

Folding

1. The Process of Rock Folding:

- 1.1 Folding is the bending of Strata as a result of compressive forces in the Earth's crust.
- 1.2 Most mountains consist of sedimentary strata that has been deposited more or less horizontally.
- 1.3 We can often see how the strata has been bent and folded.
- 1.4 It is like pushing the two sides of a table cloth towards each other. Folds are formed. If the same is done with a rigid cardboard, the result will be different.
- 1.5 The bending of rock strata occurs in a similar way.
- 1.6 If the compressional force is slight and the rocks stable, warping will occur and the horizontal layers will only slightly bend.
- 1.7 If the compression is more intense and of longer duration, the rocks will not offer much resistance and folding occurs.
- 1.8 When the compression is so intense and the rocks are incapable of further deformation a fault occurs.
- 1.9 A fault is a clear fracture in the Earth's surface.
- 1.10 Some parts of Earth's crust are very stable and if weak horizontal stress is applied, small changes can appear. As a result, small, flat and irregular swells are formed with shallow depressions between them.
- 1.11 South Africa has many good examples of crustal warping.
- 1.12 The escarpment in SA is bend upward by warping.

Folding



2. Landforms associated with Folding:

1.1 Folding occurs when rocks are sufficient plastic to bend when strong forces act upon them.

1.2 This is found when two plates push together (converge or collide).

1.3 Examples of folding are the following:

1.3.1 Andes Mountains in South America.

1.3.2 Atlas Mountains in North Africa.

1.3.3 Cape Fold Mountains in Western Cape.

1.3.4 Rockies and Appalachians in North America.

1.4 **There are three types of Folds:**

1.4.1 **Monoclines:**

1.4.1.1 This type of fold forms when the force acting on the layers are not very strong.

1.4.1.2 This is a one-sided fold.

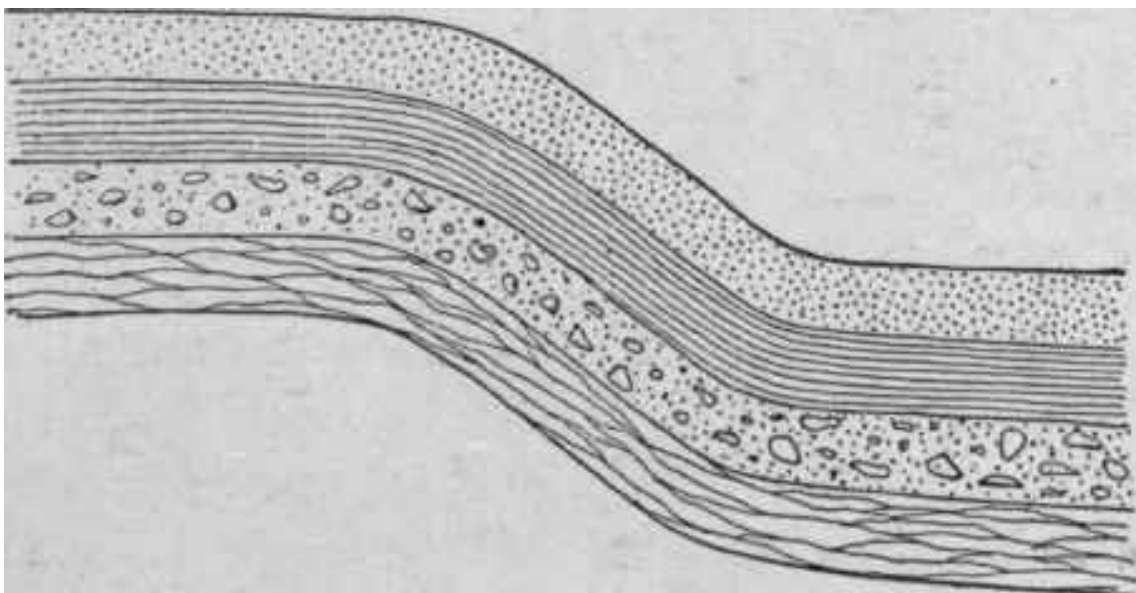
1.4.1.3 They are difficult to identify because the bend is sometimes so gradual that it happens over a distance of a few kilometres.

1.4.1.4 The Lebombo Mountains in South Africa is an example and are 800km long and narrow.

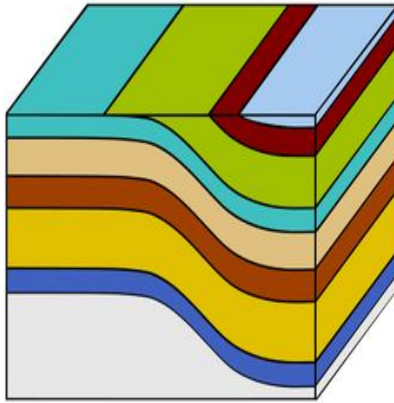
1.4.1.5 If the compression is somewhat greater, the layers are more pliable and more regular folds are formed.

1.4.1.6 The **up-folded section is called anticline** and the **down-folded section is called syncline**.

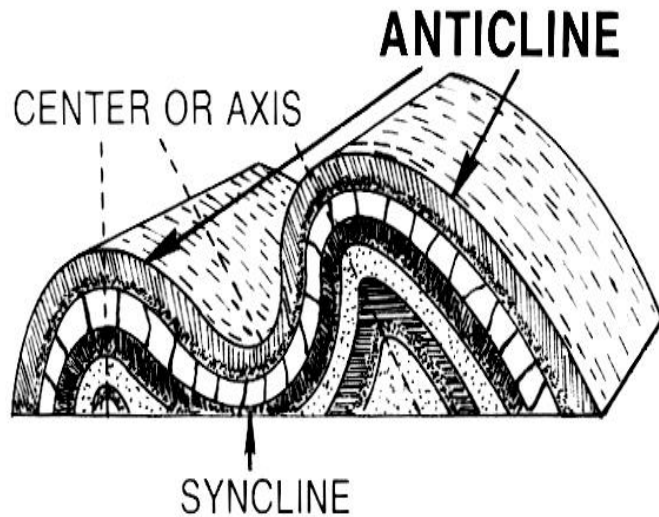
Monocline Fold



Monocline diagram

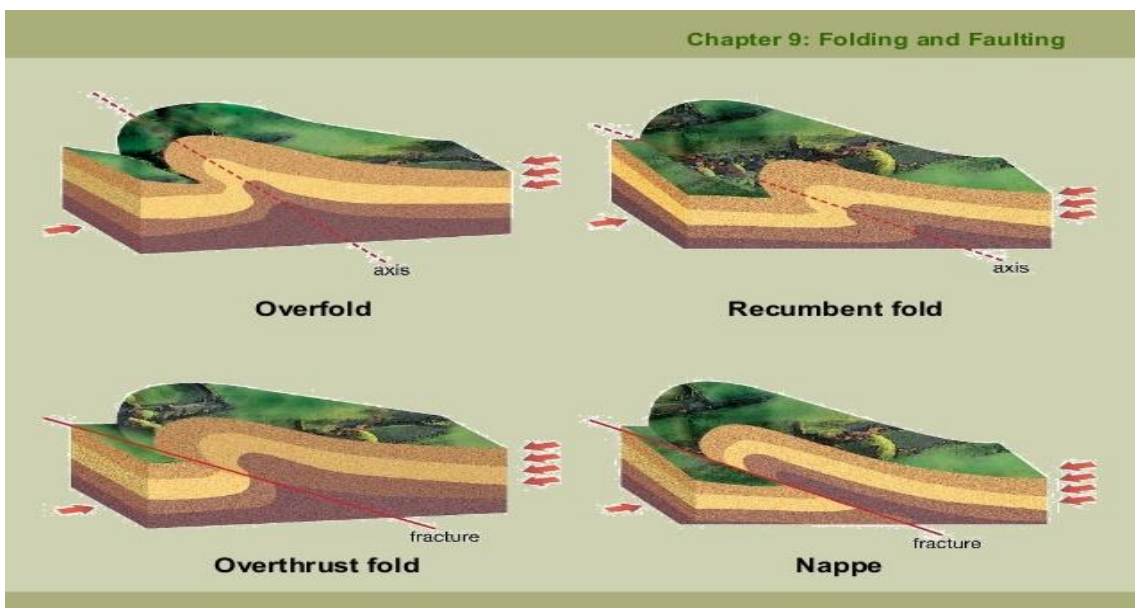


Monocline Diagram



1.4.2 Overthrust Fold

- 1.4.2.1 The force is stronger from the one side than the other.
- 1.4.2.2 The fold is **asymmetrical** and an overfold is formed.
- 1.4.2.3 The overfold is bend over in the direction away from the strongest force.
- 1.4.2.4 Subsequent stage faulting occurs.
- 1.4.2.5 The fold is displaced and an overthrust is formed.
- 1.4.2.6 The Swartberg Range near Oudtshoorn is an example and one can see the folds are overthrown to the north.
- 1.4.2.7 Landforms associated with folding are homoclinal ridges, cuestas and hogsback. There are many examples of these landforms in the Cape Fold Mountains.



Overthrust Mountain

