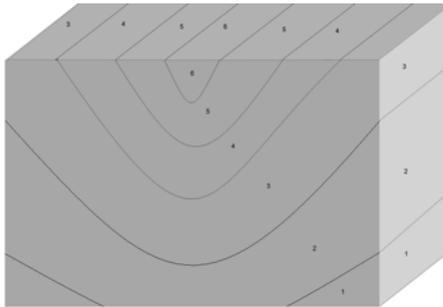


Building Geological Models in Clay

Your group will be assigned one of the following models to build. Your group's task is to construct the assigned model by carefully following the directions. When your model is complete you will be provided with a camera to photograph the result.

Model One: The Syncline

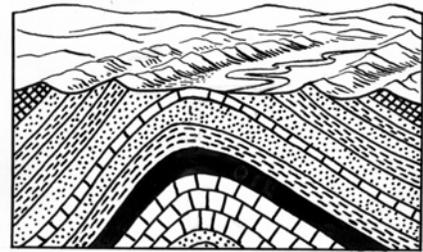


This drawing depicts a syncline and the numbers describe the order that the layers were laid down 1 being the oldest.

Begin by constructing layers of sediment. Choose different colors of clay to represent different layers. Roll out slabs about one inch wide and four inches long. Stack several slabs on top of each other. Bend all layers at once to create the syncline. Trim your model so that it resembles the diagram shown here.

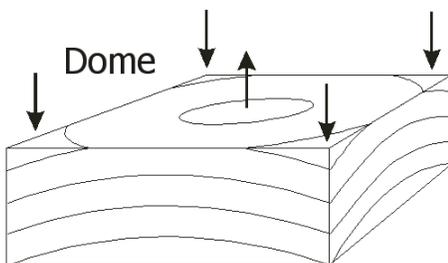
Model Two: The Anticline

The anticline is constructed following the same basic procedure as the syncline. Consider this image. To make your model more interesting create layers with a variety of thicknesses. Once you have bent the layers use the knife to cut the top of the layers to simulate the process of erosion.



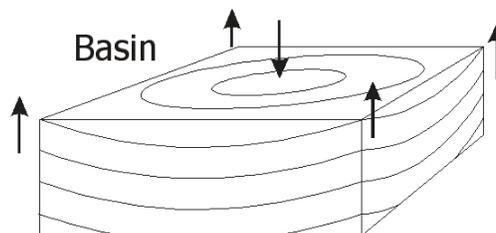
Model Three: The Dome

Roll out several layers in the shape of squares and stack them on top of each other. Using a spherical object, such as an upside-down bowl, apply pressure to the bottom of the stack of layers causing them to up warp. Cut a slice off the top of the dome to create concentric rings on the surface.



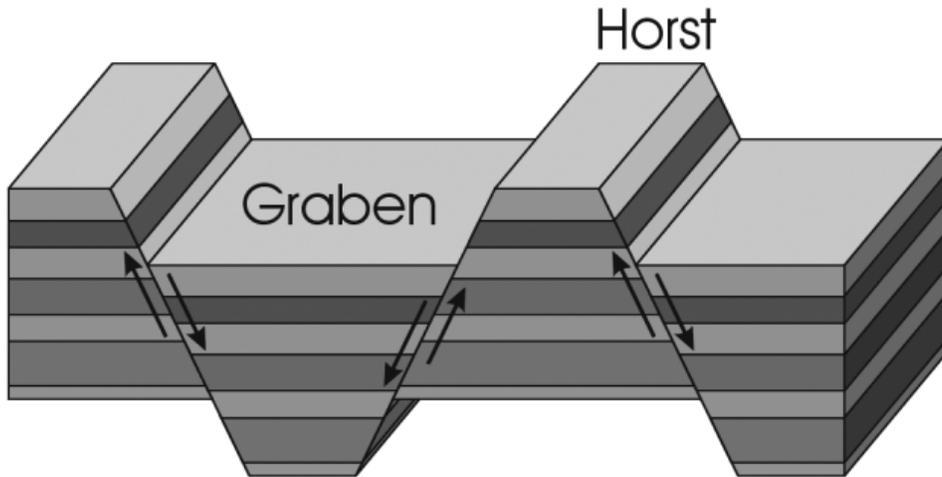
Model Four: The Basin

Follow the directions for the dome but consider how you would cause the layers to down warp instead of up warp.



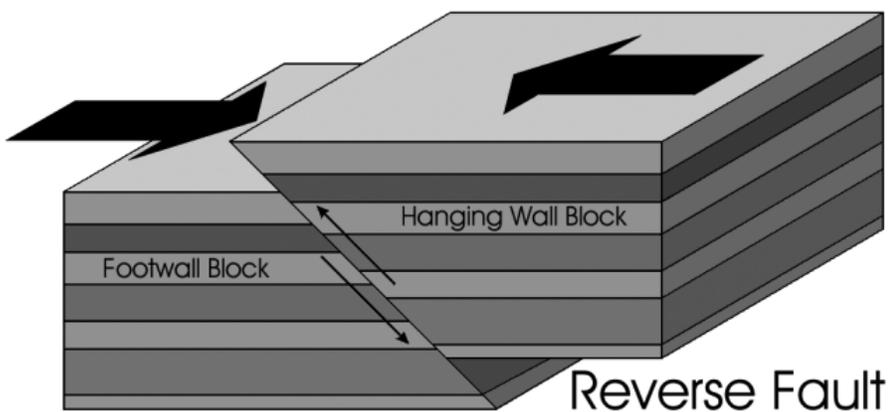
Model Five: Horsts and Grabens (Normal Faults)

Roll out layers and stack them to create sedimentary rock. The layers should be about three inches wide and 8 inches long. You will need a stack of about six to eight layers. Using a knife, make cuts in the layers to simulate normal faulting. Separate the sections by moving them gently apart (tensional forces). Simulate the force of gravity by moving alternating sections down to create Grabens. This is most easily accomplished by placing the model on its side. Here is a diagram to use as a reference:



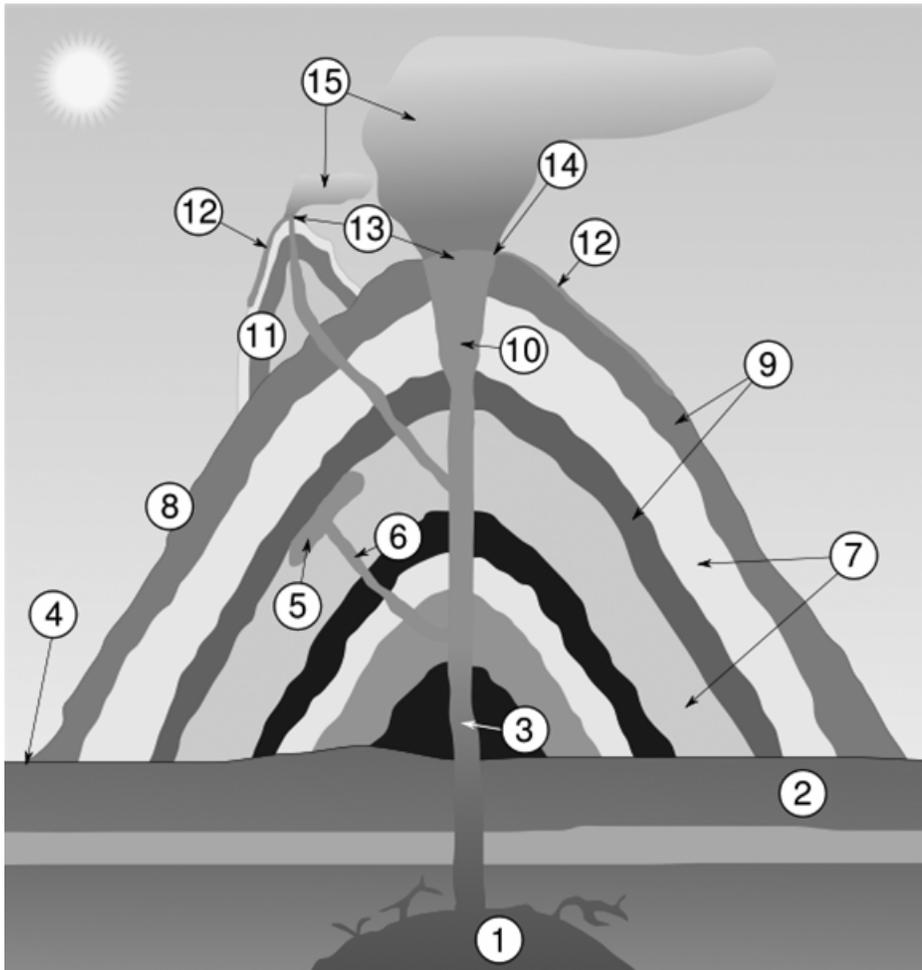
Model Six: Reverse Fault

Roll out layers and stack them to create sedimentary rock. The layers should be about three inches wide and 6 inches long. You will need to stack about six layers. Using a knife make a cut in the layers to simulate a reverse fault. Gently move the sections together (compressional forces) and allow one of the sections to move upward simulating the process of reverse faulting. Here is a diagram to use as a reference:



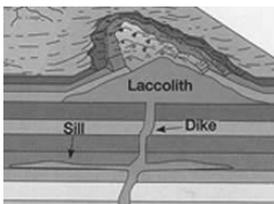
Model Seven: Anatomy of a Composite Cone Volcano

This is a complex model with several parts. You will need to choose colors to represent pyroclastics and to represent lava. You will also need a color (red or orange) to represent molten magma inside the volcano. To mold the sections roll out “snakes” and then arrange them on a flat surface pressing them down as needed to cause them to adhere to each other. The final model should resemble the following image (This is the same image used for your homework assignment). Create labels using the label maker provided, to indicate various sections of the diagram. To simulate the ash cloud you should use cotton.



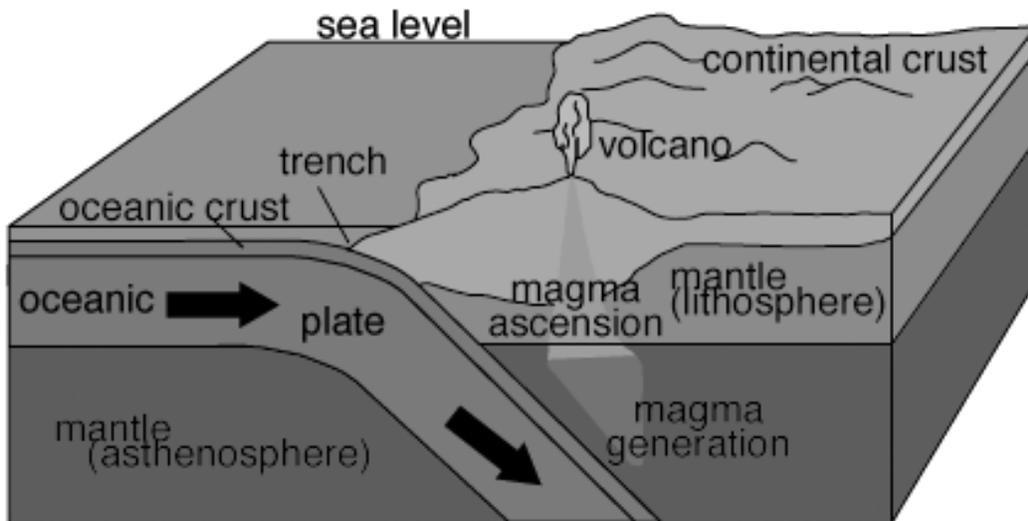
Model Eight: Sills and Dikes

Your model should show the differences between sills (form between layers) and dikes (cut through layers).



Model Nine: Subduction

To create this model it is important to build the two plates and then gently bend one beneath the other. You will need different colors for the mantle, the oceanic crust, the continental crust and the magma. Remember that the process of building the model is as important as the finished result. You want to be able to experience the dynamic changes that occur when subduction takes place. Take some time to sculpt the continental crust to show the volcanoes created by the magma that is generated by the subducting plate.



Model Ten: Earth's Interior

When constructing this model it is important that you show the relative thicknesses of each layer as realistically as possible. This means that the crust will be very thin. Build a 3-D spherical model and then cut the model in half exposing the layers. The final model should be about the size of a baseball. Use appropriate colors and label all the features in this diagram. Include a hot spot in your model (not shown in this diagram).

