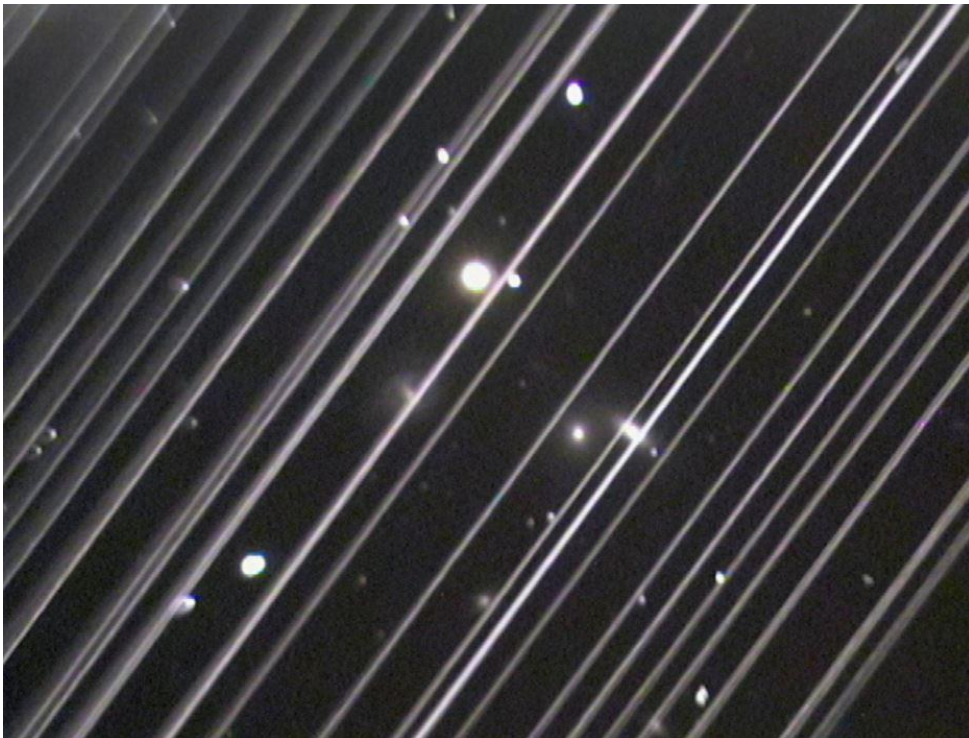


## August 2021 Astronomy Update for the Chippewa Valley

**Editor's note:** *Astronomy Update is provided by the Chippewa Valley Astronomical Society and is compiled by Dr. Lauren Likkell, an emeritus of the University of Wisconsin-Eau Claire department of physics and astronomy.*

**Figure caption:** Satellites look like moving stars in the night sky, so they show up as streaks in the long exposures required for imaging celestial objects. This image of a galaxy was marred by a launch of Starlink satellites in May 2019. Images by researchers and astro-photographers are increasingly ruined by satellites.

**Photo Credit:** Victoria Girgis/Lowell Observatory



**“Thousands swarm Earth’s skies”**

**By Kevin Litten**

Once upon a time not so long ago, people looked up at the night sky and didn't see anything move. The occasional airplane came along with its blinking lights but that mostly bothered people who lived along a common flight path. Then on October 4, 1957 the Soviet Union launched Sputnik 1. It was the first artificial satellite to orbit the Earth. Sputnik was not visible to the naked eye and it was nice enough to come back down after 3 months. However, ever since that time the sky has gotten more and more crowded.

Today over 2000 communication satellites alone have been launched into Earth's orbit.

Elon Musk keeps shooting up Starlink satellites, 60 at a time, each one following the other. Every one of them visible. One day there will be over 1500 of them. Russia will have its own version, known as Sphere. Russia, China, and the European Union each have their own Global Positioning Satellites, named respectively Beidou, Glonass, and Galileo.

The International Space Station (ISS) is the brightest man-made object orbiting the Earth. Want to watch it sometime? Well go online, there are sites dedicated to predicting when and where it will be. The Chinese are building their own version of the ISS, the Tiangong or "Heavenly Palace." It will be a bright one too. Our country's Orbital Test Vehicle X-37B shines at magnitude 1.5, not too stealthy as a supposed spy satellite, but you didn't read that here, so don't worry about it.

Some astronomy enthusiasts actively seek out satellites. They have special software and techniques to help them accomplish this. Every group has its contrarians. My brother astronomers didn't launch them there in the first place. To each his own.

There are an estimated 100 million pieces of space debris orbiting the Earth. Our Department of Defense only tracks those 10 cm in diameter or larger, about softball size, or about 35 million pieces. Those small pieces can do considerable damage to a spacecraft. The larger ones will easily destroy a satellite. The worst part is they would leave more pieces behind.

One day, not too much further in the future, it may be unsafe for anything to orbit the Earth. We'll be stuck here longing for the days when space flight is again possible. Waiting for the days when our man-made stars stop moving and our self-imposed reign of debris ends.

-- Kevin Litten is a member of the Chippewa Valley Astronomical Society

To investigate what satellites are in the night sky at a given time, check out [Heavens-above.com](http://Heavens-above.com) or a satellite tracking app. There are specific apps for the International Space Station, such as ISS Spotter.