



Module 2, Investigation 2: Briefing

How does remote sensing help us observe human activities?

Background

What physical evidence of our presence do we create on Earth's surface? How is this evidence detected from space? Observing Earth from space helps us to understand better the forces that shape the planet. Many times humans choose areas to settle because of needed resources or suitable physical features such as locating near water or in a favorable climate. These valuable resources and suitable features outweigh the fact that an area may be dangerous because of one or more physical processes. For example, Los Angeles lies on an active fault system, yet it is a densely populated area.

In Part A of this investigation, we will look at one specific area of human settlement, New Orleans, Louisiana, and the effects of the population on the surrounding area. We will also look at the effects of the surrounding area on the population. This will be achieved by observing the same area using two different space-based observing methods: Space Shuttle handheld photography and radar imagery. Each space-based method will show different features to give a more detailed view of the area. Scientists, engineers, farmers, geographers, geologists, and educators use many different views of one area to get a better overall picture of a location. This investigation shows how these different views may be interpreted and how information is gathered. NASA uses these space-based observations to study and better understand the forces that shape Earth.

Objectives

Upon completion of this investigation, you will

- understand different ways a region of Earth may be observed from space,
- understand how space-based images are interpreted, and
- interpret space-based images to gather information about the observed area.



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Procedures

1. On a U.S. map, locate the city of New Orleans, Louisiana, and answer the following questions:

A. Near what major body of water is New Orleans located? _____

B. Are there major highways passing through New Orleans? _____

C. What major waterway passes through New Orleans? _____

D. Using the map legend, what is the approximate population of New Orleans? Is it the most populated city in the state?

E. From the map, identify some of the physical features surrounding New Orleans. Do any of these pose hazards to the population?

F. What natural hazards do you speculate may affect New Orleans and its population?

2. Each of the following images were taken from space. Figure 1 was taken from the Space Shuttle with a handheld 35 mm camera and shows natural colors. Observing Figure 1, what do the following true colors show? Use a travel map and a topographic map of the area, supplied by your teacher, to help answer the question.

White/gray: _____ Dark blue/black: _____

Light brown/tan: _____ Light blue: _____

Dark brown: _____ Green: _____

3. Figure 2 was taken by the Space Shuttle using the Spaceborne Imaging Radar–C/X Band Synthetic Aperture Radar (SIR-C/X-SAR). The color in Figure 2 has been computer enhanced (it is false color) to highlight certain characteristics of the image that may not be observed in true-color photos. Observing Figure 2, what do the following false colors show? Use the knowledge you gained in question 2, a travel map, and a topographic map of the area to help answer this question.

White/gray: _____ Light blue: _____

Light brown/tan: _____ Green: _____

Dark brown: _____ Purple: _____

Dark blue/black: _____



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4. Using both Figures 1 and 2, answer the following questions:

- A. Identify some details that were observed in the false-color image that were not observed in the true-color image.

- B. Identify some details that were observed in the true-color image that were not observed in the false-color image.

- C. Locate and identify the areas that show the highest densities of human population.

- D. Identify areas that appear to have been influenced or changed by humans.

- E. Identify any naturally formed features.

- F. Identify any features that appear to be human made.

- G. Are there any natural systems that appear to have a positive effect on the population? If so, identify them. _____

- H. Are there any natural systems that appear to have a negative effect on the population? If so, identify them. _____

- I. Using a topographic map of the area, locate the low-lying areas. Are they areas of high population? _____

- J. What problems might be faced by the people living in these areas?

- K. Based on what you know of New Orleans, would you live here? Why or why not?



Module 2, Investigation 2: Figure 1

New Orleans, Louisiana





Module 2, Investigation 2: Figure 2

New Orleans, Louisiana

