

## Re: moon atlas; questions about moon

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- *From:* "canopus56" <[canopus56@xxxxxxxxx](mailto:canopus56@xxxxxxxxx)>
  - *Date:* 3 Oct 2006 11:56:09 -0700
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brucegooglegroups wrote:

Tonight I was viewing the moon. I had a difficult time matching my view with moon charts in books . . . and the one from S&T.  
[www.lunarrepublic.com/atlas/index.shtml](http://www.lunarrepublic.com/atlas/index.shtml) is a good site, though.  
. . . [O]n the lower side of the moon( North in my telescope?), I could see one large crater, and six craters near it.  
The surface was flat. I also saw two craters directly right on the edge. Was I looking at the Northern Mare Imbrium?

Your description sounds like you were looking at the crater Plato on the north edge of Mare Imbrium. The other large prominent crater visible at that time was Copernicus, but its floor is not a flat plain. The six craters reference does not ring any bells.

At the time of your post, the lunar terminator was at approx. 40W with a lunar age of 10.7 days. Henrik Bondo's original edition evening lunar atlas at:

[http://inet.uni2.dk/~d120588/henrik/ela0\\_sessions.html](http://inet.uni2.dk/~d120588/henrik/ela0_sessions.html)

contains photos of the Moon by lunar age. That may help you to get oriented. Bondo's 10.9 lunar day image is at:

[http://inet.uni2.dk/~d120588/henrik/ela1\\_387w\\_109d\\_19apr05.html](http://inet.uni2.dk/~d120588/henrik/ela1_387w_109d_19apr05.html)

Using your own lunar hardcopy map or the "lunar republic" map, you can match up the craters in Bondo's image with their names. The "lunar republic" image for Plato is B-3:

<http://www.lunarrepublic.com/atlas/sections/b3.shtml>

Copernicus is on "lunar republic" image D-2 and D-3.

When you begin to watch the Moon, it is typical to have problems matching the chart to the image do to changes in the apparent view of its surface. Those changes include:

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1) phase change – where the terminator is. See –  
<http://www.lpod.org/archive/LPOD-2005-02-21.htm>

2) parallactic angle – the angle of the Moon's north–south pole and your local meridian.

3) libration – the Moon's orbit is inclined at 6 degrees to the ecliptic. Sometimes you are looking "down" on the Moon; at others you look "up" from below at the Moon. Libration effects range from about 7 degrees of selenographic latitude and up to 10 degrees in selenographic longitude.

To understand libration, it helps to have a friend stand in front of you. Look at their face at various angles, including by stooping and looking up from below, or standing on ladder or stair case and looking down from above.

A good illustration of this can be found on page 10 of Chong, S.M. et al. 2002. A Photographic Atlas of the Moon. Cambridge Univ. Press. ISBN 0-521-81392-1.

Chong's book is available on Amazon.com.

<http://www.amazon.ca/exec/obidos/ASIN/0521813921>

Excerpts from Chong's book, including the illustration of libration on page 10, can be seen online using Amazon's "Search this book" feature.

The process I went through when first learning the Moon was:

1) Learn the major mare phase asterisms using the Astronomical League's Lunar Observing List:

<http://www.astroleague.org/al/obsclubs/lunar/lunar3.html>

2) Using a whole Moon chart, like the ARVAL Moon Map, learn the major fiducial craters that catch the eye on any casual inspection of the Moon.

<http://www.oarval.org/MoonMapen.htm>

Some of the major fiducial craters include Atlas, Hercules, Mostling A (a small crater near selenographic 0 degs lat, 0 deg long), Ptolemaeus–Alphonsus, Clavius, Tycho, Plato, Kepler, Eratosthenes, Copernicus, Archimedes, Gassendi, Aristarchus, and Grimaldi.

Then learn the fiducial mountain ranges like: Montes Caucasus, Montes Alpes, Montes Jura, Montes Apenninus and Montes Pyrenaeus.

3) Using a lunar planetarium program like the freeware Virtual Moon Atlas,

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[http://www.astrosurf.com/avl/UK\\_index.html](http://www.astrosurf.com/avl/UK_index.html)

follow the Moon each night for one entire lunation. Pay particular attention to

(a) the lunar longitude of the terminator each night. The Hitchhiker's Guide to the Moon has a convenient online calculator to tell you the lunar longitude of the terminator for a particular night.

<http://www.shallowky.com/moon/hitchhiker.html>

Virtual Moon Atlas also reports this colongitude of the terminator, and has tools that identify the major cool things to look at along the terminator.

(b) the ecliptic latitude of the Moon – that partially defines the libration viewing angle,

(c) how the phase is related to the position of the Moon in its orbit around the Earth and the rising time of the Moon – first quarter Moon sets after sunset in the West, third quarter rises in the east in the early morning hours.

You can even do this online using the USNO "What the Moon looks like" today.

[http://aa.usno.navy.mil/data/docs/current\\_moon.html](http://aa.usno.navy.mil/data/docs/current_moon.html)

4) Read Dr. Chuck Wood's Lunar Picture of the Day (LPOD) daily and his monthly S&T column for in depth notes on particular objects.

[www.lpod.org](http://www.lpod.org)

A couple of lunations (monthly lunar cycles) of this and you'll be an old hand!

When first learning the feature names, it is also helpful (for learning purposes) to adopt the mindset of 17th and 18th century astronomers how first named the Moon's features. They viewed the Moon like the Earth – it had highland continents (terra), oceans (oceanus), seas (mare), lakes (lacus) and marshes (palus). Headlands (promintorium) stick out into the "oceans" and "seas". Although we no longer use the former names of the continents, –

<http://www.lpod.org/?m=20060418>

– it is helpful to understand the early astronomers' mindset when they were naming features.

Hope this helps.

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Clear skies – Canopus56