DIVERGENT PLATE BOUNDARIES

Divergent plate boundaries occur when two plates are moving away from each other. This happens above areas of rising convection currents in the mantle. This occurs on both oceanic crust and continental crust with varied effects.

When this occurs on oceanic crust, it creates a ridge as the layer under the crust, the **lithosphere**, is raised. New crust (or new seabed) is formed at these places. Often there is volcanic activity and the chance of earthquakes. An example of an oceanic divergent plate boundary is the Mid-Atlantic Ridge.

When the same process occurs over continental crust, a rift valley is created. The process of the continental crust moving apart other creates large valleys and uneven topography that can also lead to the creation of lakes. If it happens extensively over time, new seas and oceans can be formed. An example of a continental divergent plate boundary is the East Africa Rift Valley.

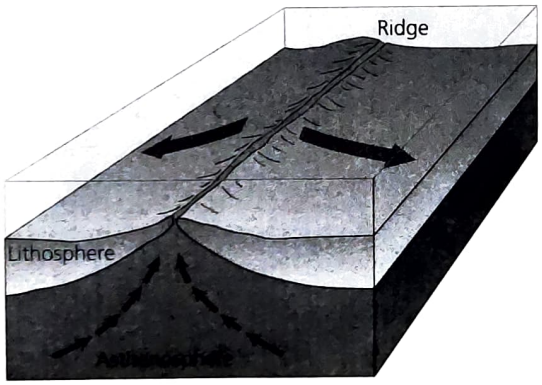

Figure 2.7 A divergent plate boundary

CONVERGENT PLATE BOUNDARIES

Convergent plate boundaries occur when two plates are moving towards each other. This can occur in three different ways: continental meeting continental crust, oceanic meeting oceanic crust and oceanic meeting continental crust. Each has different effects.

When oceanic crust collides with continental crust, an interesting process takes place called subduction. As the oceanic crust is thinner and less dense than the continental crust it is forced downwards in the meeting of the plates. This subduction process leads to the destruction of oceanic crust as it melts into the mantle. At the same time, magma is forced upwards by this process and can break through the surface as a volcanic eruption. An example of this type of plate boundary is the meeting of the Nazca and South American Plates.

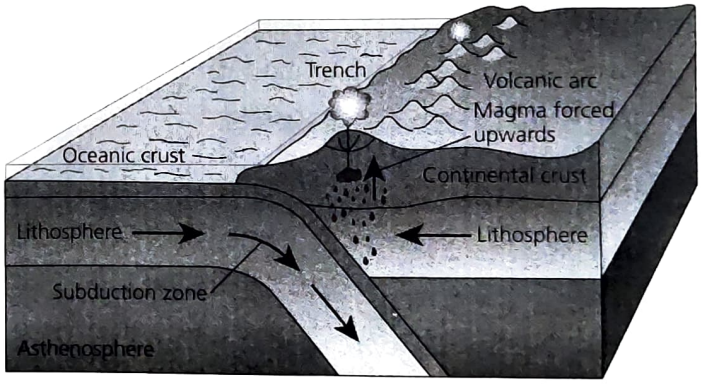

Figure 2.8 A convergent plate boundary where oceanic crust meets continental crust

When two oceanic crusts meet at a plate boundary, a slightly different process occurs. Subduction takes place again, and it will typically be the less dense crust that is subducted. Once again magma is forced upwards and this can create at first volcanic eruptions on the seabed. Over time this can lead to the creation of volcanic islands. For example, many of the Caribbean and Japanese islands were formed due to this process.

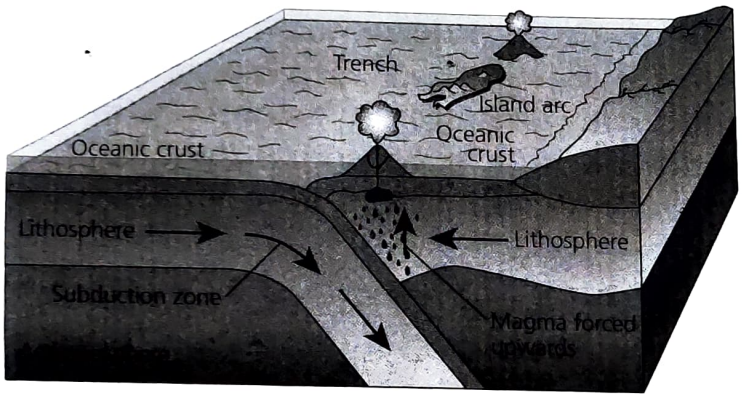

Figure 2.9 A convergent plate boundary where oceanic crust meets oceanic crust

Finally, when two plates collide which are both continental crust, a different process takes place. Rather than subducting, the crust is forced upwards, cracks and moves in different directions. This can create vast mountain ranges. An example where this is taking place at the moment is the meeting point of the Indo-Australian and Eurasian Plates. Where the two plates meet is the location of the Himalayas, which have formed as a result of this collision. In this area earthquakes are quite common but volcanoes don't usually occur.

TRANSFORM PLATE BOUNDARIES

Transform plate boundaries are where two plates slide past one another rather than directly towards each other. In this situation, new plate isn't created or destroyed but the tremendous energy that is produced from the plates sliding past each other occasionally results in earthquakes. The crust at these boundaries is damaged, and geological features form, including fault valleys on land and undersea canyons. An example of a transform plate boundary is the San Andreas Fault, which forms the boundary between the Pacific Plate and the North American Plate.

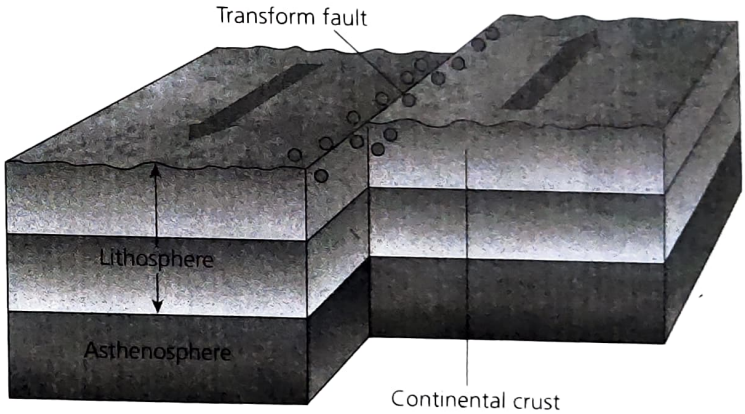

Figure 2.10 A transform plate boundary