Landslide headwall. Patterned ground associated with the weathered, differentially eroded surface exposed section of basalt. Bottoms have the potential for these catastrophic events. Cycle on the order of years to decades. The most prominent debris-flow events are historically infrequent, dependent on weather, with a recurrence interval up to 50 years (Bell, 1986). The deposits are characterized by a layer of colluvium which covers the basaltic surface and forms lateral ledges. More gently sloping areas are mantled by loess mantling basalt residuum. Movement is controlled by slope, aspect, upper and lower slope position, and association with stream channels. Landslides are associated with stream channels, small hillslopes, and fault scarps. Movements on steep-sided canyons and gullies cut into Columbia River Plateau, which is composed of Miocene basalt flows of the Columbia River Basalt Group, are particularly common. The largest landslides occur where canyon-floor deposits intercalate with sedimentary interbeds and adjacent basalt flows. The factors controlling the initiation and recurrence of debris flows are weathered basement rocks. The largest landslides occur where canyon-floor deposits intercalate with sedimentary interbeds, the hydrogeologic regime, and the occurrence of basalt overlying clay-rich surficial deposits. Areas of thicker saprolite, mostly attributed to the Miocene age of this remnant basalt, are the sites of frequent landslides.\n
Today, initiation and reactivation of landslides is closely tied to unusual weather events, and they are also triggered by unusually high groundwater levels.\n
The surface geology map is a diagnostic tool for assessing slope movement potential and the potential for debris-flow deposits.\n
**REFERENCES**\n
This information is intended for use outside the United States. It is provided as a guide to understanding the geology and potential for debris flows in the area. It is not intended to be a definitive scientific study. Users should consult with local experts and authorities for accurate information.