. Jarvis (UNIGE)
10:30 – 11:00	Coffee Break - Posters	
11:00 – 12:30	Breakout sessions	
12:30 – 13:00	Plenary	
13:00 – 14:00	Lunch	

Program

27 June, Afternoon

	THEME 2: How to analyse vulnerability in a volcanic context – Part I	
14:00 – 15:45	*Talks:* ➢ Russell Blong (Macquarie University, AU) "Analysing vulnerability" ➢ Giulio Zuccaro (Univ. of Naples Federico II) "Physical vulnerability for quantitative risk assessments" ➢ Tom Wilson (Univ. of Canterbury, NZ) "What's the Consequence? Using field and laboratory volcanic impact assessment approaches to inform volcanic vulnerability assessment" ➢ Chris Gregg (East Tennessee Univ., USA) "Assessment of social vulnerability" **SKYPE** ➢ Luis Martins (GEM) "Assessing the impact from earthquakes and volcanoes: what is different and what is not"	*Moderator: C. Magill* *Rapporteurs: K. Wallace; A. Fries (UNIGE)*
15:45 – 16:15	Coffee Break - Posters	
16:15 – 17:45	Breakout sessions	
17:45 – 18:30	Plenary, Poster presentation	
20:00	*Workshop Dinner – Café Papon (Old Town)*	

Program

28 June, Morning

	THEME 2: How to analyse vulnerability in a volcanic context – Part II	
8:30 – 10:00	*Talks:* ➢ Scira Menoni (Politecnico di Milano, Italy) "Aspects and concepts of systemic vulnerability applied to volcanic risk assessment: learning lessons from real events and improving modelling capacity" ➢ Giulia Pesaro (Politecnico di Milano, Italy) "Economic vulnerability in disasters: lessons learnt from the field" ➢ Susanna Jenkins (EOS, Singapore) "Case study vulnerability assessments across volcanic hazards" ➢ Eliza Calder (University of Edinburgh) "The 3 June 2018 eruption of Fuego volcano, Guatemala: hazard, vulnerability and risk in a dynamic environment"	*Moderator: F. Viveiros* *Rapporteurs: J. Phillips; A. Fries (UNIGE)*
10:00 – 10:30	Coffee Break - Posters	
10:30 – 12:00	Breakout sessions	
12:00 – 12:30	Plenary, Poster presentation	
12:30 – 13:30	*Lunch*	

Program

28 June, Afternoon

	THEME 3: How to combine hazard and vulnerability in a volcanic context	
13:30 – 15:00	*Talks:* ➢ Cees Van Westen (ITC, Netherlands) "Changing multi-hazard risk assessment after major disasters" ➢ Jenni Barclay (Univ. of East Anglia, UK) "The Ultimate Volcanic Risk Equation: Myth or Reality? Risk in practice in the STREVA study regions" ➢ Sebastien Biass (EOS, Singapore) "Scenarios in volcanology: causes and implications of deterministic and probabilistic choices" ➢ Adriana Galderisi (Univ. of Campania, Italy) "Scenario-based approach to understand the multi-temporal and multi-scale consequences of volcanic eruptions"	*Moderator: M. Kervyn* *Rapporteurs: J. Crummy ; P. Jarvis (UNIGE)*
15:00 – 15:30	Coffee Break - Posters	
15:30 – 17:00	Breakout sessions	
17:00 – 17:30	Plenary	
17:30 – 18:00	Future workshops / Workshop Closing	

Breakout sessions

- More infos provided after coffee breaks (come back to main room!)

Posters

- 2 min presentation at the end of plenary Day 1 and 2 + coffee breaks

Consensual document

- …based on results of plenary and breakout sessions + replies to pre-workshop questions + feedback post workshop
- Workshop infos (participant list, program, presentations (?)) and workshop product (consensual document) will be uploaded on workshop website: http://www.unige.ch/sciences/terre/CERG-C/iavcei-gvm-workshop-2018/

SCIENCE FOR DISASTER RISK MANAGEMENT, 2017 EXECUTIVE SUMMARY

(Joint Research Centre – JRC: European Commission's science and knowledge service)

The Disaster Risk Management Knowledge Centre has produced this flagship science report as a contribution to the Science and Technology Roadmap of the Sendai Framework for Disaster Risk Reduction. This report is the result of the multi-sectorial and multi-disciplinary networking process and represents the combined effort of more than two hundred experts.

- Current status of disaster risk management and policy frameworks
- Understanding disaster risk: risk assessment methodologies and examples
- Understanding disaster risk: hazard related risk issues (Geophysical, Hydrological, Meteorological, Technological risk)
- Communicating disaster risk
- Managing disaster risk
- Future challenges of disaster risk management