Topographic Maps Module Student Guide

In this module, you will learn about topographic maps – one method of showing the varying elevations of an area using lines (contour lines) that represent a single elevation. You will be able to view movies showing three landforms: hill, valley, and cliff. For each landform you will first see its topographic map and then interact with movies showing each landform's three-dimensional features.

The purpose of this module is to help you learn to visualize the three-dimensional surface of a landform from two-dimensional topographic maps. Observations of students reading topographic maps have shown that students struggle with this interpretation exercise. The movies that are included in this module helped those students to improve their map-reading, interpretation, and visualization skills.

Some of the movies included in this module are virtual reality (**VR**) movies and allow you to click-and-drag the mouse inside the image to change features of the movies. Above each movie, arrows will indicate the direction(s) you can move the mouse and text will indicate what changes will occur as you drag the mouse in each direction. Other movies are **self-playing**, and after a short pause on the screen, they will begin playing without you having to do anything. Once these movies reach the end, they will repeat from the beginning.

There are several different types of movies in this module.

- **Tilt and rotate**. In the VR version, you can click-and-drag the mouse to 1) rotate the movie 360° (by clicking and dragging side-to-side) and 2) tilt the landscape on its side to view elevation differences (by clicking and dragging up and down).
- **Shading**. These movies allow you to watch shadows lengthen and shorten across surface features and show you how shadows would change as the sun rises and sets.
- **Flooding**. These movies allow you to flood a given landscape and watch how water fills a terrain.
- **Profile-slicing**. These movies allow you to cut into a landscape from front to back to see how profiles (side views) of the landscape change and how topographic maps would look if viewed from the side.

We (the research group that developed this module) feel the best way for you to learn about topographic maps is to play with the movies we've made for this module. For you to get the most out of this, you might have to look at each movie a few times. Before you start the module, make sure you have the worksheets handy! We included these to help you keep a record of your answers to questions, observations, and progress as you go through this module.