GLOSSARY

1. *Landslides* - movement of a mass of rock, debris, soil, organic materials, or earth down a slope, under the influence of gravity
2. *Alluvium* - Loose sediments deposited by running water
3. *Alluvial fan* - an outspread, gently sloping mass of alluvium deposited by a stream, especially in an arid or semiarid region where a stream issues from a narrow canyon onto a plain or valley floor. Viewed from above, it has the shape of an open fan, the apex being at the valley mouth.
4. *Bedrock* - the solid rock underlying gravel, sand, clay, etc.; any solid rock exposed at the surface of the earth or overlain by unconsolidated (loose) material
5. *Borehole* - a circular hole drilled into the earth, often to a great depth, as a prospective oil well, or for exploratory purposes
6. *Colluvium* - a general term applied to loose and mixed deposits, usually at the foot of a slope or cliff and brought there chiefly by gravity
7. *Catch basin* - a large basin into which a debris flow runs or is directed, and where it quickly dissipates its energy and deposits its load. Abandoned gravel pits or rock quarries can often be incorporated"
8. *Creep* - is the slow, steady, downward movement of slopeforming soil or rock.
   (1) seasonal, where movement is within the depth of soil affected by seasonal changes in soil moisture and soil temperature;
   (2) continuous, where shear stress continuously exceeds the strength of the material;
   (3) progressive, where slopes are reaching the point of failure as other types of mass movements.
   (4) *Complex,* Combination of two or more of the above types
9. *Debris avalanche* - This is a variety of very rapid to extremely rapid debris flow.
10. *Debris flow* - debris flows occur when masses of poorly sorted sediment, agitated and saturated with water, surge down slopes in response to gravity
11. *Differential weathering* - when weathering across a rock face or exposure occurs at different rates, mainly due to variations in the composition and resistance of the rock. This results in an uneven surface with the more resistant material protruding
12. *Digital elevation model (DEM)* - a digital file consisting of terrain elevations for ground positions at regular intervals
13. *Digital terrain model (DTM)* - a three-dimensional model of digital elevation data for cartographic representation. Terrain models are often displayed as grids, superimposed over topography maps to illustrate peaks and valleys.
14. Digital surface model (DSM) - three-dimensional model of digital elevation data for cartographic representations taking into account of all objects (structures, buildings, etc.) on the surface

15. *Drawdown* - lowering of water levels in rivers, lakes, or underground aquifers due to pumping or artesian flow. Drawdown may leave unsupported banks or poorly packed earth that can cause subsidence or landslide
16. *Earth flow* - have a characteristic “hourglass” shape. The slope material liquefies and runs out, forming a bowl or depression at the head. The flow itself is elongated and usually occurs in fine-grained materials or clay-bearing rocks on moderate slopes and under saturated conditions.
17. *Epicenter* - the point on the earth's surface directly above the focus of an earthquake
18. *Expansive soils* - types of soil that shrink or swell as the moisture content decreases or increases. Structures built on these soils may experience shifting, cracking, and breaking damage as soils shrink and subside or expand
19. *Falls* - abrupt movements of masses of geologic materials, such as rocks and boulders, that become detached from steep slopes or cliffs, strongly influenced by gravity, mechanical weathering, and the presence of interstitial water.
20. *Fracture* - breaks in rocks due to intense folding or faulting; can be caused by breaking oil-, gas-, or water-bearing strata by injecting a fluid under such pressure as to cause partings in the rock
21. *Geodesic/geodetic measurements - t*he investigation of any scientific questions connected with the shape and dimensions of the Earth.
22. *Geographic Information System (GIS)* - computer system for the capture, storage, retrieval, analysis, and display of spatial data
23. *Geologic hazard* - a geologic condition, either natural or man-made, that poses a potential danger to life and property. Examples: earthquake, landslides, flooding, faulting, beach erosion, and land subsidence.
24. *Geologic map* - a map on which is recorded the distribution, nature, and age relationships of rock units and the occurrence of structural features
25. *Geomorphology* - the science that treats the general configuration of the earth's surface; specifically, the study of the classification, description, nature, origin, and development of landforms and their relationships to underlying structures, and the history of geologic changes as recorded by these surface features
26. *Hydrology* - the science that relates to the water of the earth
27. *LIDAR (Light Detection and Ranging, also known as Airborne Laser Swath Mapping or ALSM)* - a remote sensing technology that uses light in the form of laser to detect, scan and characterize topography.
28. *Lahar* - slurries of volcanic sediment, debris and water that cascade down volcano’s slopes through rivers and channels.
29. *Landslide hazard map* - hazard maps that show the areal extent of threatening processes: where landslide processes have occurred in the past, where they occur now, and the likelihood in various areas that a landslide will occur in the future.

30. *Landslide inventory maps* - inventories that identify areas that appear to have failed by landslide processes, including debris flows and cut-and-fill failures
31. *Landslide risk map* - these maps shows landslide hazards and the probability that they will occur, expressed in statistical recurrence rates; risk maps may show cost/benefit relationships, loss potential and other potential socio-economic impacts on an area and/or community
32. *Landslide susceptibility map* - these maps go beyond an inventory map and depict areas that have the potential for landsliding. These areas are determined by correlating some of the principal factors that contribute to landsliding, such as steep slopes, weak geologic units that lose strength when saturated, and poorly drained rock or soil, with the past distribution of landslides
33. *Lateral Spreads* - They are distinctive because they usually occur on very gentle slopes or flat terrain. The dominant mode of movement is lateral extension accompanied by shear or tensile fractures.
34. *Liquefaction* - the transformation of saturated, loosely packed, coarse-grained soils from a solid to a liquid state. The soil grains temporarily lose contact with each other and the particle weight is transferred to the pore water
35. *Lithology* - the physical character of a rock, generally as determined at the microscopic level, or with the aid of a low-power magnifier; the microscopic study and description of rocks
36. *Mechanical weathering* - the physical processes by which rocks exposed to the weather change in character, decay, and crumble into soil. Processes include temperature change (expansion and shrinkage), freeze-thaw cycle, and the burrowing activity of animals
37. *Mitigation* - activities that reduce or eliminate the probability of occurrence of a disaster and/or activities that dissipate or lessen the effects of emergencies or disasters when they actually occur
38. *Mudflow* - a general term for a mass-movement landform and process characterized by a flowing mass of fine-grained earth material with a high degree of fluidity. The water content may range up to 60%
39. *Rain gauge* - a meteorological instrument to measure the precipitating rain in a given amount of time per unit area.
40. *Reconnaissance mapping* - a general, exploratory examination or survey of the main features of a region, usually preliminary to a more detailed survey. It may be made in the field or office, depending on the extent of information available
41. *Relief* - the difference in elevation between the high and low points of a land surface
42. *Risk* - the probability of occurrence or expected degree of loss, as a result of exposure to a hazard
43. *Rock mechanics* - the theoretical and applied science of the mechanical behavior of rocks, representing a branch of mechanics concerned with the response of rock to the force fields of its physical environment

44. *Rotational slide* - a slide in which the surface of rupture is curved concave upward and the slide movement is roughly rotational about an axis that is parallel to the ground surface and transverse across the slide.
45. *Soil Erosion* - removal of the upper layer of soil or topsoil by wind, water, and ice
46. *Stress* - in a solid, the force per unit area, acting on any surface within it, and variously expressed as pounds or tons per square inch, or dynes or kilograms per square centimeter; also, by extension, the external pressure which creates the internal force
47. *Subsidence* - sinking or downward settling of the earth's surface, not restricted in rate, magnitude, or area involved. Subsidence may be caused by natural geologic processes, such as solution, compaction, or withdrawal of fluid lava from beneath a solid crust; man's activity such as subsurface mining or the pumping of oil or ground water may also cause subsidence
48. *Surficial geology* - geology of surficial deposits, including soils; the term is sometimes applied to the study of bedrock at or near the earth's surface
49. *Swelling soils* - soils or soft bedrock which increase in volume as they get wet and shrink as they dry out. They are also commonly known as bentonite, expansive, or montmorillinitic soils
50. *Topples* - Toppling failures are distinguished by the forward rotation of a unit or units about some pivotal point, below or low in the unit, under the actions of gravity and forces exerted by adjacent units or by fluids in cracks.
51. *Vulnerability assessment* - the susceptibility or exposure to injury or loss from a hazard
52. *Watershed* - land area drained by a stream fixed body of water and its tributaries having a common outlet for surface runoff
53. *Weathering* - the destructive process by which earth and rock materials exposed to the atmosphere undergo physical disintegration and chemical decomposition resulting in changes in color, texture, composition, or form. Processes may be physical, chemical, or biological

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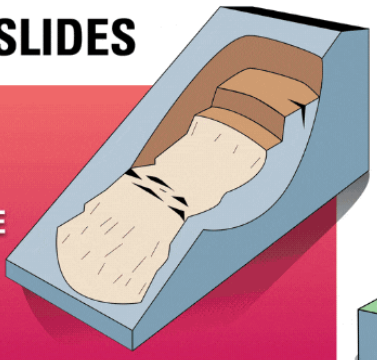
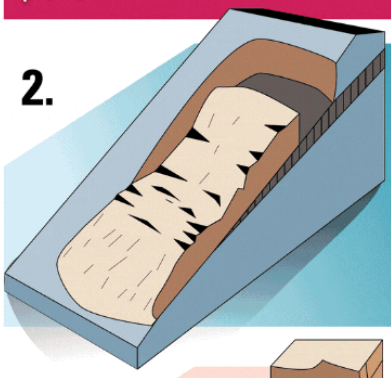
TYPES OF LANDSLIDES



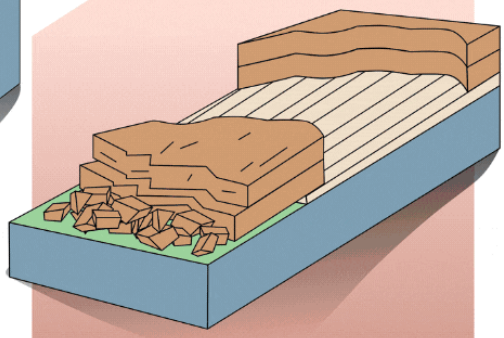
1.

ROTATIONAL LANDSLIDE
Ground rotates and slides along a curved failure plane.



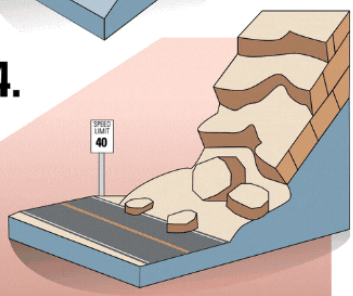
2.

TRANSLATIONAL LANDSLIDE
Ground slides with little rotation along a flat plane parallel to the surface.



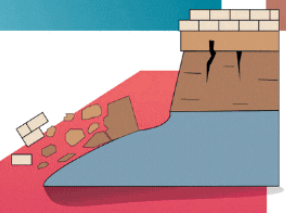
3.

BLOCK SLIDE
A type of translational landslide made of mostly one block of surface material that moves downslope.



4.

ROCKFALL
Gravity sends rocks and other materials tumbling downslope.

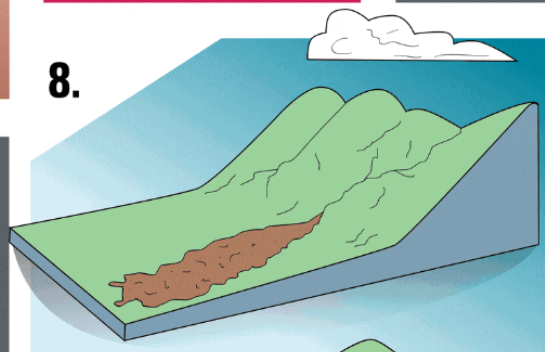


5.

TOPPLE
Pieces of a cliff or rock face fall forward as large blocks.

6.

EARTHFLOW
Form on moderate slopes when fine-grained material liquefies and runs out in hourglass shape.

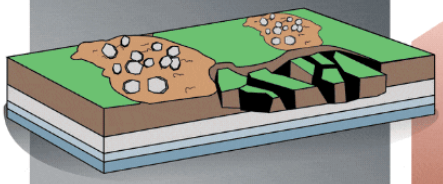


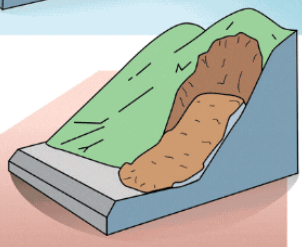
8.

DEBRIS FLOW
Rapidly moving mix of water, mud, trees, and other materials that flows downvalley and can travel great distances.

7.

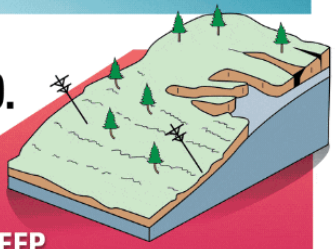
LATERAL SPREAD
When surface material extends or spreads on gentle slopes. This type of ground deformation is often associated with earthquake shaking.





9.

DEBRIS AVALANCHE
An extremely large and fast moving debris flow.



10.

CREEP
Soil and surface material that slowly moves down a slope.

By: Steven Sobieszczyk (modified Highland and Johnson, 2004)

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