

Group Project 1: Geologic misconceptions

Introduction: In 1998, students taking a standard physical geology course (such as the one you are in now) were asked to take an earth science “literacy” test in which they were asked open-ended questions about the Earth, and other earth science topics (details can be found in DeLaughter, Stein, Stein and Bain, Preconceptions about earth science among students in an introductory course, *Eos*, 79 (1998), 449). What the study found was that a majority of the students thought the list of misconceptions below to be true. The purpose of this project is for you to recognize why a particular misconception is wrong, and, at your four-year school, score well when they give you an earth science literacy test.

Objective: In this project, you will choose a geologic misconception from the list below. You will figure out why it’s a misconception (what’s wrong with it), then clarify and/or correct it in a **three-minute oral presentation** with at least **one visual element** (not the illustration itself) and **writing a summary** of the same.

Timeline for the project:

Day 1 (Monday): Form groups of four. Assign a role to each of the members; such as an **organizer/facilitator**, a **researcher**, a **writer/recorder**, and a **presenter**. Alternatively, each member can perform all of the tasks above and the individual results can be pooled and edited.

Choose one of the eight misconceptions below:

1. The Earth is a layered planet with a magma layer within it.
2. The Richter scale magnitudes are the most accurate measure of the strength of an earthquake.
3. Volcanoes arise from excess heat and/or pressure within the Earth, and are frequently associated with warmer climates and the ocean.
4. The Mid-Atlantic Ridge was either formed by a collision of two plates or by a rise in sea level.
5. Life on Earth arose less than 1 million years (1 Ma) ago. The dinosaurs went extinct around that time as well.
6. Global warming is due to the destruction of the ozone layer.
7. The Earth orbits the Sun in an elliptical orbit, and the varying distance of the Earth from the Sun is the reason Earth has seasons.
8. The hydrologic (water) cycle on Earth is a closed system. Water on Earth goes around the cycle forever.

Choose **three** of the misconceptions you find interesting enough to pursue (you will only present one of them). To assure that your group gets one of the chosen

misconceptions, give me a **list of the group members and the number of three selections**. I do not want repeated presentations, so each group will cover a different selection, and you will know which one by the end of the period.

After class, either as a group or individually, begin determining what's wrong or incomplete about the misconception. Note that your group must have at least one citation in the bibliography (use a standard bibliographic format) of the written part of this assignment. You may not use Wikipedia, but you may use on-line sources whose site name ends with a ".edu" or ".gov".

Day 2 (Wednesday): You will have some time to discuss progress within the group. By the end of this period, your group should have a good idea of a way to "fix" the misconception that will make a good three-minute oral presentation. At this point, assign someone to coordinate the presentation and someone else to write the summary to turn in to me. You should also determine what **visual elements** you will use: it could be an overhead transparency, a website, a Powerpoint slide or even a poster.

Day 3 (Friday): Each group will present their oral presentation, first **summarizing** the information they found out about their misconception, then stating **how** they would **clarify** it. A *short* question-and-answer period will ensue. You will have access to a slide projector, an overhead projector and a computer projector to illustrate your talk.

- Turn in the **written summary**, along with a **bibliography**. Make sure the names of all group members *who contributed to the presentation* are on the summary. The bibliography should contain the author, title, publisher and publication date of the textbook(s) you used and/or the author or sponsoring organization, the URL (i.e., <http://...>) and the last update date of the website(s) you used.