

Northern Lights

written by Chris Guibert | August 7, 2022

Northern Lights on the Keweenaw Peninsula

The Keweenaw Peninsula is one of the best places to see the northern lights in Michigan. The Northern edge of the peninsula runs along Lake Superior creating a natural viewscape across the water. The lights can appear just above the horizon and across the sky above you.



Northern Lights over Copper Harbor – photo by Chris Guibert taken on April 9, 2022

The Aurora Borealis or as most people refer to them “the northern lights” are visible anytime of year. The northern lights are a natural phenomenon found in the Northern

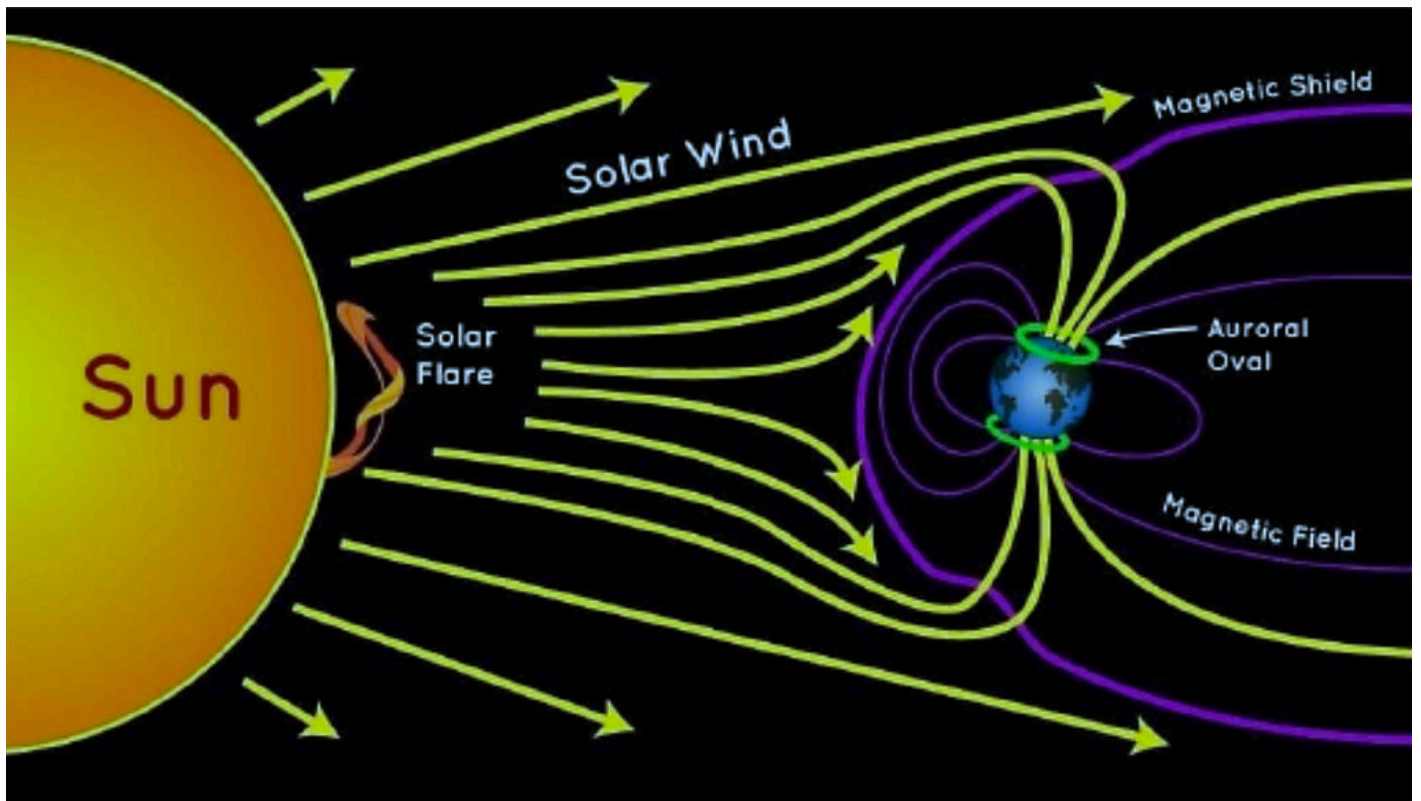
Hemisphere, in the Southern Hemisphere they are called, aurora australis or “southern lights.”



Comet Neowise dances with the Northern Lights above the Bete Grise Preserve – photo by Chris Guibert taken July 4, 2020

There is no official season for the northern lights because they are almost always present, day and night. The best time for increased geomagnetic activity seems to be during the Spring and Fall equinoxes. The lights are caused by charged particles from the sun hitting atoms in Earth's atmosphere and releasing photons, it's a process that happens constantly. The aurora display is based on the direction of the solar wind and how it collides with Earth. During the Spring and Fall equinoxes, in March and September, the position of the Earth's axis, relative to the sun, puts it side-on to the solar wind. This can cause more interaction with charged particles along the Earth's

magnetic lines and create more aurora activity.



Solar winds produced by the sun send energy particles through the solar system which strike the Earth's magnetic fields. When these particles collide with oxygen in the Earth's atmosphere, they produce red or green lights when they collide with nitrogen, the light produced is green and purple.



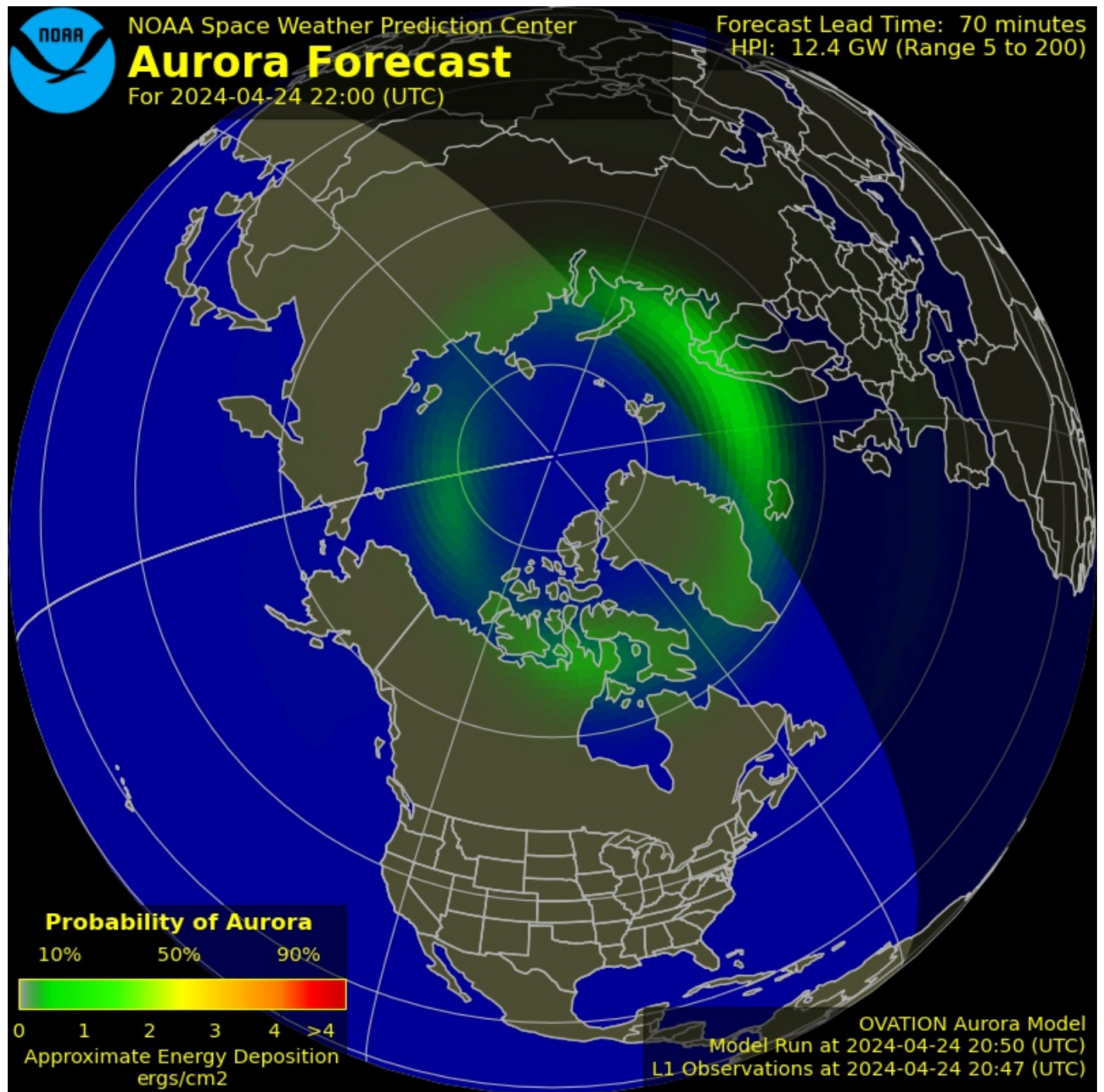
Northern Lights above the Cabins at the Keweenaw Mountain Lodge on February 26, 2023.

One of the ways to measure the chances of seeing the Northern Lights is to check the Kp index. The Kp index is an excellent indicator of disturbances in the Earth's magnetic field. Aurora storms have a scale of intensity from Kp1 to Kp9. When a storm reaches KP5 it's consider a minor magnetic storm. In the Upper Peninsula you can see KP4 storms and photograph them very well. A Higher Kp does not necessarily mean higher chance to see the lights. It simply corresponds to how strong geomagnetic activity is.



The northern lights over the Keweenaw Mountain Lodge. This was a level G3 solar storm that took place on February 26, 2023- photo by Chris Guibert

Aurora Forecast, from NOAA



This link will take you to NOAA's planetary K index which will

give you an idea what kind of solar wind activity has been taking place.

<https://www.swpc.noaa.gov/products/planetary-k-index>

There are also many apps available to use to check the Kp index and current or predicted conditions.

Northern Lights Apps



Aurora [[Android](#) | [iPhone](#)]



Aurora Forecast [[iPhone](#)]

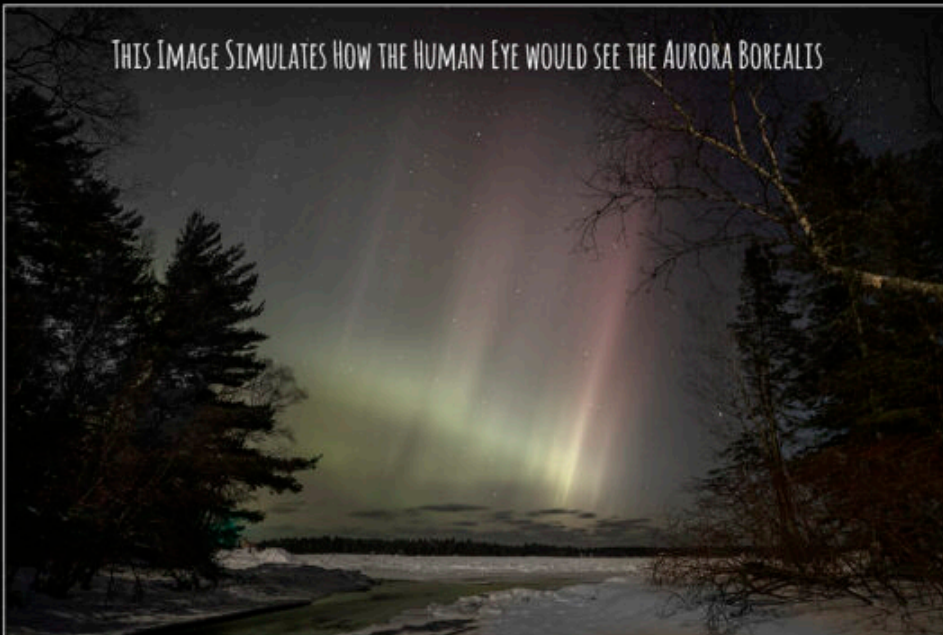
Resources:

- [Soft Serve News](#)
- [Space Weather Live](#)
- [Space Weather Woman – Dr. Tamitha Skov](#)

Please keep in mind that in Michigan, the northern lights might not be seen in color with the naked eye but as a white/grey area in the sky. With a strong solar storm you may see faint pale green and magenta colors. Vibrant photos taken of the northern lights usually have long exposures that absorb more light onto the sensors. These exposures, which are usually 15 seconds or more have more saturated colors. Using your cell phone with a long exposure night mode or a small tripod can create images similar to the ones created with digital SLR's on a tripod.

HOW HUMANS SEE THE AURORA BOREALIS: HUMAN EYES VS CAMERA

THIS IMAGE SIMULATES HOW THE HUMAN EYE WOULD SEE THE AURORA BOREALIS



Human eyes can't see the relatively "faint" colors of the aurora at night. Our eyes have cones and rods – the cones work during the day and the rods work at night. Humans use two different kinds of cells in their eyes to sense light. Cone cells, concentrated in the fovea in the central area of vision, are high resolution and detect color in bright light. These are the main cells we use for vision in the daytime. Rod cells, concentrated in the periphery around the outside of the fovea, can detect much fainter light at night, but only see in black and white and shades of gray. Aurora only appear to us in shades of gray because the light is too faint to be sensed by our color-detecting cone cells"

- Jerry Lodriguss - Astropix

THIS IMAGE IS FROM A CANON DIGITAL CAMERA WITH A LONG EXPOSURE (15 SECONDS)



Camera: Canon 5D Mark IV

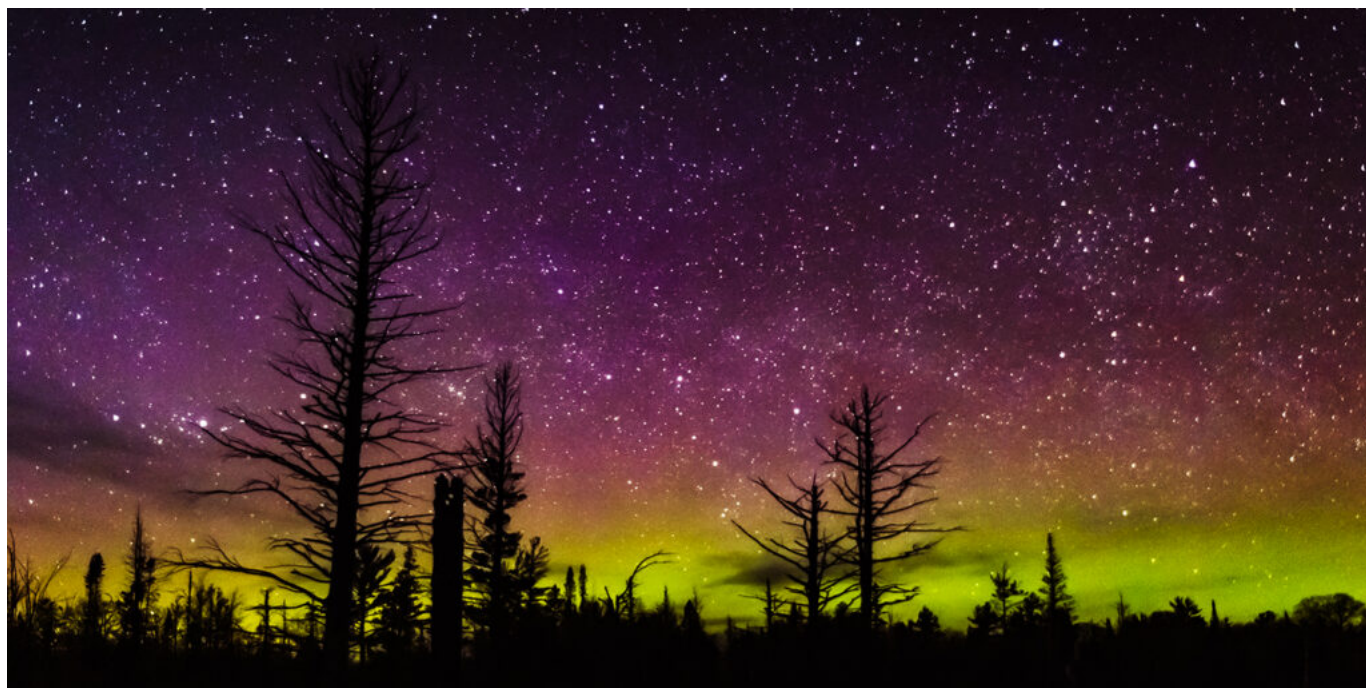
Lens: Canon EF 16-35 f/2.8L III USM

Settings: 15 seconds f2.8 ISO 1000

Long exposure photography is the name given to the technique in which the camera's shutter is left open during a somewhat lengthy period of time. Also known as slow-shutter or time-lapse photography, this technique is used to show the effect of passing time in a scene. A long exposure photo can require an exposure time anywhere between a couple seconds up to half an hour.

A camera (or phone) must be placed on a tripod to properly execute this technique.

If you are interested in learning more about photographing the northern lights please consider taking one of our [Night Sky Photo Workshops](#).



This photo by Tom Oliver uses a 20 second exposure.
<https://www.instagram.com/theupwell/>

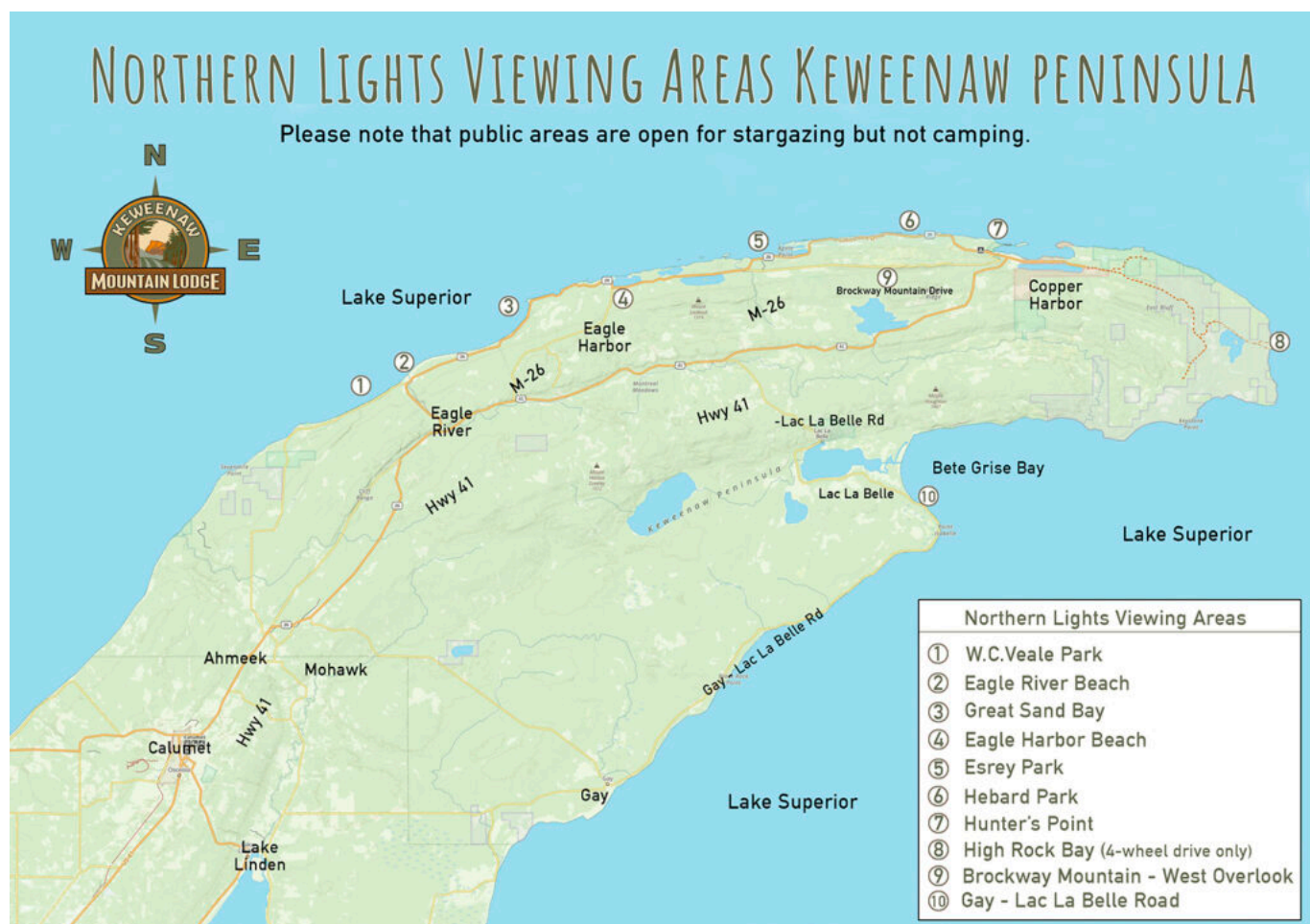
A few suggestions for trying to view the northern lights:

- Understand the moon phases. The moon's brightness will wash out the sky and make the aurora less visible. It is best to plan a trip around the new moon. Below is the current year (2023) New Moon Calendar.

January 21	July 17
February 20	August 16
March 21	September 14
April 20	October 14
May 19	November 13

June 18	December 12

- Go to a viewing area that faces directly North. This map shows roadside parks across the peninsula that are open to the public all night long. Please note that you are welcome to stargaze but camping is not permitted.



[Click on the above image to [download PDF version of the map](#)]

- Join the group [Michigan Aurora Chasers group on Facebook](#). “Our goal is to help people in Michigan and surrounding areas find and photograph the Northern Lights. Read the pinned post to get started! Created on Jan. 20, 2021, we encourage sharing, connecting, asking questions, and working together to forecast this rare natural phenomenon.” – Administrators of Michigan

Aurora Chasers.



Northern Lights over Copper Harbor. This location is one mile from the Keweenaw Mountain Lodge. Photo by Chris Guibert