

Subject area/course: Science/Earth Science

Grade level/band: 9-10

Task source: Virtual Learning Academy Charter School (VLACS) in collaboration with the Center for Collaborative Education; Author: Betsy Stacey

Your Earthquake and Volcano Risk

STUDENT INSTRUCTIONS

A. Task context:

You are a risk assessor for the Federal Emergency Management Agency (FEMA). Your job is to figure out if your local region is at risk of a devastating earthquake or volcano and to write a risk assessment document for your locality. In order to understand the risks, you need to understand plate tectonics and where your state sits in relation to plate boundaries, and how those plate boundaries affect earthquakes and volcanoes. You will then pick another region of the world that you feel has a very different risk factor of volcanoes and/or earthquakes and write a risk assessment document for that region as well.

Be sure to include the following in your risk assessment:

1. General safety guidelines for dealing with an earthquake and with volcanoes.
2. General description of the two regions including underlying plate tectonics.
3. Description of damage that earthquakes and volcanoes might do at each region.
4. Explain why a high rate of earthquakes and/or volcanoes may or may not be expected at each region.
5. Describe the comparison of the two regions for earthquake or volcano risks.

B. Final product:

Your final task will consist of two pieces:

- Risk Assessment Table (see materials section below)
- Two Earthquake Risk Assessments for two different regions in the style of **FEMA documents** and a comparison of the two regions.

Below are suggested specifications for high quality products. Please review these before turning in your final products.

- Each Risk Assessment should be 3-4 pages and address the content listed in 1-5 above
- Final drafts are required to be typed, double spaced, in 12-point font including sources
- Headings and formatting are consistent with industry standards



ADDITIONAL INFORMATION

C. Knowledge and skills you will need to demonstrate on this task:

1. On this task, you will show that you know these things:
 - Theory of plate tectonics
 - Fault, focus, and epicenter
 - Layers of the earth and their attributes; from inner core through crust
2. On this task, you will show that you are able to do these things:
 - Explain why certain parts of the Earth are more prone to earthquakes or volcanoes
 - Assess whether your region has a high risk of earthquakes and explain why or why not given your knowledge of plate tectonics, volcanoes and earthquakes
 - Compare the relative earthquake or volcano risks for two regions
 - Research the earthquake and volcano risks based on the FEMA risk assessment table

D. Materials needed:

- Risk Assessment Table
http://www.ready.gov/sites/default/files/documents/files/RiskAssessment_Table_0.pdf

The following websites will be helpful as you move through this task:

- Earthquake detection: <http://www.pbs.org/wgbh/nova/earth/earthquake-detection.html>
- National Geographic Special- Down to the Earth's Core:
<http://www.youtube.com/watch?v=LwTzzgHaC2I>
- Khan Academy - Compositional and Mechanical layers of the earth:
<http://www.youtube.com/watch?v=hHteUIS0OFY>
- Readiness and Risk (FEMA style example): <http://www.fema.gov/determine-your-risk>
- Summary of regional earthquakes and geologic forces:
https://www2.bc.edu/~kafka/Why_Quakes/why_quakes.html

E. Time requirements:

You will have 3 weeks to complete this task.

F. Scoring:

Your work will be scored using the SCALE Earthquake and Volcano Risk rubric. You should make sure you are familiar with the language that describes the expectations for proficient performance.

