

# Mars Public Mapping Project (MP)2

MP2

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Rate This Image: ★★★★★ STARS FOR MARS

Welcome to Mars Public Mapping Project

## Scientists need your help!

Welcome to the Mars Public Mapping Project, or (MP) <sup>2</sup> for short.

We're trying to identify the coolest images of Mars, and you can help. It's easy! Check out the image at left and rate it by clicking the star scale above: five stars = coolest.

(You can zoom and scroll around to see the full image using the controls, and a click on its ID number takes you to a page with more info about the image.)

For each star-click, you'll see a new image to rate, and you can keep clicking and rating new images for as long as you like.

### Want to do more?

**Sign Up** I want to sign up.

**Login** I signed up already and want to log in.

**Go Tag** Let's go tagging.

## STUDENT GUIDE



Arizona State University

# MARS PUBLIC MAPPING PROJECT (MP)2

## KWL Prior Knowledge/*Engagement* Activity

In your small group, brainstorm ideas about what you think you know about geologic features that may be found on Mars. Also include what questions you have about geologic features on Mars. You will revisit the third column throughout your investigation.

<b>What do we know about geologic features found on Mars?</b>	<b>What questions do we have about geologic features on Mars?</b>	<b>What have we learned about geologic features on Mars?</b>

# **MARS PUBLIC MAPPING PROJECT**

## **(MP)2**

### Objectives

1. Identify images of Mars that are interesting and visually appealing (cool!)
2. Develop a strategy for identifying different types of geologic features on Mars

### Background Information

#### ***THEMIS***

NASA has sent many spacecraft to Mars to help scientists investigate our neighboring planet. Pictures and other data that are sent back to Earth help us understand the history of Mars and why it is the way it is today. One spacecraft that has been orbiting Mars since 2001 is called the *Mars Odyssey* spacecraft. This activity uses images taken by a camera onboard this spacecraft called the Thermal Emission Imaging System or THEMIS. THEMIS is composed of two cameras, a visual camera (VIS) and an infrared camera (IR). This activity will focus on images taken of Mars with the VIS camera, which takes pictures in a similar way as a digital camera. The visible images show us what the surface looks like -- the morphology (the shape) of the surface. The morphology of the geologic features we can see in these images tells us a lot about Mars.

#### ***MARS PUBLIC MAPPING PROJECT***

The Mars Public Mapping Project, or (MP)2, allows the public, including you as students, to help scientists in two ways.

1. **Rating Images:** You can help scientists identify cool images of Mars. There are thousands of THEMIS images of Mars, and scientists would like help in identifying those that are the coolest. Cool images of Mars may tell scientists that a particular area is geologically interesting and perhaps that it should be studied in more detail.
2. **Tagging Images:** This task is a bit more involved and very important! Mars has many types of geologic features that you can observe in THEMIS images. (MP)2 will ask you to tag or identify different geologic features in each image. By tagging features in images, you will help create global feature maps of Mars. These global feature maps can help scientists better understand our neighboring planet Mars. As you tag images, be sure to zoom in and out of each image. Some of these features are small and hard to see unless you zoom in and observe carefully!

#### ***GETTING STARTED***

Before you begin your work you will need to create a login. Directions for this are on the following page of this activity guide. By creating a login you will get credit for your work and your teacher will be able to monitor your progress. Once you create your login you will automatically be taken to the ***Getting Started*** page. This page will give you additional information to enable you complete your tasks well.

Scientists appreciate your help and hard work. Hopefully your contributions to the Mars Public Mapping Project will bring scientists one step closer to understanding Mars!

# MARS PUBLIC MAPPING PROJECT

## (MP)2

### Data Collection /*Exploration* Activity

#### Creating a Login:

1. Go to the (MP)2 web site: <http://mp2.mars.asu.edu/>
2. Click on the ***Sign Up*** tab at the top right hand side of the page.
3. Select *Student* as the user and fill in the information as requested. Your teacher will let you know whether to sign in as a single student or as a pair of students. Be sure to get the *Class ID* and *Class Key* from your teacher.
4. Once you create your login, you will be taken to the ***Getting Started*** page. Read this information carefully so you can correctly tag images! At the bottom of the page you will be able to select *Go Tag* to begin your work!

#### Gathering Your Data

As you use the (MP)2 website to gather your data, keep in mind there are 3 steps to tagging:

Step 1: Rate the image on a scale of 1 to 5 stars

Step 2: Tag features as you see them (don't forget to scroll around the image and zoom in and out to help you identify features carefully)

Step 3: Submit your work and then begin working with the next image!

As you do your work, keep track or log your information on the data sheets provided. You will share it with your teacher and the class. The information you will be asked to log is:

- Image ID #: This is the V# at the bottom of the image. Record the Image ID# so you can go back and view this image again later if necessary.
- Image Rating: What did you rate the image – how many stars?
- Sketch of Image: Create a quick sketch of the image & indicate features you tagged.
- Features found: Circle the specific features you tagged in each image. Be sure these features are included on your image sketch.
- Most interesting feature: What specific feature(s) did you find most interesting? What about that feature(s) is interesting?

# MARS PUBLIC MAPPING PROJECT

## (MP)2

Data Collection /*Exploration* Activity

Mars THEMIS Image Data	
<b>Image ID#:</b>	<b>Image Rating:</b>
<b>Sketch of Image:</b>	<b>Circle the Geologic Features Identified:</b> Craters:            Preserved, Modified, Rampart Layers Valleys:            Straight, Curvy, Gullies Volcanic:            Lava Flows, Tubes, Cones Wind Related:    Sand Dunes, Dust Devil Tracks, Wind Streaks
	<b>Most Interesting Feature (please explain what makes it interesting):</b>     
Mars THEMIS Image Data	
<b>Image ID#:</b>	<b>Image Rating:</b>
<b>Sketch of Image:</b>	<b>Circle the Geologic Features Identified:</b> Craters:            Preserved, Modified, Rampart Layers Valleys:            Straight, Curvy, Gullies Volcanic:            Lava Flows, Tubes, Cones Wind Related:    Sand Dunes, Dust Devil Tracks, Wind Streaks
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## (MP)2

Data Collection /*Exploration* Activity

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# MARS PUBLIC MAPPING PROJECT

## (MP)2

### Presentation of Observations/*Explanation* Activity

#### A. PRESENTATION PREPARATION

Think about all the images you observed. You will be asked to explain three features you saw in most of the images you observed and the criteria you used to identify them. You will also show your favorite image and discuss the specific feature(s) you observed from that image that interested you most. Be sure to explain what interested you about that feature(s). You can prepare your presentation by:

1. Re-look at your favorite image by going to <http://themis-data.asu.edu>. Put in the Image ID# in the appropriate information box.
2. Fill in the table below to use as a guide during your presentation.

Name 3 features you found in the majority of images you observed	List the criteria used to identify each feature	Name and discuss a specific feature(s) that interested you from your favorite image
1.	1.	
2.	2.	
3.	3.	

**B. PRESENTATION LOG:** During each group's presentation, fill out the table below:

Student Names	Three Identified Features	List Criteria Used To Identify Each Feature	Feature of Interest
	1.	1.	
	2.	2.	
	3.	3.	

# MARS PUBLIC MAPPING PROJECT (MP)2

## Presentation of Observations/*Explanation* Activity (continued)

Student Names	Three Identified Features	List Criteria Used To Identify Each Feature	Feature of Interest
	1.  2.  3.	1.  2.  3.	

# MARS PUBLIC MAPPING PROJECT

## (MP)2

### Presentation of Observations/*Explanation* Activity (continued)

Student Names	Three Identified Features	List Criteria Used To Identify Each Feature	Feature of Interest
	1. 2. 3.	1. 2. 3.	

# MARS PUBLIC MAPPING PROJECT

## (MP)2

### Presentation of Observations/*Explanation* Activity (continued)

Student Names	Three Identified Features	List Criteria Used To Identify Each Feature	Feature of Interest
	1.  2.  3.	1.  2.  3.	

# MARS PUBLIC MAPPING PROJECT

## (MP)2

### Presentation of Observations/*Explanation* Activity (continued)

Student Names	Three Identified Features	List Criteria Used To Identify Each Feature	Feature of Interest
	1.  2.  3.	1.  2.  3.	

# MARS PUBLIC MAPPING PROJECT

## (MP)2

### Research Planning/*Elaboration* Activity

Based on the presentations from students in your class, list the two most popular geologic features student groups found interesting:

1. \_\_\_\_\_
2. \_\_\_\_\_

Think about which of these features is most interesting to you. How could you conduct a scientific investigation about that feature? What question would you ask? As you formulate a question, think about what steps you would need to take in order to answer that question.

1. Which geologic feature of the two listed above is most interesting to you?
2. Formulate a research question that would allow you to further investigate this feature.

Elaborate on a plan of what you would need to know about this feature and how you would go about conducting your research. Consider using resources like the Internet or using resources from your school or local library.

<b>What would you need to know about this feature to further research it?</b>	<b>How would you go about conducting research to answer your question?</b>	<b>Where might you find information to help you with your research?</b>

# MARS PUBLIC MAPPING PROJECT

## (MP)2

### Creating Your Mini-Poster/*Evaluation* Activity

Create a mini-poster diagramming and explaining a student-created “THEMIS” image of Mars. The image should illustrate and define the most commonly observed features based on the class presentations. The poster should include criteria for identifying these features.

1. Brainstorm with your partners on how to sketch your student-created “THEMIS” image. The image should be sketched to reflect actual THEMIS image characteristics. This includes the slight slant each image has (that reflects the rotation of the planet as the spacecraft is flying overhead) as well as its shape.
2. Clearly and neatly create your image and clearly label features. Criteria for identifying features should be included. You should also clearly identify the specific feature of interest for your created research question.
3. Include the research question you created to further investigate this feature on your poster.

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#### Suggestions:

- A. Sketch a rough draft of your poster before finalizing your poster format.
  - B. Use the Rubric for Poster Assessment to understand how your poster will be evaluated.
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#### RUBRIC FOR POSTER ASSESSMENT

<b>Exemplary</b>	Image is accurately sketched with THEMIS image characteristics Key features have been appropriately labeled and criteria defined Question is clearly written & focuses on feature of interest Poster is neatly presented and logically organized No spelling or grammatical errors
<b>Meets Standards</b>	Image is somewhat accurately sketched with some THEMIS image characteristics Most key features have been appropriately labeled and criteria defined Question is somewhat clearly written & focuses on feature of interest Poster is somewhat neatly presented and somewhat organized Minimal spelling or grammatical errors
<b>Partially Meets Standards</b>	Image is sketched with few THEMIS image characteristics Few key features have been appropriately labeled and few criteria defined Question is not clearly written and does not focus on feature of interest Poster is poorly presented and disorganized Numerous spelling and/or grammatical errors
<b>Redo</b>	Image is poorly sketched with no THEMIS image characteristics Almost no key features have been appropriately labeled and no criteria defined Question is not included Poster is disorganized and sloppy Multiple spelling and/or grammatical errors