January 2023 Astronomy Report

- Moon Shots:
  - Phases
  - “Good Librations”

- Planetary views:
  - many good viewings early in evening
  - Mars high in sky in Taurus
  - Mercury visible in early morning

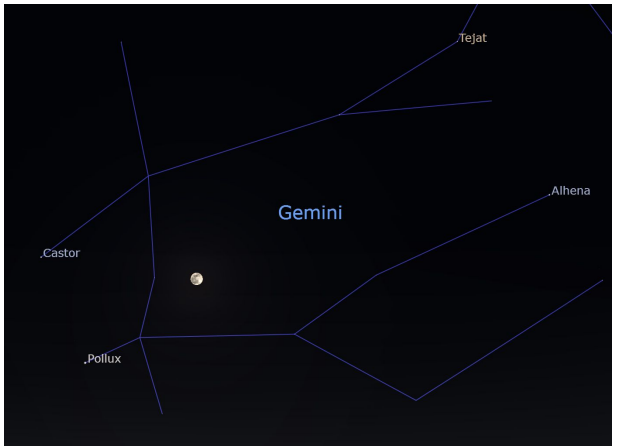
- Meteor showers:
  - Quarantid - peak night on 3rd

- Comet Search:
  - C/2022 E3

- Constellations:
  - featured nearby DSOs in Orion, Taurus

Moon Shots - Phases

January 6 - Full "Wolf" Moon

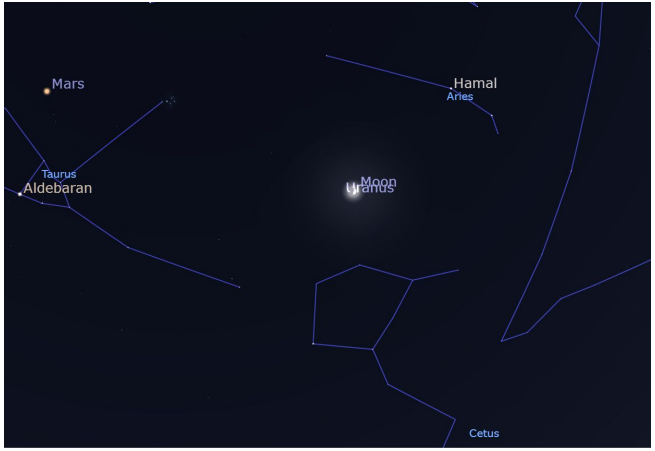


January 8 at apogee (252.5K miles)

January 14 - Last Quarter

January 21 - New Moon
at perigee (221.5K miles)

January 28 - First Quarter



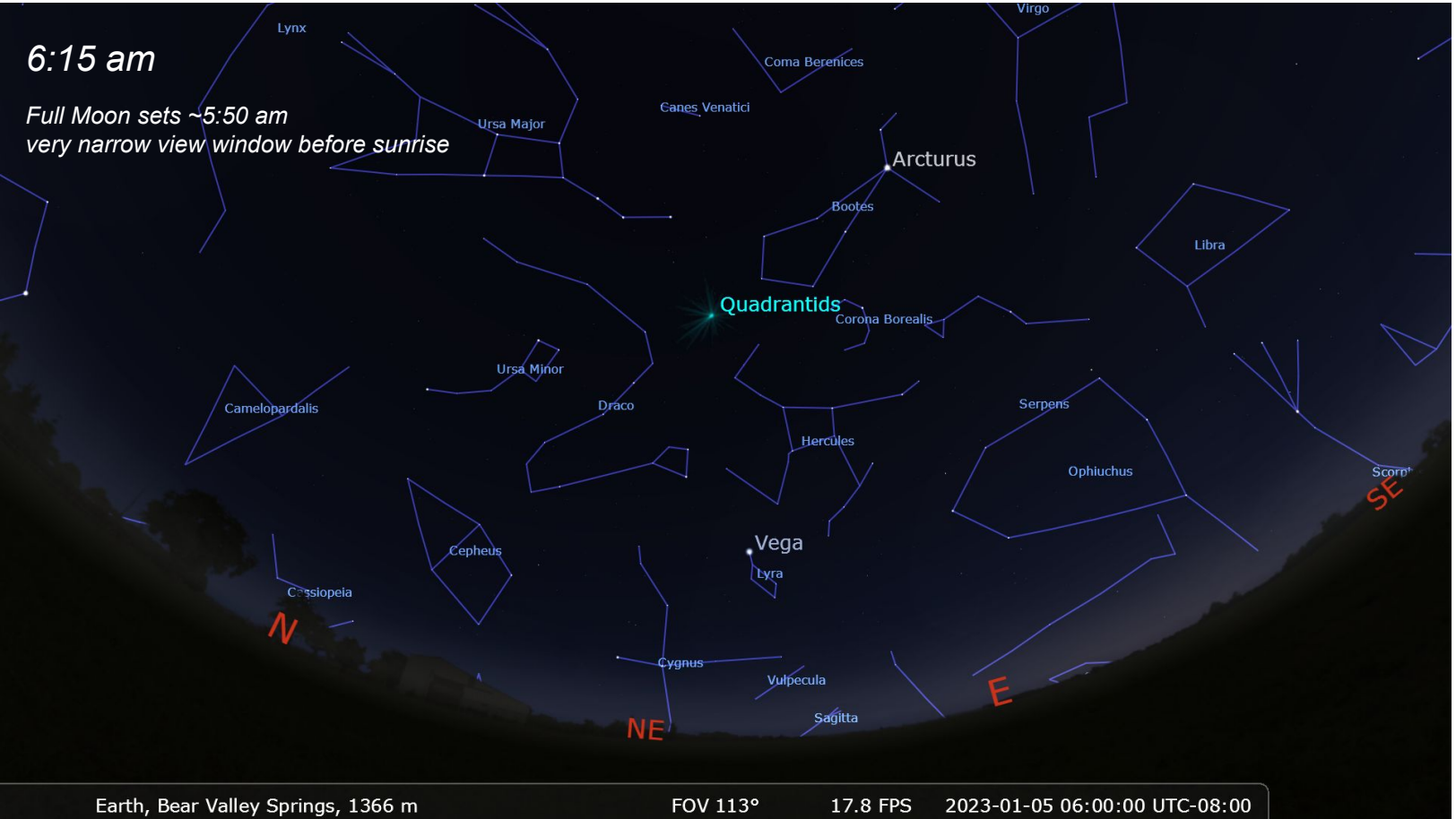
Moon Shots - Good Librations

Waxing crescent - next cycle opens

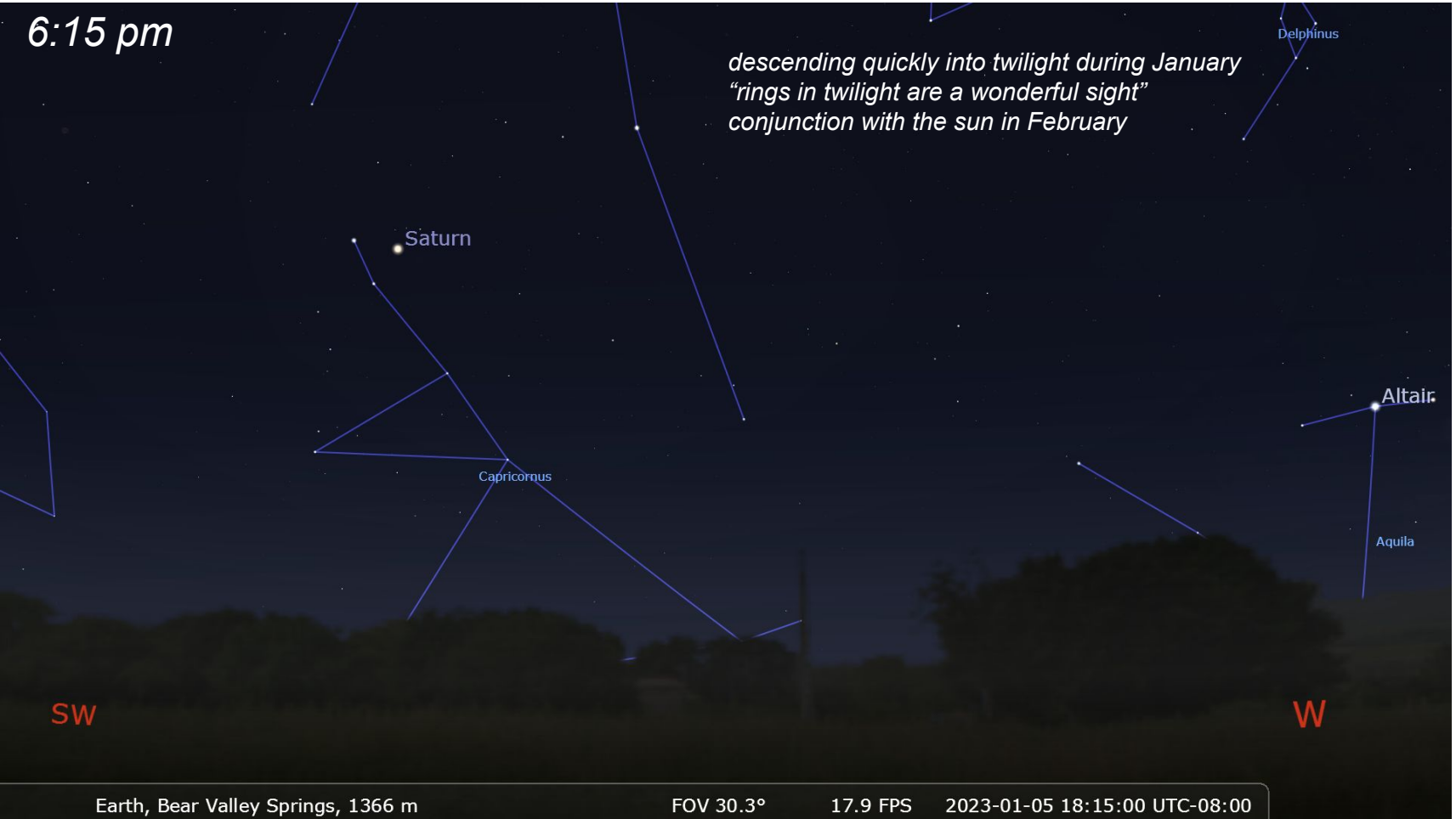
moon.nasa.gov/moon-in-motion/moon-phases

Meteor Watch - Quadrantid Meteor Shower, January 5

- *active 12/28 - 1/12; max rate 110/hour (Jan. 3)*
- *associated with asteroid 2003EH1 (extinct comet)*

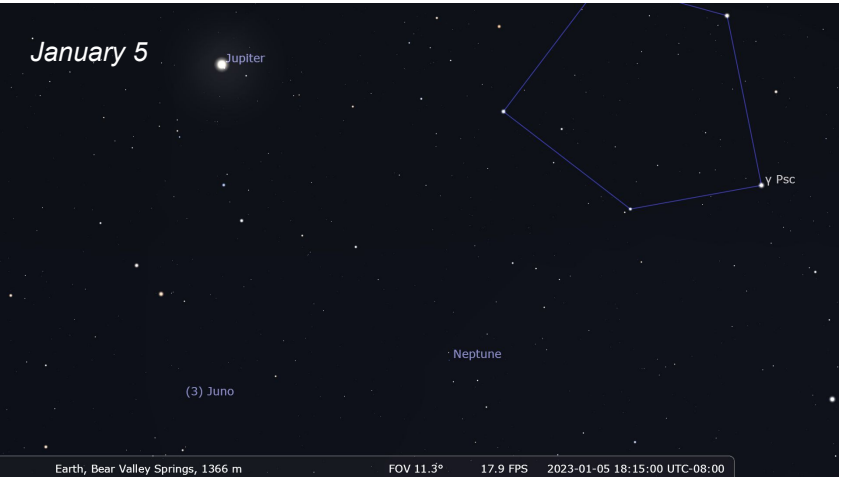


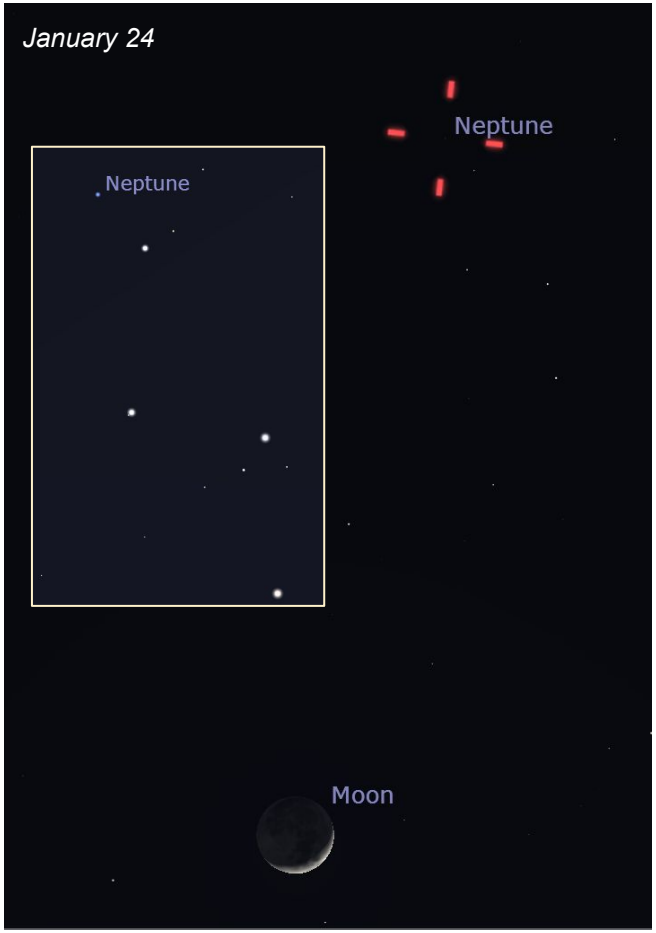
Planet Views - Saturn, January 5



Planet Views - Jupiter, Neptune, Saturn, January 5

Planet Views - Neptune closeup



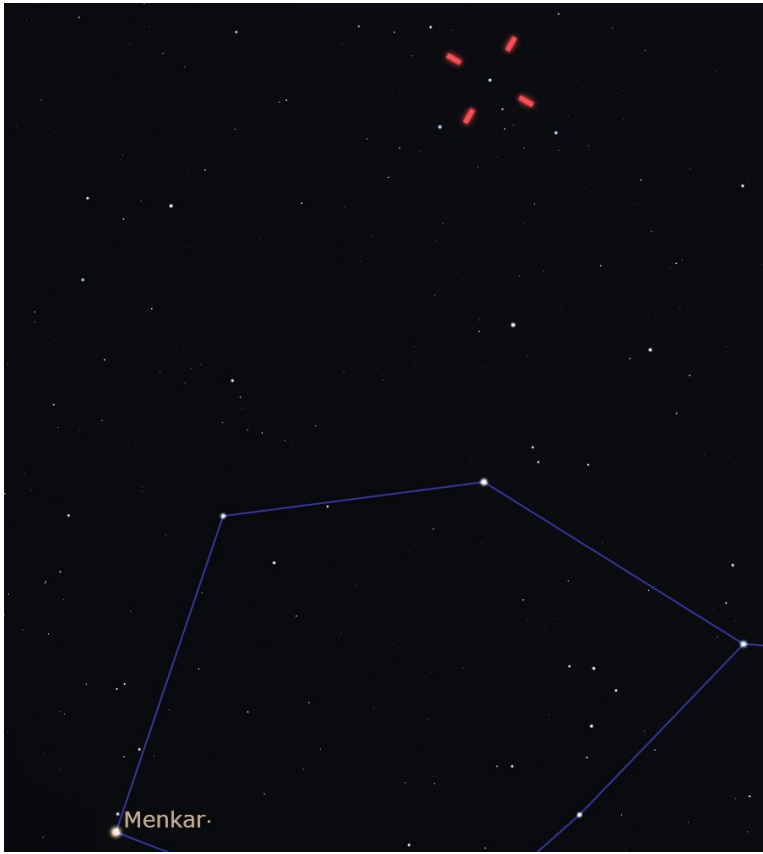


all times 6:15pm

Planet Views - Mercury, January 19

Planet Views - Mars & Uranus, January 21

New Moon - good viewing

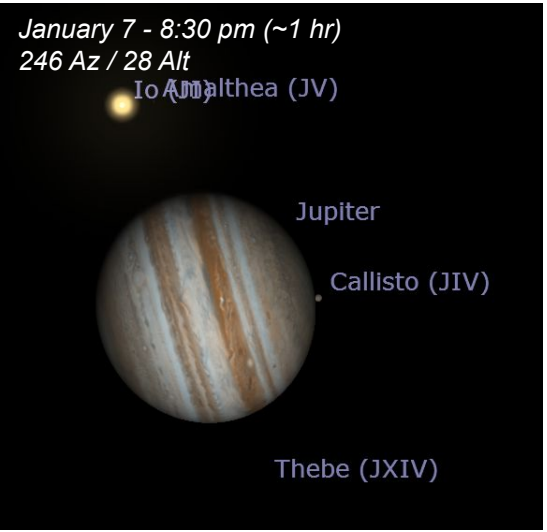


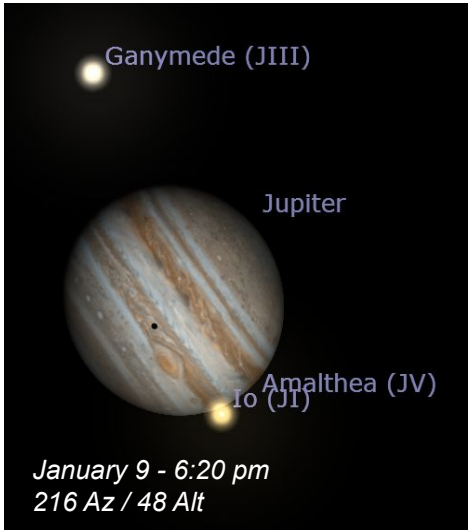
Planet Views - Venus & Saturn, January 22

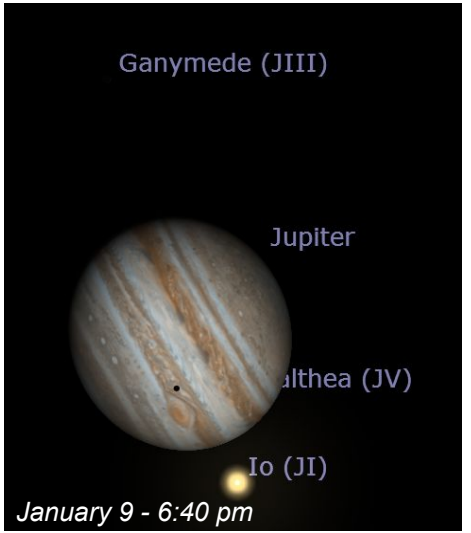
Planet Views - Venus & Saturn with Moon, January 23

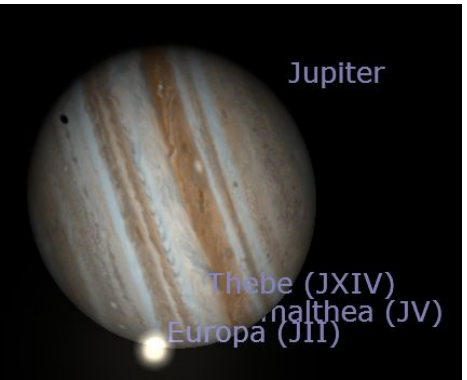
Planet Views - Jupiter with Moon, January 25

Planet Views - Jupiter occultations/transits

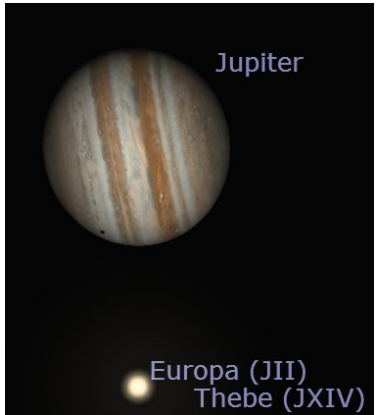








January 19 - 7:18 pm
241 Az / 34 Alt



January 19 - 9:30 pm
263 Az / 10 Alt

rasc.ca/handbook-history

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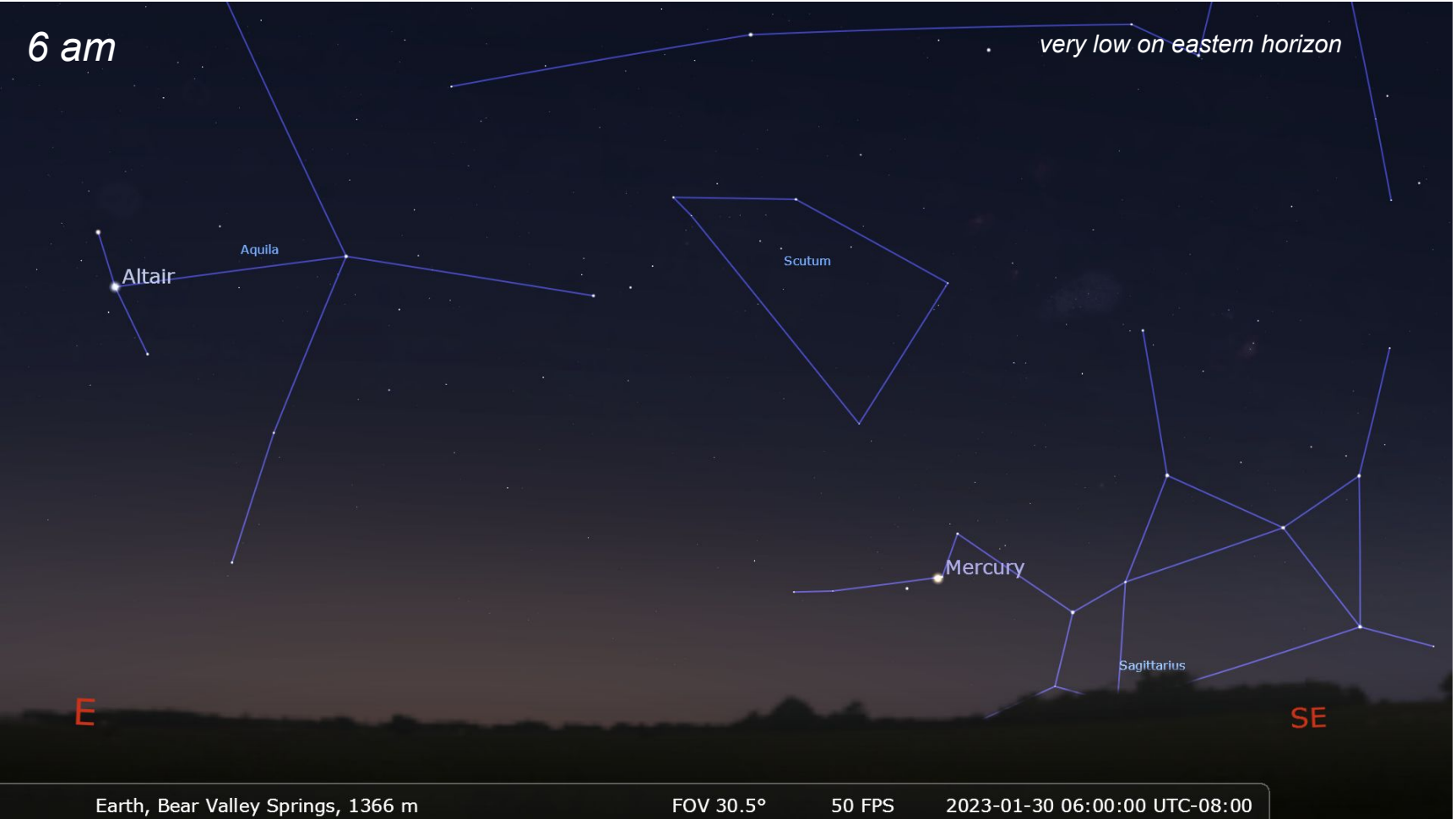
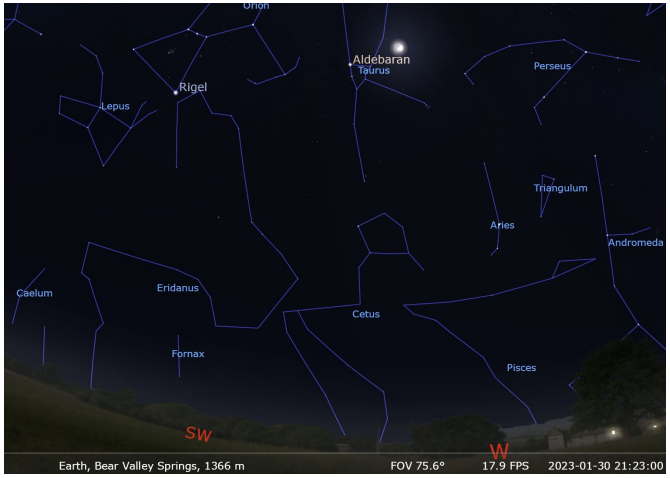
Observer's Handbook

Planet Views - Mercury, January 30

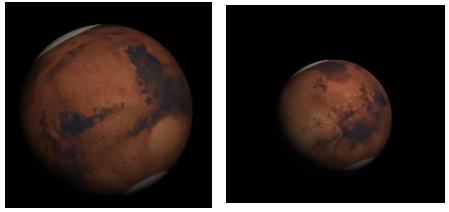
greatest western elongation from the sun

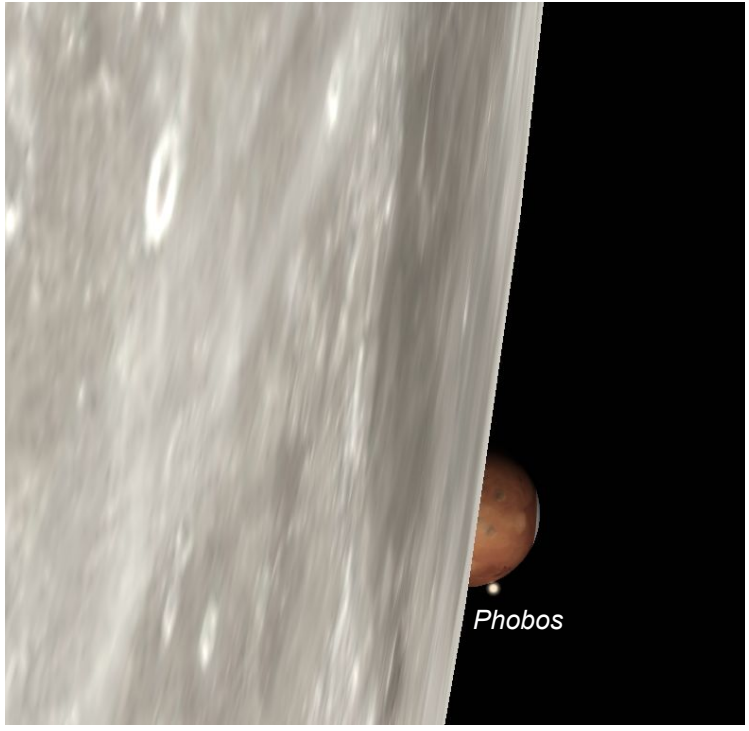


Planet Views - Moon occultation of Mars, January 30



Mars shrinks & fades during the month





Comet Search - C/2022 E3 (ZTF)

- *"barring surprise, will be best of the year"*
- *binocular range by Jan 12th at perihelion (closest to sun)*
- *closest to Earth by end of month, at 4th-5th magnitude, near Polaris*
- *Rapid motion - 12" per minute (~3 hrs to cross the moon)*

cometchasing.skyhound.com

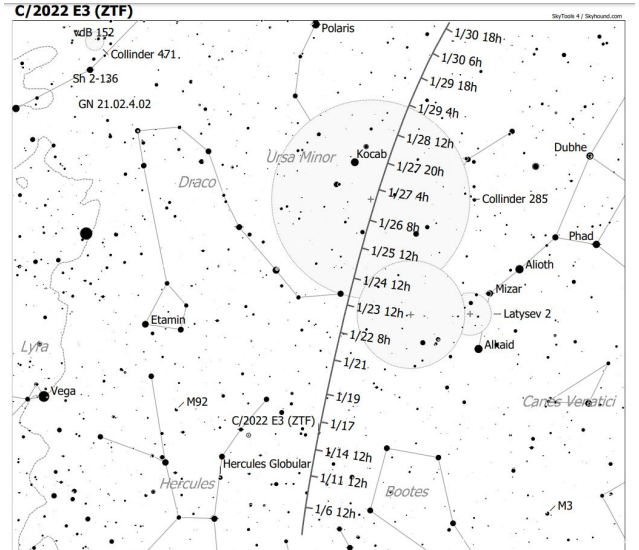
Comet Chasing in January

Comet chasing is the visual observation of telescopic comets.

C/2022 E3 (ZTF): A northern hemisphere morning comet visible to the naked eye

This comet begins the month in Corona Borealis at magnitude 7.7. Look for a 19.5' coma. It should brighten rapidly, moving into Camelopardalis by month's end. FINDER CHART

Latitude	Visibility December 31	Visibility January 7	Visibility January 14	Visibility January 21	Visibility January 28	Nights Visible
55° N	Not visible	Not visible	High in moonlight at ~05:50	High at ~05:30	High at ~04:30	1-
40° N	Not visible	Not visible	High in moonlight at ~05:40	High at ~05:30	High at ~04:20	1-
Equator	Not visible	Not visible	Not visible	Fairly high in the northern sky at ~04:50	Low in the northern sky at ~04:50	1-
30° S	Not visible	Not visible	Not visible	Not visible	Not visible	



January constellations

Jan 15 - 8 pm

Orion, Taurus, Caelum, Lepus

January Deep Sky Objects

1 - M43 (Orion Nebula)
2 - M1 (Crab Nebula)
3 - M45 (Pleiades)
4 - Hyades Cluster

Sources: constellation-guide.com; Stellarium

Orion Nebula (M42)

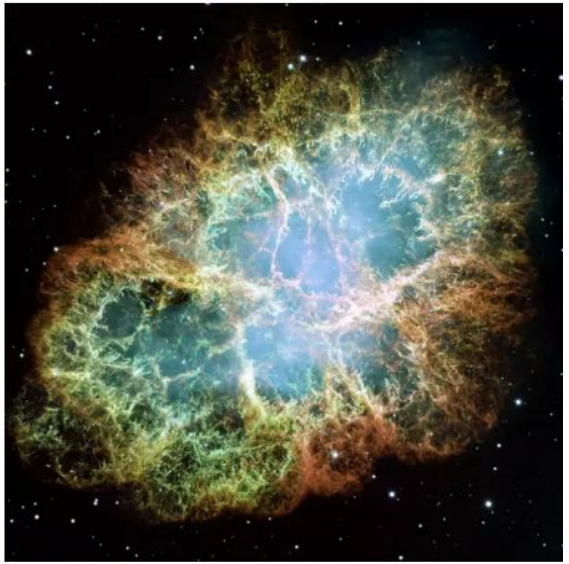
1344 light years from Earth
visible with the naked eye, binoculars
location of massive star formation and one of the most studied areas
allows astronomers to study the process of stars forming from clouds of dust and gas
hundreds of stars <1 million years old (some may be <10,000 years)

In one of the most detailed astronomical images ever produced, NASA's Hubble Space Telescope

Source: constellation-guide.com

Crab Nebula (M1)

6500 light years from Earth
result of a supernova explosion, first observed by Chinese astronomers in 1054 AD
M1 is about 11 light years in diameter and is expanding at a rate of 1500 km/sec
supernova remnant Crab Pulsar - a rapidly rotating neutron star that spins 30X/sec, responsible for nebula's bluish glow



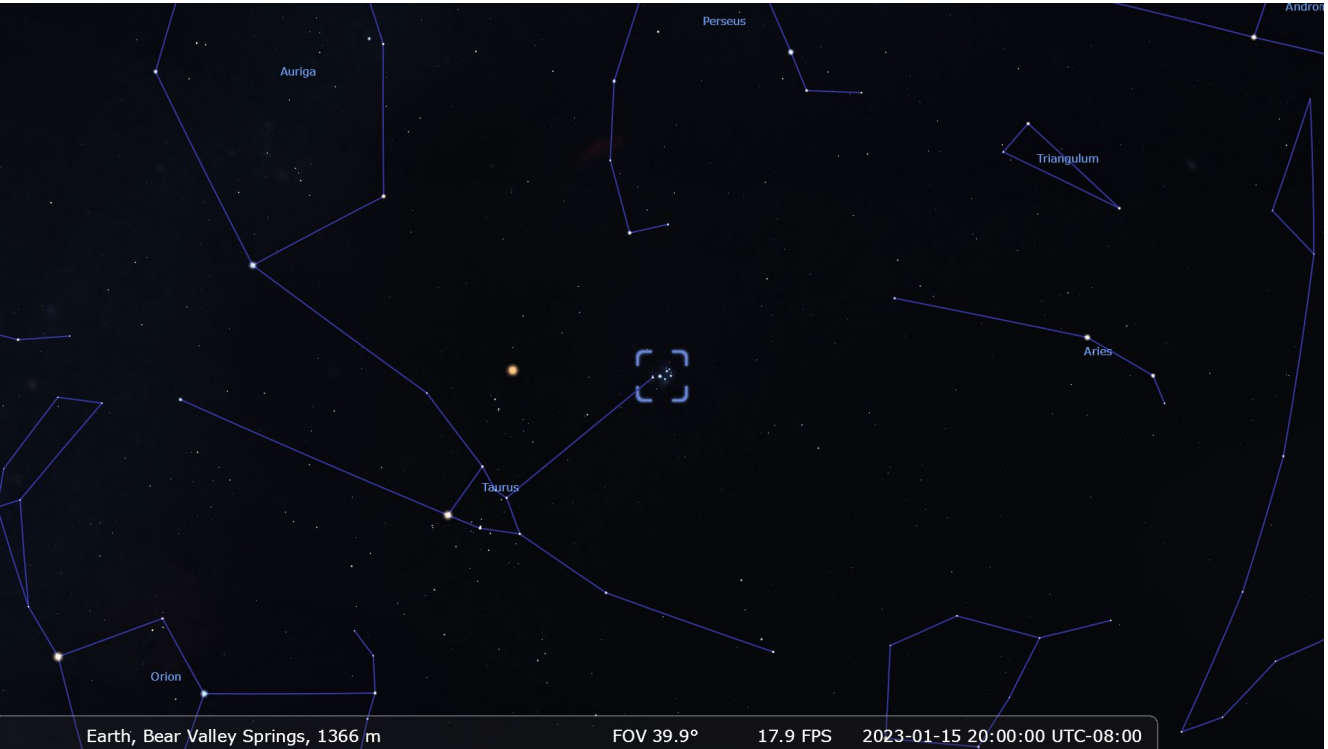
Messier 1 – The Crab Nebula. This is a mosaic image, one of the largest ever taken by NASA's Hubble

Drawing of the Crab Nebula. Originally published in *Observations on Some of the Nebulae, Philosophical Transactions of the Royal Society of London* vol. 134 (1844). Image: William Parsons, 3rd Earl of Rosse

Source: constellation-guide.com

Pleiades or Seven Sisters (M45)

about 400 light years from Earth
formed about 100 million years ago
visible with the naked eye, binoculars
Hot, blue star cluster that will stay gravitationally bound to each other for another 250MM years before dispersion - by then will have moved from Taurus to Orion



The Pleiades, an open cluster consisting of approximately 3,000 stars at a distance of 400 light-years (120 parsecs) from Earth in the constellation of Taurus. Image: NASA, ESA, AURA/Caltech, Palomar Observatory. Credit: D. Soderblom and E. Nelan (STScI), F. Benedict and B. Arthur (U. Texas), and B. Jones (Lick Obs.)

SUBARU

Source: constellation-guide.com

Hyades Cluster

153 light years from Earth, closest star cluster
brightest stars form V shape at the head of Taurus the Bull constellation
about 625 million years old
highly studied cluster - possibility of Earth-sized planets based on presence of asteroids circling a white dwarf in cluster
one exoplanet discovered thus far

Image: NASA, ESA, and STSCI

Source: constellation-guide.com