



## SUMMARY OF IGCP 2016

### IN GEOHAZARDS THEME

F E B R U A R Y 2 0 1 7

#### **Geohazards: Mitigating the Risks**

Hazard is a process, phenomenon or human activity that may cause loss of life, injury or other health impacts, property damage, social and economic disruption or environmental degradation. **Geohazards** originate from internal Earth processes. Examples are earthquakes, volcanic activity, and related geophysical processes such as mass movements, landslides, rockslides, surface collapses and debris or mud flows. **Mitigation** measures include engineering techniques and hazard-resistant construction as well as improved environmental and social policies and public awareness.

*(The definitions have been adopted by the United Nations General Assembly on 2 February 2017.)*

#### **IGCP 640: Significance of Modern and Ancient Submarine Slope LandSLIDEs (S4SLIDE) 2015-2019**

Subaquatic landslides pose a risk to coastal communities and offshore infrastructure. Lack of understanding of the causal mechanisms and timing of submarine landslides has hampered progress in the prediction effort. The project enhances our understanding of the landslides and fills the gap between landslide occurrence, dynamics and tsunami genesis.

#### **Countries involved in the project (with 229 participants):**

Australia, Austria, Canada, Colombia, China, Brazil, France, Germany, Ireland, Israel, India, Indonesia, Italy, Japan, Republic of Korea, Netherlands, New Zealand, New Caledonia, Nigeria, Norway, Spain, Switzerland, Taiwan, UK, and USA.

#### **Main achievements in 2016:**

1. The community effort to advance our understanding of subaqueous landslides continues with special emphasis on the collection of morphometric parameters and their potential relationship with pre-conditioning factors and triggering mechanisms. Several of these databases have been made available in the S4SLIDE webpage.
2. Important advances have also been made in the active monitoring of subaqueous sediment gravity flows in fjords and lakes.
3. S4SLIDE Scientific Sessions in China, Italy, and South Africa
4. S4SLIDE sponsored workshops in Germany and South Africa
5. 40 publications in peer-reviewed journals incl. *Nature Communication*

#### **IGCP 641: Deformation and fissuring by exploitation of subsurface fluids (M3EF3) 2015-2018**

Earth fissures and reactivation of pre-existing faults caused by extraction of fluids is observed in sedimentary basins worldwide. Unexpected fissure generation associated with anthropogenic land subsidence strongly impact the development of urban areas. The project is aimed to improve the understanding of the processes involved in ground rupturing.

#### **Countries involved in the project (with 47 participants):**

China, Germany, Italy, Mexico, Philippines, Poland, Spain, UK, and USA.

#### **Main achievements in 2016:**

1. Contribution to the characterization of the major ground-failure features in selected areas of Mexico City, Arizona, and Nanjing, China, and the integration of the methodologies developed by each leader and project participants to investigate the generation/propagation of earth fissure and fault activation.
2. Progress in development of the global map of ground failures caused by subsurface fluid extraction.
3. Publication of 4 scientific papers, and papers in Symposium Proceedings.
4. Organization of the annual project meeting and workshop in Mexico, and several Scientific Sessions in Mexico and USA.

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