

## Modelling folding – by hand Using your hands to demonstrate different fold features

The features of folds and their names can be shown by using your hands, like this:

### Antiform and synform

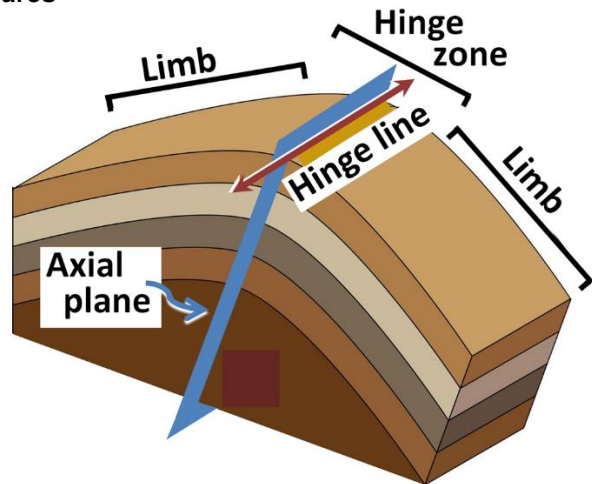
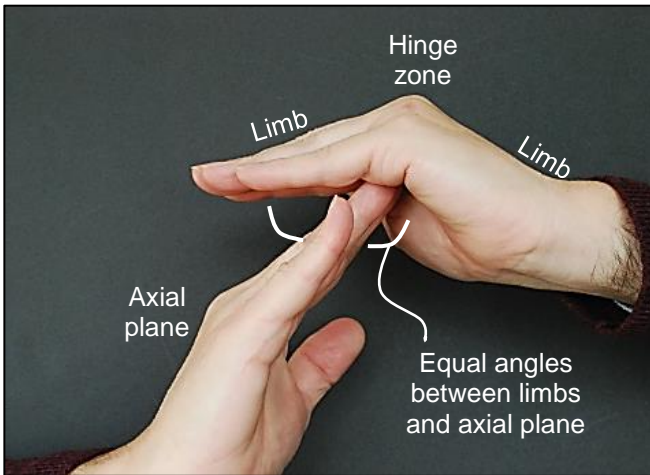


Antiform on the left, synform on the right. Where rock sequences have not been overturned, antiforms = anticlines and synforms = synclines.

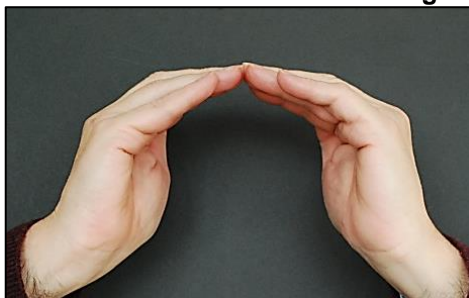


Folded limestone, Glaserbachklamm, Germany.

### Fold features



### Hinge shape

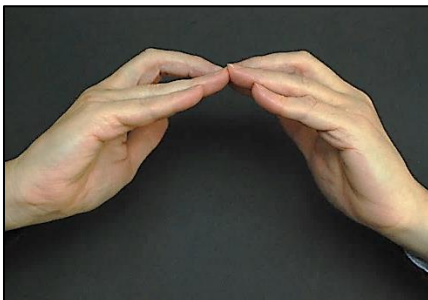


Rounded hinge.



Angular hinge.

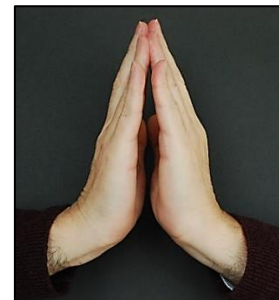
### Fold tightness



Open fold, angle between limbs (hinge angle) greater than 70°.



Tight fold, hinge angle less than 70°.



Isoclinal fold, parallel limbs.

### Fold attitude



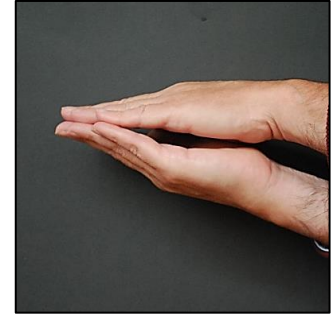
Upright fold, axial plane (AP) vertical.



Inclined fold, AP inclined.

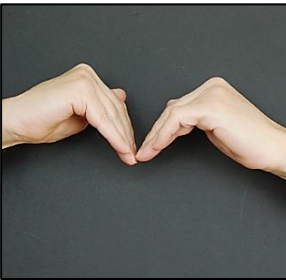


Overturned fold, one limb tilted more than 90°.

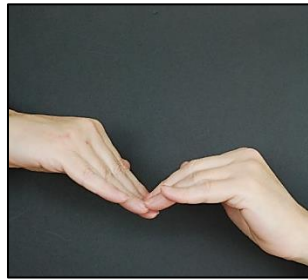


Recumbent fold, lying on its side.

### Fold symmetry



Symmetrical fold, limbs have equal lengths.



Asymmetrical fold, one limb is longer than the other.



Symmetrical folds in Crete.



Asymmetrical fold, Orkney, UK.

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## The back up

**Title:** Modelling folding – by hand.

**Subtitle:** Using your hands to demonstrate different fold features.

**Topic:** Pupils use their hands to demonstrate different elements of folding in rocks.

**Age range of pupils:** 14 years upwards

**Time needed to complete activity:** 10 minutes

**Pupil learning outcomes:** Pupils can:

- describe rock folding using the correct terminology;
- demonstrate this with their hands.

#### Context:

The educational advantages of using your hands to model geoscience features and processes have been explained in the Earthlearningidea, *Rock cycle at your fingertips*.

Describing folding in rocks involves complex terminology. Through this activity, pupils use their hands to model and name the different terms used.

#### Following up the activity:

Extra terminology of rock folding can be demonstrated using your hands through the Earthlearningideas: *'Right way up or upside down? modelling antiforms and synforms by hand - use your hands to show how folds can be the right way up or inverted'* and *'Visualising plunging folds: with a piece of paper and your hands - using your hands and folded and torn paper to show the patterns made by plunging folds'*.

Pupils could be asked for different ways of illustrating the terminology of rock folding, they might suggest:

- drawing and labelling folds on paper or a white- or black-board;
- making and labelling paper models;
- using modelling clay and labelling the features with sticky labels.

#### Underlying principles:

- Much of the terminology for describing folds can be illustrated using your hands.

#### Thinking skill development:

Illustrating folding terminology with your hands involves construction, relating the hand models to real world folded rocks involves bridging.

**Resource list:**

- just your hands

**Source:** Devised by Chris King; photos by Peter Kennett, both of the Earthlearningidea Team.

**Useful links:**

See: <http://www.geologypage.com/2015/12/geological-folds.html>

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<b>The Earthlearningidea hand-modelling activities</b>	
Modelling Earth processes	The rock cycle at your fingertips: modelling the rock cycle with your fingers
	Plate margins by hand: modelling plate margins and plate movement with your hands
	Modelling by hand 'when the youngest rock is not on top': illustrating how rock sequences can have older rocks on top of younger ones
	Modelling unconformity – by hand: using your hands to demonstrate how unconformities form
Modelling structural geology nomenclature	Modelling Earth stresses isometrically: using your hands to model Earth stresses
	Modelling folding – by hand: using your hands to demonstrate different fold features
	Right way up or upside down? - modelling anti- and synforms by hand: use your hands to show how folds can be the right way up or inverted
	Visualising plunging folds - with a piece of paper and your hands: using your hands and folded and torn paper to show the patterns made by plunging folds
Climate change activities	Modelling faulting – by hand: using your hands to demonstrate different fault features
	The Earth during Milankovitch cycles – by hand: modelling the Earth's squashed orbit, tilt and wobble using your hands
	Modelling tipping points – by hands: demonstrating tipping points in the Earth's system with the hands of three pupils