6. Earthquakes

Earthquakes = tremors or ground movements caused by shock waves => occur normally at plate boundaries. Plate movement causes stress to build up within the crustal rocks until the rocks break along the line of a fault or cracks in the Earth´s crust.

Actual movement = few cms but the sudden release of seismic (earthquake) energy can be enormous

The point at which the rocks break within the crust is the focus of the earthquake = particular distance below the surface => seismic energy emitted from the focus travels in all directions as seismic waves. The point on the Earth´s surface above the focus is the epicentre.

More powerful earthquake is when:

- *stress was built up for a long time*
- *focus is near the surface*

Seismograph records intensity of an earthquake.

Earthquake prediction

Prediction and monitoring of earthquakes by e.g.:

- monitoring of tectonic movement
- examining historic evidence
- identifying strange and unusual animal behaviour (animals are more sensitive to tremors)

Earthquake effects (damages)

Each year = thousands of earthquakes => few are centred near populated areas and strong enough to cause loss of lives = primary effects (from the violent shaking of the ground during an earthquake), e.g.

- *buildings* may collapse killing people inside them,
- shattered *window glass* may shower on to the streets below
- huge *cracks* may open in the ground
- *roads* may be damaged
- *water pipes* and (electricity) *mains* may be cut off

Primary effects can generate secondary effects, e.g.

- deaths because of food and water shortage
- *fires* ⇔ gas or oil leaking from fractured pipes
- *diseases* ⇔ lack of medical care and clean drinking water
- *tsunamis* ⇔ huge waves caused when earthquake occurs under the sea (1000 kph in open water, 65 kph close to land + 15 m high). Created by displacing of the seabed (seafloor) => great damages to coastal areas. Tidal waves too.

Geomorphological effects = land movements, tsunami, landslides, avalanches (land disturbances in mountainous areas – Peru 1970: huge block of ice from an upper glacier of Mt. Huascaran fell 1000 m and travelled at speeds of up to 480 kph down the valley => 200 000 homes destroyed, 70 000 people killed), uplift, depression

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