Fault Classification

Faults and fault zones are classified by how the rocks on each side of the fault or fault zone move past each other. There are two main types of movement along faults: 1) a sideways movement called strike slip, and 2) an up or down movement called dip slip.

Strike-Slip Faults

The movement along a strike-slip fault is approximately parallel to the strike of the fault, meaning the rocks move past each other horizontally.

The San Andreas is a strike-slip fault that has displaced rocks hundreds of miles. As a result of horizontal movement along the fault, rocks of vastly different age and composition have been placed side by side. The San Andreas fault is a fault zone rather than a single fault, and movement may occur along any of the many fault surfaces in the zone. The surface effects of the San Andreas fault zone can be observed for over 600 miles (1,000 km).

Dip-Slip Faults

Dip-slip faults are faults on which the movement is parallel to the dip of the fault surface. Normal faults are dip-slip faults on which the hanging wall (the rocks above the fault surface) move down relative to the footwall (the rocks below the fault surface). Normal faults are the result of extension (forces that pull rocks apart).

Where the dip of a normal fault’s surface is steep, it is called a high-angle normal fault, or simply a normal fault. The Owens Valley and the Sierra Nevada fault zones are examples of high-angle normal faults. Together they produce a
down-dropped block which forms the Owens Valley. This type of fault-bounded valley is called a **graben**. A fault-bounded ridge is called a **horst**.

Where the dip of a normal fault’s surface is very gentle or almost flat, it is referred to as a **detachment fault** or low-angle normal fault. Detachment faults are common in the desert areas of California.

**DETACHMENT FAULT**

The Sierra Madre fault zone of southern California is an example of reverse-fault movement. There the rocks of the San Gabriel Mountains are being pushed up and over the rocks of the San Fernando and San Gabriel valleys. Movement on the Sierra Madre fault zone is part of the process that created the San Gabriel Mountains.

A **thrust fault** is a reverse fault with a gently-dipping fault surface. Thrust faults are very common in the Klamath Mountains of northern California.

**THRUST FAULT**

The terms hanging wall and footwall are also old mining terms. These terms were originally used in inclined underground passageways to refer to the rock “hanging” overhead (the hanging wall) and the floor beneath the miners’ feet (the footwall) (Ojakangas, 1991).

**References Cited**


Credits: “California has its faults...” by Cindy Pridmore, 1992

**HORST AND GRABEN**

Reverse faults are dip-slip faults in which the hanging wall moves up relative to the footwall. Reverse faults are the result of compression (forces that push rocks together).

**REVERSE FAULT**

Notes:

The terms normal and reverse were first used by English coal miners to describe faults. When working a flat coal bed where it was dislocated by a normal fault, the miners continued the workings either upward or downward on the fault surface in the same, or normal, direction. The workings in a seam dislocated by a reverse fault were also continued upward or downward on the fault, but in the opposite, or reverse, direction (Ojakangas, 1991).

**NORMAL** **VERSE**