Geophysical Research Abstracts
Vol. 18, EGU2016-17034, 2016
EGU General Assembly 2016


# Enhancing national Daily Landslide Hazard Assessments through inter-agency collaboration; lessons learned from storm Desmond (UK)/Synne (Norway), Dec 2015.

Søren Boje (1), Graziella Devoli (1,2), Monica Sund (1), Katy Freeborough (3), Tom Dijkstra (3), Helen Reeves (3), and Vanessa Banks (3)

(1) Norwegian Water Resources and Energy Directorate (NVE), Forecast of flood and landslide hazard, Oslo, Norway (gde@nve.no), (2) University of Oslo, Department of Geosciences, Oslo, Norway , (3) British Geological Survey, Keyworth, UK

The Norwegian Water Resources and Energy Directorate (NVE) and the British Geological Survey (BGS) compile daily landslide hazard assessments (DLHA) in their respective countries. NVE DLHA has been operational since 2013 and provides national daily assessments based on quantitative thresholds related to daily hydro-meteorological forecasts coupled with qualitative expert analysis of these forecasts. The BGS DLHA has been operational since 2012 and this is predominantly based on expert evaluation of antecedent hydro-meteorological conditions and triggering rainfall across Great Britain (GB). In both cases, the hydro-meteorological evaluation is coupled with observations derived from proprietary datasets on landslide events and landslide potential in order to specify, and limit, the spatial extent of the potentially impacted area. However, the DLHA are strongly driven by hydro-meteorological forecasts.

In December 2015, a large extra-tropical cyclone developed over the Atlantic and delivered record-breaking precipitation over parts of the UK and Norway. The meteorological services started naming these events to enhance public uptake and awareness and the storms were named as Desmond (the 4th large storm in 2015/16 in the UK) and Synne (the 5th storm in 2015 in Norway). Desmond arrived in earnest on the 5th of December and brought intense precipitation and strong winds over a 48-hour period. In Cumbria (NW-England) record precipitation was measured (341.4 mm in 24-hour at Honister Pass which is more than twice the monthly average), with 48-hour accumulations exceeding 400 mm. Synne arrived shortly after in Norway and was also characterised by excessive rainfall of 140 mm in 24-hour, 236 mm in 48-hour and 299 mm in 72-hour at Maudal, SW-Norway.

Both organisations managed to issue appropriate advance warnings, operating individually. In Norway, warnings were issued some 2 days in advance with a yellow level communicated on Friday 4th and an orange warning the 5th and 6th December. Synne triggered at least 23 landslides, 5 slush flows and 8 snow avalanches. The storm caused also significant floods in the southern sector of the west coast of Norway. In the UK, the DLHA warning level was elevated to yellow on Friday 4th and maintained the following days. Desmond resulted circa 25 landslides that were reported in the media. In both countries, many events were recorded close to transport infrastructure, but the actual number of events is much greater than reported during the storm. The severe consequences of extensive, simultaneous flooding provided a focus for most media reports. Following the events a picture emerged of the wider landscape response through anecdotal photographic evidence and social media. Data gathering therefore continues to date.

Even though the issuing of landslide warnings has seen a high rate of success, there are important lessons to be learned regarding the magnitude of landscape response to particular events. This study shows how extreme events can strike several countries at approximately the same time raising landslide forecasting beyond the local environment. Significant gains can be made through inter-agency, international collaboration in order to improve the quality of daily landslide hazard assessments and risk mitigation strategies.