

## Abstract Details

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### Abstract title:

Modelling Debris flow/Debris flood Hazards under Climate Change scenarios in the Andes Cordillera of central Chile

J. Clavero<sup>1,2</sup>, B. Droguett<sup>1</sup>, W. Pérez<sup>3</sup>, P. Vidal<sup>3</sup>, I. Briceño<sup>3</sup>, A. Tamayo<sup>4</sup>, I. Kovacic<sup>4</sup>.

<sup>1</sup>Amawta Geoconsultores, Amawta, Santiago, Chile.

<sup>2</sup>Universidad Mayor, Escuela de Geología, Santiago, Chile.

<sup>3</sup>Universidad Mayor, Centro de Observación de la Tierra Hémera, Santiago, Chile.

<sup>4</sup>Angloamerican Chile, Superintendencia de Sustentabilidad, Santiago, Chile.

We summarize here the first results of an ongoing research project which main goal is to assess the effects that climate change may induce on landslide hazards in a high Andean area of central Chile. In recent years, this area has suffered an intense drought period occasionally disturbed by intense-rain events with dramatic consequences for the communities located in mountain valleys as well as downstream in Chile's main central valley. These intense-precipitation events have increased in recent years, which together with the challenges derived from the unarguable global climate change, are the main reasons for assessing the possible future effects of climate conditions over landslide hazards in the Andean range of central Chile.

A climate model analysis based on a Regional Climate Model was used to assess the future precipitation and temperature conditions for the period 2030-2050 at two different scenarios (MPI-ESM-LR, HadGEM2-ES). In terms of landslide hazards, the main effects are related to those triggered by extreme meteorological events, such as debris flows and debris floods. The HadGEM2-ES scenario projects an increase of these landslide-triggering extreme rainfall events (higher than 20 mm/day) whereas de MPI-ESM-LR model projects a decrease in the number of events but more extreme in terms of rainfall (up to 150 mm/day). Under this situation, the future climatic conditions that would affect landslide hazards in this Andean range are: i) Water catchment area increase; ii) Rain season "shift" towards less cold seasons; iii) Higher occurrence of intense precipitation events; iv) Possible intense-rainfall events in spring months.