

RASC Toronto Centre – www.rascto.ca

The Sky This Month – June 4, 2014 to July 8, 2014

by Chris Vaughan

NEWS

Space Exploration – Public and Private

Ref. <http://www.spaceflightnow.com/tracking/index.html>

Launches

June 11 pm - SpaceX Falcon 9 rocket from Cape Canaveral Air Force Station, Florida, payload six 2nd-generation Orbcomm comsats

June 14 pm - Soyuz rocket from Plesetsk Cosmodrome, Russia, payload Glonass M navsat

June 17 TBD - Orbital Science Antares rocket from Wallops Island, Virginia, payload 3rd Cygnus cargo freighter on 2nd operational flight to ISS

June TBD - Ariane 5 rocket from Kourou, French Guiana, payload Measat 3b and Optus 10 comsats

June TBD - Polar Sat Launch Vehicle from Satish Dhawan Space Center, Sriharikota, India, payload Spot 7 remote sensing sat

June 19 pm - ICS Kosmotras Dnepr rocket from Dombarovsky, Russia, payload Earth observation sats

June 20 pm - Proton rocket from Baikonur Cosmodrome, Kazakhstan, secretive payload reportedly known as Olymp or Luch

June 25 TBD - Angara rocket from Plesetsk Cosmodrome, Russia, suborbital demonstration flight

June 28 TBD - Soyuz rocket from Baikonur Cosmodrome, Kazakhstan, payload Meteor M2 weather sat and others

July TBD - SpaceX Falcon 9 rocket from Cape Canaveral Air Force Station, Florida, payload AsiaSat 8 comsat

July 1 am - United Launch Alliance Delta 2 rocket from Vandenberg Air Force Base, Ca, payload Orbiting Carbon Observatory 2 satellite for NASA

New Hubble Ultra Deep Field 2014

Area between Fornax and Eridanus (RA. 3h32m38.5s Dec -27°47'00"). It's comprised of ~600 hours of exposure, from July 2002 to Sep 2012. Hubble instruments include the **Advanced Camera for Surveys** (far-UV to visible) and the **Wide Field Camera 3** (High res near-IR, visible, and near-UV). The original Deep Field image included only visible and IR wavelengths (ACS/SBC, ACS/WFC, and WFC3/IR instruments). The new image adds Ultraviolet (WFC3/UVIS instrument) after 2009, shows where star formation occurring. The 13 monochrome filter images have been assigned in groups to Blue (UV), Green, and Red (IR).

Link at <http://hubblesite.org/newscenter/archive/releases/2014/27/>

This Month in History (a sampling)

Ref. <http://astroplanet.org/next.php>, <http://www2.jpl.nasa.gov/calendar/>,

<http://space.about.com/library/weekly/bldatechoice.htm>, <http://www.planetary.org/multimedia/space-images/charts/whats-up-in-the-solar-system-frohn.html>

Astro-Birthdays

June 1, 1633 - Italian astronomer and lens maker Geminiano Montanari is born. In 1667, he was the first to record the variable brightness of the star Algol

June 5, 1819 - English astronomer John Couch Adams is born. Predicted the existence and position of Neptune, using only mathematics.

June 7, 1928 - American astronomer, Bernard Burke, is born. In 1955, discovers radio waves emitted by the giant Jupiter.

June 8, 1625 - Giovanni Cassini is born. Co-discoverer of the GRS and discoverer of Saturnian moons and the eponymous ring gap. He also determined the Earth-Mars distance using parallax and explained zodiacal light.

June 17, 1839 - American astronomer and clergyman, Rev. George Mary Searle, is born (and DIES IN 1918). Discovered the asteroid 55 Pandora and six galaxies.

June 26, 1730 - French Astronomer Charles Messier is born. Later he will create a his famous Messier Catalogue black list of dim fuzzy objects that are not comets.

July 7, 1746 - Italian astronomer and discoverer of Ceres, Giuseppe Piazzi, is born.

Astronomy and Space Exploration

June 3, 1969 - NBC cancels the original Star Trek series after a 3 season run

June 4, 781 BCE - First Solar Eclipse recorded by the Chinese.

June 16, 1963 - Valentina Tereshkova becomes the first woman in space.

June 18, 1983 - Sally Ride becomes the first American female astronaut.

June 19, 240 BCE - Eratosthenes calculates the circumference of Earth using two sticks.

June 22, 1633 - Galileo Galilei is forced by the Holy Office of Rome to recant the Solar-centric view of the Universe.

June 25, 1638 - The first astronomical event, a lunar eclipse, recorded in North America.

June 30, 1908 - The great Tunguska impact in Siberia.

July 1, 1917 - The 100-inch Hooker Telescope mirror arrives at Mt. Wilson. The only scope larger than DDO's 74" when it opened in 1935.

July 4, 1054 - Chinese astronomers record a bright supernova later to become the Crab Nebula (M1).

July 6, 1687 - Isaac Newton publishes Principia outlining his 3 Laws of Motion.

July 7, 1947 - Alleged UFO crashes in Roswell, New Mexico

Star Parties, etc.

Ref: <http://ontariostargazing.ca/astronomy-star-party-and-astronomy-events-listing-for-canada/>,
<http://www.amsky.com/calendar/events/#may>

"RASC City Skies Observing", Bayview Village Park, Toronto – window opens June 8

"RASC Dark Skies Observing", Long Sault Conservation Area, ON – window opens June 23

"Canada Day Weekend Astronomy Night", Gordon's Park Dark Sky Preserve, Manitoulin Island – June 28
(www.gordonspark.com)

"New Moon in June Star Party", Mew lake Campground, Algonquin Park – June 26-29
(<http://www.rascto.ca/content/new-moon-june-algonquin-star-party-0>)

"Thursday Night Astronomy Nights", Gordon's Park Dark Sky Preserve, Manitoulin Island – July/Aug
(www.gordonspark.com)

"Rocky Mountain Star Stare", Colorado – June 25-29 (<http://www.rmss.org/index.htm>)

"Green Bank Star Quest XI", Green Bank, West Virginia – June 25-28 (<http://greenbankstarquest.org/>)

"Bryce Canyon Astronomy Festival", Bryce Canyon National Park, Utah – June 25-28
(<http://www.nps.gov/brca/planyourvisit/astrofest.htm>)

OBSERVING

Globe at Night 2014

A citizen science program to map light pollution around the world. During the observing window, you are encouraged to make a visual measurement to determine the limiting magnitude of stars you can observe at your location. The website provides charts for assisting observations, instructions for submitting results, and an interactive map showing current and historical results. Details are at <http://www.globeatnight.org/>
The June campaign focus is on **Hercules**.

Sunrise/Sunset

June 1, sunrise at 5:45 am, sunset at 8:48 pm
July 1, sunrise at 5:46 am, sunset at 8:59 pm
July 3 at 8 pm, Earth at aphelion (1.521 million km)
June 21 at 6:51 am, Summer Solstice

Moon - Orbit

Apogee - June 2/3 at midnight
Perigee – June 14 at 11 pm
Apogee – June 30 at 3 pm
Perigee - July 13 at 4 am (near Full Moon, large tides)

Moon - Phases

June 5 at 4:29 pm – First Quarter Moon (sets around midnight)
June 13 at 12:11 am – Full “Strawberry/Rose” Moon
June 19 at 2:49 pm – Last Quarter Moon (rises around midnight)
June 27 at 4:08 am – New Moon
July 5 at 7:59 am – First Quarter Moon (sets around midnight)

Moon - Conjunctions

Visible from dusk to ~2 am on June 7, the Waxing Gibbous Moon (71% illum.) sits approx. 2° to the south of (below) Mars. On the next night, the Moon sits about 1° to the northeast of Spica.

Visible all night on June 10, the nearly Full Moon (94% illum.) sits approx. 4° to the southeast (lower left) of Saturn.

Visible in pre-dawn of June 24, the very Old Crescent Moon (8% illum.) sits about 2° south (lower right) of Venus (84% illum. and mag. -3.4), low in the eastern sky. Photo op! This is an opportunity to try and observe the pair after sunrise.

Visible with difficulty at sunset on June 28, the New Crescent Moon (3% illum.) sits about 6° south (lower left) of Jupiter, low in the western sky. Another opportunity occurs the follow evening.

Visible on July 5, from dusk to 1 am in the southwestern sky, the First Quarter Moon sits about 0.5° southwest (lower right) of Mars. Photo op! Equatorial observers will see Mars occulted.

Visible on July 7, from dusk to 2 am in the southwestern sky, the waxing gibbous Moon (75% illum.) sits about 1.5° southwest (lower right) of Saturn. Photo op! Equatorial observers will see Saturn occulted.

Planets and Dwarf Planets

Mercury on June 4th (mag 1.6, 15% illum.) sets about 8:20 pm. It is rapidly swinging back towards the Sun and inferior conjunction on June 19. It can be observed with difficulty in early June and then as a morning object starting the first week of July. By July 8th it will be rising at 4:37 am, about an hour before the Sun, and will have brightened to mag 1.0 and be 26% illuminated.

Venus, a bright morning object low in the eastern sky, is swinging towards the Sun and moves from Aries into Taurus over the next month. It rises at 4 am on June 4th (mag -3.4 and 78% illum) and 3:47 am on July 8th (mag -3.3 and 87% illum). On June 24, the very Old Crescent Moon (8% illum.) sits about 2° south (lower right) of Venus (84% illum. and mag. -3.4). Photo op! From June 26 to 29, Venus passes between the Pleiades and the Hyades (about 4° from Aldebaran on July 1st), but all observing will occur in twilight.

Mars is in Virgo, moving towards Spica, over the next month, and is an easily visible orange-red object in the southwestern sky after dusk. It is dimming steadily as we increase our distance from it, but good seeing can still reveal surface detail in larger scopes. It sets at 2:51 am on June 4th (mag -0.2) and about 1 am on July 8th (mag 0.3). On June 7th, the Waxing Gibbous Moon (71% illum.) sits approx. 2° to the south of (below) Mars. On July 5th, the First Quarter Moon sits about 0.5° southwest (lower right) of Mars. Photo op!

Jupiter season is nearly over. By the end of June it will be very low in the west at dusk, and will be departing Gemini for Cancer. Superior Conjunction on July 24. It sets about 11:30 pm on June 4th (mag -1.4) and at 9:42 pm on July 8th (mag -1.3). Visible with difficulty at sunset on June 28, the New Crescent Moon (3% illum.) sits about 6° south (lower left) of Jupiter, low in the western sky. Another opportunity occurs the follow evening.

Saturn remains an all night object moving retrograde (west) in Libra all month. Already up in the south by dusk, it sets at 4:30 am on June 4th (mag 0.4) and at 2:15 am on July 8th (mag 0.6). On June 10, the nearly Full Moon (94% illum.) sits approx. 4° to the southeast (lower left) of Saturn. On July 7, the waxing gibbous Moon (75% illum.) sits about 1.5° SW (lower right) of Saturn. Photo op! Equatorial observers will see Saturn occulted.

Uranus, in Pisces, is observable low in the eastern pre-dawn sky, rising at 3 am (mag 6.2) on June 4th and at 12:50 am on July 8th (mag 6.1).

Neptune (mag 7.7) in Aquarius, is low in the southeastern pre-dawn sky. It rises at 1:39 am on June 4th and at 11:25 pm on July 8th.

Pluto, NE of Sagittarius' teapot, a faint mag 14.1 object, rises at 10:43 pm on June 4th and at 8:26 pm on July 8th.

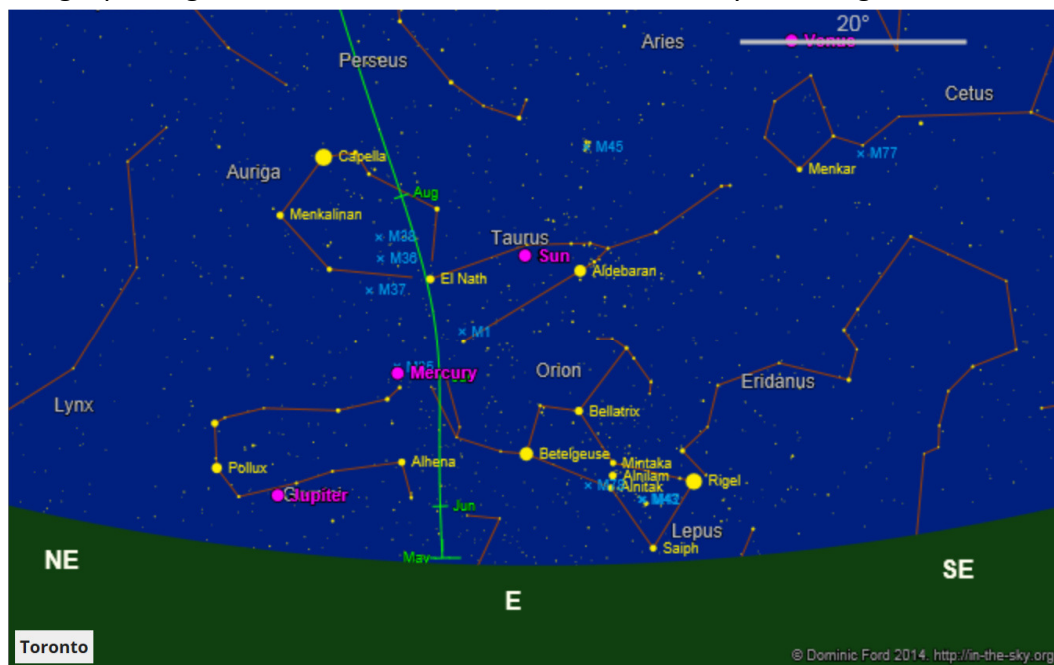
Vesta (mag 5.9) and **Ceres** (mag 7.2) are in the same area, about 12° northeast of Mars in Virgo. They are well placed for evening viewing. On July 11th the two objects will be positioned only about 3 arc-seconds apart!

Comets

Ref <http://www.aerith.net/comet/weekly/current.html>, <http://cometchasing.skyhound.com/>, <http://in-the-sky.org/comets.php>

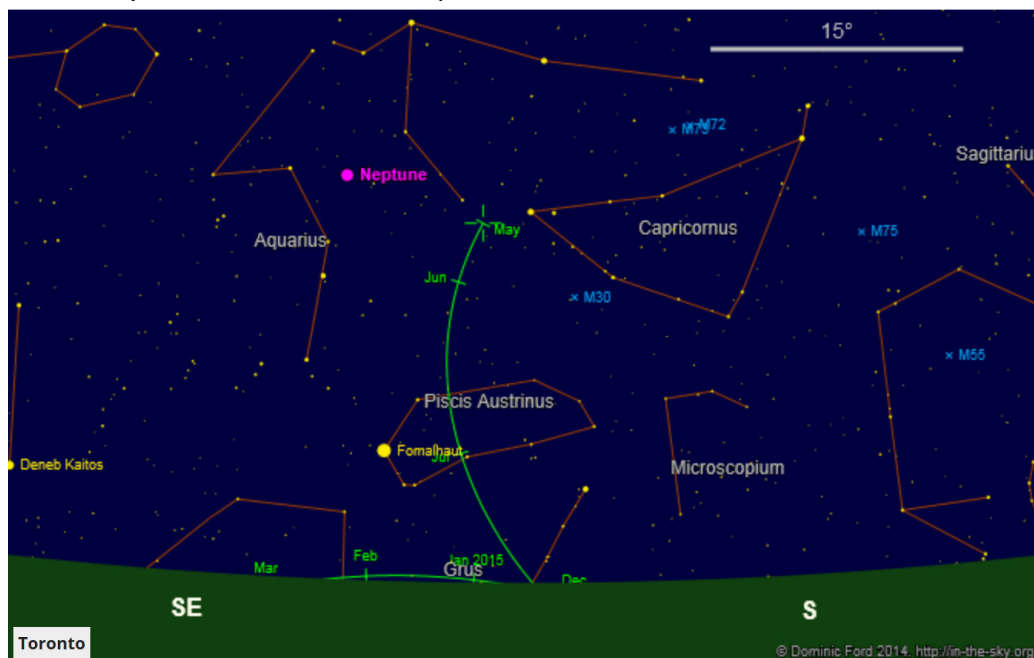
Comet C/2014 E2 (Jacques)

Jacques is unobservable right now in western evening twilight, moving northwest through Monoceros/Gemini/Orion towards perihelion in early July, when it peaks in brightness (predicted at +4.5), then becomes a morning object. It rises at 4:30 am on July 8th. Through July, it will curve northward through Auriga, passing about 30 arc-minutes from Alnath on July 20, rising earlier each morning.



Comet C/2012 X1 Linear

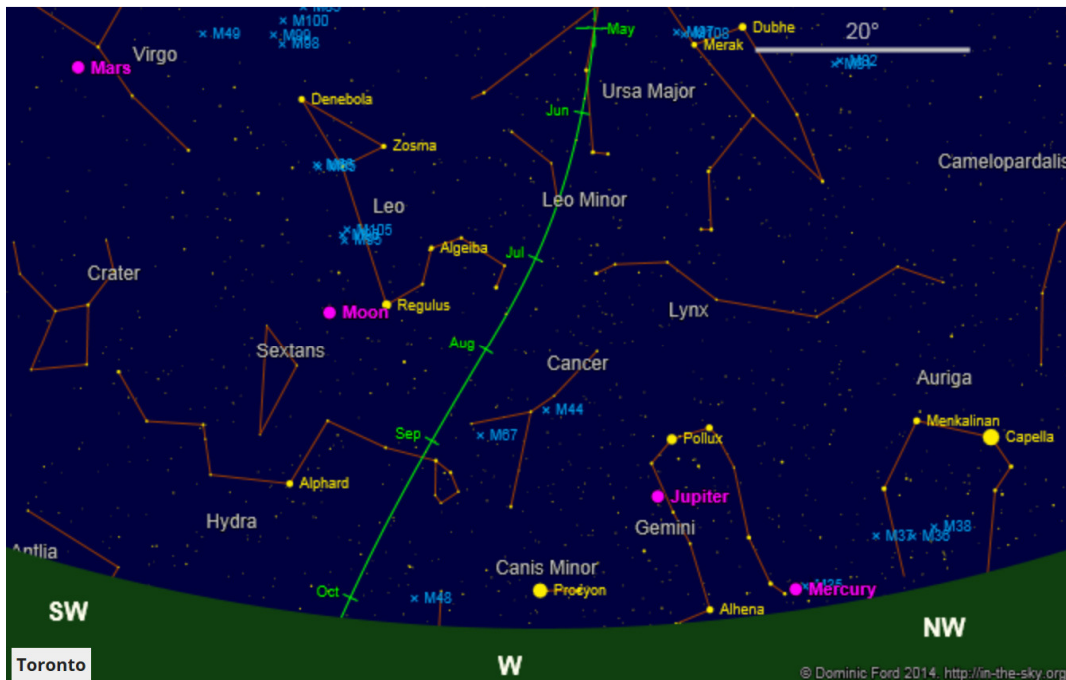
Linear is about 8.5 magnitude, and has already peaked. It's shifting southward from Aquarius to Pisces Austrinus low in the southern pre-dawn sky (binos and small scopes). It rises about 2 am on June 4th and 1:30 am on July 8th. It will remain well positioned for months.



Comet C/2012 K1 (PANSTARRS)

Comet C/2012 K1 (PANSTARRS) is observable until about mid-July, followed by perihelion. It is approximately 8th magnitude and brightening, with a predicted peak in late 2014. It is curving southwestward from Ursa

Major towards the Sickie of Leo in the evening northwestern sky. On June 4th it sets at 4:43 am and on July 8th it will set at 11:48 pm.



Meteor Shower(s)

Ref. <http://www.amsmeteors.org/meteor-showers/meteor-shower-calendar/>

No major events

Asteroids

Ref. <http://neo.jpl.nasa.gov/ca/>, <http://www.minorplanetcenter.net/>

According to the Minor Planet Centre...

Near-Earth Objects Discovered This Year: 515
 Minor Planets Discovered This Year: 20,008
 Comets Discovered This Year: 20

June 8 - Asteroid 2014 HQ124 (400-900 m) will pass within 3.3 Lunar Distances

Satellites

Current GTA International Space Station morning and evening pass series continues until June 23 (Most are visible between 9:30 pm and 11:30 pm). Morning passes commence on July 16.

Some higher/brighter ones include*:

Date	Mag.	Time	Direction	Alt.
04-Jun	-3.3	4:21:15 am to 4:27:48 am	moving WNW to SE	60°
05-Jun	-3.3	9:51:40 pm to 9:58:19 pm	moving WSW to ENE	89°
15-Jun	-3.4	11:24:04 pm to 11:27:49 pm	moving WNW to SE	83°
19-Jun	-3.3	9:44:49 pm to 9:51:28 pm	moving WNW to ESE	88°

*far future predicted times may shift slightly

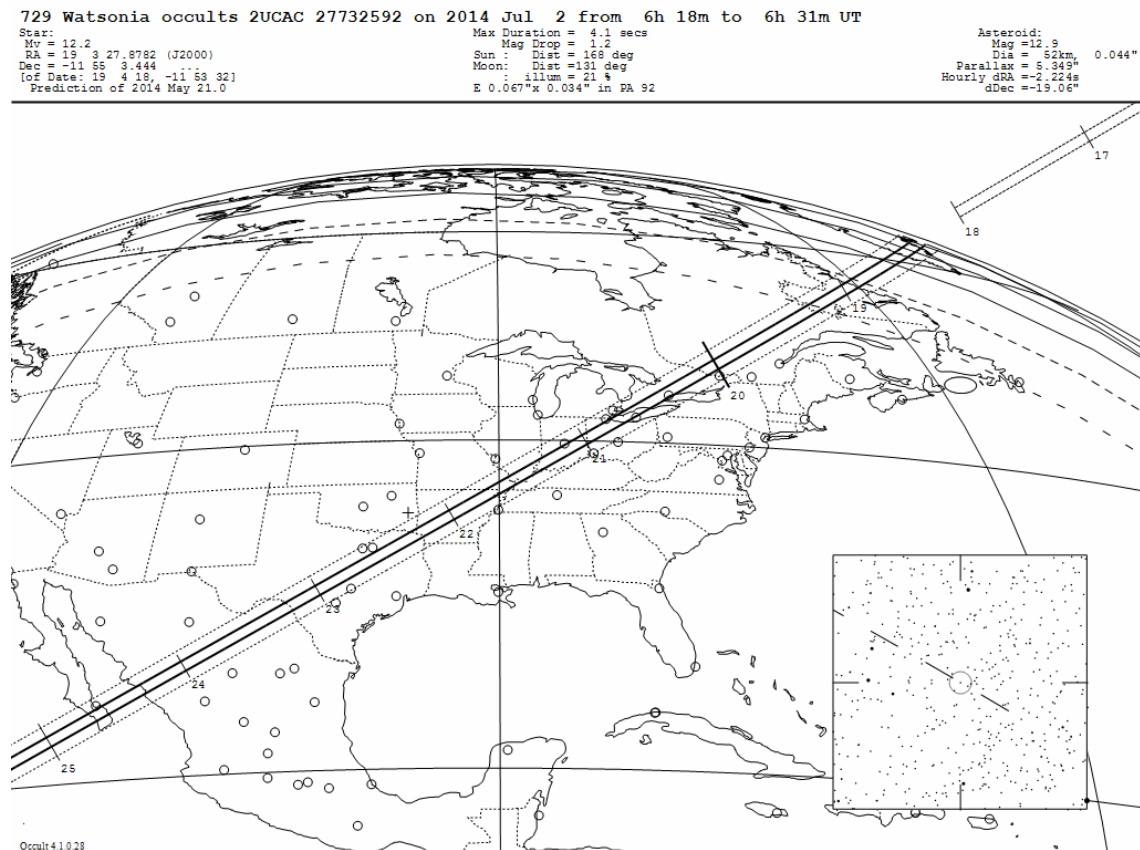
Iridium Flares most frequent evening passes occur between 10 pm and 11:30 pm. Local occurrences info at www.heavens-above.com and enter your location, from phone/tablet apps, Chris Vaughan's Skylights (subscribe to email or visit www.astrogeoguy.tumblr.com)

Occultations

Ref: <http://www.asteroidoccultation.com/> (additional links on the following URLs open track maps)

Rank 60 - 02 Jul 2014 , 06:24 UT Asteroid 60 (729) Watsonia (mag 12.9) occults star 2UCAC 27732592 (mag 12.2) - visible over SE Canada, USA, Mexico, drops 1.1 mags for 4.1 seconds, alt. 50°

http://www.asteroidoccultation.com/2014_07/0702_729_32670.htm



Constellations near the Meridian (Annually in June)

11 pm: Lupus, Libra, Serpens, Corona Borealis, Draco, and Ursa Minor

1 am: Scorpius, Ophiuchus, Serpens, Hercules, Draco, and Ursa Minor

3 am: Sagittarius, Scutum, Aquila, Sagitta, Vulpecula, Cygnus, Lyra, and Draco

Early Summer Star party Skylights (Annually in June)

The Big Dipper, Leo, Hercules, and the Summer Triangle (eye / binoculars)

Summer Globes – M13, M92 (Her), M3 (CVn), M5 (Ser), M4 (Sco), etc. (telescope)

Summer Blobs – Lagoon, Trifid (Sag), Eagle (Ser), Crescent (Cyg), Heart / Soul (Cas), etc. (telescope)

Summer Knobs - Ring (Lyr), Dumbbell (Vul) etc. (binoculars, telescope)

Double Plays – Regulus and Algieba (Leo), iota Cancr (Cnc), Cor Caroli (CVn), Porrima (Vir), Izar (Boo), etc. (telescope)

Hit Singles – Antares (Sco), Vega (Lyr), Arcturus (Boo), Altair (Aqu), Deneb (Cyg) (eye, binoculars, telescope)

Come out to Long Sault C A, Bayview Village Park, CAO, or DDO!