

Abstract

Urban centers continue to densify and increase in number as the world's population grows. Landslides are a common hazard throughout the world and can cause significant loss of life and property. Landslide risk and damage to the built environment is often an outcome of urbanization, whereas in the natural environment damage due to landslides is considered part of nature taking its course. This study examines the most common landslide triggering variable, precipitation, in Western Washington State, a region prone to this geohazard. The methodology developed in this study utilizes freely available, currently cached and real-time soil, geology, land use, demographic, and weather data provided by state and federal agencies and required no field research. It is imperative in high-risk landslide zones to have easy access to accurate landslide prediction models available in an open format. Integrating real-time data into validated landslide risk and relative risk assessment models through a geographic information system (GIS) can increase the utility, accuracy, and ease of use of a given model. The model developed in this study reports potential risk to urban and rural environments as well as risk to specific demographics for a specified landslide event. Landslide triggering variables are well suited for real-time streaming due to their continuously changing behavior. By publishing and publically sharing the model as a web service thus making it available on via the internet, the methodology also encourages collegial and professional discussion. Thus, this study provides an example of data integration of traditional landslide risk assessment variables with real-time precipitation into a landslide risk and relative risk model that can be readily adapted to investigations into landslide hazards in other locations.