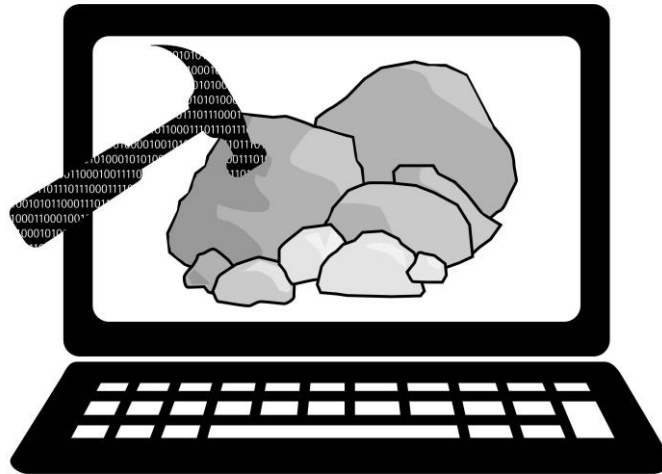


2nd FZ:GEO Hackathon "Hack the Rock²"

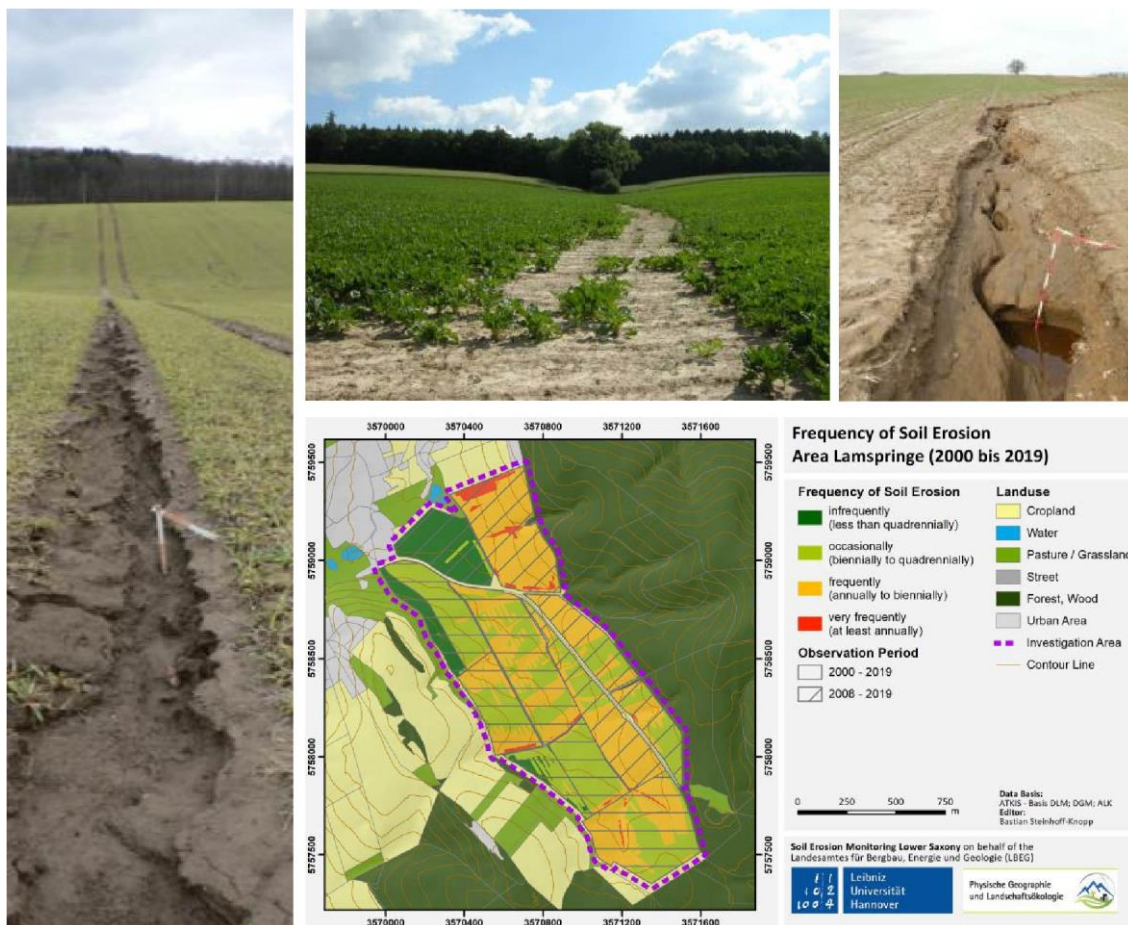


We want to draw your attention to an upcoming Hackathon. On **March 1st/2nd, 2021** we will meet online (Cisco Webex Meeting) to tackle two challenges. The first task is to develop novel machine learning approaches for the prediction of soil erosion by water based on soil erosion data from several localities. The second task to be tackled is related to the detection of controlling features of precious metal deposits based on mineralogical and geochemical data of drill cores from various sensors.

If you want to participate, **please register until February 26th, under: hackathon@geo.uni-hannover.de**. The event is open to all researchers and students, who are interested in machine learning as well as computer vision and photogrammetry. The hackathon also invites novices from both, machine learning and earth sciences to jointly work on the challenges. We aim to set up groups that consist of members from different disciplines and skill levels to activate synergies.

1. Soil erosion

Frequent soil erosion is a geohazard endangering not just agricultural production, but many sensitive ecosystems and their ability to provide ecosystem services. Monitoring of erosion is necessary to understand the influence of agricultural management, climate change and concomitant extreme events on the degradation of soils. We will use machine learning and deep learning to derive models to predict soil erosion rates and soil erosion frequencies based on monitoring data of the last 20 years.



2. Platinum in drill cores

The Bushveld Complex in South Africa is one of the richest ore deposits on Earth, containing the world's largest reserves of platinum group elements (PGEs) along with vast quantities of other economically important elements, such as iron, tin, chromium, titanium and vanadium. Up to the day, the formation and distribution of these elements is not well understood, but crucial for the targeted exploration. We will use methods of machine learning, computer vision and photogrammetry to come up with innovative approaches for the automation of drill core evaluation. Exemplary tasks are the geometrical co-registration of several 2-D datasets acquired by different sensors and the extraction of features which might control ore emplacements by deep learning.

