



A Guide to Salem's Night Skies

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Squad Goals

- To give you a short list of fun, easy things to look at when you find yourself under a night sky
- To make sure you know how to find said objects in the sky
 - Don't be afraid to use technology to help you either! There are some great apps out there these days.
- Everything is visible with the naked eye and looks great with just binoculars
- A small telescope will really make everything pop but is largely unnecessary
- Slides available at
<https://github.com/jrembold/Presentations> under the SPL Skies of Salem folder for future reference



Overview

- The Moon
 - Tycho
 - Copernicus
 - Sea of Tranquility
- Planets
 - Jupiter and moons
 - Saturn
 - Venus and Mars
- Deep Sky
 - Pleiades
 - Orion Nebula
 - Andromeda Galaxy
 - Hercules Cluster
- Perseid Meteor Shower



Upcoming:

The Moon





The Moon

- Where to find:
 - Full: highest in sky around midnight
 - New: highest in sky at noon
 - Waxing: up in early evening
 - Waning: up in early morning
- Always see basically the same side of the Moon
 - Rotates on axis at same rate it rotates around Earth
- Near-side has lots of contrast with darker lowlands and brighter highlands
- Looking along the **terminator** where light meets dark, will give the greatest sense of depth and contrast from shadows.



Tycho

- Named after Tycho Brahe
- Bright crater in Southern hemisphere
- Characterized by many long rays emanating outwards
- Fairly young by crater standards





Tycho

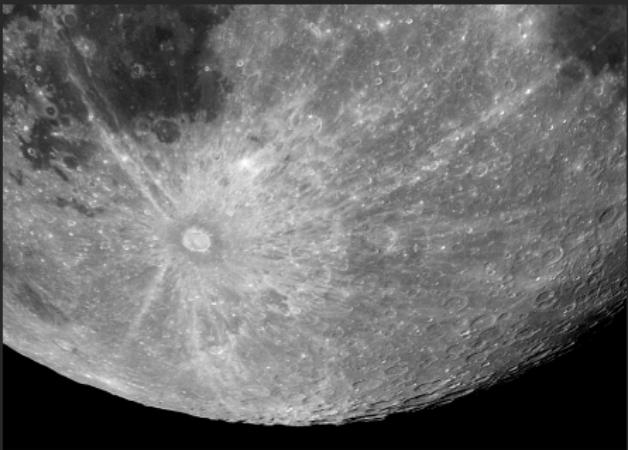
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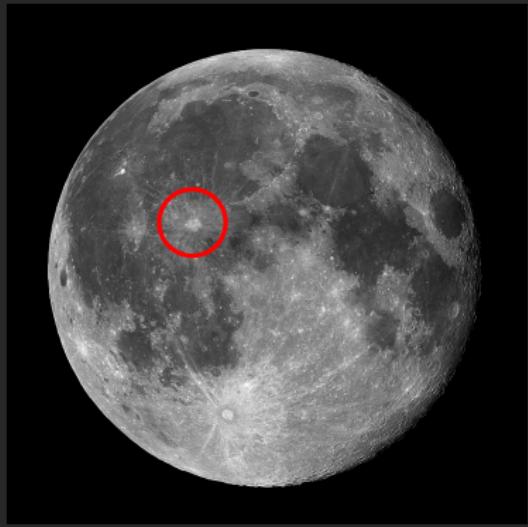


Copernicus



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- Large crater to West and in center of many darker seas
- Also has rays but they are more wandering

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Sea of Tranquility



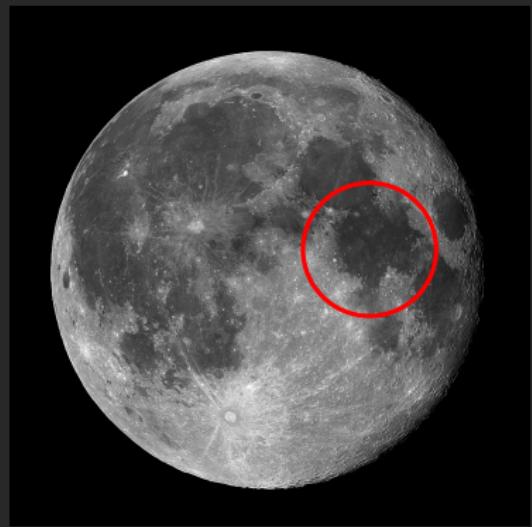
- Lower of the two seas to the East
- Lowlands expose darker rock, giving the distinct shade
- Apollo 11 landing was near the Southwest edge



Sea of Tranquility



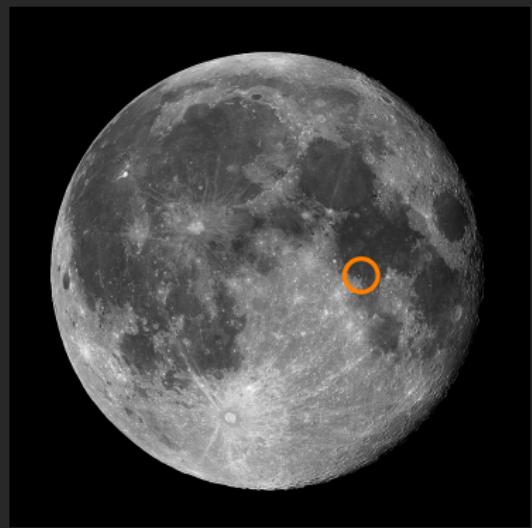
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Upcoming:

Planets



Jupiter



- Largest of the planets. Will appear as a very large bright star in the sky.
- Look towards the South between 15 and 30 degrees above the horizon.
- If you see two really bright stars, Jupiter is the brighter and is the rightmost one at the moment.
- 4 moons easily visible with just binoculars
 - Io, Europa, Ganymede and Callisto
 - Sometimes 1 or 2 may be in front or behind the planet



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Saturn

- Also appears as a bright star in the sky.
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- Will just appear oblong in binoculars, really need a **small telescope** to see the rings.
- Can sometimes see its largest moon Titan nearby.





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Venus and Mars



- Venus

- Brightest planet besides Jupiter
- Will always be hanging out near the Sun, so visible only in early evening or morning
 - Currently so close to the Sun as to be invisible
- Goes through visible phases and size changes



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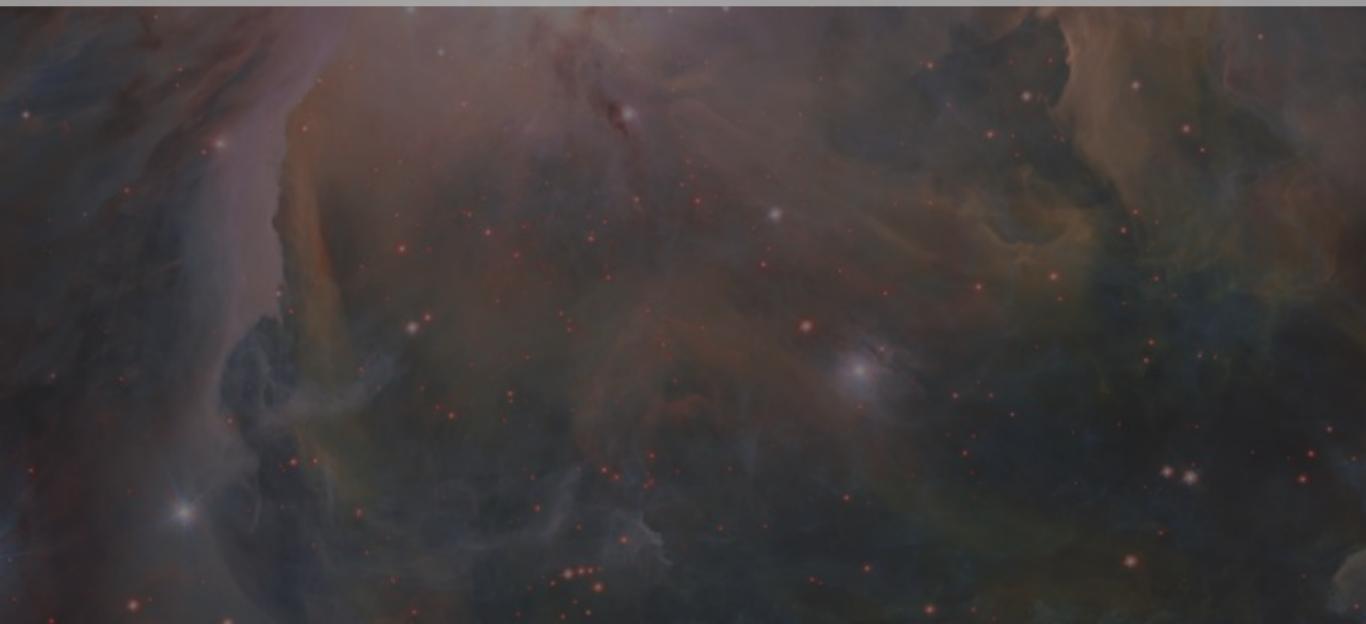
• Mars

- Exhibits a reddish tinge
- Lies on the same ecliptic, so visible mainly looking South
- With telescope can sometimes make out polar caps



Upcoming:

Deep Sky





Deep Sky Basics

- I will relate everything to 3 bright, easy, constellations. So you just need to be able to find them.
 - Cassiopeia
 - Orion
 - The Big Dipper
- Peripheral vision is more sensitive to light
 - Don't stare directly at the dim object you are trying to see!
- These all can be seen in light-polluted areas, but it may be easier to find them the first time from a good dark location.

The Pleiades: An Open Star Cluster



- Located in the constellation Taurus
 - Can find by following the line of Orion's belt
 - Or rapidly scan the sky looking for a blurry spot
- Tightly pack bunch of young, bright blue stars
- Inspired the Subaru logo

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- Brightest nebula to look at in the Northern hemisphere
- Resides in the “dagger” on Orion’s belt
- Orion currently rises just before the Sun, but will be up earlier and earlier as we move toward winter.





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Andromeda Galaxy

- Our nearest galactic neighbor!
- Definitely easier to spot away from light pollution
- Follow a trail of constellations to help find it:
 - Cassiopeia (the “W”)
 - Pegasus (a big square)
 - Andromeda (two “legs” attached to the square)
- Will appear an oblong fuzzy blob with naked eyes, much more detail visible with binoculars





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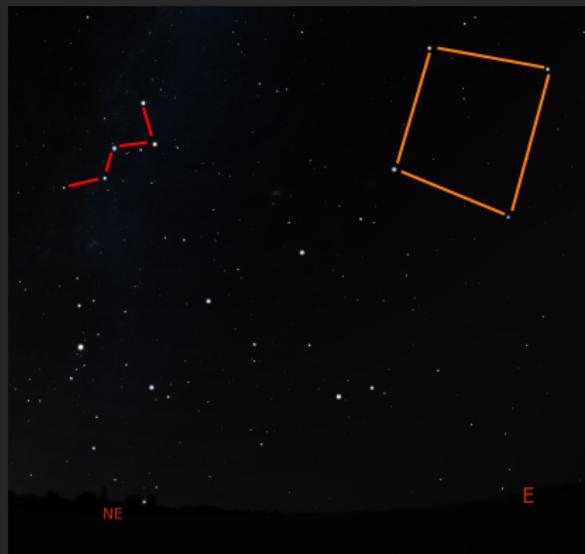
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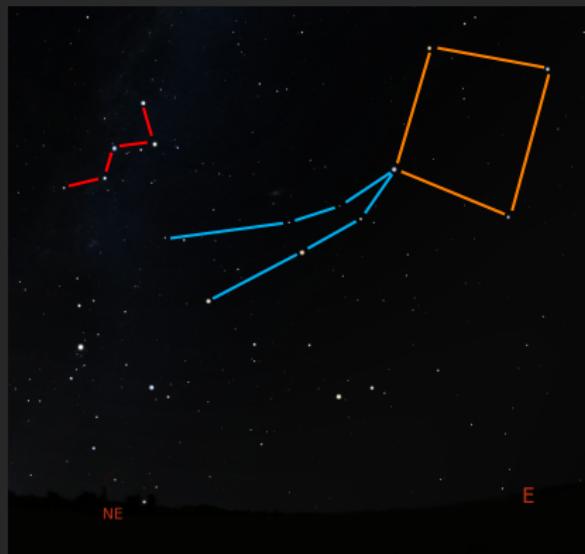
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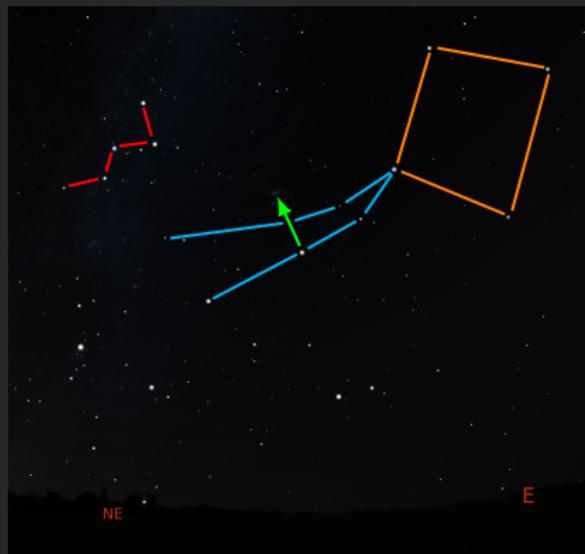
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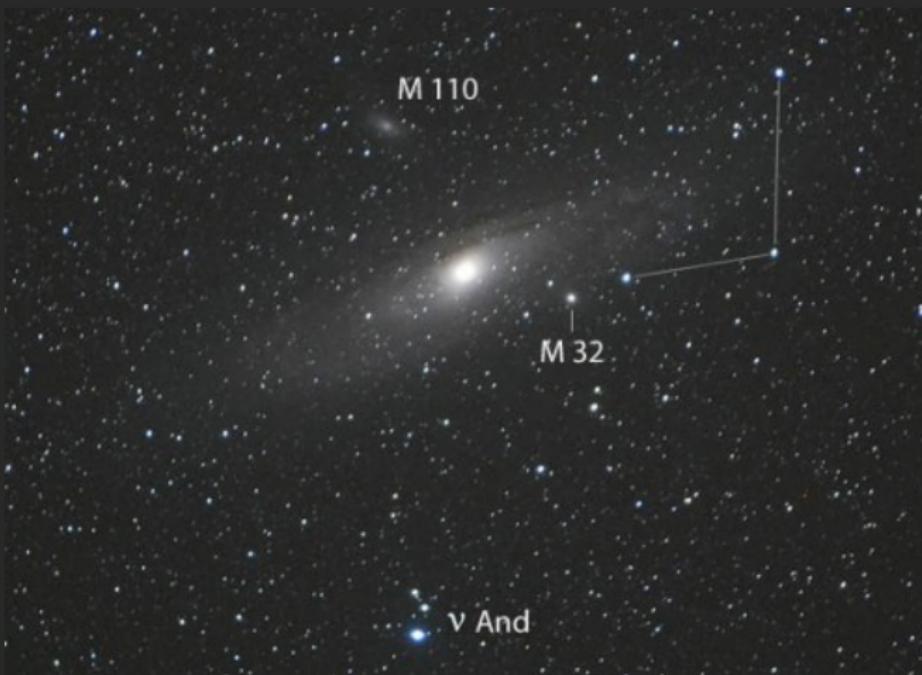
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Andromeda thru Binoculars





Hercules Cluster: A Globular Cluster

- Located in constellation Hercules
 - Rests between the bright stars Vega and Arcturus
 - The handle of the big dipper points towards Arcturus
- Incredible dense regions of old, yellow/golden stars
- Generally live above or below the disk of the Milky Way





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Perseid Meteor Shower



- Caused by debris from Comet Swift-Tuttle burning up in the atmosphere
- Radiant will appear to be in the constellation Perseus, just below Cassiopeia
 - In truth though, just look up. You'll see them everywhere!
- Peak mornings are August 11,12,13
 - But watch starting now! A large moon will obscure viewing on those days