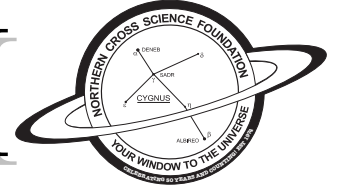


SPECTRUM



Northern Cross Science Foundation Newsletter
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February 2025

Star Clusters – Their Formation and Characteristics

Dave Minerath

As we look up in the sky at night, if conditions are right, we can see many types of objects—some relatively close, and others far, far off in deep space. This month we explore three types of deep-sky objects, open clusters, globular clusters, and stellar associations.

What makes a star cluster?

A star cluster is a group of stars that are tied together into a close formation by mutual gravity. Galaxies share the same characteristic, but have many, many more stars; in terms of mass, a galaxy may have as much as 10^7 times the mass of a star cluster.

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Meeting Minutes-January 2025

Don Woelz, NCSF Secretary

Jeff Setzer, NCSF President, started the January 2025 Member Meeting of the Northern Cross Science Foundation at 6:30 pm on Thursday, January 2, 2025, at the Jackson Community Center by introducing himself as the presenter for the evening. His program was a review of the just-completed 50th anniversary year of the NCSF.

Some of the highlights of the year outlined by Jeff in his slide show and talk included:

- The new 50th Anniversary Logo
- Pictures and reminisces of the 50th Anniversary Banquet
- The Solar Eclipse with pictures of his personal experiences with family in Indiana
- The May 10 aurora that coincided with a public viewing event at HBSP

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Next Meeting

General Meetings

All general meetings are held at the Jackson Community Center, N165 W20330 Hickory Lane, Jackson, unless otherwise noted.

Thursday, Feb 6, 6pm

Presentation topic: “Using your First Telescope”





Hercules Cluster M13.

Photo Credit: NASA, ESA, and the Hubble Heritage Team (STScI/AURA)

A globular cluster may have thousands or millions of stars, and tend to be older than open clusters. In the sky, a globular cluster may look like spilled salt or a very faint cotton ball in the telescope eyepiece. The Hercules Cluster, M13, is one example of a globular cluster.

An open cluster is much younger and smaller than a globular cluster, mass-wise with hundreds to thousands of stars. Their mutual gravitational bonds are much weaker, so the clusters are more loosely packed and spread out in irregular shapes. One of the most famous open clusters is the Pleiades, M45.

There is a third type of cluster that is the loosest and smallest of the group—*stellar associations*.

Consisting of 10 to 10,000 stars, they have the loosest association of the three groups. They are so spread out that they have lost their mutual gravitation, but are moving through space together. Since they do not have the mutual gravitational bonds holding them together, these associations are hard to spot. Scientists can group them based on movement, age, and chemical composition. 🪐



The Pleiades or Seven Sister, M45. Photo Credit: Jakub Korbek

<https://starwalk.space/en/news/naked-eye-star-clusters-list>

<https://science.nasa.gov/universe/star-clusters-inside-the-universes-stellar-collections/>

<https://science.nasa.gov/mission/hubble/science/explore-the-night-sky/hubble-messier-catalog/messier-13/>

<https://science.nasa.gov/mission/hubble/science/explore-the-night-sky/hubble-messier-catalog/messier-45/>

*Star Clusters
Continued from p. 1*

–The NCRAL conference at St. Norbert University in West DePere

–WOW! 2024

–The 50th Anniversary picnic at the observatory at HBSP

–The October 10 aurora

–The updates and repairs to the Panarusky telescope and the Jim and Gwenn Plunkett Observatory

–The Tsuchinshan comet

–The Pike Lake candlelight hike

Submitted by Don Woelz, Secretary 🪐

Meeting Minutes-January 2025

Continued from p. 1

Outreach-Astronomy and Nitrogen

Last month Jim Hahn lead two different outreach programs highlighting astronomy and the science of extreme cold.

Mequon Nature Preserve – Liquid Nitrogen Demonstrations



Stand by for blastoff! Photo Credit: Amanda Neimon

On January 20, Jim led a science outreach at the Mequon Nature Preserve. He demonstrated to a small crowd the power of extreme cold, using liquid nitrogen to quickly freeze otherwise pliable objects so cold that they shattered under the blow of a hammer.

He also demonstrated the Leidenfrost Effect by pouring liquid nitrogen into his hand and showing how it boiled away before contacting his



Jim deep-freezing a racquetball before shattering it with a hammer. Photo credit: Amanda Neimon

skin. A small green rocket took to the skies, harnessing the power of liquid nitrogen for propulsion.

Riversedge Nature Center Trails Aglow

Jim also led an astronomy outreach during the Riveredge Nature Center “Trails Aglow” event. Set with a scale model of the Solar System, Jim showed a crowd of about 60 guests our nearby neighbors Venus, Mars, and Jupiter through an 8-inch Dobsonian scope. 🪐





Photo credit-Gene Dupree

January Outreach Programs

Gene Dupree and Dave Minerath

On January 18th Gene and Charlotte Dupree hosted a public outreach event up at Horicon Marsh. They set up a single 8" telescope shortly before sunset at 4:45 under clear and very cold skies.

The targets for the evening were planetary neighbors Venus, Jupiter, Saturn, Mars, and our deep space friend the Orion Nebula. Gene braved the cold for about 2-1/2 hours guiding the visitors around the sky, while Charlotte presented numerous handouts and a small telescope display in the warm indoors.

About 100 visitors came through the inside displays and the telescope viewing. It was a very low turnout for this event because of the cold. 🪐

In the Sky This Month

1 – Waxing crescent close to Venus in the afternoon



1 – Moon approaches Saturn, [freepik.com](https://www.freepik.com) then it approaches Venus later that night

5/6 – Moon occults the Pleiades, and also has a close approach to Jupiter

8 – α -Centaurid Meteor Shower

9 – Moon close approach to Mars

16 – Venus at its greatest brightness

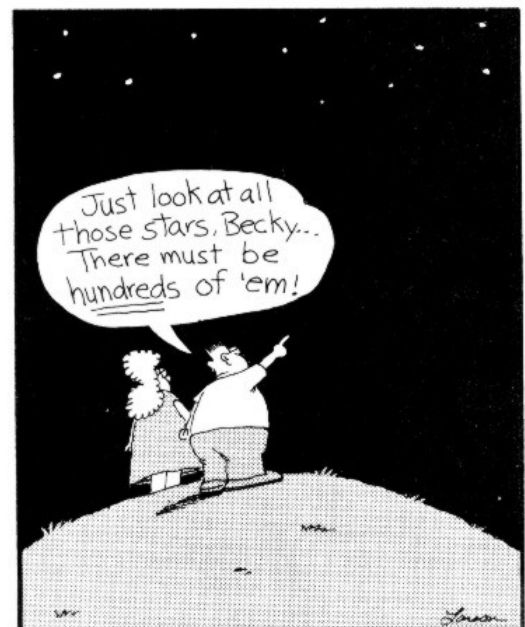
19 – Bode's Galaxy (M81) high in the sky

24/25 – Mercury and Saturn pass each other

28 – Waxing crescent moon close to Mercury and Venus. The new moon comes at 6:44 pm local time (00:44 UTC) so the waxing crescent may be pretty thin. 🪐



Photo credit-Charlotte Dupree



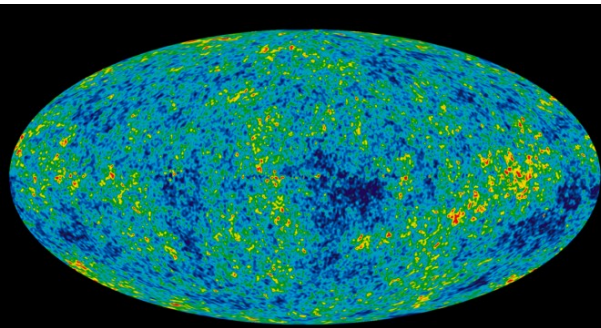
Carl Sagan as a kid

This Month in Astronomy History

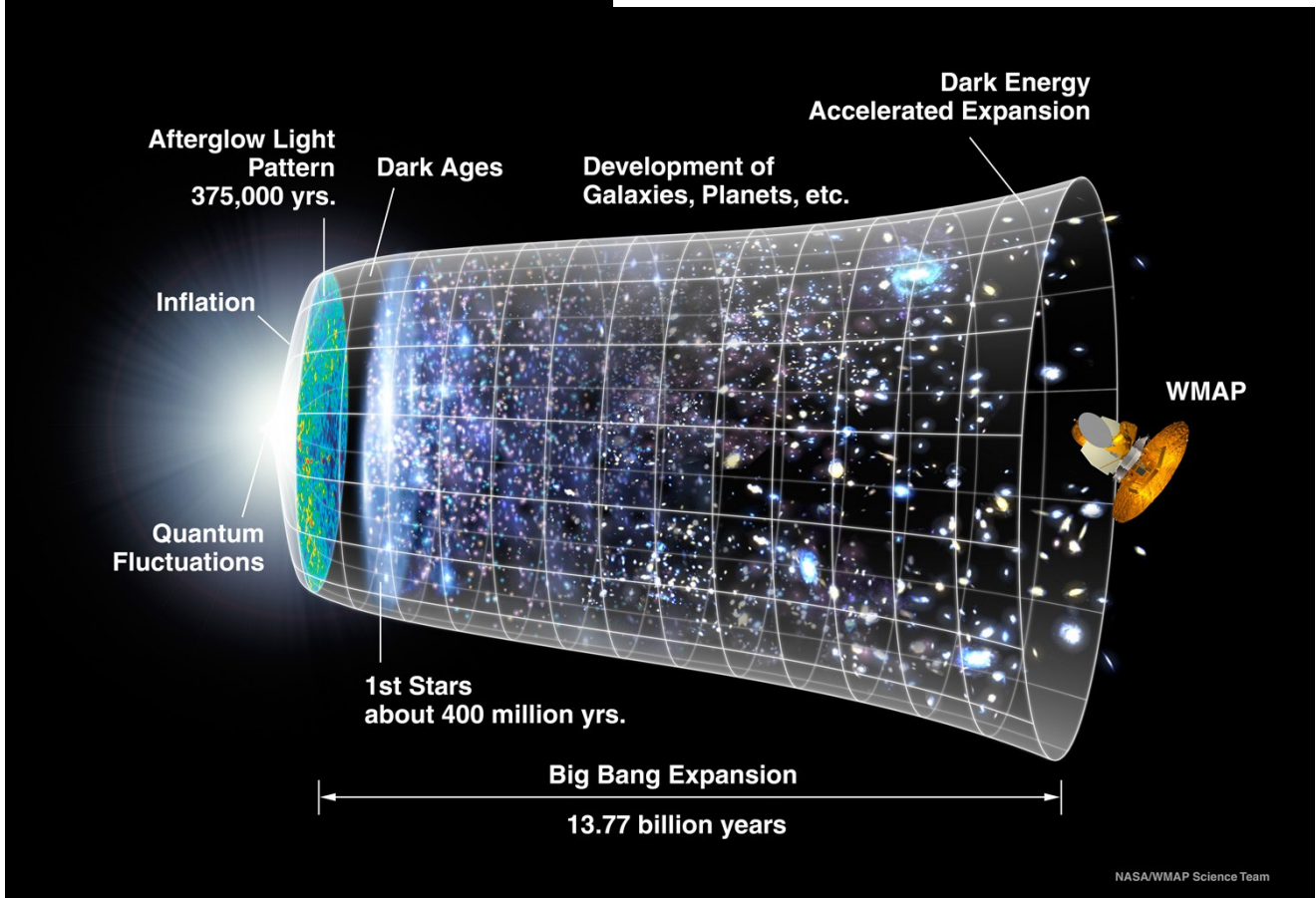
1930 – Clyde Tombaugh discovers Pluto. The name was suggested by Venetia Burney, an 11-year old girl from Oxford England. The name is a reference to the Greek god of the underworld, and also starts with the initials of the astronomer that started the hunt for “Planet X”, Percival Lowell, in 1906.



Pluto as seen by New Horizons. Credit: NASA/JHU APS/SWRI



2003 – NASA’s Wilkinson Microwave Anisotropy Probe (WMAP) mission releases a map of the Cosmic Microwave Background (CMB). The CMB is the name given to the faint afterglow in the universe stemming from the Big Bang. 🪐



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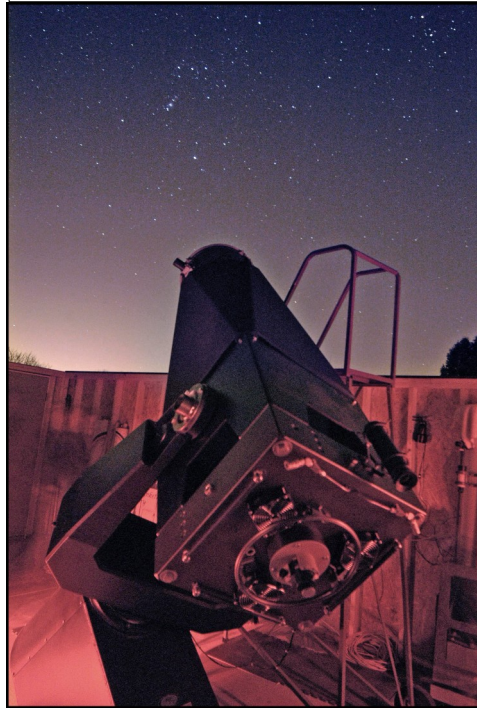
In the Sky This Month:

<https://www.highpointscientific.com/astronomy-hub/post/night-sky-news/2025-astronomical-calendar>

<https://spacetourismguide.com/february-night-sky/>

This Month in Astronomy History

<https://aas.org/posts/news/2017/02/month-astronomical-history-discovery-pluto>



<https://ncsf.info>

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Submissions for publication may be sent to newletter@ncsf.info by the third Saturday of the month prior to publication. 🪐



NCSF is a member of the [North Central Region of the Astronomical League](#)



NCSF supports the [International Dark Sky Association](#)