Interesting Astronomical Events for 2022

Our sky is always changing, most changes are predictable and follow patterns, known since ancient times.

Here are some of the more interesting astronomical events visible from St Louis in 2022

Happy observing

Stacy Park, Olivette, MO
Nov 5, 2021
Interesting Astronomical Events for 2022

Astro Links:


https://www.go-astronomy.com/astronomy-events.htm


https://orionbearastronomy.com/2019/01/12/2022-celestial-events-calendar/

http://www.astropixels.com/almanac/almanac21/almanac2022cst.html
Interesting Astronomical Events for 2022

Special Astro Links:

http://www.lunar-occultations.com/iota/iotandx.htm

https://www.asteroidoccultation.com/

https://www.asteroidoccultation.com/2022-BestEvents.htm

http://www.lunar-occultations.com/iota/bstar/bstar.htm

http://www.lunar-occultations.com/iota/planets/planets.htm


Jefferson College Observatory
Oct 3, 2021
Full Moon Events 2022

Largest Full Moons of 2022
June 14: diameter: 33’ 23”; 359,587km
July 13: diameter: 33’ 24”; 358,503km
August 12: diameter: 33’ 02”; 365,300km

Smallest Full Moons of 2022
Jan 17: diameter: 29’ 46”; 398,113km
Dec 7: diameter: 29’ 50”; 391,452km

Image below shows the apparent size difference between largest and smallest dates

No telescope Required
Full Moon Events 2022

★ May 15-16 – Total Lunar Eclipse (Evening Event)
  Partial Starts 9:28pm, Alt=14 deg, Az=129 deg
  Total Starts 10:30pm, Alt=23 deg, Az=142 deg
  Total Ends 11:54pm, Alt=30, Az=162 deg
  Partial Ends 12:55am, Alt=32 deg, Az=180 deg

Nov 8 – Total Lunar Eclipse (Morning Event)
  Partial Start 3:10am, Alt=39 deg, Az=258 deg
  Total Starts 4:17am, Alt=26 deg, Az=270 deg
  Total Ends 5:42am, Alt=10 deg, Az=282 deg
  Moonset 6:35am
  Partial Ends 6:49am (below horizon)

★ No telescope Required
Other Moon Events 2022

Lunar-X on the Moon (Start Times)

- Jan 9 – 11:12pm Alt=17°
- Mar 10 – 12:28am Alt=9°
- Jun 6 – 2:54pm, Alt=33°
- Nov 30 – 3:17pm, Alt=23°

Lunar V also seen at same Sun angles

Yellow=Favorable Moon Conditions are always near First Quarter phase

Telescope Required
Solar Eclipses 2022

★ None visible from STL

Next visible solar eclipse from STL
Oct 14, 2023 – Partial/Annular Eclipse

10-14-2023 - Annular
Max eclipse as seen from STL
2022 Meteor Showers

- January 3 Quadrantids; ZHR=40 (NM)
- April 22 Lyrids; ZHR=20 (LQ-1day)
- May 5 Εta Aquarids; ZHR=60 (FQ-2days)
- July 28 Delta Aquarids; ZHR=20 (NM)
- Aug 12 Perseids; ZHR=60 (FM+1day)
- Oct 21 Orionids; ZHR=20 (LQ+4days)
- Nov 17 Leonids; ZHR=20 (LQ+1day)
- Dec 13 Geminids; ZHR=120 (LQ-2days)

Yellow=Favorable Moon Conditions are before Full Moon (FM) and closest to New Moon (NM)

★No telescope Required
Planet Oppositions 2022

- Jupiter – Sep 26 14 (dia=48.8 arc-sec)
- Saturn – Aug 14 (dia=18.8 arc-sec)
- Uranus – Nov 9 (dia=3.8 arc-sec)
- Neptune – Sep 16 (dia=2.4 arc-sec)
- Venus GWE – Mar 20 (24.5 arc-sec)
- Venus SC – Oct 22 (9.7 arc-sec)
- Mars – Dec 8 (dia=17.1 arc-sec)

Yellow=Favorable Conditions
SC= Superior Conjunction
QEE= Greatest Elongation East

= Increase or decrease in size since 2021

Images from Stellarium
Jupiter 2022

- Jan 1 – 35.3 arc-seconds, mag = -2.13
- Sep 26 - Jupiter at opposition, 49.9 arc-seconds, mag= -2.94
- Images below show the apparent size difference between January 1st and the opposition date. Planets appear largest near the opposition dates because they are closest to Earth at that time.

Telescope Required

Images from Stellarium
Saturn 2022

- Jan 1 – 15.5 arc-seconds (36.0 arc-sec rings), mag = + 0.71
- Aug 14 - Saturn Opposition – 18.8 arc-seconds (43.7 arc-sec rings), mag = + 0.28
- Rings are closing until edge-on in 2025
- Images below show the apparent size difference between January 1st and the opposition date. Planets appear largest near the opposition dates because they are closest to Earth at that time.

Telescope Required
Images from Stellarium
Uranus 2022

- Jan 1 – 3.7 arc-seconds, mag = + 5.70
- Nov 9 - Uranus opposition, 3.8 arc-seconds, mag = + 5.64
- Images below show the apparent size difference between Jupiter at opposition date and Uranus’ opposition. Planets appear largest near the opposition dates because they are closest to Earth at that time.

Telescope Required

Images from Stellarium
Neptune 2022

- Jan 1 – 2.3 arc-seconds, mag = +7.91
- Sep 16 - Neptune opposition, 2.4 arc-sec, mag = +7.81
- Images below show the apparent size difference between Jupiter at opposition date and Neptune’s opposition. Planets appear largest near the opposition dates because they are closest to Earth at that time.

Jupiter (Opp)

Neptune – Sep 14 (Opp)

Telescope Required

Images from Stellarium
Grand Alignment

- June 22\textsuperscript{nd}
- Morning sky – the naked-eye planets are aligned in order from the Sun
- Mercury, Venus Mars, Jupiter, and Saturn

\begin{itemize}
  \item June 22\textsuperscript{nd}
  \item Morning sky – the naked-eye planets are aligned in order from the Sun
  \item Mercury, Venus Mars, Jupiter, and Saturn
\end{itemize}
# Lunar Occultations 2022

<table>
<thead>
<tr>
<th>DATE</th>
<th>STAR</th>
<th>NAME</th>
<th>MAG</th>
<th>PH</th>
<th>% ILL</th>
<th>GENERAL AREA</th>
</tr>
</thead>
<tbody>
<tr>
<td>22-Feb</td>
<td>ZC2118</td>
<td>α Lib</td>
<td>2.8m</td>
<td>RD</td>
<td>-66%</td>
<td>w USA, w Canada</td>
</tr>
<tr>
<td>16-Mar</td>
<td>ZC1484</td>
<td>η Leo</td>
<td>3.5m</td>
<td>DD</td>
<td>94%</td>
<td>e USA, w Africa</td>
</tr>
<tr>
<td>6-Sep</td>
<td>ZC2784</td>
<td>τ Sag</td>
<td>3.3m</td>
<td>DD</td>
<td>76%</td>
<td>s Canada, USA, Mexico, Central America</td>
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**Curved edge of Moon**

**Beta Scorpi**

**Video of Moon Occulting Beta Scorpii on 9-21-2020**
**Lunar Occultations 2022**

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**Disappear 10:30pm (alt=21deg, az=200deg)**
**Reappear: 11:37pm (alt=15deg, az=213deg)**

Images from Stellarium

Yellow arrow shows direction of star’s movement relative to the Moon

Telescope Required

![Image of Moon and Star](https://example.com/image.png)
### Lunar Occultations 2022

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Disappear before moonrise  
Reappear: 9:45pm (alt=1deg, az=69deg)

Images from Stellarium  
Yellow arrow shows direction of star’s movement relative to the Moon  
Telescope Required
# Lunar Occultations 2022

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**Disappear 6:15am (alt=45deg, az=106deg)**

**Reappear: 7:39am (after sunrise)**

Images from Stellarium

Yellow arrow shows direction of star’s movement relative to the Moon

Telescope Required
## Lunar Occultations 2022

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**Disappear 5:50am (alt=33deg, az=200deg)**  
**Reappear: 6:22am**

*Images from Stellarium*

*Yellow arrow shows direction of star’s movement relative to the Moon*

*Binoculars Required*
### Lunar Occultations 2022

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Disappear 6:35pm (alt=21deg, az=85deg, before sunset)  
Reappear: 7:43pm (alt=35deg, az=96deg)

Images from Stellarium

**Yellow arrow shows direction of star’s movement relative to the Moon**

**Telescope Required**
Disappear 9:03pm (alt=51deg, az=98deg)
Reappear: 9:50pm (alt=61deg, az=108deg)

Yellow arrow shows direction of star’s movement relative to the Moon

Binoculars Required
## Planet Conjunctions 2022

<table>
<thead>
<tr>
<th>Date</th>
<th>Time CST</th>
<th>Conjunction</th>
<th>Angle</th>
</tr>
</thead>
<tbody>
<tr>
<td>04 Apr 2022</td>
<td>17:05</td>
<td>Conjunction of Saturn and Mars</td>
<td>0.2deg</td>
</tr>
<tr>
<td>27 Apr 2022</td>
<td>14:27</td>
<td>Conjunction of Venus and Neptune</td>
<td>0.002deg</td>
</tr>
<tr>
<td>30 Apr 2022</td>
<td>13:42</td>
<td>Conjunction of Venus and Jupiter</td>
<td>0.2deg</td>
</tr>
<tr>
<td>17 May 2022</td>
<td>18:07</td>
<td>Conjunction of Mars and Neptune</td>
<td>0.4deg</td>
</tr>
<tr>
<td>28 May 2022</td>
<td>19:03</td>
<td>Conjunction of Jupiter and Mars</td>
<td>0.4deg</td>
</tr>
<tr>
<td>01 Aug 2022</td>
<td>04:22</td>
<td>Conjunction of Mars and Uranus</td>
<td>1deg</td>
</tr>
<tr>
<td>29 Aug 2022</td>
<td>03:00</td>
<td>Conjunction of Mars, Pleiades and Hyades</td>
<td>5deg</td>
</tr>
<tr>
<td>05 Sep 2022</td>
<td>06:00</td>
<td>Conjunction of Venus and Regulus</td>
<td>1deg</td>
</tr>
</tbody>
</table>

★ **No telescope Required**
Planet Conjunctions 2022

04 Apr 2022 17:05 CST
Conjunction of Saturn and Mars 0.2deg

Morning sky, 5am, Alt=5 deg

Images from Stellarium
Red circles are Telerad circles of $\frac{1}{2}$ and 1 degree in diameter

★ No telescope Required
Venus and Neptune
4-27-2022

Moon, Jupiter, Neptune and Venus before sunrise
Neptune and Venus >1/2 deg apart at 5am
By 2:15pm Venus approaches Neptune <6 arc-sec!
Not visible from USA

Telescope Required
Images from Stellarium
Planet Conjunctions 2022

30 Apr 2022 13:44 CST

Conjunction of Venus and Jupiter 0.2deg

Morning sky 5am, Alt=9deg

Images from Stellarium

Red circles are Telerad circle of $\frac{1}{2}$ degree in diameter

⭐ No telescope Required
Planet Conjunctions 2022

17 May 2022 18:07 CST

Conjunction of Mars and Neptune 0.4deg

Morning sky 5am, Alt=19deg

Images from Stellarium

Red circles are Telerad circles of $\frac{1}{2}$ and 1 degree in diameter

Telescope Required
**Planet Conjunctions 2022**

**28 May 2022** 19:03 CST  **Conjunction of Jupiter and Mars**  0.4deg

Morning sky 5am, Alt=25deg

Images from Stellarium

Red circles are Telerad circle of ½ degree in diameter

★ No telescope Required
01 Aug 2022
04:22 CST
Conjunction of Mars and Uranus
1deg

Morning sky 5am, Alt=51deg

Images from Stellarium

Red circles are Telerad circles of ½, 1 and 2 degrees in diameter

Binoculars Required
Mars and Pleiades/Hyades
8-29-2022

No telescope Required
Images from Stellarium
Deep Sky Conjunctions 2022

- Sep 5 – Venus and Regulus
- 1 deg
- 6am

Images from Stellarium
Red circles are Telerad circles of \( \frac{1}{2} \) and 1 degree in diameter

⭐ No telescope Required
Capture Vesta, Juno, Saturn, Neptune and Jupiter in a DSLR camera with 24mm lens FOV

Binoculars Required
<table>
<thead>
<tr>
<th>Date</th>
<th>Asteroid</th>
<th>Opposition/Perihelion</th>
<th>Magnitude</th>
<th>Constellation</th>
</tr>
</thead>
<tbody>
<tr>
<td>13 Jan 2022</td>
<td>7 Iris</td>
<td>at opposition</td>
<td>mag=7.7</td>
<td>Gemini</td>
</tr>
<tr>
<td>05 Feb 2022</td>
<td>20 Massalia</td>
<td>at opposition</td>
<td>mag=8.5</td>
<td>Cancer</td>
</tr>
<tr>
<td>16 Apr 2022</td>
<td>15 Eunomia</td>
<td>at opposition</td>
<td>mag=9.8</td>
<td>Hydra</td>
</tr>
<tr>
<td>29 Apr 2022</td>
<td>10 Hygiea</td>
<td>at opposition</td>
<td>mag=9.3</td>
<td>Virgo</td>
</tr>
<tr>
<td>07 Jun 2022</td>
<td>29 Amphitrite</td>
<td>at opposition</td>
<td>mag=9.7</td>
<td>Scorpius</td>
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<tr>
<td>06 Jul 2022</td>
<td>14 Irene</td>
<td>at opposition</td>
<td>mag=9.8</td>
<td>Sagittarius</td>
</tr>
<tr>
<td>20 Jul 2022</td>
<td>9 Metis</td>
<td>at opposition</td>
<td>mag=9.7</td>
<td>Sagittarius</td>
</tr>
<tr>
<td>23 Jul 2022</td>
<td>192 Nausikaa</td>
<td>at opposition</td>
<td>mag=9.6</td>
<td>Sagittarius</td>
</tr>
<tr>
<td>22 Aug 2022</td>
<td>4 Vesta</td>
<td>at opposition</td>
<td>mag=6.0</td>
<td>Aquarius</td>
</tr>
<tr>
<td>08 Sep 2022</td>
<td>3 Juno</td>
<td>at opposition</td>
<td>mag=7.8</td>
<td>Aquarius</td>
</tr>
<tr>
<td>12 Nov 2022</td>
<td>27 Euterpe</td>
<td>at opposition</td>
<td>mag=8.8</td>
<td>Aries</td>
</tr>
<tr>
<td>19 Nov 2022</td>
<td>115 Thyra</td>
<td>at opposition</td>
<td>mag=9.7</td>
<td>Perseus</td>
</tr>
<tr>
<td>22 Nov 2022</td>
<td>324 Bamberga</td>
<td>at opposition</td>
<td>mag=9.1</td>
<td>Perseus</td>
</tr>
<tr>
<td>29 Nov 2022</td>
<td>30 Urania</td>
<td>at opposition</td>
<td>mag=9.6</td>
<td>Taurus</td>
</tr>
<tr>
<td>01 Dec 2022</td>
<td>349 Dembowska</td>
<td>at opposition</td>
<td>mag=9.6</td>
<td>Taurus</td>
</tr>
<tr>
<td>11 Dec 2022</td>
<td>1 Ceres</td>
<td>at perihelion</td>
<td>mag=8.5</td>
<td>Virgo</td>
</tr>
</tbody>
</table>
# Asteroid Occultations 2022

<table>
<thead>
<tr>
<th>Event Date/Time</th>
<th>Asteroid</th>
<th>Star</th>
<th>Visibility</th>
<th>Mag Drop, Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>01 Jan 2022, 02:58 UT</td>
<td>(162) Laurentia</td>
<td>TYC 2389-01033-1</td>
<td>North Africa, Europe, SE Canada, USA</td>
<td>3.82m 9.740s 75°</td>
</tr>
<tr>
<td></td>
<td></td>
<td>mag 12.9</td>
<td>mag9.1</td>
<td></td>
</tr>
<tr>
<td>15 Apr 2022, 00:29 UT</td>
<td>(690) Wratislavia</td>
<td>HIP 22486</td>
<td>SE USA</td>
<td>5.90m 3.8s 72°</td>
</tr>
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<td></td>
<td></td>
<td>mag 14.0</td>
<td>mag8.1</td>
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<tr>
<td>19 Aug 2022, 02:53 UT</td>
<td>(480) Hansa</td>
<td>TYC 1099-00683-1</td>
<td>E Canada, USA</td>
<td>3.55m 5.2s 54°</td>
</tr>
<tr>
<td></td>
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<td>mag 12.5</td>
<td>mag9.0</td>
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</tr>
<tr>
<td>04 Oct 2022, 02:37 UT</td>
<td>(23) Thalia</td>
<td>HIP 4031</td>
<td>E Canada, USA</td>
<td>4.40m 7.9s 29°</td>
</tr>
<tr>
<td></td>
<td></td>
<td>mag 11.1</td>
<td>mag9.0</td>
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<tr>
<td>17 Nov 2022, 02:15 UT</td>
<td>(388) Charybdis</td>
<td>TYC 1825-00541-1</td>
<td>Russia, Europe, E Canada, USA, Mexico</td>
<td>3.23m 9.6s 64°</td>
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Telescope Required
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### 690 Wratislavia occults HIP 22486 on 2022 Apr 15 from 0h 27m to 0h 33m UT

- **Star:** (690) Wratislavia, mag 14.0
- **Asteroid:** (690) Wratislavia, mag 14.0
- **Visibility:** SE USA
- **Mag Drop, Duration:** 5.90m 3.8s 72°
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**Event Details:**

- **Asteroid:** (23) Thalia
- **Star:** HIP 4031
- **Visibility:** E Canada, USA
- **Mag Drop, Duration:** 4.40m 7.9s 29°
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<tr>
<td>mag 13.0</td>
<td>mag 9.9</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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**388 Charybdis occults TYC 1825-00541-1 on 2022 Nov 17 from 2h 8m to 2h 23m UT**

**Star:** (Obs < 0.1 mas)
- ra = 5 39 48.0125 (astrometric)
- dec = 29 30 35.210
- [of Date: 4 1 14, 23 34 90]
- Prediction of 2021 Jun 12.0
- Reliable not available

**Asteroid:** (in DAMIT)
- mag = 13.0
- dist = 167°
- parallax = 3.365°
- hourly dRA = -2.91°
- JPL#1042021May03, known errors

**Mag Drop = 3.2 (0.01)**
- Sun: dist = 86°
- Moon: dist = 45°
- Error 28.321.8 mas in RA 76°
Happy observing

Stacy Park, Olivette, MO
Nov 5, 2021