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# Seismic monitoring of the unstable Aaknes rock slope, Norway

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The instable rock slope at Aaknes, Norway is a threat to close by villages and ships in the fjord system. The site is remote, but a sudden failure of the slope can possibly generate a local tsunami endangering large parts of the fjord and its shores. The estimated volume of the instability lies between 40 and 70 million cubic meters and the movement rate within the slope varies between 4 and 15 cm/year. Several contineous monitoring systems have been installed and presently are operational. Amongst these there is a seismic monitoring system consisting of 8 three-component geophones with the purpose to record microseismic events related to the movement of the slope. The network has been installed October 2005 and is running without major interruption since then. It covers an area of about 250 x 150 meters in the upper part of the unstable slope, where the mass movements can directly be observed by means of extensomenters and a laser ranging system. The local acquisition system is connect through a 13 km radio link and the internet to NORSAR. Thereby we can download the data in real-time using an automised file transfer to NORSAR. In the first year we collected the data in contineous mode in order to gain an overview on the ambient noise conditions and the different types of seismic events. From August 2006 onwards we record the data in an event-triggered mode with higher sampling rates. Usually we observe 1-10 local microseismic events per week that we consider to be related with the movement. These signals have a duration of about 2-3 s and can be observed on all geophones simultaneously with a good signal-to-noise ratio. So far the events could not be localized, because of lack of a realistic velocity model for the subsurface. The site is very heterogeneous having a rough topography and strong variations of the seismic velocities. In October 2006 we conducted a first calibration experiment consisting of 11 blasts located in and around the seismic network. It turned out that the velocities

vary signifcantly (by a factor of 2-3) within the network, which is partly on solid rock and partly on the moving part of the slope.