

2006 ECI Conference on Geohazards

Lillehammer, Norway

Editors: Farrokh Nadim, Rudolf Pöttler, Herbert Einstein, Herbert Klapperich, and Steven Kramer

Year 2006

Paper 3

Hazards, Climate Change and Extreme
Weather Events

Christian Jaedicke*

Kalle Kronholm†

Anders Solheim‡

Ketil Isaksen**

Dagrun Vikhamar††

Kari Sletten‡‡

Lars Harald Blikra§

Asgeir Sorteberg¶

Asbjørn Aaheim||

*Norwegian Geotechnical Institute

†International Centre for Geohazards / NGI

‡International Centre for Geohazards / NGI

**Norwegian Meteorological Institute

††Norwegian Meteorological Institute

‡‡Geological Survey of Norway

§Geological Survey of Norway

¶Bjerknes Centre for Climate Research

||Centre for International Climate and Environmental Research

<http://services.bepress.com/eci/geohazards/3>

Copyright ©2006 by the authors.

Hazards, Climate Change and Extreme Weather Events

Abstract

Geohazards are events related to geological features and processes that cause loss of life and severe damage to property and the natural and built environment. The most common and destructive geohazards in Norway are snow avalanches, clay-, debris- and rock slides, and floods, which together caused more than 2000 deaths during the last 150 years. Statistically, about 10 large slides and avalanches are expected to occur in Norway the next 50-100 years, each with possibly 20-100 deaths, unless preventive planning and actions are made. In addition to the loss of lives, geohazards pose a large impact on infrastructure and the daily life in many parts of Norway. A possible increase of extreme weather events in the next 50 years may lead to change in the type and frequency of slides and avalanches. The main objective of the four year research project GeoExtreme is therefore to assess the geohazard situation in Norway in a changing climate over the next 50 years. The initial step is a statistical analysis of the relationships between meteorological conditions and geohazards. To do this, a national database of slide events has been established. The time and location of these events will be compared to interpolated meteorological datasets for the last 100 years. Results of this analysis will be used in combination with climate scenarios for the next 50 years to produce a picture of possible future geohazards in Norway. The effects on the local society are studied in detail in four study areas representing different climate areas in Norway. An important part of the project is the assessment of socioeconomic consequences of geohazards in Norway, both in the past, and in the future, under the predicted climate

scenarios. Important parameters here are cost related to damage by natural disasters as well as to mitigation measures, ability to learn by experience, changes in preparedness, and impact on policy makers. The first results show a high predictability of slide events by standard meteorological observations. Also the vulnerability pattern shows significant changes from hazard for residential areas to transport lines and leisure time activities. The presentation gives a general overview over the project and presents some of the first results of the analyses.

No manuscript submitted by the authors.