



Seismic signals preceding the the Nuugaatsiaq landslide (Greenland): Insights into the nucleation processes

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Observation of precursory signals of catastrophic natural events, such as earthquakes and landslides, is necessary for improving our knowledge about the physics of the nucleation process. These observations may also help to forecast these catastrophic events or reduce their hazard.

I report here a study aimed at detecting and characterising the seismic precursors to the Nuugaatsiaq landslide in Greenland. A precise detection of precursors obtained using template matching technique, permitted me to observe the emergence of small precursory signals from ~ 15 h before the main event. The strong similarity and the time evolution of the detected precursors imply that an aseismic slip event is taking place for hours before the landslide, with an exponential increase of slip velocity. The increment of events for times close to the main rupture suggest a slip acceleration, and an evolution of rheological properties of the rupture plane. Furthermore, time evolution of the precursory signals' amplitude sheds light on the evolution of the fault physics during the nucleation process.