



HAL
open science

A web-platform for resilience assessment in mountainous valleys impacted by slope instabilities

Gilles Grandjean, Loïc Thomas, Séverine Bernardie, Jean-Philippe Malet, Anne Puissant, Thomas Houet, Franck Bourrier, Monique Fort

► **To cite this version:**

Gilles Grandjean, Loïc Thomas, Séverine Bernardie, Jean-Philippe Malet, Anne Puissant, et al.. A web-platform for resilience assessment in mountainous valleys impacted by slope instabilities. EGU - European Geosciences Union General Assembly 2018, Apr 2018, Vienne, Austria. hal-01755546

HAL Id: hal-01755546

<https://hal-brgm.archives-ouvertes.fr/hal-01755546>

Submitted on 30 Mar 2018

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



A web-platform for resilience assessment in mountainous valleys impacted by slope instabilities.

Gilles Grandjean (1), Loic Thomas (2), Severine Bernardie (1), Jean-Philippe Malet (3), Anne Puissant (4), Thomas Houet (5), Franck Bourrier (6), and Monique Fort (7)

(1) BRGM, Orleans, France (g.grandjean@brgm.fr), (2) GEOHYD, Olivet, France (loic.thomas@anteagroup.com), (3) EOST, University of Strasbourg, Strasbourg, France (jeanphilippe.malet@unistra.fr), (4) LIVE, University of Strasbourg, Strasbourg, France (anne.puissant@live-cnrs.unistra.fr), (5) University of Rennes, Rennes, France (thomas.houet@univ-rennes2.fr), (6) IRSTEA, Grenoble, France (franck.bourrier@irstea.fr), (7) PRODIG, University Paris Diderot, France (fort@univ-paris-diderot.fr)

The ANR-SAMCO project aimed to develop a proactive resilience framework enhancing the overall resilience of societies on the impacts of mountain risks. The project elaborated methodological tools to characterize and measure ecosystem and societal resilience from an operative perspective on three mountain representative case studies. To achieve this objective, the methodology was split in several points: (1) the definition of the potential impacts of global environmental changes (climate system, ecosystem e.g. land use, socio-economic system) on landslide hazards, (2) the analysis of these consequences in terms of vulnerability (e.g. changes in the location and characteristics of the impacted areas and level of their perturbation) and (3) the implementation of a methodology for quantitatively investigating and mapping indicators of mountain slope vulnerability exposed to several hazard types, and the development of a GIS-based demonstration platform available on the web.

The strength and originality of the SAMCO project lies in the combination of different techniques, methodologies and models (multi-hazard assessment, risk evolution in time, vulnerability functional analysis, and governance strategies) implemented in a user-oriented web-platform. We present the results of this developments, architecture and functions of the web-tools, the case studies database showing the multi-hazard maps and the stakes at risks. Different kinds of risk were assessed over several area of interest in Alpine or Pyrenean valleys, so that different analyses are presented for current and future periods for which climate change and land-use (economical, geographical and social aspects) scenarios are taken into account. This tool, dedicated to stakeholders, should be used to evaluate resilience of mountainous regions since multiple scenarios can be tested and compared.