

Mountaineer Skies

Volume 15, Issue 3

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

July – August – September 2015

In the Sky This Quarter

On **July 14**, Bastille Day in France, NASA's spaceship **New Horizons** will arrive at Pluto after a nine and a half year voyage. Expect the unexpected as we see Pluto as never before.

One of the most useful tools for the beginning astronomer is called a **planisphere** which is a display of the sky for any date/time of the year. It is like a flat planetarium. You can find them online for less than \$15.00; some include the planet locations for several years. One that works online (no planets) and is free can be found at <http://drifted.in/planisphere-app/>. Use **40 degrees North latitude** during **Settings** (left most icon on the top right of the screen) if you live less than 200 miles from Morgantown.

On Wednesday, **September 23**, the Autumnal Equinox or the first day of autumn, will take place. This means that the sun will rise due east and set due west and the period of night and day are of nearly equal length. There is another equinox, called the Vernal Equinox, that signals the first day of spring. It will occur on March 20 in 2016.

September 27/28 Total Lunar eclipse*

(If the sky is clear, this should be really good.)

Moonrise	Sep 27	19:01
Moon enters penumbra	Sep 27	20:10
Moon enters umbra	Sep 27	21:07
Moon enters totality	Sep 27	22:11
Middle of eclipse	Sep 27	22:47
Moon leaves totality	Sep 27	23:24
Moon leaves umbra	Sep 28	00:27
Moon leaves penumbra	Sep 28	01:24
Moonset	Sep 28	07:41

*Data from US Naval Observatory

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In The Sky This Quarter

Visible Planets in the Night Sky

Beginning of July, 2015

	Const	Rise	Transit	Set	Mag
Sun		05:56	13:24	20:51	-26.8
Mercury	Tau	04:38	11:56	19:12	-0.3
Venus	Leo	09:26	16:19	23:12	-4.4
Mars	Gem	05:32	13:03	20:33	1.6
Jupiter	Leo	09:22	16:19	23:13	-1.8
Saturn	Lib	17:29	22:30	03:30	0.3

Beginning of August, 2015

	Const	Rise	Transit	Set	Mag
Sun		06:20	13:26	20:33	-26.8
Mercury	Leo	07:10	14:07	21:08	-1.1
Venus	Leo	08:11	14:39	21:02	-4.3
Mars	Gem	05:07	12:30	19:51	1.7
Jupiter	Leo	07:52	14:41	21:27	-1.7
Saturn	Lib	15:24	20:25	01:25	0.4

Beginning of September, 2015

	Const	Rise	Transit	Set	Mag
Sun		06:49	13:20	19:51	-26.8
Mercury	Vir	09:08	14:56	20:44	0.2
Venus	Cnc	05:01	11:34	18:11	-4.4
Mars	Cnc	04:46	11:49	18:53	1.8
Jupiter	Leo	06:24	13:05	19:43	-1.7
Saturn	Lib	13:26	18:26	23:25	0.6

Vir	Virgo, The Maid
Tau	Taurus, The Bull
Cnc	Cancer, The Crab
Leo	Leo, The Lion
Gem	Gemini, The Twins
Lib	Libra, The Scales

About: Even NASA Has Spinoffs

Created directly as a response to the Soviet Union's successful launch of Sputnik 1 into orbit on October 4, 1957, the National Aeronautics and Space Administration, now universally known as NASA, had its birthday on July 29, 1958, when Congress passed the National Aeronautics and Space Act. Since then the United States has become a (some say **the**) world leader in space exploration. NASA, during its years exploring space, has invented or developed many things that were meant to be used aboard various space craft, but which have benefitted the ordinary citizen in many ways. During the autumn semester, 2015, beginning on August 28, the WVU Planetarium will present *To Space and Back*. Lasting about 25 minutes, it is an excellent reminder of what we, who stay on the ground, have to thank the space program for.

Here are just a few examples of the things that the space program has brought to us and made our lives better.

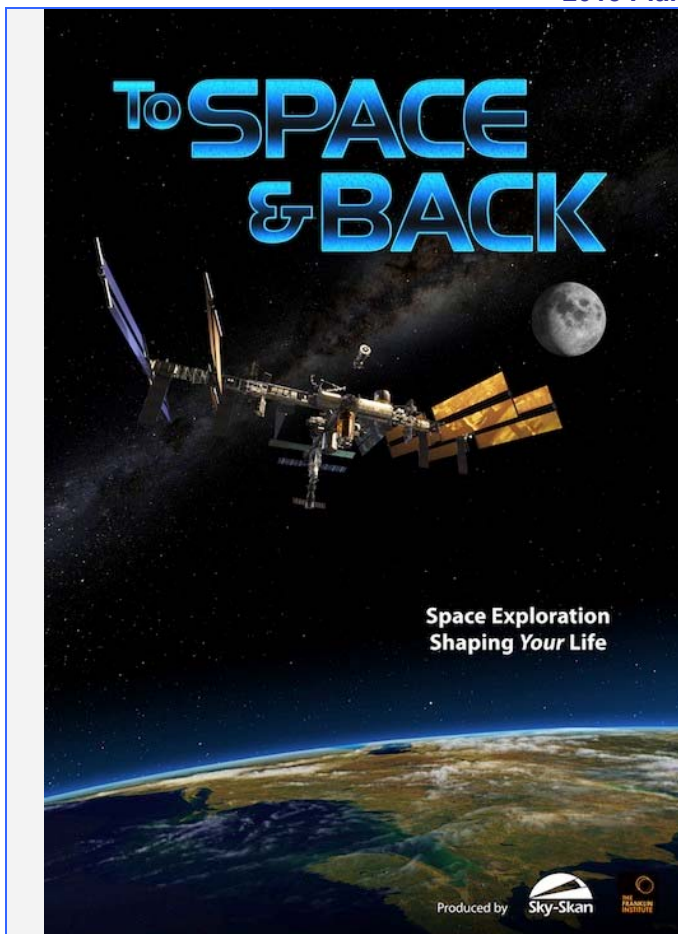
1. Originally designed to find small imperfections in space craft and other space bound equipment, CAT (computerized axial tomography) scanners are now used by physicians to help with the early detection of various diseases and conditions.
2. If you have a cell phone, use a computer, or drive a car, you can thank the developers of the microprocessors found within these and many other smart devices which come directly from integrated circuits originally designed for the Apollo Space Program's guidance systems.
3. Memory foam which is used in many modern mattresses came from the need to improve impact absorption in astronauts' seats and helmets.
4. Campers and other outdoor minded people use freeze-dried foods originally designed for space travelers. All you have to do is add water and heat. The idea is that you do not have to carry the water weight of hydrated food. You get the water from a clean source where you are camping. The taste is not bad.
5. Another invention designed to keep harmful bacteria out of the astronauts' water supply, gave us portable water filters. Before this there were only iodine pills, effective, but not very tasty.

6. A life saver in many situations, the home smoke detector was of NASA origin.
7. Although not exactly invented for the space program, the Soaper Soaker, later called Super Soaker, was the brainchild of a NASA engineer named Lonnie G. Johnson. First introduced in 1982, this device has made summer a little more fun for our younger citizens, though opinions of parents might differ.
8. Monitoring an astronaut's core temperature was important in keeping track of the inside temperature of the space pilot. This was done by having him swallow a wireless thermometer. It is now used to keep a close eye on athletes during training.
9. Those highly reflective metallic blankets used by first responders and marathon runners were a NASA development.
10. Adam Kissiah, a former NASA engineer, who also is hearing impaired, conceived of a digital device, called a cochlear implant that was a huge improvement over analog hearing aids which only amplified sound, but not improving its clarity. This device has helped over 200,000 people around the world rejoin the world of sound.
11. Another life enhancing (saving) development is the insulin pump. Persons who are afflicted with Type 1 diabetes (insulin-dependent diabetes) have benefitted from technology developed at the Goddard Space Flight Center which came initially from the need to oversee an astronaut's vital signs while in space.

To keep up to date about things from NASA that directly improve the quality of our lives, go to *Spinoff* at <https://spinoff.nasa.gov/>

If you would like to see the show, you can make reservations at (304)293-4961 or e-mail lhough3@mix.wvu.edu. The entire first semester show schedules can be found at <http://planetarium.wvu.edu/shows>.

2015 Planetarium Shows



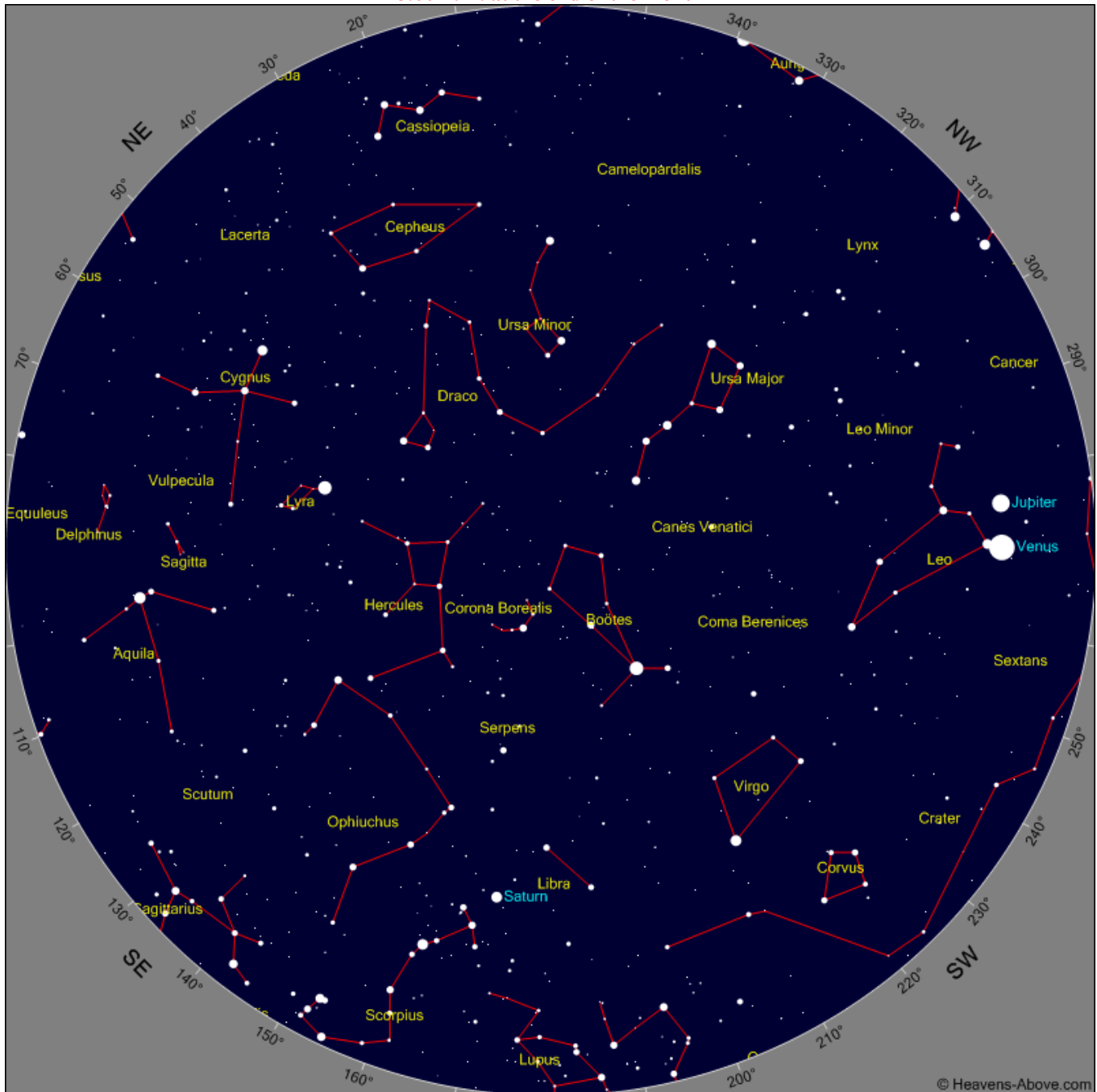
July Closed	August 28 8:00 P.M. <i>To Space & Back</i> 9:00 P.M. <i>Impact Earth</i>	September 11 & 25 8:00 P.M. <i>To Space & Back</i> 9:00 P.M. <i>Impact Earth</i>
October 9 & 23 7:00 P.M. <i>To Space & Back</i> 8:00 P.M. <i>Impact Earth</i>	November 13 & 20 7:00 P.M. <i>To Space & Back</i> 8:00 P.M. <i>Impact Earth</i>	December 4, 11, & 18 7:00 P.M. <i>Season of Light</i> 8:00 P.M. <i>Season of Light</i>

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 Logan Hough at (304)293-4961, or by email at: lhough3@mix.wvu.edu

Selected Sunrise/Sunset and Moon Rise/Moon Set Times

Date	Sunrise	Sunset	Moon Rise	Moon Set	Moon Phase
July 1	5:56 A.M.	8:51 P.M.	8:22 P.M.	5:40 A.M.	Full Moon
July 8	5:59 A.M.	8:50 P.M.	12:35 A.M.	1:25 P.M.	Last Qtr
July 15	6:04 A.M.	8:47 P.M.	5:50 A.M.	8:18 P.M.	New Moon
July 24	6:11 A.M.	8:41 P.M.	2:18 P.M.	12:41 A.M.	First Qtr
July 31	6:18 A.M.	8:35 P.M.	8:37 P.M.	6:32 A.M.	Full Moon
Aug 6	6:23 A.M.	8:29 P.M.	NA	1:30 P.M.	Last Qtr
Aug 14	6:30 A.M.	8:19 P.M.	6:33 A.M.	8:11 P.M.	New Moon
Aug 22	6:38 A.M.	8:08 P.M.	2:01 P.M.	NA	First Qtr
Aug 29	6:45 A.M.	7:57 P.M.	7:52 P.M.	6:29 A.M.	Full Moon
Sept 5	6:51 A.M.	7:47 P.M.	NA	2:29 P.M.	Last Qtr
Sept 13	6:58 A.M.	7:34 P.M.	7:15 A.M.	7:45 P.M.	New Moon
Sept 21	7:06 A.M.	7:21 P.M.	2:37 P.M.	NA	First Qtr
Sept 27	7:11 A.M.	7:11 P.M.	7:01 P.M.	6:27 A.M.	Full Moon

July 2015 Year 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](http://www.heavens-above.com/) at <http://www.heavens-above.com/>

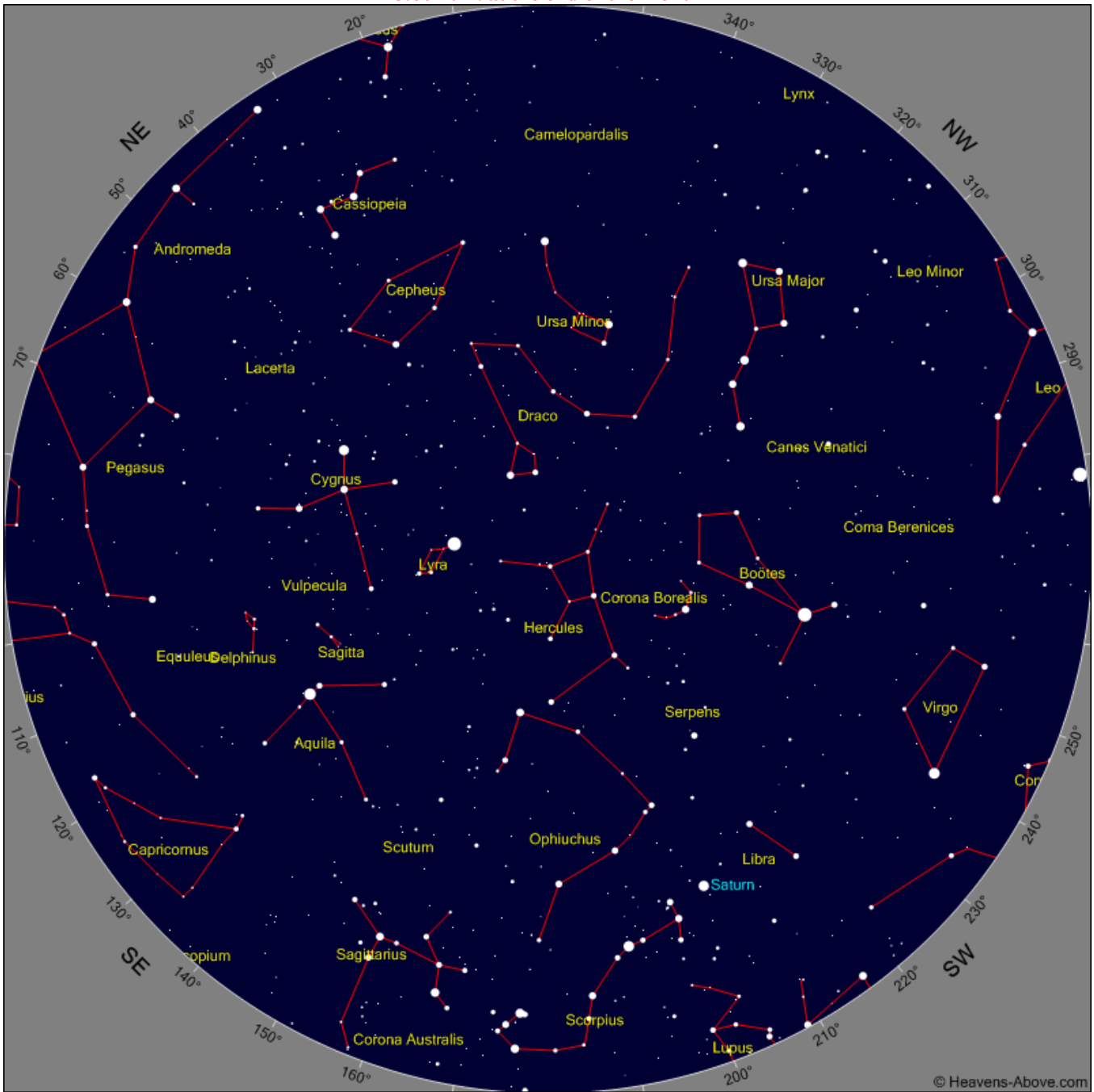
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August 2015 Sky Chart* for:
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 9:00 P.M. in the middle of the month
 8:00 P.M. at the end of the month



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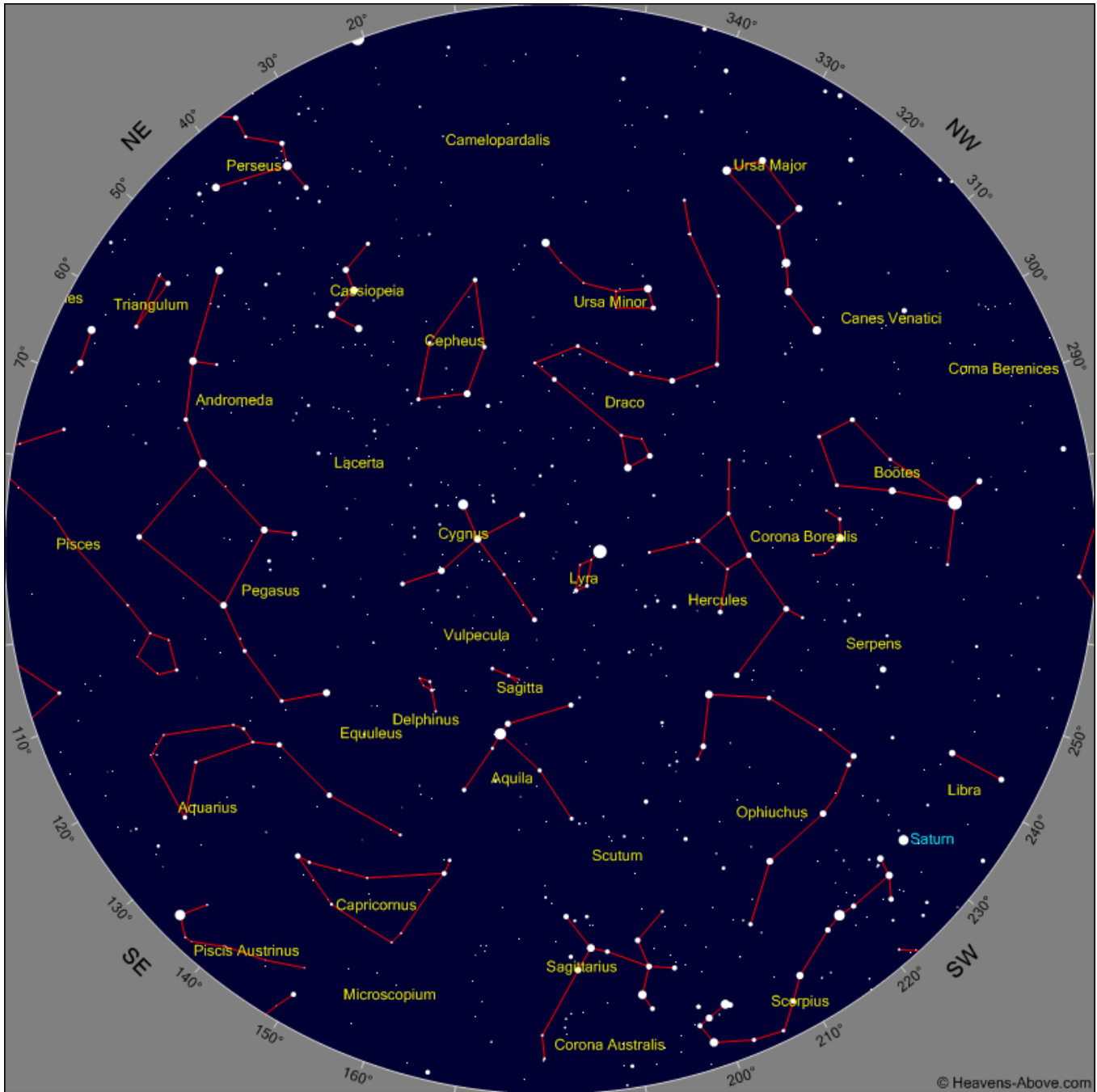
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September 2015 Sky Chart* for:
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