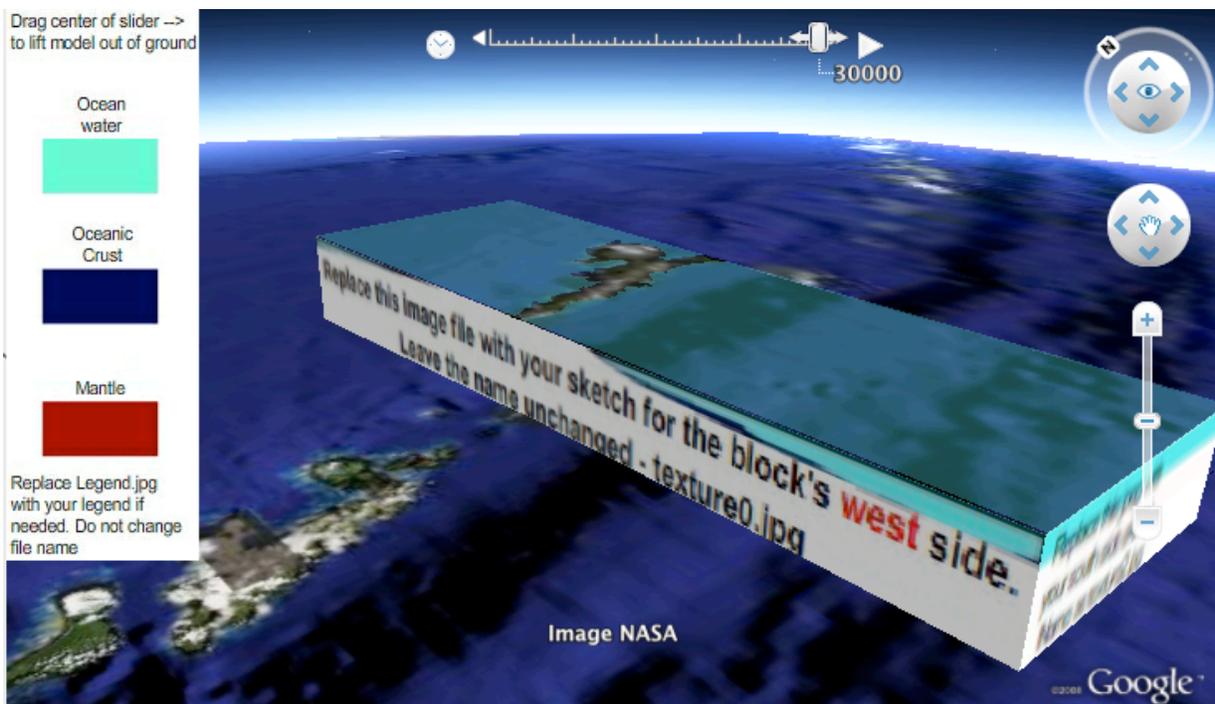


Students:

This exercise involves use of the Google Earth application. You need to instal the latest version of Google Earth on your computer. This is a free download from <http://earth.google.com>.

You will be given a web address from which to download files for the exercise. Find the folder called “AleutianStudent.” It contains a doc.kml file that can be opened with Google Earth.

Open the doc.kml file and you should see something like the image below (the orientation may be different). If you do not see the block diagram, check the slider at the top of the window. Drag it to the right and the block should emerge. Be sure to drag the *center* of the slide: do not expand it or multiple images will be superimposed. You can also click the forward arrow but that is slower. Note that the slider was designed by Google to represent time, but we are using it to show the number of meters that the block has been lifted out of the sub-surface.



On the sides of the block, you will see images with messages such as “Replace this image file with your sketch for the block’s west side.” These placeholder images are located in a sub-folder called “images” and are named as follows:

- texture0.jpg: the image for the west side of the block
- texture1.jpg: the image for the east side of the block
- texture2.jpg: the image for the south side of the block
- texture3.jpg: the image for the north side of the block

Task #1: Your first assignment is to use a drawing program to create your own jpeg images and substitute them for these placeholders. The substitute files must have the exact same (case-sensitive) names and should be the same size and shape. You can use any drawing program that saves jpeg, png, or tiff files, such as Illustrator, Flash, CorelDraw *etc.* You can even use color pencils on paper and take a snap of your sketch with your cellphone or webcam, or scan it with a flatbed scanner.

There is also a legend image which you may change if you decide to use your own color scheme or symbols. Call your file "Legend.jpg" and replace the default legend.

Finally, there is a file called texture0.png which corresponds to the top of the block. This can be left unchanged or can be replaced with a sketch geologic map, for example.

When you have created your own block diagram images, right-click the "Aleutian" name in the Google Earth Places sidebar and revert/refresh (or quit and relaunch Google Earth). Then use "Save place as..." to save your work as a KMZ archive and drop the archive in the course Blackboard drop box. Be sure to include your name or ID in the archive file name.

Task #2: When you have completed task #1, delete your block, or make it invisible by un-checking it in the Google Earth sidebar, and load the KMZ files which will be downloadable from the web [or distributed on flash drive].

The first KMZ file is raw velocity data based on a research publication, Holbrook *et al. Geology* 27:31-34 (1999). Study the seismic velocity data and discuss how it relates to tectonic setting. Then load the final KMZ file - "AleutianModel.kmz" and compare your interpretation, the raw data, and a simplified tectonic model of the region.

Answer the following questions [note that Google Earth contains a measuring tape tool]:

- (i) Compare the crustal thickness in different parts of the block. Be quantitative.
- (ii) What is the approximate angle of subduction in this region?
- (iii) About how far is it, in kilometers, from the trench to the volcanic arc?
- (iv) Why is the Aleutian Arc arcuate? [hint: what would happen if the block were made twenty times wider than it is?]