Assignment 1

Write-to-Learn Assignment: Evidence for the Theory of Plate Tectonics

My objectives for this assignment:
(1) To make sure that you recall the basic concepts of the theory of Plate Tectonics and the historical development of the theory from multiple lines of evidence. This theory is fundamental to the tectonic aspect of this course, but I will not be reviewing the basic aspects of Plate Tectonics during the course.
(2) To give you practice in assessing and planning your writing, developing and writing structured arguments for a position in an attempt to refute an opposing position.
(3) To help you reflect on how data are collected and analyzed to create new “knowledge” in the field of geology.
(4) I want to get a writing sample from you to determine your level of writing skill. We will make extensive comments on your writing, your organization, and clarity of presentation.

The Tasks
The theory of Plate Tectonics is a comprehensive set of ideas that explain the development of regional geologic features, such as the distinction between oceans and continents, the origin of mountain belts, and the nature and distribution of earthquakes, volcanoes, and rock types. The theory predicts that oceanic lithosphere is created at oceanic ridges and is returned to the mantle by subduction along deep ocean trenches. Paleomagnetic data from the ocean floor provided some of the first evidence for the theory of plate tectonics and led to the concept of sea-floor spreading. Although most earth scientists accepted the concept of seafloor spreading, some scientists argued that sea-floor spreading was evidence that the earth has been expanding.

Your friend, Rocky, a student in Geology 1 at Missouri State University, is very taken by this concept of an expanding earth ("whata cool idea"). Unfortunately, Rocky has a solid D so far in Geo 1 and may get an F unless he understands "this whole Plate Tectonics thing". Your job is to write a letter to Rocky to set him straight so he can pass the class. Your letter should include an explanation that acknowledges how the concept of continental drift and sea-floor spreading could support the expanding earth hypothesis. However, your real challenge is to convince Rocky that other types of data and their analysis are more consistent with subduction processes that maintain a constant volume for the earth. I expect your letter to be organized to persuade Rocky of the plate tectonic theory as you explain how it compares and contrasts with the expanding earth theory.

Your most recent instruction in Plate Tectonic theory, like Rocky's, was probably in your introductory geology course. So, to refresh your understanding of the theory, I have placed several introductory physical geology textbooks on reserve in the Geology Library that you can use to supplement chapters in the textbook that you used for your introductory geology course. I suggest that you skim several textbooks for information rather than relying on a single source. You may also use resources and/or figures from various sources on the Internet, but Internet sources alone are insufficient.
Format Considerations

Your letter should be no more than six and no less than four pages long (typed double spaced, Times Roman, 12 pt font, 1 inch margins), and should include a page of figures or sketches (not in your page count) that you refer to in your text to support (not replace) points that you make in your prose. You should also include a page that lists the textbooks and any web site resources that you used to get background material or figures for your letter.

Grading and Due Date

Your letter is due at the beginning of class on Monday, February 16th. This assignment is worth 40 points. Twenty-five points are allotted for the quality of the information, explanation, and reasoning that you provide to Rocky and the organization of your arguments. Fifteen points are allotted for the quality of your writing and presentation of the material. Late papers will be penalized five points per day or part of a day late. See grading criteria in the section below.

Listed below are some of the criteria I will consider as I grade and critique your letter.

See the Writer’s Help Assignment and associated link in Blackboard just before the link to this assignment. Your assigned reading in Writer’s Help for this assignment is on the Writer’s Help home page for this course. Read the linked sections before you start writing, and review them as you write your paper. MS Word comments on your paper may include links to specific topics in Writer’s Help that apply to my comments.

- Is the writing appropriate for your audience?
- Structure, organization, reasoning at all levels
  - Appropriate research and content to make your arguments
  - Depth of detail and appropriate emphasis in the points you make
  - Reasoned presentation and organization of your arguments
  - Paragraph organization & transitions

- Language
  - Arrangement of words and phrases
  - Use of examples and analogies where appropriate
  - Clarity, guiding audience, concise, forthright, flow
- Use and integration of illustrations
- Appropriate references including both books and online sources

Paper Submission and Revision

You should submit both a hardcopy of your letter (in class) and an e-mail attachment file (in MS Word format). Send your attachment to Jamie Russell at: rjr9r2@mail.missouri.edu and to me at: bauerr@missouri.edu. Your assignment will be returned to you with comments and suggestions for revisions. If you receive less than <36/40 points on your assignment, you must revise your letter and resubmit it within a designated time period to receive any points for the assignment. Based on the quality of your revised version, you may recover as much as 50% of the points that you lost on your first submission.