EGU23-16218, updated on 21 Feb 2024
https://doi.org/10.5194/egusphere-egu23-16218
EGU General Assembly 2023

Continental Scale Landslide Susceptibility Mapping Using Machine Learning Techniques

Graham Reveley, Hamish Mitchell, Claire Burke, James Brennan, Sally Woodhouse, and Laura Ramsamy
Climate X

The identification of areas susceptible to landslides is critical for planners, managers, and decision makers in developing functional mitigation strategies. Recent applications of machine learning and data mining methods have demonstrated their effectiveness in large-scale assessments of landslide susceptibility. At Climate X, we utilise a range of big Earth remote sensing data alongside machine learning techniques to evaluate the spatial susceptibility landslides at continental scale. We compile several conditioning factors— including topographic, subsurface, and land use data—and combine them with continental scale landslide inventories to generate landslide susceptibility maps for Europe and North America. Climate model projections for different emissions scenarios are then used to understand how climate change could modify the spatial occurrence of landslide events with a focus on landslides triggered by rainfall within steeper terrain. Our results demonstrate how the combined application of big Earth data and machine learning can provide time sensitive assessments of landslide hazard over large spatial scales.