

GEO 130 SPRING 2006
FILM STUDY GUIDE

Title: *Violent Hawaii*, Nature, Thirteen/WNET, PBS

Synopsis: The Hawaiian archipelago is the most isolated chain of islands on Earth. It is the home to the tallest mountain on Earth (base to peak rise), the longest continuing erupting volcano on Earth both of which are explained by plate tectonics. Humpback whales winter in Hawaii and while they are giving birth, blizzards rage atop Mauna Kea. In short Hawaii offers many lessons in oceanography.

Major concepts and additional information:

1. Hawaii is born of fire - still burning deep in the Earth
2. Big island -the volcano Kiluea - continuous eruption since 1983
3. Kiluea is a non-explosive volcano because of the composition of the lava. Mt. St. Helens' lava is different.
4. A forbidding landscape - air temps to 600°F near lava
5. Geologists to floor of the caldera to sample new lava
6. Lava is fast moving lava and >2100°F
7. Composition of lava reveals source and how it was formed
8. Kalapana - buried in the lava of Kiluea
9. Hawaiian-Emperor Seamount Chain is >3600 miles long - all islands are volcanic from the Aleutian trench to the seamount Lo'ihi
10. Most of the islands are now under the waters of the Pacific
11. The chain is on the Pacific plate over a stationary hot spot
12. The hot spot is now 20 miles south of the Big Island
13. The newest volcano is Lo'ihi
14. The Pacific plate is moving to the northwest
15. Scientists study Loihi using a submersible
16. Water from Lo'ihi exceeds 200°F moving into deep ocean water near freezing
17. Lo'ihi will emerge from the sea barren and lifeless, quickly plants will colonize the new island.
18. Coral reefs grow on the islands under sea flanks, coral reefs are very productive - an exception in the tropics.

19. Humpback whales travel from summer feeding grounds around Alaska to give birth and winter in Hawaii. (What is so special about the cold arctic waters around Alaska?)
20. Male humpback whales, like other mammals compete for resources, including mating opportunities.
21. Winter storms in the far northern Pacific cause swells that grow into waves and crash on the north shores of the islands.
22. Jaws refers to huge waves that break on the north shore of Maui.
23. They are formed by the coastline and a ridge of lava under the water
24. These huge waves are dangerous.
25. Winter is also the blizzard season. On Mauna Kea (White Mountain) four feet of snow falls in the winter. Mauna Kea is 13,796 feet tall and the home of astronomical observatories.
26. Plenty of rain falls in Hawaii and in the unconsolidated volcanic soil erosion and landslides are often problems.
27. The Great Crack contains caves (lava tubes) and may represent the future site of a catastrophic collapse of part of the island into the sea.
28. In Hawaii very steep, huge cliffs more than 1000' tall are the result of massive landslides as parts of the islands fell into the sea.
29. These can cause huge tsunamis, gravel and sediment from the sea bed have been found as far as 1200' above sea level. Some scientists feel La Palma volcano in the Canary Islands could collapse putting the east coast of North America in danger.
30. Hundreds of thousands of tourists are in danger on any given day if a tsunami was to occur.
31. More people have been killed in Hawaii by tsunamis than any other natural disaster.
32. In 1946 Hilo, on the Big Island was hit by a tsunami generated by an earthquake in the Aleutian Islands.