



All of The Above

Presents



PLUTO: Dwarf Planet of the Month



and the HST Pluto Companion Search Team

New Horizons: July 2015

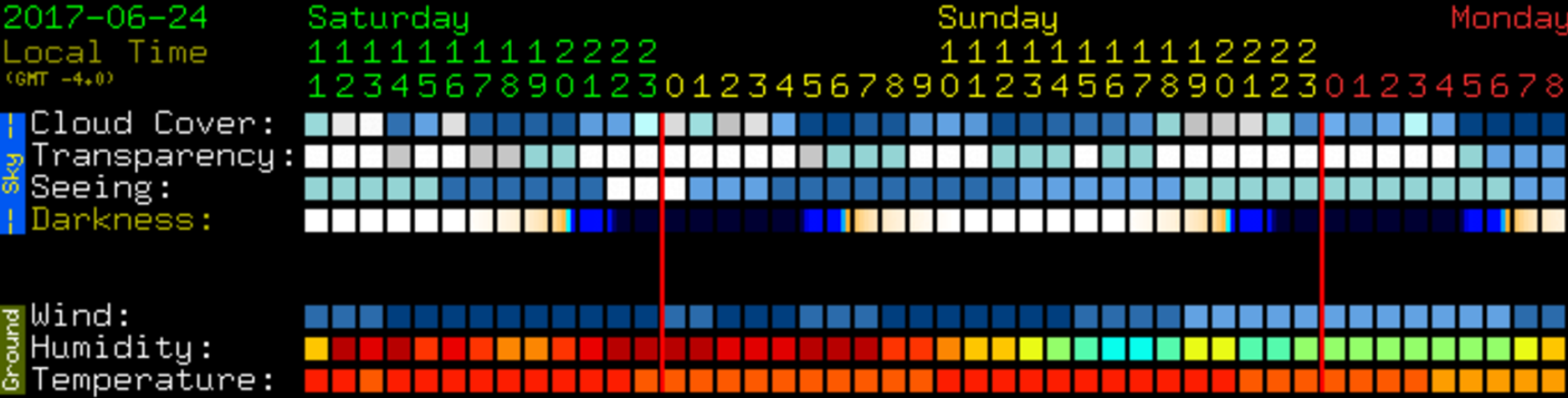


It's a small, small World



Current Conditions at Jon Wood Field

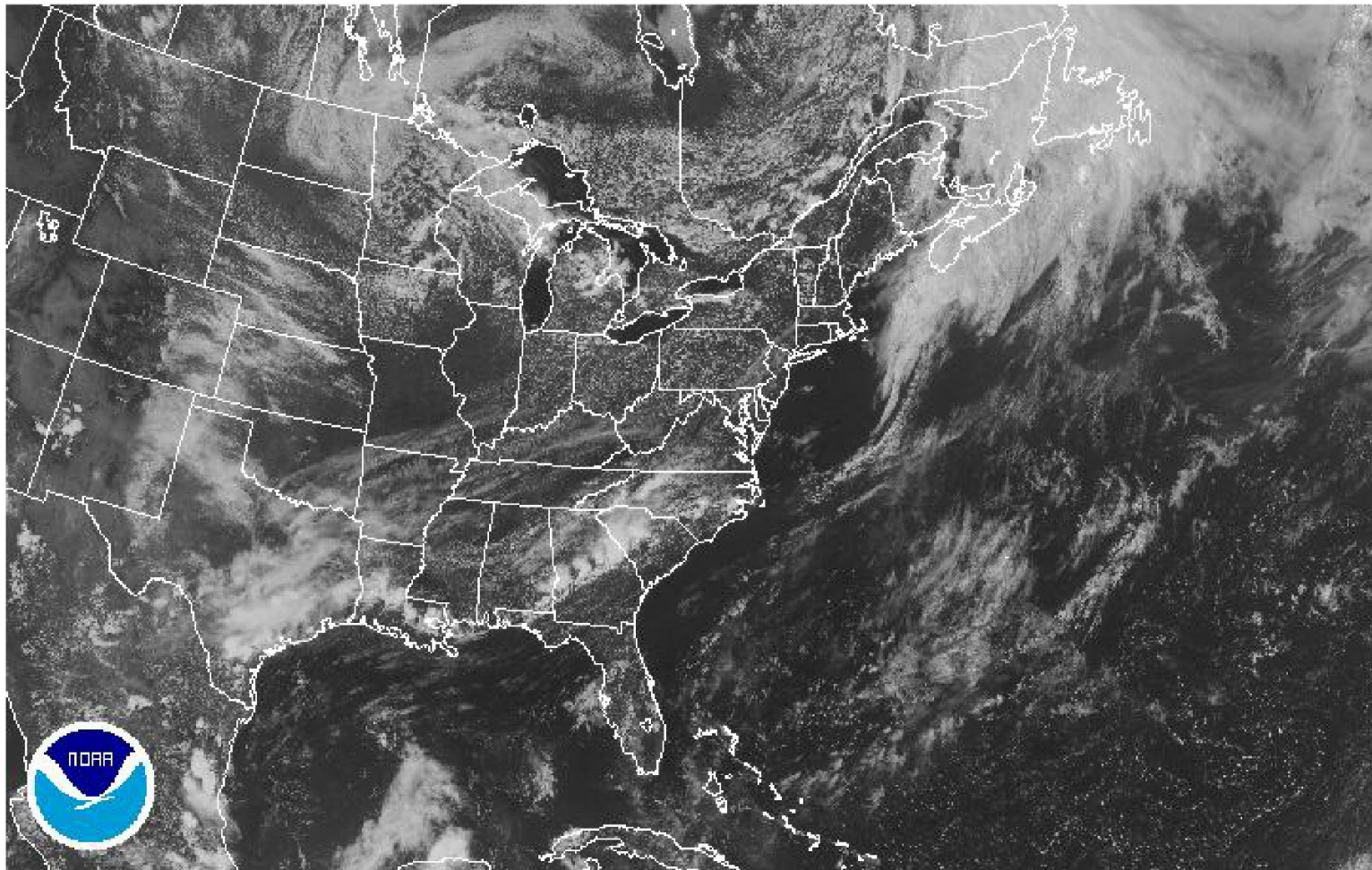
Charlie Elliott WLC Clear Sky Chart





Current Conditions at Jon Wood Field

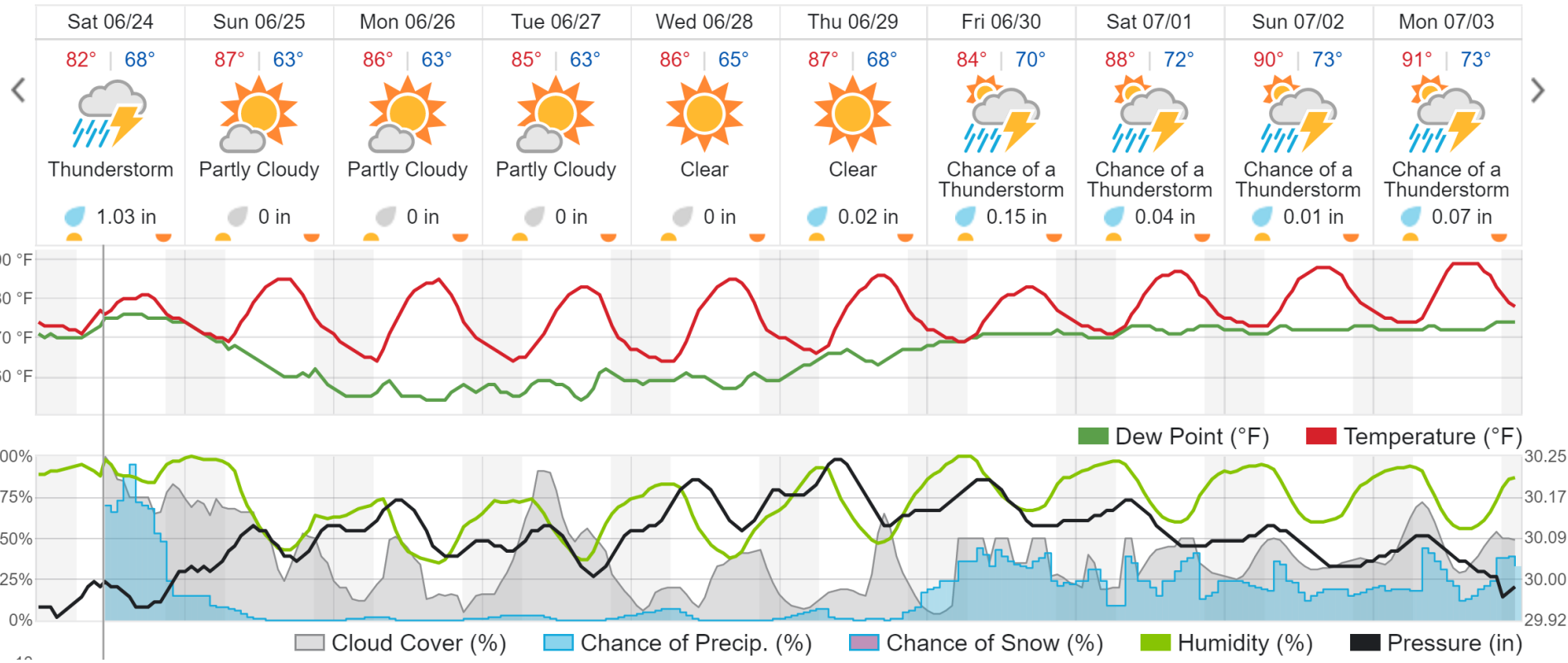
(visible satellite: <http://www.ssd.noaa.gov/goes/east/eaus/flash-vis.html>)





Current Conditions at Jon Wood Field

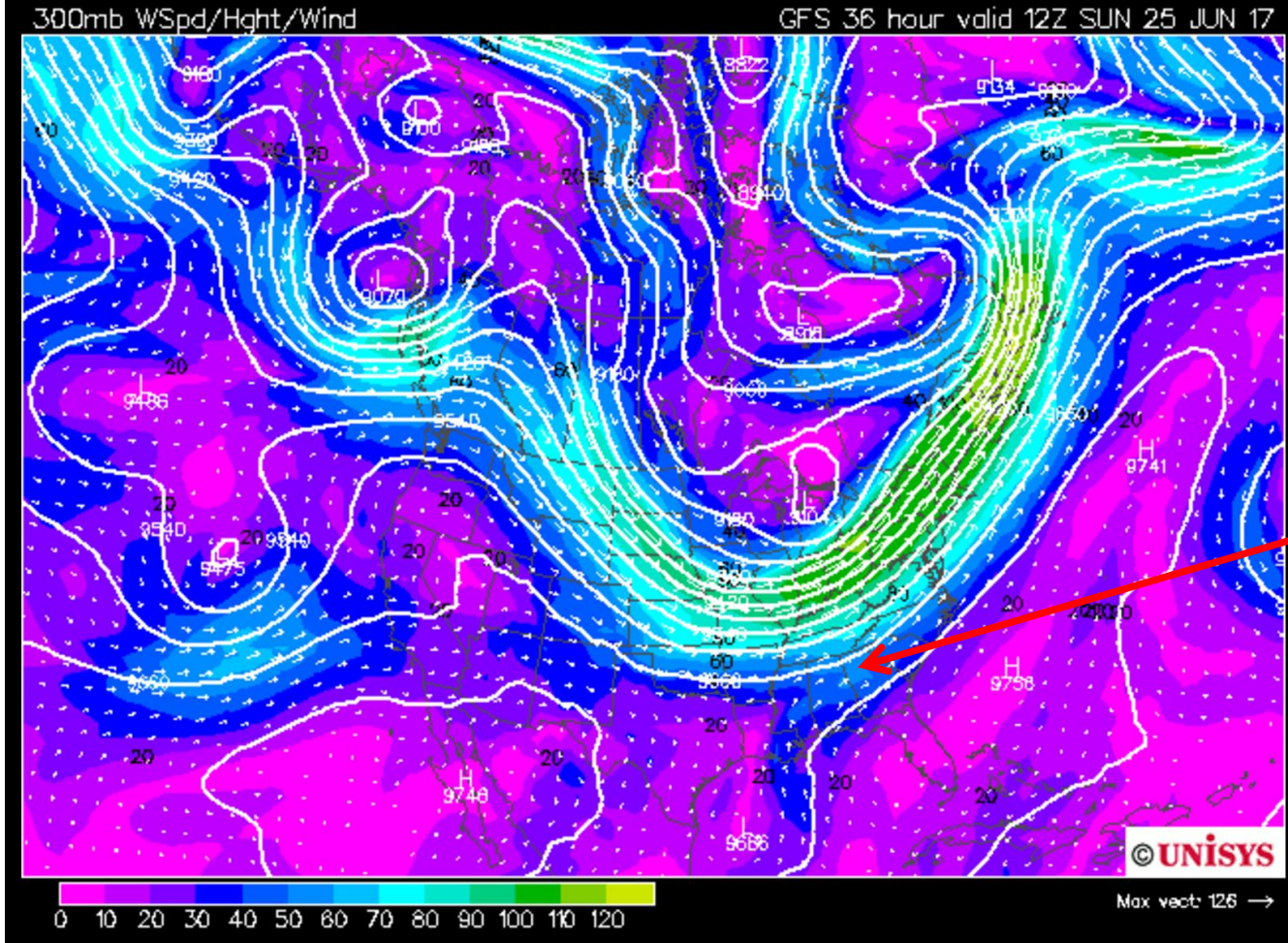
(Weather forecast data by www.wunderground.com)





Current Conditions at Jon Wood Field

(Jet Stream data by www.weatherstreet.com)





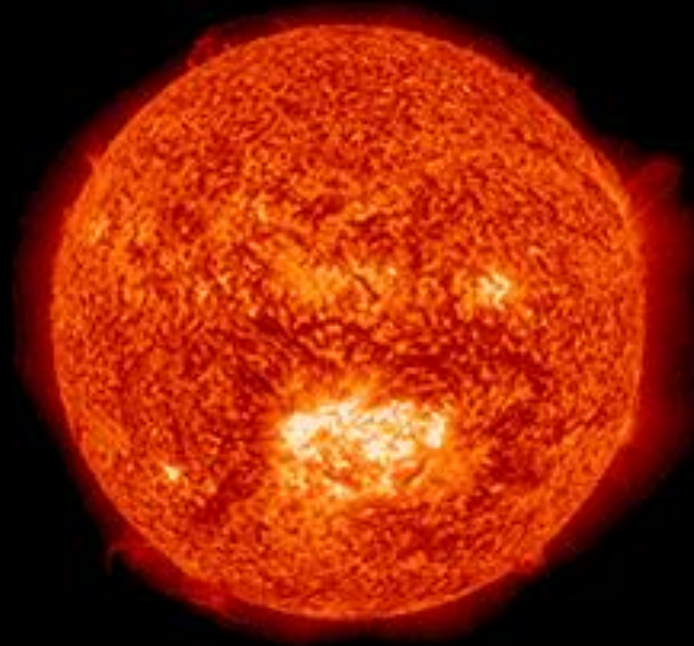
The Solar System: June 24, 2017

Body	Constellation	Rise	Set	When to View
Sun	Gemini	6:26 AM	8:50 PM	Until almost 9:00 tonight ☹
Moon	Gemini	7:06 AM	9:29 PM	Where did I say the Sun was?
Mercury	Gemini	6:39 AM	9:12 PM	About that Sun....
Venus	Aries	3:39 AM	5:16 PM	East before dawn
Mars	Gemini	7:10 AM	9:33 PM	Lets talk about the Sun...
Jupiter	Virgo	2:24 PM	2:09 AM	Most of the night
Saturn	Ophiuchus	7:55 PM	5:59 AM	All night long baby!!!
Uranus	Pisces	2:39 AM	3:38 PM	Just before dawn
Neptune	Aquarius	12:45 AM	12:11 PM	Graveyard shift
Pluto	Sagittarius	9:40 PM	7:47 AM	Now until August!!





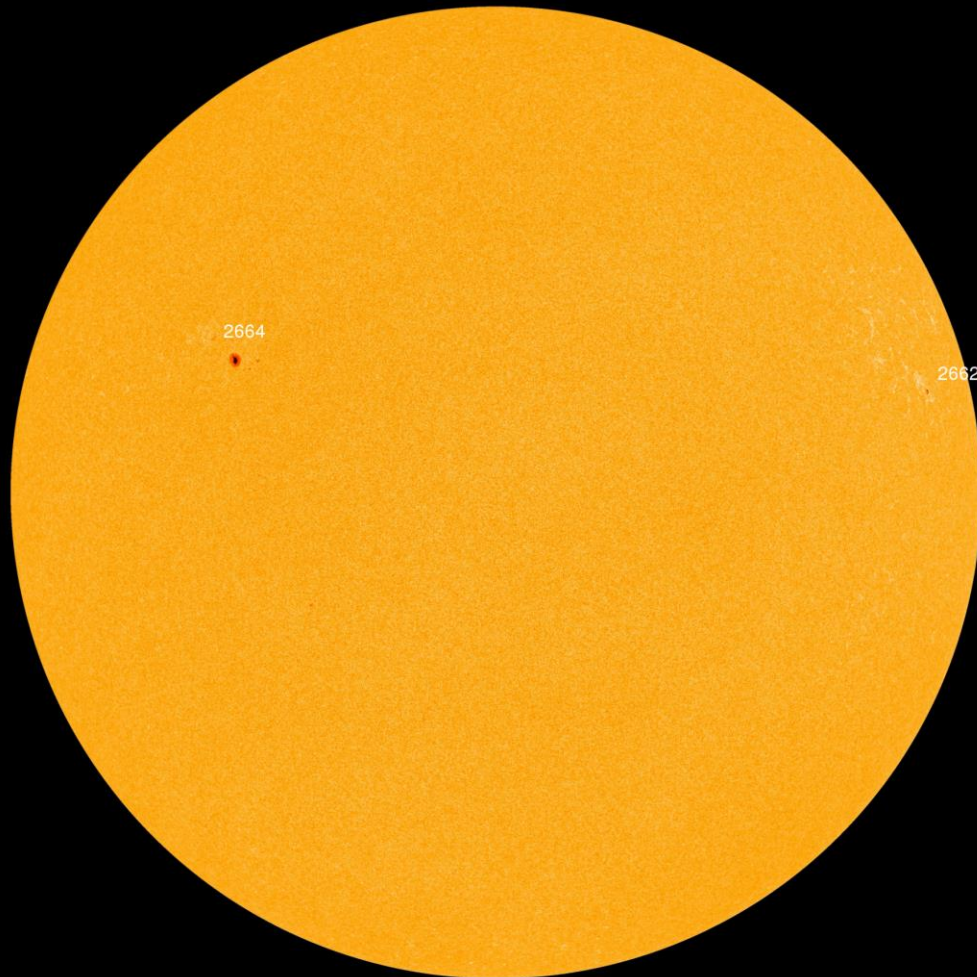
The Solar Update





The Sun: June 24, 2017

Solar image by www.spaceweather.com



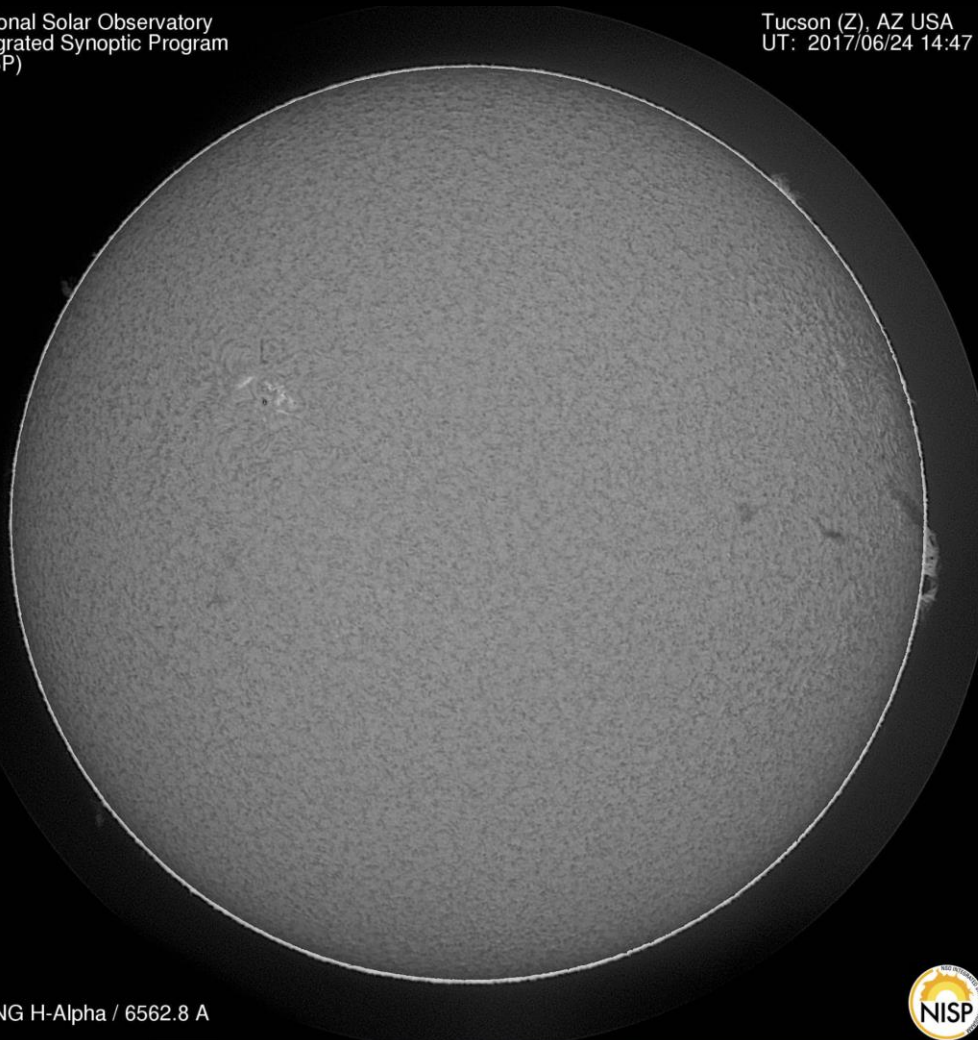


The Sun-H α : June 24, 2017

Image by www.gong2.nso.edu – Tucson, AZ

National Solar Observatory
Integrated Synoptic Program
(NISP)

Tucson (Z), AZ USA
UT: 2017/06/24 14:47



GONG H-Alpha / 6562.8 A





The Sun: June 24, 2017

Sunspot Report

:Product: 0624SRS.txt
:Issued: 2017 Jun 24 0030 UTC
Prepared jointly by the U.S. Dept. of Commerce, NOAA,
Space Weather Prediction Center and the U.S. Air Force.
#

Joint USAF/NOAA Solar Region Summary

SRS Number 175 Issued at 0030Z on 24 Jun 2017

Report compiled from data received at SWO on 23 Jun

I. Regions with Sunspots. Locations Valid at 23/2400Z

Nmbr	Location	Lo	Area	Z	LL	NN	Mag	Type
2662	N13W65	052	0020	Hrx	01	01	Alpha	
2664	N18E35	312	0070	Hsx	02	01	Alpha	

IA. H-alpha Plages without Spots. Locations Valid at 23/2400Z Jun

Nmbr Location Lo

None

II. Regions Due to Return 24 Jun to 26 Jun

Nmbr Lat Lo

None

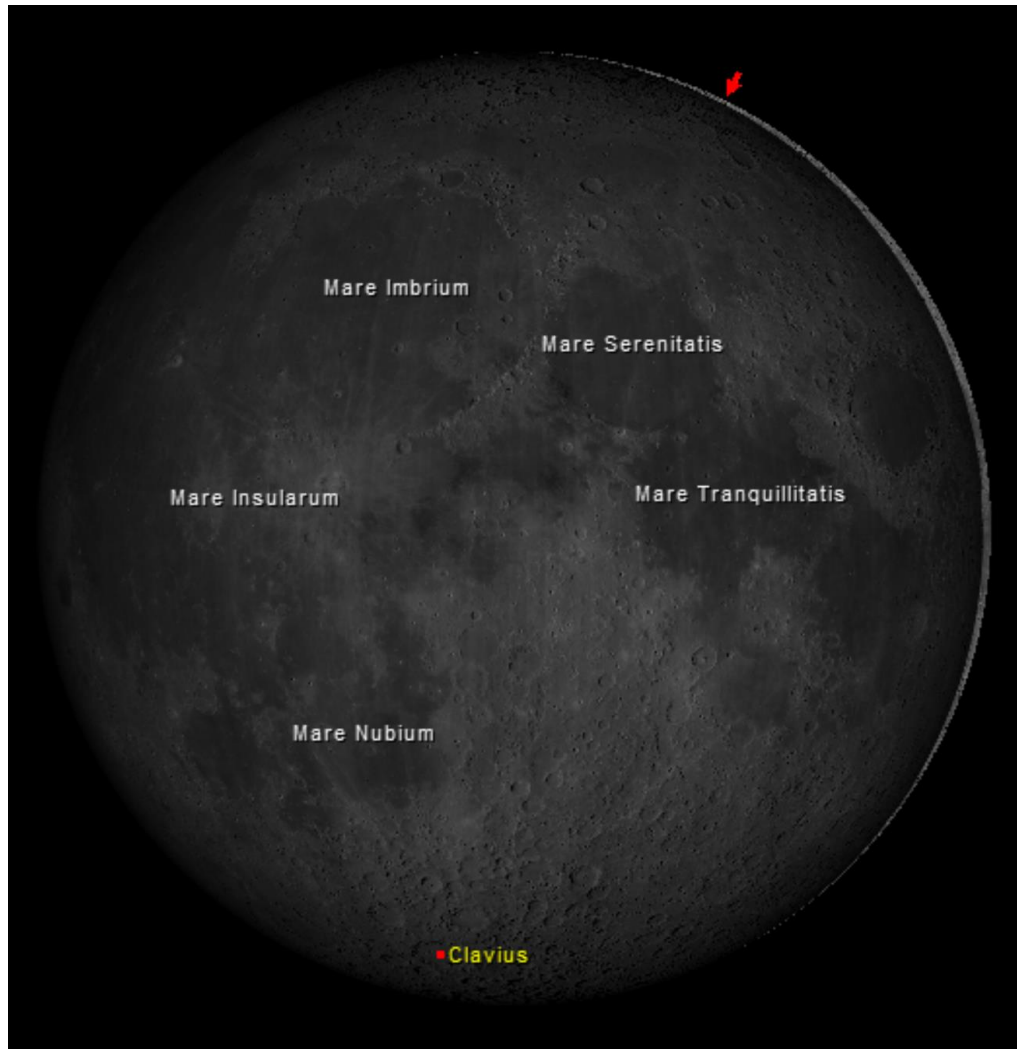


The Lunar Update





The Moon: June 24, 2017



Lunation: 0.8 Day

Illumination: 0.9%

Mag: +1.6

Distance:

224,084 mi

359,638 km

1.20 Light Second

Apparent Diameter: 33.2'

Location: Gemini

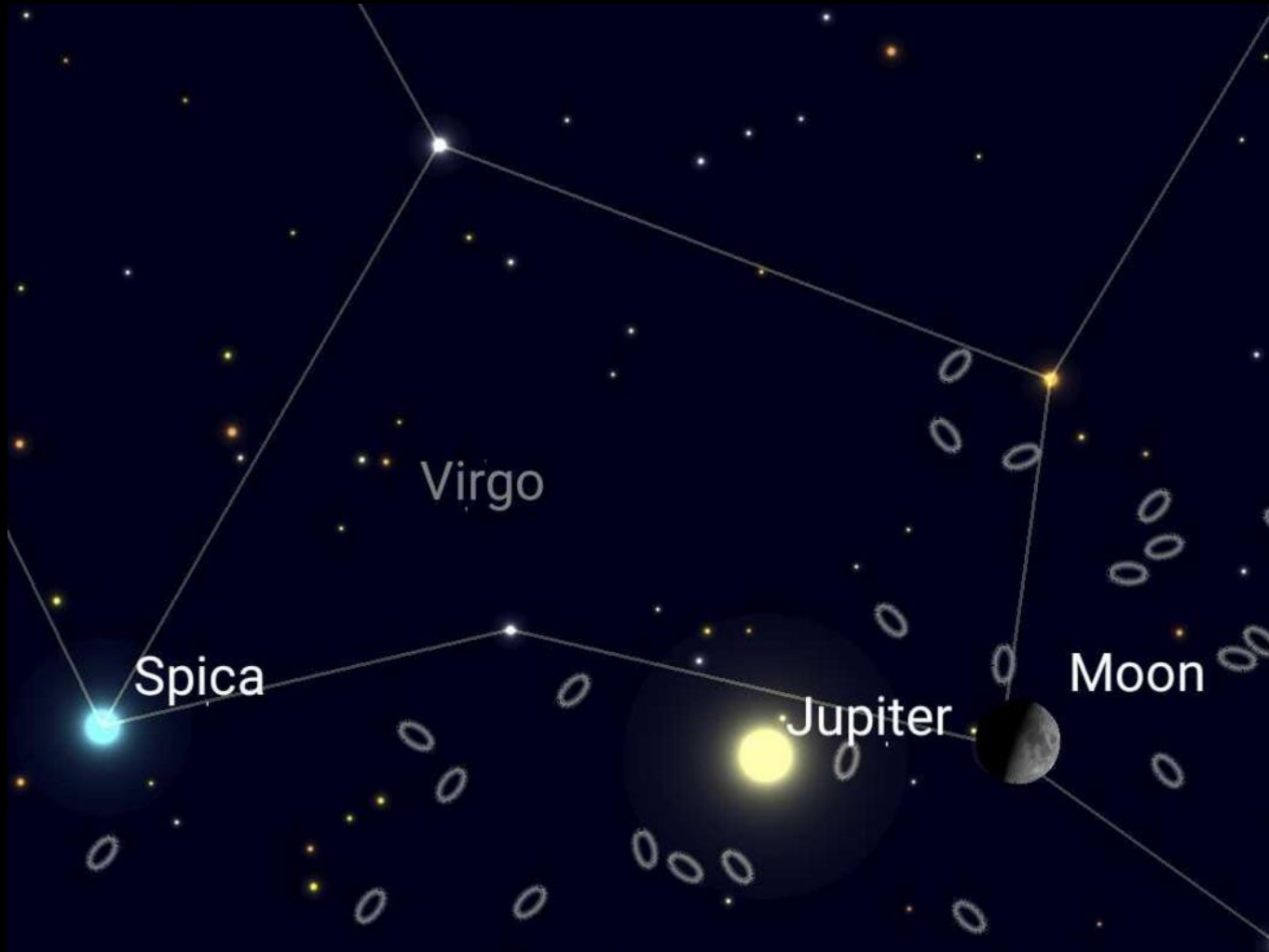


Lunar Events for June/July

- **June 23rd – New Moon (Last night)**
- **June 27th – 0.03° conjunction with Regulus 9:00PM EDT**
- **June 30th – 1st Quarter**
- **June 30th – Moon occults Porrima (Υ Virginis) 10:59 PM EDT**
- **July 9th – Full Moon and Pluto conjunction**
- **July 16th – Last Quarter**
- **July 19th - 0.4° conjunction with Aldebaran 8:00 PM EDT**



The moon is going to do **WHAT** to Porrima?



June 30, 10:59PM EDT



Solar System Update

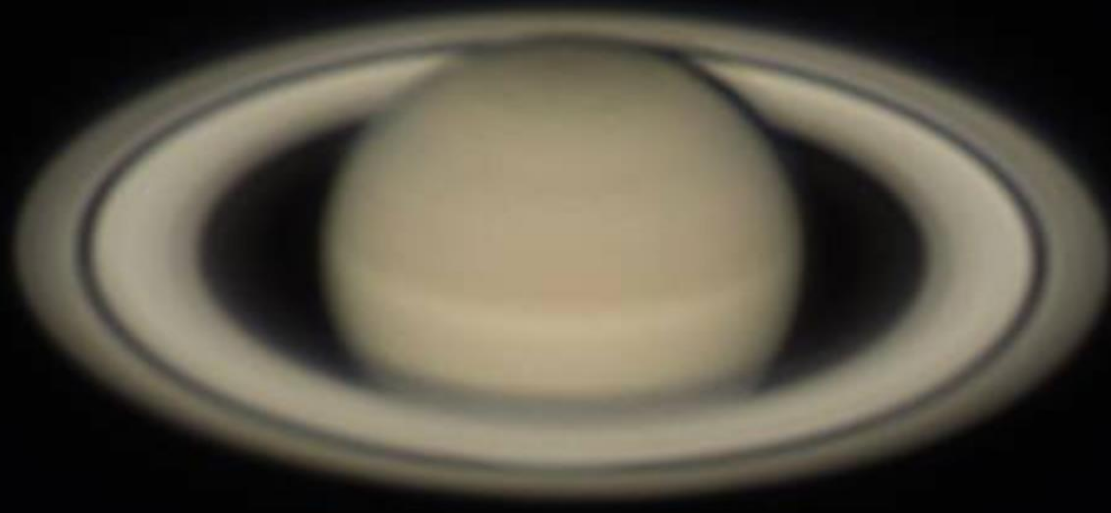


Image of the Month

Saturn
May 16, 2017
Chris Horne



Where is Jupiter Tonight?



S

W

Date and Time ✕

Date and Time				Julian Day					
2017	/	6	/	24	23	:	17	:	39



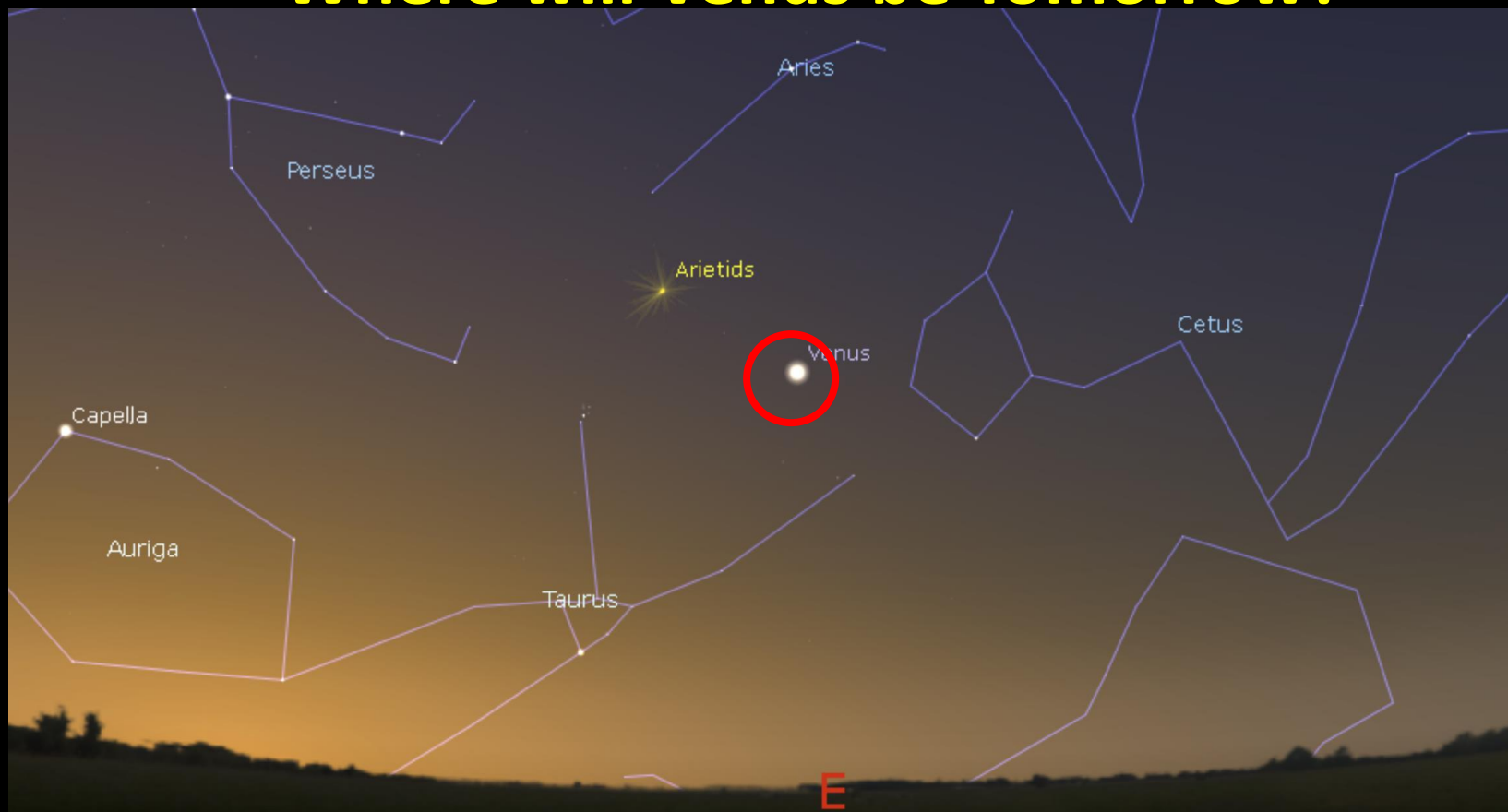
Where is Saturn Tonight?



Date and Time							X		
Date and Time			Julian Day						
2017	/	6	/	24	23	:	21	:	23



Where will Venus be Tomorrow?



Date and Time ✕

Date and Time			Julian Day		
2017	/	6 / 25	5	:	50 : 53



Pluto: (Dwarf) Planet of the Month



At opposition on July 10, 2017

**Located $1^{\circ} 44' 20''$ E of Pi Sagittarii
(Albaldah)**

Located SE of the bowl of the Teaspoon

Magnitude +14.2

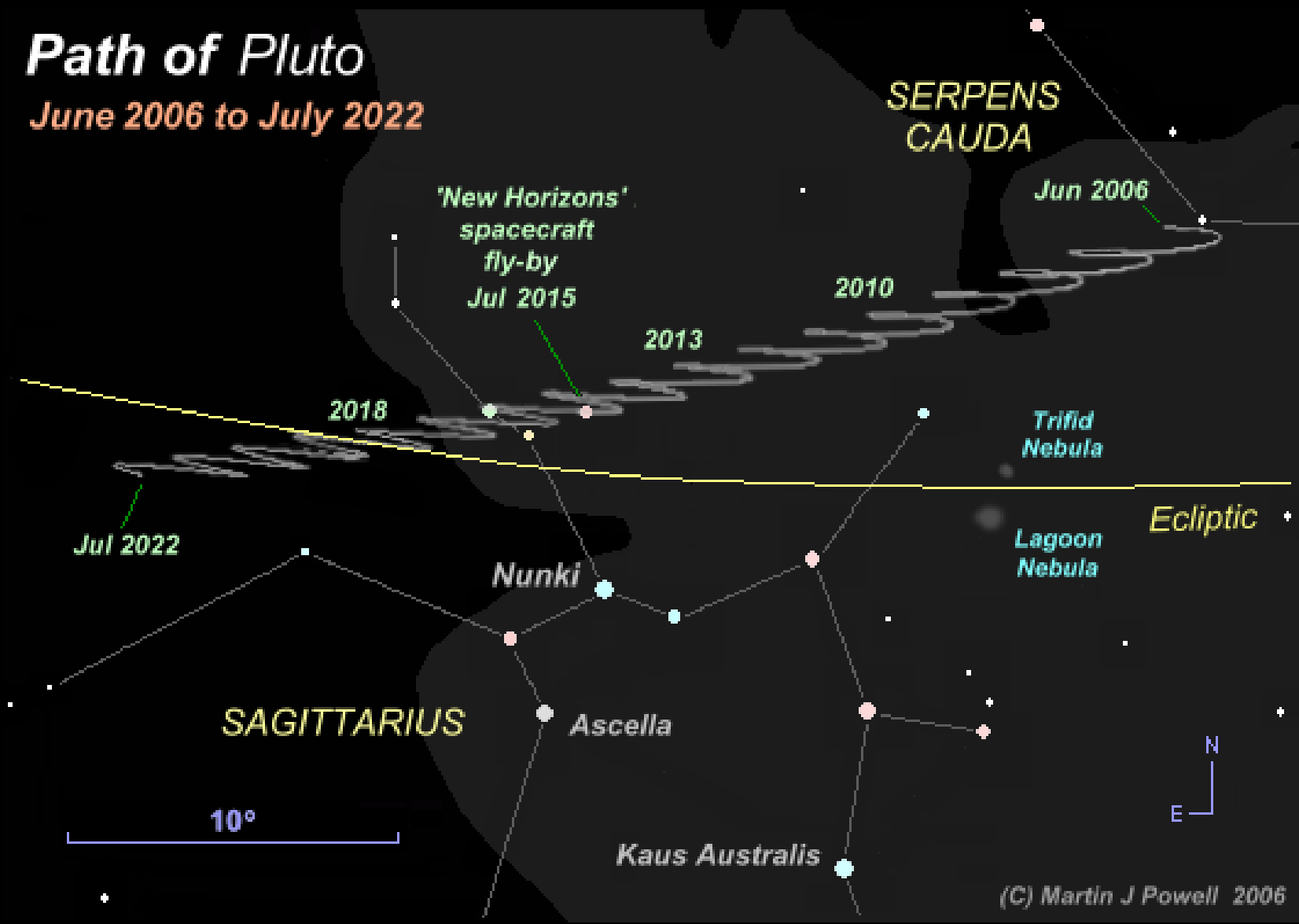
0.1 Arc Second

Good Luck with That!!



Path of Pluto

June 2006 to July 2022



(C) Martin J Powell 2006



Where is Pluto Tonight?



Date and Time

Date and Time			Julian Day						
2017	/	6	/	24	23	:	23	:	34



Pluto... Where are you???





If you want more detail...

**Dust off your wallet and buy the July
copy of:**

Sky and Telescope (pages 48-49)

Astronomy Magazine (pages 58-59)



Constellation Update

Stale in the West:

Leo	Ursa Major
Leo Minor	Lupus
Corvus	

Meridian Crossing:

Libra	Hercules
Scorpius	Corona Borealis
Ophiuchus	Draco
Serpens	Ursa Minor

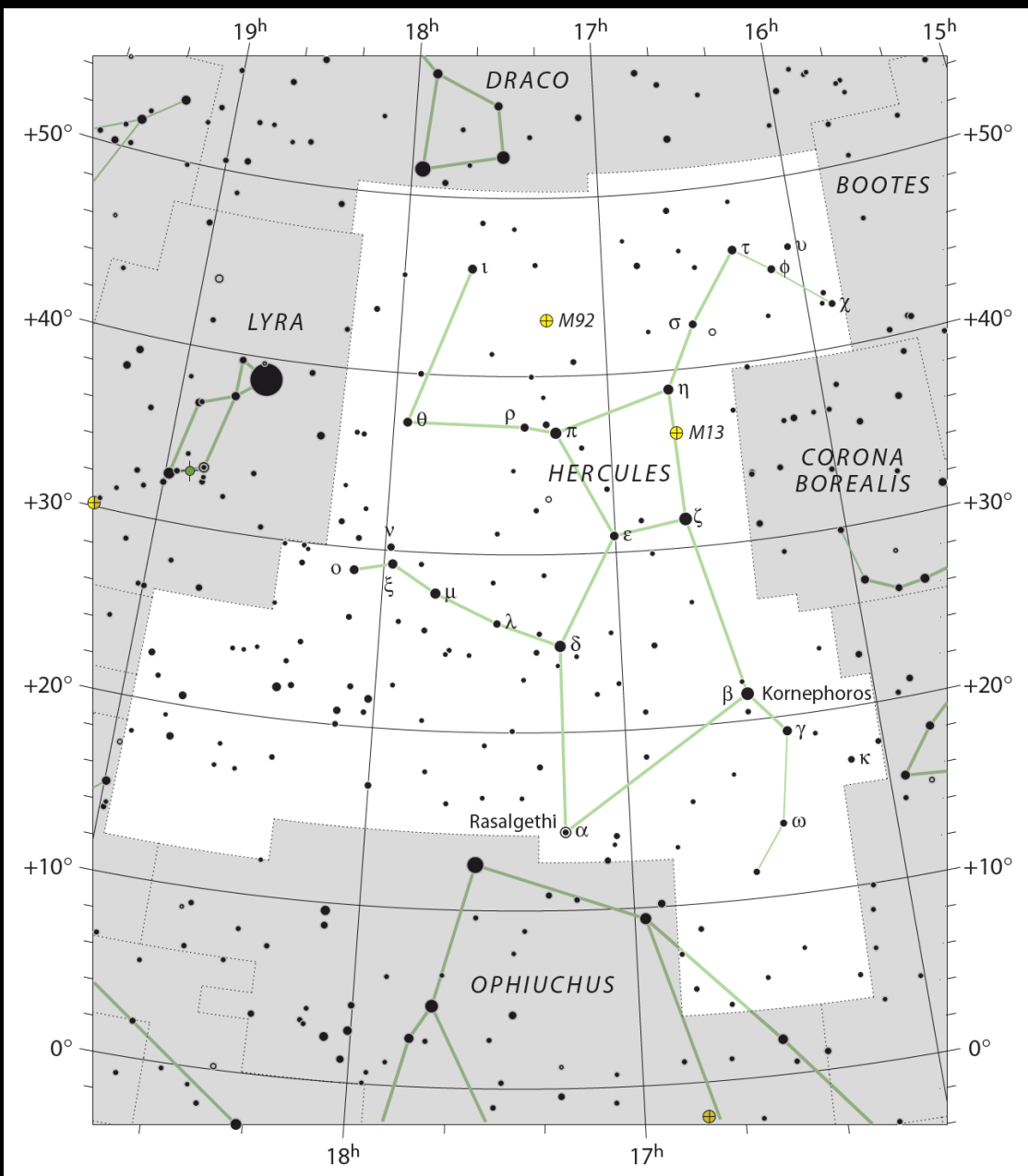
Fresh from the East:

Cepheus	Aquila
Cygnus	Scutum
Vulpecula	Sagittarius
Sagitta	Delphinus

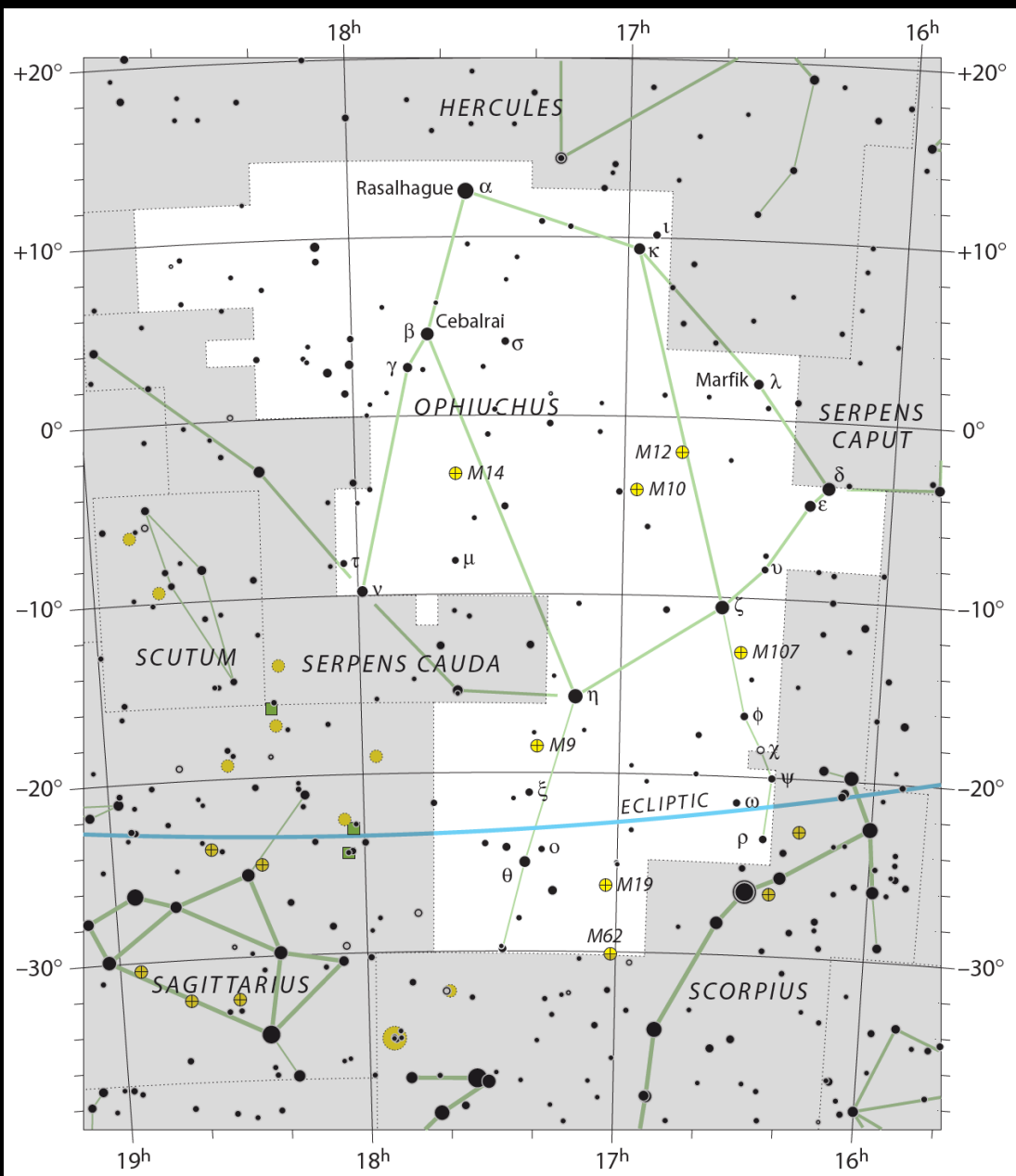


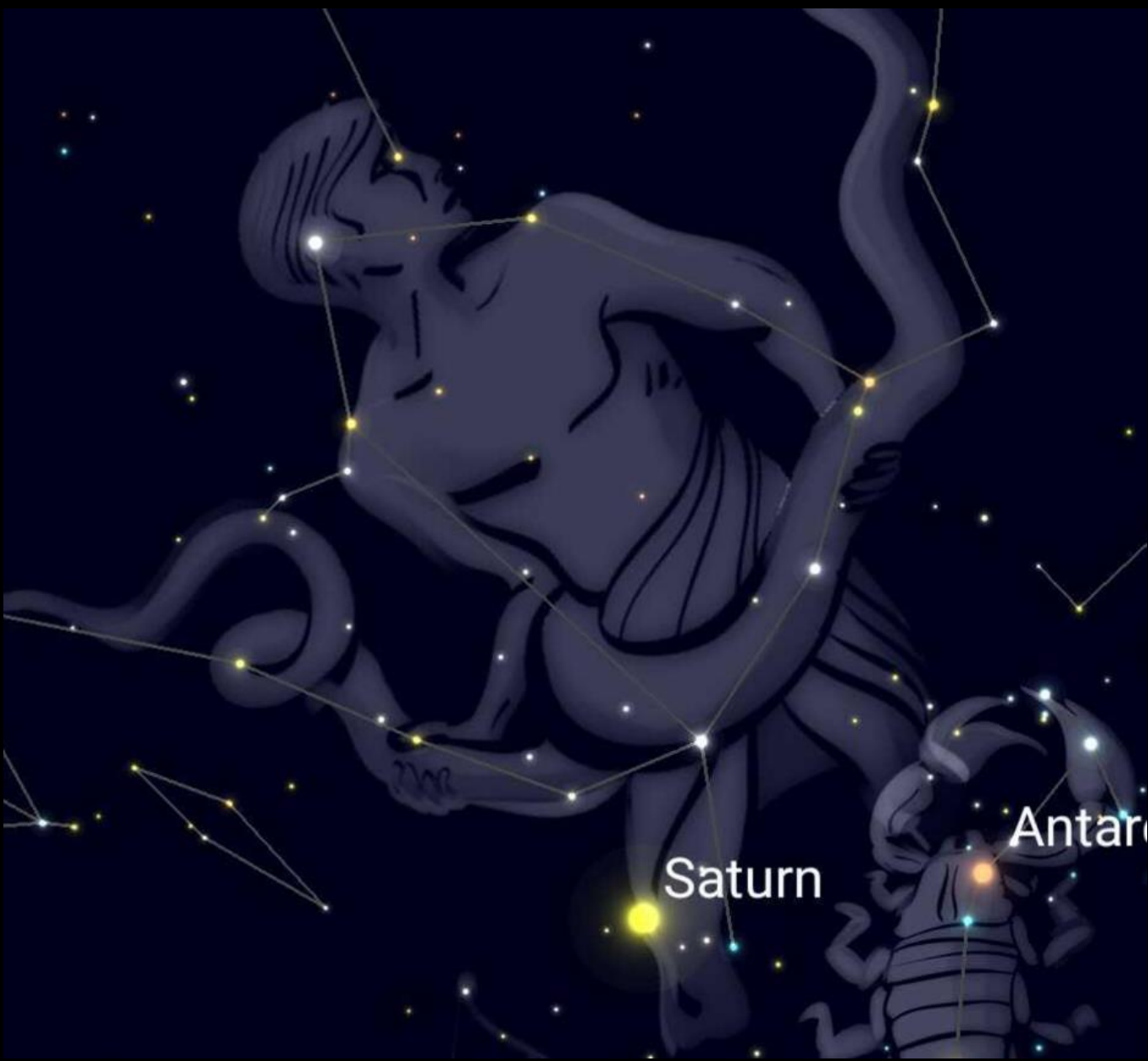
Valorie's Constellations of the Month:

- **Hercules**
- **Ophiuchus**
- **Serpens Caput**
- **Serpens Cauda**



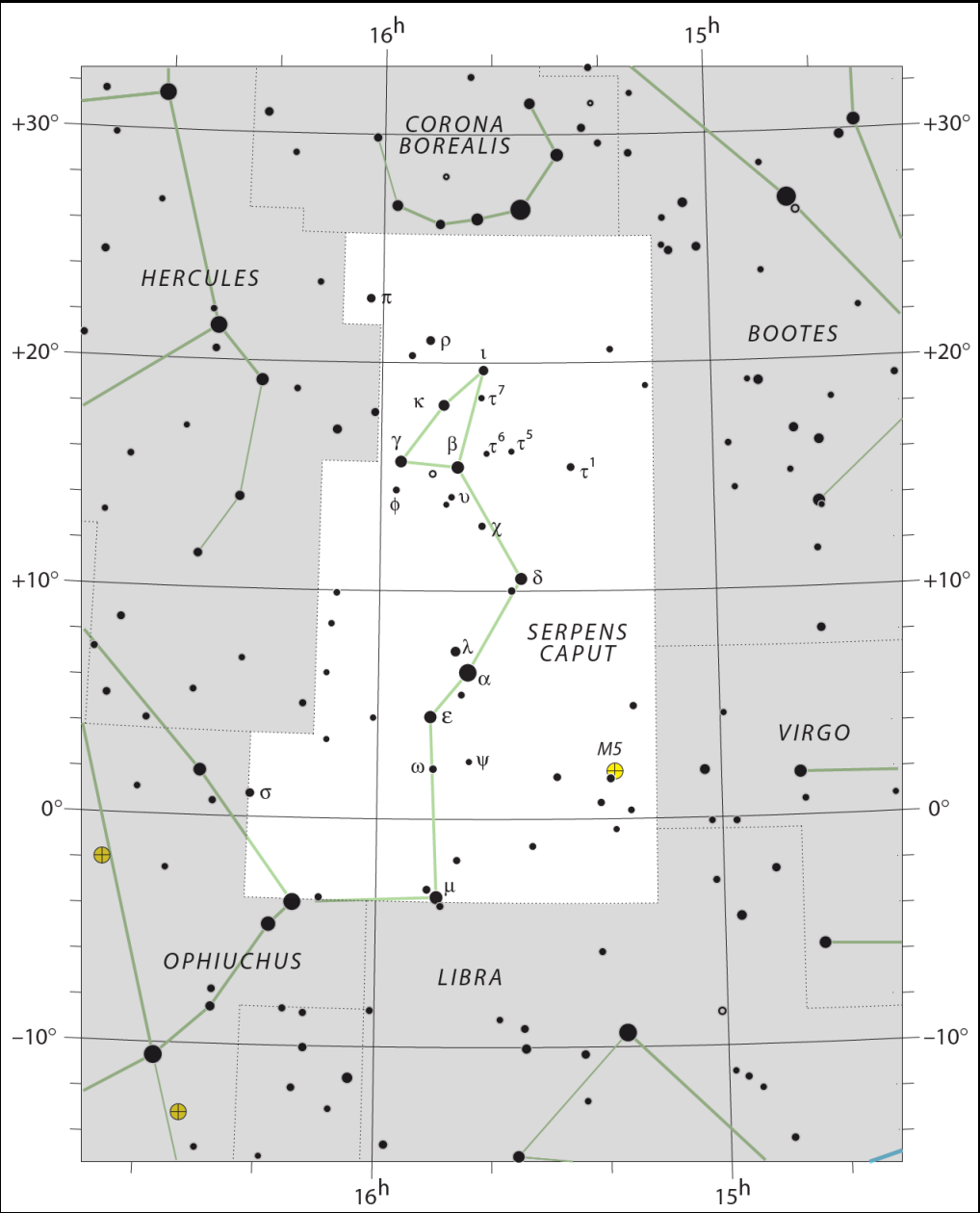




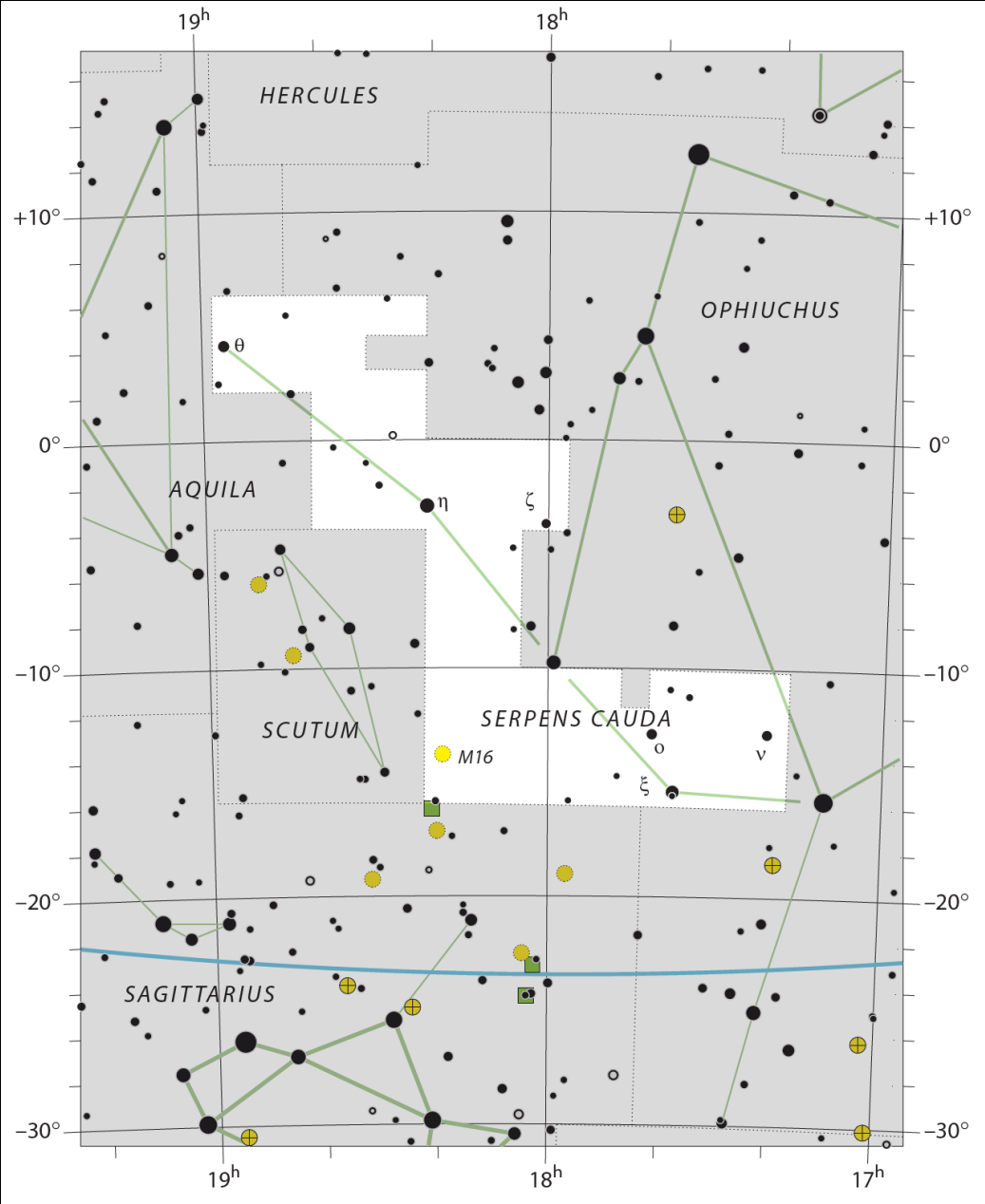


Saturn

Antar



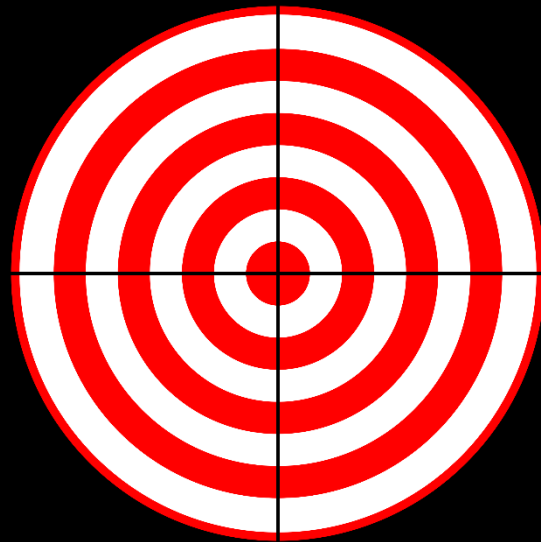










May/June Target Lists









June/July Target List: Relaxing Piece of cake

Target	Type	Constellation	Notes	Image
Saturn	P	Ophiuchus	I know it was on my list last month, but it is so cool!	
M10	GC	Ophiuchus	Mag +6.4, Class VII Globular	
M12	GC	Ophiuchus	Mag +7.6, Class IX Globular	
IC 4665	OC	Ophiuchus	“Summer Beehive Cluster”. Best views in binoculars.	
M107	GC	Ophiuchus	Mag +8.9, Class X Globular	







June/July Target List: Intriguing

Small to medium telescopes

Target	Type	Constellation	Notes	Image
M4	GC	Scorpius	Mag +5.9, Class IX Globular next to Antares.	
Rho Oph	DS	Ophiuchus	Multiple star system with nebulosity. Located just north of Antares	
M57	PN	Lyra	The Ring Nebula. It's summer so you MUST observe it.	
M56	GC	Lyra	The other Messier object in Lyra. Mag +8.3, Cass X Globular between M57 and Albireo	



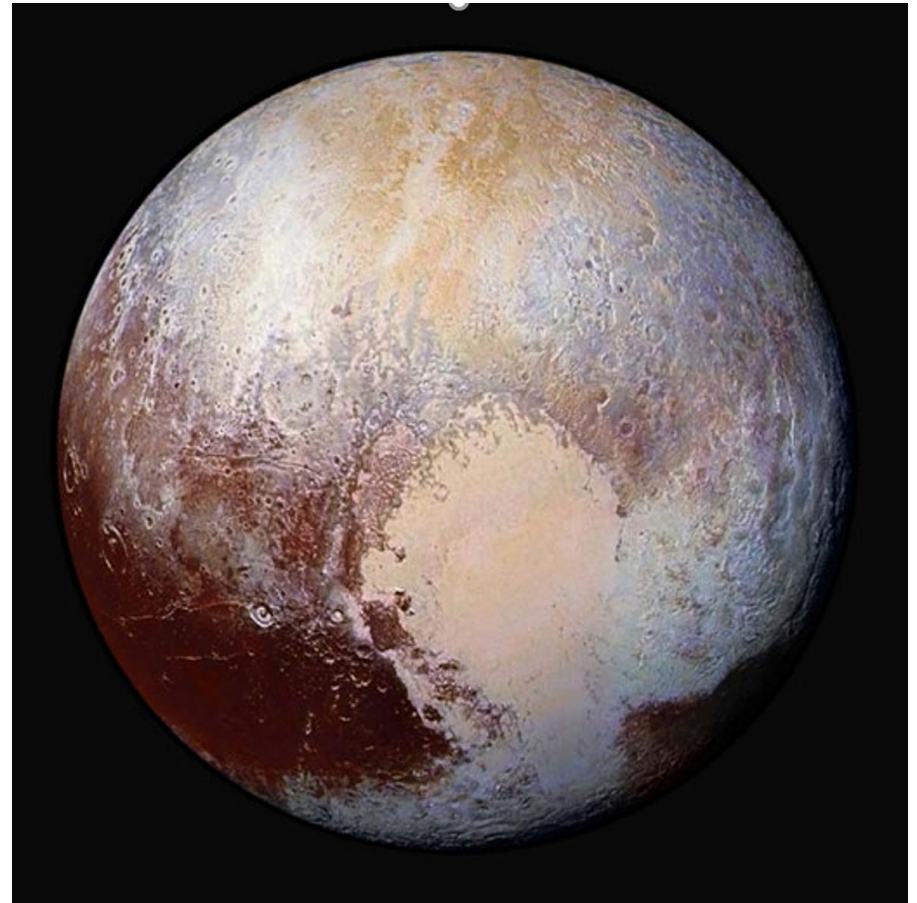
June/July Target List: Taxing Light Buckets and AP

Target	Type	Constellation	Notes	Image
IC 4592	BN	Scorpius	"Blue Horsehead", reflection nebula in Scorpius. Located next to Beta Scorpii.	
NGC 6572	PN	Ophiuchus	Dual lobed, elongated planetary nebula. Mag +9.0, 6"	
IC 1396	BN	Cepheus	"Elephant's Trunk Nebula". Brutal target. I'm sorry...not! 😊	
NGC 6302	PN	Scorpius	"Bug Nebula". Mag +7.2, 3'. Located west of Shaula and Lesath (The stinger of Scorpius)	



June/July Observing Challenge: Pluto

- Mag +14.2
- 0.1"
- RA 19h 19m 39.62s
- Dec -21° 22' 31.0"
- Observe and sketch twice to confirm
- Detailed 14th mag charts required





Astronomical League Observing Program Reminder



Programs with Imaging options for AL Awards:

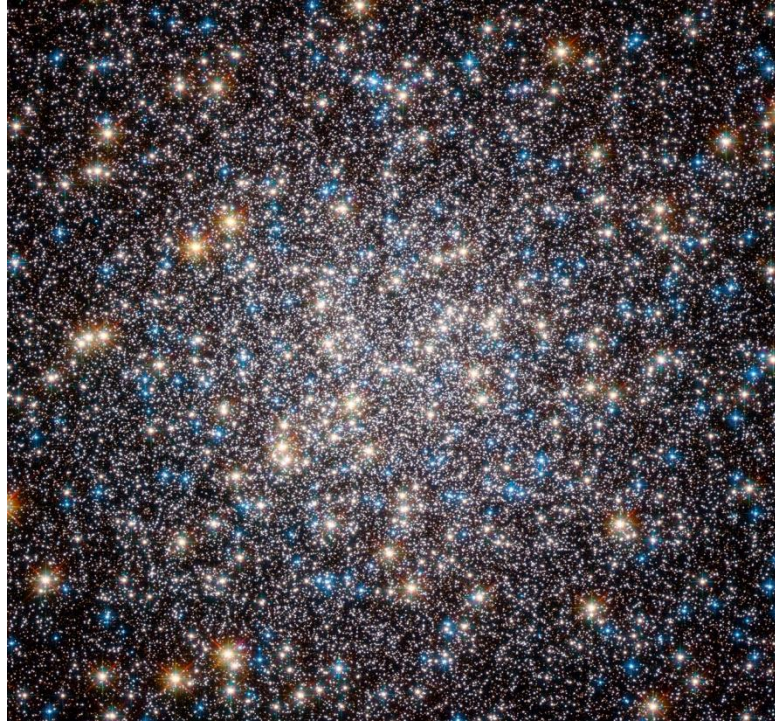
- Bright Nebula
- Dark Nebula
- Two in the View
- Comets
- Asteroids
- Galaxy Groups and Clusters
- Local Galaxy Group
- Arp peculiar galaxies
- Planetary nebula
- Globular Cluster
- Open Cluster



Speaking of Astrophotography...

ASTROPHOTOGRAPHY TARGETS

JUNE - JULY



The month of globular's

NASA Hubble Photo

Beginner Targets

Shoot an evening landscape. Include the moon and planets.

- **Subject: Moon/Planets:** Shoot the young moon, planets at sunset or rise if the timing works. Shoot conjunctions of planets with Moon. Download the Skyweek app.
- **Equipment:** Use a DSLR with 50mm or wider lens on a tripod for terrestrial shots. You can use a point and shoot but turn off the flash and manual override ISO setting to 400 or 800 iso. For DSLR go to manual exposure, use lowest aperture setting. In most cases around a f/ number less than 5. Set to ISO 400 to 800, higher if you have a newer camera. Exposure time could be 1, 2 or 3 seconds to as fast as 1/60th second, experiment. For conjunctions use a zoom lens on tripod. Use low f-stop.
- **Setting:** Try to include some interesting foreground such as water, buildings or just at sunset for pretty sky colors. At sunset or sunrise avoid overexposure as it will washout colors.

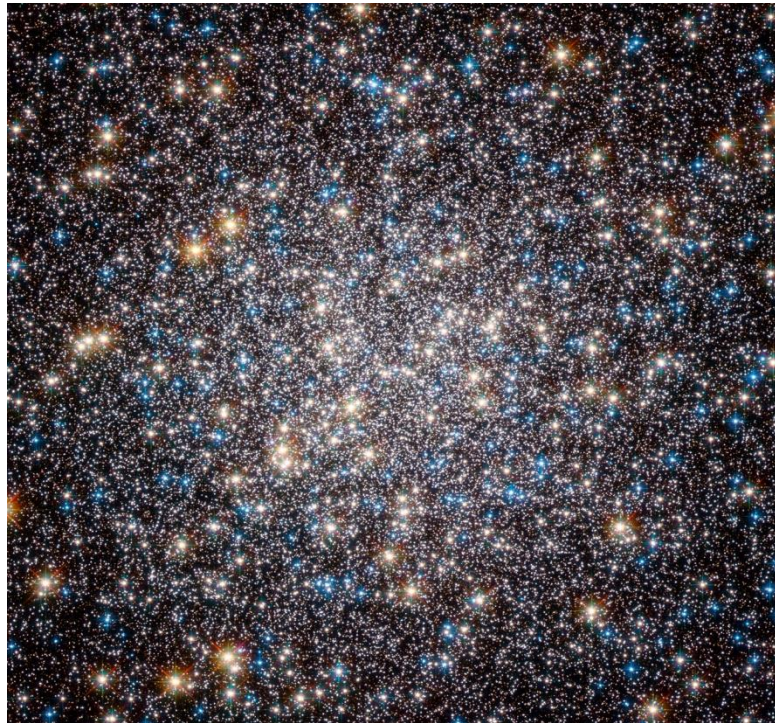


Beginner Targets List

- Moon: June 25 to June 30th, young moon at sunset.
- Moon and Saturn: On July 6 they will be about 3 degrees apart. They rise at 21:08.
- Moon and Venus: On July 20 they will be less than 3 degrees apart. Look for them about 3 hrs before sunrise.
- Moon and Jupiter: On July 28 they will be less than 3 degrees apart. Look in the west after sunset.

Intermediate Target

Globular cluster



M13 Great Hercules Cluster

M13

- **Designation:** Messier 13, NGC 6205
- **Constellation:** Hercules
- **Coordinates:** 16h 41.7m, +36d 28'
- **Size:** 20 x 20 arcmin
- **How to shoot:** Shoot a moderate field of view 30-50 arcmin if skies are not steady. Shoot around 20 arcmin to resolve core but need steady skies.
- **Exposure time:** Successful astrophotographers suggest to keep exposure time to around 2 min or less per sub to minimize bloating of brighter stars
- **Camera Equipment:** Single shot color (DSLR) as well as conventional RGB. Luminance layers are generally not needed for brighter globulars.

- Source, The 100 Best Astrophotography Targets by Ruben Keir

Advanced Target

M101 Pinwheel Galaxy



Image Credit: Hubble, Subaru; Composition & Copyright: R. Gendler

M101

- **Designation:** Messier 101, NGC 5457
- **Constellation:** Ursa Major
- **Coordinates:** 14h 03.5m, +54d 21'
- **Size:** 29 x 27 arcmin
- **How to shoot:** Shoot at higher resolution of 40 arcmin for detail. Shoot wider, 60 arcmin to include smaller spiral NGC 5474
- **Exposure time:** Review of other successful shots show times of up to 5 mins or more if mounts and seeing permits.
- **Camera Equipment:** Single shot color (DSLR) will work fine. Best results will be using RGB methods. Adding a luminance layer will show better detail. This galaxy does have a Ha region so obtaining subs with Ha filter will emphasize this region. Consider binning RGB if luminance layer obtained.
- Source, The 100 Best Astrophotography Targets by Ruben Keir

Narrowband Target

M8 Lagoon Nebula



- By ESO/VPHAS+ team - <http://www.eso.org/public/images/eso1403a/>, CC BY 4.0, <https://commons.wikimedia.org/w/index.php?curid=30759954>

M8

Use Narrowband Filters to shoot when the moon or light pollution would otherwise be an issue

- **Designation:** Messier 8, NGC 6523
- **Constellation:** Sagittarius
- **Coordinates:** 18h 0.37m, -24d 23'
- **Size:** 90 x 40
- **How to shoot:** Shoot wide.
- **Exposure time:** Review of other successful shots show times of up to 5 or more mins if mounts and seeing permits.
- **Camera Equipment:** Use Ha, SII and O3 filters with mono ccd or if you have a modified DSLR with narrowband filters. Map Ha, O3 and S2 to RGB channels.
- **Online information Sources:**
<https://starizona.com/acb/ccd/advimnarrow.aspx>
- Source, The 100 Best Astrophotography Targets by Ruben Keir

Software and Data Sources

- **Astrophotography planning:** *DSO Browser* - <https://dso-browser.com/>
- **Field of View Calculators for different equipment:** *New Astronomy Press CCD Calculator* - http://www.newastro.com/book_new/camera_app.html
- **Planetarium Software:** *Stellarium* - <http://www.stellarium.org/>
- **Weekly sky events:** *Skyweek App* - [Google play](#)
- **Monthly and weekly sky events:**
 - <http://www.skyandtelescope.com/observing/sky-at-a-glance/>
 - <http://www.skymaps.com/downloads.html>
- **Book:** *The 100 Best Astrophotography Targets* by Ruben Kier



**And now, back to our previously
scheduled program...**



Summary of Celestial Events to Note:

- **July 2nd: Asteroid Juno at opposition**
- **July 3rd: Earth at aphelion (94.5M mi @ 4:00 PM EDT)**
- **July 6th: Moon in 3° conjunction with Saturn**
- **July 10th: Pluto at opposition**
- **July 20th: Moon in 1° Conjunction with Venus**
- **July 22nd: Next CE Astronomy meeting**



Fin