Landslide Susceptibility Across the Pacific Northwest: The Heavy Influence of Transportation Inventories

Thomas Stanley (1) and Dalia Kirschbaum ()

(1) Universities Space Research Association & NASA Goddard Space Flight Center, (2) NASA Goddard Space Flight Center, 617 - Hydrological Sciences Branch, Greenbelt, United States (dalia.b.kirschbaum@nasa.gov)

Some of the largest and best landslide databases in the United States of America describe the Pacific Northwest region. Nevertheless, these inventories are not a comprehensive listing of historic landslides. In particular, landslide dates tend to be recorded by state transportation agencies, which imposes a spatial bias upon any subsequent analysis. This reporting bias complicates not only the identification of landslide triggering conditions, but also hinders empirical calculations of landslide susceptibility. Although many strategies for bias mitigation could be employed, the simplest approach delivers generally plausible results that are most reliable in the most critical locations: along major highways and rail lines. This work tests logistic regression models that were fitted in zones with landslide reports, then applied regionally. Due to the destabilizing effects of excavation and other anthropogenic disturbances, the models may overestimate susceptibility in undeveloped areas. However, the susceptibility of developed sites should be as accurate as the modeling technique and input data allow.