FARMING THE DESERT

Student Worksheet

Part 1: Desertification

Section A: Yacouba Sawadogo – Farming the Desert

Getting started – Defining Desertification:

1. What do you think "desertification" means?

2. What might cause desertification?

Watch the video "Farming the Desert | EARTH A New Wild" and then answer the questions below. Video URL: http://www.pbslearningmedia.org/resource/f484ad16-6818-42bb-8e1d-c191bbd3fbd6/farming-the-desert-earth-a-new-wild/

Viewing Questions – Yacouba Sawadogo's Story:

3. In the video, why did people clear the trees from the land?

4. What does the narrator describe as causes of desertification?

5. What were the results of all of Yacouba Sawadogo's efforts?

6. How did Sawadogo's tree-planting activities affect the microclimate on his land?

7. What unanswered questions do you have after watching the video on Yacouba Sawadogo?

Post-Viewing – How Nature Works For People:

8. In areas like the Sahel, which are very impoverished, high-tech solutions to increasing agricultural yields are not feasible. In the video, Yacouba Sawadogo harnesses nature to help him increase his crops and the trees on his land. In the graphic organizer below, indicate how Yacouba Sawadogo's strategies helped his land.

What did Yacouba Sawadogo do?	How did this help?
worked land in dry season	
dug zai pits	
put organic material (leaf litter, dung) in pits	
put termites in pits	
built stone walls	
planted trees	

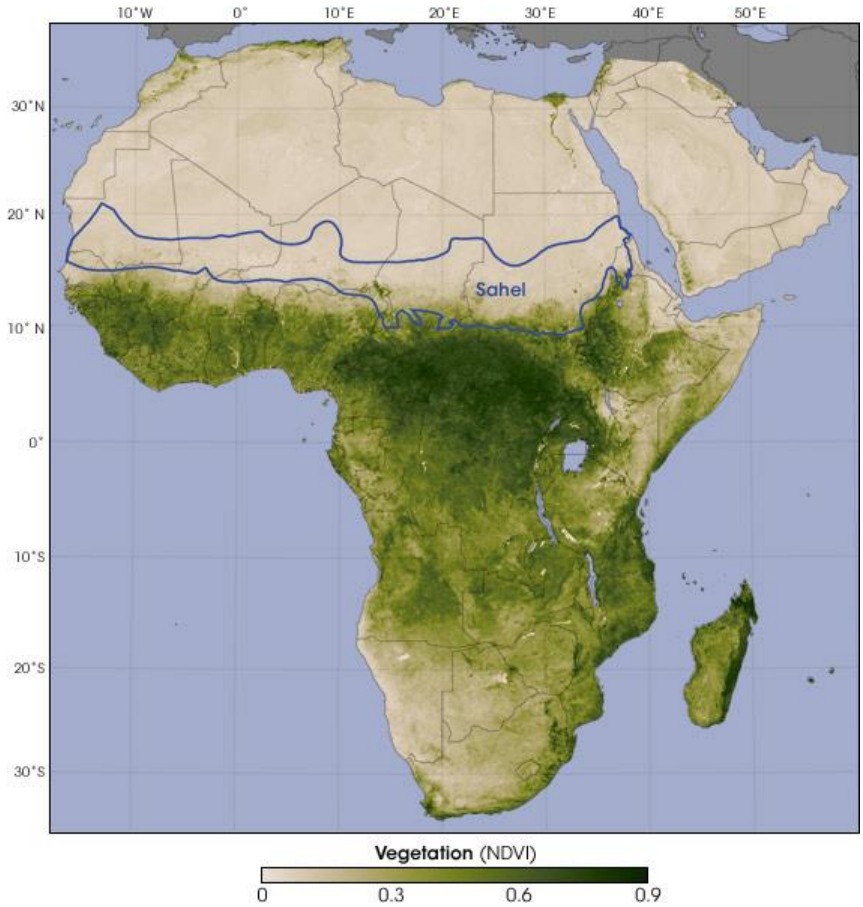
Section B: Examining the Data on Desertification

Read pages 1 and 2 of NASA Earth Observatory's online article "Defining Desertification" (either online at or as a worksheet) and answer the questions below.

Page 1 URL: http://earthobservatory.nasa.gov/Features/Desertification/
Page 2 URL: http://earthobservatory.nasa.gov/Features/Desertification/desertification2.php

1. What is a vegetation index?

2. In the map below from NASA, circle the area that has the high vegetation index at the time the image was created. Put a dotted line around the area with the lowest vegetation index.

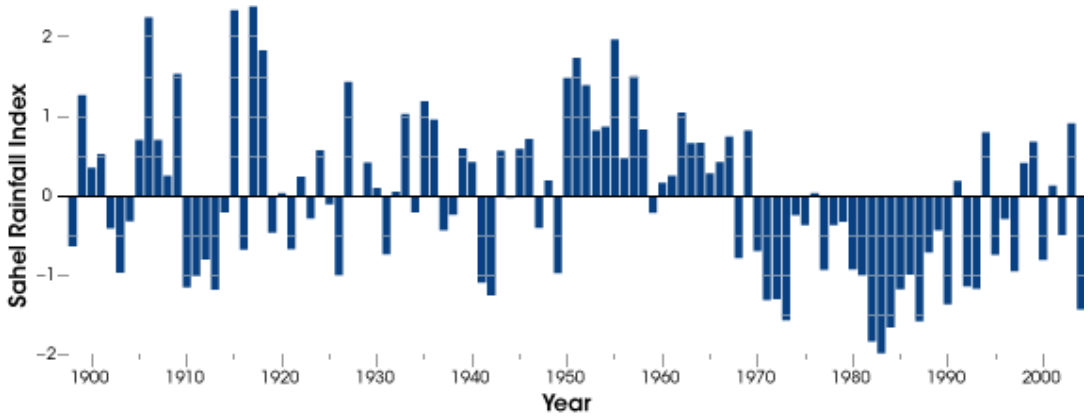


3. Define desertification.

4. List the causes of desertification.

5. If a piece of land appeared to be desertified, but then its productivity and plant life returned, can it still be called desertified? Explain.

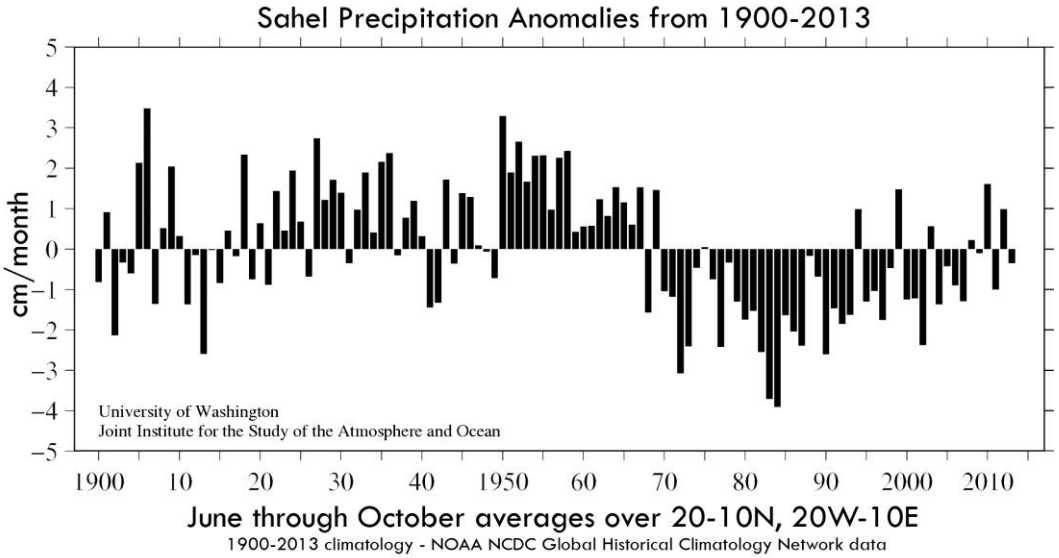
6. In the graph below, identify the range of years in which the Sahel region experienced a long drought. A positive rainfall index value means that there is heavy precipitation compared to normal (for that area) over time. A negative rainfall index value means that there is low precipitation compared to normal.



Graph source: NASA Earth Observatory

Range of years of severe drought: _____

7. The graph below is similar to the rainfall index graph from the reading. This graph shows the actual rainfall deviation in centimeters from the June-October (rainy season) average. An anomaly is something that deviates from the standard or expected. Looking at the graph below, describe the precipitation anomalies beginning in 1970 to 2013. Compare this time period to the time from 1900 to 1970. Use data from the graph in your answer.



8. What determines if an area is experiencing a drought? Is drought the same as desertification?

9. Based on information from the NASA reading, how can scientists use rainfall and the vegetation index to determine if an area is desertified?

Global Desertification Vulnerability

Examine the Global Desertification Vulnerability (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/nedc/training/soil/?cid=nrcs142p2_054003) and the Historical Population Density Maps (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/edu/?cid=nrcs142p2_054015) below (your teacher may provide you with larger versions or click on the links or images to view them online) and answer the corresponding questions.

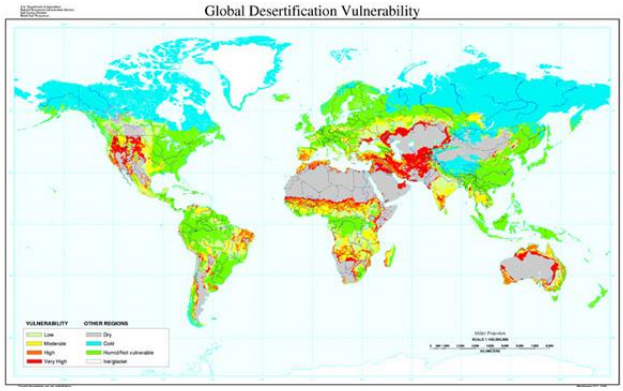


Image Source: USDA Natural Resources Conservation Science

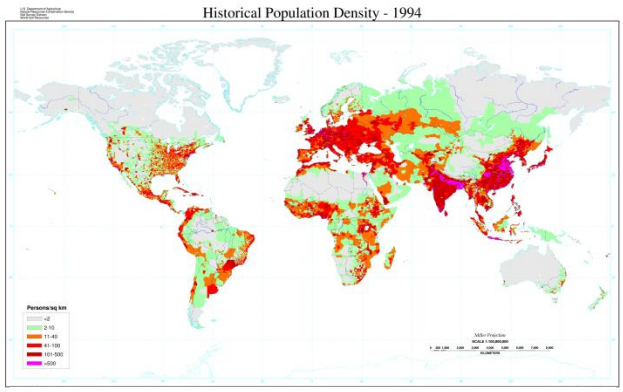


Image Source: USDA Natural Resources Conservation Science

10. Desertification is not just a problem that affects the Sahel in Africa. What other parts of the world are at risk for desertification?

11. Are there overlaps between high population areas and areas of land that have high vulnerability to desertification? What implications does desertification have for the populations that live in vulnerable areas?

12. Which states in the United States are at very high risk for desertification?

13. How could you find out why these states are at risk for desertification?

14. Pick one of the states in the U.S. that are at risk for desertification and do an internet search to find out what kinds of human activities might be contributing to desertification in that state.