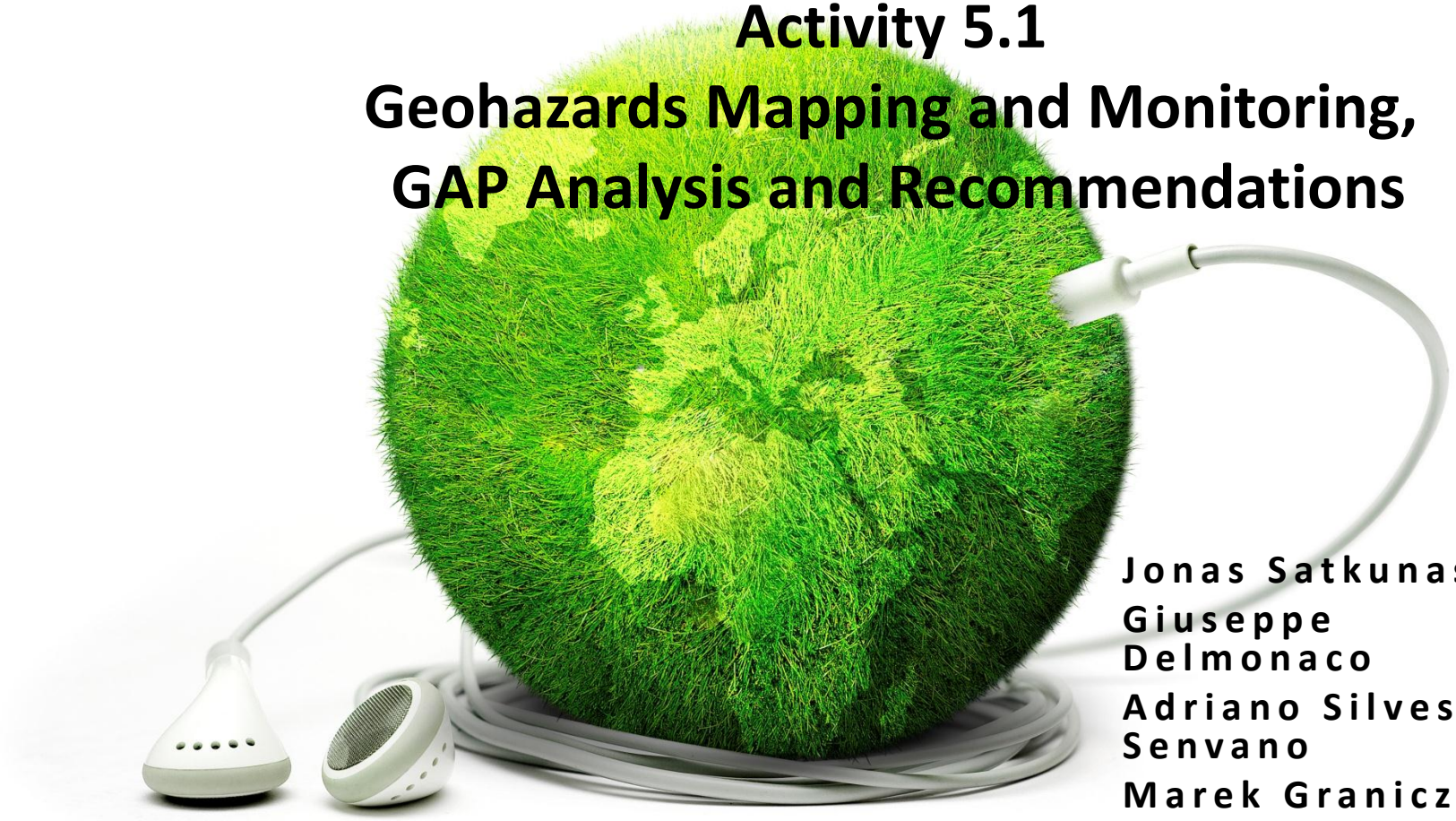
Activity 5.1
Geohazards Mapping and Monitoring, GAP Analysis and Recommendations



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EGS – OAGS Workshop
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Relevance of the Topic

Africa is impacted by a multitude of natural and technogenic hazards and disasters such as:

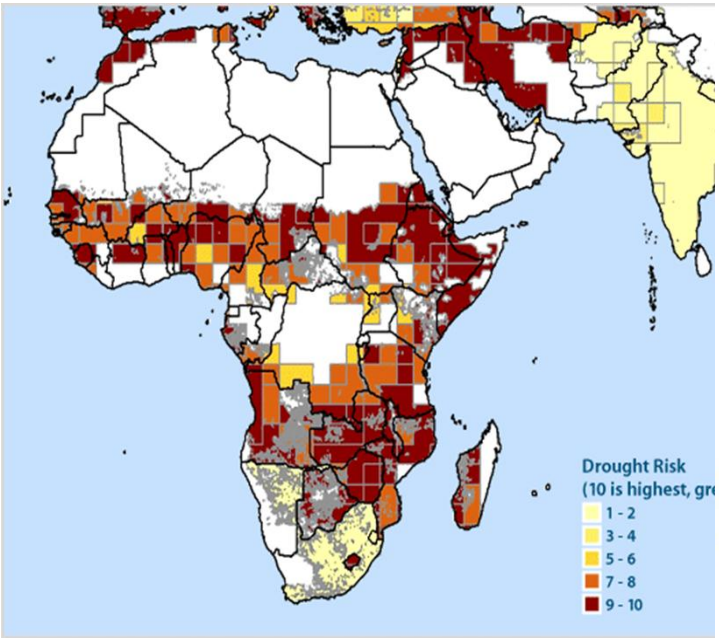
- drought / soil erosion /desertification,
- flooding,
- landsliding,
- volcanic activity,
- earthquakes,
- mining activity,
- waste disposal

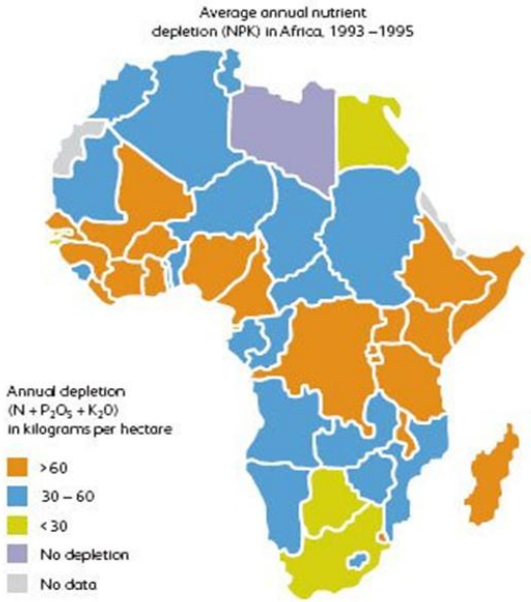
Relevance of the Topic

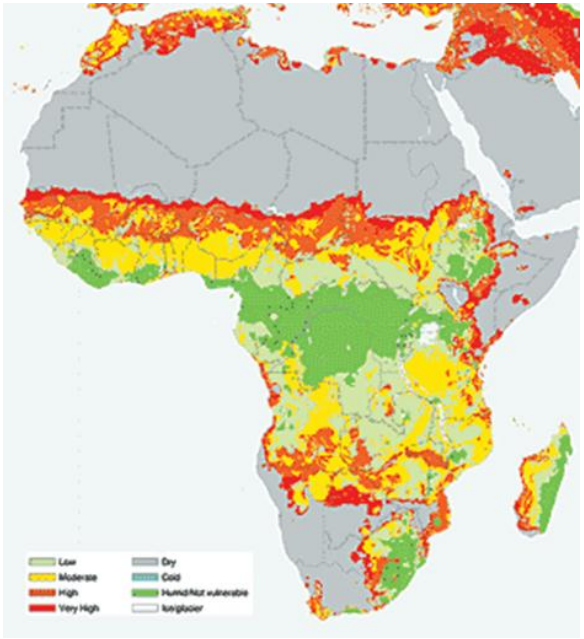
These disasters claim thousands of lives, devastate homes and destroy livelihoods. With more than 40% of the population living below the poverty line, Sub-Saharan Africa is also the least-equipped and prepared continent to cope with the impacts of these events (ICSU, 2007).

In 24 of the 56 African countries geohazards inventory has not been made
(T. Shlütter, 2006)

Relevance of the Topic

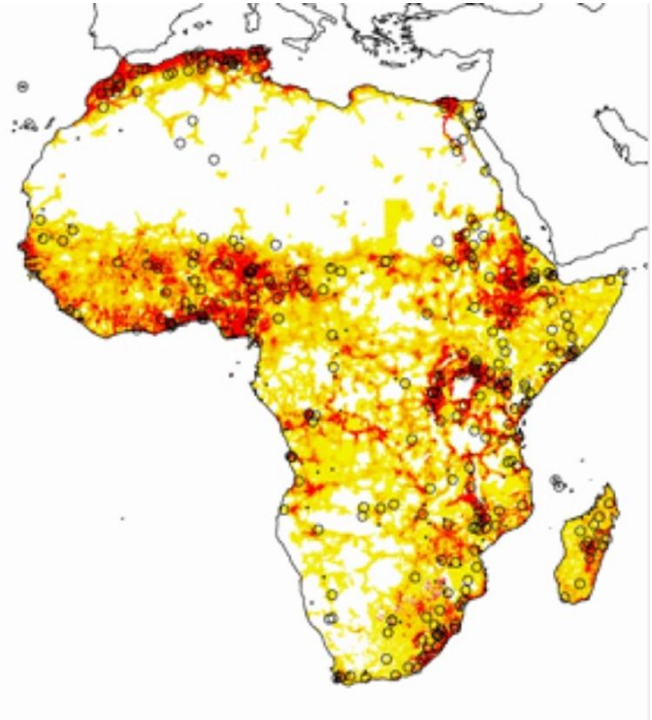






Drought **Soil erosion** **Desertification**

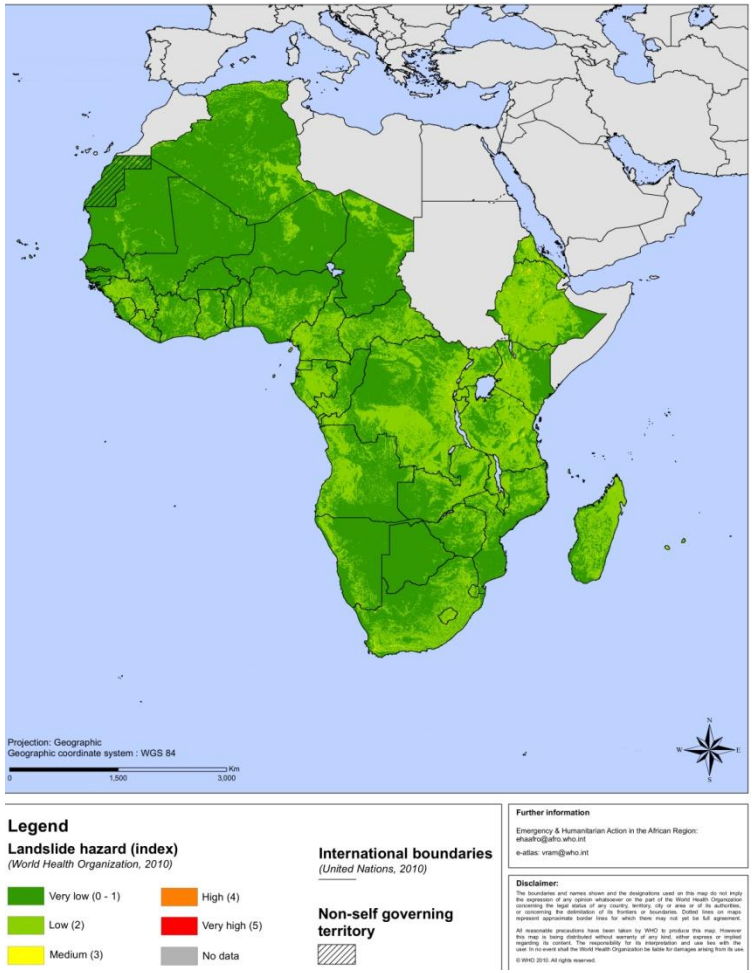
Relevance of the Topic



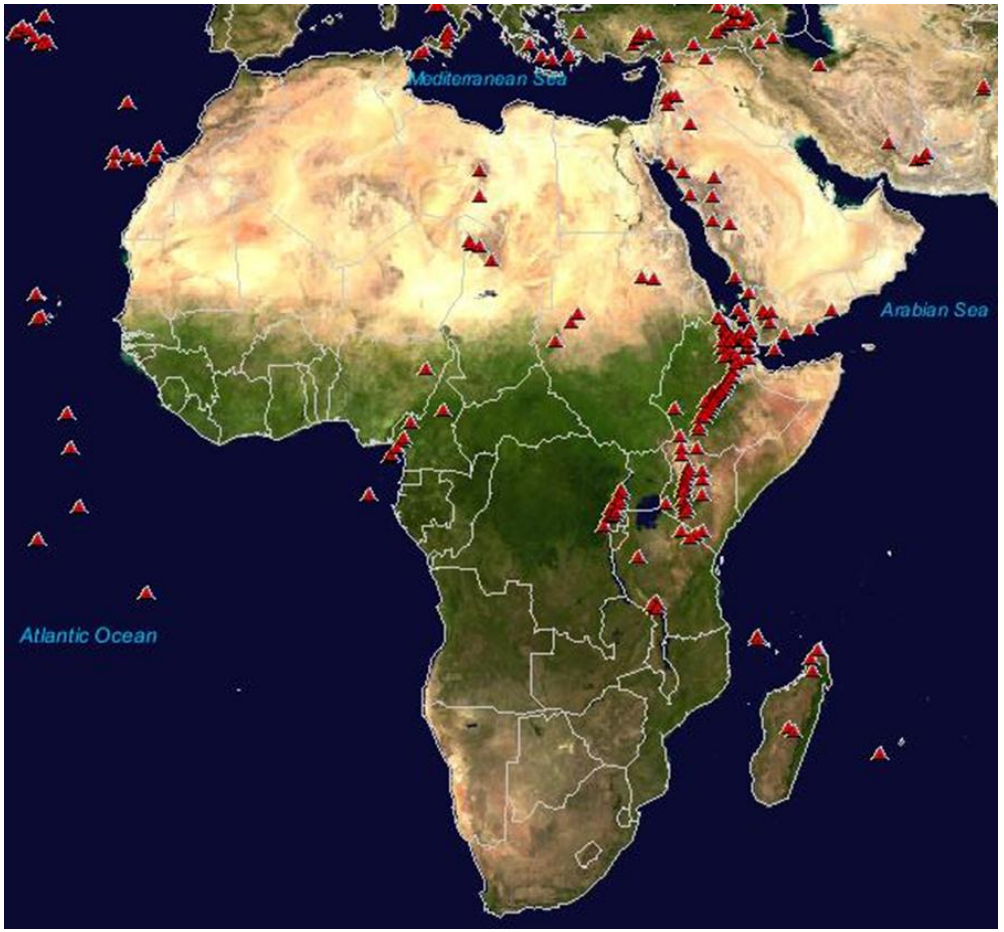
Flood risk

Relevance of the Topic

Landslides

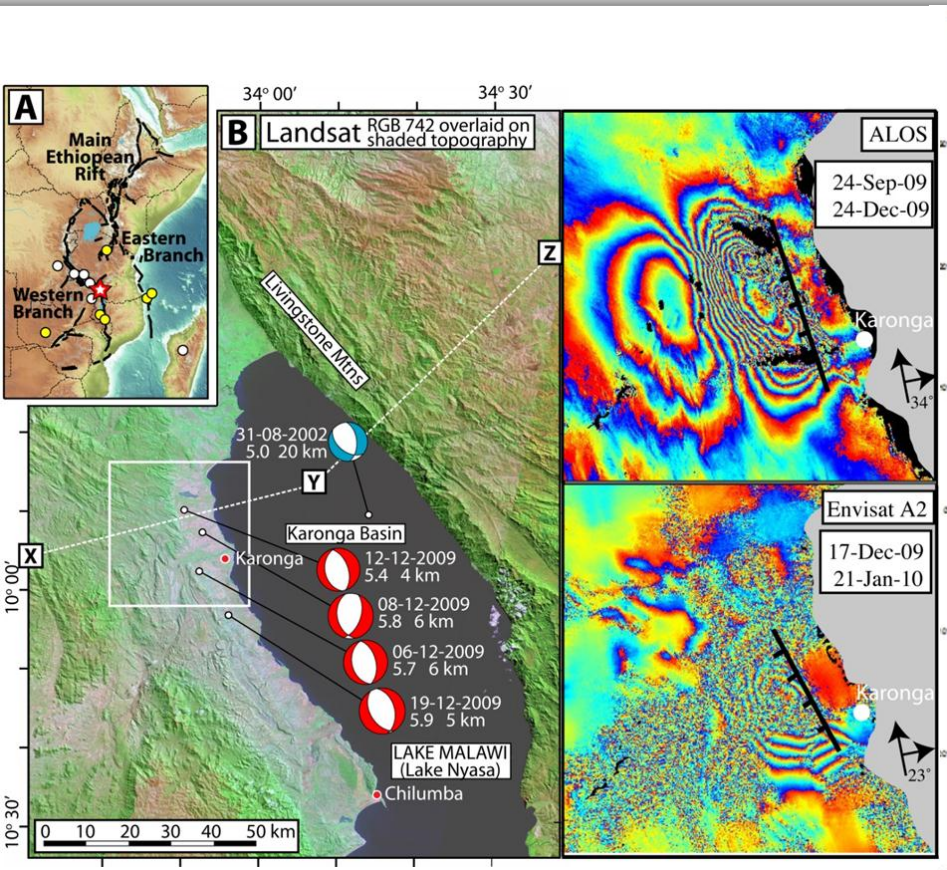


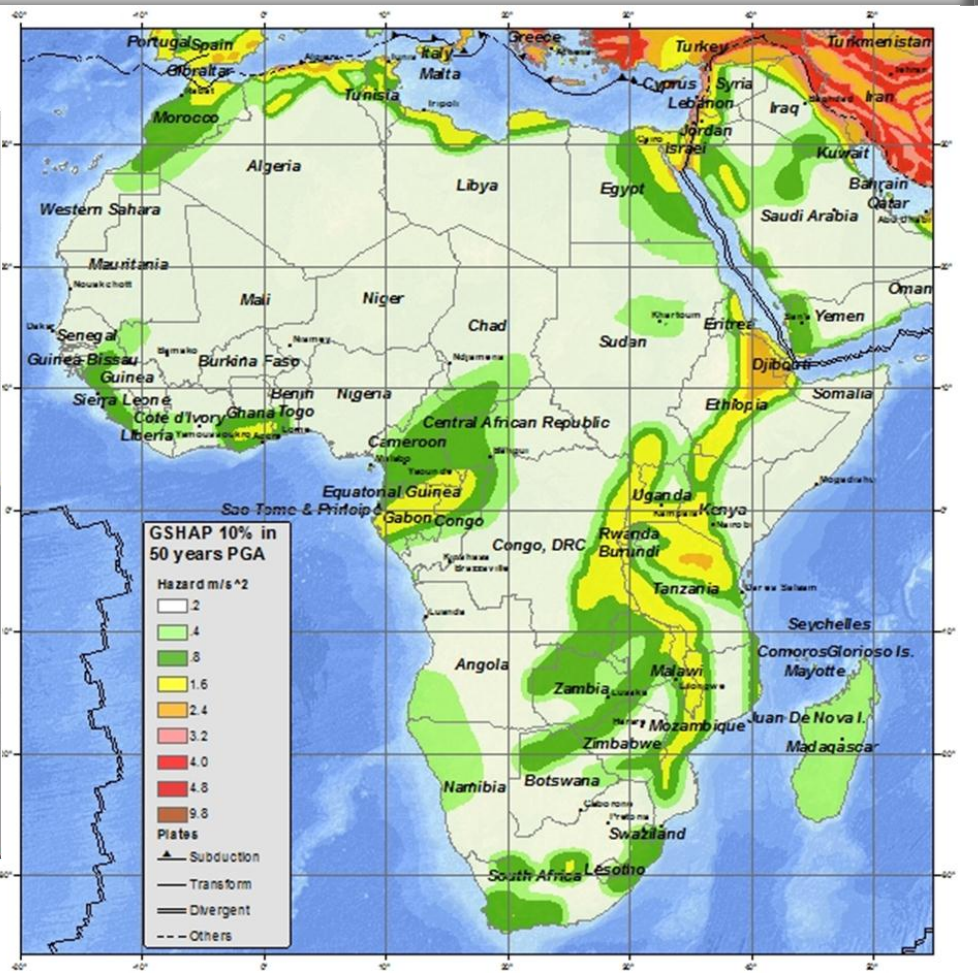
Relevance of the Topic



Volcanic activity

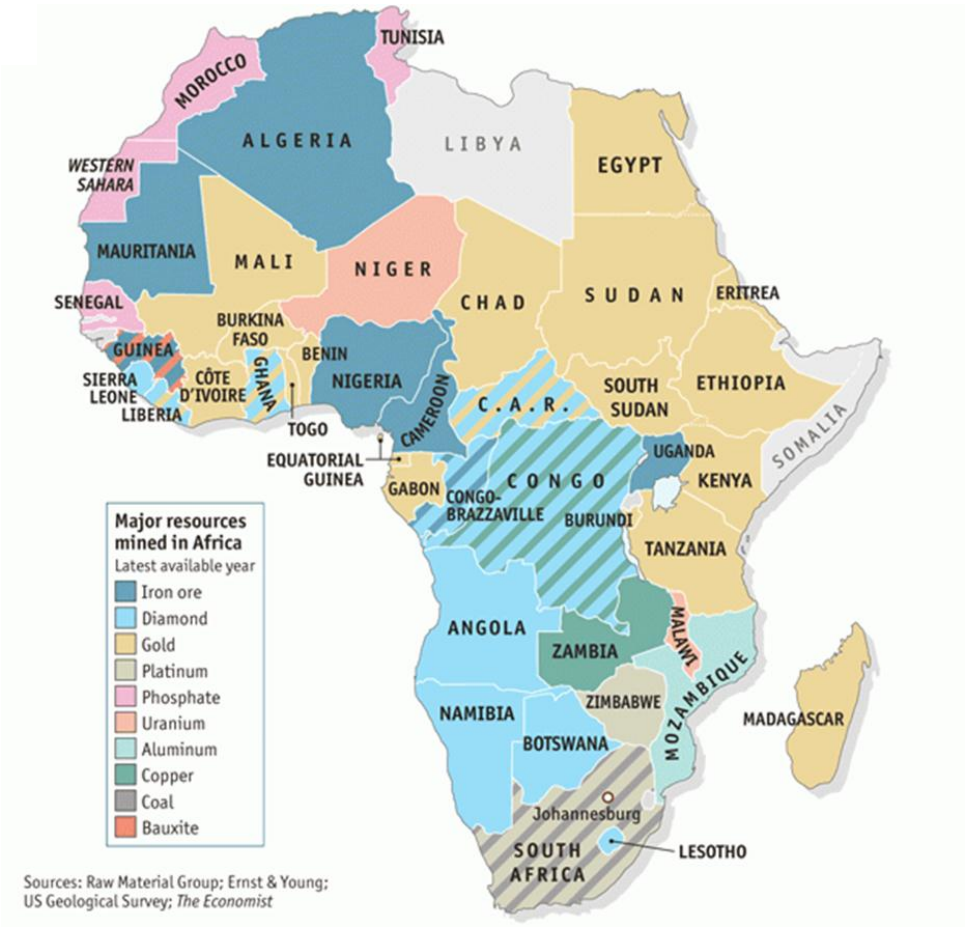
Relevance of the Topic





Earthquakes

Relevance of the Topic



Mining activity

Relevance of the Topic

Waste disposal

Gap analysis

Information sources on geohazards analysis are different in each country:

• Institutional bodies – state authorities (related ministries, bureau of statistics) and local authorities (municipal councils);

• Research centres and universities, geohazards centres and seismic stations, Geological Survey's departments and divisions e.g. Geophysics, Engineering and Environmental Geology;

• Scientific studies and publications on landslides, flash floods, assessment of watersheds vulnerability, etc.

Based on collected information sources on geohazards analysis it is almost obvious that there are not available systematized data portals or data bases

Gap analysis

Majority of the responded countries has indicated various needs and expectations in the field of geohazards analysis. It could be subdivided to these main areas of interest:

Methodologies – classification of geohazards, recommendations, other methodical support.

Trainings and knowledge – staff formation and training, radar interferometry training, capacity to forecast earthquake occurrence, skills development in engineering geology, public awareness.

Equipment – vehicles, equipment for field surveying, monitoring and early warning (sensors and accessories, seismic stations)

Mapping – products of earth observation (digital elevation models (DEM), laser scanning data (LIDAR)), remote sensing data (SPOT imagery) for a country-wide geohazard mapping, active faults mapping, etc.

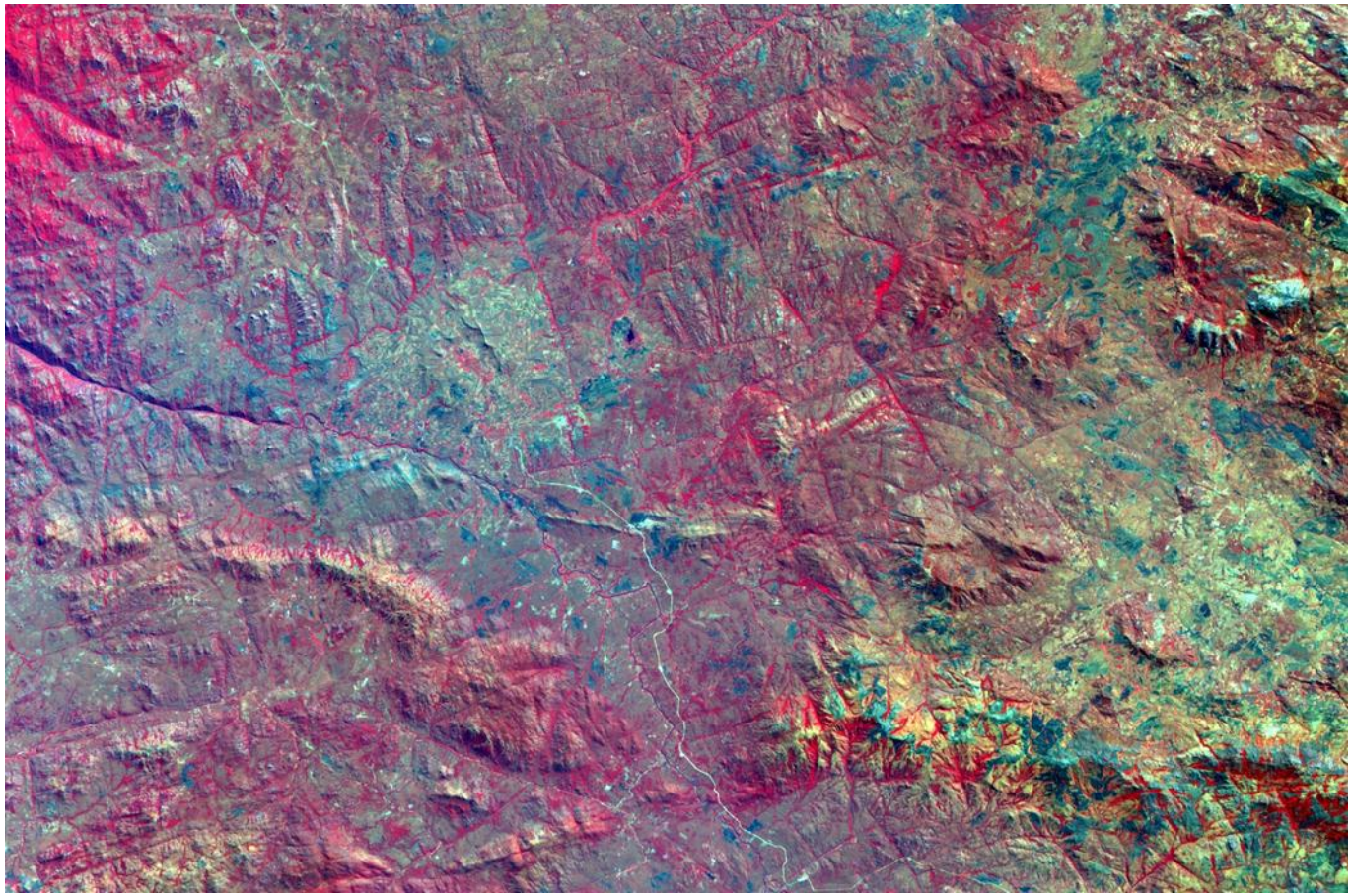
Inventory – identification of hotspot areas.

Recommendations

Training in geohazards should be developed based on proposed scheme of case studies.
It will cover:

- Technical properties of rocks and soils.
- Application of remote sensing methods.
- Modern mapping techniques.
- Geo-structural field survey.
- Quality of rock masses.
- Stability analysis for rock and soil slopes.
- Direct investigation techniques.
- Geophysical investigation techniques.

Proposed scope of training



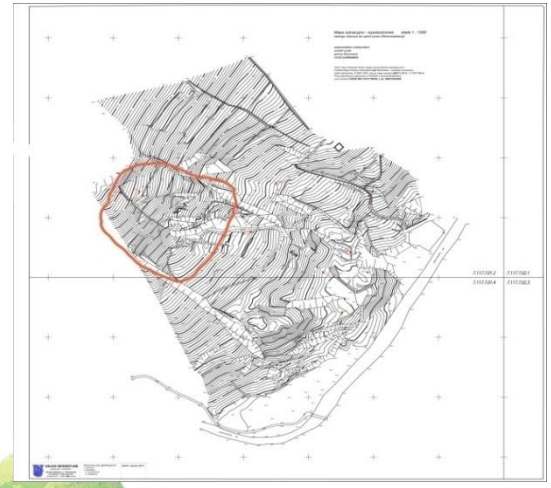
Remote Sensing – Landsat 8

Proposed scope of training

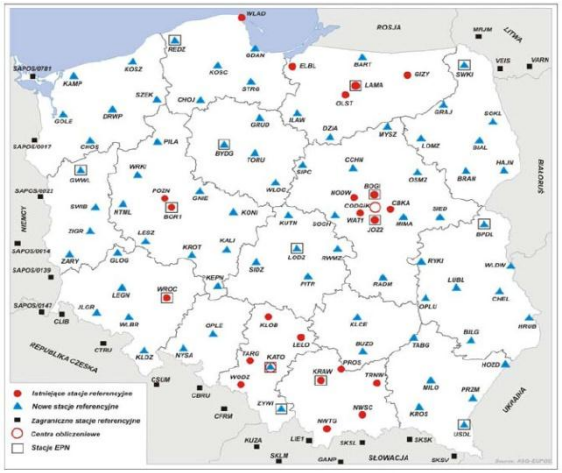
Surface monitoring

Precise GPS instruments

Total stations



Detail geodetic maps

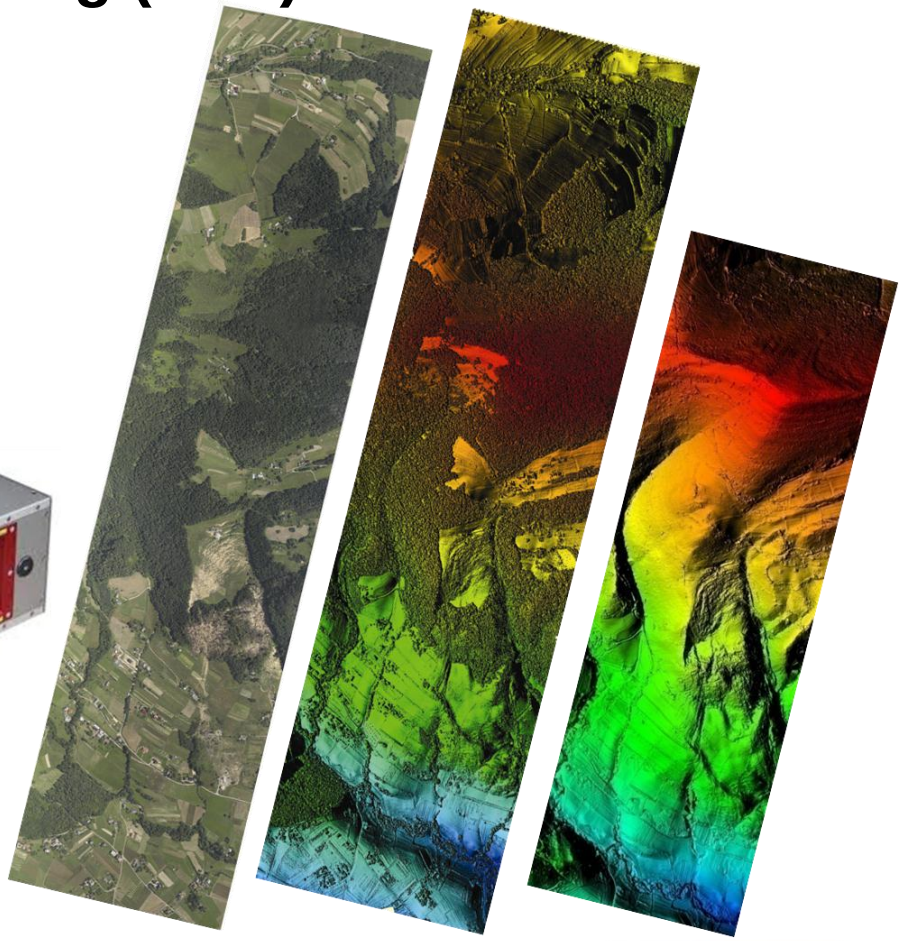


GPS reference systems

Terrestial laser scanners

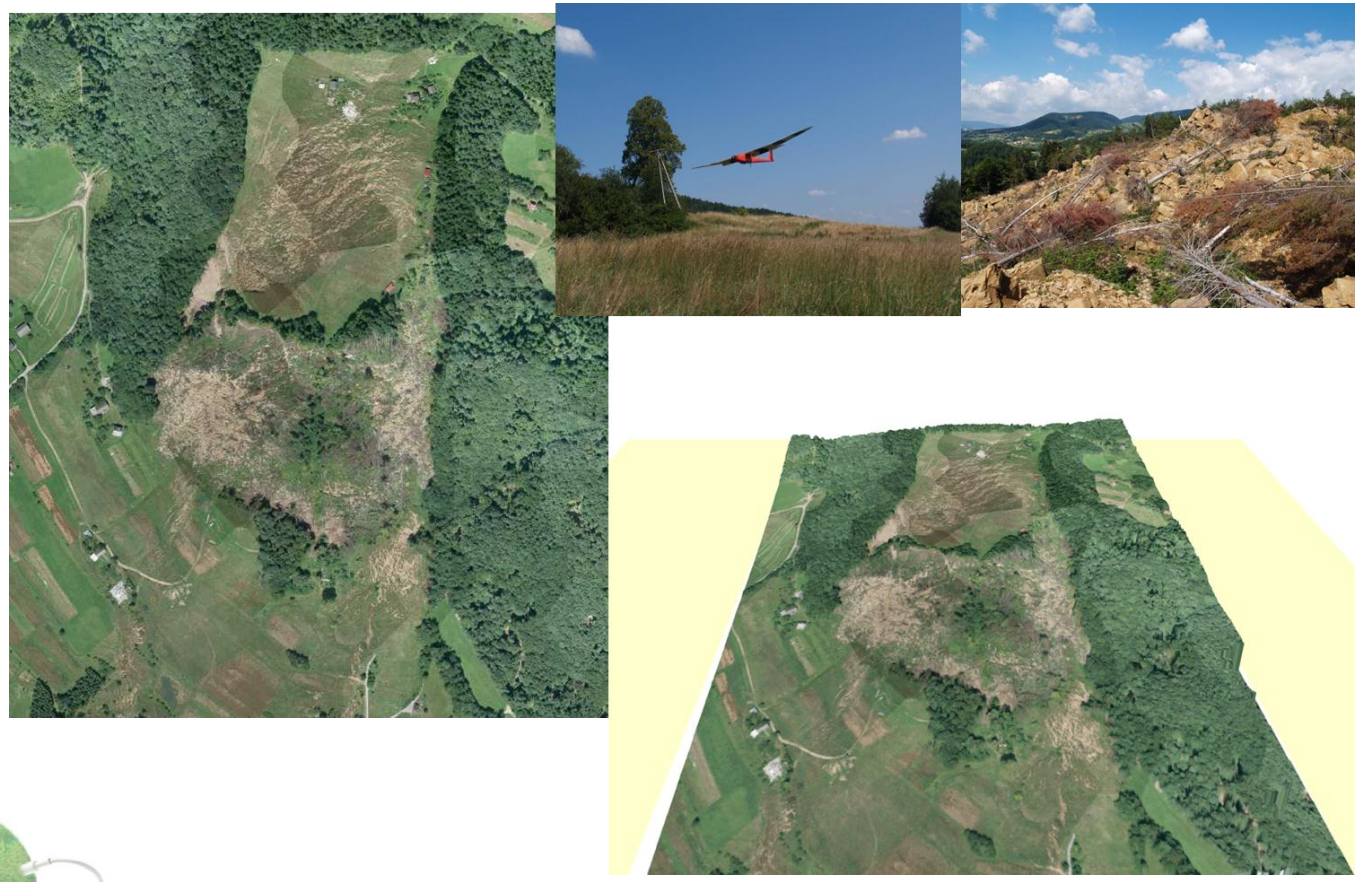
Proposed scope of training

Aerial Laser Scanning (ALS)

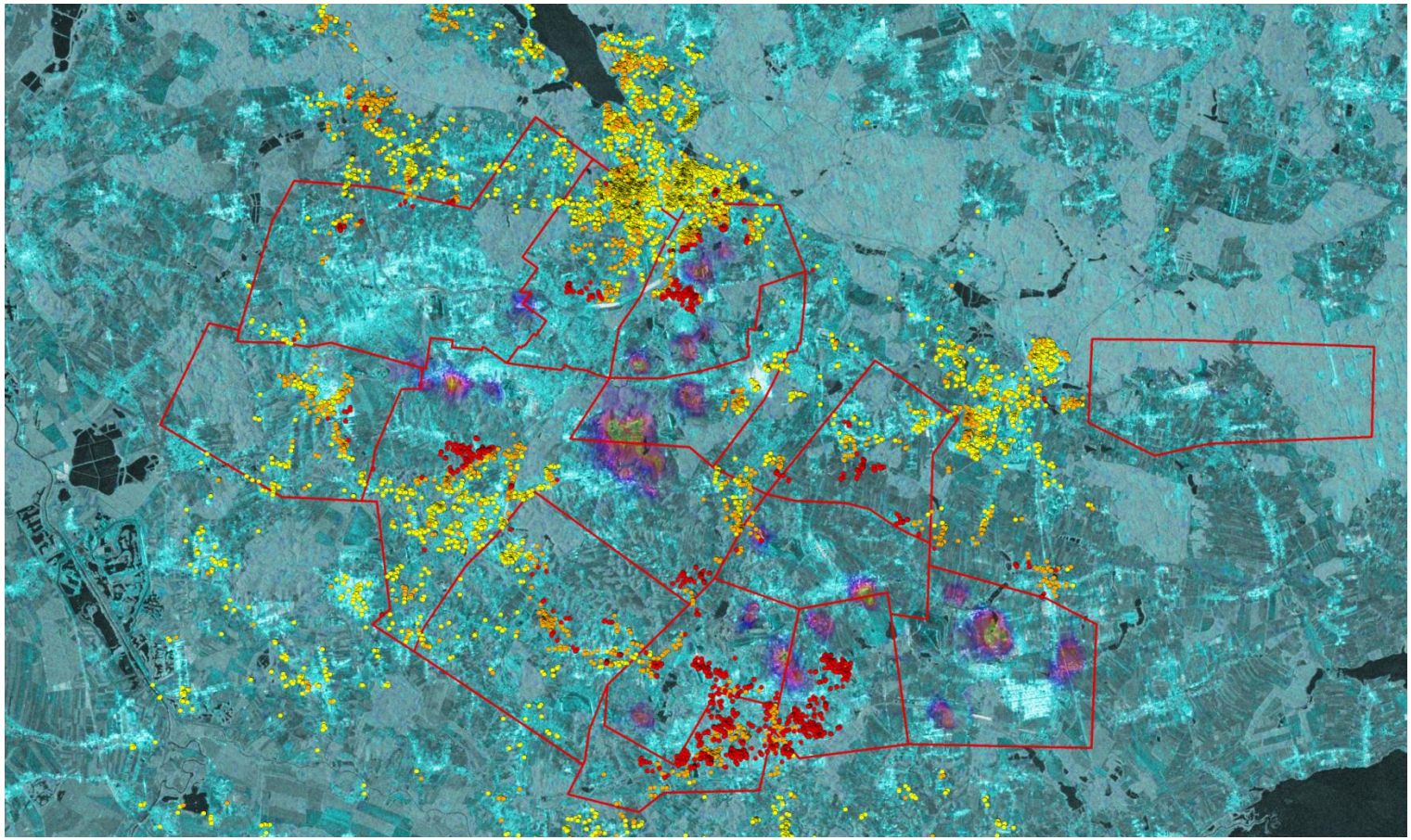


Proposed scope of training

Unmanned Aerial Vehicle (UAV)



Proposed scope of training



0 30 cm

Satellite interferometry

Thank you for your attention