

# Mountaineer Skies

Volume 14 Issue 4

<http://planetarium.wvu.edu/>

October – December, 2014

## October 8 Total Lunar Eclipse\*

Moon	Date	Time**
Moonrise	Oct 7	18:28
Moon enters penumbra	Oct 8	04:14
Moon enters umbra	Oct 8	05:15
Moon enters totality	Oct 8	06:25
Middle of eclipse	Oct 8	06:55
Moon leaves totality	Oct 8	07:25
Moonset	Oct 8	07:29

\* Data courtesy of US Naval Observatory

\*\* Time is Eastern Daylight Time

**Daylight Saving Time** will end on Sunday, November 2. Set your clocks back 1 hour. Remember the mnemonic “Fall back, Spring forward”.

The **winter solstice** this year will occur on Sunday, December 21. This is the first day of winter and shortest day of the year.

An interesting word for your vocabulary and for Scrabble: **syzygy**, pronounced [siz-i-jee]. A syzygy occurs when three solar system bodies, such as the sun, the earth, and the moon align as happens during a new or full moon.

### INSIDE THIS ISSUE

- 1 In The Sky This Quarter
- 2 About: Dwarf Planets
- 3 Planetarium Show Schedule with Times and Dates
- 3 Selected Sunrise/Sunset, Moon Rise/Moon Set Times
- 4-6 Monthly Sky Charts

## In The Sky This Quarter

### Sun and Planets

#### Beginning of October, 2014

	Const	Rise	Transit	Set	Mag
Sun		07:17	13:09	19:02	-26.8
Mercury	Vir	09:20	14:32	19:41	0.5
Venus	Vir	06:47	12:49	18:53	-3.9
Mars	Oph	12:42	17:20	21:58	0.8
Jupiter	Cnc	02:51	09:50	16:53	-1.9
Saturn	Lib	10:42	15:53	21:00	0.6

#### Beginning of November, 2014

	Const	Rise	Transit	Set	Mag
Sun		07:49	13:03	18:18	-26.8
Mercury	Vir	06:14	11:56	17:38	-0.6
Venus	Lib	08:00	13:12	18:26	-3.9
Mars	Sgr	12:23	16:57	21:30	0.9
Jupiter	Leo	01:12	08:06	15:04	-2.1
Saturn	Lib	08:57	14:04	19:09	0.5

#### Beginning of December, 2014

	Const	Rise	Transit	Set	Mag
Sun		07:22	12:09	16:56	-26.8
Mercury	Sco	07:09	11:55	16:40	-1.1
Venus	Oph	08:11	12:49	17:29	-3.9
Mars	Sgr	10:51	15:37	20:22	1.0
Jupiter	Leo	22:24	05:16	12:12	-2.3
Saturn	Lib	06:16	11:17	16:22	0.5

Cnc	Cancer, The Crab
Leo	Leo, The Lion
Lib	Libra, The Scales
Oph	Ophiuchus, The Serpent Holder
Sco	Scorpius, The Scorpion
Sgr	Sagittarius, The Archer
Vir	Virgo, The Maid

### About: Dwarf Planets

After reading the last scintillating *Mountaineer Skies* (July-September, 2014) you know that Pluto was demoted to “dwarf planet” status. “But what is a dwarf planet?” I can hear you echoing. Well, I am glad you asked. Because our telescopes are getting better and better, we can expect more admissions to this small, but surely growing, club. Right now (October, 2014) there are five members in this diminutive group. They are, from largest to smallest, **Eris**, **Pluto**, **Makemake**, **Haumea**, and, the smallest, **Ceres**. As the diameters of both Eris and Pluto are very close, there is a possibility, with more accurate measurements, that Eris and Pluto might change places.

What makes a solar system body a dwarf planet? If you were fortunate enough to have read last quarter’s newsletter, you already know, but if you missed it, here are the conditions that must be met.

1. The object in question must orbit the sun.
2. It must be large enough to be roughly spherical.
3. It is not a moon of some other body.
4. The body must not have cleared its orbital neighborhood of other solar system debris.

Number 4 above is what separates a planet from a dwarf planet. In the author’s opinion, the definition is terrible. One example: Using a strict interpretation of item 4, Neptune does not qualify as a planet. This definition needs significant work if it is going to stand (and it may or may not).

The icy dwarf planet **Eris**, at one time nicknamed Xena from the once popular TV show called *Xena: Warrior Princess*, is, by a narrow margin, the largest of the small with a diameter of 2326 km (1445 miles). It was discovered by Mike Brown and his team at the Caltech Mount Palomar Observatory, on January 5, 2005, and named for the Greek goddess Eris who ensured the world was full of chaos and confusion. This lady seems to have done her job quite well. Its orbital period is 557\*\* years and has one moon, Dysnomia. This small body is located in the very distant **scattered disc region\*** of the solar system.

**Pluto**, the once and maybe future planet, was discovered by Clyde Tombaugh at the Lowell Observatory on February 18, 1930. Coming from a more serious time, it had no nickname, though it is probably the origin of Mickey Mouse’s famous dog. This icy-rocky world has a diameter of 2306 km (1433 miles), an orbital period 248 years, and lives in the Kuiper belt. Its name was suggested by 11 year old Venetia Burney of Oxford, England, after the god of the underworld. It comes equipped with five moons: Charon, Styx, Nix, Kereros, and Hydra, but when the New Horizons space craft arrives next July (2015), this number will almost certainly increase. You can follow the New Horizons mission at <http://pluto.jhuapl.edu>.

Both **Makemake**, having a diameter of 1430 km (889 miles), a period of 309 years, and no moons, and **Haumea** with a diameter of 1240 km (771 miles), a period of 283 years, and two moons were discovered by Michael Brown and his team at Mount Palomar between 2004 - 2005. Makemake is named after a deity of Easter Island and Haumea from an Hawaiian god, and both reside in the Kuiper belt.

Finally, the diminutive **Ceres**, having a diameter of 950 km (590 miles), an orbital period 4.6 years, and no moons, was discovered by [Giuseppe Piazzi](#) at the Academy of [Palermo](#), Sicily on the first day of 1801, about three months before Thomas Jefferson became third president of the United States. Named after the Roman goddess of agriculture, and, like Pluto, never was shown the affection of a nickname, it is located in the asteroid belt between Mars and Jupiter.

For those of you who are worrying day and sleepless night as to whether Eris or Pluto is first among the dwarfs, there might be relief coming. After a ten year journey, the New Horizon spacecraft will fly past Pluto in July 2015 and almost certainly will give us a more accurate measurement of its diameter.

**\*scattered disc: scattered solar system objects located in and beyond the Kuiper belt**

**\*\*orbital period: the time it takes for a body to complete one orbit around the sun**

## 2014 Planetarium Shows



**October 10 & 24**  
**7:00 P.M.** Back to the Moon  
 for Good  
**8:00 P.M.** Two Small Pieces of  
 Glass

**November 14 & 21**  
**7:00 P.M.** Back to the Moon  
 for Good  
**8:00 P.M.** Two Small Pieces  
 of Glass

**December 5, 12, & 19**  
**7:00 P.M.** Season of Light  
**8:00 P.M.** Season of Light

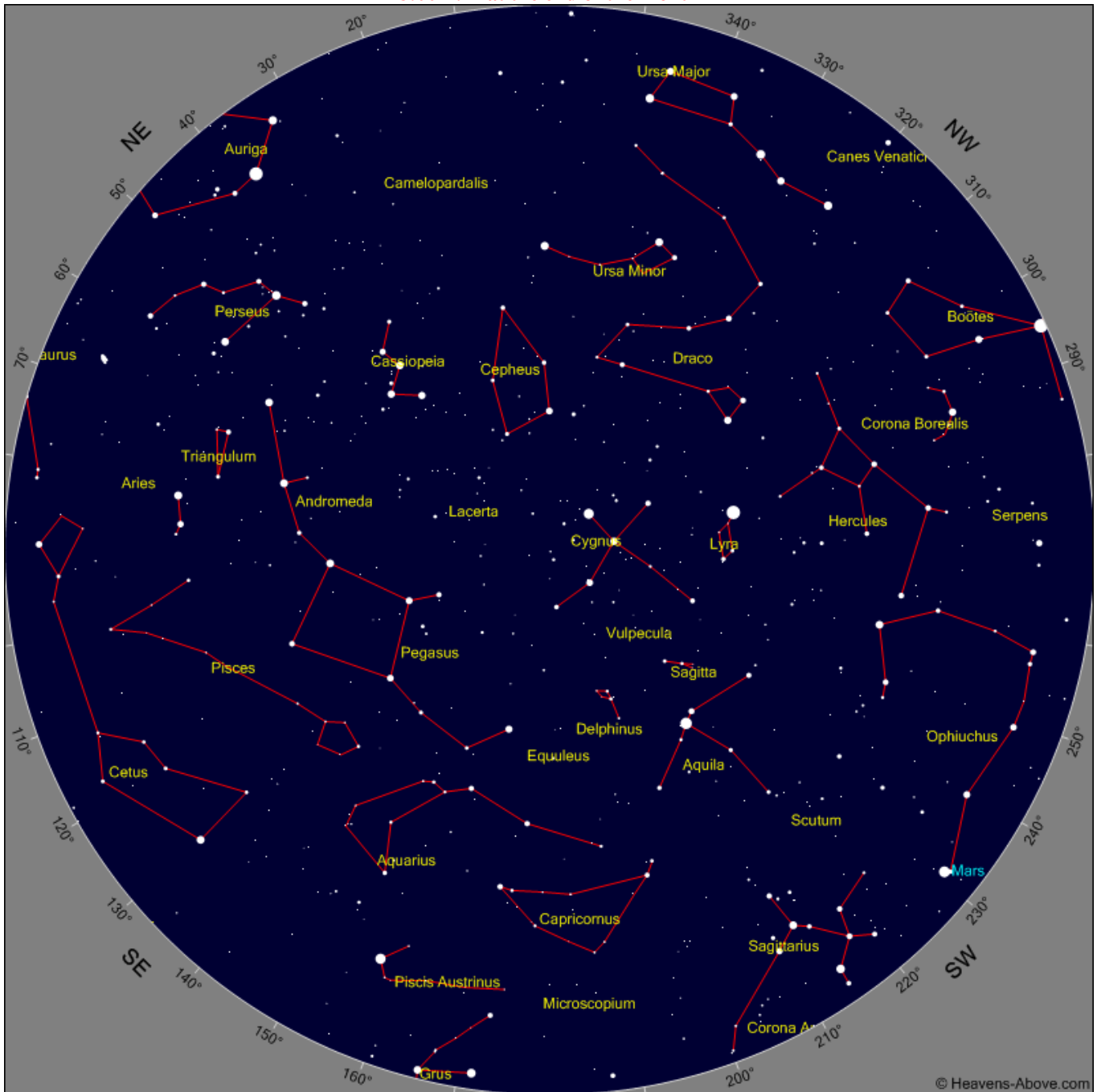
For those who are interested in bringing a group, such as schools or scouts, during the day, please call for more information. These shows are usually given on Tuesday or Thursday mornings.

For further information or reservations, please call John Hopkins at (304)293-4961, or by email at: [jghopkins@mail.wvu.edu](mailto:jghopkins@mail.wvu.edu)

### Selected Sunrise/Sunset and Moon Rise/Moon Set Times

Date	Sunrise	Sunset	Moon Rise	Moon Set	Moon Phase
Oct 1	7:16 A.M.	7:04 P.M.	2:15 P.M.	NA	First Qtr
Oct 8	7:22 A.M.	6:53 P.M.	7:06 P.M.	7:28 A.M.	Full Moon
Oct 15	7:29 A.M.	6:42 P.M.	NA	2:11 P.M.	Last Qtr
Oct 23	7:38 A.M.	6:31 P.M.	7:17 A.M.	6:30 P.M.	New Moon
Oct 30	7:45 A.M.	6:22 P.M.	1:49 P.M.	NA	First Qtr
Nov 6	6:53 A.M.	5:13 P.M.	5:19 P.M.	6:24 A.M.	Full Moon
Nov 14	7:02 A.M.	5:06 P.M.	NA	12:55 P.M.	Last Qtr
Nov 22	7:11 A.M.	5:00 P.M.	7:07 A.M.	5:29 P.M.	New Moon
Nov 29	7:19 A.M.	4:57 P.M.	12:49 P.M.	NA	First Qtr
Dec 6	7:26 A.M.	4:56 P.M.	5:31 P.M.	7:16 A.M.	Full Moon
Dec 14	7:32 A.M.	4:56 P.M.	NA	12:25 P.M.	Last Qtr
Dec 21	7:37 A.M.	4:58 P.M.	6:52 A.M.	5:04 P.M.	New Moon
Dec 28	7:40 A.M.	5:03 P.M.	12:03 P.M.	NA	First Qtr

**October 2014 Sky Chart\* for:**  
**10:00 P.M at the beginning of the month**  
**9:00 P.M in the middle of the month**  
**8:00 P.M at the end of the month**



\*Sky Chart used with the kind permission of **Heavens-Above** at <http://www.heavens-above.com/>

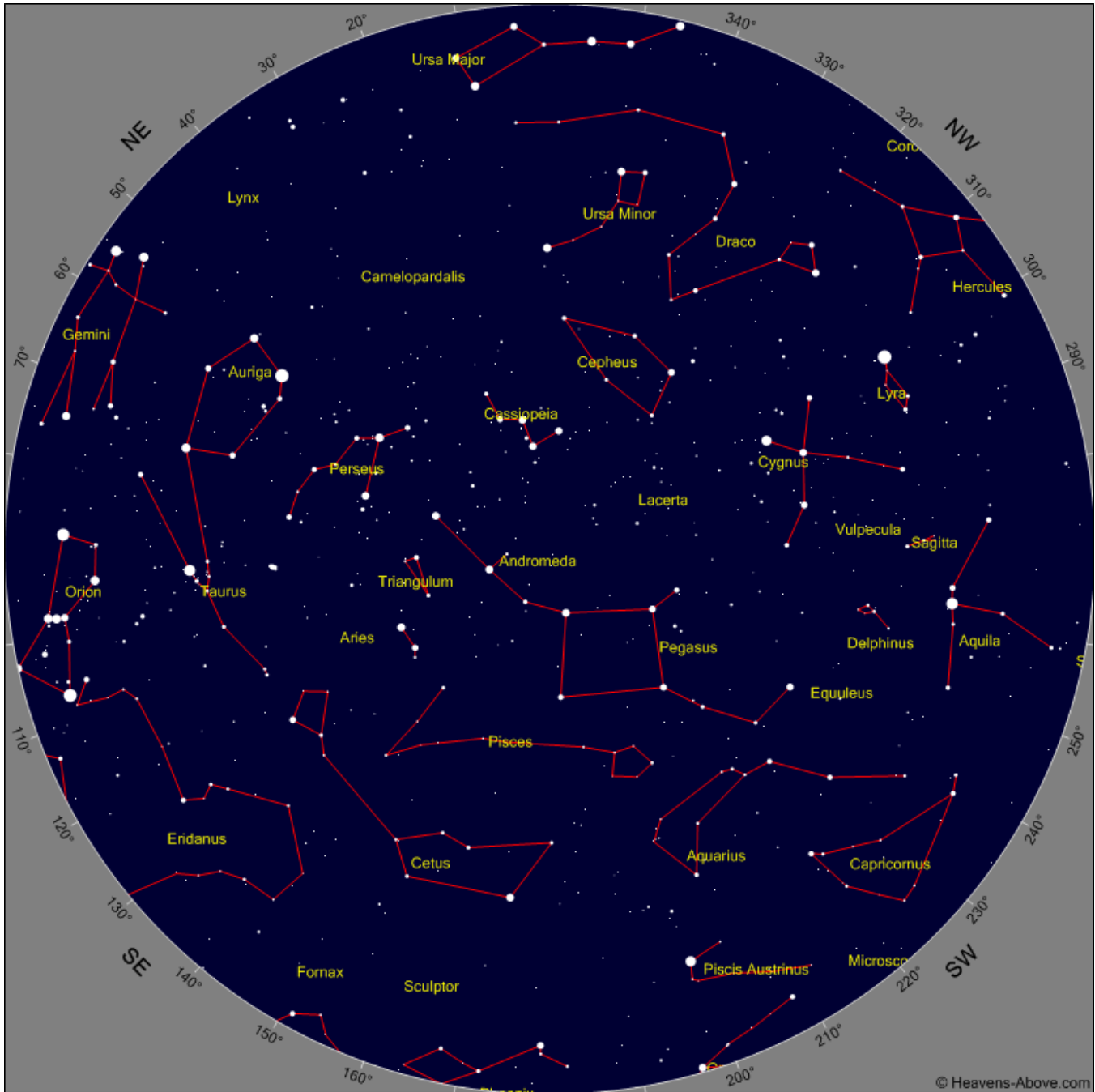
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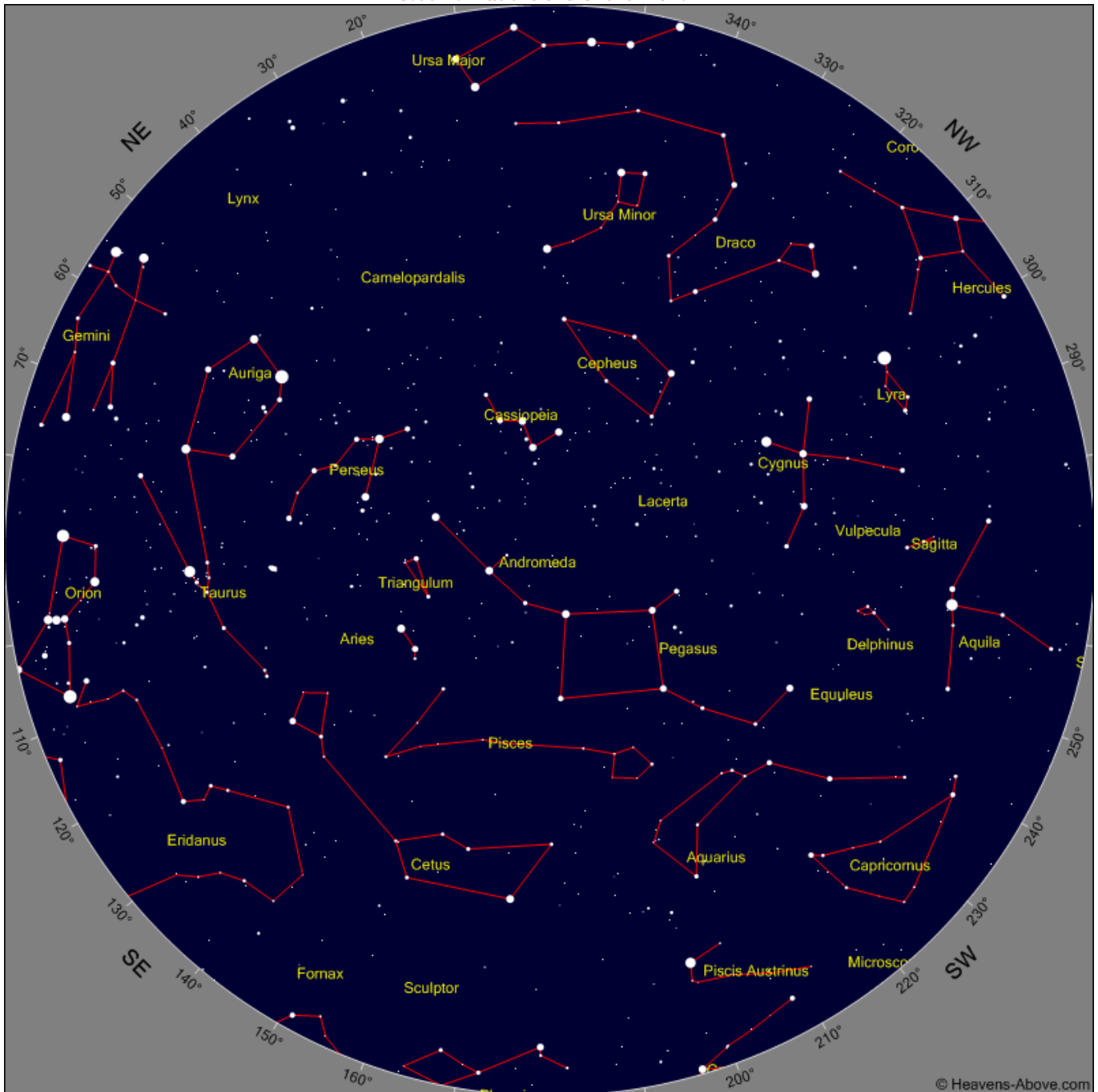
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