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Disaster risk and resilience

Professor Richard Haigh

CENEAST

Tempus

EACEA Education, Audiovisual & Culture Executive Agency

www.disaster-resilience.salford.ac.uk

Centre for Disaster Resilience
School of the Built Environment
University of Salford
Salford
Greater Manchester
M5 4WT, UK

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Disaster Resilience

Part 1: Professor Richard Haigh

- Disasters and disaster risk
- Concept of resilience

Part 2: Professor Dilanthi Amaratunga

- Resilience in the built environment

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What is a disaster?

"A situation or event, which overwhelms local capacity, necessitating a request to national or international level for external assistance; an unforeseen and often sudden event that causes great damage, destruction and human suffering"

Source: The Centre for Research on the Epidemiology of Disasters (CRED), which maintains the International Disasters Database (EM-DAT)

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‘Taking the naturalness out of natural disasters’

“nature makes volcanic eruptions, earthquakes, landslides, floods and windstorms, but humans are responsible for the deaths”

O’Keefe, P., Westgate, K., Wisner, B. (1976)

Piton de la Fournaise
La Reunion Island, 2004

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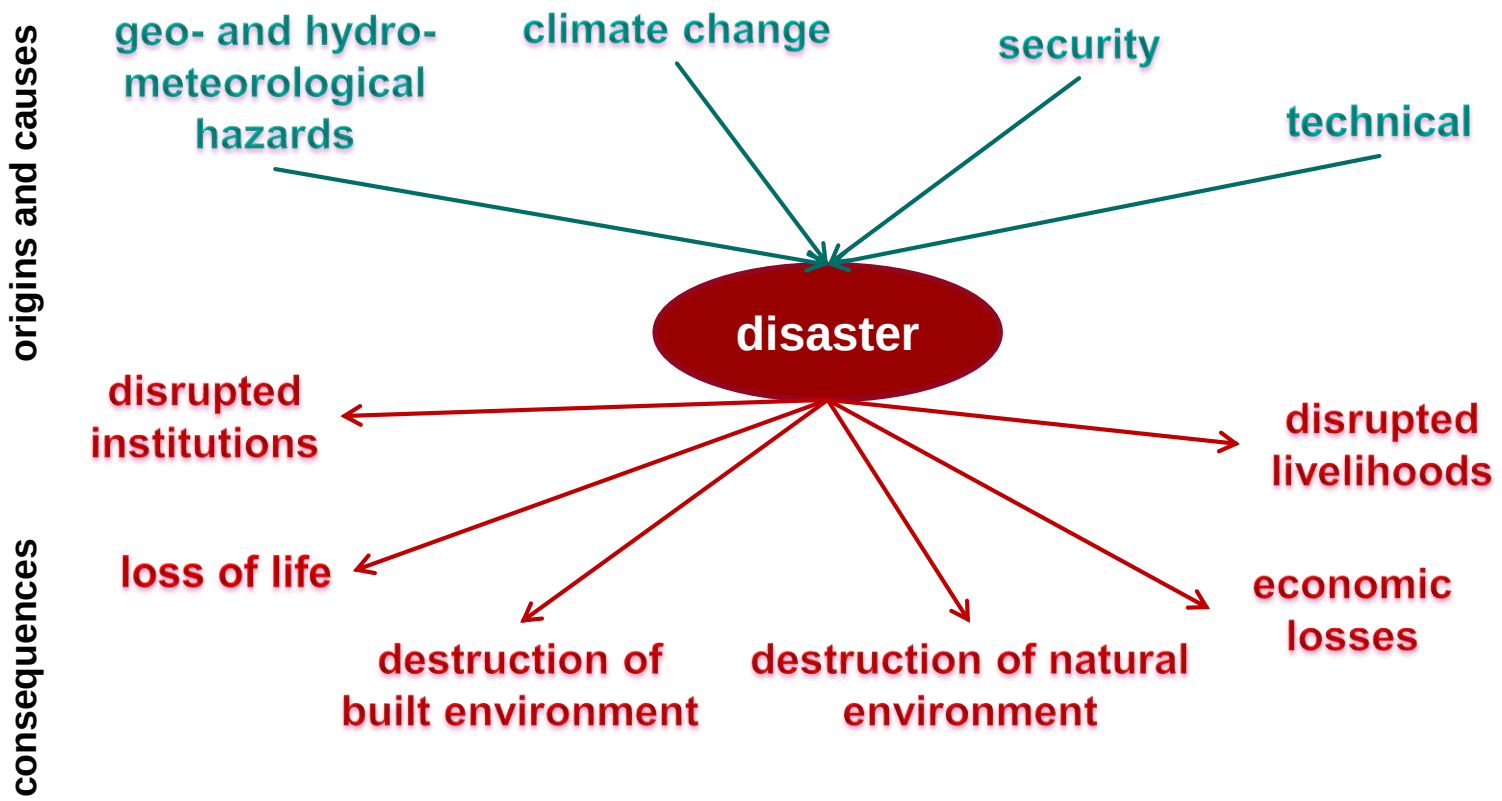
Origins and impact



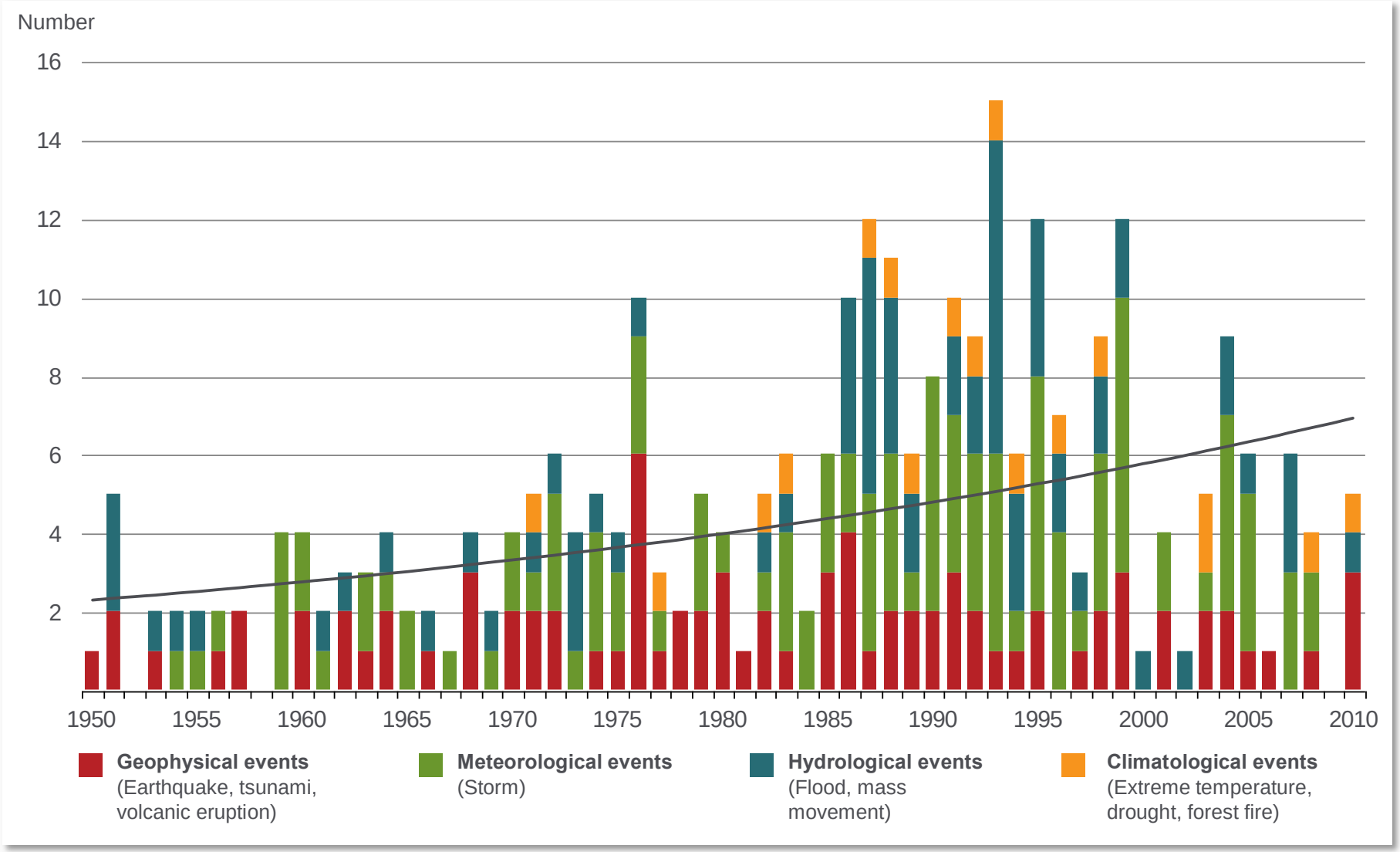
need to proactively consider disaster risk and increase the resilience of all communities as a part of the sustainable development agenda

NatCatSERVICE

Great natural catastrophes worldwide 1950 – 2010

Number of events with trend

Munich RE

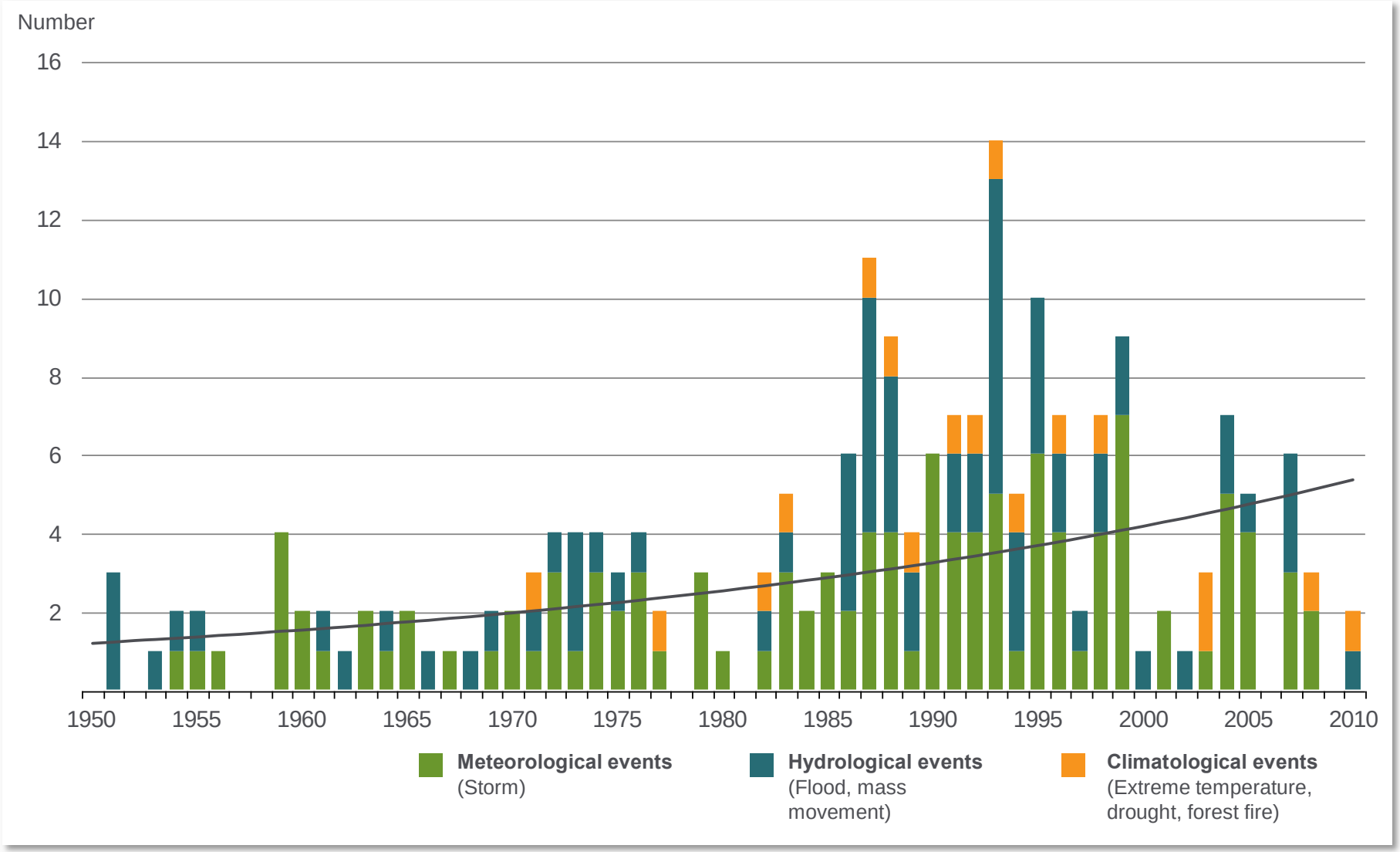


NatCatSERVICE

Great weather catastrophes worldwide 1950 – 2010

Number of events with trend

Munich RE



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Risks and hazards

Risk =

Hazard
(frequency and
severity)

x

Vulnerability
(exposure and
capacity)

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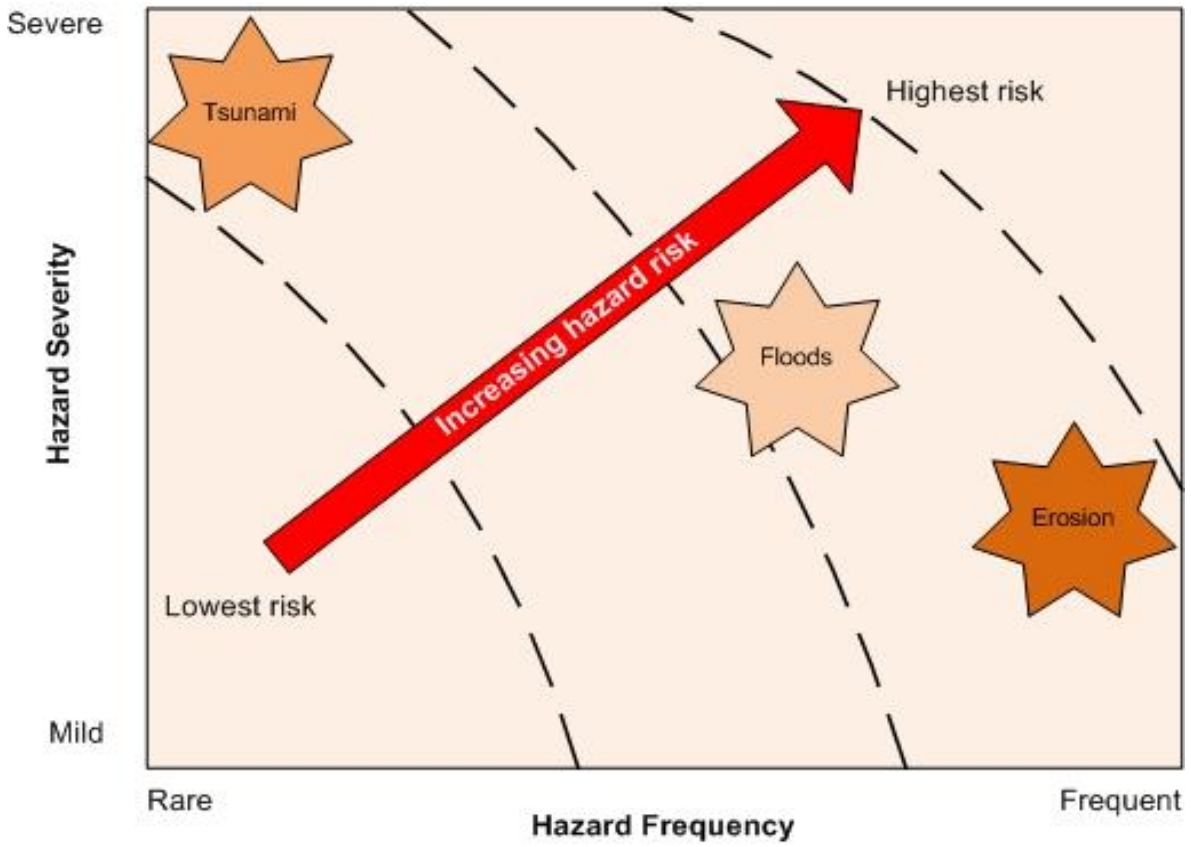
Risks and hazards



Risks from coastal hazards as a function of hazard frequency and severity

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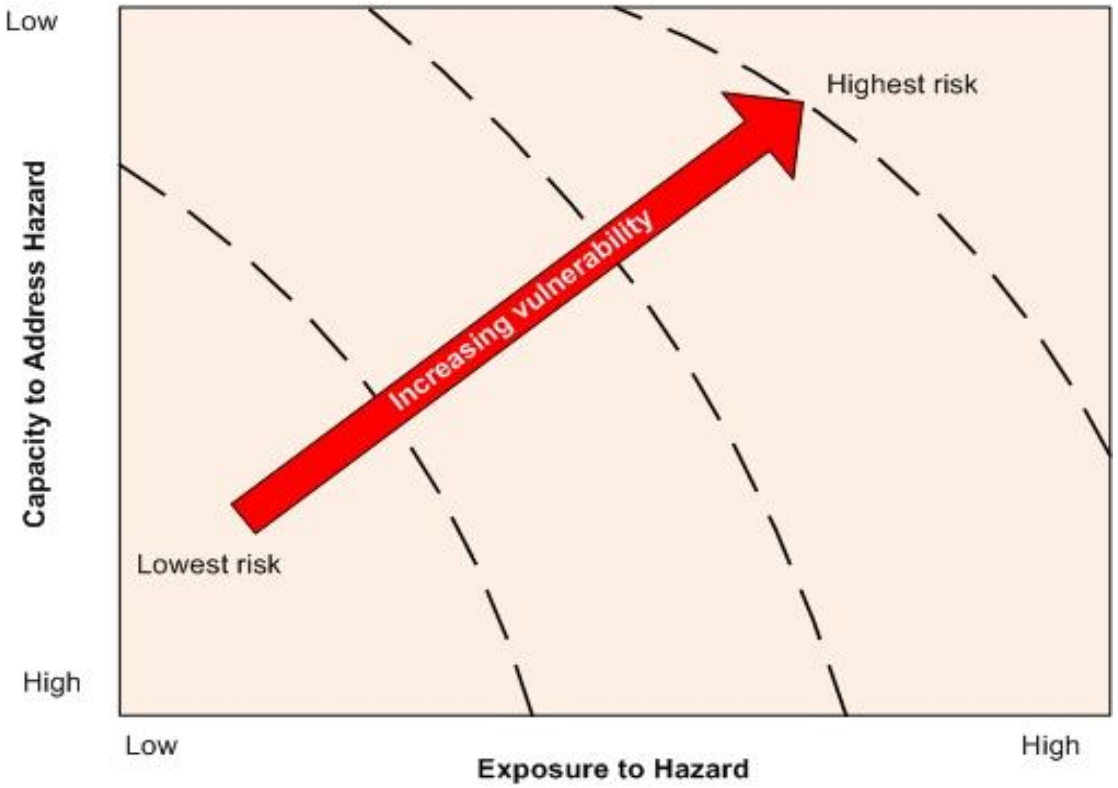
Risks and hazards



Community vulnerability as a function of the degree of exposure and the capacity to address hazard risks

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Risks and hazards

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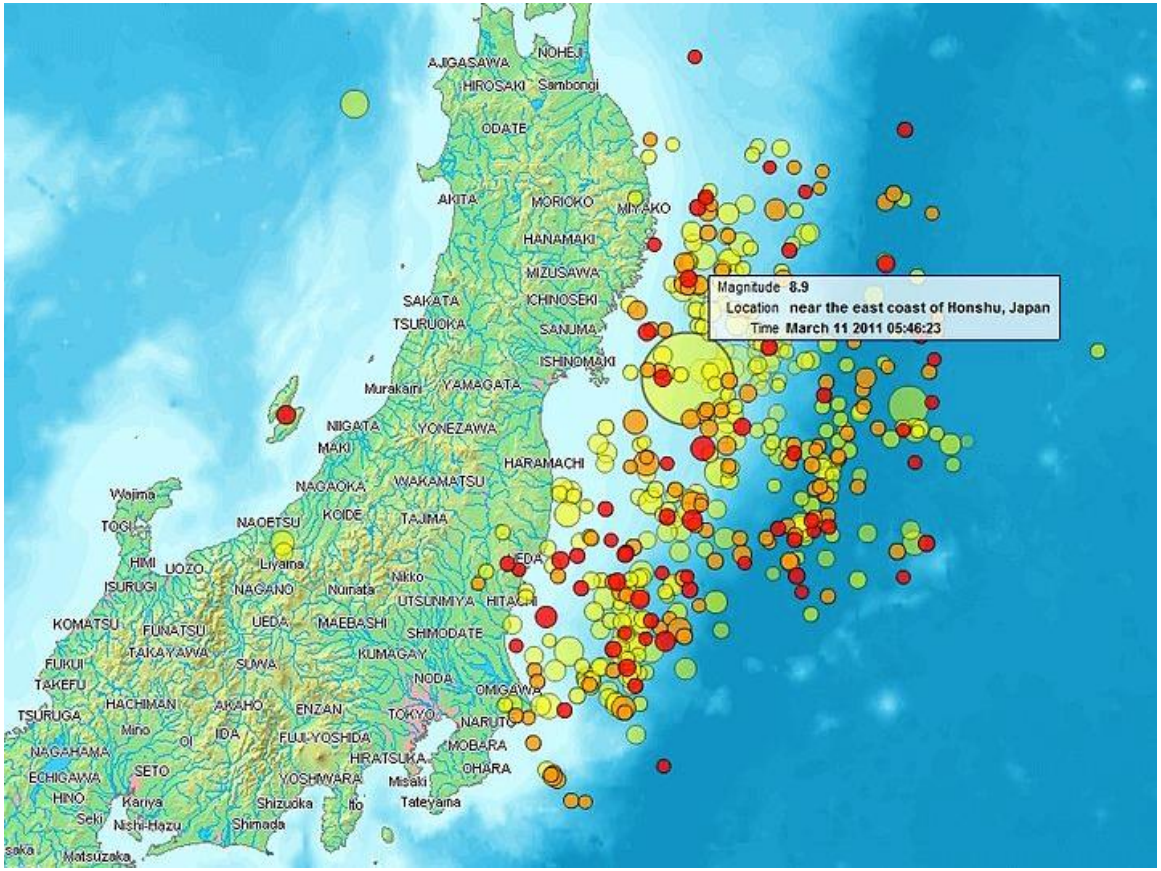

2011 Tōhoku earthquake

The 9.0 magnitude (MW) undersea megathrust earthquake occurred on 11 March 2011 at 14:46 JST (05:46 UTC) in the north-western Pacific Ocean at a relatively shallow depth of 32 km (19.9 mi),[35] with its epicenter approximately 72 km (45 mi) east of the Oshika Peninsula of Tōhoku, Japan

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2011 Tōhoku earthquake

Flooding around Sendai Airport

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2011 Tōhoku earthquake

The Fukushima I Nuclear Power Plant after the 2011 Tōhoku earthquake and tsunami. Reactor 1 to 4 from left to right.

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2011 Tōhoku earthquake

Dam failure at Fujinuma

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2011 Tōhoku earthquake

Landslide blocked roads