

What is causing the large scale displacements along the Siglufjarðarvegur road in the Almenningar area, in central N Iceland?

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Since the Siglufjarðarvegur road, in the Almenningar area in central North Iceland, was constructed in 1968 extensive damages have occurred on and along the road, often causing hazardous conditions. The road crosses three landslides on a 6 km along the coastal area on the eastern side of the Tröllaskagi Peninsula. All of these landslides show clear indications of movement. In 1977 the Icelandic Road and Coastal Administration began to monitor the deformation. In the beginning the measurements were achieved with several years interval, but over the last decades yearly measurements have been performed. In the year 2022, nine GNSS stations were installed along the road and a rain gauge was also installed in the area. This installation gives us for the first time the possibility of 24/7 monitoring on the displacements and a direct connection to weather variations, such as temperature variation and precipitation. The dataset, which spans now over 45 years, gives us a unique opportunity to correlate the displacements to external factors. Written source of deformation in the area dates back to 1916 and since then more than 50 movement events have been registered affecting the road.

Recent studies of the movement of the whole landslides masses, both using “feature tracking” and InSAR shows clearly that the whole landslide areas show signs of movement, but of different rate and the movement occurs on different parts of the landslides masses between years.

Our studies show that the highest movement rate takes place along the frontal parts of the landslide masses and that the movement is strongly related to both weather variations, e.g. precipitation and snowmelt and also to coastal erosion.

Extensive damages occur on this part of Siglufjörður road every year, often causing hazardous condition, which makes the prospect for the road not bright.