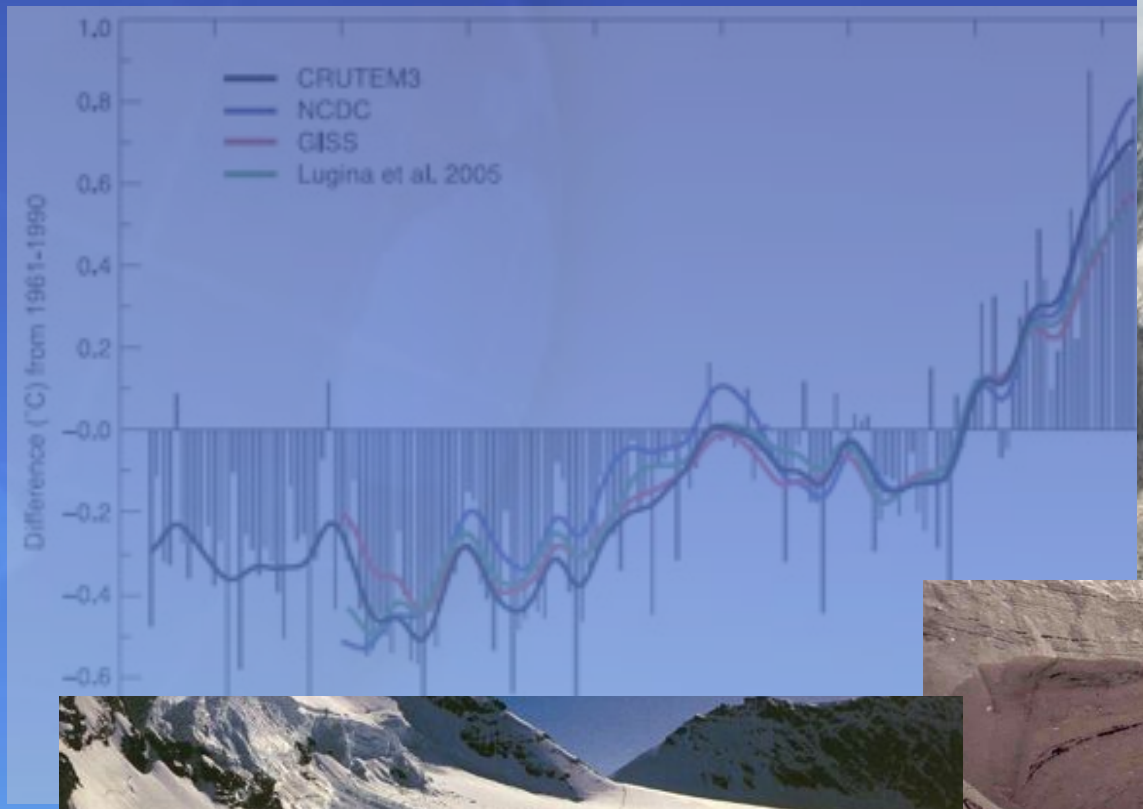
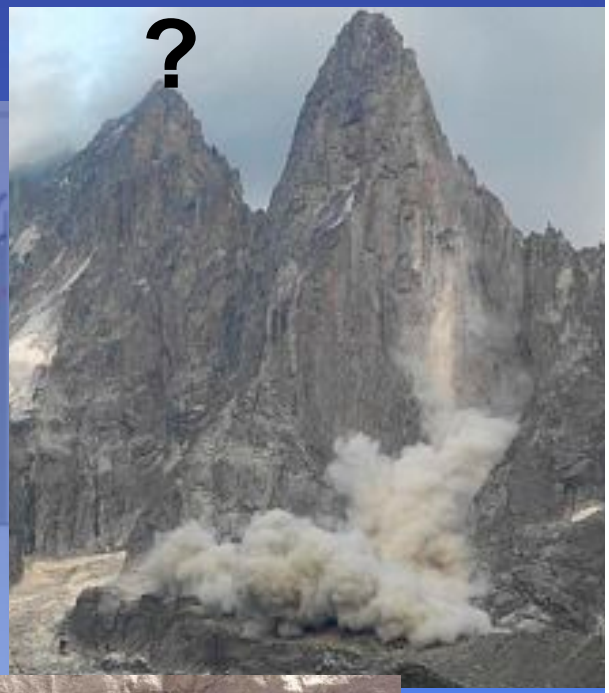
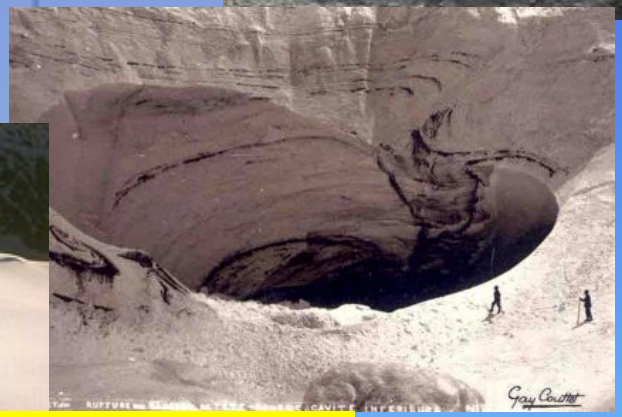
Preface: *Mountain hazards and risks…*







…only a matter of climate change?

Preface: *it's a matter of available space…*

Preface: *… and also of human "content"*

Biosphere…

BC, Canada

vs

Bosnia, Europe

Natural and Antropogenic Risks ...

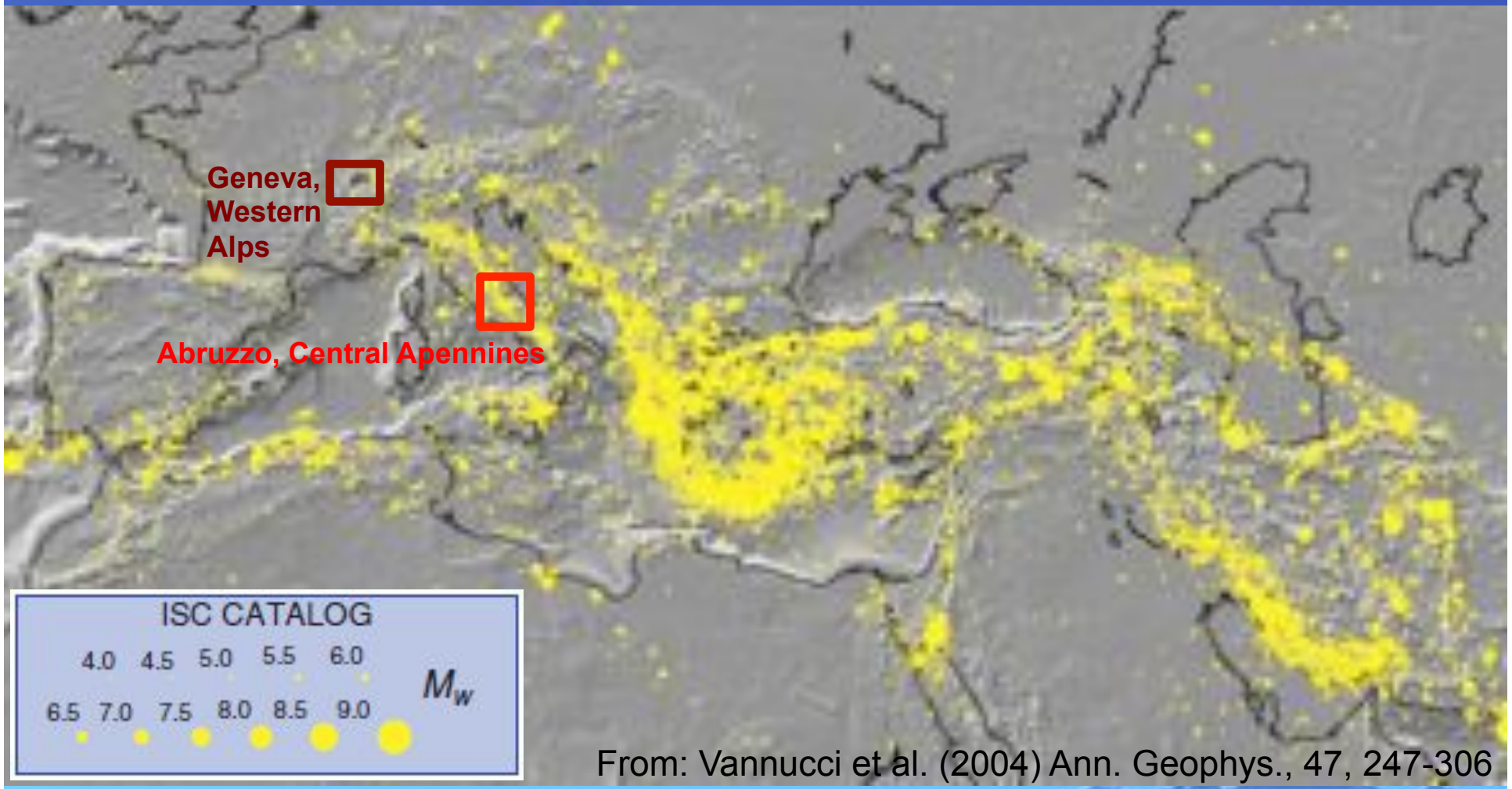
Bosnia

Natural Risks: the Human factor

Growing population in the Mediterranean area (EU 190M, PSEM 300M)

Seismic Risks: (one of) Geological factors

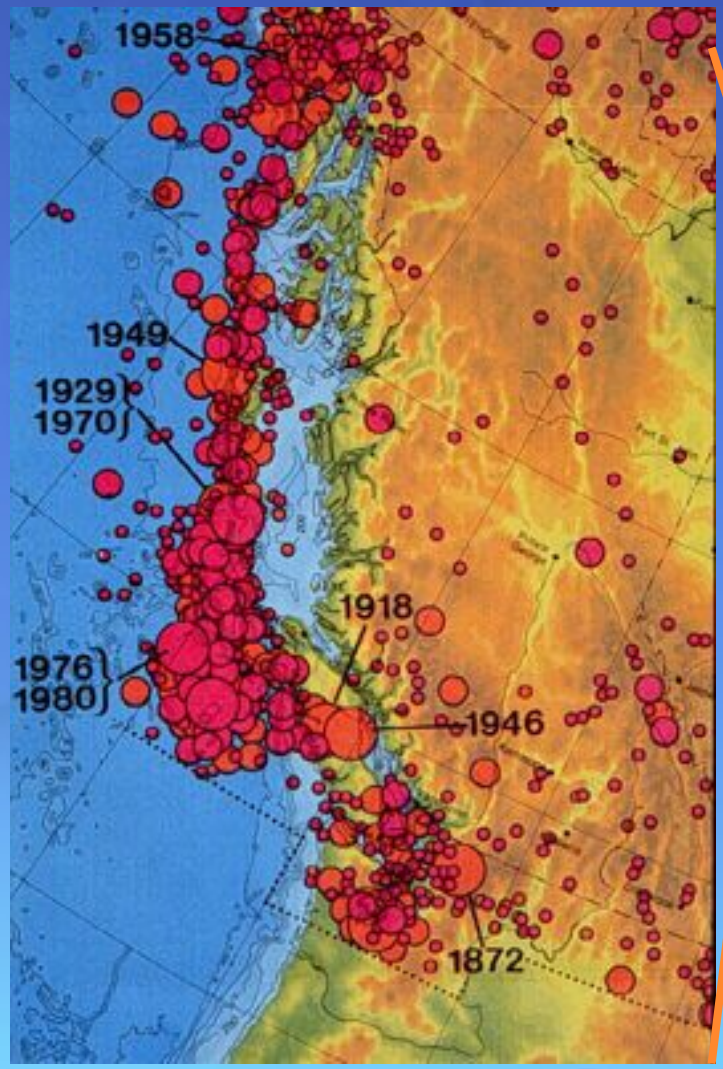
Earthquakes (M>4) in the Mediterranean area (1904 to present-day)

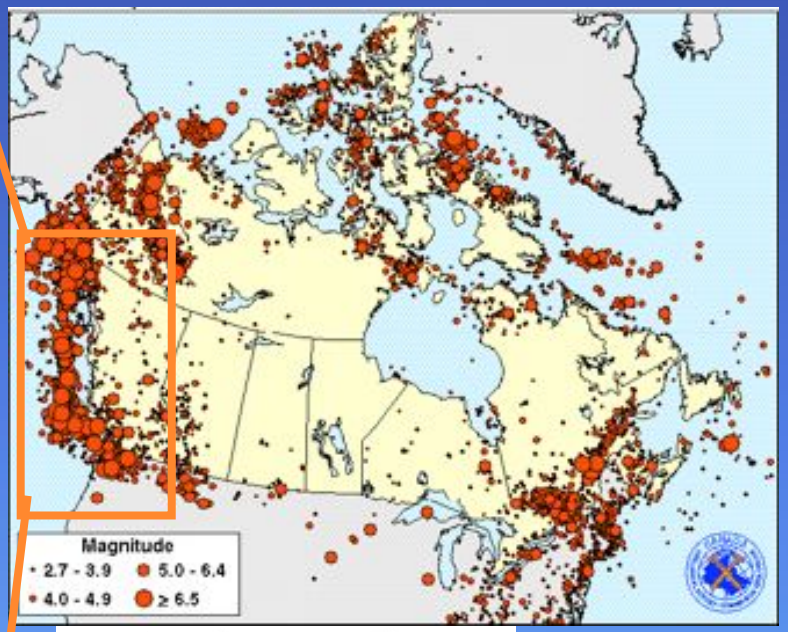


From: Vannucci et al. (2004) Ann. Geophys., 47, 247-306

Seismic Risks: (one of) Geological factors

Earthquakes (M>2.7) in the Canada (1904 to present-day)





TODAY: PART 1 OF AN INVESTIGATIVE REPORT ON A B.C. SERIAL RAPIST AND KILLER

THE VANCOUVER SUN

FINAL

THURSDAY, MARCH 1, 2001

Richter 6.8

'The magnitude of this quake is a wake-up call to B.C.'

RICHTER 6.8

Effects on human activities and structures:

The 2009 L'Aquila earthquake (april 6°; M 5.8 - 6.3)

Some ingredients for a resilient society

(Merging contributrions from universities, government, and the private-sector)

Partnerships

didactic activities

ORGANISATIONAL FRAMEWORKS

natural hazard research

student mobility

Enhancing student education

strengthening international competence

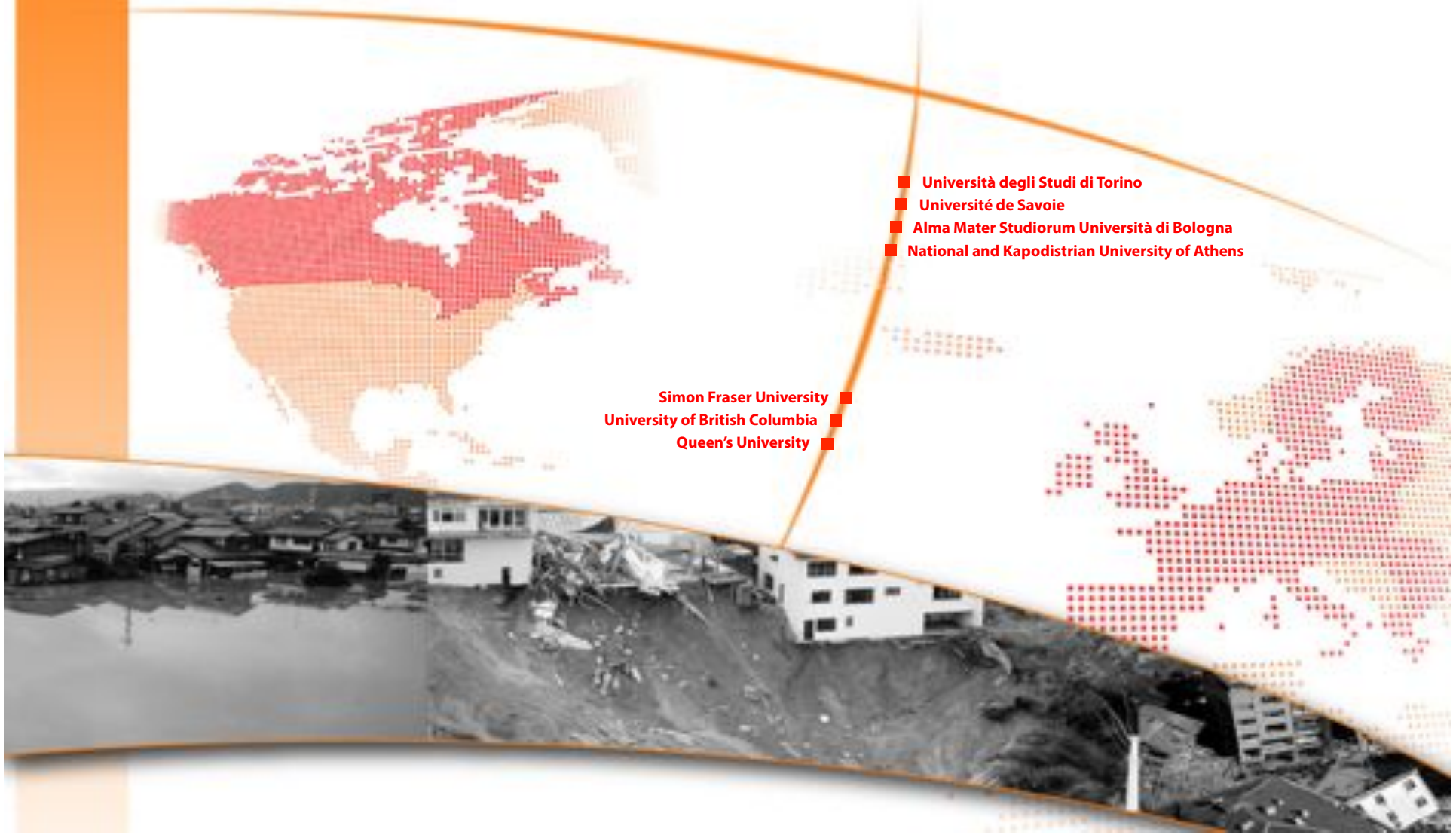
Expertise

Integration

GEOMATICS TECHNIQUES

Field survey

Enhancing international competence in Natural Hazards research



An example…

geoNatHaz project:

Bilateral Cooperation with Industrialised Countries

University Partners

CANADA

UNIVERSITIES

- Simon Fraser University
- University of British Columbia
- Queen's University

EUROPE

UNIVERSITIES

- Università degli Studi di Torino
- National and Kapodistrian University of Athens
- Université de Savoie
- Alma Mater Studiorum Università di Bologna

Industry, territorial agencies and public research partners:

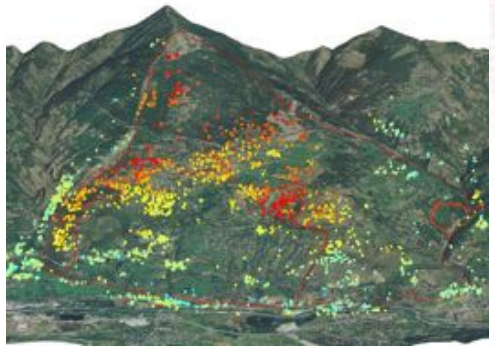
"SUPPORTING ORGANIZATIONS"

The project in brief

•***Aims***: to improve knowledge and skills for assessment and management of **natural hazards in mountain regions** and to promote cross-cultural understanding and internationalization of university curricula.

• ***Mobility***: **Earth Sciences graduate students** will benefit from field training involving classic natural hazard case studies in Canada and Europe. **Faculty and technicians** will ensure that students' educational experiences are rich and intellectually rewarding.

•***Supporting organizations***: **industry and public research partners** will supply professional skills in advanced geotechnologies applications.



4 major lines of activity:

1) Research and documentation for the organization and recognition of didactic activities

- *Classic natural hazards case studies* have to be selected and evaluated in order to be included in **problem–based learning units**.

- *Classroom-, laboratory- and field-based activities* have to be then organized and offered to Earth Sciences and Engineering Geology students (**courses and grad thesis**).

- All *geoNatHaz activities* **have to be accredited** through the normal vetting and approval processes of the participating universities.

2) Student and staff exchanges, Summer schools

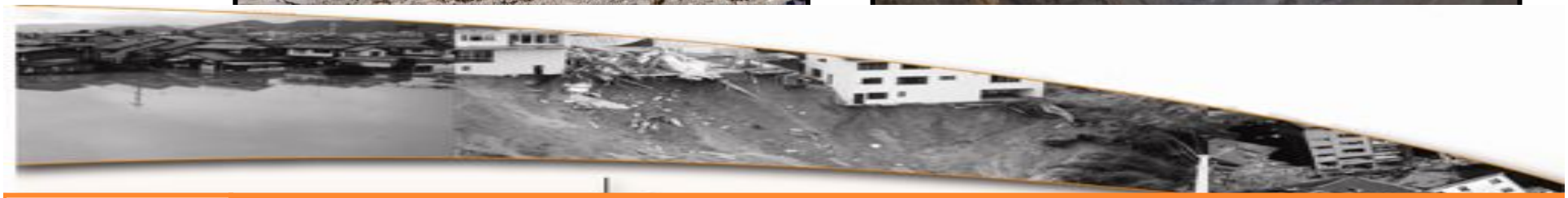
EU: "Impacts of Climate change on natural hazards in high mountains"

2010	EU	Canada
Location	Mont Blanc massif (Italy-France)	Coast and Cordillera Ranges (BC and AB, Canada)
Day	July 28 – July, 23	Aug. 11 – Sept. 3
Faculty	10 (+ 10 ext)	5
Assistant	7	5
Student	7 (+ 6)	7 (+7)

Summer school 2 - *Canada: "Catastrophic rock-slope failures"*

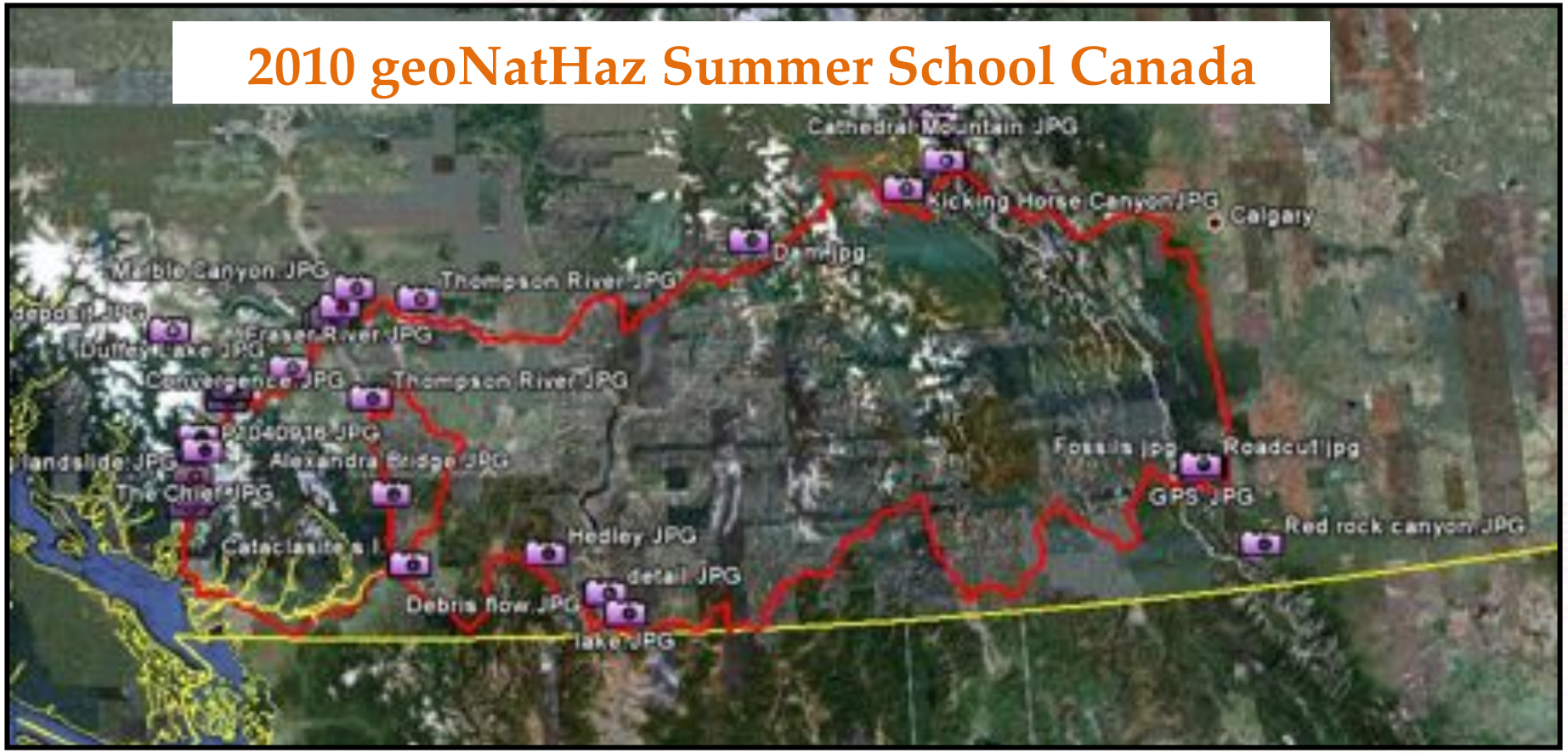
Distinction between hazard and risk and the environmental differences between Canada and Europe have been "lively" analyzed.

Mount Meager, the second largest rock avalanche in Canada, an available, open-air laboratory for large slope instabilities



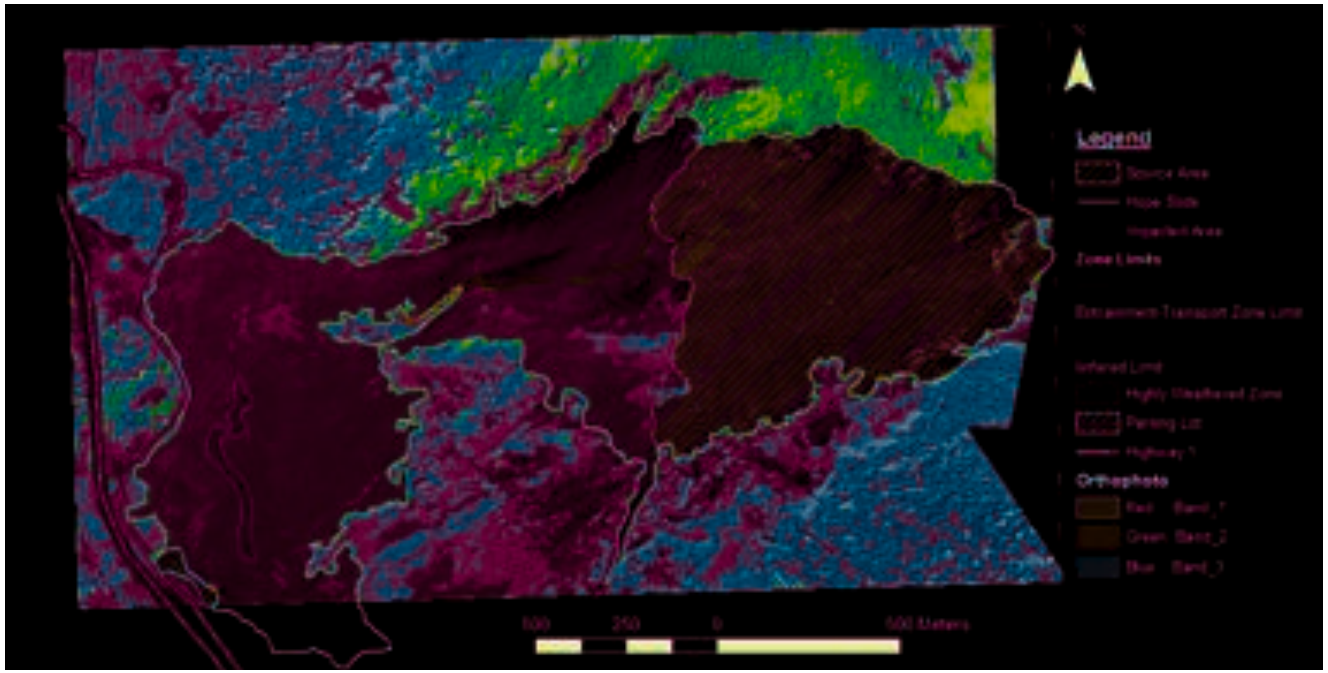
3) Development of transferable technical skills and cultural competence on Natural Hazards.

• Partnerships among university, government, and private-sector scientists offered expertise and material support to didactic activities and live connections to the territory



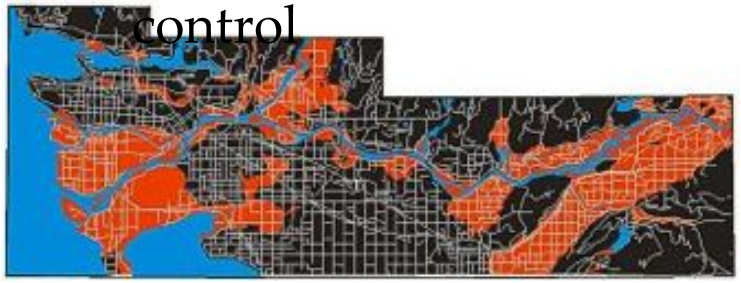
1965 Hope Slide, catastrophic rock avalanche

- Early morning on 9 January 1965
- Largest historic landslide in Canada: 47 million cubic meters of greenstone & felsite
- Consequences: 4 fatalities, BC Highway 3 buried
- Deposit: 18 m average thickness up to maximum 79 m

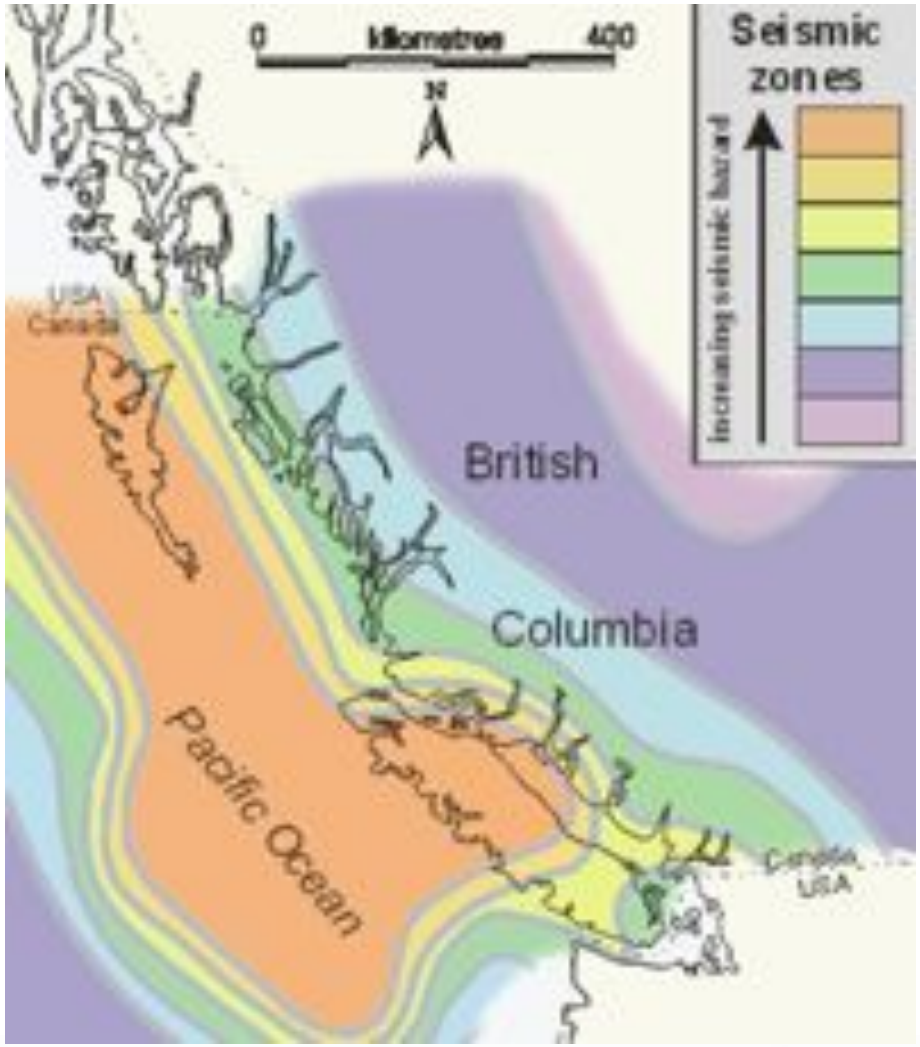


Some Natural Hazards in Western Canada

- Flooding
  - glacial lake outburst floods, jökulhaup cycles, dyke flood control

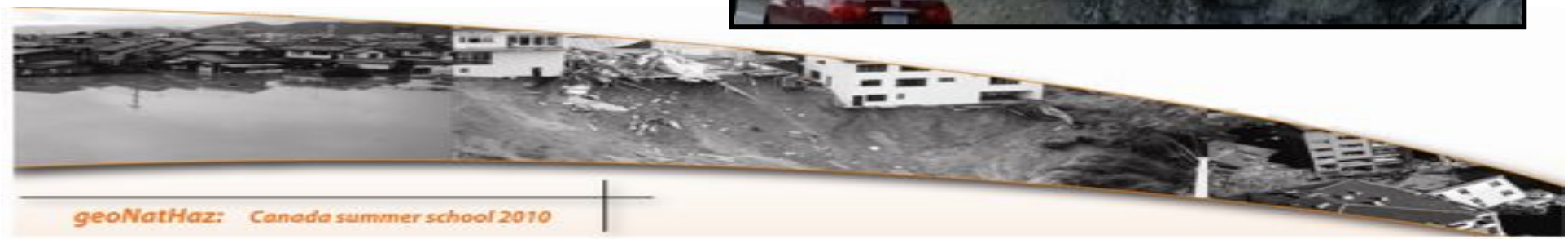


- Volcanism
  - associated earthquakes, pyroclastic flows, lahars, ash buildup, Mazama tephra
- Earthquakes
  - subduction zone, crustal, megathrust



Mitigation Strategies

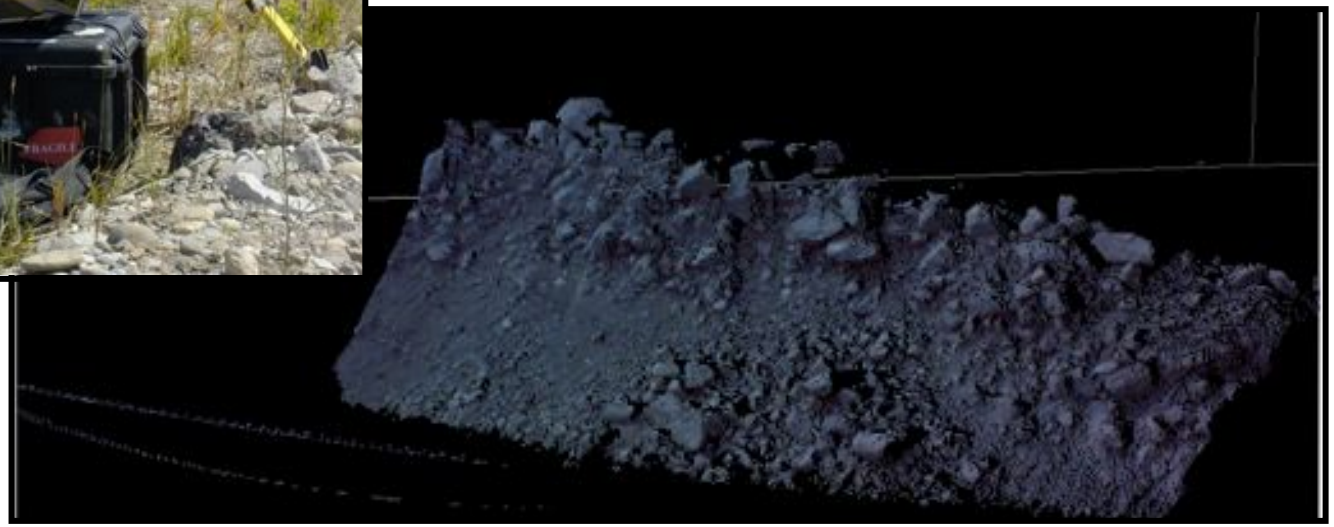
- Avoidance, engineering, monitoring
- Case studies of European management methods
- Public education
- Hazard inventories
- Research

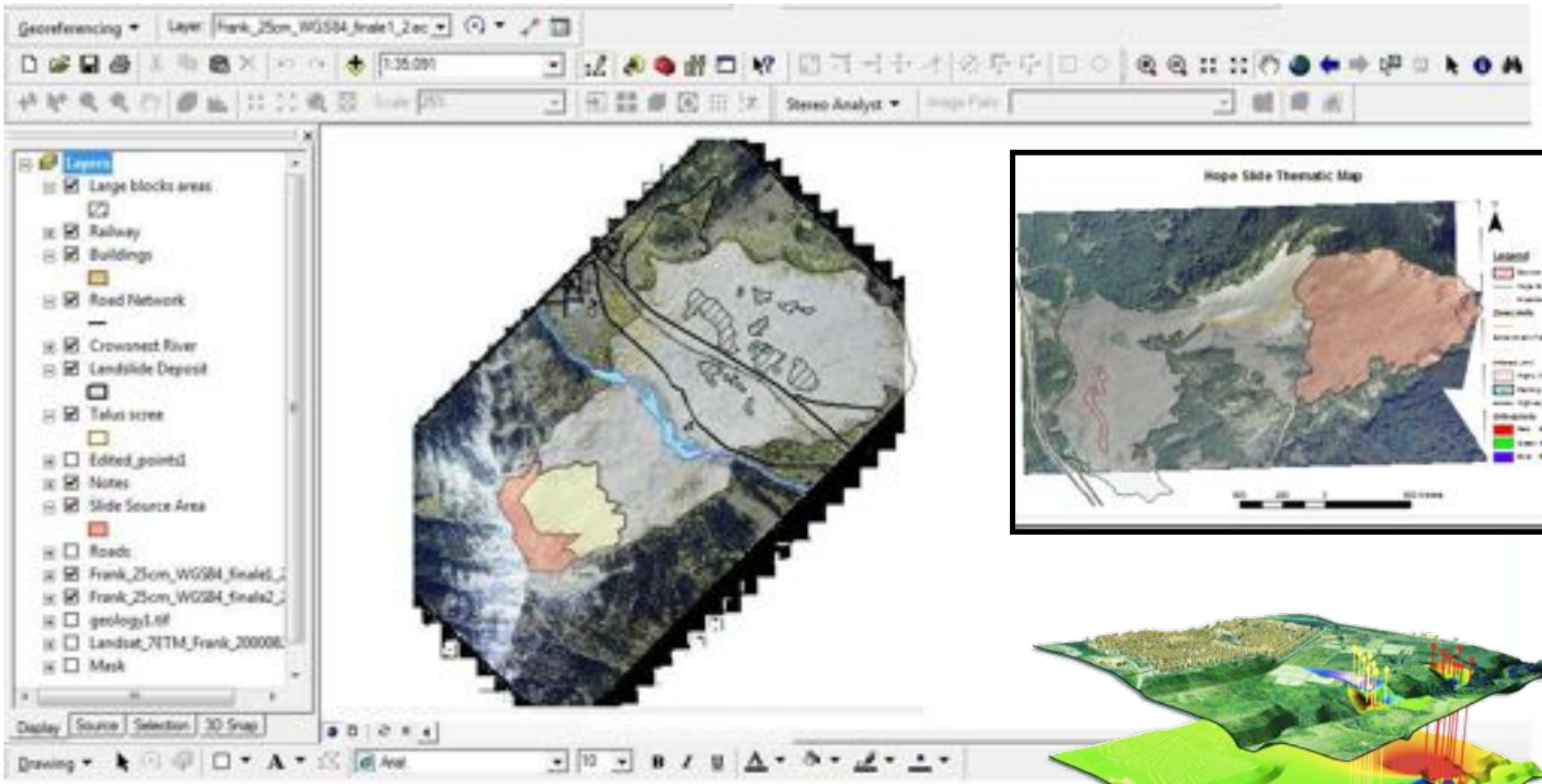


Geomatics tools: LiDAR

Technical Difficulties!

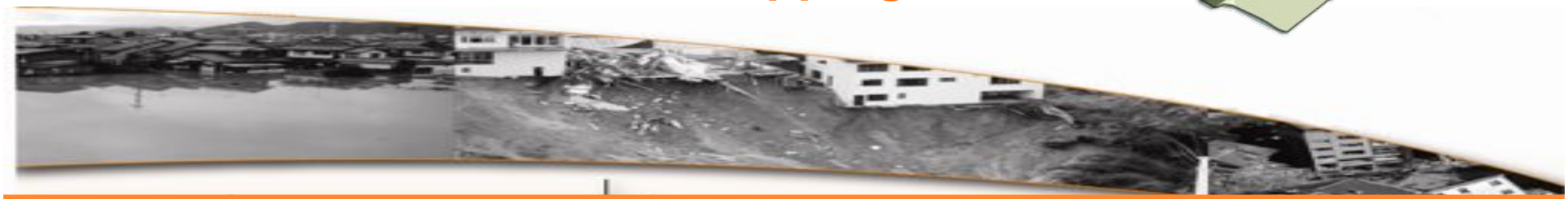
- control communication
- low battery
- rain
- sun





Geomatics

Technical skills - GIS Mapping



4) Dissemination of outcomes and implementation of sustainability of the project.

• The geoNatHaz project have been presented at scientific meetings and conferences and its activities have been publicized through the electronic and print media.

• Quality improvement of services for exchange students and sustainability of geoNatHaz activities beyond the funding period have been pursued through the collection of financial and logistical contributions from bank foundations, regional governments and supporting organization.

Bilateral Cooperation with Industrialised Countries

TRANSATLANTIC EXCHANGE PARTNERSHIPS (TEP)

EU-CANADA PROGRAMME
CO-OPERATION IN HIGHER EDUCATION, TRAINING AND YOUTH

geoNatHaz project:

Enhancing international Earth Science competence in Natural Hazards research by integration of traditional field-based activities and Geomatics techniques

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Queen's University

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