

Figure 3



Figure 4

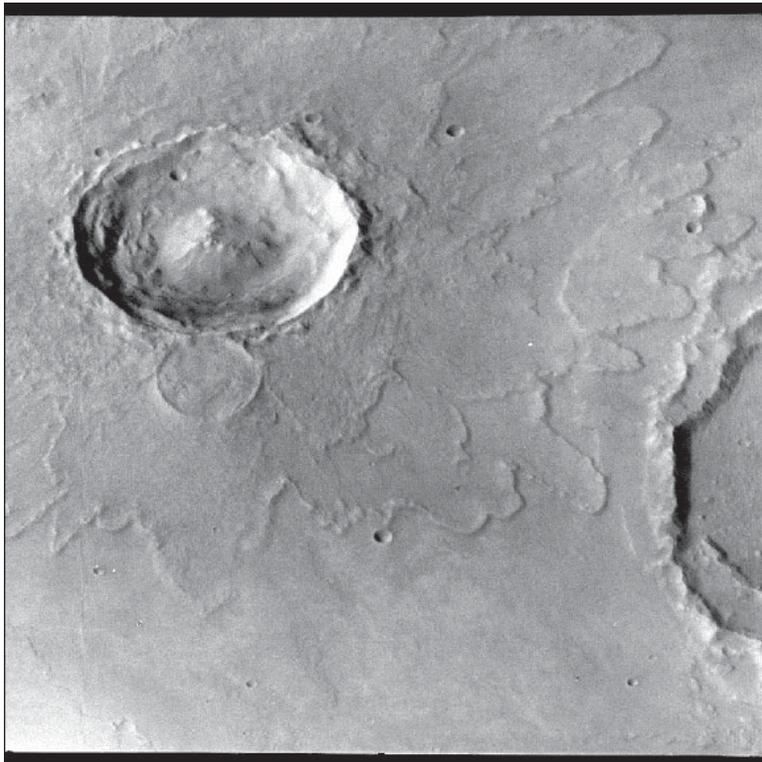


Figure 5

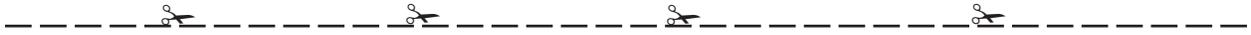
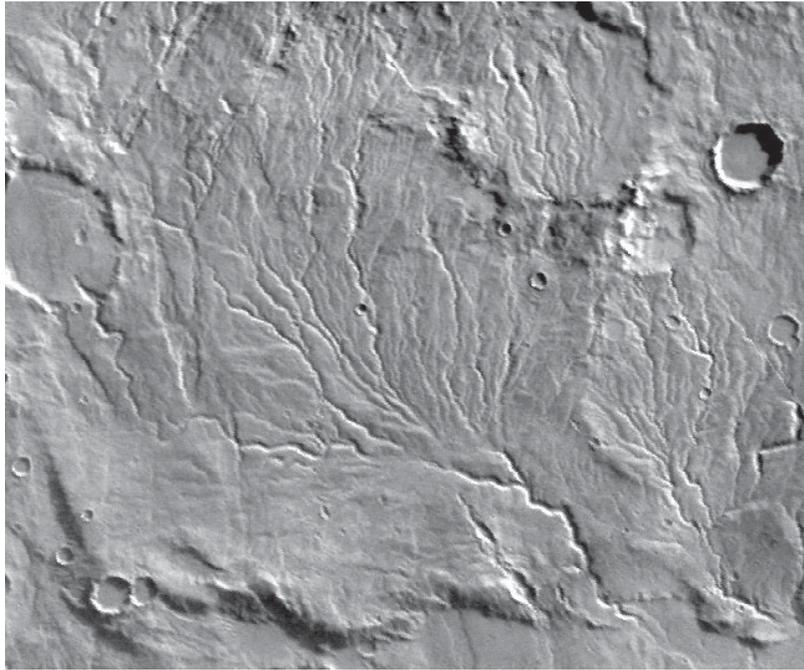


Figure 6



Figure 7



Figure 8

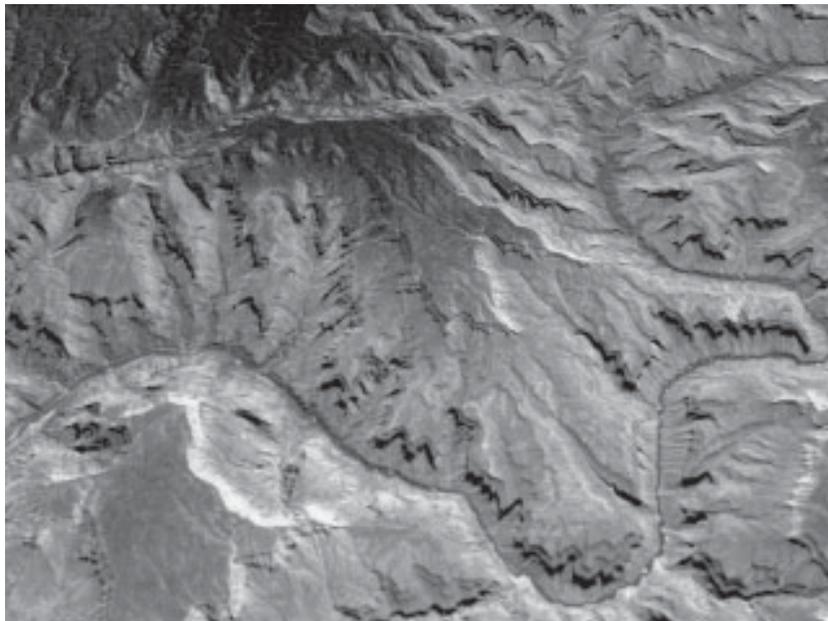


Figure 9

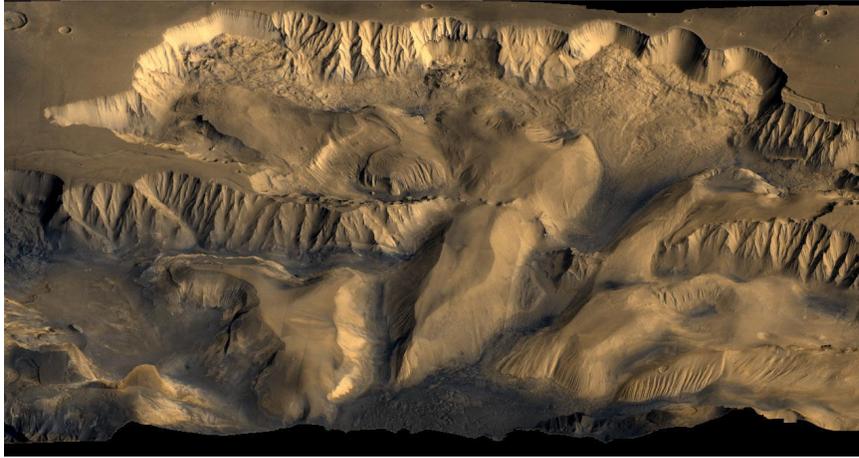


Figure 10

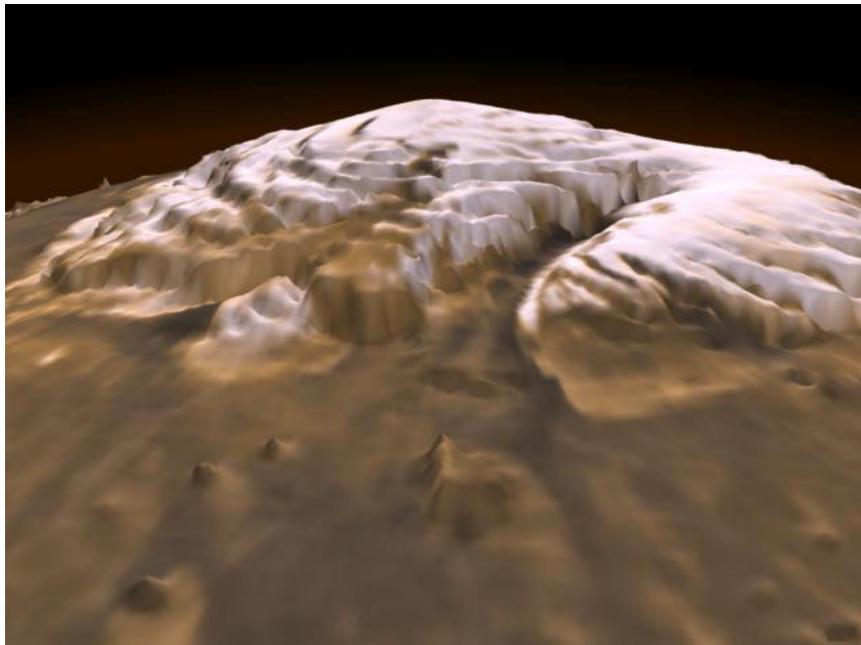
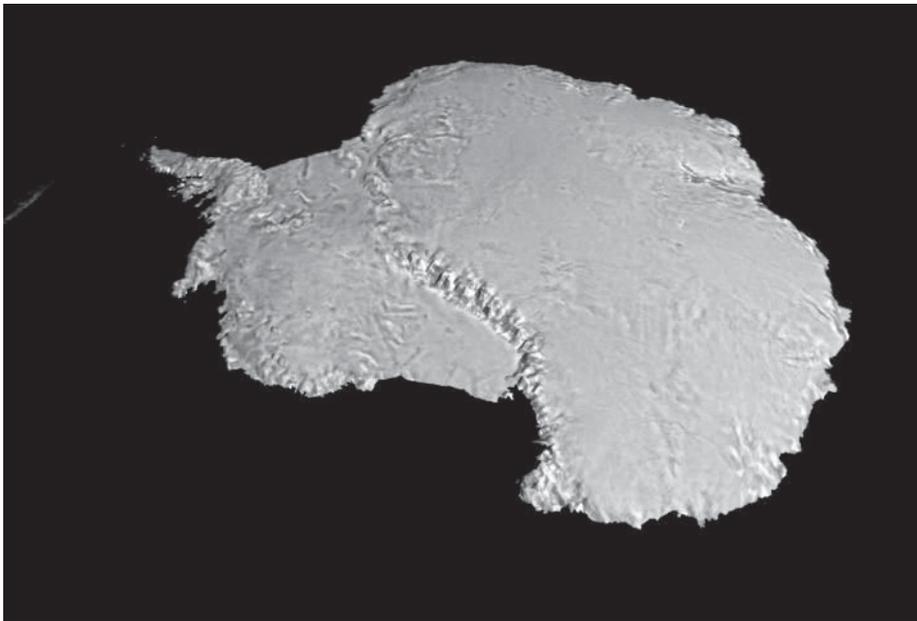


Figure 11



Figure 12





Module 2, Investigation 3: Briefing

What similar physical processes occur on both Earth and Mars?

Background

How did Earth form? Did some of the other planets in our solar system form from the same processes? One theory states that Earth and Mars formed from the same processes that formed other rocky planets. The theory assumes that our solar system formed from the debris of an exploded star that was once in the location of our current Sun. Over a period of millions of years, the debris accumulated into many larger “clumps” of debris that then formed into the rocky planets of Mercury, Venus, Earth, and Mars as well as the moons, asteroids, and comets that now make up our present solar system. Based on this theory, both Earth and Mars should have similar features since they formed from similar processes. Earth and Mars do have many striking resemblances in their physical properties and processes. They also have many striking differences. This investigation allows you to observe and identify these similarities of Earth and our planetary neighbor, Mars.

Understanding Mars is an important task because NASA is currently investigating plans that will send the first humans to Mars within the next two decades to explore our planetary neighbor and possible future home for explorers. This knowledge may help you in the near future when you may make a trip to Mars yourself. Have fun with your explorations.

Objectives

Upon completion of this investigation, you will

- identify similarities and differences between the physical processes that occur on Earth and Mars,
- classify images of Earth and Mars by observing physical features in each image, and
- speculate about physical processes that create the physical features observed in each image.

Procedures

1. Arrange the unidentified images of both Earth and Mars into pairs by identifying characteristics that appear to have been formed by similar physical processes. Examples of some physical processes are volcanic activity, water or wind erosion, glaciation, tectonics, and impacts from space. One image should be of a location on Earth and the other a location on

Mars. The first image pair has been done for you to use as an example. Identify some of the similarities between the two images in the example.

2. Individually or in small groups, observe each image pair. Answer the questions provided for each image pair. Be prepared to defend your answers.

Example

Figure 1

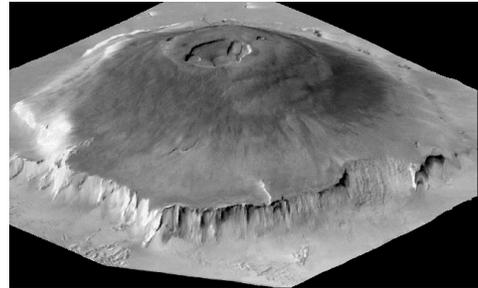
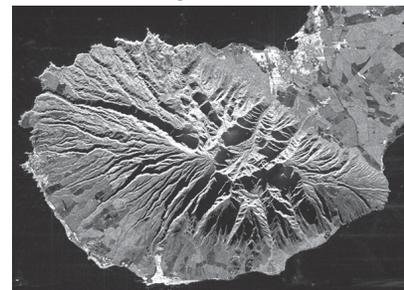


Figure 2



- Ex 1. Identify ways the images appear similar:
(answers vary based on your observations)
- Ex 2. Identify ways the images appear different:
(answers vary based on your observations)
- Ex 3. Identify the similar physical feature(s) that you observe in both images: *mountains, volcano, caldera, jagged cliffs*
- Ex 4. Speculate about what physical process(es) formed the features identified in question 3: *volcanic activity, tectonics, erosion*
- Ex 5. Which image is Earth? (Figure 2) Mars? (Figure 1)



Module 2, Investigation 3: Log

What similar physical processes occur on both Earth and Mars?

Image Pair A:

Figure _____

Figure _____

1. Identify similarities between the images: _____

2. Identify differences between the images: _____

3. Identify the similar physical feature(s) that you observe in both images: _____

4. Speculate about what physical process(es) formed the similar features identified in question 3:

5. Which image is Earth? _____ Mars? _____

Image Pair B:

Figure _____

Figure _____

1. Identify similarities between the images: _____

2. Identify differences between the images: _____

3. Identify the similar physical feature(s) that you observe in both images: _____

4. Speculate about what physical process(es) formed the similar features identified in question 3:

5. Which image is Earth? _____ Mars? _____



Module 2, Investigation 3: Log

What similar physical processes occur on both Earth and Mars?

Image Pair C:

Figure _____

Figure _____

1. Identify similarities between the images: _____

2. Identify differences between the images: _____

3. Identify the similar physical feature(s) that you observe in both images: _____

4. Speculate about what physical process(es) formed the similar features identified in question 3:

5. Which image is Earth? _____ Mars? _____

Image Pair D:

Figure _____

Figure _____

1. Identify similarities between the images: _____

2. Identify differences between the images: _____

3. Identify the similar physical feature(s) that you observe in both images: _____

4. Speculate about what physical process(es) formed the similar features identified in question 3:

5. Which image is Earth? _____ Mars? _____



Module 2, Investigation 3: Log

What similar physical processes occur on both Earth and Mars?

Image Pair E:

Figure _____

Figure _____

1. Identify similarities between the images: _____

2. Identify differences between the images: _____

3. Identify the similar physical feature(s) that you observe in both images: _____

4. Speculate about what physical process(es) formed the similar features identified in question 3:

5. Which image is Earth? _____ Mars? _____