**Mapping and Predicting Earthquakes**

For this assignment, you will be an amateur seismologist. Your task will be to track and plot earthquakes in a particular region over the course of a few weeks, and then analyze the patterns of seismic activity in that region and make predictions about future seismic activity in that region.

In this assignment you will do the following:

1. Select a region—a (specific region of a) country/state/province located near a plate tectonic boundary
2. Track earthquakes of magnitudes **3.0 and above**, every day:
	* You will record your data for your region every day for about 1.5 weeks or more (see attached data sheets: “Daily Earthquake Log Sheets”)

*\*Note: If you are using an ipad, you can download any one of these free Earthquake tracking apps to track your Earthquakes:*

* + *QuakeFeed,*
	+ *KCOY Weather Earthquake Tracker,*
	+ *iQuakeLite,*
	+ *Quakes*

*\*Note: If you are using a laptop or an ipad, you can use the following websites to track the Earthquakes for your region:*

<http://earthquake.usgs.gov/earthquakes/map/>

1. **Create** and **print/draw** a graph to represent your data and the patterns of Earthquake magnitudes you observed.
2. In three paragraphs, you will summarize research about the general seismic activity in that region. You should address the following questions in your summary:
	* Find and analyze a “Seismic Hazards Map” of your region and its surrounding area (country, state, etc.)
	* Discuss what general patterns you see there
	* Does your region have any major fault lines?
	* In general, what is the pattern of seismic activity in that region?
	* Did your region experience any major earthquakes in the past? If so:
		+ When did it happen?
		+ What was the magnitude of the earthquake?
	* How much damage did it cause (cost wise, casualties, etc.)?
3. Analyze your data/graph by answering the following questions in 2 or more paragraphs:
	* What was the general pattern of seismic activity in your region?
	* What magnitude of Earthquakes seemed to occur most frequently?
	* Where do most of the Earthquakes in your region tend to occur most frequently?
	* What predictions about the seismic activity in this region can you make?
	* Any other observations/thoughts/reflections about the seismic activity in this region.

*\*For #4 and #5, your paragraphs MUST BE TYPED, DOUBLE-SPACED, Times New Roman Font (Size 12),\**

*\*Your entire report should be presented in a neat report-cover folder/presentation folder* ***WITH A TITLE PAGE****\**

*Title page requirements:*

* *Title of Project: “Sesimic Activity in \_\_\_\_\_\_\_\_\_\_\_ (name region)”*
* *Picture/Map of region*
* *Name, Period, Date, Teacher*

**Deadlines:**

|  |  |
| --- | --- |
| Phase | Due Date |
| Select Region (#1) | **December 12, 2012** |
| Completed Data Sheets (#2) | **December 21, 2012** |
| Graph of Data (#3) | **January 11, 2013** |
| Summary of Area’s General Seismic Activity (#4) | **January 16, 2013** |
| Analysis of Data/Predictions (#5) | **January 23, 2013** |

**6th Grade Science Content Standards Addressed:**

1. Plate tectonics accounts for important features of Earth's surface and major geologic events. As a basis for understanding this concept:
2. Students know that earthquakes are sudden motions along breaks in the crust called faults and that volcanoes and fissures are locations where magma reaches the surface.
3. Students know major geologic events, such as earthquakes, volcanic eruptions, and mountain building, result from plate motions.
4. Students know how to determine the epicenter of an earthquake and know that the effects of an earthquake on any region vary, depending on the size of the earthquake, the distance of the region from the epicenter, the local geology, and the type of construction in the region.
5. Scientific progress is made by asking meaningful questions and conducting careful investigations. As a basis for understanding this concept and addressing the content in the other three strands, students should develop their own questions and perform investigations. Students will:
6. Select and use appropriate tools and technology (including calculators, computers, balances, spring scales, microscopes, and binoculars) to perform tests, collect data, and display data.
7. Construct appropriate graphs from data and develop qualitative statements about the relationships between variables.
8. Communicate the steps and results from an investigation in written reports and oral presentations.
9. Read a topographic map and a geologic map for evidence provided on the maps and construct and interpret a simple scale map.

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***Mapping and Predicting Earthquakes:***

***Statement of Understanding***

I \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_(your name) have thoroughly read and understood all the directions and instructions for this assignment. I am aware of all the requirements and deadlines for this assignment and I will do my best to submit quality work for this assignment on the due dates listed above. I also understand that if I have any questions, that I must take the responsibility to ask and clarify any questions with the teacher regarding this assignment BEFORE the deadlines. I also understand that, subject to the teacher’s decisions, certain aspects of this project (including deadlines) may change and that I will abide by any changes.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(Student Signature) (Parent Signature)

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(Date) (Date)

**Mapping and Predicting Earthquakes**

**Data Sheets**

*Region:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |  |
| --- | --- | --- |
| **Magnitude** | **Tally (# of Earthquakes)** | **Main Epicenters** |
| 3.0-3.9 |  |  |
| 4.0-4.9 |  |  |
| 5.0-5.9 |  |  |
| 6.0-6.9 |  |  |
| 7.0-7.9 |  |  |
| 8.0-8.9 |  |  |
| 9.0+ |  |  |

 Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |  |
| --- | --- | --- |
| **Magnitude** | **Tally (# of Earthquakes)** | **Main Epicenters** |
| 3.0-3.9 |  |  |
| 4.0-4.9 |  |  |
| 5.0-5.9 |  |  |
| 6.0-6.9 |  |  |
| 7.0-7.9 |  |  |
| 8.0-8.9 |  |  |
| 9.0+ |  |  |