

G115 VIRTUAL FIELD TRIP #1: THE HAWAIIAN ISLANDS

INTRODUCTION

Field work is an important part of geologic studies, and the virtual field trips offered in this course give you the opportunity to observe real oceanographic phenomena, without ever leaving your computer! The questions here will guide you through your investigation of the assigned virtual field site, and ask you to make observations and analysis of the site. You will end with a reflection on the location you visited.

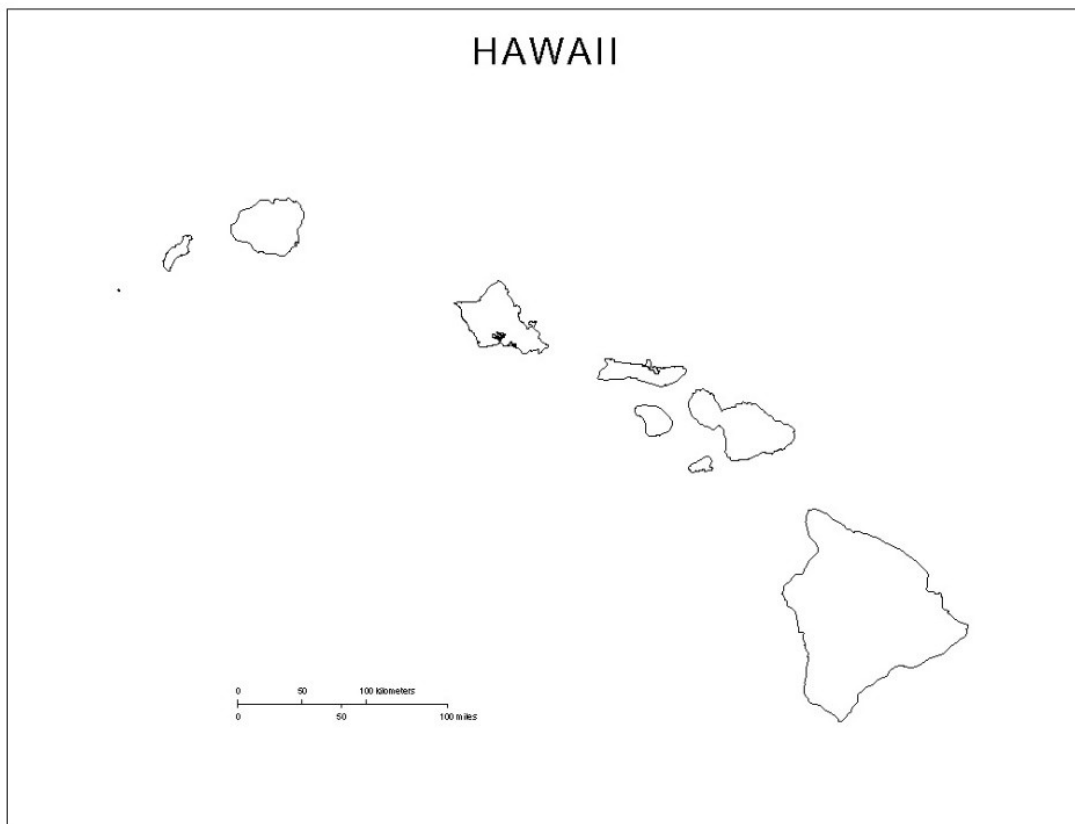
Your first virtual field trip will explore tectonic processes in the Hawaiian Islands. You will explore the shape and characteristics of this area, and make observations and analyses using imagery and data online. Please read through the directions carefully, and use specific detail when answering the questions given. Once you have answered the questions, you will compose a 2-3 page essay on the oceanographic characteristics of the Hawaiian Islands, supported by at least 3 primary sources, as well as captioned and referenced images and maps. Your essay will also include a brief reflection of your thoughts on this virtual field trip.

Read this entire worksheet carefully and completely to ensure full credit for this assignment. Instructions for submitting the Virtual Field Trip questions and Essay can be found at the end of this document.

WHERE ARE WE? THE HAWAIIAN ISLANDS

Go to maps.google.com, and search for "Hawaii". Change to "Earth" view in the lower left corner of the map. Zoom in and out on the map, and answer the following questions:

1. In what ocean do we find Hawaiian Islands? _____
2. How many islands make up the Hawaiian Islands? _____
3. Label the blank map here with the names of the Hawaiian Islands:



PHYSICAL CHARACTERISTICS OF THE ISLANDS

The Pacific Islands Ocean Observing System (PacIOOS) provides real-time data of current oceanic conditions around the Hawaiian Islands. Click on the hyperlinked words below to record the following information, focusing on the big island of Hawaii:

4. **Average wave height** (make an estimate, include units on your answer): _____
5. **Water Temperature** (include units on your answer): _____
6. **Wind direction and speed** (make and estimate): _____
7. **Current direction and speed** (click on an arrow to see specific data): _____

The beaches of the Hawaiian Islands vary considerably. Go to the links below to see 360 photos from many different Hawaiian Islands beaches. Look at least three photos from each island. To see the 360 view at each of the links, click on the image and drag your mouse left or right.

- Big Island Hawaii Beaches: <http://www.vthawaii.com/BIGISLAND/Beaches/BeachesFull.html>
- Maui Beaches: <http://www.vthawaii.com/MAUI/Beaches/BeachesFull.html>
- Oahu Beaches: <http://www.vthawaii.com/OAHU/Beaches/Beaches.html>
- Kauai Beaches: <http://www.vthawaii.com/KAUAI/Beaches/Beaches.html>

Then, look at some webcams around the beaches Hawaiian Islands. Review the webcams at the following links, and then write a short paragraph describing your observations. Include information on what the similarities and differences in the beaches, the characteristics of the waves (big, small, fast, slow), the weather conditions, and any human activity you notice.

- Sheraton Kauai Resort: <http://www.seehawaiiive.com/kauai/kauai-resorts>
- Sheraton Maui Resort: <http://www.seehawaiiive.com/maui/maui-resorts>
- Sheraton Kona Resort: <http://www.seehawaiiive.com/big-island/big-island-resorts>
- Moana Surfrider Resort: <http://www.seehawaiiive.com/oahu/waikiki-resorts>

8. **How are the various beaches of the Hawaiian Islands similar? How are they different? Record your observations here, use details and specific terminology from your module readings:**

HAWAII'S GEOLOGIC SETTING

Hawaii has a unique geologic setting, as we will explore in this section. Please go to this link, and read the entire page about the geologic setting of the Hawaiian Islands: <http://www.marinebio.net/marinescience/02ocean/hwgeo.htm>

Answer these questions, in complete sentences and your own words.

9. **What is the tectonic setting of the Hawaiian Islands? How did they form, geologically?**
10. **Which Hawaiian Island is the youngest? Which is the oldest? Why are the Hawaiian Islands different ages?**

11. Which volcanoes of the Hawaiian Islands are active today? On what island are they located? Why aren't all the Hawaiian islands volcanically active?

12. Describe the volcanism of the Hawaiian Islands. What does the lava/rock look like? Are the eruptions relatively quiet or explosive? How and where does lava erupt?

13. Describe the difference between pahoehoe and aa lava flows. What creates these differences?

14. What is a lava tube? How do they form?

15. What are the four types of sand found on Hawaiian beaches? How and why are they different in composition?

A new Hawaiian Island, the Loihi Seamount, is currently forming in the Pacific Ocean. Please review these two resources to learn more about Loihi.

- Watch this 3 minute video about the big island of Hawaii and Loihi:
<http://www.hawaii.edu/news/2014/08/04/ocean-expedition-maps-loihi-deepest-reaches/>
- Review this page about Loihi:
<http://www.geo.arizona.edu/geo5xx/geos577/projects/riley/Loihi%20Seamount%20Web%20Page.htm>

16. Where is this new island forming, relative to the big island of Hawaii? How deep is it below the sea surface?

17. Why is this new island forming?

18. What does this new island look like? How do we know what it looks like if it is below the ocean surface?

19. Does Loihi present any hazards to humans?

20. Is there marine life at Loihi? What are some examples?

HAZARDS AND ENVIRONMENTAL ISSUES IN HAWAII

Several oceanographic and geologic hazards directly affect the Hawaiian Islands.

21. Research each of the hazards and issues listed in the table below, starting with the websites listed here. You will probably have to do more research than just these sites. In the table below, provide a definition of the hazard/issue, its causes, how it effects Hawaii, and what is being done to mitigate (prevent) the hazard from being dangerous to people.

- Volcanic Hazards in Hawaii: <http://hvo.wr.usgs.gov/hazards/>
- Tsunami Safety and Preparedness in Hawaii: <http://ptwc.weather.gov/ptwc/hawaii.php>
- Coastal Erosion in Hawaii: <http://www.soest.hawaii.edu/coasts/erosion/>

22. Do some extra research to determine what other hazards affect Hawaii, and list them at the bottom of the table.

	Define	Causes	Effects	Mitigation Strategies
Lava Flows				
Tsunami				
Shoreline Erosion				
Other Hazards (list here):				

ESSAY: DESCRIBE HAWAII'S OCEANOGRAPHIC CHARACTERISTICS

Now that you have reviewed the oceanographic characteristics of Hawaii, you will prepare a well-researched, well-written, detailed (750-1000 words) oceanographic description of the islands. **You will provide a detailed description that covers the oceanographic details of the location, including a map and other relevant imagery.**

Your essay should be informative and well organized. **You should begin with an introduction, followed by several paragraphs that describe the physical characteristics, geologic setting, and hazards of Hawaii, a conclusion, and a reflection.** You should include imagery and maps, and support your discussion with primary resources from this virtual field trip, or others that you find through additional research. Follow the tips and guidelines below when preparing a report on your chosen location:

- **A minimum of 750 words and a maximum of 1000 words.** This is 2-3 pages of double-spaced text. Use the word count tool in your word processor to be sure you have the correct amount of text.
- **Your essay must include** a title, at least 3 subheadings, at least 3 images, and a section titled "Works Cited". You should decide what subheadings best reflect the oceanographic characteristics of this location. Subheadings are titles to paragraph(s) that demonstrate the major ideas of that paragraph.
- **Your description should be oceanographic and scientific in nature.** Use terminology from the virtual field trip worksheet and from your textbook readings. Your descriptions should give a thorough overview of the location and all of your content must be scientific and geologic in nature. You may decide how best to do this, but your essay should be informative, and contain subheadings for each of your major topics. Consider using the topics explored on the previous page of this virtual field trip as your major ideas for the essay.
- **Your description should include at least 3 graphics;** one should be a map and all should be captioned and referenced. A caption tells your reader what the graphic shows. The reference tells where you found the graphic.
- **At least 3 resources must be cited in MLA or APA format,** both in-text and in a Works Cited section. Your essay should integrate at least three primary resources – you may use some of the resources you explored in the previous pages of this virtual field trip, or you may find your own resources to support your discussion. Your resources must be cited in-text, and in a works cited section at the end of your essay.
- **A reflection paragraph at the end of your essay, of no less than 250 words, should address the following questions:**
 - *What did you learn from this virtual field trip that you did not know before?*
 - *What did you find most interesting about this virtual field trip?*
 - *Give a specific example of a time where you were able to directly apply your oceanographic knowledge during this virtual field trip.*
 - *What other questions did this virtual field trip create in your mind? In other words, what more do you want to know about the Hawaiian Islands?*

Your essay should clearly flow from introduction to conclusion and should give your reader a comprehensive overview of the oceanographic characteristics of the Hawaiian Islands. You should be creative in preparing your essay – you do not have any specific format for presenting your content, other than the subheadings, imagery and references requirements. Your instructor will post an example essay, from a different location, to give you an idea of what a quality essay looks like.

For more resources on the writing and research process, please see page 8 of the course syllabus. If you have any questions, or need more resources for writing, please contact your instructor or the University Writing Center (see syllabus, page 10).

SUBMITTING YOUR COMPLETED VIRTUAL FIELD TRIP AND ESSAY

Your grade for this assignment is based on your answers to the virtual field trip questions (page 1-4 of this document) and the quality and completeness of your essay (page 5 of this document). Therefore, you need to submit both your answers to the virtual field trip questions AND your essay to earn full credit for this assignment. Both portions will be submitted to the “(FT1) Virtual Field Trip #1: Hawaiian Islands” assignment of Canvas Assignments.

You should plan to upload both at the same time; you will NOT have the option to submit one first, and the other later – both parts must be submitted at the SAME time.

VIRTUAL FIELD TRIP QUESTION SUBMISSION (PAGES 1-4)

You have several options for submitting your completed field trip questions on page 1-4 of this document, please choose ONE of these options to submit your worksheet answers by the due date.

1. **Scan and Upload** your completed worksheet (in your own handwriting) to Canvas Assignments.
2. **Upload a Word document** of your completed answers (typed) to Canvas Assignments.

Whichever option you chose should be submitted to the “(FT1) Virtual Field Trip #1: Hawaiian Islands” assignment of Canvas Assignments. You should plan to upload your answers at the same time as your essay (see below). You will NOT have the option to submit one first, and the other later – both parts must be submitted at the SAME time.

A rubric is posted to Canvas Assignments for grading, and will be used to evaluate your work. In general, your instructor will be looking to see that you answered each question completely, and that your answers demonstrate a clear understanding of the web resources provided, and of your understanding of the module readings assigned.

ESSAY SUBMISSION (DESCRIBED ON PAGE 5)

Your essay should be submitted as a Word or PDF document only, submitted to the “(FT1) Virtual Field Trip #1: Hawaiian Islands” assignment of Canvas Assignments. You should plan to upload your essay at the same time as your answers to the questions on page 1-4 of this document (see above). You will NOT have the option to submit one first, and the other later – both parts must be submitted at the SAME time.

Your essay will be graded on how well you cover the oceanography of your chosen location in an organized, cohesive, grammatically correct, well-referenced essay. A rubric will be posted to Canvas Assignment to show how your grade for the essay will be calculated; plan to review that rubric before you submit your essay.

GRADING

Your virtual field trip answers and essay will be graded within 1-2 weeks of the due date. The [rubric posted to Canvas Assignments](#) for this assignment will be used to assess your work. Your instructor may include additional feedback with the rubric. You should plan to review your rubric and feedback after it is posted, and apply that feedback to your next virtual field trip. Generally, your grade will be calculated as:

- **25 points for the accurateness and quality of your answers to the Virtual Field Trip Questions 1-22.**
- **50 points for the quality, accuracy, resources, and reflection of your Virtual Field Trip Essay.**

If you plagiarize this assignment, you will receive zero (0) points with the possibility of failing the class and being reported to your Dean for academic misconduct. **Your essay will be submitted to Canvas “Assignments” and will be checked against the Turnitin.com database.** Please review pages 6 and 8 of the course syllabus for more information on academic honesty and plagiarism.