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Swiss Agency for Development and Cooperation SDC

METEODAT

UNIVERSITÄT BERN

UNIVERSITAS FRIBURGENSIS

UNIVERSITÉ DE GENÈVE

University of Zurich[UZH]

HAZARDS EXERCISES

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IHCAP – Indian Himalayas Climate Change Adaptation Programme
Capacity building programme Level-1 (September 11, 2014)

HAZARDS IN MOUNTAINS

The aim of the exercise is to define areas prone to multiple hazards in a region of the Swiss Alps.

Hazard (temporal condition): The probability of a potentially damaging event (a landslide) occurring in a unit of time.

Risk: Expected consequences emanating from a hazard, expressed as the probability and severity of loss to the elements at risk for a unit area, object, or activity, over a specified period of time.

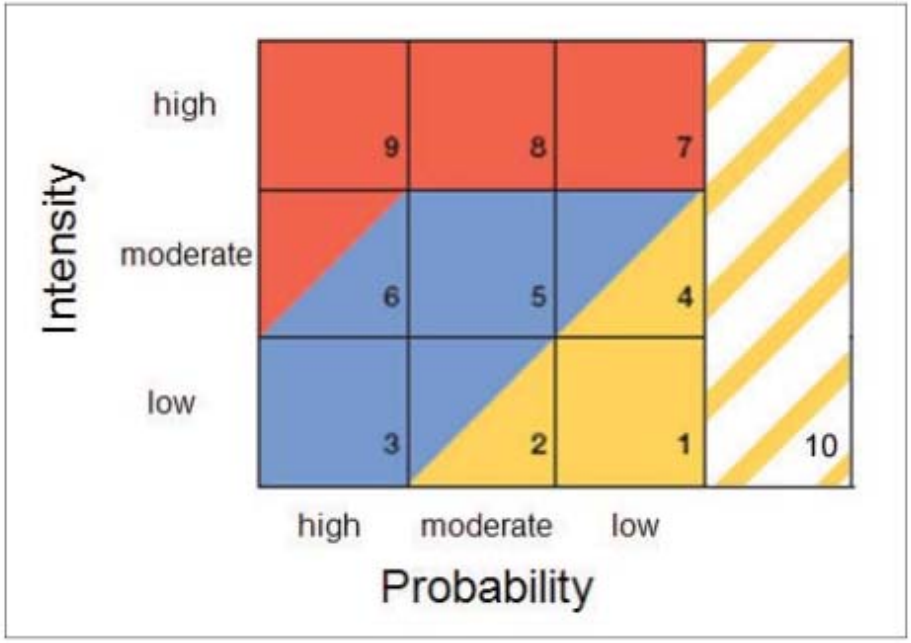
Susceptibility: The propensity of a designated area to experience a particular physical hazard.

Vulnerability: The degree of damage expected from given magnitude of hazard, usually expressed as a ratio of the existing value.

Swiss hazard maps legend

Magnitude-frequency diagram

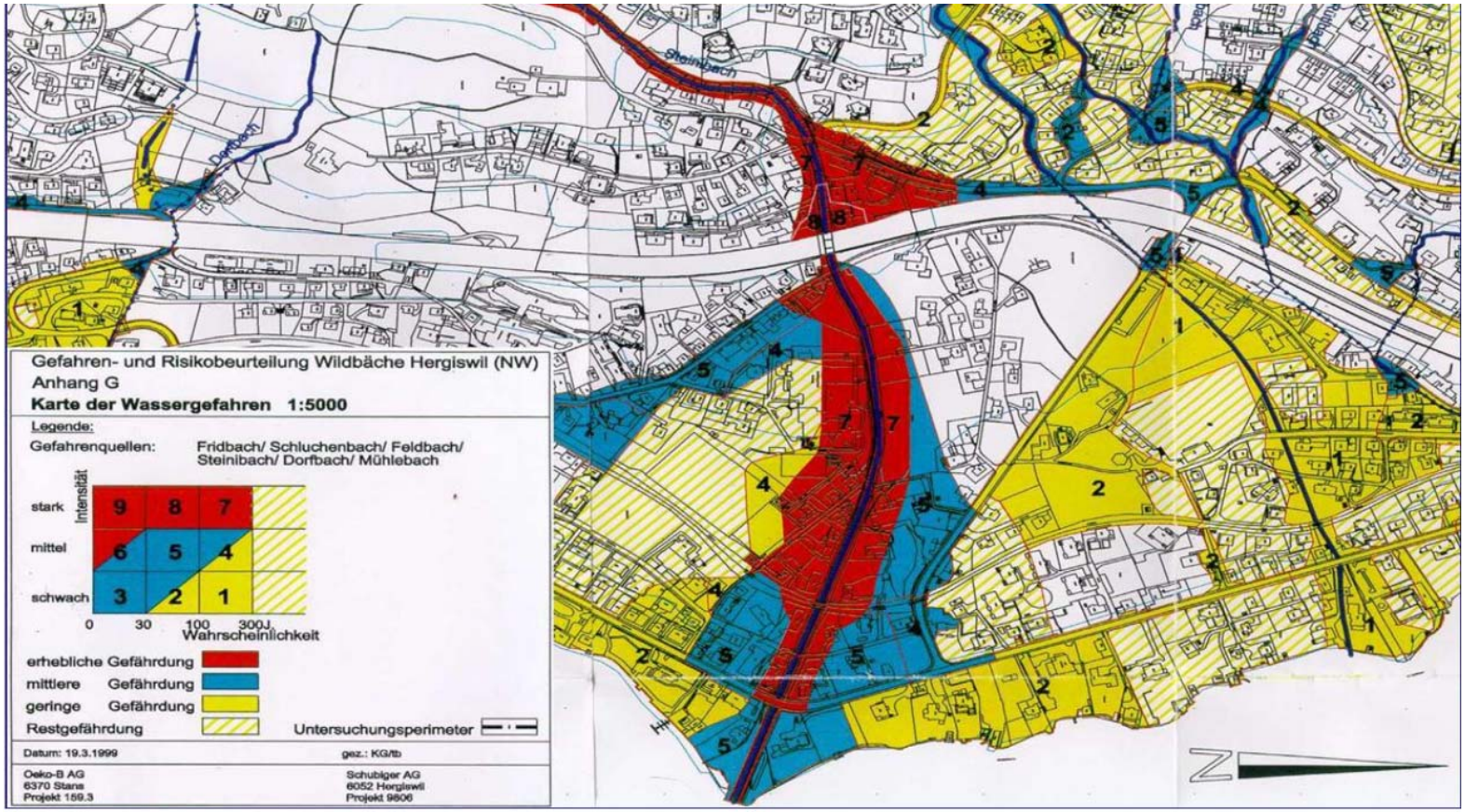
- **Red** (high hazard)
- **Blue** (moderate hazard)
- **Yellow** (low hazard)
- **White/yellow-hatched** (residual danger, high intensity but very unlikely)



http://www.mountaincartography.org/publications/papers/papers_lenk_08/kunz.pdf

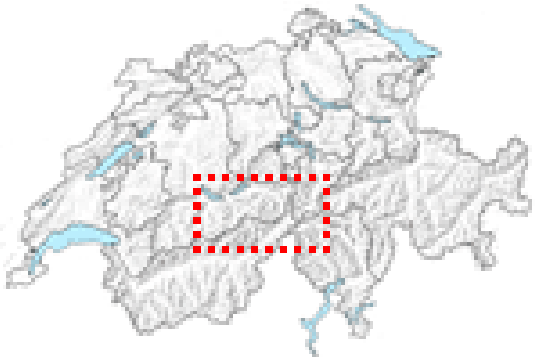
Swiss hazard maps

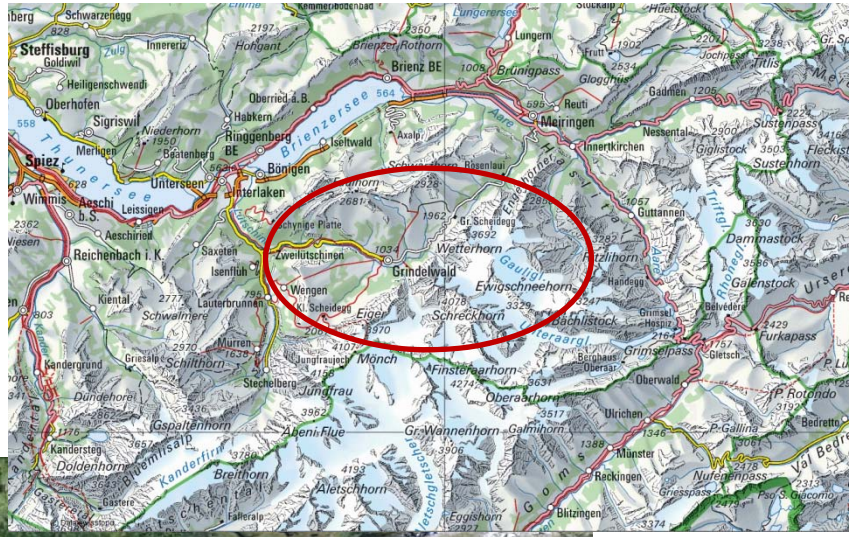
Example: Hazard map of Hergiswil

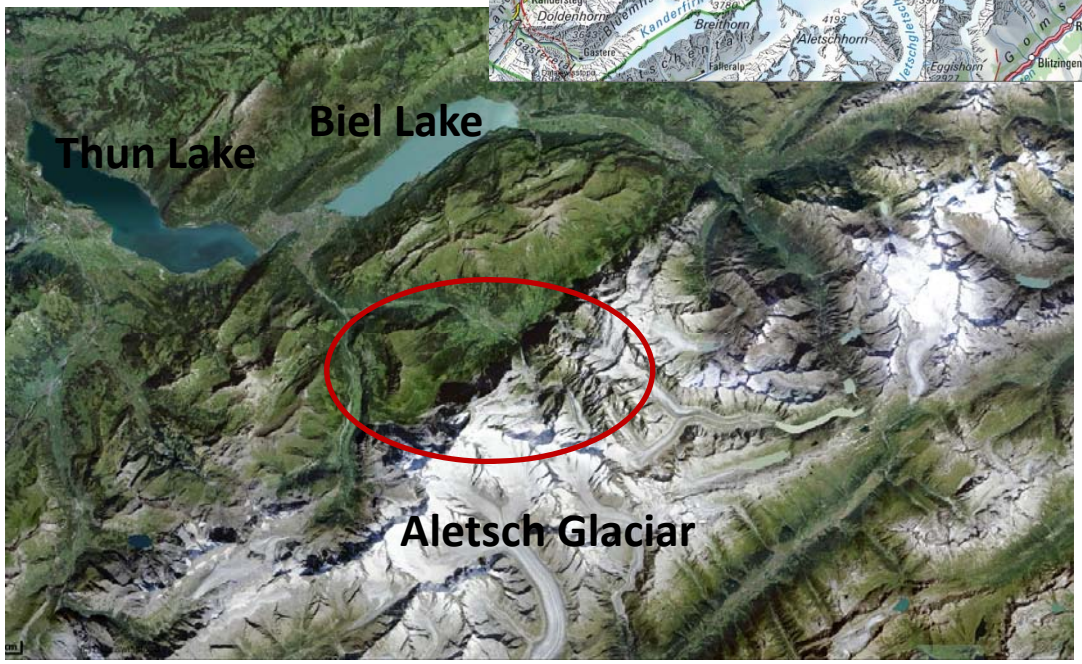


http://www.alpconv.org/en/organization/groups/WGHazards/Documents/PLANALP_Hotspot_Paper.pdf

Study site: Grindelwald (Canton Bern)







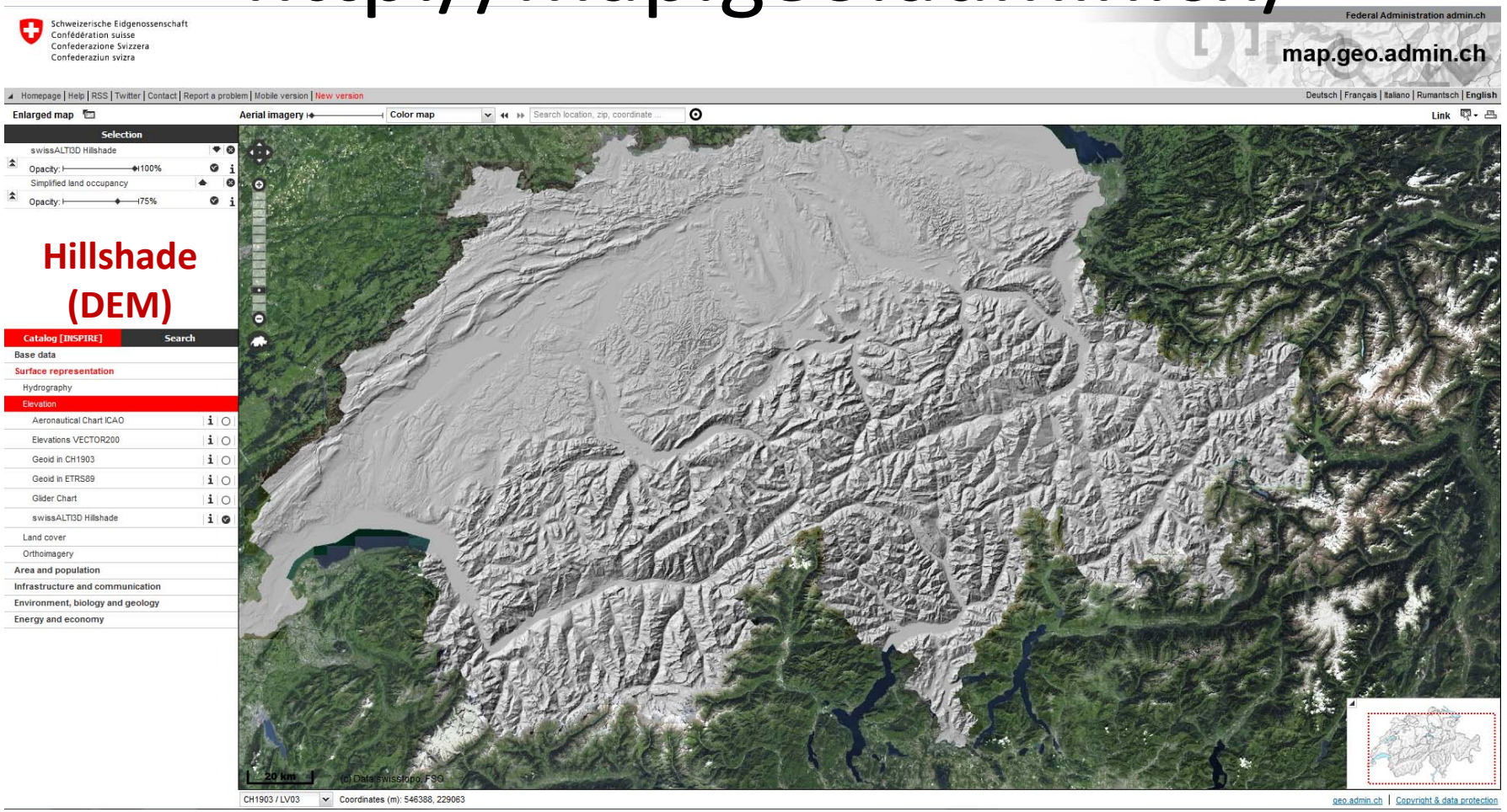
Study site: Grindelwald (Canton Bern)

http://www.planat.ch/en/images-details/datum/2011/06/21/grindelwald/

Study site: Grindelwald (Canton Bern)

Useful information

http://map.geo.admin.ch/



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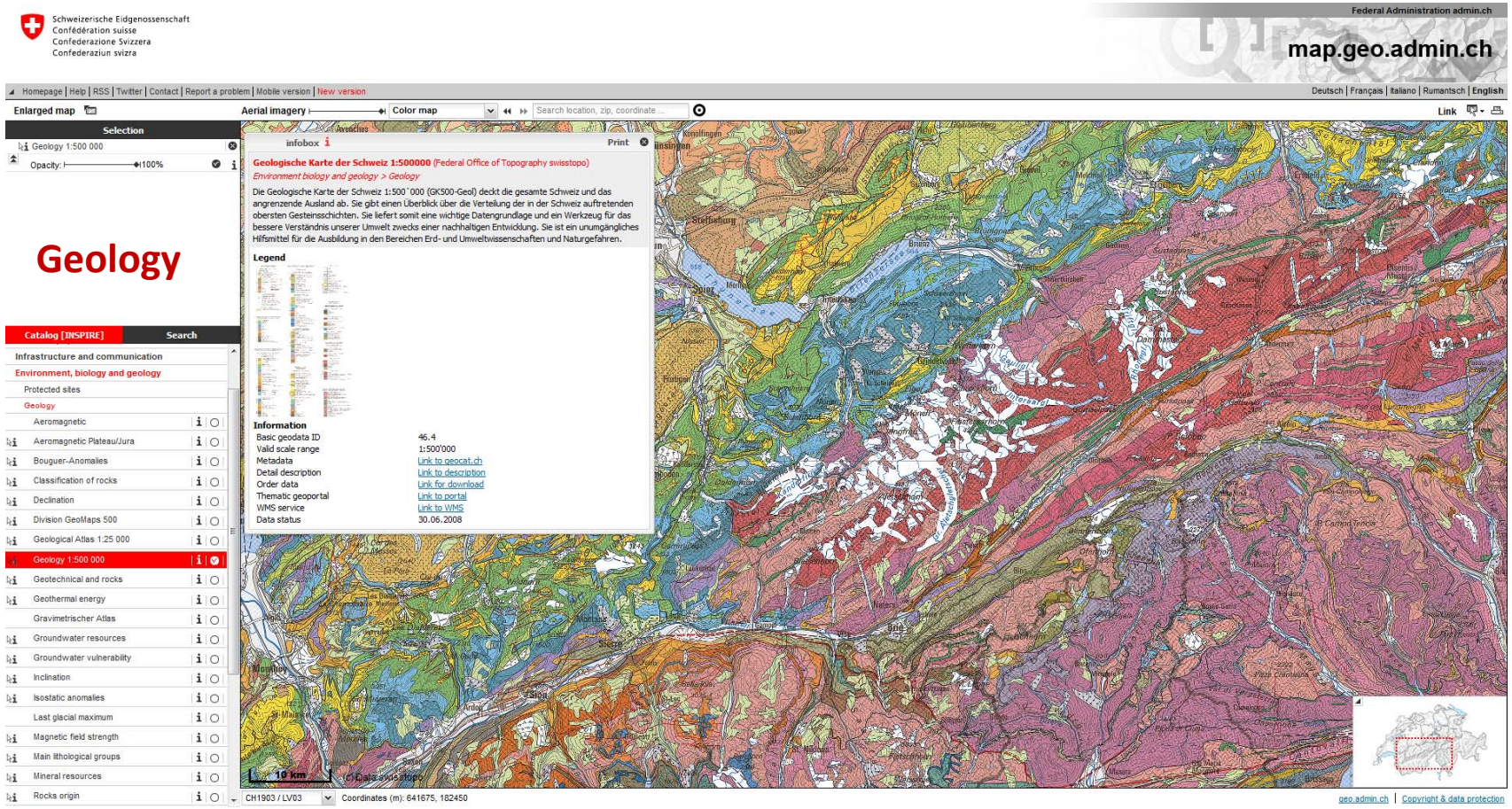

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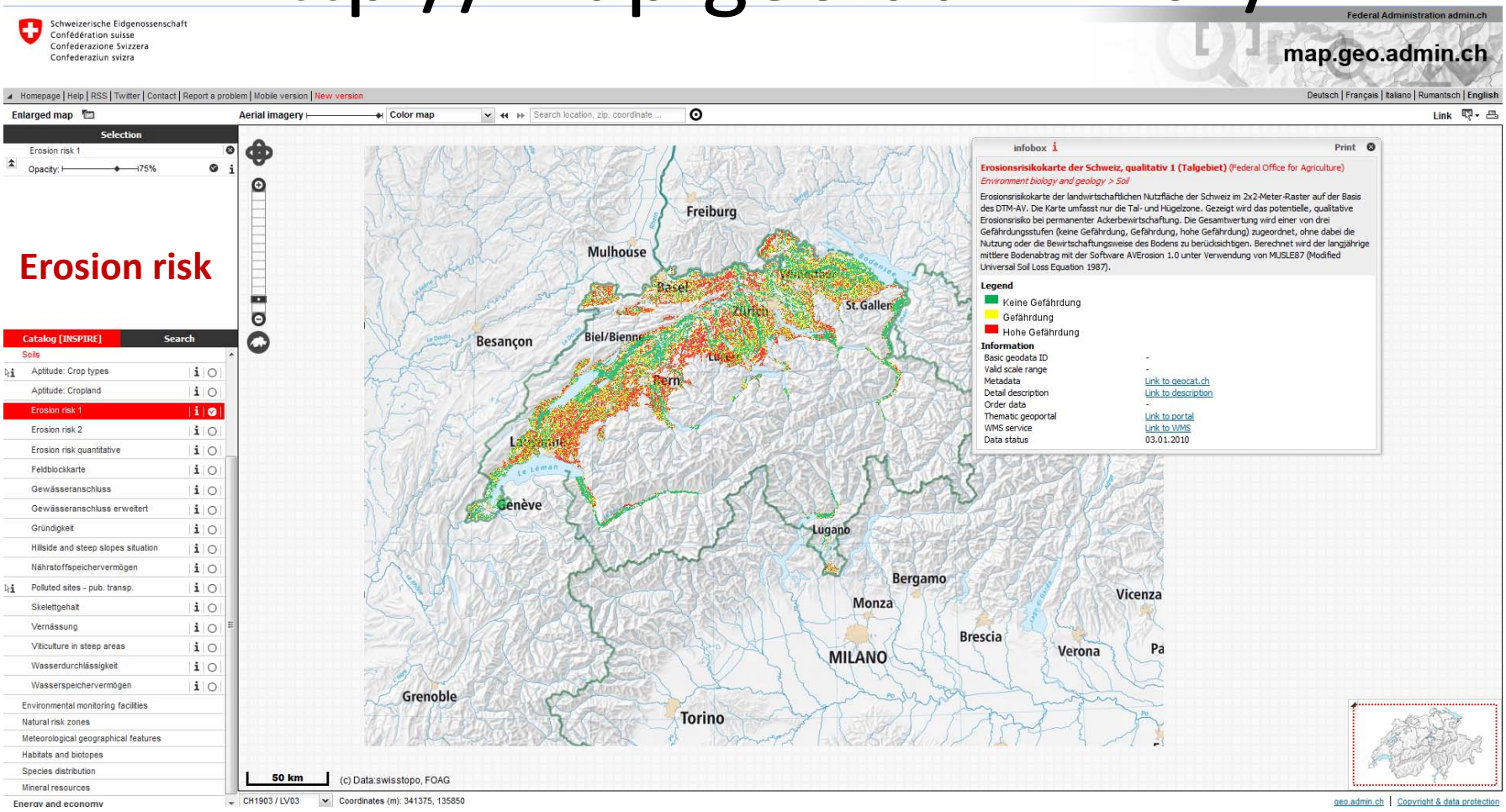

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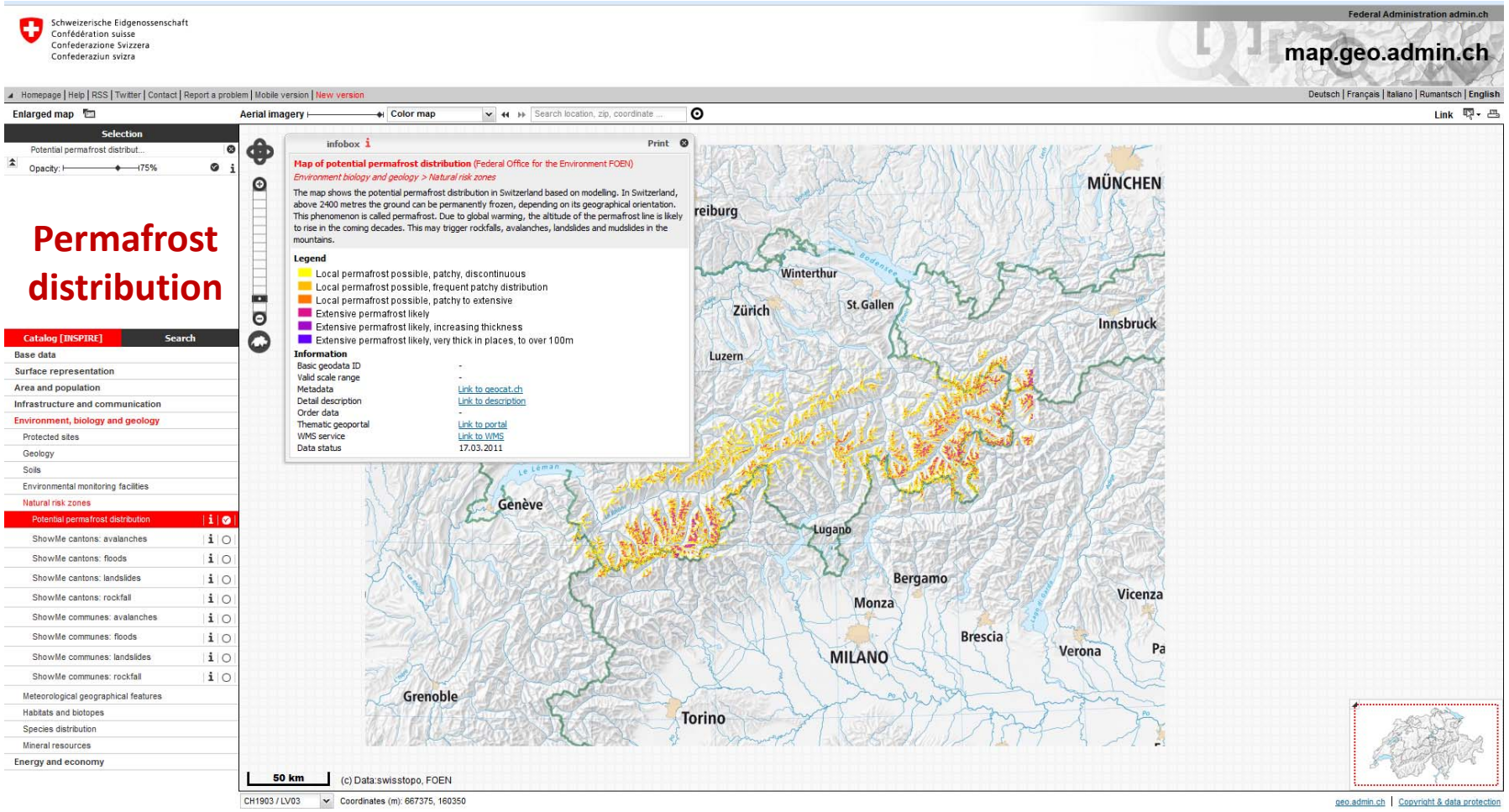
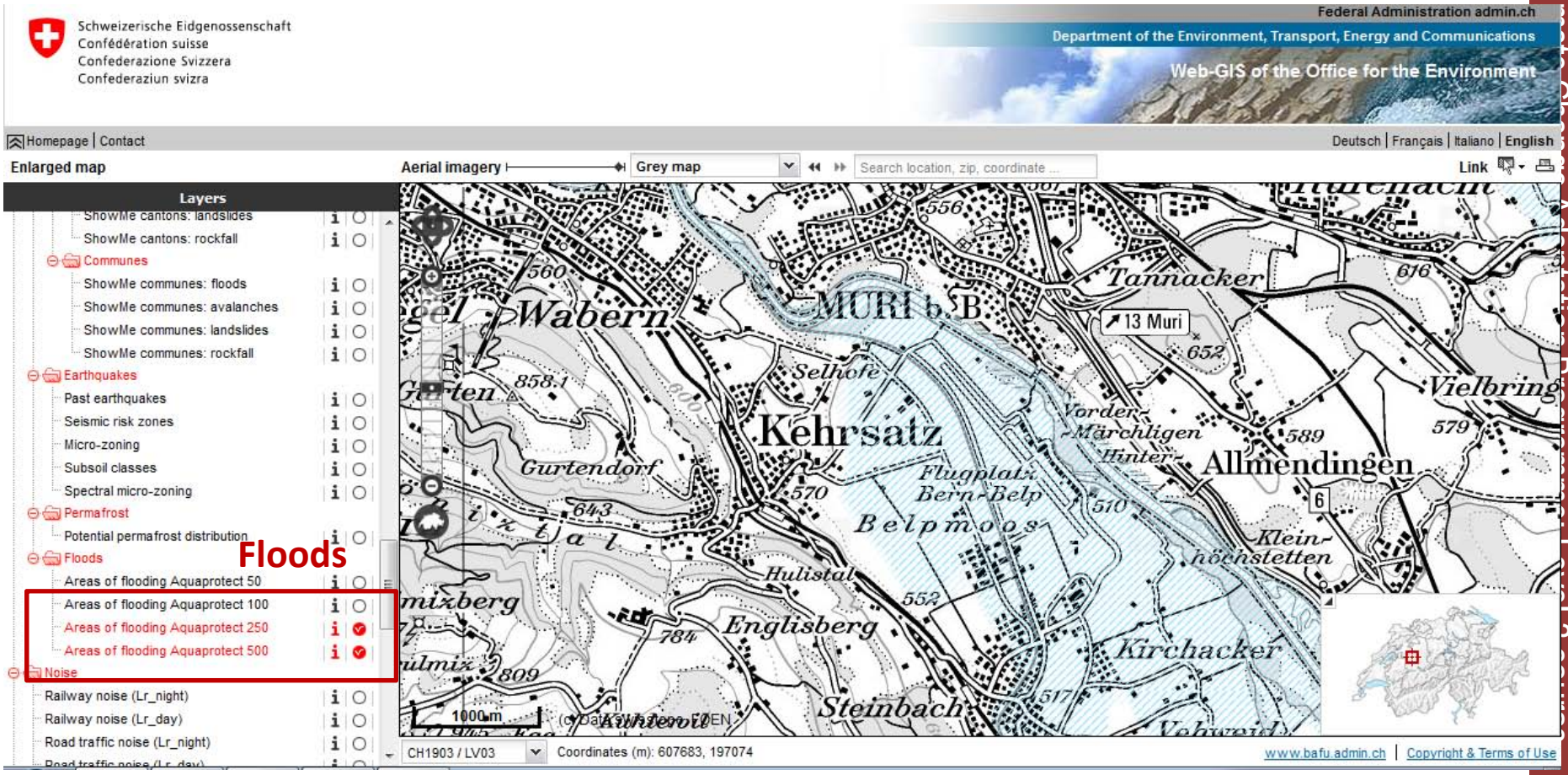


Useful information

http://map.bafu.admin.ch

Bundesamt für Umwelt **BAFU**

Federal Office for the Environment **FOEN**



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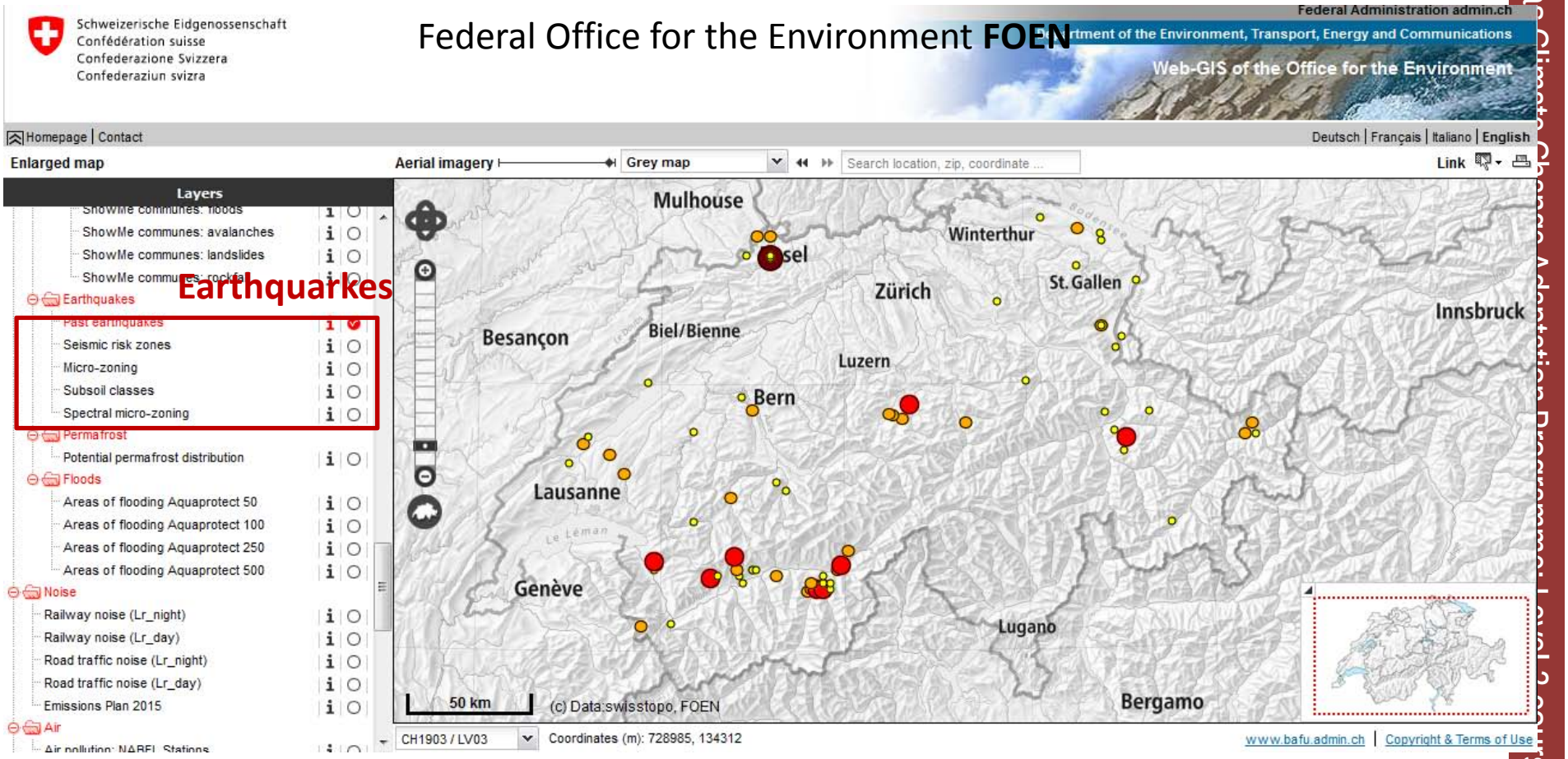

Earthquakes

HAZARDS IN MOUNTAINS

QUESTIONS:

1. Useful information will be provided based on the maps available on ***map.geo.admin.ch*** and ***map.bafu.admin.ch***. As a basis the ortophoto and topography are also provided.
2. Define those areas potentially prone to rockfalls
3. Define those areas potentially prone to avalanches
4. Define those areas potentially prone to landslides
5. Define those areas potentially prone to floods
6. Identify the elements at risk
7. Identify most vulnerable areas

For all cases explain the main disposition and potential triggering factors

HAZARDS IN MOUNTAINS