

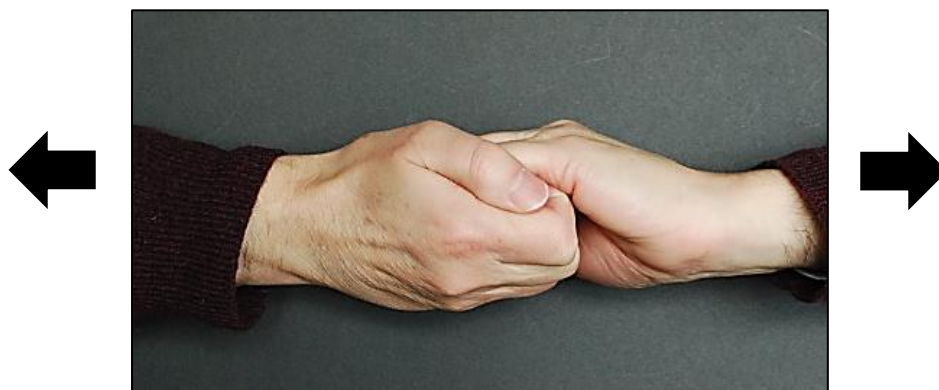
## Modelling Earth stresses with your hands Hand modelling of compression, tension and shear in the Earth

You can use your hands to model the three different types of stress in the Earth.

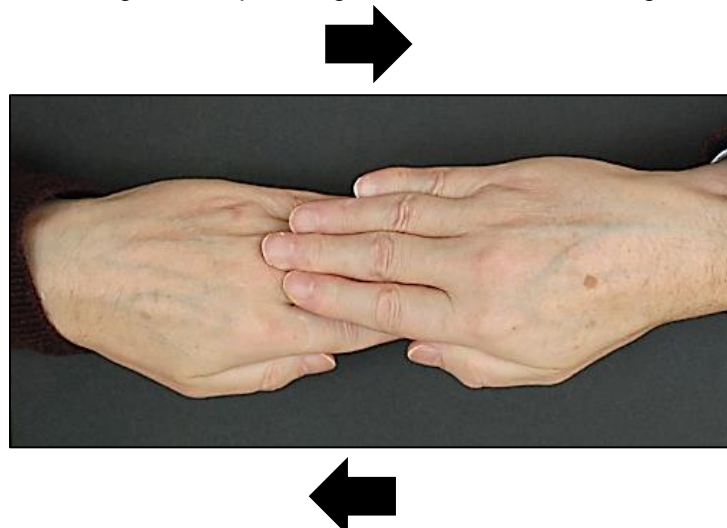
**Compression** – hands pushed together: modelling the forces causing folding and reverse and thrust faulting, in crustal compression.



**Tension** – fingers hooked together and pulling apart: modelling the forces causing normal faulting and crustal extension.



**Shear** – both hands vertical, one beside the other, attempting to slide one hand to the left and the other to the right: modelling the forces causing strike-slip faulting and the transform faulting of conservative plate margins.



## The back up

**Title:** Modelling Earth stresses with your hands.

**Subtitle:** Hand modelling of compression, tension and shear in the Earth.

**Topic:** A class activity to help pupils to visualise types of stress in the Earth through modelling with their hands.

**Age range of pupils:** 10 years upwards

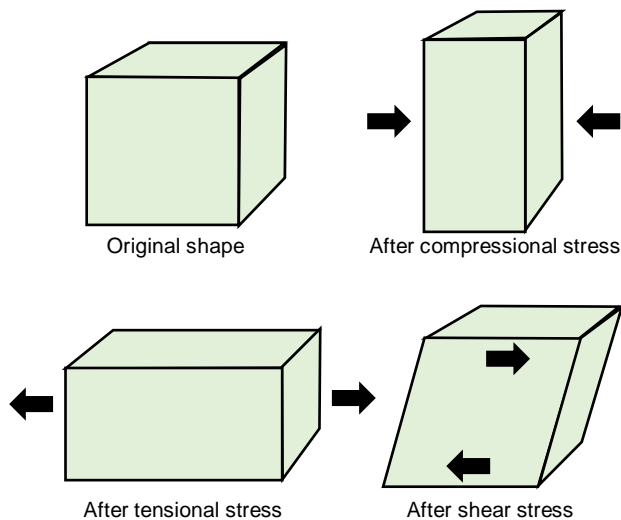
**Time needed to complete activity:** 5 minutes

**Pupil learning outcomes:** Pupils can:

- describe the different types of stress in the Earth;
- model these with their hands.

### Context:

The results of the different types of stress are seen in the deformation of a cube, shown in these diagrams.



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

### Following up the activity:

Ask the pupils to think of different ways to model Earth stresses. Possibilities include using:

- foam rubber;
- stress balls;
- modelling clay;
- toffee or fudge bars.

### Underlying principles:

- The three main types of stress in the Earth can be modelled with your hands.

### Thinking skill development:

Modelling Earth stresses with your hands involves demonstrating a pattern which can then be bridged to real geological situations.

### Resource list:

- your hands

### Useful links:

See:

<http://earthsci.org/education/teacher/basicgeol/def orm/deform.html>

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

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| The Earthlearningidea hand-modelling activities |   |
|---|---|
| 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: hand modelling of compression, tension and shear in the Earth   |
|   | 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                                    |