

## **Blocks Module Student Guide**

In this module, you will learn about five major geologic features - layers, folds, faults, intrusions, and unconformities. These five features intersect surfaces in various ways due to geologic events that continually occur below the surface. Throughout the module, you will interact with movies to learn how geologic events such as tilting, deposition, erosion, and faulting change and modify the appearance of these five features on the surfaces of blocks. After interacting with these movies, you will be able to identify and recognize the five main features and reconstruct the geologic history that resulted in the complex pattern of surface features found in these blocks.

The movies included in this module are QuickTime Virtual Reality (QTVR) movies and allow you to click-and-drag the mouse to change features in them. Above each movie, arrows will indicate the direction(s) you can move the mouse and text will indicate what changes will occur as you click and drag the mouse. Most sections begin with **rotating movies** so you can see the four sides and top of a block. These movies can be rotated by clicking and dragging the mouse from left to right (or right to left). The slower you drag the mouse, the smoother the changes will be. Other movies allow you to change two features at a time. For example, some movies let you rotate a block (clicking and dragging side-to-side) as well as making the block **partially transparent** so you can see features beneath the surface (by clicking and dragging up-and-down). For movies with two changes in them, dragging the mouse diagonally will cause both changes to occur simultaneously. To prevent this, try to drag the mouse horizontally and then vertically (or vertically and then horizontally). **Note:** You can also use the arrow keys on the keyboard to make these changes occur and have more careful control over the changes.

Other movie types in this module allow you to:

**cut into a block** (from the left, from the right, and from the top) so you can see how a process such as erosion would change the surface of a block.

**offset the fault** to observe how layers or folds would appear to change after faulting occurs. You can also simulate erosion by cutting into the blocks, rotate the blocks, and change the amount of transparency.

**reveal the unconformity** to see the boundary between old and young rocks (where there is a large gap in time in which no distinct events occurred).

While progressing through this module, you will be asked to complete various activities on worksheets. Questions on the worksheets will ask you to: sketch a missing face of a block; sketch a block after imagining it has been cut into; sketch a face of a block after it has been faulted; describe the differences between types of faults, how they change features, and how they can be recognized in the field; list geologic events in the order they occurred; describe differences in types of intrusions; and draw unconformities. Make sure you have the worksheet for each section before you begin.

This module was designed to help you form your own definitions of terms and procedures. For this reason, answers will not always be provided for confirmation. The same is true of the application questions at the end of each section. Try to formulate your own answers on your own or in your group before asking your teacher for help.