

Name: \_\_\_\_\_

Date: \_\_\_\_\_

## Outdoor Laboratory: Observing Lunar Features

### Introduction

The Moon is a great observing target. Its close proximity makes it easy to view features that we don't see on even the closest planets to us through telescopes. In contrast, we can see a number of features using small telescopes and binoculars. Even a camera with a modest telephoto lens can be used to view large features.

There are hundreds of books and lunar atlases in both print and digital media that can be used to point out various features. The Peterson Guide includes a lunar atlas that will help you locate features of interest. The official keeper of names and feature types is the IAU/USGS Gazetteer of Planetary Nomenclature. The gazetteer recognizes 18 types of features on the lunar surface:

<i>Albedo Feature</i>	<i>geographic area distinguished by an amount of reflected light</i>
<i>Catena, catenae</i>	<i>chain of craters</i>
<i>Crater, craters</i>	<i>circular depression</i>
<i>Dorsum, dorsa</i>	<i>ridge</i>
<i>Fossa, fossae</i>	<i>shallow depression or hollow</i>
<i>Lacus, lacūs</i>	<i>lake or small plain</i>
<i>Landing site name</i>	<i>lunar features at or near Apollo landing sites</i>
<i>Mare, maria</i>	<i>sea, low albedo, relatively smooth plain, large extent</i>
<i>Mons, montes</i>	<i>mountain</i>
<i>Oceanus, oceani</i>	<i>ocean, a very large dark area on the Moon</i>
<i>Palus, paludes</i>	<i>swamp, small plain</i>
<i>Planitia, planitiae</i>	<i>low plain</i>
<i>Promontorium, promontoria</i>	<i>cape, headland</i>
<i>Rima, rimae</i>	<i>fissure</i>
<i>Rupes, rupēs</i>	<i>scarp, a very steep bank or slope</i>
<i>Satellite Feature *</i>	<i>a feature that shares the name of an associated feature</i>
<i>Sinus, sinūs</i>	<i>bay, small plain</i>
<i>Vallis, valles</i>	<i>valley</i>

There are times when observing the Moon isn't ideal, such as when it is full. The human brain needs contrast to discern elevation changes. It's best to wait until the terminator (separation of light and darkness) can offer a little shadow and definition to the surface features.

### Procedures

One of the benefits of observing the Moon is that you don't have to wait for it to be completely dark. You can actually see some of the more prominent features during the daytime, but it's best to wait until after sunset to begin making serious observations. If you are using binoculars, use a tripod, walking staff or other means to stabilize the binoculars to get the best view.

Use the lunar charts in the Peterson Guide for assistance. Some smartphone apps can be helpful here as well. Night vision isn't critical when observing the Moon; so, using a computer or smartphone to bring up a lunar app or the gazetteer is fine.

Gazetteer of Planetary Nomenclature

<https://planetarynames.wr.usgs.gov/Page/MOON/target>

Don's Online Lunar Atlas (click a feature for its name and information)

<https://doncarona.tamu.edu/apps/moon/atlas/>

- You'll want to pay attention to the sunlit region near the terminator. These features will have some shadow to make them stand out, but not so much that it obscures it from identification.
- If you have a DSLR camera with a good telephoto lens, there's nothing wrong with taking a photo of the Moon to help with identification.
- If you are using the 8 inch telescopes, the cameras on some smartphones work well to take a photo through the eyepiece of the telescope. Some focusing of the telescope may be required.
- Observing a bright Moon through a telescope or binoculars cannot harm your eyes. However, if it's bright enough, the glare can be annoying. Wearing sunglasses can relieve the glare and help reveal subtle features.

For this observing session, you will identify up to 10 features near the lunar terminator. Your instructor will let you how many features are required depending on the position of the terminator.

Observation Date (UTC): \_\_\_\_\_ (yyyy-MM-dd HH:mm)

	Feature Name	Feature Type
1.	_____	_____
2.	_____	_____
3.	_____	_____
4.	_____	_____
5.	_____	_____
6.	_____	_____
7.	_____	_____
8.	_____	_____
9.	_____	_____
10.	_____	_____

Sketch a line marking the position of the terminator on the map below.

