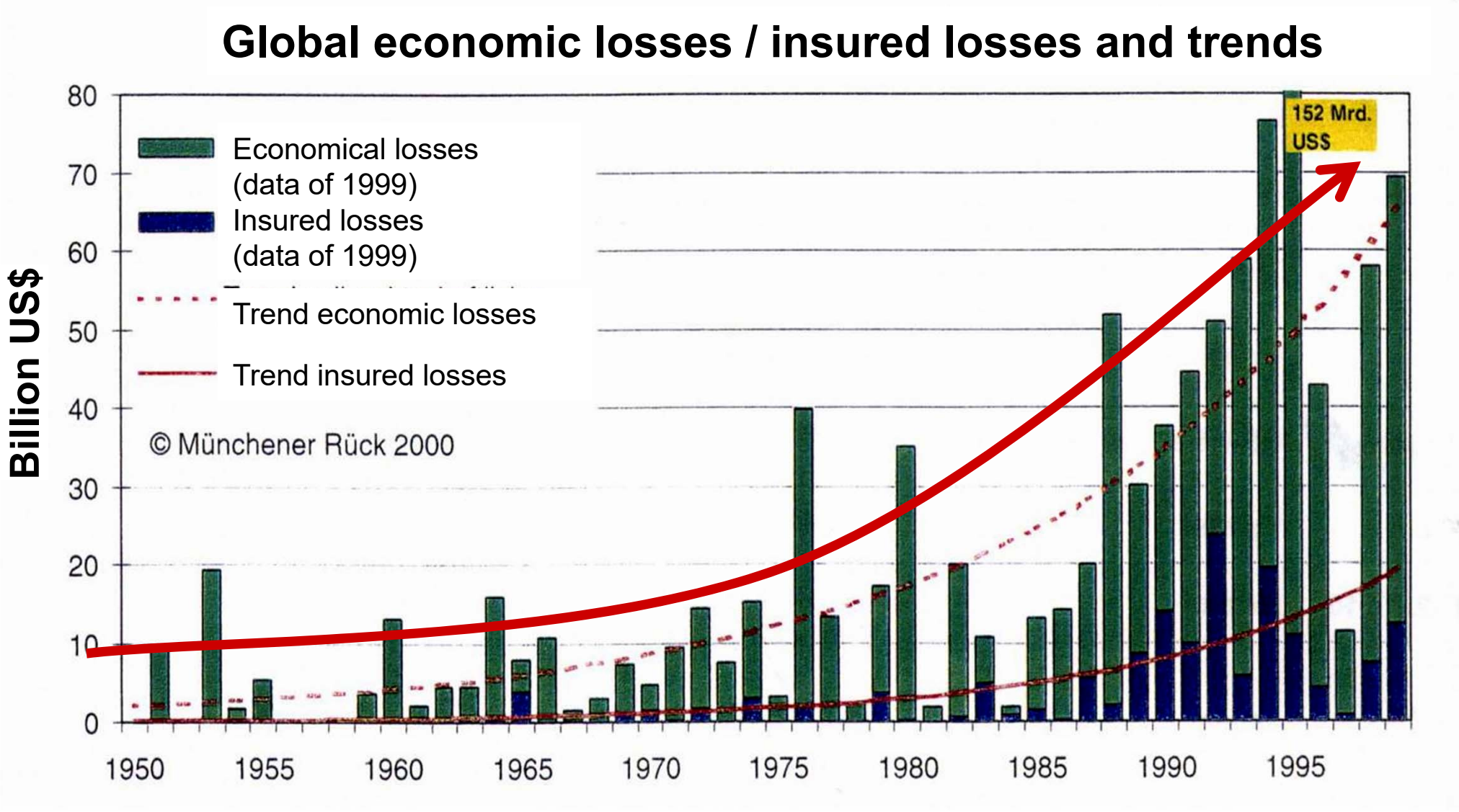
Teaching and research at the

Institute of Mountain Risk Engineering

at the University of Natural Resources and Life Sciences in Vienna, Austria (BOKU)

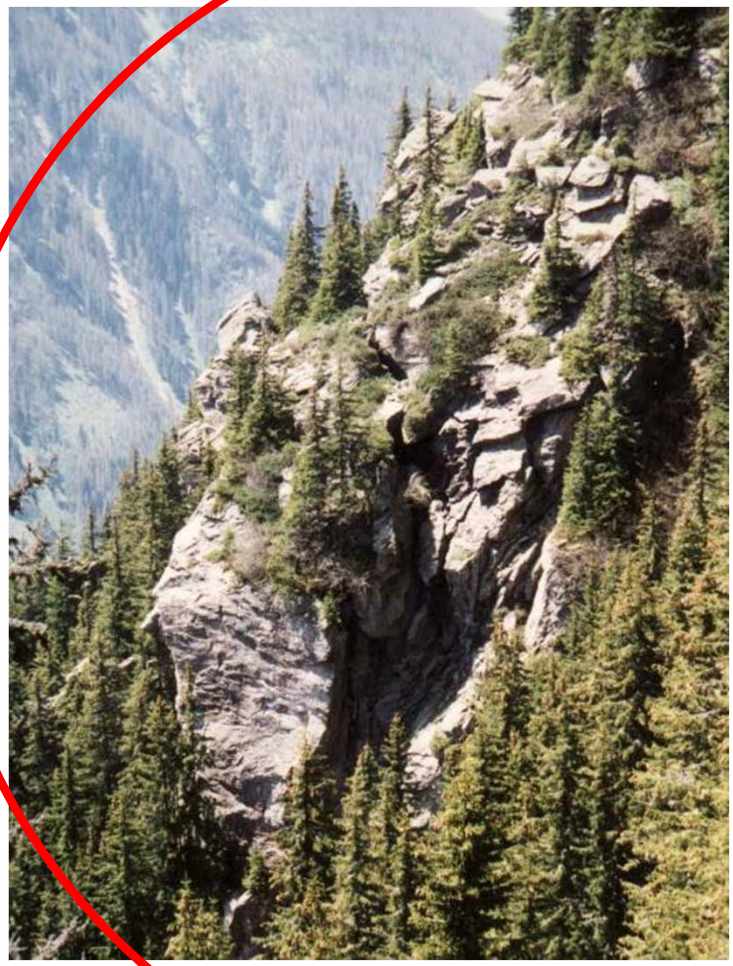
University of Natural Resources and Life Sciences
Department of Structural Engineering and Natural Hazards

Damage due to natural disasters



Hazard areas (nature)

Living space (human)



risks

chances

Which hazards?

- Floods, bedload transport

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Which hazards?

- Landslides, debris flows

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Which hazards?

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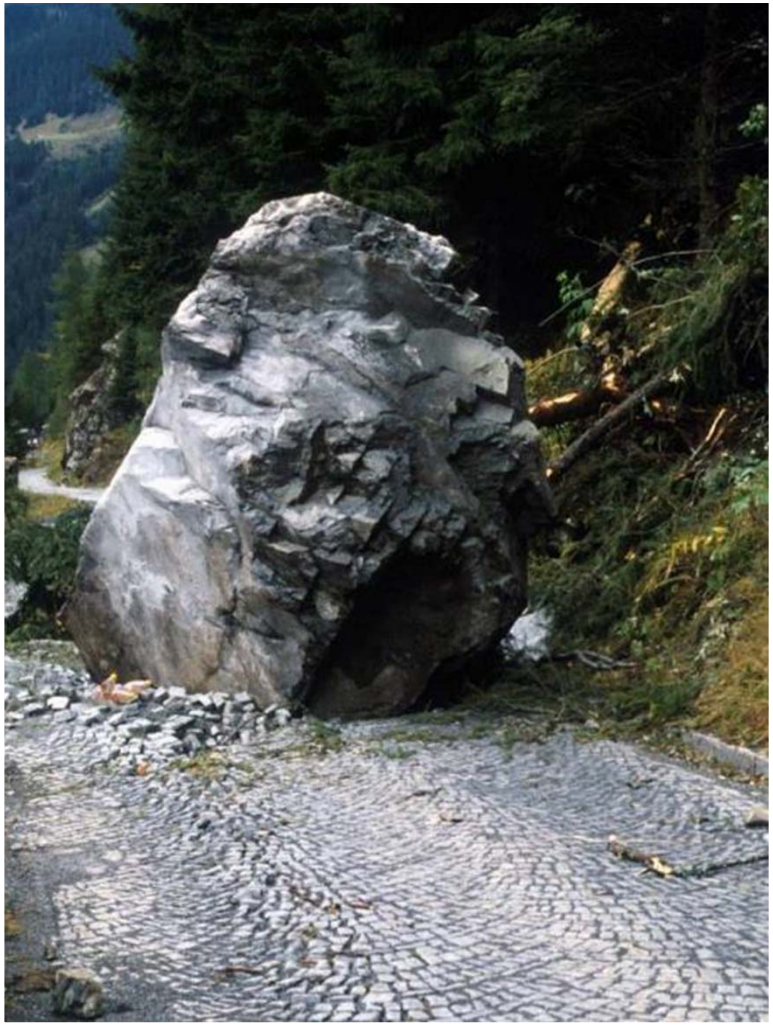
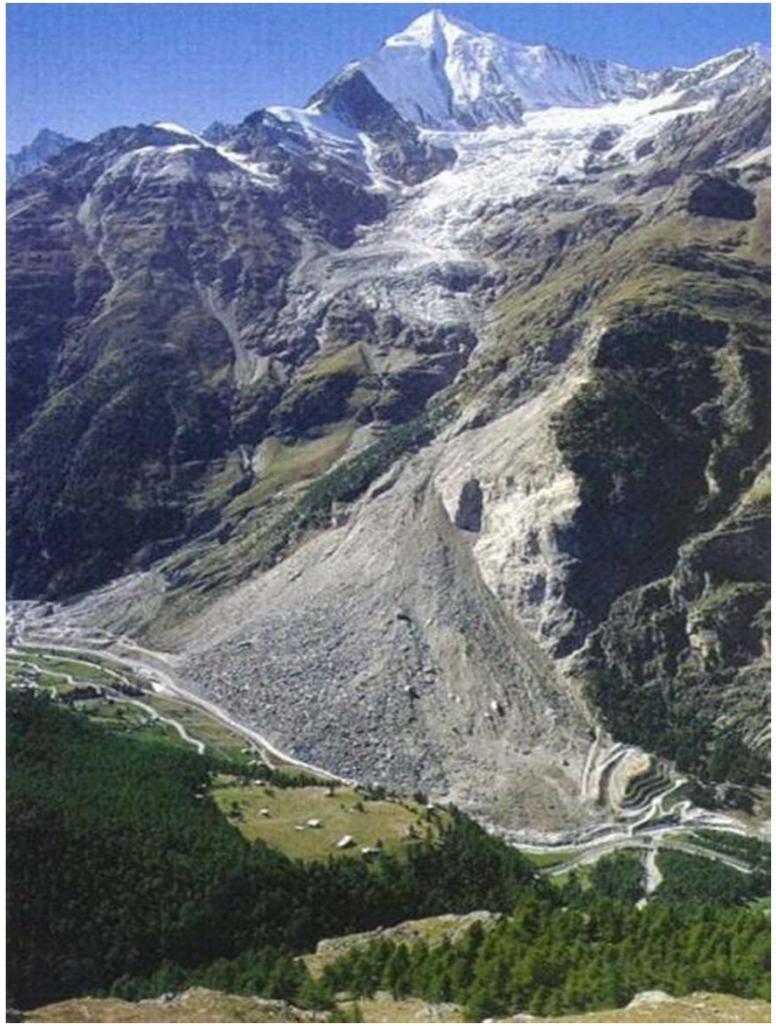
- Rock fall, rock avalanches





Which hazards?

- Snow avalanches

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Vulnerability, risk and exposure

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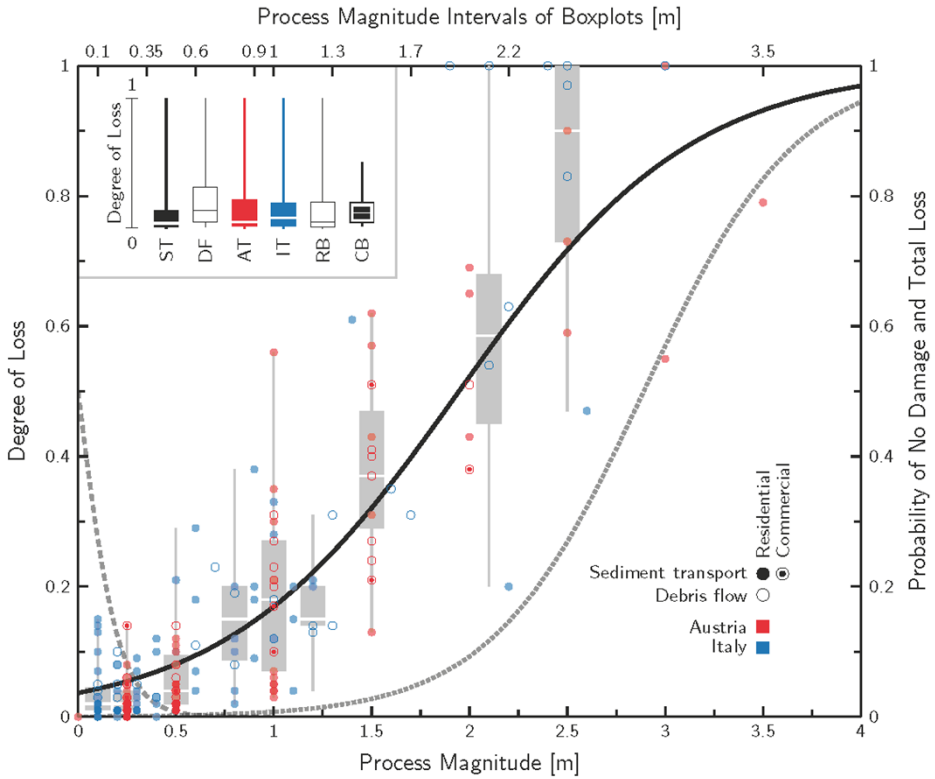
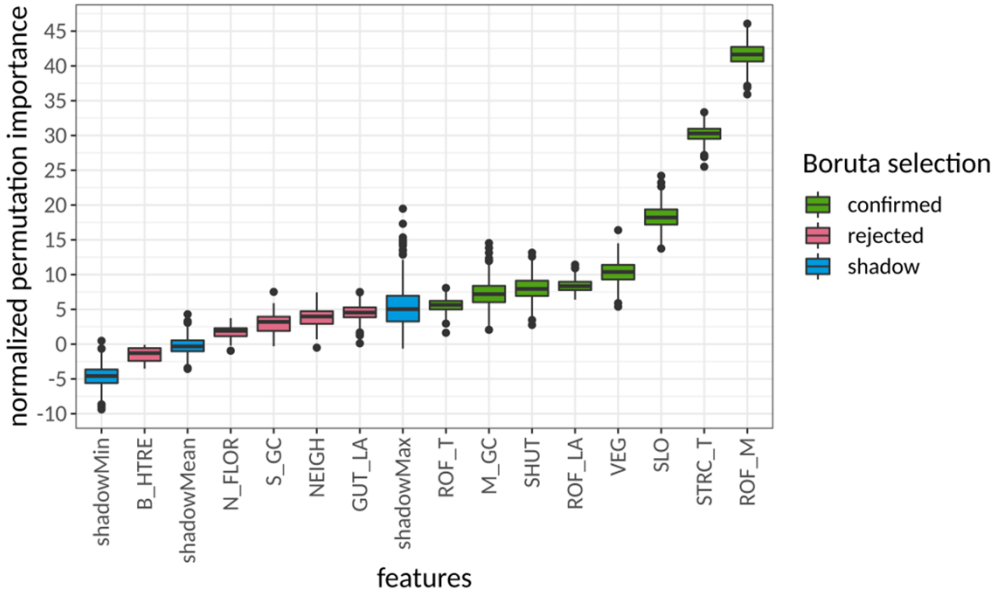
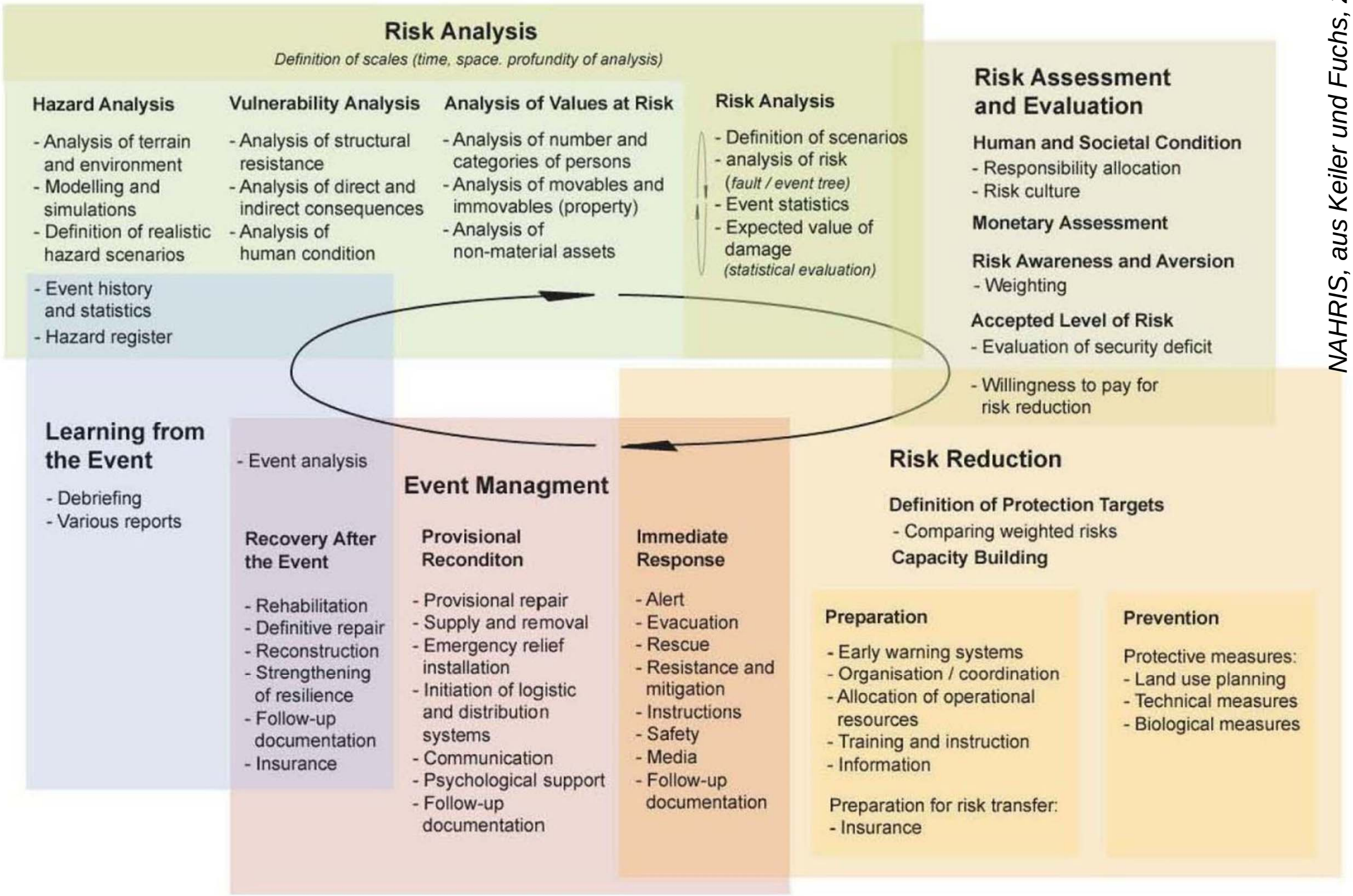
- Vulnerability curves, indicators





Fuchs et al. 2019, 2022



NAHRIS, aus Keiler und Fuchs, 2007

Institute of Mountain Risk Engineering (IAN)

University of Natural Resources and Life Sciences
Department of Structural Engineering and Natural Hazards

- Department of Structural Engineering and Natural Hazards
- Staff:
  - 1 Professor, 2 Assoc. Professors, 2 Senior Scientists
  - ~ 8-12 research employees
  - 2 administrative employees, 1 technician
- Research, teaching and administration
- Field of activities:

Analysis and mitigation of mountain hazards

Examples of current research activities

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- Design standards for structural protection measures
- Experimental investigations of sediment transport over check dams and flow behavior of debris flows
- Development of simulation tools
- Derivation of a vulnerability function mountain hazards
- Effects of climate change on mountain hazards
- Snow cover modeling, triggering of wet snow avalanches
- Event monitoring, documentation
- International consulting (private clients, international organisations, etc.)

Teaching with tradition

University of Natural Resources and Life Sciences
Department of Structural Engineering and Natural Hazards

- First lectures dealing with alpine hazards in 1882 at BOKU
- Situated in the Forestry Faculty
- Specialisation ‘Wildbach- und Lawinenverbauung’ (“torrent and avalanche control”) since the 1970s

BOKU master programs related to IAN and natural hazards

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…taught in German

- **Alpine Naturgefahren / Wildbach- und Lawinenverbauung (ALPNAT)**
- Forstwissenschaften
- Kulturtechnik und Wasserwirtschaft

…international programs

- Mountain Forestry
- **Water and Environmental Engineering, Diploma supplement Mountain Risk Engineering (MRE)**
- Natural Resource Management and Ecological Engineering (NARMEE)
- Environmental Sciences – Soil, Water and Biodiversity

WMEE
Structure overview

University of Natural Resources and Life Sciences
Department of Structural Engineering and Natural Hazards

- Two year program, 120 ECTS in total
- Finishes with Dipl. Ing. (equivalent to MSc.)
- All courses are taught in English
- Prerequisite for admission: Bachelor/Master's degree or equivalent
- Two specializations possible (confirmed by diploma supplement):
  - Water Management and Environmental Engineering (*WMEE*)
  - Mountain Risk Engineering (*MRE*)
- Target group are people with an academic degree in civil/environmental engineering, forestry, earth science or similar
- Work field: engineering company, consulting, research, public institutions, development agencies, international organizations (EU)

Water & Env. Eng. / Mountain Risk Eng.

Basic subjects, complementary subjects, engineering project

Choice of 6 out of 11 of sectoral subjects (moduls)

- Sanitary engineering
- Rural water management
- Hydrology / water management
- Hydraulic engineering / river basin management
- Aquatic ecology and wetland management
- Water management in developing countries
- Waste management
- Economy and law
- Mountain hazard processes
- Mitigation measures for mountain hazards
- Risk management

Elective subjects, master thesis

Institute for Mountain Risk Engineering:

www.boku.ac.at/ian
www.alpine-naturgefahren.at

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