

GG104 F 2017 potential final questions: these will be updated after each class meeting, and posted at:

[http://www.soest.hawaii.edu/GG/FACULTY/ROWLAND/GG104/Study\\_guides/GG104\\_f15\\_final\\_review.pdf](http://www.soest.hawaii.edu/GG/FACULTY/ROWLAND/GG104/Study_guides/GG104_f15_final_review.pdf)

All powerpoints from the class are on the web at:

[http://www.soest.hawaii.edu/GG/FACULTY/ROWLAND/GG104/GG104\\_PowerPoints.htm](http://www.soest.hawaii.edu/GG/FACULTY/ROWLAND/GG104/GG104_PowerPoints.htm)

1. What are the two scales that are used to measure Earthquakes?
2. How do these two scales work? How are they measured? How can they be related and/or used together?
3. How are p-waves and s-waves different?
4. How do you use the s-wave delay to locate an earthquake?
5. Why is the s-wave delay earthquake-location technique difficult in practice?
6. How are s-waves and the outer core related?
7. What is the difference between earthquake focus and earthquake epicenter?
8. Why do we have earthquakes in Hawai‘i?
9. Why are earthquakes dangerous?
10. During the 2006 Kīholo Bay earthquake, was the intensity of shaking directly related to distance from the epicenter? (Robertson *et al.* 2006)
11. What are some examples of structural and infrastructure damage that occurred during the 2006 Kīholo Bay earthquake (Robertson *et al.* 2006)
12. Besides the sliding of tectonic plates, what are some other causes of earthquakes? (Reynolds *et al.* 2008)
13. What is the typical earthquake distribution in a subduction zone? (Reynolds *et al.* 2008)
14. How does a seismometer work? (Reynolds *et al.* 2008)
15. What kinds of damage (direct and indirect) can be caused by earthquakes? (Reynolds *et al.* 2008)
16. What are the different kinds of faults, and what do they tell you about the stresses involved?
17. Why are tsunamis so difficult to detect in the open ocean?
18. How does the coastline (shape, offshore aspects) affect tsunami run-up and damage?
19. What are natural warning signs of a tsunami?
20. How is it that tsunamis can travel all the way across the ocean with only minimal dissipation?
21. Why is it significant that Hawai‘i has not had a significant tsunami since 1960?
22. What do the different levels of tsunami alert (advisory, watch, warning) mean?
23. How are tsunamis different from storm waves?
24. How were the effects of the Tohoku tsunami different along the Japanese coast with respect to timing and topography?
25. How does a subduction zone produce a tsunami?
26. What is the “orphan tsunami” story?
27. What is a megapode, and how are they related to the geology of Niuafo‘ou?
28. What are “fished-up” and “thrown-down” myths? (Nunn 2003)
29. What is/are the argument(s) that some of these myths must have come from places other than where they are told? (Nunn 2003)

30. What geological events might be the source for “fished-up” myths? (Nunn 2003)
31. What geological events might be the source for “thrown-down” myths (Nunn 2003)
32. What are alternative explanations (other than geological) for the “fished-up” and “thrown-down” myths (Nunn 2003)
33. What are the different types of Pacific islands?
34. What are the various benefits and drawbacks of the different types of Pacific islands?
35. What are some of the characteristics of islands that make them good or not so good for developing advanced societies?
36. How do the following island characteristics affect the development of societies, and how are these characteristics related to geology and/or geophysics: isolation, rainfall, good vs. poor soil, steep vs. gradual topography, presence or absence of reefs, access from land to sea and vice versa.
37. What are high islands and low islands?
38. With regard to living on them, what is the biggest difference between high and low islands?
39. What are the different types of high islands?
40. What are the different types of low islands?
41. What is an atoll, and how does it form?
42. How would you get a raised coral platform island?
43. How does island age affect island society?
44. How does island topography affect island society?
45. What is the difference between looking at societies’ “success” pre-contact vs. post-contact?
46. What kinds of tool materials are available on a raised coral platform?
47. How do young shield volcanoes compare to young strato volcanoes when it comes to living there?
48. What is lithic mulching?
49. What is the old idea about the rise and fall of culture on Rapa Nui?
50. What are some of the new findings that are putting large holes in that old idea?
51. How might the moai on Rapa Nui have been moved?
52. What is the evidence for glaciation on Mauna Kea?
53. Why would there be glaciers there in the first place?
54. What do you need to produce a glacier?
55. What is a moraine?
56. What is hyaloclastite?
57. How do you recognize a moraine?
58. Who are the deities associated with ice and snow in Hawaiian mythology?
59. What might the fights between Poli‘ahu and Pele represent?
60. Where, in Hawai‘i, could these possibly have been witnessed by people?
61. What explains some of the deeply-eroded gullies on the upper flanks of Mauna Kea?
62. What is the possible connection between glaciers and Haleakalā?
63. Was there ever glaciation on Mauna Loa?
64. What are some ways that glaciers lose volume? (Macdonald *et al.* 1983)
65. What are the processes that allow glaciers to erode the substrate? (Macdonald *et al.* 1983)
66. How are glacial stages on Mauna Kea dated? (Macdonald *et al.* 1983)

67. How is it that Lake Waiau can exist near the summit of Mauna Kea? (Hazlett & Hyndman 1996)
68. If you wanted to tie a real event or type of event to the story of Aiwohikapua and Poliahu, what might it be? (Westervelt 1916)
69. Why, supposedly, could the outcome of the collision between Maori and Moriori have been predicted? (Diamond 1999)
70. Why did the Moriori have to “revert” to being hunter gatherers when they arrived at the Chatham islands? (Diamond 1999)
71. What are the environmental variables that contribute to differences among Polynesian societies? (Diamond 1999)
72. What do wai and puna mean, and why do they feature so commonly in Hawaiian place names?
73. What is the Ghyben-Hertzberg lens?
74. How can humans help/hurt fresh groundwater resources on ocean islands?
75. Why are there commonly springs along island coastlines?
76. What is dike-impounded water, and why is it important?
77. What is caprock, and why is it important?
78. What is an artesian well?
79. What is lithic mulching?
80. What is the relationship between wave erosion, river erosion, and island size? (Menard 1986)
81. Why is there so little sand on volcanic islands that don't have coral reefs? (Menard 1986)
82. As an island erodes to a little nub standing above a much wider (and submerged) wave-cut platform, what might cause it to not be in the middle of the platform? (Menard 1986)
83. What is the relationship between permeability and volcanic-island age, and how does it affect stream erosion? (Menard 1986)
84. What is “sustainable yield” with respect to groundwater? (Miike 2004)
85. What does “base flow” mean with respect to a stream? (Miike 2004)
95. Why are many Hawaiian people so upset about the building of telescopes on Mauna Kea?
96. What is meant by “wet” and “dry” agriculture?
86. What are the aspects of the different types of agriculture that were practiced on Pacific islands? What were their benefits and drawbacks?
87. What geological, topographical, climatic, etc. conditions control whether or not a society uses wet vs. dry agriculture?
88. What are the human and time resources needed to maintain wet and dry agriculture?
89. What is the connection between wet and dry agriculture and conflicts between societies?
90. What is a geological reason that might explain why Kamehameha I never conquered Kaua'i?
91. Why is sea level rise in Tuvalu more serious than in Hawai'i? Why is sea level rise in Hawai'i more serious than in California?
92. If sea level rises on a small island, are waves coming in from the ocean the only thing you have to worry about?
93. What human-caused environmental problems exist on Tuvalu in addition to sea level rise?
94. What are some potential choices for Tuvaluans to make with regard to their shrinking islands?
95. What from Jane Ta'afaki-Sam's talk makes it clear that at least some parts of Michaels' (2000) article is false?

96. Is there anything in Michaels (2000) that might make you suspicious of his objectivity?
97. Besides lo'i, what are the other kinds of "wet" Polynesian agriculture? (Kirch 1994)
98. What is the "hydraulic hypothesis" and why did it come about? (Kirch 1994)
99. What is arboriculture? (Kirch 1994)
100. What is the general relationship between farming style and island age in Hawai'i nei? (Kirch 1994)
101. What are the reasons why soils might be different even in places that are close to each other?
102. What are soils useful for?
103. What are some of the processes and factors that cause soils to be different?