

Atchafalaya

- 1) Why is it important to control the flow between the Atchafalaya River and the Mississippi River?
- 2) What is a crevasse? List three ways you think crevasses could occur.
- 3) What was the purpose of the Bonnet Carre spillway? Did it work?
- 4) What did the government and the U.S. Corps of Engineers learn from the Great Flood of 1927? What legislative steps were taken to improve the efficiency of river control?
- 5) How did the structure at Old River help the Corps control the flow between the Atchafalaya and the Mississippi Rivers? What caused it to fail?
- 6) How do you think Hurricane Katrina has affected the Atchafalaya and Mississippi Rivers? What do you think has happened to riverside towns? What new precautions do you think the Corps had to take?

Cooling the Lava

- 1) Who was Thorbjorn? What was his idea?
- 2) Describe the damage the Eldfell volcanic eruption caused.
- 3) How much lava could one cubic meter of water stop from flowing? How much lava could five cubic meters of water stop from flowing?
- 4) How did the eruption affect the islanders physically and mentally?

5) Do you think cooling the lava was worth it (keep in mind the financial cost and the cost to the islanders)? Why or why not?

LA vs. The Mountains

- 1) Where are the San Gabriel Mountains?
- 2) What is water harvesting?
- 3) What is the angle of repose? Describe in your own words. What is its importance?
- 4) Does rain help clear chaparral and debris from the mountains? Why or why not?
- 5) What is the main cause of debris flow from the mountains?
- 6) How do you think California has managed the debris since 1989?

Additional questions developed by Dr. Tanya Furman, Dept. of Geosciences, The Pennsylvania State University

Chapter One - Atchafalaya

A map of the Mississippi River delta, showing its historical development, is included through these links:

LINK 1: <http://pubs.usgs.gov/of/2002/of02-206/env-overview/geomorphology-fig6.html>

LINK 2: http://geoinfo.amu.edu.pl/wpk/geos/GEO_5/GEO_PLATE_D-1.HTML

- 1) Every known early human settlement from 7000-5000 BCE originated on a major river delta. Why did so many people choose to live on deltas; that is, what are the benefits of living in this environment?
- 2) Should the Mississippi be allowed to descend to the Gulf of Mexico along the Atchafalaya? What are the long-term (think ahead 200 years or more) benefits and challenges inherent in your answer? Does the aftermath of Hurricane Katrina affect your answer?

Chapter Two - Cooling the Lava

- 3) Could this event have taken place in the US? Why or why not? How did the Icelanders differ in their approach to the situation than what you would expect in the US?
- 4) Could this approach have taken place in an island arc setting (Indonesia, Montserrat, etc)? Why or why not?

Chapter Three - Los Angeles Against the Mountains

- 5) Given all of the natural hazards described in this chapter, why was Los Angeles settled initially?
- 6) Take on the role of an LA Disaster Planning official. What could you do to mitigate against the danger of mud slides? Would you worry more about mud slides, earthquakes, terrorist attacks, biohazards (pick your top few candidates) - how did you decide?

Gallery Walk Questions

Questions developed by Dr. Laura Guertin, Earth Science, Penn State Brandywine

Note that any of the questions from above can also be used during a Gallery Walk exercise.

- If geologists live on the mountain front in California, why would anyone believe that there is a risk living at this location?
- To control nature, it is extremely expensive – but it's all good, as so many of us can pay the bill to protect those who insist on living in hazardous areas.
- “I didn’t like the lava. It was all black. I thought it was very ugly. Now I can see it has a beauty, too.” (*what exactly is the beauty in lava?*)
- “In Vestmannaeyjar, as in much of Iceland, it is not easy to differentiate between bad weather and a natural disaster, because 100-knot winds are common and waves will break over an islet 200 feet high.” So what is a natural disaster?
- *Do you agree with this statement:* “We must recognize that natural processes cannot be restored. We can’t put it back the way it was. The best we can do is try to get it back in balance.”
- “Man against nature. That’s what life is all about.” Should it be? Does it need to be? Should it be? Does it need to be?