



# [Astronomy Club of Asheville](#)

## December 2017 Sky Events

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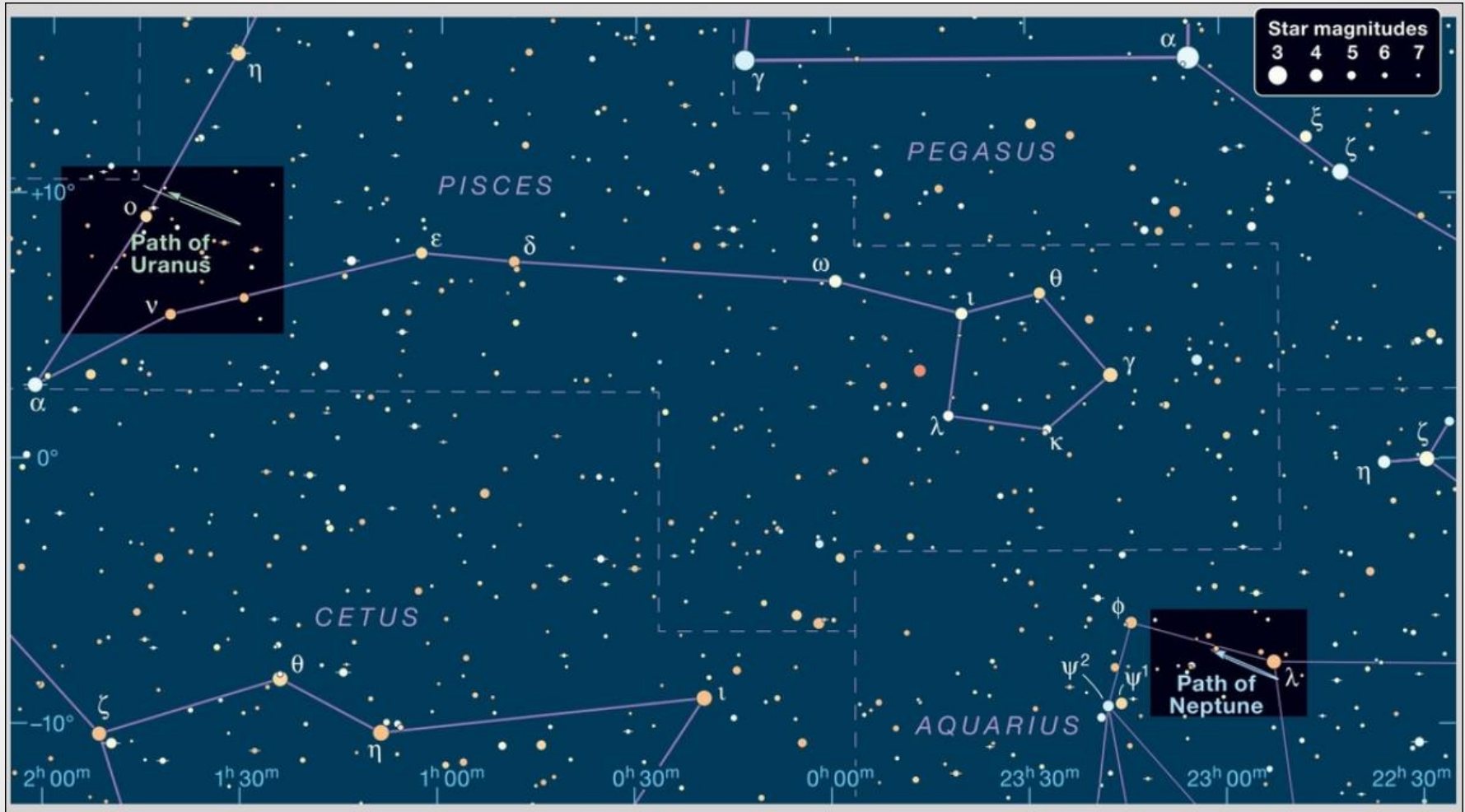
# December 2017 Sky Events – the Planets

- ★ While darkness falls ever earlier in December, those with ambitions to hunt bright planets before bedtime will likely come up empty handed.
- ★ **Saturn**, which has entertained evening observers since late spring, will make a last gasp appearance very low to the southwestern horizon at sunset. But catch it quickly – after the first couple of days the ringed planet will be lost in the Sun's glare, moving ever closer to a December 21<sup>st</sup> *solar conjunction* and emerging in morning skies early next year.
- ★ **Mercury** mimics Saturn's motion this month, appearing briefly at sunset until it, too, is lost in the Sun's glow after December 2<sup>nd</sup>. The *Winged Messenger* heads toward a *inferior conjunction* on December 13<sup>th</sup>, passing between the Sun and the Earth. This speedy planet then reemerges in dawn skies for the last week of the month.

# December 2017 Sky Events – the Planets

- ★ The Earth's denser atmosphere near the horizon will spoil telescopic views, so try your luck spotting this pair with binoculars on December 1<sup>st</sup> or 2<sup>nd</sup>.
- ★ While bright planet seekers won't be rewarded after sunset, those chasing more humble targets will be pleased.
- ★ **Neptune** continues its lazy journey through our skies and will be visible with telescopic aid high in the sky, near the meridian, as darkness falls. Locate this icy giant planet toward the south in the constellation Aquarius, above the solitary bright star Fomalhaut.
- ★ **Uranus** is equally present much of the night in Pisces and will be the easier of the two to find.
- ★ Shining at magnitude +8 and +6, respectively, you will need binoculars or a telescope to locate and observe the small distant planetary disks of Neptune and Uranus.

# December 2017 Sky Events – Uranus and Neptune

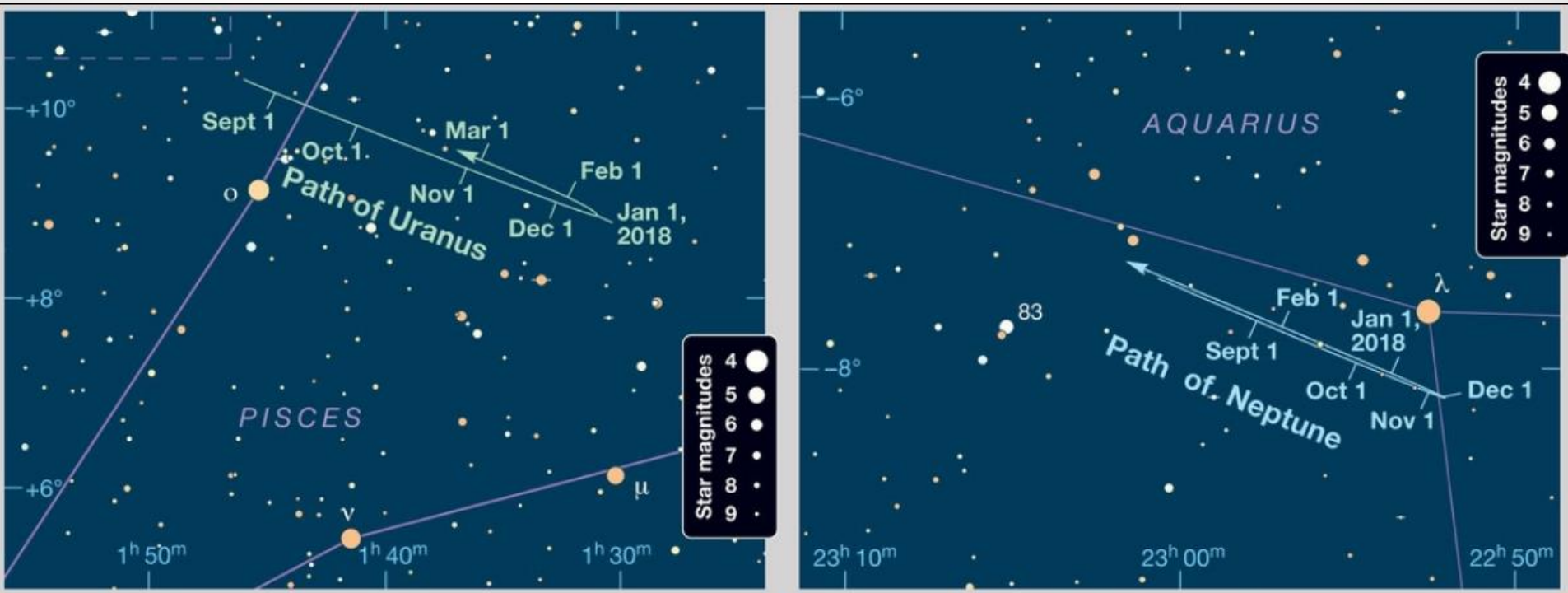


Charts courtesy of Sky & Telescope

The motion of the two ice giants, Uranus and Neptune, as they slowly move through Pisces and Aquarius, respectively, in 2017 and beyond.

# December 2017 Sky Events – Uranus and Neptune

**Uranus and Neptune** remain in great viewing positions in December. Use the below charts to find their small, distant blue disks in a telescope this month.



Charts courtesy of  
Sky & Telescope



# December 2017 Sky Events – the Planets

- ★ Now turn our attention to dawn skies, where the bright planets are now congregated. Mars, Jupiter, Venus and, later, Mercury all make morning appearances this month.
- ★ In early December, high in the southeast well before daybreak, **Mars** can be found in the constellation Virgo, near the bright star Spica. By month's end this red planet draws ever nearer to Libra and the much fainter star Zubenelgenubi to meet up with Jupiter.
- ★ While Mars is still dim and small through the telescope eyepiece, by July of 2018 the planet will have its best showing in 15 years!
- ★ Shining at magnitude -1.7, **Jupiter** won't be hard to miss, despite being 570 million miles away.
- ★ Rising about 2 hours before sunrise, the Jovian planet will charm telescopic observers as its four Galilean moons dance around this giant gas world.

# December 2017 Sky Events – the Planets

- ★ After shining brightly as our “morning star” since March, **Venus** finally makes an undistinguished exit in December.
- ★ Rising just 45 minutes before sunrise, by the 12<sup>th</sup> she’ll dip too close to dawn’s glare to be noticed. Venus is approaching a January *superior conjunction* as she moves behind the Sun, traversing through three constellations (Libra, Scorpius and Sagittarius) as she does so.
- ★ Finally, after a mediocre appearance at month’s start, **Mercury** redeems itself and reappears following its inferior conjunction on the 13<sup>th</sup>. By December 20<sup>th</sup> it begins to climb higher in southeastern skies and ends the month nearly 24 degrees west of the Sun. With medium to high power through the telescope Mercury will appear as an attractive gibbous crescent phase – well worth rising early to catch.

# 13–16 December 2017 – the Planets

## Conjunction of the Crescent Moon with Jupiter and Mars

On the mornings of Wednesday, December 13<sup>th</sup> through Saturday the 16<sup>th</sup>, about 1 hour before sunrise, the waning crescent moon will join faint Mars and a much brighter Jupiter in the southeast near *Alpha Librae*, a double star in Libra called Zubenelgenubi.

While Mars shines at magnitude 1.7, Jupiter glows nearly 23 times brighter at magnitude  $-1.7$ .

All three objects are situated in the same area of sky but lie at very different distances. During this time the Moon is only 249 thousand miles away, while Mars sits at 196 million miles. Jupiter is almost three times this distance at 573 million miles!





# December 2017 Planet Highlights

<u>Planet</u>	Avg. Distance from Earth	Constellation(s)	Avg. Diameter in arc seconds	Avg. Magnitude	Comments
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Mercury	0.8 AUs	Sagittarius & Ophiuchus	8.3	+1.2	Reaches <i>inferior conjunction</i> on the 13 <sup>th</sup> , reappears by month's end.
Venus	1.7 AUs	Libra, Scorpius, Ophiuchus & Sagittarius	9.8	-3.9	Lost in the Sun's glare by mid-month.
Mars	2.1 AUs	Virgo & Libra	4.5	+1.6	Found at dawn in the SE.



# December 2017 Planet Highlights

<u>Planet</u>	Avg. Distance from Earth	Constellation(s)	Avg. Diameter in arc seconds	Avg. Magnitude	Comments
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Jupiter	6.1 AU <sub>s</sub>	Libra	32.2	-1.7	Find it in the E-SE dawn skies all month
Saturn	11.0 AU <sub>s</sub>	Sagittarius	15.1	+0.5	Reaches <i>conjunction</i> with the Sun on the 21 <sup>st</sup> .
Uranus	19. AU <sub>s</sub>	Pisces	3.6	+5.7	In good position for evening observing this month.

# December 2017 Planet Highlights

<u>Planet</u>	Avg. Distance from Earth	Constellation(s)	Avg. Diameter in arc seconds	Avg. Magnitude	Comments
Neptune	30.1 AU <sub>s</sub>	Aquarius	2.3	+7.9	View in the S-SW early in the evening.

# The Moon – December 2017

	<b>Full Moon**</b>	3 <sup>rd</sup>	10:47 a.m.
	<b>Last Quarter</b>	10 <sup>th</sup>	2:51 a.m.
	<b>New Moon</b>	18 <sup>th</sup>	1:30 a.m.
	<b>First Quarter</b>	26 <sup>th</sup>	4:20 a.m.

**\*\* The “Long Nights Moon”**

**Unless otherwise indicated, all times are EST**

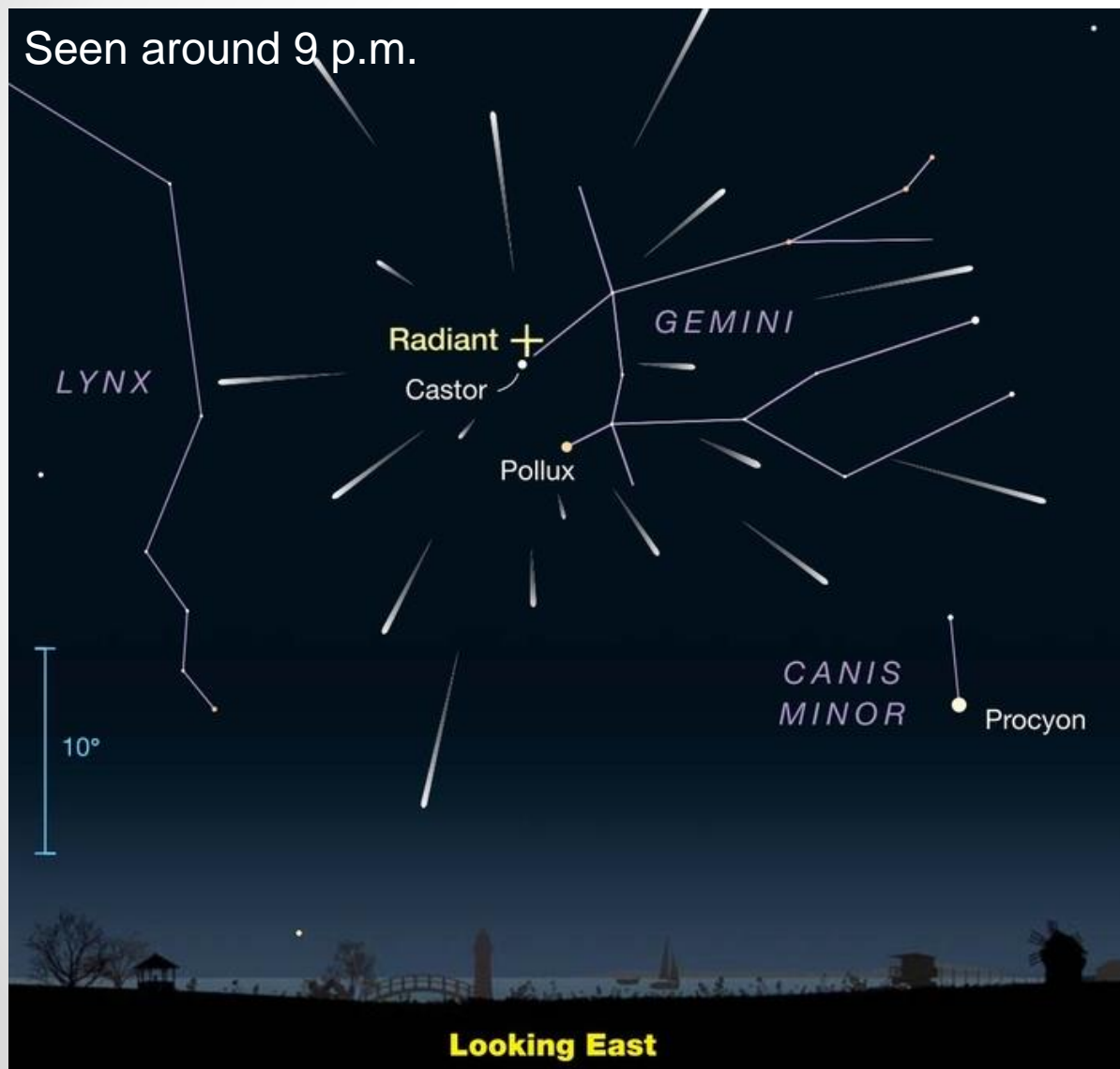
# December 2017 Sky Events

## Geminid Meteor Shower

- ★ The Geminid Meteor Shower peaks the night of **Wednesday, December 13<sup>th</sup>** and into the early morning hours of **Thursday the 14<sup>th</sup>**, with estimates upward of 100 meteors per hour under ideal conditions.
- ★ The meteors appear to radiate from the direction of the **constellation Gemini**— hence their name.
- ★ The Geminids are associated with an object named **3200 Phaethon** which is thought to be an asteroid or extinct comet with an orbital period of only 523 days.
- ★ With meteors travelling at a medium speed of 22 miles per second (about 80,000 mph!), the shower often produces bright meteors called bolides, or *fireballs*.
- ★ This year the Geminids will not be impacted by intense moonlight. With clear skies from a dark location, meteor hunters should find a good show.

# December 2017 Sky Events

## Geminid Meteor Shower



Around 9 p.m. on Wednesday the 13<sup>th</sup> the Geminid meteors will appear to radiate from this area of the sky.

By midnight and into the early morning hours on Thursday the 14<sup>th</sup>, the radiant point will be high in the sky near the meridian.

Image courtesy of Sky & Telescope

# December 2017 Sky Events

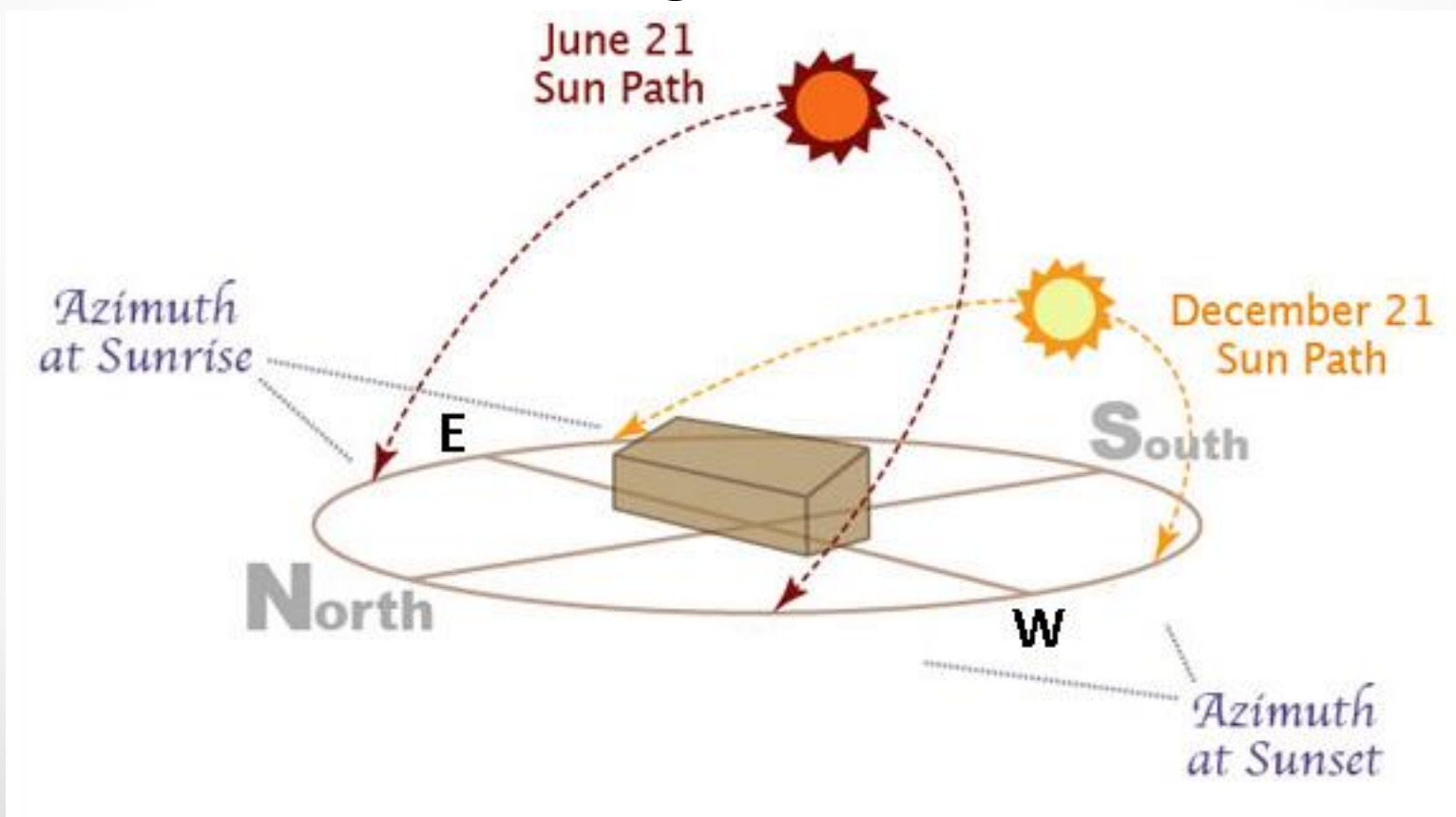
## December 21<sup>st</sup>, 2017 Winter Solstice

- ★ The northern hemisphere's winter solstice occurs on the morning of **Thursday, December 21<sup>st</sup> at 11:28 a.m. EST.**
- ★ It's the shortest day (and longest night) of the year in the northern hemisphere.
- ★ **The Sun's position on the winter solstice in the Asheville area reaches 2 extremes in altitude and azimuth (the following values are rounded):**
  1. First the Sun rises only  $31^\circ$  above the horizon at high solar noon on the winter solstice, compared to  $78^\circ$  on the summer solstice; that's a  $47^\circ$  swing ( $23\frac{1}{2}^\circ$  axial tilt times 2).
  2. Next the Sun rises  $30^\circ$  south of east and sets  $30^\circ$  south of west on the winter solstice, compared to  $30^\circ$  north of east and  $30^\circ$  north of west on the summer solstice; that's a  $60^\circ$  swing.

# December 2017 Sky Events

## December 21<sup>st</sup>, 2017 Winter Solstice

- ★ **Translation:** At the winter solstice the Sun takes not only a shorter path across the sky but also a much lower path across the sky, yielding a much shorter daylight period, with the Sun's radiation at a less intense angle.





**End**