

Google SketchUp Science / Geography Project #1



SketchUp can be used for projects in almost any subject, which makes it especially perfect for classes that combine subjects.

This project uses Google Earth, another free product by Google. SketchUp and Earth work in tandem with each other: you can bring a “slice” of Earth into SketchUp and build something on it, then bring that model into Earth.

You can download Google Earth at <http://earth.google.com>.

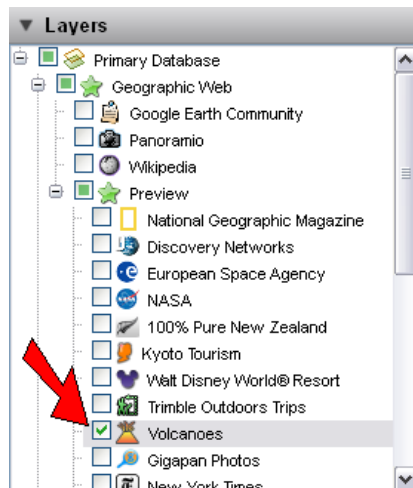
If you need some basic information on downloading Google SketchUp, or about its user interface and basic tools, please see our printable “Intro to SketchUp” PDF.

The PC version is at www.3dvinci.net/SketchUp_Intro_PC.pdf.

The Mac version is at www.3dvinci.net/SketchUp_Intro_Mac.pdf.

In this project, we’ll go searching for a volcano. Once we find it in Google Earth, we’ll decide what we want to build on it, and for what purpose.

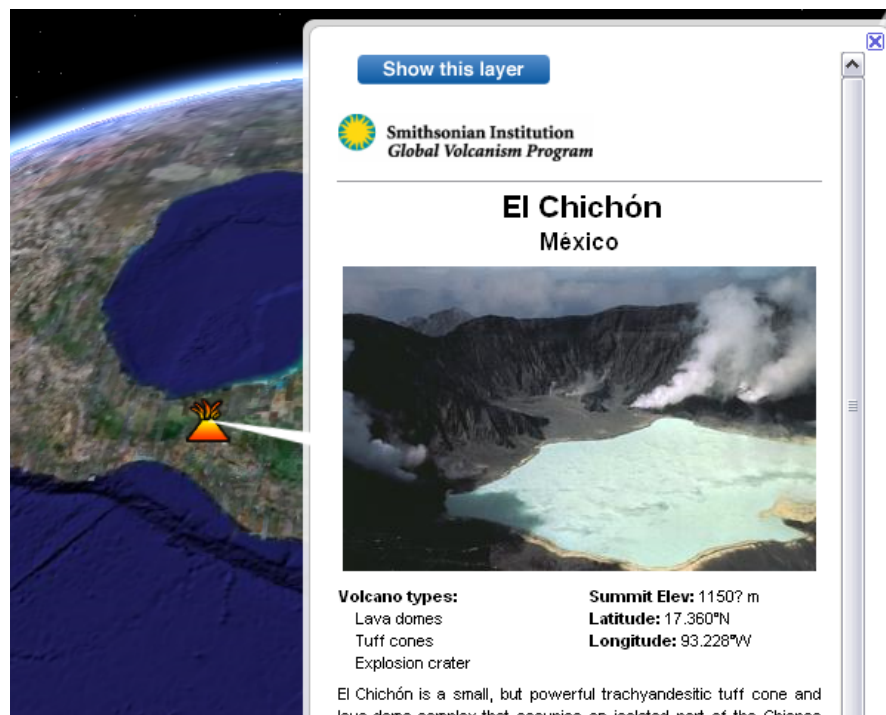
1. Start Google Earth. Before searching for a particular place, look at the **Layers** window at the bottom left. There is a huge number of items you can display, but too many of these things will clutter your screen and make things move too slowly. So uncheck everything, except for “Volcanoes.”



2. Now you can spin around Earth, looking for volcanos. You can use Earth's navigation controls or click and drag your mouse. You need to zoom in a little to see the volcano markers. For examples, here are two volcanos - one in Mexico and one in Costa Rica.

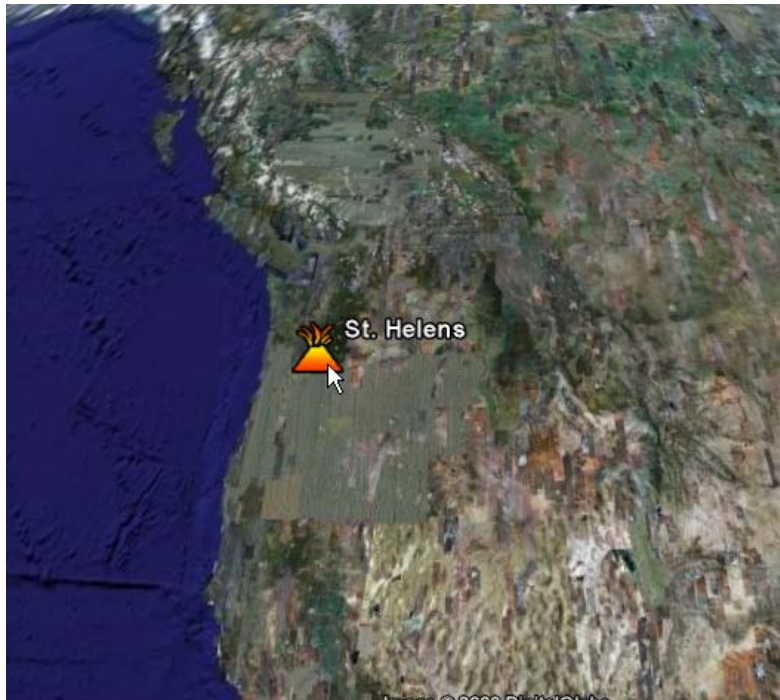


3. To get information about the volcano, click the volcano marker. This one is called “El Chichon,” and you can find facts about its location and altitude.

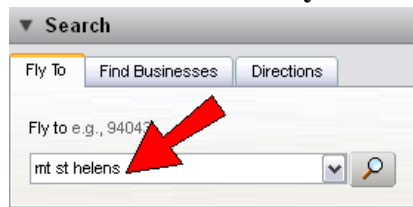


Other famous volcanoes to find are Fuji in Japan, or Mauna Loa in Hawaii.

4. The one where I'll be building is Mount St. Helens, in Washington State, USA. Try to find it by spinning around the world.



If you can't find it this way, enter "Mt St Helens" in the **Fly To** field of the **Search** window.



5. If you zoom out a little, this should be your view. It's a large volcano with an interesting shape (it erupted in 1980 and some of the volcano top spilled down the slope), which is why I chose it for this project.



6. To see the shape in 3D, use the navigation controls or drag your mouse up and down.

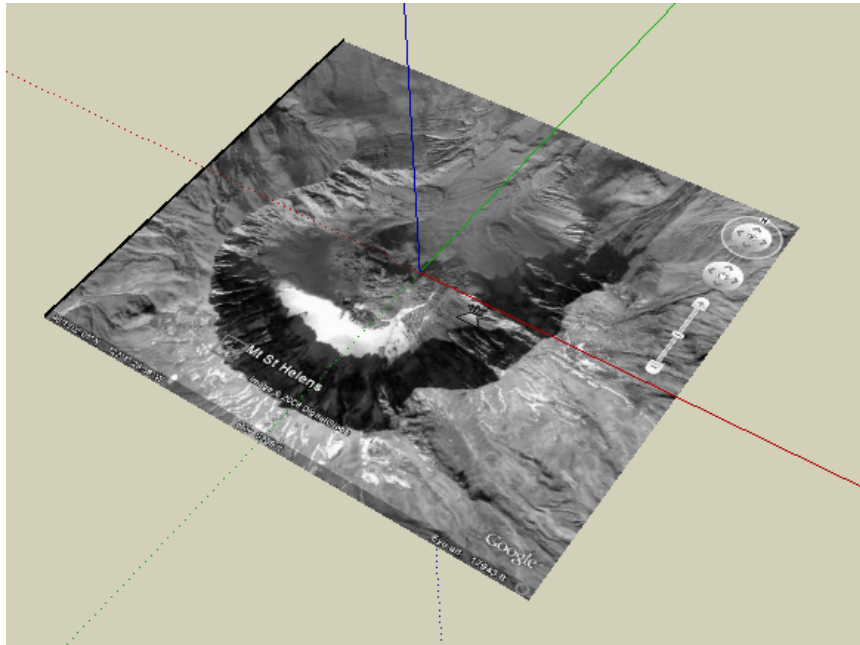


7. Go back the bird's-eye view. When you bring a piece of Earth into SketchUp, you should always be looking straight down at the ground (or volcano top in this case).

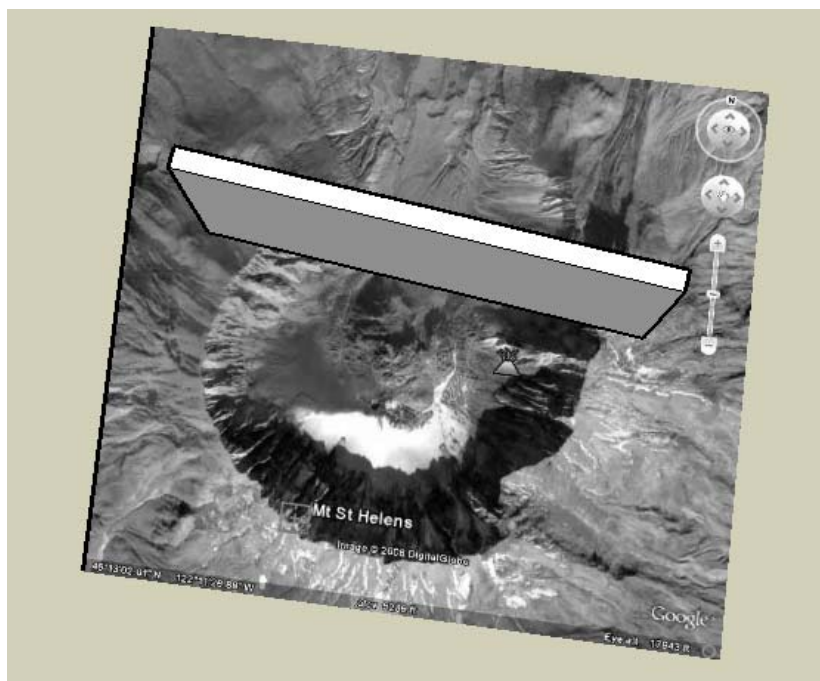
8. Open SketchUp, and click **Get Current View**.



Your view is brought into SketchUp, as a flat rectangle.



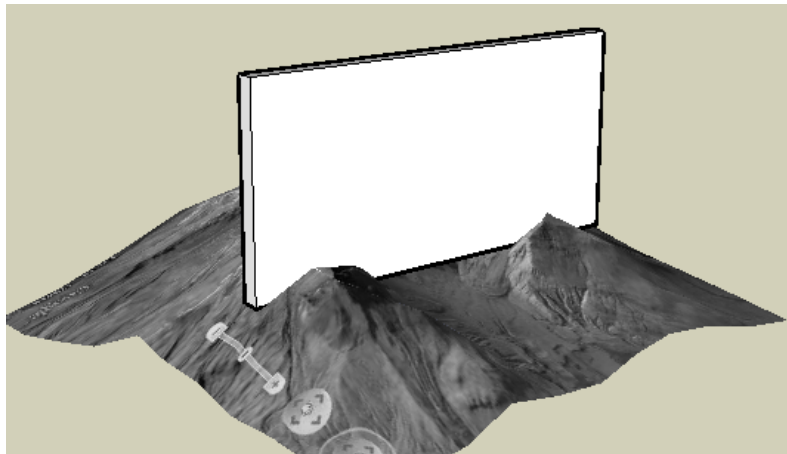
9. What to build here? I'll try for something relatively simple - a retaining wall that will block any lava from spilling down the mountain in the future. Plus an observation bridge that crosses over the volcano. On the flat SketchUp rectangle, draw the rectangle you want to use for the wall, and use **Push/Pull** to pull it up.



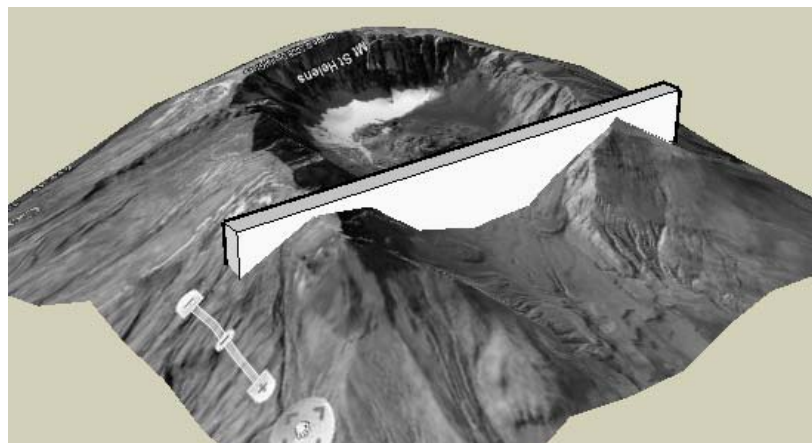
10. We know this volcano isn't flat, and we should see how it really looks in 3D before we start making our model. So click **Toggle Terrain**.



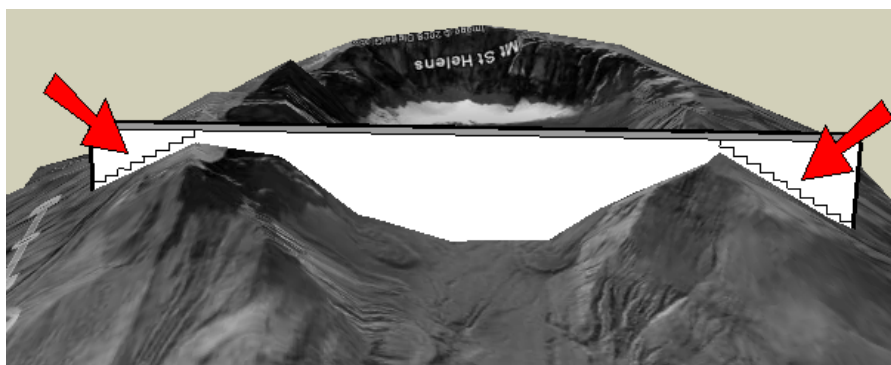
Now you can see the mountain.



11. Use **Push/Pull** to make the wall the right size. You might have to flip the volcano upside-down to pull the wall down far enough.

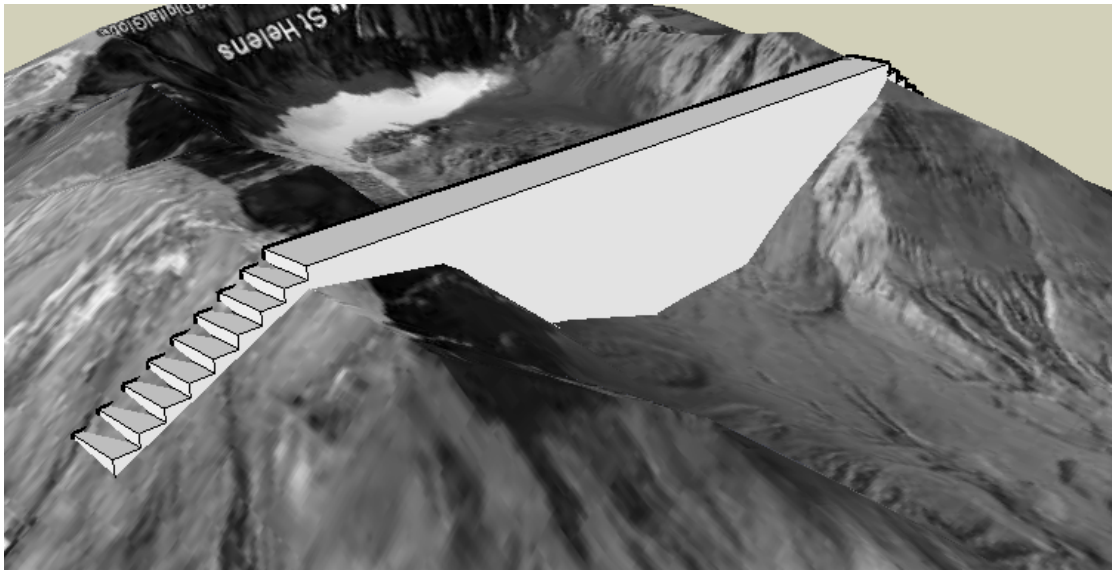


12. I'm adding steps on either side, for easy access. You can use **Line** to make the step outlines.

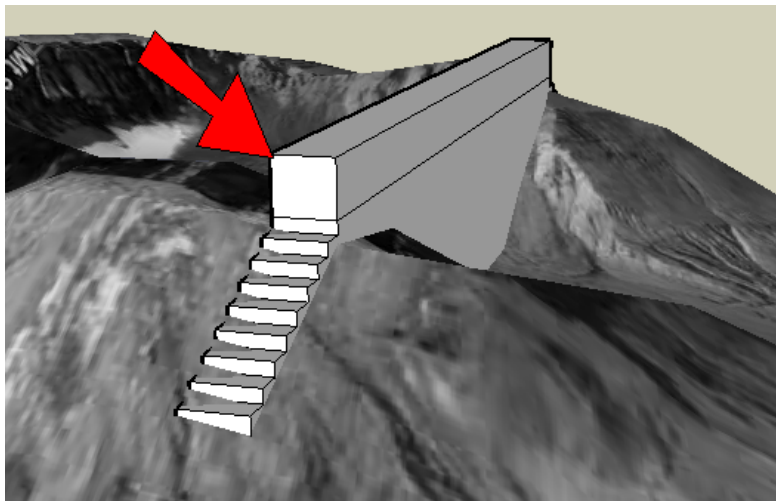


If you pay attention to the measurements of your lines, you'll see how huge they are. Obviously, this model scale doesn't have to be very accurate.

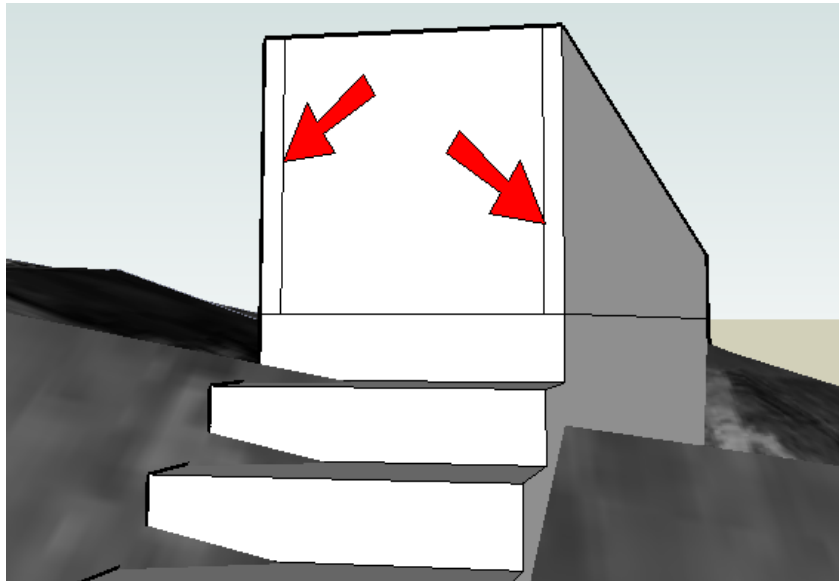
13. **Push/Pull** the steps out.



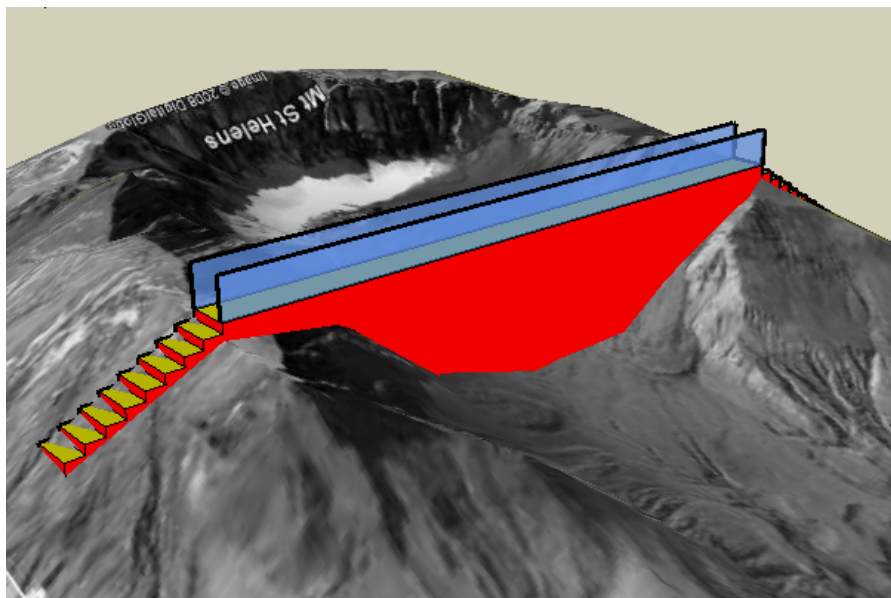
14. For an observation area, we need a protective wall. So pull the top up. (Press the Ctrl / Option key when using **Push/Pull** if you want to create a new set of faces.)



15. Then use **Rectangle** or **Line** to create the edges for the protective wall.



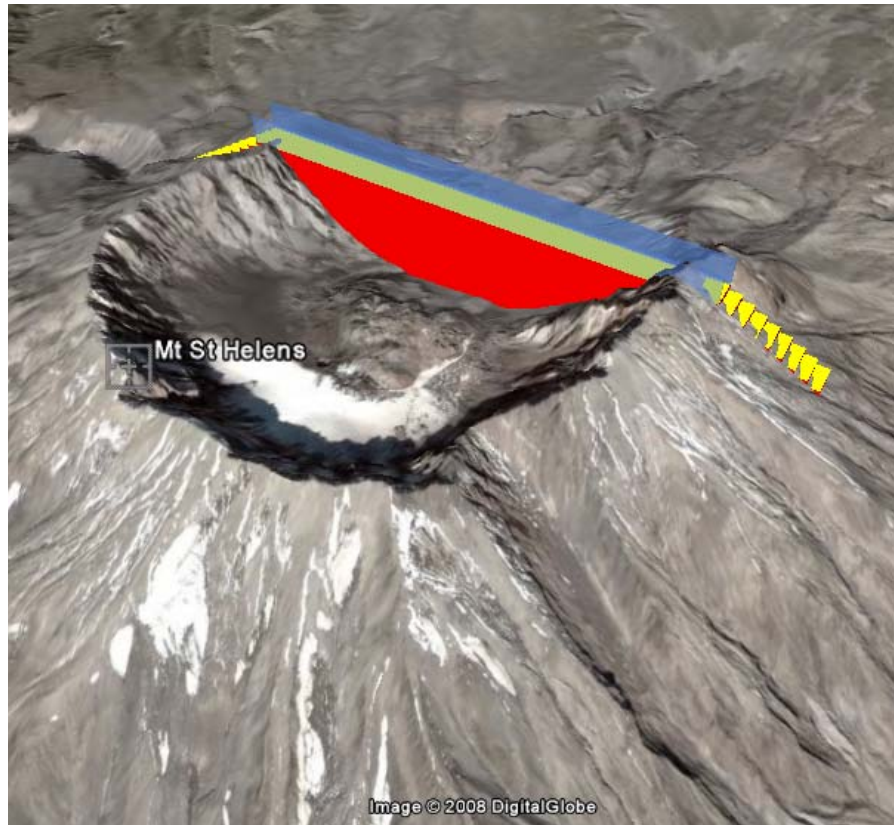
16. Pull out the middle, and paint your wall. I used a translucent color for the protective wall to make it easier for visitors to see what's going on. No lava will get through here next time!



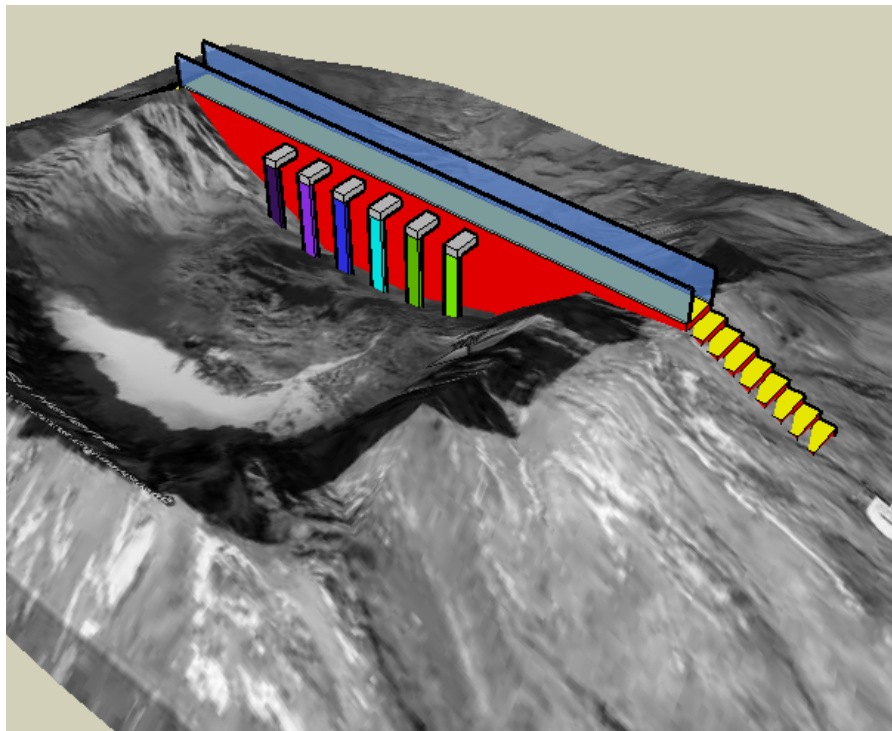
17. To place your wall in Google Earth, click **Place Model**.



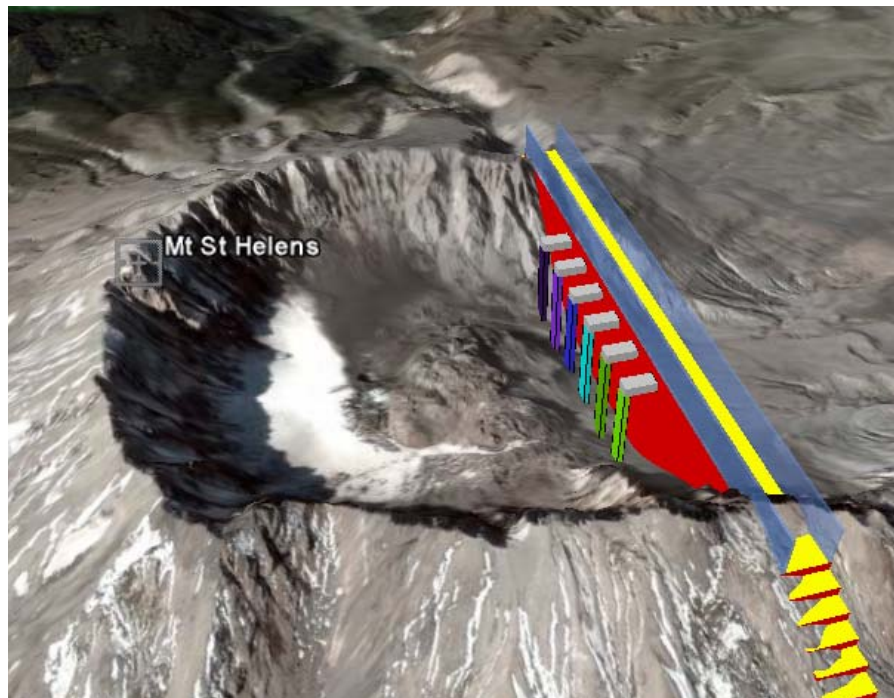
18. Go back to Earth to see it.



19. To make this model more useful, we can add a scientific testing station. I'm not sure exactly what this would look like, perhaps a series of pipes coming out of the wall which will measure chemical levels or test temperature. Go back to SketchUp and make whatever changes you like to your model.

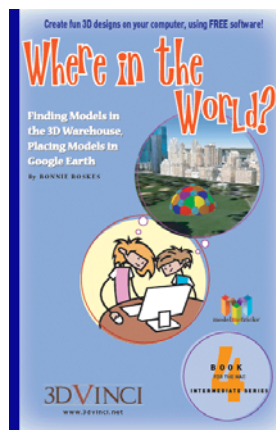


20. Click **Place Model** again, and go back to Earth (you'll have to confirm that you want to replace the model that's already there. Here's your observation center / testing lab / retaining wall.



21. This model is in your Google Earth as a temporary place - it is not on the “main” Google Earth that everyone sees. If you want to save this place in Earth, use **File / Save / Save Place As**. The file extension is .kmz. You can save your SketchUp file as well, which will keep its location information. If you open a saved SketchUp file with location information, you can always use **Place Model** to see where it ends up in Earth.

If you like this project, please check out 3DVinci's book Where in the World? (http://www.3dvinci.net/ccp0-prodshow/MI4_PDF.html). This book teaches all you need to know about integrating models into Google Earth, including how to change and relocate models. It also covers how to find just what you need in the 3D Warehouse.



And if you want to receive three ready-to-use projects like these each month, sign up for our SketchUp Projects of the Month subscription (<http://www.3dvinci.net/ccp0-prodshow/POM.html>).
