

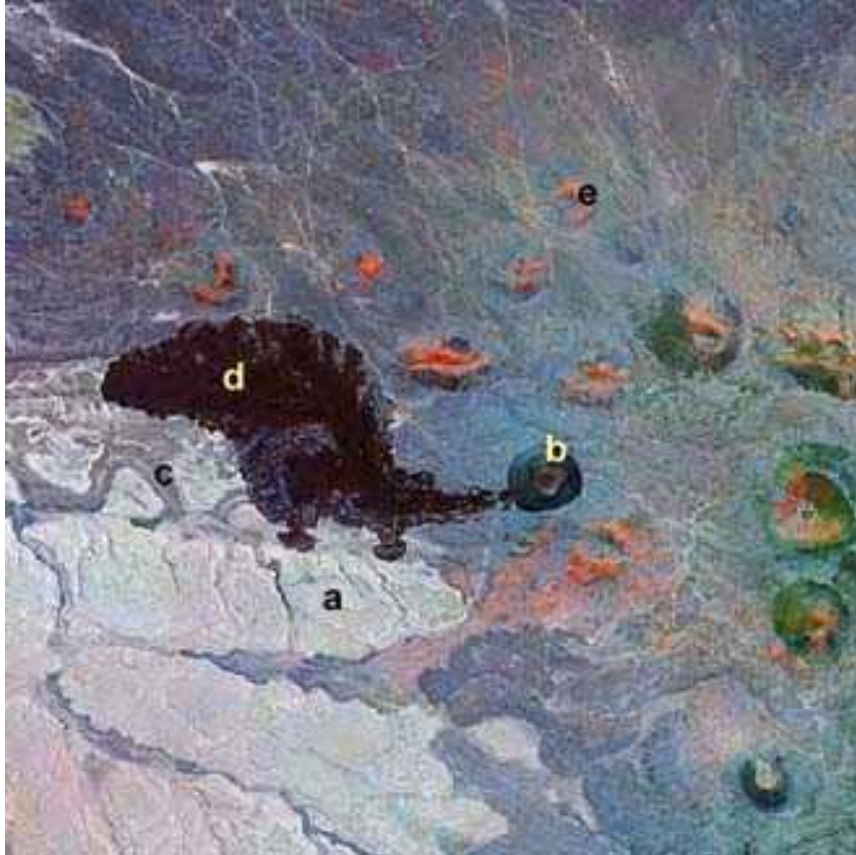


## GEOG 3200/5200 -- Intro Geomorphology

*This is due Thursday March 1 at the start of the class. You may consult any source you wish, but you must provide a bibliography at the end of the test, indicating the sources you consulted, including books and websites, specifying the date of the last access.*

1. How would the elevation of mountains differ if Earth's crust was composed of more dense rocks? The mountains would be:  
a) Higher                      b) Lower                      c) There would be no change  
Explain your answer.

2. Explain the different types of equilibrium and non-equilibrium recognized in geomorphic systems, & provide specific examples.
3. What is the difference between stress and strain? Please provide examples how is this expressed geomorphically.
4. Compare & contrast the common landforms in association with a caldera and a stratovolcano.
5. Discuss the origin and relationships of the main landforms in the processed satellite image below, with special emphasis on the characteristics of those features labeled a-e. What kind of tectonic setting is this?

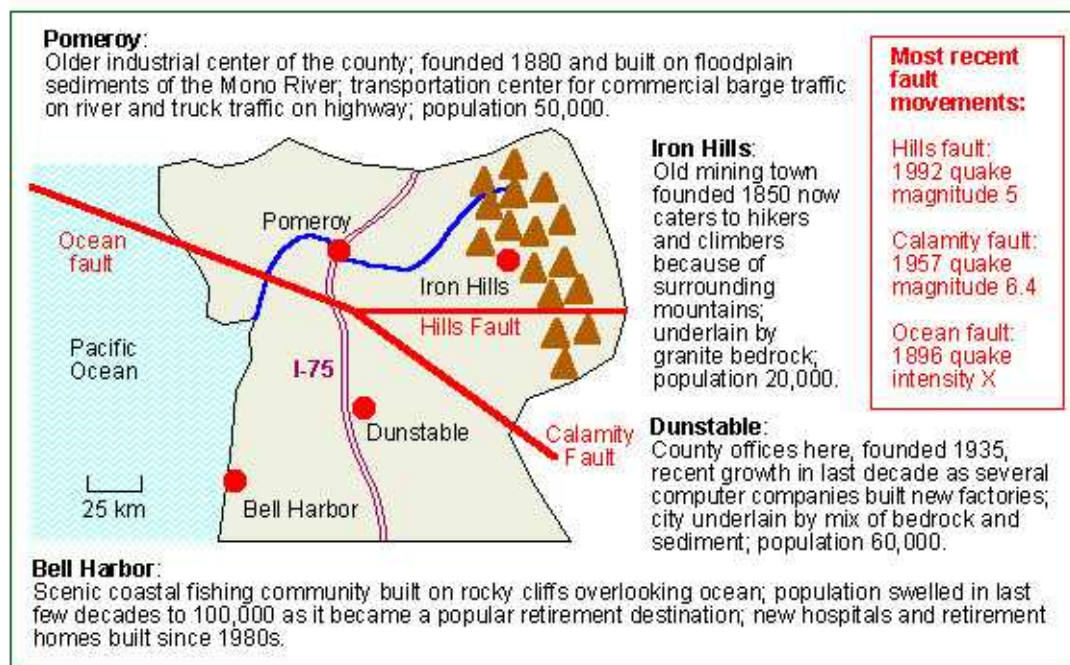


6. Following graduation, you get a job working for a county planning task force in California. The task force must examine the settings of several different cities and identify which is at greatest risk for future earthquake damage from movement on known faults. You are given the assignment to create an evaluation rubric to identify factors that will influence the risk of potential damage from a future earthquake. The location that scores the highest using the scoring rubric you create will receive additional county funds to protect key structures from earthquake damage. The factors may be related to the physical environment (e.g., nature of the local geology or geomorphic features) or may be cultural factors (e.g., size of population centers).

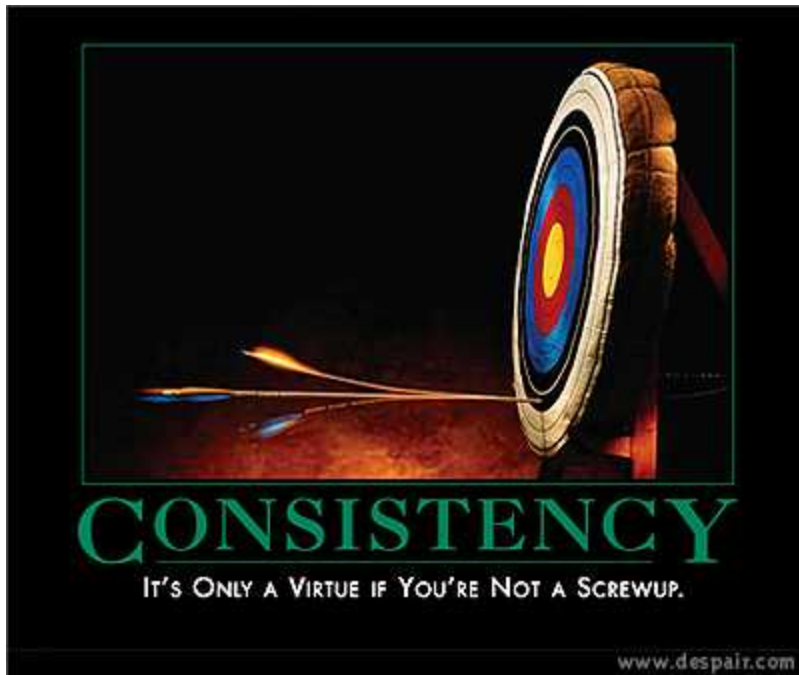
You must *identify four factors in addition to fault proximity*, and differentiate among characteristics that make them high, moderate, or low risk phenomena. One factor, the proximity of the site to a fault, is included as an example. If the fault were to move in the future, sites closest to the fault would suffer the most damage (high risk) whereas those further away may experience little or no damage (low risk). Each site with a high risk factor is scored as 3 points; low risk factors rate 1 point. The site with the highest cumulative score for all factors would be at greatest risk from a future earthquake.

Use your rubric in a hypothetical situation. Examine the information on the geology and characteristics of four cities shown on the map below and rank the cities in order of greatest to least risk of damage from a future earthquake.

Factors	Low Risk (1 point)	Moderate Risk (2 points)	High Risk (3 points)
Proximity to fault	Far (>50 km)	Intermediate (25-50 km)	Near (<25 km)



7. In class, we reviewed the difference between *accuracy* and *precision*. Discuss these terms in reference to the following figure:



8. The diagram below represents three rock exposures containing fossils and specific stratigraphic layers as labeled by letter. Each exposure contains a layer of volcanic ash (in red) that has been dated by the analysis of  $^{238}\text{U}/^{206}\text{Pb}$  isotopes.

- Place the fossils in the correct order according to their relative ages, from oldest to youngest;
- Explain how you would estimate the potential age ranges of the C, G, and K fossils based on the ages determined for the three volcanic ash layers. What else can you say about the ages of the units?

