# METEORS & S'MORES

## Goes virtual in 2020

**What are meteors?** Meteors are leftover material from the formation of our solar system and dust debris from comets and asteroids. When comets travel through the inner solar system, the cosmic wind from the sun heats up the comet, helping to release water and dust particles.

**What are meteor made of?** Most meteors are made of common rocky type silicates, while others are made of heavy iron and nickel.

**What causes a meteor shower?** As the earth rotates around the sun, earth's atmosphere collides with space debris that enters the atmosphere between 9 to 46 mps (miles per second) and causes the debris to burn up. This burning from the friction of the meteor colliding with air molecules can produce a very bright light of varying colors.

**Why are there so many different colors of meteors?** The different colors are produced by the ionization process of the meteor. Different minerals will produce different colors.

**Why are some meteors brighter than others?** Faint meteors come from small objects that burn up faster, are higher up and are typically the size of a grain of sand or dust. Larger objects (ranging from pea size to walnut size) with more material to burn will usually be brighter and last longer. The longer and brighter meteors may be made of rocky silicate material or of sturdier minerals like iron and nickel, which are very dense metals.

**What's the difference between a meteor and a meteorite?** A meteor only ever makes it to earth's atmosphere, while a meteorite makes it through the atmosphere and survives impact on the earth's surface.

### Helpful tips for night sky viewing

- **Watch the weather**
- **Dress appropriately.** Bring layers and blankets that can be added easily as temperatures drop.
- **Look away from the constellation of which the meteor shower is originating for best views.**
- **Observe when the moon is in its darker phases.** The moon's glare will severely outshine faint meteors, so try to avoid the first and third quarter when it is bright. Also, keep the viewing area dark (no car headlights, street lamps, etc.)
- **If you need lighting, use a red light.** This will allow eyes to adjust to the darkness.
- **Use a large open area or hill top.**
- **Bring food and/or drinks.**
- **Pack the bug spray.**
- **Have fun!**

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The Recreation Passport is the easiest way for residents to explore, support and protect state parks, trails and waterways for the next generation. Check "YES" for the Recreation Passport when it's time to renew your Michigan vehicle registration or purchase one at a state park. Check here. Park here. Learn more at Michigan.gov/RecreationPassport.

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## More facts about meteors

**Smoke trains**
Often larger meteors will leave what's called a smoke train. Smoke trains can be very long from meteors with more mass, but they can also be short. Shorter smoke trains are typically from fireballs that burn up closer to the ground. Smoke trains can last for quite a while in the atmosphere if the wind or other environmental conditions don't affect it, some lasting minutes or even hours.

**Bolides**
Pieces that fall off of a meteor as it's burning up are called bolides. Meteorites that land on earth show evidence of this process and have areas on them that look like a piece was "scooped" out of it. These impressions are called Regmaglypts and are about the size of a thumb print. Fireballs and bolides have also been reported to have sound.

**Oriented meteorites**
Some meteors have been reshaped to look like cones or even triangles

**Meteor shower names**
Meteors radiate from various regions in the sky. These radiant areas are given names which name the shower. For example, the Perseids meteor shower radiates from the constellation Perseus and the Leonids shower radiates from the constellation Leo.

Every month of the year hosts one or more meteor showers (large or small), with many overlapping each other and sometimes spanning up to three months.

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## About Dark Sky Preserves in Michigan

Dark Sky Preserves are protected against light pollution and are ideal locations for stargazing.

Here in Michigan, six state-designated Dark Sky Preserves are located within the following parks:

- Lake Hudson Recreation Area
- Negwegon State Park
- Port Crescent State Park
- Rockport Recreation Area
- Thompson's Harbor State Park
- Wilderness State Park

## Headlands Dark Sky Park & Dr. T.K. Lawless Park

The Headlands Dark Sky Park (Emmet County) and Dr. T.K. Lawless Park (Cass County) are the only internationally designated Dark Sky Parks in the state and offers additional opportunity for viewing the night sky.

This prestigious designation was bestowed by the International Dark Sky Association after a rigorous application and review process. As a result, these parks will stay dark and protected, forever.

## Michigan's Upper Peninsula

Michigan's Upper Peninsula offers excellent night sky viewing opportunities across more than 15,000 square miles.

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