Geophysical Research Abstracts, Vol. 9, 08949, 2007
SRef-ID: 1607-7962/gra/EGU2007-A-08949

Spatial and temporal variations of geohazards in Norway under a changing climate

K. Kronholm (1,2), C. Jaedicke (1), D. Vikhamar-Schuler (3), K. Isaksen (3), A. Sorteberg (4), A. Solheim (1)

(1) International Centre for Geohazards ICG, Oslo, Norway, (2) Norwegian Geotechnical Institute NGI, Oslo, Norway, (3) Norwegian Meteorological Institute met.no, Oslo, Norway, (4) Bjerknes Centre for Climate Research, BCCR, Bergen, Norway (kalle.kronholm@ngi.no)

Various types of slides (snow, rock, clay and debris) pose the main geohazards in Norway. Such events have caused more than 2000 deaths, considerable damage to infrastructure and the natural environment over the last 150 years. An integrated research project, “GeoExtreme” is set up to investigate the coupling between climatic parameters and slides, extrapolate this into the near future with a potentially changing climate, and estimate socioeconomic implications.

Slides are preceded by a complex interaction of meteorological and geological processes acting at short and long time scales and are further complicated by local and regional variations in the snow cover and geology. This makes it difficult to predict deterministically the time and location of any slide event. Short- and long-term meteorological variables such as precipitation exhibit a strong control on the timing of slide release and can be used to predict the probability of slides, given a set of meteorological parameters. We have coupled a database consisting of more than 20 000 recorded slide events with a climate database to assess the predictability of slides caused by meteorological conditions. The slide database mainly contains events that have interfered with humans or infrastructure and cover all parts of Norway spanning the period from 1961 to 2005. The climate database contains daily interpolated maps of precipitation, temperature and wind for Norway. Meteorological parameters have been extracted for each slide event based on its location and date.

In addition the historical and present geohazard situation was documented in detail for four selected study areas in Norway covering different climatic zones of the coun-

try. The results from the analysis of historical slide events, meteorological conditions and the detailed study of geohazards in the study areas give a general overview of the present geohazards situation in country. The main objective for the project is the prediction of how this situation will change in a future climate. For this purpose climate scenarios are produced for various regions of Norway. Based on the future scenarios and the analyses of the historical data a prediction of the changes in geohazards as well as an evaluation of the resulting socioeconomic effects on the Norwegian society over the coming 50 years is scheduled for the late phase of the project.