

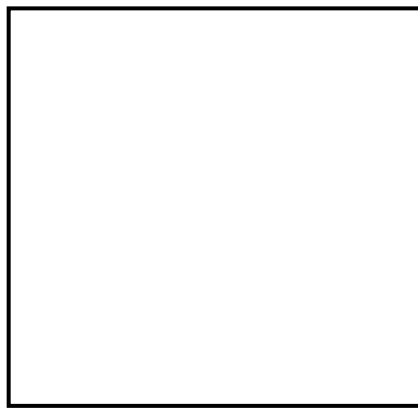


Field Skills

Useful for Module 1: Development of Practical Skills in Geology

There is an age-old adage that 'The best geologist is the one that has seen the most rocks' (slightly adapted from Read, 1952) which is why we, as geologists, spend a lot of time on fieldwork. Even though we can't currently go into the field, living in the age of technology means that the field can come to us!

In the field, the first thing to do is to describe the rock. What is the colour? what textures can you see? Are there any identifiable minerals? Is it worthy of a sketch? (Spoiler: rocks are ALWAYS worth a sketch). Try sketching the pictures of outcrops in the blank box below:



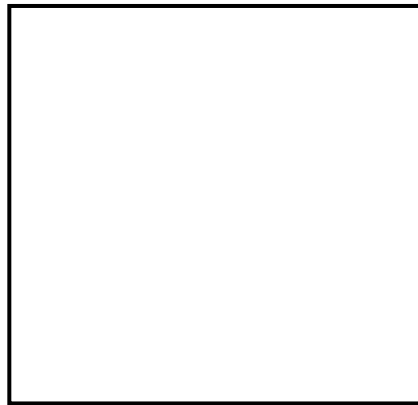
Some tips for the sketch:

Identify the important lines first

Don't overcomplicate the drawing

Highlight any key features

Add some colour or some labels



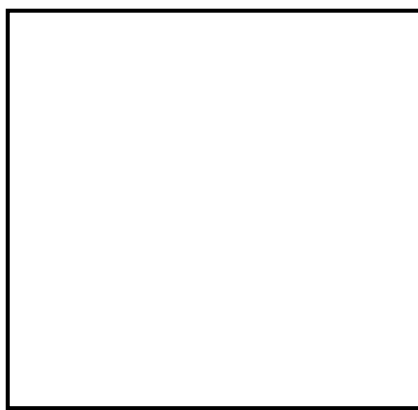
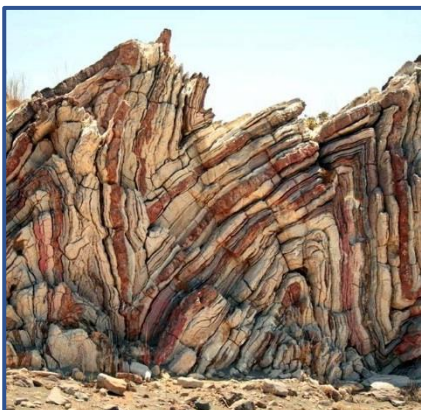
Some tips for the sketch:

Follow the above tips to start

Can you identify any relationships in the photo?

Could you approximate an angle of this relationship?

What feature do you think is shown here?



Some tips for the sketch:

Follow the tips for the first diagram

Don't feel as though you have to sketch all of the beds (layers). The general shape will do

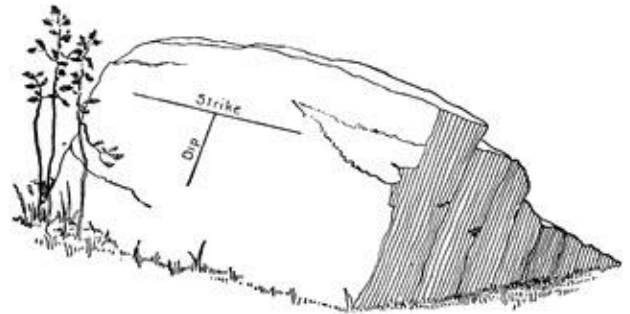
What feature can you identify in the photo?



Structural Readings!

After the description and a sketch, it helps to take as many structural readings as possible. This will allow you to identify any tilt on the beds, and find any key features, such as folding.

Dip and Strike is our key structural reading. For this, you need a compass clinometer (which you will be given in your field kit when you start your degree). A compass clinometer can act either as a traditional compass (for the cardinal directions) or as a level (very useful for hanging shelves!). This is the 'clinometer' part



We first use the clinometer to find zero dip (this is the SAME as strike)! Keep moving across the rock face until the needle hangs at zero. We can then measure the dip angle (again using the clinometer) at right angles to the strike. The final measurement using the compass to find the direction in which the rock is dipping.

You can watch a video showing how to record this here:

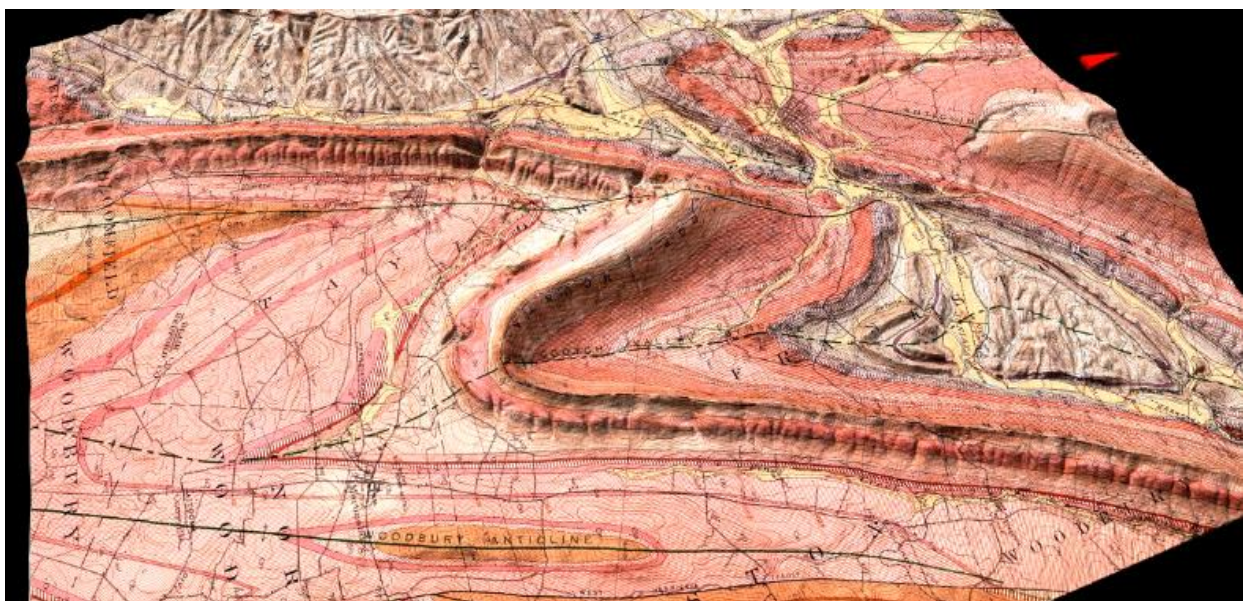
https://www.youtube.com/watch?v=4N_DPWKu8p0

If you have a compass-clinometer you can practice taking dip and strike by angling flat surfaces (books work well)

Thinking in Three Dimensions

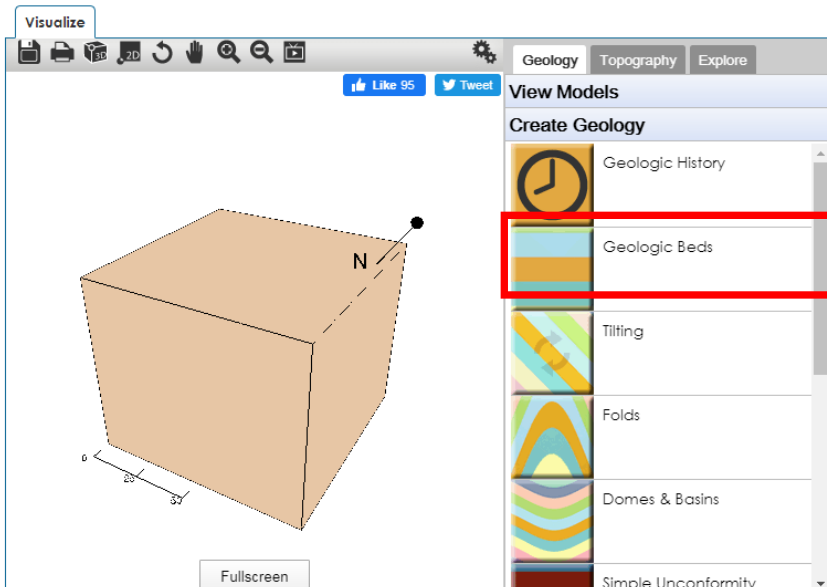
One of the trickiest things about doing field geology from the comfort of your sofa is trying to picture the rocks in three dimensions.

Taking structural measurements allows us to picture 3D structures a bit better, such as the fold shown in the image below. This is a drawn geological map 'hung' over the topography of the area!



You can play with structures using the Visible Geology App by SEEQUNT:

app.visiblegeology.com



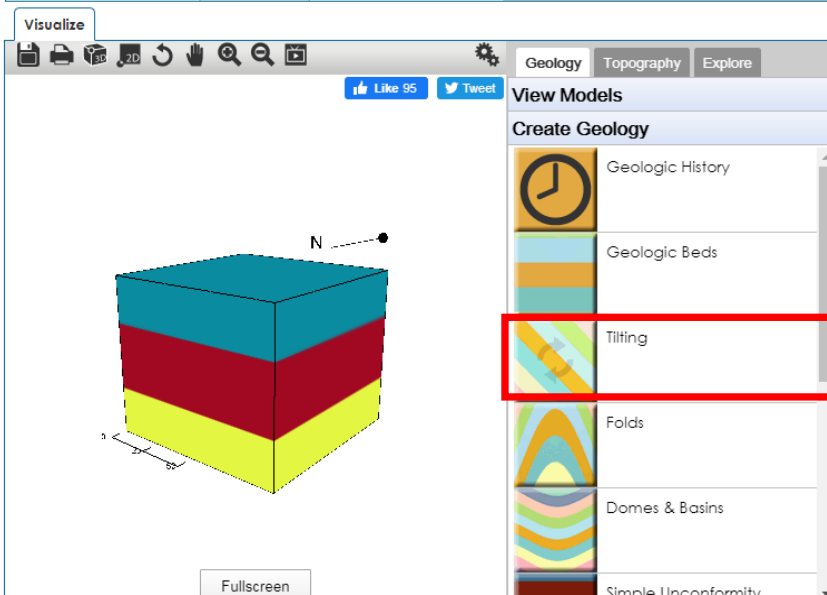
Add some beds by clicking on the area highlighted in red:

Click on the  and then the  to edit the bed.

Name it 'Sandstone' change the width to '25' and the colour to 'yellow'

Add another layer called 'Basalt' with a width of '30' and a 'red' colour

The final layer will be 'Limestone' with a width of '30' and a 'blue' colour

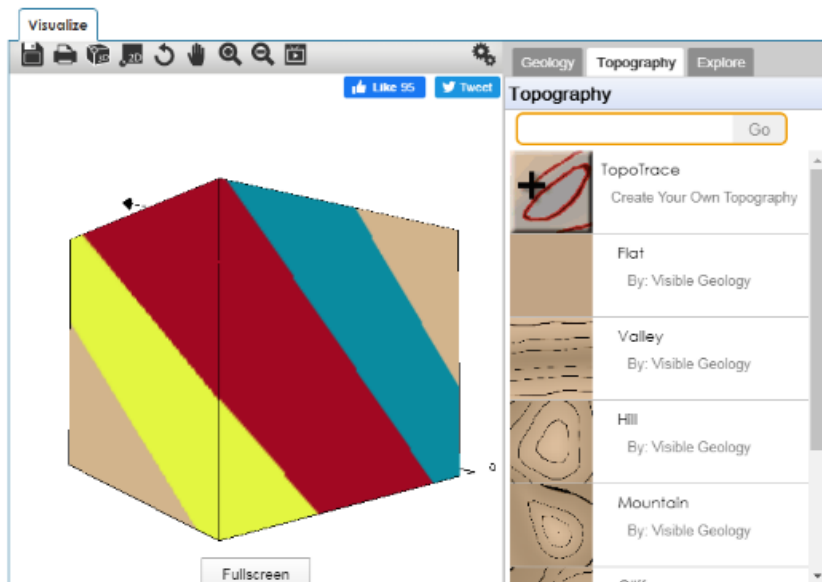


You can add a tilt to the beds to see how the layers will change with different structural regimes by clicking on the link highlighted in red.

The strike relates to a line of a planar feature (e.g., beds) and the dip relates to how much this feature is inclined.

Play with both of these variables to see how they change.

Try setting the strike to '120' and the dip to '50' and then press 'Add New Tilting Event' to generate the tilt



Change the tab to 'Topography' to see how these tilted beds will look in a variety of different topographic features. This will give you an idea of how they will look in field.

What does the outcrop pattern (bird's eye view) look like if you create a valley?

What differences can you see if you change this to a mountain?

Have a play with all of the other features to see what different structures might look like on geological maps!