Geohazards can have a drastic effect upon society. While developed nations suffer mostly in financial terms, the human impact of geohazards is concentrated in the less developed world. As population increases, more and more people are exposed to geohazards.

earthquakes, volcanic activity, landslides, tsunamis, floods, health hazards of geological materials

Geoscience cannot eliminate geohazards, but it is increasingly able to reduce their impact and to mitigate associated risks. This has resulted in improved forecasting where geohazards may occur, and how these may impact communities.

Challenge facing Earth scientists is how best to communicate information on risk reduction to stakeholders to assist better risk management.

In the service of society
2008-2012

Damaging earthquakes typically recur at intervals of centuries to millennia, but the seismological instruments have only been available for about a hundred years. To reliably assess the seismic hazard, we need a longer record. Archaeological evidence has the potential to reveal earthquake activity over millennial time spans, especially when integrated with historical documents and geological evidence (paleoseismology). Project demonstrates that earthquake archaeology can make a valuable contribution to long-term seismic hazard assessment in earthquake-prone regions. Interdisciplinary approach based on the expertise of historians, anthropologists, archaeologists, geologists, seismologists, geophysicists, architects and structural engineers.
IGCP 585: E-MARSHAL–Earth’s continental MARgins: aSSessing the geoHAzard from submarine Landslides

2010-2014

This project has brought a worldwide perspective to **submarine mass movements** and their consequences. The project attracted a broad range of research, covering the Atlantic and Pacific oceans, **inner seas** like the Mediterranean, **fjords** and **lakes** using the most recent technologies from **multibeam sonar imaging** and **3D seismic imaging** to **modelling of slope stability** to **post-failure evolution** and **tsunami generation**, propagation and run-up. It has also acted as a unique forum to showcase the **diversity** and **complexity** of the **geomorphology** and **geology** of the subaqueous environment.

- IGCP 511: Submarine mass movements and their consequences (2005-2009)
- IGCP 640: Significance of Modern and Ancient Submarine Slope LandSLIDEs (S4LIDE) (2015-2019)
IGCP 606: Addressing Environmental and Health Impacts of Major and Abandoned Mines in Sub-Saharan Africa

IGCP 594: Impact of Mining on Environment in Africa

2011-2014

Main topics:
• Soils contamination by metals
• Dispersion of dust and gaseous emissions from mining operations
• Contamination of wetlands, surface and ground waters
• Response of plants to heavy metal stress and bioremediation
• Mitigation of environmental impacts and application of modern rehabilitation technologies
• Geochemical modeling of the pollutants spreading
• Evaluation of potential links between contamination and health
• Environmental policy and legislation – best practices
• Compilation of inventory of abandoned mines
• Radiation and radon exposure risk

Main goals:
• Integrate the results of multidisciplinary studies performed in contaminated areas
• Strengthen the capacity of African institutions
• Raise public awareness about impacts of mining on the environment and human health
• Facilitate cooperation among geoscientists and medical scientists.
IGCP 601: Seismotectonics and Seismic Hazard in Africa

2011-2014

Main topics:
• Compilation of the seismotectonic database and related seismic parameters
• Characterization of the potential of faults as seismogenic sources
• Compilation of seismic catalogue, and analysis of earthquake recurrence
• Prepare a database of Ground Motion Prediction Equations
• Prepare a seismic hazard map of six provinces in Africa
• Analysis of seismic vulnerability and seismic risk
• Analysis of Tsunami threats for African coasts

Main goals:
• Development of the Guidelines for the seismotectonic map preparation
• Strengthen the cooperation within the Organisation of African Geological Surveys and AfricaArray - a program to promote geoscience in Africa
• Providing a basis for implementing seismic and geodetic networks for early warning systems
Brings together geoscientists with biomedical and public health researchers to address a range of environmental health problems. Toxic elements in soil, rocks and the atmosphere, arising from natural (rock chemistry) and human pollution may impact human health. All people on Earth are affected in some way either from an excess or lack of certain elements and natural processes. Primary aim was to raise awareness on these issues based on results of profound multidisciplinary research.

- International Medical Geology Association - launched in 2006.
- IYPE - one of topics Earth and Health: Medical Geology
Tales Set in Stone

40 Years of the International Geoscience Programme (IGCP)