

# Natural Disasters and Plate Boundaries

## Earth Science Unit Final Project - Karlen

**Due Date:** \_\_\_\_\_

**Type of Project: Individual or Partner Project** - If you are working in a partnership, it must be within the **same class**. You are responsible for choosing a partner that you work well with. Your grade is dependent on your partnership so choose wisely!

**What are we doing?:** You will first select 1 type of natural disaster to study specifically. You will decide where in the world (what boundary) that disaster will occur. You will research and provide background information on your natural disaster. Specifically, you will explain what happens inside the earth that causes tectonic plate movement, and how that in turn causes natural disasters. You will design a house/city that will survive that natural disaster, and you will make a model, poster, or digital model of your design. You will need to be able to explain and analyze your design elements - you will do this in a Google Slides Presentation. The background information, models, and analysis will be presented in class via a Gallery Walk.

**Why are we doing this?:** Natural Disasters are one of the biggest ways we see the different topics in Earth Science connect. This is your opportunity to show what you know about Earth science and how these topics are all interconnected. This is half of your final assessment for the Earth Science unit.

**Learning Target:** I can explain how things inside the Earth that we cannot see impact things on Earth's surface that we can see, and I can design a way to help minimize the impact of natural disasters on communities that are impacted.

**How should I turn this in?:** Submit Google Slides to Schoology. Bring your model and slides to class the day of presentations!

Library page with library databases - [Click here](#)

Research Document - [Click here](#)

Plate Boundary Map - [Click here](#)

**My partner (if applicable)** \_\_\_\_\_

**My Natural Disaster:** \_\_\_\_\_

**My selected Boundary, location, plates involved, type of boundary:** \_\_\_\_\_

### **Project Timeline:**

Include DETAILS on what you will have finished by each day.

<b>Day 1</b>	See this schedule - <a href="#">click here</a>
<b>Day 2</b>	
<b>Day 3</b>	
<b>Day 4</b>	
<b>Day 5</b>	
<b>Day 6</b>	
<b>Day 7</b>	

**Sign-off of Approval from your teacher** \_\_\_\_\_

## Part 1: Natural Disaster Description, Causes, and Effects

	Exemplary   5	Accomplished   4	Developing   3	Beginning   <2
<b>Location and Plate Boundary</b>	The student (1) <b>clearly chooses a REAL location</b> where their specific natural disaster commonly occurs, (2) clearly <b>identifies a real plate boundary</b> , (3) explains the <b>type of plate boundary</b> that exists, and (4) clearly <b>explains the relationship</b> between the boundary type and natural disaster..	The student (1) <b>chooses a REAL location</b> where natural disasters commonly occur, (2) clearly <b>identifies a real plate boundary</b> , and (3) clearly <b>explains the relationship</b> between the boundary type and natural disaster.	The student (1) <b>chooses a general location</b> where natural disasters commonly occur, (2) clearly <b>identifies a plate boundary type</b> , and (3) somewhat <b>explains the relationship</b> between the boundary type and natural disaster.	The student (1) <b>fails to choose a location</b> where natural disasters commonly occur, does not (2) <b>identify a plate boundary</b> , <u>and/or</u> does not (3) <b>explain the relationship</b> between the boundary type and natural disaster..
<b>Cause and Direction of Plate Movement</b>	The student (1) <b>identifies the cause</b> of tectonic plate motion, (2) <b>completely describes how and why</b> it results in movement, (3) <b>identifies the direction of plate movement</b> at their specific selected boundary, (4) <b>Diagrams the cause of that specific movement</b> and direction, and (5) <b>describes all relevant landforms</b> caused by this type of boundary	The student (1) <b>identifies the cause</b> of tectonic plate motion, (2) <b>completely describes how and why</b> it results in movement, (3) <b>identifies the direction of plate movement</b> at their specific selected boundary, and (4) <b>describes most relevant landforms</b> caused by this type of boundary	The student (1) <b>identifies that tectonic plates move</b> , (2) <b>somewhat describes why</b> plates move, and (3) <b>identifies the direction of plate movement</b> for a relevant boundary, and (4) <b>describes some relevant landforms</b> caused by this type of boundary	The student (1) <b>fails to identify how and why</b> tectonic plates move (2) <b>fails to identify the direction of plate movement</b> for a relevant boundary, <u>and/or</u> (3) <b>fails to describe relevant landforms</b> caused by this type of boundary
<b>Measurement and duration of disaster</b>	Provides (1) a <b>detailed description</b> of the disaster from its <b>initiation</b> through the <b>aftermath</b> , (2) provides <b>data</b> about how <b>frequently the disaster occurs</b> around the world, and (3) summarizes the <b>scale that is used to measure the disaster</b> and how that <b>scale was created</b> .	Provides (1) a <b>description</b> of the disaster from its <b>initiation</b> through the <b>aftermath</b> , (2) mentions how <b>frequently the disaster occurs</b> around the world, and (3) summarizes the <b>scale that is used to measure the disaster</b>	<u>One of the 3</u> requirements is inadequate or missing	<b>Fails to</b> Provide an adequate description for <b>multiple</b> requirements or requirements are missing
<b>Impacts and cost of disaster</b>	(1) A <b>cost and time estimate</b> of the clean up process of their natural disaster <b>at their specific location</b> is provided and <b>accurate</b> (including cost of labor), (2) a <b>detailed description</b> of the <b>population of people impacted</b> , (3) the <b>Pros and cons</b> of how your design would work to help minimize the impacts of the disaster ( <b>2+ of each</b> )	(1) A <b>cost and time estimate</b> of the clean up process of their natural disaster <b>at their specific location</b> is provided and mostly <b>accurate</b> (including cost of labor), (2) a description of the <b>population of people impacted</b> , (3) the <b>Pros and cons</b> of the design are clearly described ( <b>1+ of each</b> )	(1) A <b>cost and time estimate</b> of the clean up process of their natural disaster is attempted (not including cost of labor), (2) the description of the <b>population of people impacted</b> is incomplete (3) the <b>Pros and cons</b> of the design are attempted	(1) A <b>cost and time estimate</b> of the clean up process of their natural disaster is inaccurate or missing (2) the description of the <b>population of people impacted</b> is incomplete or missing <u>and/or</u> (3) the <b>Pros and cons</b> of the design are not discussed
<b>Score:</b> _____/20	<b>Comments:</b>			

## Part 2: Prevention Plan and Model

	Exemplary   5	Accomplished   4	Developing   3	Beginning   <2
<b>Design Features</b>	(1) At least <b>4 design features</b> are incorporated in house design, (2) all major features are <b>clearly labeled</b> , and (3) the <b>scientific reasoning</b> behind each feature is <b>clearly articulated</b>	(1) At least <b>3 design features</b> are incorporated in house design, (2) all major features are <b>clearly labeled</b> , and (3) the <b>scientific reasoning</b> behind each feature is <b>describes</b>	(1) At least <b>2 design features</b> are incorporated in house design, (2) some features are <b>labeled</b> , and (3) some <b>scientific reasoning</b> behind each feature is <b>attempted</b>	Student <b>fails to</b> (1) incorporate specific design features in house, (2) features are <b>not labeled</b> , <b>and/or</b> (3) <b>scientific reasoning</b> behind each feature is <b>not explained</b>
<b>Physical Model</b>	(1) A physical, <b>3-dimensional model</b> is well constructed, (2) the <b>4 design features</b> are <b>clearly labeled</b> and evident in the model, and (3) the <b>model is neat</b> and <b>would successfully save human life</b> in the selected disaster.	(1) A physical, <b>3-dimensional or drawn model</b> is well constructed, (2) the <b>3 design features</b> are <b>clearly labeled</b> and evident in the model, and (3) the <b>model is neat</b> and <b>would likely save human life</b> in the selected disaster.	(1) some sort of <b>model</b> is constructed, (2) the <b>2 design features</b> are <b>labeled</b> and evident in the model, and (3) the <b>model is somewhat neat</b> and potentially would <b>save human life</b> in the selected disaster.	Student <b>fails to</b> have (1) some sort of <b>model constructed</b> , (2) the design features are <b>not labeled</b> and evident in the model, <b>and/or</b> (3) the <b>model is not neat</b> and <b>would not save human life</b> in the selected disaster.
<b>Score:</b> _____/10	<b>Comments:</b>			

## Part 3: Presentation

	Exemplary   5	Accomplished   4	Developing   3	Beginning   <2
<b>Verbal Presentation</b>	Student clearly and concisely (1) presents <b>all relevant information from parts 1</b> , (2) <b>identifies and explains all important features of their design</b> from part 2, (3) effectively <b>uses a visual aid</b> to display all information, and (4) shows <b>clear evidence of practice</b>	Student clearly and concisely (1) presents <b>all relevant information from parts 1</b> , (2) <b>identifies and explains most important features of their design</b> from part 2, and (3) effectively <b>uses a visual aid</b> to display all information	Student (1) presents <b>most relevant information from parts 1</b> , (2) <b>identifies and explains some important features of their design</b> from part 2, and (3) <b>uses a visual aid</b> to display all information	Student <b>FAILS TO</b> (1) present <b>relevant information from parts 1</b> , (2) <b>identify and explains some important features of their design</b> from part 2, <b>and/or</b> (3) <b>use a visual aid</b> to display all information
<b>Organization and Neatness</b>	All information is (1) <b>clearly and neatly displayed</b> , (2) <b>easy to read</b> , and (3) <b>uses pictures</b> to help illustrate points. (4) There are <b>few to no typos</b> .	All information is (1) <b>clearly and neatly displayed</b> and (2) <b>uses pictures</b> to help illustrate points. (3) There are <b>a few typos</b> .	All information is (1) <b>displayed</b> and (2) <b>uses a few pictures</b> to help illustrate points. (3) There are <b>many typos</b> .	Information is (1) <b>Incomplete</b> and (2) <b>fails to use a few pictures</b> to help illustrate points. (3) There are <b>Tons of typos</b>
<b>Citations</b>	Correctly <b>cites all sources</b> used ( <b>3+ sources</b> ) in <b>MLA citation format</b> . Has completed all notecards/piles in noodle tools.	Correctly cites all sources used ( <b>2 sources</b> ) in <b>MLA citation format</b> . Has <b>completed most notecards/piles in noodle tools</b> .	Correctly cites all sources used ( <b>1 source</b> ) in <b>MLA citation format</b> . Has <b>completed only a few notecards/piles in noodle tools</b> .	<b>Fails to cite sources or inappropriately cites sources</b> (does not use MLA format). Has completed little to none of their notecards in noodle tools.
<b>Score:</b> _____/15	<b>Comments:</b>			

Overall Score:

**/45**

Comments:

Project Checklist:

\_\_\_ **Choose a natural disaster (volcano, tsunami, earthquake)**

\_\_\_ Provide a timeline of the disaster (length/duration from cause to impact)

\_\_\_ Describe the cause(s) of the disaster (climate causes and plate boundary causes)

\_\_\_ Describe the impact(s) of the disaster (Choose a historical natural disaster that occurred @ that location and explain how it has impacted the area, the people, the culture of the area etc)

\_\_\_ **Identify how plate tectonics results in this disaster**

\_\_\_ Identify a real, specific location on a plate boundary where the disaster could occur and name which plates are at that boundary

\_\_\_ Identify the type of plate boundary responsible for the disaster

\_\_\_ Identify the direction of plate movement responsible for the disaster

\_\_\_ Identify all possible resulting landforms that occur from this type of plate movement/boundary and explain the processes that cause them to form

\_\_\_ Explain what causes the plates to move and how it works (convection currents)

\_\_\_ Identify the cleanup cost and timeline of the selected historical natural disaster, and the people impacted by it

\_\_\_ Identify 2+ pros and cons of your design and how it will help in this event

\_\_\_ **Design a structure/house that will survive the natural disaster and preserve all life within**

\_\_\_ Make a model/drawing of your design (must have color, may be electronic)

\_\_\_ Identify 4 features of the design that will allow it to survive the disaster and label those features. THESE NEED TO BE FEATURES THAT ARE CURRENTLY USED BY structural engineers and architects. Also take pictures of your structure and put it in your slide show.

\_\_\_ Explain the scientific reasoning behind your features

\_\_\_ Explain why your design is reasonable and feasible (think about cost, means of construction, how many people it would require to build, how much time etc)

\_\_\_ **Site sources**

\_\_\_ at least 3+ sources are used and cited in MLA format

\_\_\_ **Neat and Organized presentation of information**

\_\_\_ Information is clear and easy to read and understand

\_\_\_ Model/design and information is presented side by side in final presentation

\_\_\_ Presentation is well practiced and uses good visual aids