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## Chippewa Valley Astronomy Update

### “The Destructive Force of the Moon”

By Lauren Likkel

**Figure caption.** How do you know this image is a fake? Take another look before I tell you the big clue. The moon image was taken in the Chippewa Valley by Ed Henry, and added to a picture of ocean waves. The big clue in the picture? The moon is closer than the clouds. Or maybe you realized there would be reflected moonlight from the ocean!



Tomorrow is International Observe the Moon Night, Saturday October 16, 2021 which gives you a nudge to get out and enjoy the moon. You will see the moon reflecting sunlight to you. What you won't be able to see or feel is the gravitational force from the moon.

Even though you live in the midwest, you might know that the moon's gravity causes the ocean tides, with two high tides per day. How high the water goes up at high tide depends on the moon phase – highest at full and new moons. It also is higher if the moon is close to the plane of Earth's orbit and if it is closer to the Earth in its orbit. Weather, sea levels, and location also matter. The highest tides create flooding, wave damage, and deposits of sand and debris. The moon's orbit creates a repeating 18.6 year lunar cycle of how high the tides are.

We are currently feeling the extreme tide part of that lunar cycle. In recent years, the super high tides (called King Tides) have caused unusually large amounts of damage to beach front roads, businesses, homes and tourist areas. NASA started “International Observe the Moon Night” in 2010, just before the high tides peaked in 2015. Coincidence? Or are they trying to get us to love the moon even when it causes coastal destruction?

Because the sea levels continue to rise, the tidal damage will be even worse by the next peak of the cycle in 2034, according to a study by NASA's Sea Level Change Science Team. Tidal surges in the 2030's will be more damaging than we have previously seen because the sea level will be higher. In about a decade, it might not be a good time to buy beachfront property on the coasts of the United States.

Take a look at the moon tomorrow after sunset on *Observe the Moon Night*. Does the moon look any different now than it used to? Ah, if you haven't been looking at it you don't know. The moon changes how it looks and where it is in the sky every single night, but you are seeing the same moon that people gazed at hundreds and thousands of years ago. Compare what you can see with your eye to a view through binoculars, telescope, or a zoom lens.

And while you look at the moon, remember the invisible power the moon has on the ocean tides.

-- Lauren Likkel is a member of the Chippewa Valley Astronomical Society