

## *When it Comes to Mass Extinction, Meteorite Size Doesn't Matter*



*Near-Earth objects pass by our planet in this artist's rendering. It's a well-known story in our planet's past: A giant space rock slams into Earth, causing a catastrophe that ends in mass extinction. You might think that when it comes to determining which hits will cause such widespread devastation, the size of the incoming impactor is what matters. But new research suggests that something else might matter more: The composition of the ground where that meteorite hits. An international team of researchers, including experts in mineralogy, climate, asteroid composition, and paleontology, tackled this question by examining 33 impacts over the past 600 million years. Specifically, they looked at the minerals in the massive amount of dust that an incoming meteorite throws up into the atmosphere. That dust can profoundly change Earth's climate — and it is that climate change which researchers think is a major cause of mass extinctions following impacts.*

Photo Courtesy: ESA - P.Carril

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The EAS newsletter, Observer, is published monthly. Anyone wishing to contribute articles or photos may mail them to the club's PO Box: EAS, PO Box 3474, Evansville, IN 47733, or e-mail them to the editor at:

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The **Evansville Astronomical Society (EAS)** is a non-profit organization fully incorporated in the state of Indiana. It has, as its primary goal, the advancement of amateur astronomy. Founded in 1952, the society seeks to:

- 1... maintain adequate facilities for its members and the public in order to extensively study the skies and
- 2... promote an educational program for those who wish to learn more about the science of Astronomy.

Meetings are held the third Friday of each month, except June, when the annual EAS picnic is held. The society also sponsors monthly Open House events during the warmer seasons that afford the public an opportunity to tour the observatory.

**EAS 2022 Officers and Contacts**

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For more information about the EAS or directions to the Observatory, please visit the club's web page:

[www.evansvilleastro.org](http://www.evansvilleastro.org)



## Local Events and Information

### EAS Update

Please Note: We have a Zoom Meeting scheduled for 7:30 PM on Friday, February 18<sup>th</sup>, 2022.

### EAS Update

### EAS Update:

Please visit our website [www.evansvilleastro.org](http://www.evansvilleastro.org) and our Facebook Group page to keep yourself up to date for any changes.

### FOR SALE:

### Telescopes and accessories for sale...

As mentioned in last month's issue, Mike Borman still has some excellent telescope equipment and imaging accessories for sale. Some of the gear has already been sold. If interested, go to Mike's web page. Here is the link: <http://www.mborman.org/forsale.htm>

**Earth is Spinning Faster Now than it was 50 Years Ago.**



*Ever feel like there's just not enough time in the day? Turns out, you might be onto something. Earth is rotating faster than it has in the last half-century, resulting in our days being ever-so-slightly shorter than we're used to. And while it's an infinitesimally small difference, it's become a big headache for physicists, computer programmers and even stockbrokers.*

Credit: janez volmajer/Shutterstock

Thanks to that angular momentum, our planet has been spinning for billions of years and we experience night and day. But it hasn't always spun at the same rate.

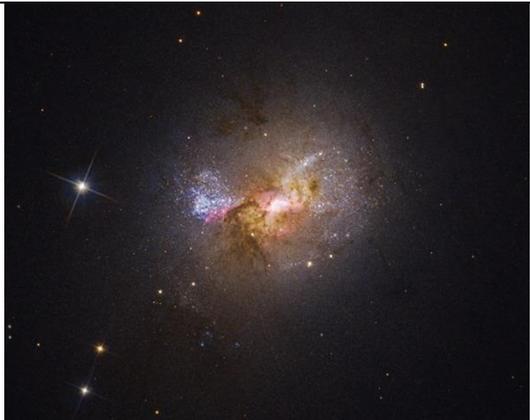
Hundreds of millions of years ago, Earth made about 420 rotations in the time it took to orbit the Sun; we can see evidence of how each year was jam-packed with extra days by examining the growth lines on fossil corals. Although days have gradually grown longer over time (in part because of how the moon pulls at Earth's oceans, which slows us down a bit), during humanity's watch, we've been holding steady at about 24 hours for a full rotation — which translates to about 365 rotations per trip 'round the Sun.

As scientists have improved at observing Earth's rotation and keeping track of time, however, they've realized that we experience little fluctuations in how long it takes to make a full rotation.

In the 1950s, scientists developed atomic clocks that kept time based on how electrons in cesium atoms fall from a high-energy, excited state back to their normal ones. Since atomic clocks' periods are generated by this unchanging atomic behavior, they don't get thrown off by external changes like temperature shifts the way that traditional clocks can.

“As time goes on, there is a gradual divergence between the time of atomic clocks and the time measured by astronomy, that is, by the position of Earth or the moon and stars,” says Judah Levine, a physicist in the time and frequency division of the National Institute of Standards and Technology. Basically, a year as recorded by atomic clocks was a bit faster than that same year calculated from Earth's movement. “In order to keep that divergence from getting too big, in 1972, the decision was made to periodically add leap seconds to atomic clocks,” Levine says.

**Hubble Catches a Black Hole Creating New Stars.**



*The black hole at the heart of this dwarf galaxy is kick-starting star formation instead of cutting it off.*

Credit: SCIENCE: NASA, ESA, Zachary Schutte (XGI), Amy Reines (XGI) IMAGE PROCESSING: Alyssa Pagan (STScI)

As it turns out, black holes aren't always monsters.

Normally, the giant black holes lurking at the center of galaxies are known for *quenching* star formation – cutting off their host's ability to birth new stars. But the black hole at the heart of dwarf galaxy Henize 2-10 is doing the opposite: It's feeding gas into a nearby stellar nursery, according to new research published in *Nature* January 19.

The black hole in Henize 2-10 is blowing new gas – which is moving at about 1 million mph (1.6 million km/h) — into the region, triggering the birth of new stars. How this is occurring is still uncertain, as normally outflows of gas from massive black holes heat up the surrounding gas clouds so much that they are unable to cool down enough to form stars.

March 2022

Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

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**Up and Coming Events 2021**

**EAS Meetings and Events are currently on hold or cancelled due to the current COVID-19 situation.**

**Please Note we have a Zoom Meeting scheduled for 7:30 PM on Friday, February 18<sup>th</sup>, 2022.**

**Please visit our Web Page <http://www.evansvilleastro.org> for updates.**

**Please visit our Facebook Group Page for updates.**

**Moon Phases**

New Moon	First Quarter	Full Moon	Third Quarter
March 2 <sup>nd</sup> , 2022	March 10 <sup>th</sup> , 2022	March 18 <sup>th</sup> , 2022	March 25 <sup>th</sup> , 2022

[Moon Phases courtesy of Time and Date.com](http://www.timeanddate.com)

***EAS Meeting Notes for January – 2022***

On January 21<sup>st</sup>, 2022 the EAS held a zoom meeting for members and invited those from our Facebook Group to participate as well. The meeting began @ 7:35 pm.

Chuck Allen introduced our guest speaker for the evening, Bob King. Bob presentation was a very informative slide presentation of the Solar Eclipse in Antarctica December 4<sup>th</sup>, 2021. The eclipse was over the ocean so this was a boat tour. It was interesting to see constellations and objects from the southern hemisphere. Although Bob was clouded out for the eclipse we learned a lot.

Respectfully Submitted – Dave Kube – Secretary