

Relevant material for the C24 webpages has been collected by Kendra J. Williams & Keith Olson, Engineering Geology students of Prof. Scott Burns at Portland State University (USA) in the framework of a students assignment. The following material has not yet been screened and commented nor approved by the C24 chair and membership.

## Glossary of terminology

(Sources <http://www.azgs.state.az.us/GEOHAZARDS/Geologic%20Hazard%20Glossary.txt> and [http://en.wikipedia.org/wiki/Glossary\\_of\\_geological\\_terms](http://en.wikipedia.org/wiki/Glossary_of_geological_terms) and <http://en.wikipedia.org/wiki/Neotectonics>)

**Aftershock** - Small earthquake that follows a main shock.

**Buckling (mechanics)** - a failure mode of a rock subjected to high compressive stresses, where the actual compressive stress at the point of failure is less than the ultimate compressive stresses that the material is capable of withstanding.

**Caldera** - volcanic feature formed by the collapse of land following a volcanic eruption.

**Compactions** - process by which a newly deposited sediment progressively loses its original water content due to the effects of loading, this forms part of the process of lithification.

**Compression** - system of forces that tend to decrease the volume of or shorten rocks.

**Convergent boundary** - boundary between two plates that are moving toward each other.

**Creep** - A form of mass wasting involving the slow (mm to cm per year) downslope movement of mineral, soil and rock material. Creep occurs on slopes as low as 1 degree.

**Debris flows** - A rapidly moving mass of rock fragments, soil, and mud, with more than ½ the particles being larger than sand size. Velocity varies greatly, but 10s of kilometers per hour is not uncommon.

**Dip slope** - geological formation often created by erosion of tilted strata.

**Divergent plate boundary** - boundary separating two plates moving away from each other.

**Earthquake** - A sudden motion or trembling in the Earth caused by the sudden release of slowly accumulated strain. Seismic waves - secondary and primary waves -- propagate outward in all directions at velocities of 3 to 6 km/second (approximately 6600 to 13,400 miles per hour!).

**Earth Fissure** - A tension fracture in the Earth's surface that results from substantial overdrafting (pumping) of ground water and subsequent subsidence of the ground surface. Fractures may extend for 100s of feet to several miles, from inches to 15 ft wide, and may be 100s of feet deep.

**Epicenter** - point on the Earth's surface that is directly above the hypocenter or focus, the point where an earthquake or other underground explosion originates.

**Extension** - strain involving an increase in length. Extension can cause thinning and faulting.

**Fault** – A fracture zone along which there has been displacement of earth materials/rock on either side of the zone. The action of fault rupture releases seismic energy, thereby producing earthquakes.

**Fault zone** - zone where exist different discrete fault planes.

**Flash Flood** -- A flash flood is a rapid flooding of geomorphic low-lying areas - washes, rivers and streams - caused by the intense rain fall associated with a thunderstorm, or multiple thunderstorms.

**Flood** – High stream flow that overtops the stream banks in any part of its course, covering land that is not normally underwater.

**Geomagnetic storm** -- A temporary disturbance of the Earth's magnetosphere caused by a disturbance in space weather. Geomagnetic storms electrical power generation and distribution.

**Geologic Hazard** – A geologic condition or phenomenon that poses a risk or is a potential danger to human life or property.

**Landslide** – A general term for a wide variety of processes and landforms involving the downslope movement, under the influence of gravity, of masses of soil and rock material.

**Lava** - molten rock expelled by a volcano during an eruption.

**Liquefaction** - Soil liquefaction describes the behavior of soils that, when loaded, suddenly suffer a transition from a solid state to a liquefied state, or having the consistency of a heavy liquid.

**Magma** - molten rock that sometimes forms beneath the surface of the earth (or any other terrestrial planet) that often collects in a magma chamber.

**Mass wasting** – A general term for the downslope movement of soil and rock material under the influence of gravity. Rates (velocities) of mass wasting phenomenon range dramatically from centimeters (inches) per year to 160 km (100 miles) per hour.

**Moraine** - glacially formed accumulation of unconsolidated debris which can occur in currently glaciated and formerly glaciated regions, such as those areas acted upon by a past ice age.

**Neotectonics** - subdiscipline of tectonics. It is the study of the motions and deformations of the Earth's crust (geological and geomorphological processes) which are current or recent in geologic time.

**Normal fault** - Dip-slip faults can be sub-classified into the types "reverse" and "normal". A normal fault occurs when the crust is extended. Alternatively such a fault can be called an extensional fault. The hanging wall moves downward, relative to the footwall.

**Radon** – Rn 222 is a naturally occurring radiogenic gas with a half-life of 3.8 days. Radon is a major cause of lung cancer in the U.S.

**Reverse fault** - Dip-slip faults can be sub-classified into the types "reverse" and "normal". A reverse fault (or thrust fault) occurs when the crust is compressed. The hanging wall moves upward, relative to the footwall.

**Risk** – The likelihood or magnitude of loss associated with a specific geologic hazard.

**Rockfall** – The relatively free falling of a newly detached segment of bedrock from a cliff, steep slope, or arch.

**Seiche** – An oscillation of a body of water in an enclosed basin that varies in period. It is caused chiefly by local changes in atmospheric pressure, tidal currents, and less commonly earthquakes.

**Shear zone** - a tabular to sheetlike, planar or curvilinear zone composed of rocks that are more highly strained than rocks adjacent to the zone.

**Shrinking (or swelling) soil** – Shrinking soil is caused by a loss in water moisture due to evaporation, ground water lowering, or plant uptake of water. Swelling or expansive soils are ones that swell when subjected to moisture.

**Volcanic activity** – Eruption of molten rock onto the Earth's surface.

Eruptions range from effusive or passive (e.g., lava flow extrusion) to explosive and sometimes catastrophic pyroclastic eruptions (pyro – hot, clastic – broken or fragmental). There are a variety of volcanic hazards including lava flows, tephra fall (ashfall), pyroclastic flows and debris avalanches, to name a few.