

# Geology 300/305

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## Sample Topics for Extra Credit Research Paper

### NOTES:

- ✓ *The following topics are meant to help you develop your own ideas on a suitable extra credit research paper topic.*
- ✓ *The detailed requirements for extra credit "Option I, Research Paper" on the class website apply to these topic ideas.*
- ✓ *REMEMBER: The internet is not a substitute for library research!*
- ✓ *Written portion of final work to be turned-in both printed and in digital MS Word format.*

- ✚ Review and discuss the status of the science of earthquake prediction. (what methods are being researched? which methods hold the most promise? who is doing the research? etc.) What studies have been done discussing how a government can actually get people to move to safety? Give your opinions with good supporting evidence.
- ✚ Review and discuss the status of groundwater recharge projects in the Sacramento Valley. (How close are we to actually making local groundwater recharge beneficial? Who is working on the procedure? Can we store enough in the ground to eliminate the need for more surface reservoirs? etc.)
- ✚ List all of the mountain ranges (or belts as applicable) of the entire world and their ages. Evaluate their tectonic locations and discuss what patterns may be present, what were the continents that collided thus forming these mountains, their ages, etc.
- ✚ Find an exposed cross section (road cut or similar) of sedimentary rock sequence in the foothills that can be seen in at least two adjacent locations. Develop a discussion of the geologic structures in the exposure and the connection between the two locations. Find previous published research on the area that may support your observations.
- ✚ Yosemite Valley is the result of more than one glacial advance over the last 2 million years (the most recent ice age). Gather the geologic history of the Yosemite area and of each glacial advance. Describe the likely steps in the evolution of the valley from before the first advance to the present, including associated nearby glaciation.
- ✚ Find how much the ocean is likely to rise over the next 100 years due to global warming (the amount on which most reputable scientists agree). Evaluate accurately what parts of the Earth's continents that are now above water will become covered with water. Also evaluate the number of established people and towns that will be forced to relocate. Discuss whether or not these areas can be protected from the rising sea and how any necessary relocation of people can be accomplished (when must it start? how much will it cost? how can it be accomplished? how do you convince governments to act before the situation becomes desperate? etc.).

- ✦ Global warming is likely to change weather patterns making some areas drier or wetter and warmer or colder. Find what predictions currently exist, what parts of the Earth will have significant climate change, what the change will be, and how it will impact the people in those areas. Then, develop a plan (or plans) to remediate the negative impacts (move people? built more reservoirs? Etc). What parts of the world are predicted to become more prosperous and nicer places to live?
  
- ✦ Much of the Sacramento River delta is below sea level, and is continuing to become even lower in elevation. Find the history of its elevation before the start of modern farming in the area and the possible causes for it becoming lower. If sea level is rising and this area of land is subsiding, then what is the likely future of the Sacramento River delta? Discuss this along with possible solutions or alternate plans for the area.
  
- ✦ Sacramento sits at the confluence of two major rivers. It is imperative that city planners have established thorough flood protection structures for protecting Sacramento from flooding and, in the event the protection fails, have plans that can be implemented quickly to save the lives of residents. Research what those protections are, what data was used to determine what types of protection was necessary, who is responsible for periodically reviewing the protections to assure that are in good repair and still adequate, etc. If there is a failure in the flood protection, what are the procedures that city officials will follow? Are those procedures up to date? Who is responsible for their implementation? Give your opinions with good supporting evidence.
  
- ✦ Other subjects based on minerals, rocks, weathering, geologic time, and other geology related topics.