

Google Earth cheat sheet

Tools Menu

Choose "Options" from this menu to change viewing options

Ruler (use to measure horizontal distances)

The screenshot shows the Google Earth interface with several key elements highlighted:

- Tools Menu:** The 'Tools' menu is circled in the top-left corner.
- Ruler:** A ruler icon is circled in the top toolbar.
- Places pane:** The 'Places' pane is circled on the left side.
- Place:** The 'Mauna Loa Summit' entry in the Places pane is circled.
- Image overlay:** The 'Mt Ramier Rock Type' entry in the Places pane is circled.
- Transparency slider:** A slider icon in the Places pane is circled.
- Layers pane:** The 'Layers' pane is circled on the left side.
- Layer:** The 'Terrain' layer in the Layers pane is circled.
- Outer ring:** The outer ring of the navigation globe is circled.
- Inner arrows:** The inner arrows of the navigation globe are circled.
- Arrows:** The zoom arrows are circled.
- Zoom:** The zoom slider is circled.
- Latitude:** The latitude coordinate '47°03'28.95" N' is circled in the bottom status bar.
- Longitude:** The longitude coordinate '121°50'09.41" W' is circled in the bottom status bar.
- Elevation:** The elevation 'elev 1225 m' is circled in the bottom status bar.
- Altitude:** The altitude 'Eye alt - 138.63 km' is circled in the bottom status bar.

Outer ring: left-click and drag to rotate the map/image

Inner arrows: click and hold to change your viewing angle (you can also do this by holding the shift key and use the wheel on your mouse)

Arrows: click and hold to change your horizontal position

Zoom: use this slider to change your magnification (you can also do this using the wheel on your mouse)

Places pane

Place
(double - click to fly to this position)

Image overlay
(box must be checked to be visible)

Transparency slider
(click and drag to change opacity of map overlays)

Layers pane

Layer
(check box to make layer active)

Latitude Longitude Elevation

Altitude

(how high you would be in the real world to see this image)

VOLCANISM AND TECTONICS – INSTRUCTOR'S NOTES

This exercise works best with 2 students / group. Each group should have a geologic map of Hawaii (Luedke and Smith, 1982), a computer (with network access, Google Earth installed, the Google Earth cheat sheet (if necessary), and the file "Tectonics and volcanism.kmz available on the desktop"), and there should be a class set of both Hawaiian and Cascades hand samples. The map is large, so if possible, each team should be at their own table/work station.

Most likely, the instructor will be answering questions for most of the work session. The instructions below are meant to avoid the "sticking points" that might slow student progress.

This exercise was designed for a physical geology course at Trinity University (San Antonio, TX), so the exercise is designed based on the expected prior knowledge of students prior in a particular physical geology lab course, the hand samples available at Trinity, and the location of Trinity University (see Part II., Section C.). As written, the entire exercise takes approximately 2 hours and 30 minutes, depending on whether PART III. is completed during class time (if PART III. is also to be completed during class time, add 20 – 30 minutes). This exercise can easily be modified based on the type of course, the time available in class/lab, the hand samples available for inspection, or for any other reason.

PART I. THE VOLCANOES OF HAWAII

As students are unfolding the map of the Hawaiian Islands, make sure to point out where they can find the "Explanation" on the map. Some students will not realize that the Big Island has been split into five parts, based on volcanic center.

For this first Google Earth section, once students have begun to calculate the percent grade, the instructor can point out where they will most likely see that measure (i.e., on warning signs for sections of highway that have steep slopes). The instructor might also point out that 100% grade = 45 degrees. This section could be modified to require calculation of slope in degrees instead of percent grade.

PART II. THE VOLCANOES OF THE CASCADE RANGE

Although it is noted on the student instructions, the instructor might quickly demonstrate the "transparency slider" for students. To use the transparency slider, the image to be adjusted must be highlighted in the "Places" pane on the left. Students don't always read the directions so are confused when the slider isn't available when they need to use it in the exercise. It's worth waiting until the first student team asks why there is no transparency slider available.

Also, although the geologic map explanation for the Cascades volcanoes is included at the end of the student handout, it might be worth printing the Cascades explanation on the back of the Google Earth Cheat Sheet for easier reference while completing the exercise.

SECTION C. Mt. St. Helens –1980 eruption

Question 28 should be modified to include some well-known distance measurement (question 28, as written, is based on a well-known highway proximal to Trinity).

For question 29, make sure that students take a close look at the photograph referenced on the student handout (with the 2 geologists for scale); the trees blown down by the blast are enormous.

For question 32, students should see the lava dome, both in the Google Earth image and in photos submitted by Google users (the web link takes students to a photo taken soon after the 1980 eruption).

SECTION D. Crater Lake/Mt. Mazama

For question 35, although it is included in the directions, students should look closely at the units used to quantify ash fall deposit thickness (mm for Mt. St. Helens; feet for Crater Lake).

PART III. TECTONIC SETTING AND ERUPTED MAGMAS

The questions included in this section are designed for a particular physical geology course. These questions should be modified based on when this exercise is used in the curriculum.