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Abstract

This research project will look at the effect a warmer climate will have on the established avalanche protections. Climate forecasts shows that the climate is changing faster than ever, and that the global temperature is most likely to increase by 1.6°C within 2050. This will lead to increased rainfall and harsher weather, and adaptations must be made in time to minimize economic, environmental, and social consequences. Are these avalanche protections adapted to the expected climate?

Field observations and data collection from Norwegian geological databases formed the basis as we obtained an overview of the geological, topographical, infrastructural, landslide historical, and hazard conditions at the two locations, Breivikeidet ferjekai and Kjosen-area.

Observations in the field showed that the established protections along Fv91 in the Kjosen-area are not protecting against all the avalanche incidents that have taken place in the vicinity of the county road. The climate forecasts indicates that small, steep rivers and streams – as of where those observed avalanches have moved along - are likely to excavate new courses and carry away debris in dangerous flash floods, such as the one which occurred in 2014 in the same area. The river dynamics of Storelva by the Breivikeidet Ferjekai is likely to be affected by change in rainfall- and flood patterns, and a sea level rise of 16-116 mm by the year 2100 is likely to have an effect on the depositional behavior – creating further challenges related to the geohazards in the area.

The importance of future spatial planning and that adaption of established and future avalanche protection measures for a future climate is beneficial, despite the extra financial cost it might entail. A fast-changing climate and an ever-changing avalanche dynamic in the mountains substantiates the need for continually mapping and surveillance. This will positively affect society by reducing the likelihood of disasters and other economic, social, and environmental consequences.