Earth is a dynamic planet. Tectonic forces deformed rock to produce our planet's spectacular mountain belts.
When rocks are subjected to forces (stresses) greater than their own strength, they begin to deform usually by **folding** and **faulting**. (Figure.1).

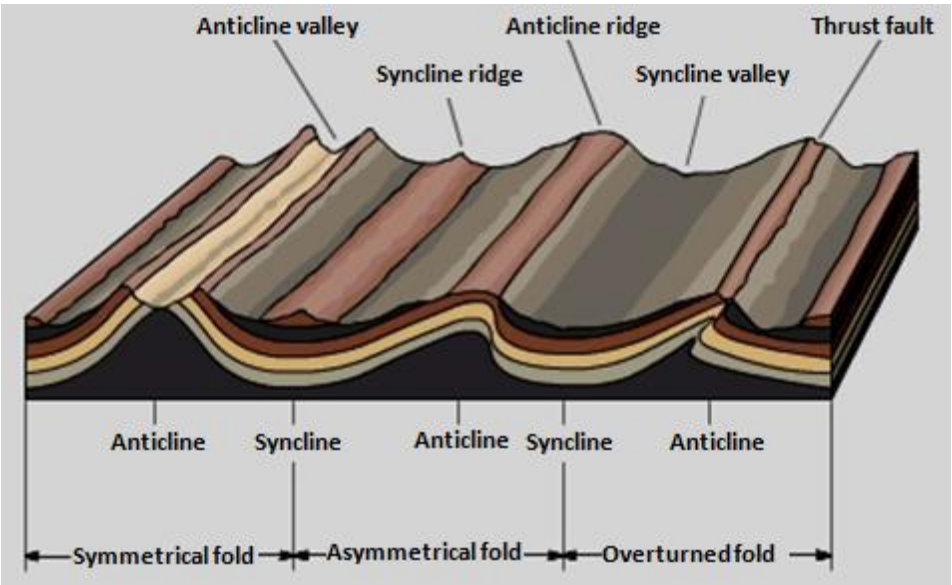


Figure.1: When rocks are subjected to forces (stresses) greater than their own strength, they begin to deform usually by folding and faulting.

Some of the geologic structures associated with crustal deformation include folds, faults and joints or fractures. (Figure..2).

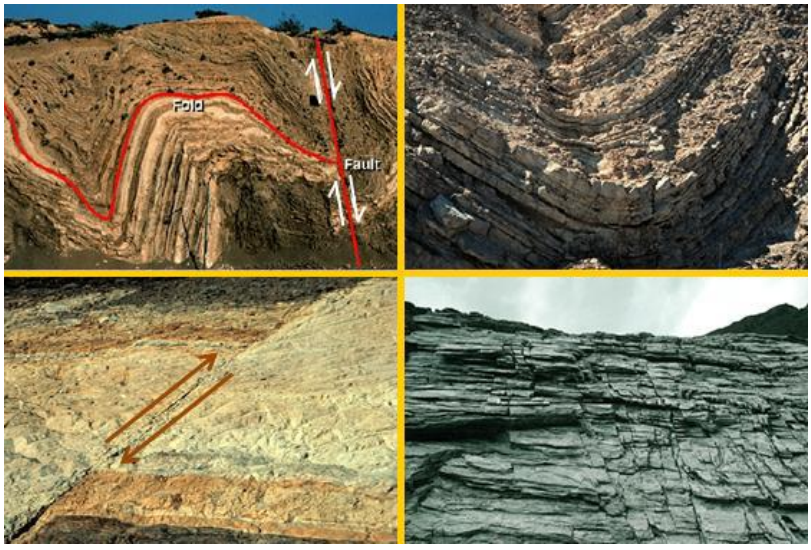


Figure.2: Some of the geologic structures associated with crustal deformation include folds, fault.

-Confining pressure:

Among the stresses that deform rock is confining pressure, which, like air pressure, is uniform in all direction.

Confining pressure is often the result of the load of overlying rocks and causes a reduction in the volume. (Figure.3).

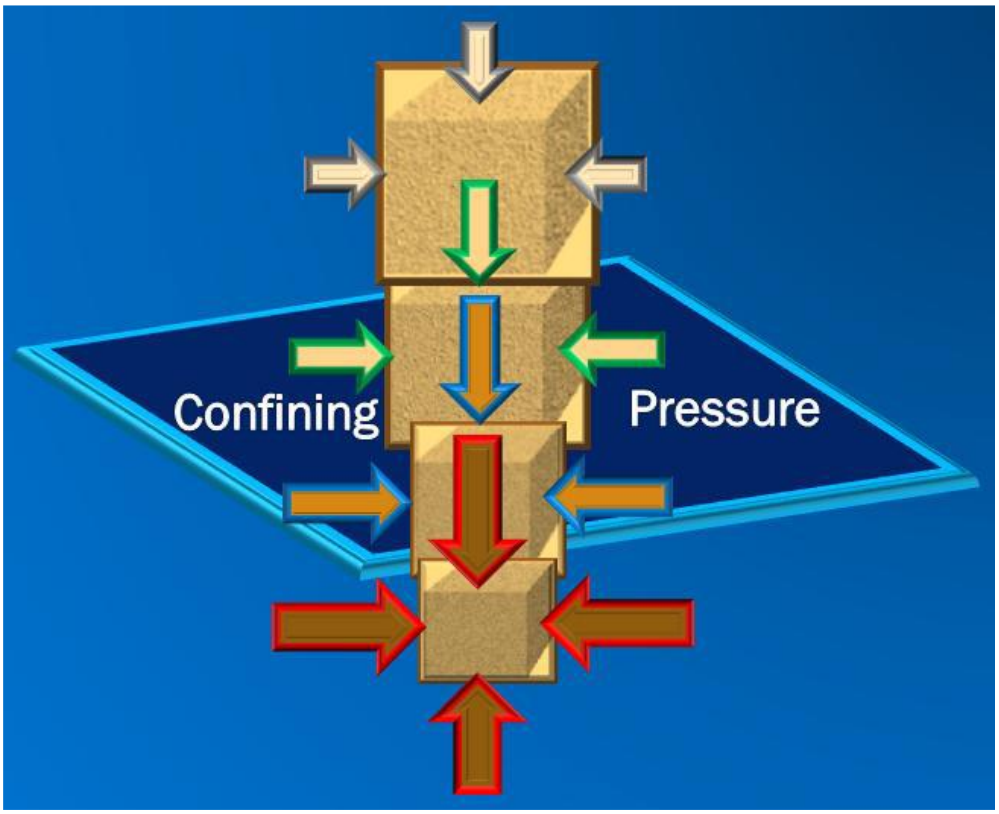


Figure..3: Confining pressure is often the result of the load of overlying rocks and causes a reduction in the volume.

In the upper crust where the confining pressure and temperature are relatively low, rocks are **brittle** and will usually fracture when deformed. (Figure.4). 1.

At great depth where confining pressure and temperature are high, rocks become **ductile** and deformed by folding. This deformation occurs at considerable depth. 2.

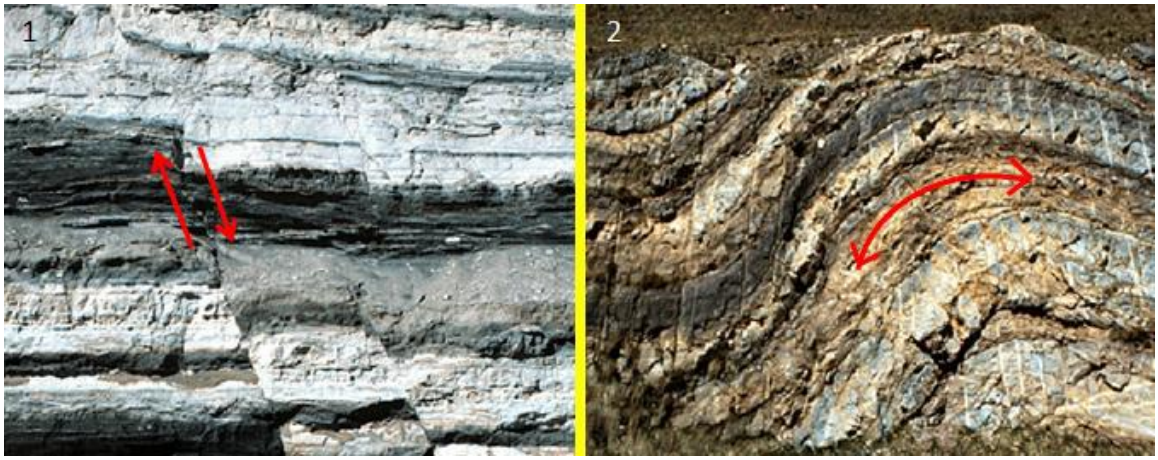


Figure..4: Rocks are brittle and will usually fracture when deformed.1, and rocks become ductile and deformed by folding. 2.

-Differential stresses:
Like those produced along plate margins, produces most crustal deformations. (Figure..5)

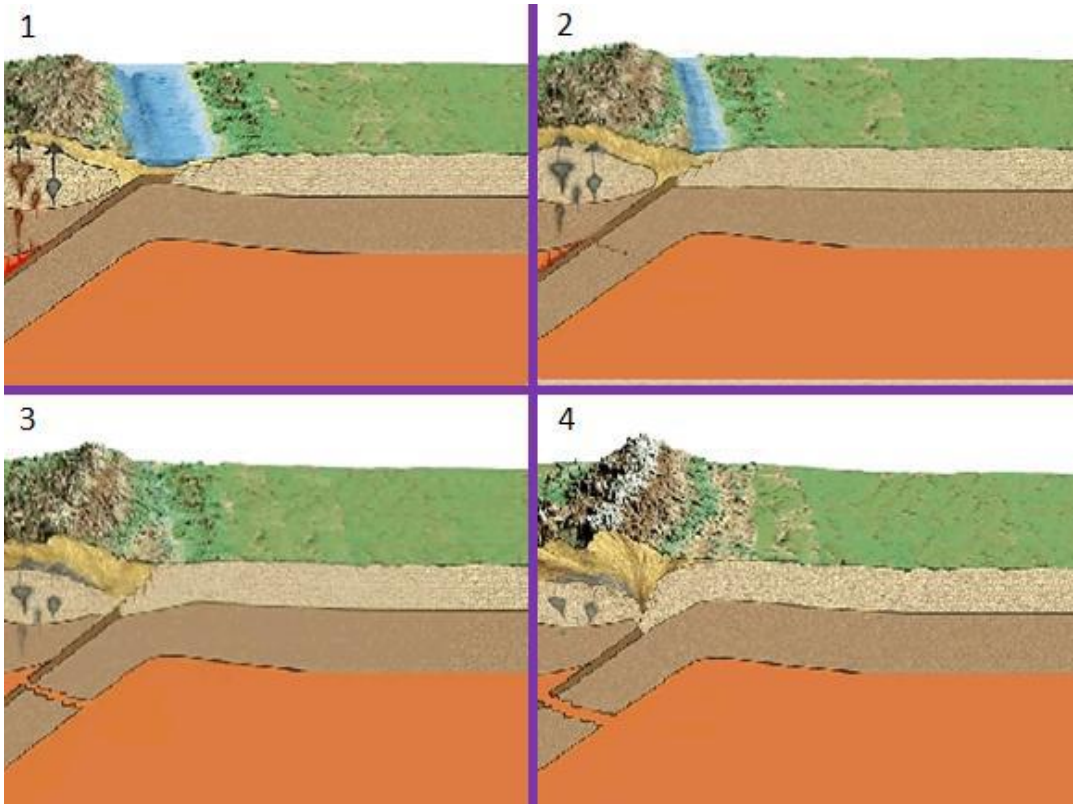


Figure.11.5: Differential stresses are like those produced along plate margins, produces most crustal deformations.

When differential stresses act to shorten a rock body, they are known as **compression stresses**. (Figure.11.6). 1.
Conversely, when stresses act in opposing direction, they tend to elongate, or pull apart, a rock unit and are known as **tensional stresses**. 2.
In addition, differential stresses can cause rock to **shear**. 3.
The features of deformation generate features at many different scales.
At one extreme are Earth's major mountain belts and at the other are localized stresses that create small features in bedrock. 4.
These features, which include folds, faults, and fractures or joints, are called **rock structures**.

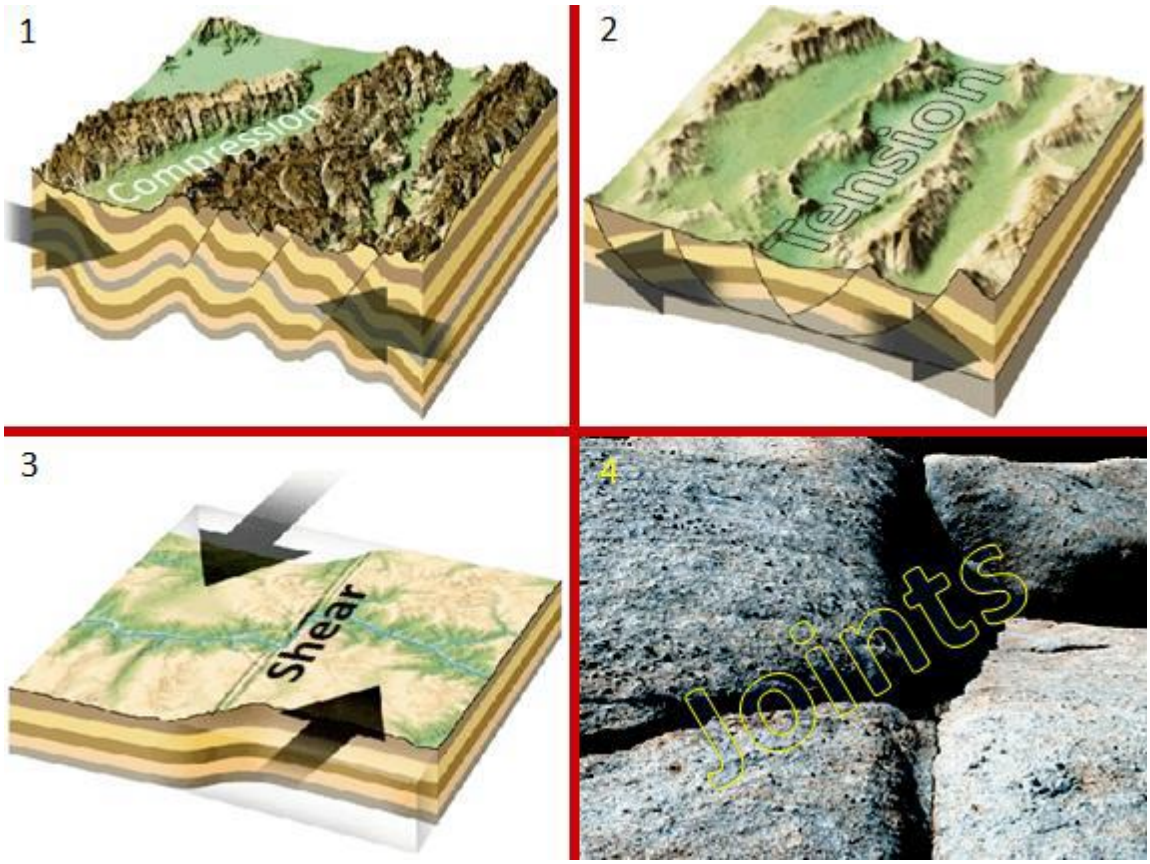


Figure..6: The features of deformation generate features at many different scales.

Folds:

During mountain building, flat-laying sedimentary rocks are often bent into a series of wavelike undulation called **folds**.
The two sides of a fold are called **limbs**.

A line drawn along the points of maximum curvature is termed the **axis** (**hinge line**) of the fold, and the **axial plane** is an imaginary surface that divides a fold as symmetrically as possible. (Figure..7).

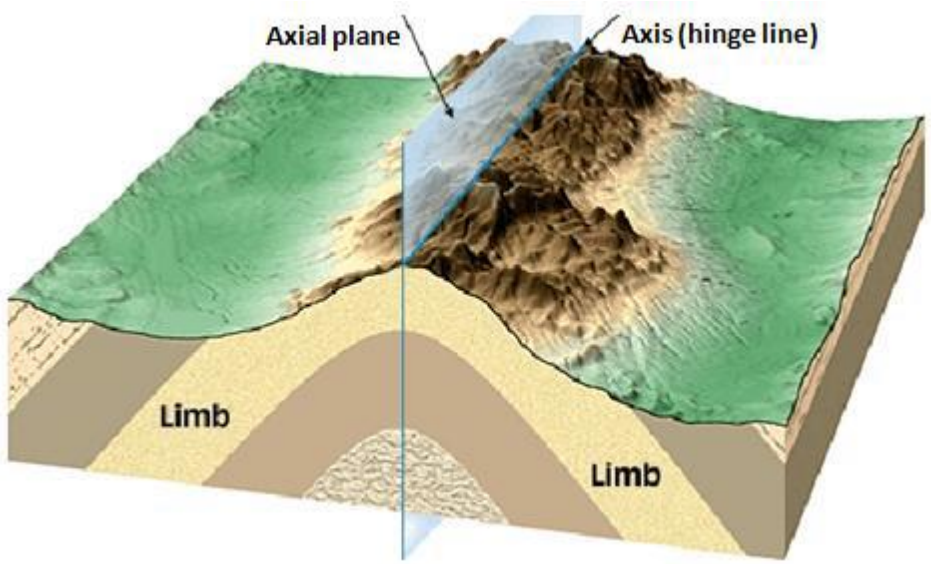
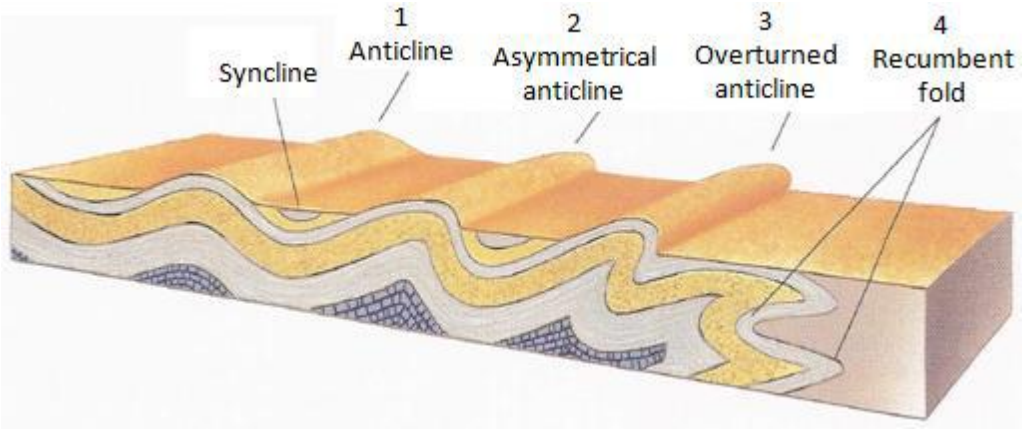


Figure..7: During mountain building, flat-laying sedimentary rocks are often bent into a series of wavelike undulation called folds.

The two most common types of folds are called anticline and syncline.
Anticline, which is commonly formed by up folding, or arching, of rock layers and often in associated with syncline.
(Figure..8).
Depending on their orientation, these basic folds are described :
A-Symmetrical: when the limbs on either side of the axial plane diverge at the same angle. 1.
B-Asymmetrical when the limbs on either side of the axial plane diverge not at the same angle. 2.
An asymmetrical fold is said to be **overturned** if one limb is tilted beyond the vertical. 3.
If an overturned fold "lies on its side" so that the axial plane is horizontal, it is called a **recumbent** fold. 4.



Folds do not continue forever, rather ends die out much like wrinkles in a table cloth. These ends are said **plunge** because their axis penetrates into the ground. (Figure.9). 1. View of plunging folds as they may appear after extensive erosion. 2.