

VENUS

THE HOTTEST PLANET

WHAT HAPPENED TO EARTH'S TWIN?

Tonight's agenda

Introduction

Fun facts about Venus

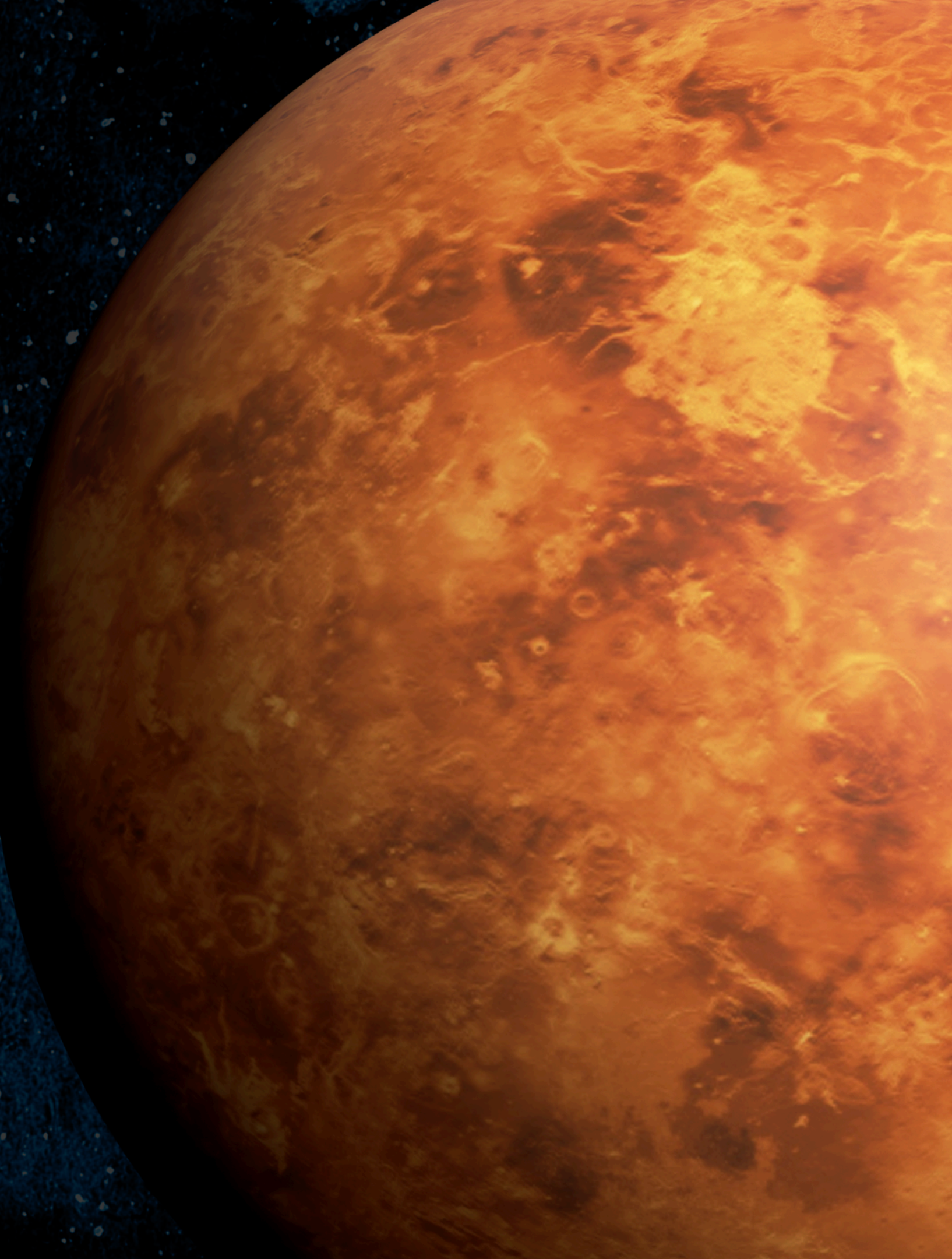
What happened on Venus?

Understanding greenhouse gases on Earth

Hands on projects

What's in the sky tonight?

More about our club



Introduction

The East Brunswick Astronomy Club (EBAC) was founded with the mission of encouraging and promoting an interest in astronomy and space science throughout East Brunswick and beyond.

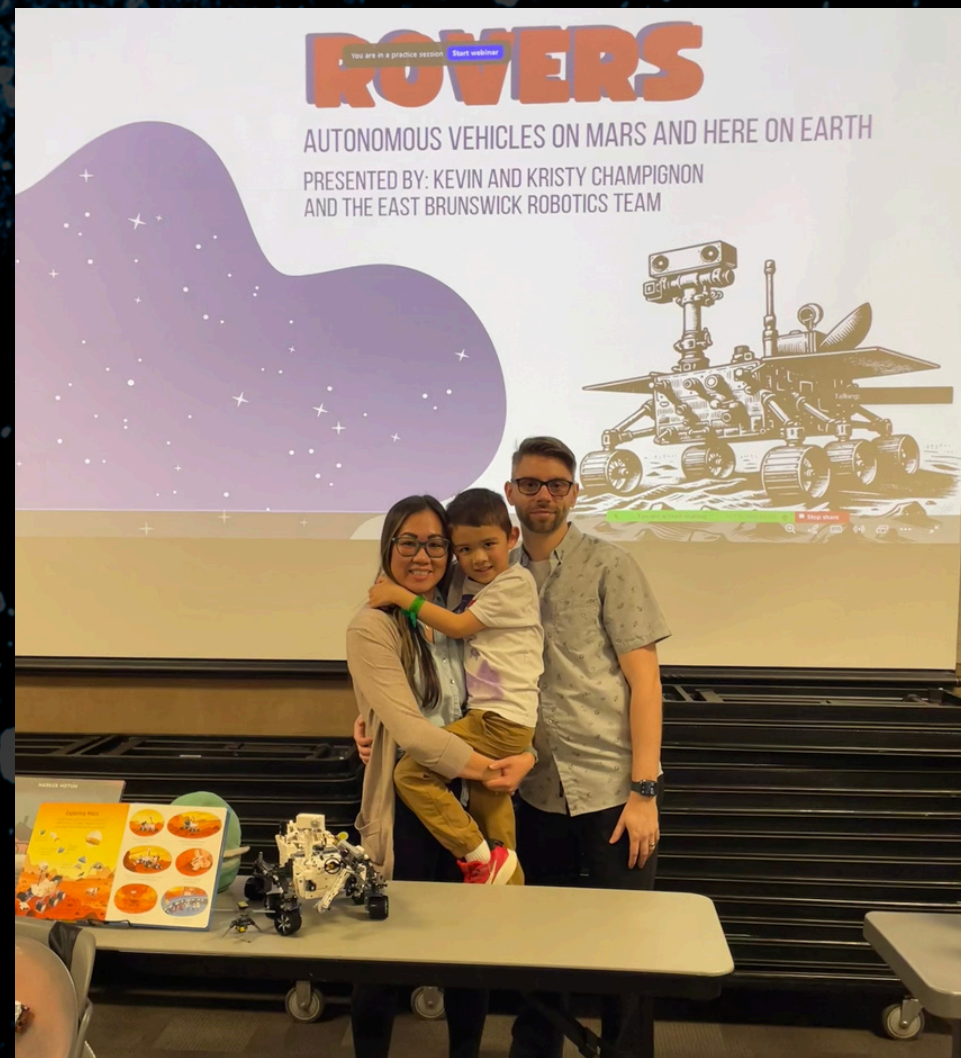
EB Astro meets once a month (on the third Thursday of each month in 2024) at the East Brunswick Public Library.

Kid-focused meetings held seasonally.

We're becoming a non-profit!



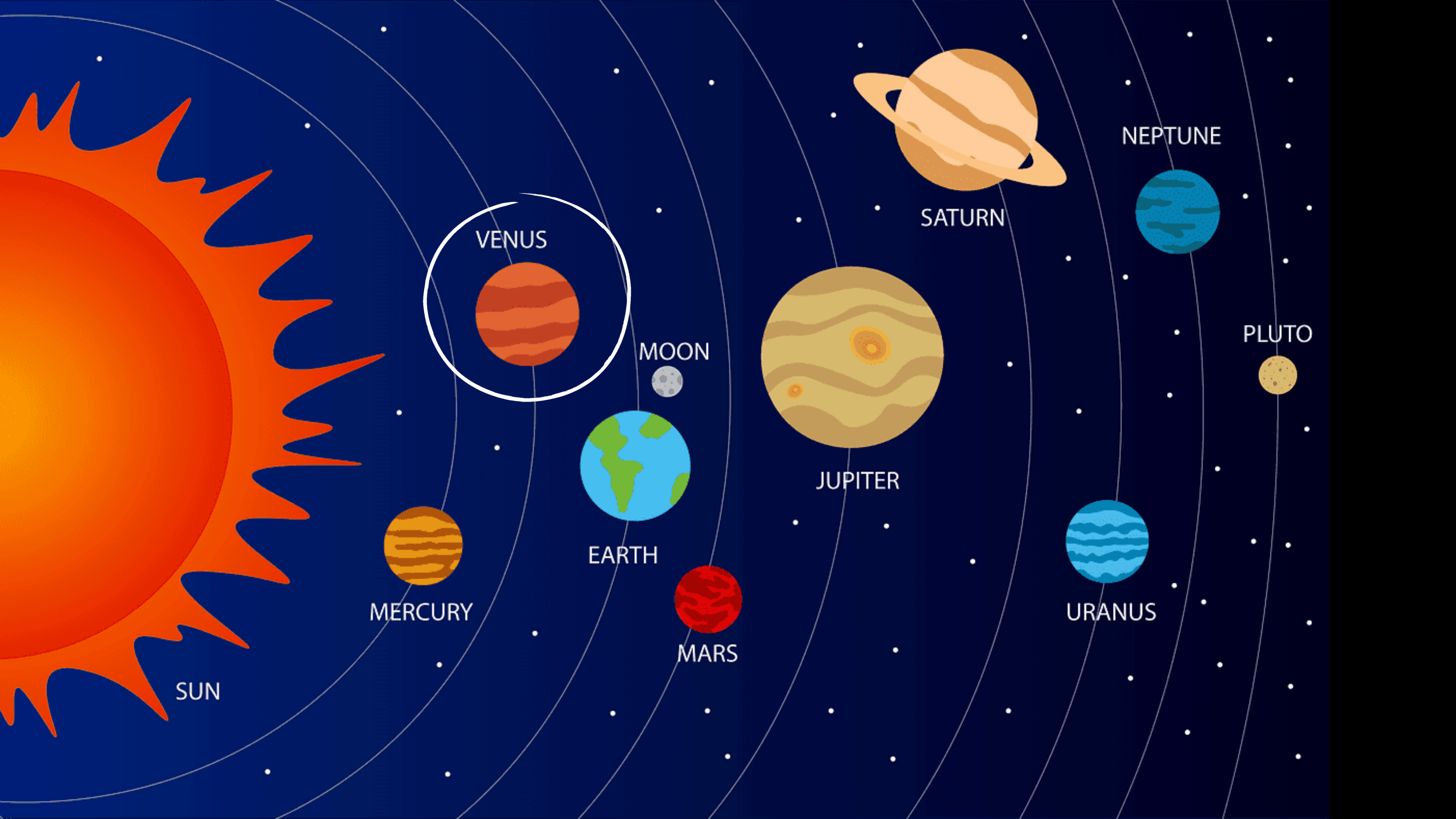
About us



Kevin Champignon is almost 6 years old and really loves space.

Kristy Champignon is his mom and really loves learning with Kevin.

Together as a family we've enjoyed adding astronomy to our favorite hobbies.



SUN

MERCURY

VENUS

EARTH

MARS

MOON

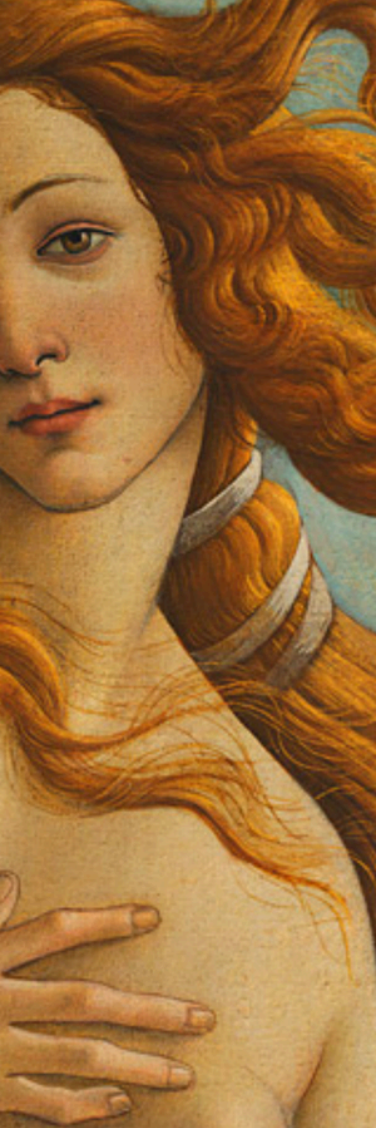
JUPITER

SATURN

URANUS

NEPTUNE

PLUTO



POP QUIZ!

What was Venus named after?

Dr. Reginald Venus

Venus flytrap

The Greek god of fire

The Roman god of beauty

???

● Loading...



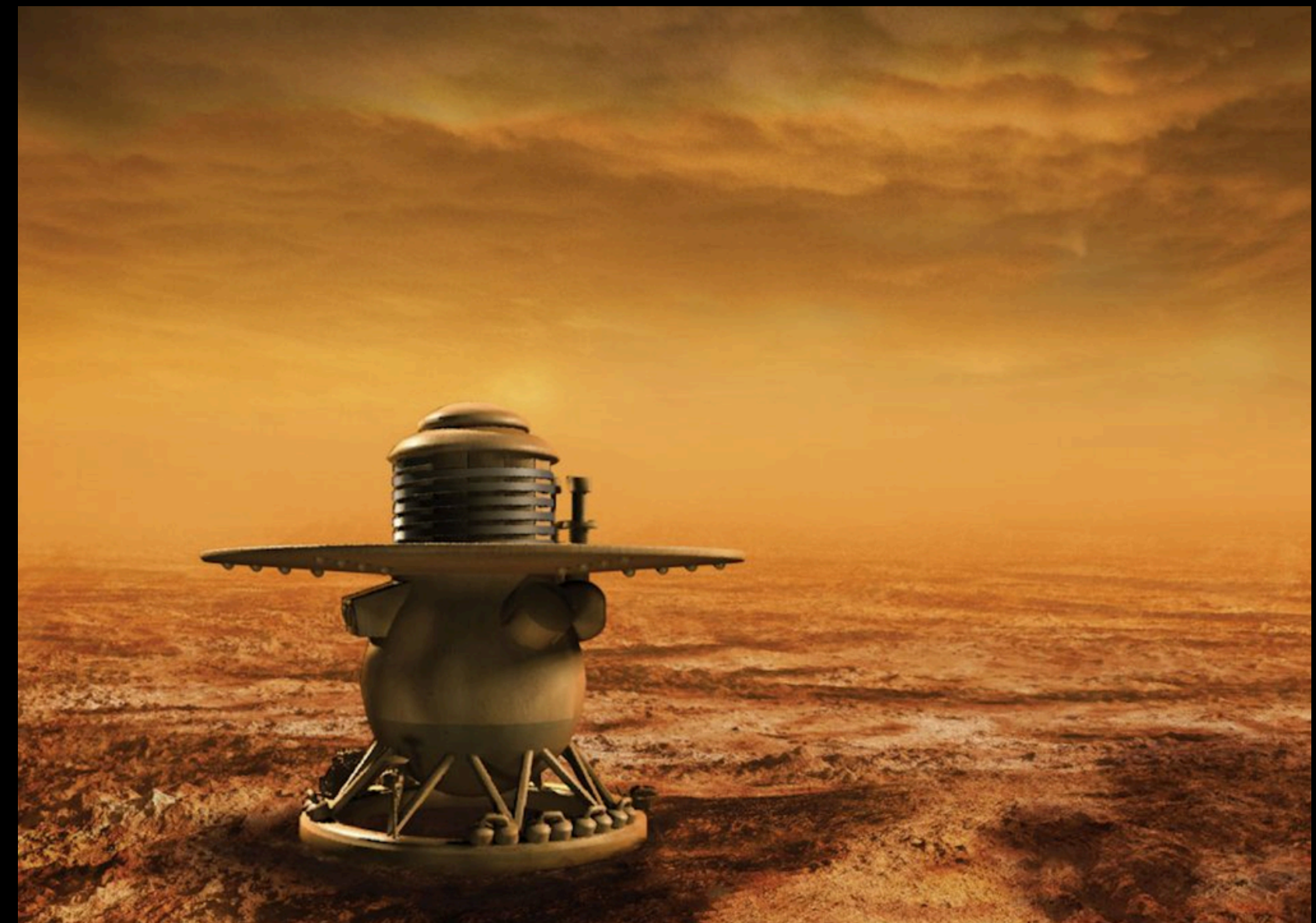
EXPLORATION

Early Missions:

- Mariner 2 (1962): First successful flyby of Venus by NASA. It was the first spacecraft to visit any planet beyond Earth.
- Venera Program (1961-1984): Series of Soviet missions; Venera 7 (1970) was the first spacecraft to land on another planet

Recent Missions:

- Magellan (1989-1994): Mapped 98% of Venus's surface using radar
- Venus Express (2005-2014): ESA mission that studied the atmosphere and surface from orbit
- Akatsuki (2010-2024): Japanese mission currently studying Venus's atmosphere and weather patterns.



Twins?



Differences

EARTH

VENUS

Day

1 day

243 Earth days

Year

365 days

225 Earth days

Moons

One moon

No moon

Average temperate (f)

60 degrees

850 degrees



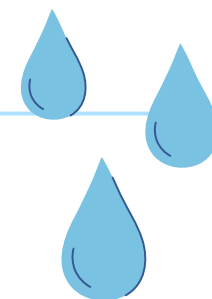
Atmosphere

nitrogen and oxygen

carbon dioxide

Rain

water



sulfuric acid

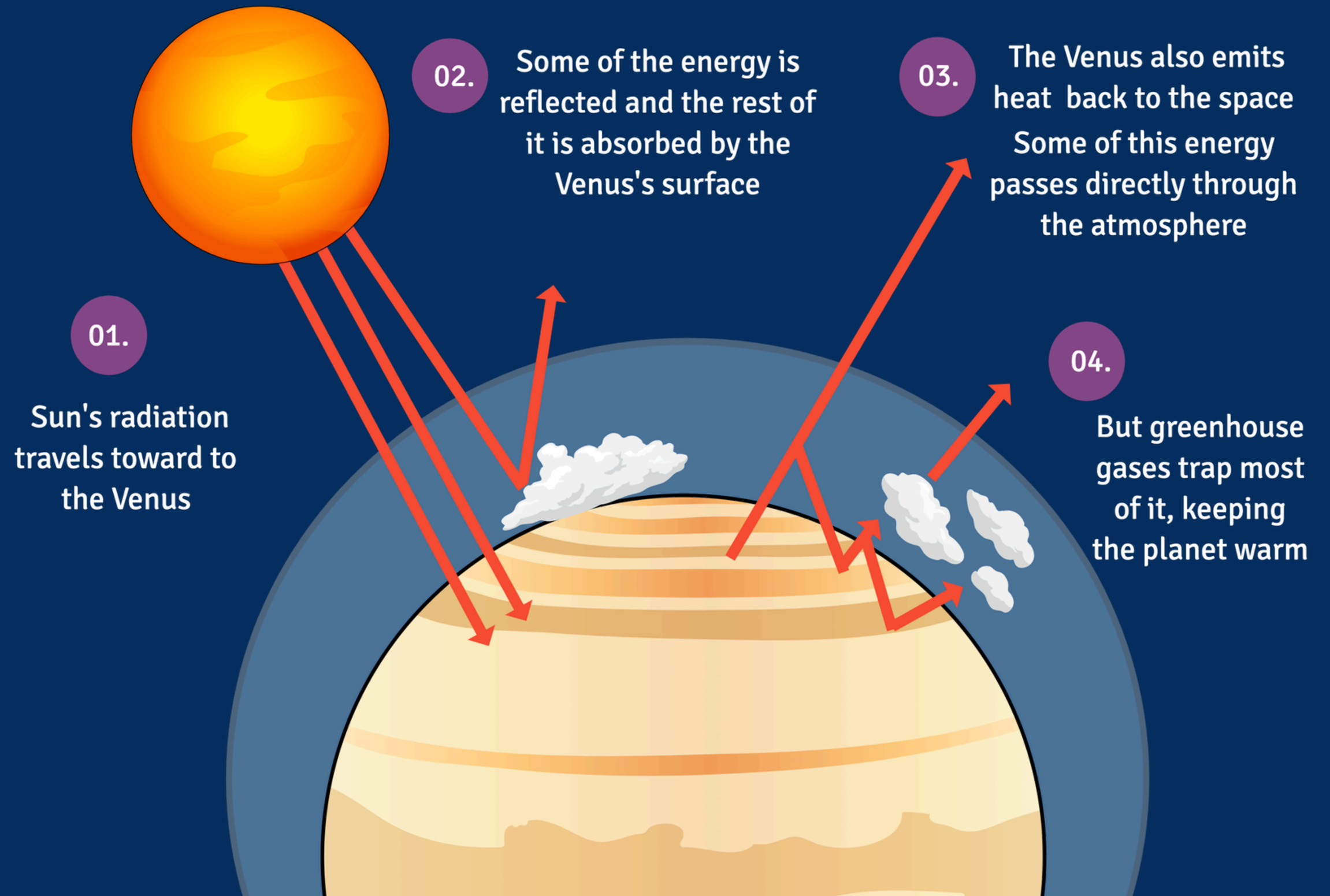
Rotation

Sun rises east,
sets in the west

Sun rises west,
sets in the east

What happened to Venus?

RUNAWAY GREENHOUSE EFFECT

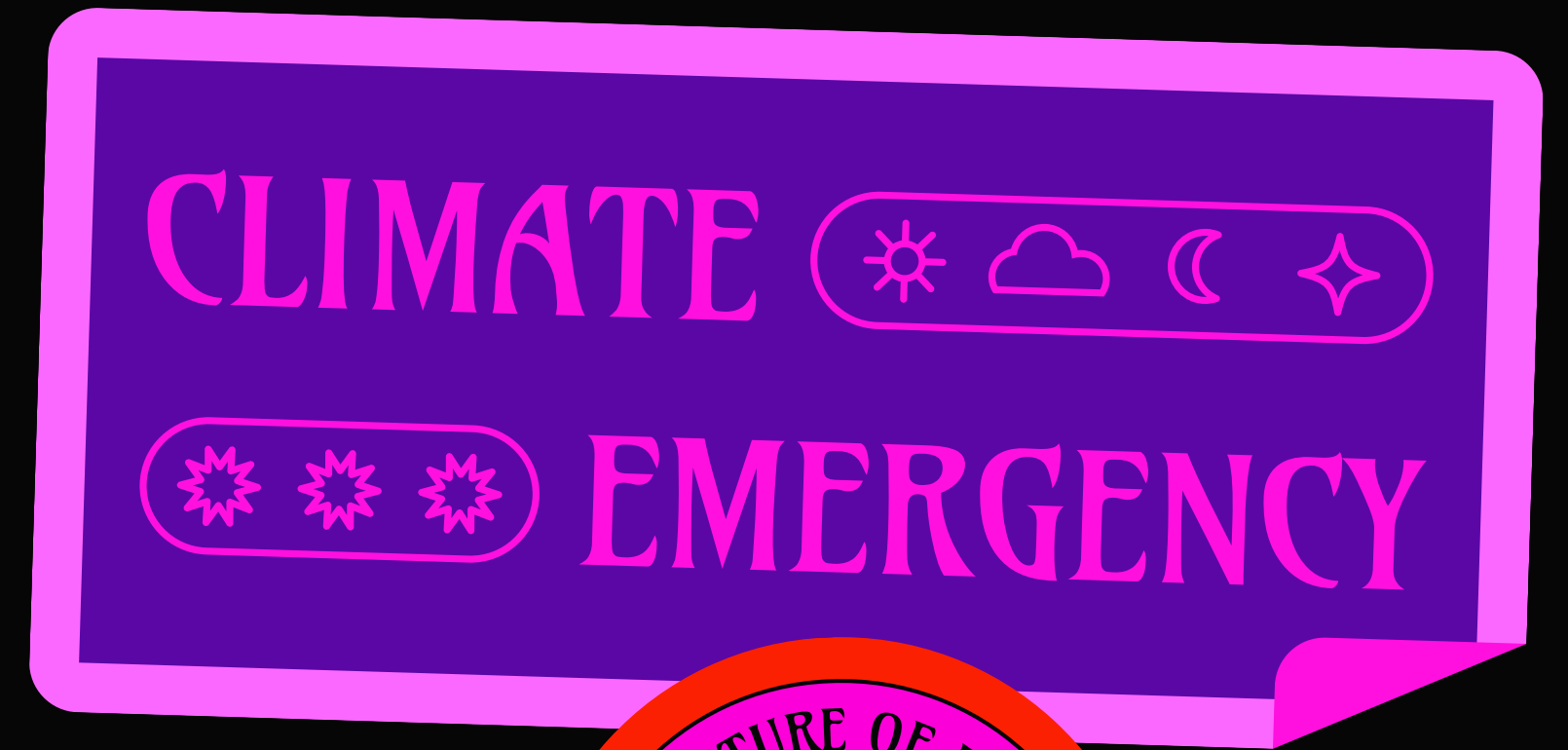


FUTURE MISSIONS



- **VERITAS (NASA):** Planned mission to map Venus's surface in high resolution and study geological history, focusing on volcanic and tectonic activity.
- **DAVINCI (NASA):** Planned to analyze Venus's atmosphere and gather high-resolution images of the surface, providing more data on volcanic regions.
- **EnVision (ESA):** Planned to study Venus's geology and atmosphere, including detailed investigations of volcanic features.

<https://ssed.gsfc.nasa.gov/davinci/>

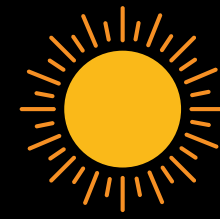


UNDERSTANDING GREENHOUSE GASES



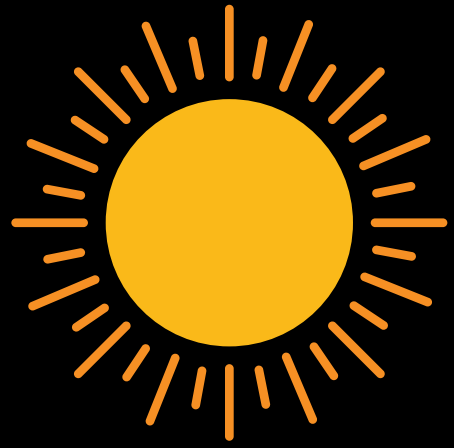


GREENHOUSE GASES



- **Imagine Earth has a special invisible blanket around it.**
 - **Atmosphere**
- **This isn't just any blanket; it's made of many gases, called Greenhouse Gases or GHGs!**
- **Who are these gases that make up the blanket?**
 - **Carbon dioxide (CO₂), Methane (CH₄), and Water Vapor (H₂O) that make up the atmosphere.**
- **Think of them like tiny, invisible gatekeepers for sunlight! They let some sunlight in, but they also keep some warmth from escaping back into space.**



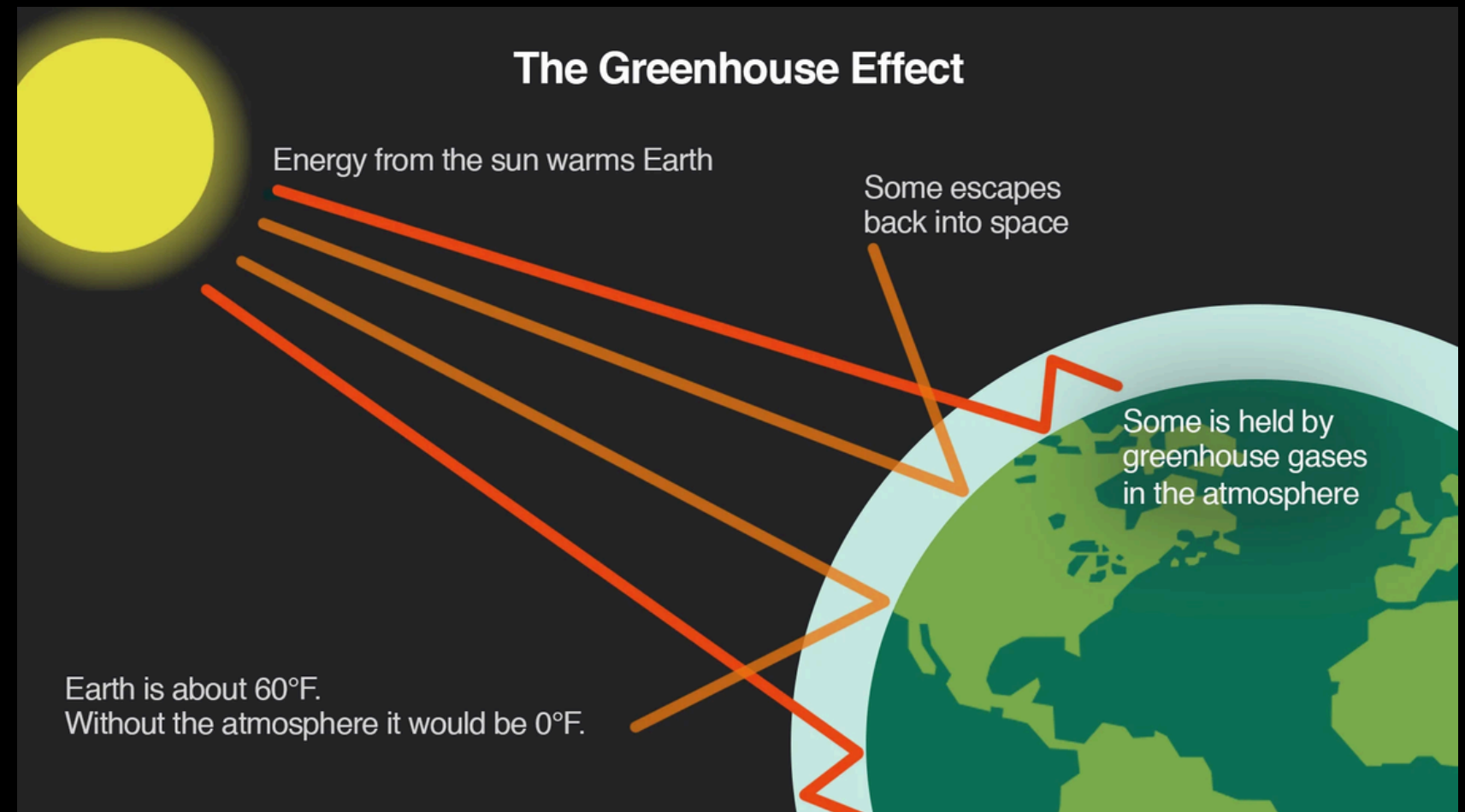


NORMAL BLANKET VS. THICK BLANKET: NATURAL GREENHOUSE EFFECT VS. TOO MANY GHGS



Normal Blanket:

- Earth needs its invisible blanket! Without these gas molecules, our planet would be VERY cold, like a giant ice cube in space.
- The natural amount of these gases keeps our planet warm enough for plants, animals, and us to live comfortably. It's like a perfect, cozy hug.





NORMAL BLANKET VS. THICK BLANKET: NATURAL GREENHOUSE EFFECT VS. TOO MANY GHGS



Thick Blanket:

- What happens if you get too many blankets on your bed? You get super hot and sweaty!
- When humans do things like driving cars a lot, or making electricity in big power plants that burn fossil fuel, we add extra greenhouse gases to Earth's blanket.
 - Sulfur Dioxide, Nitrous Oxide, Hydroflouracarbons
- This makes the blanket thicker and thicker, trapping too much heat and making Earth VERY hot.

THE GREENHOUSE EFFECT

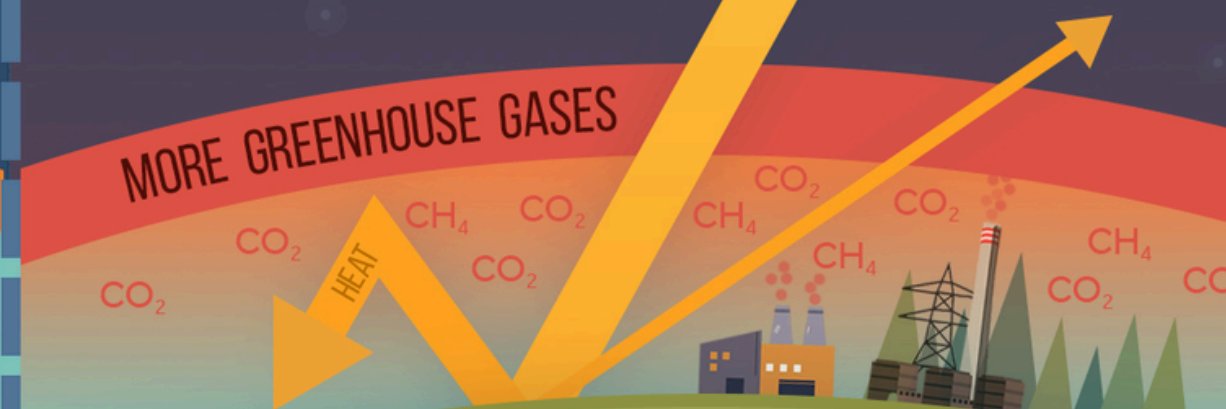
Natural

Naturally occurring greenhouse gases trap some heat from the sun to maintain a livable climate.



Human-Enhanced

Burning fossil fuels emits greenhouse gases that trap more heat & cause additional warming.



CLIMATE CENTRAL

- UV Radiation → Infrared Radiation
- Fossil fuels = Increase in GHG's = increase in Infrared Radiation

EARTH'S FEVER: EFFECTS OF TOO MANY GHGS



Today, the Earth is getting too warm, like it has a fever! This phenomenon is called GLOBAL WARMING.

- The extra heat makes ice at the North and South Poles melt, like a giant ice cream cone on a hot day. This makes the ocean water rise.
 - Flooding, Habitat fragmentation, Species Death
- We might see more crazy weather – super hot days, big storms, or not enough rain where we need it.
- Some animals might lose their homes because their habitats get too hot or too wet. Imagine if your house suddenly got too hot to live in!

BECOMING EARTH'S LITTLE HELPERS: HOW WE CAN HELP

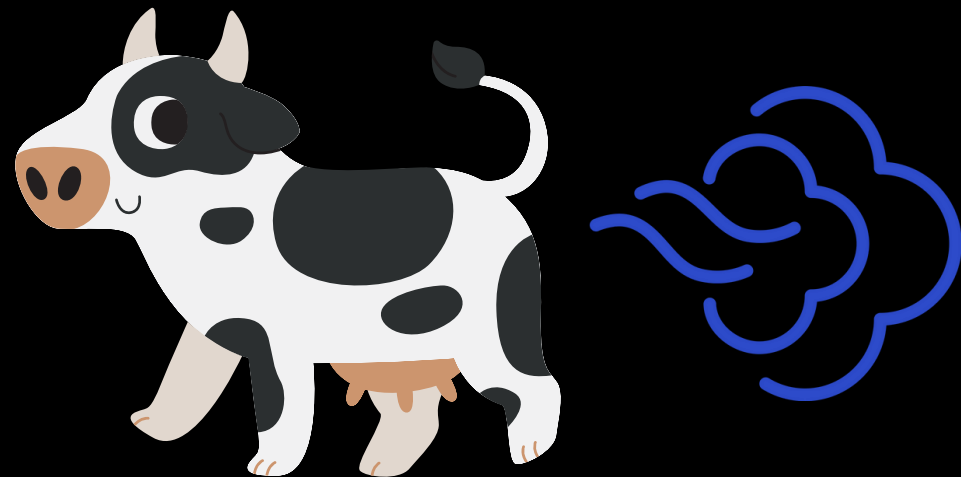


WE have the POWER to help make Earth feel better!

- **Reduce, Reuse, Recycle! (The "3 R's" of awesome!)**
- **Smart Transportation Choices: Choosing to walk, bike, carpool, or use public transportation like buses helps lower harmful GHG emissions.**
- **Harnessing Plant Power: Trees and plants are amazing! Through a process called photosynthesis, they absorb carbon dioxide from the atmosphere.**
- **Become an Environmental Advocate: Share what you've learned with your family, friends, and community.**

QUICK RECAP & FUN FACT!

Remember: Greenhouse gases are good in the right amount, but too many make Earth too hot! Let's keep Earth cool and cozy, not hot and bothered!

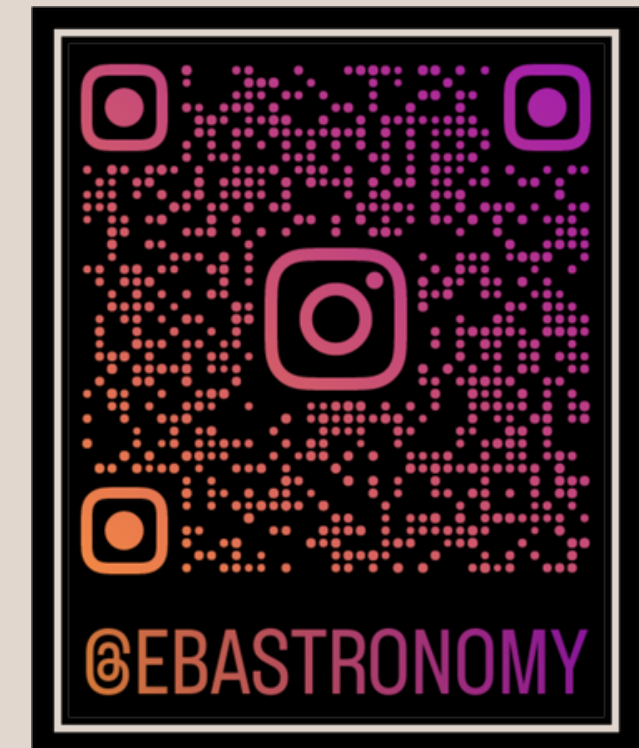


Fun Fact: Did you know cows burp and fart methane, which is also a greenhouse gas? So, even cows are part of the climate story! But don't worry, we're mostly talking about human activities causing global warming.

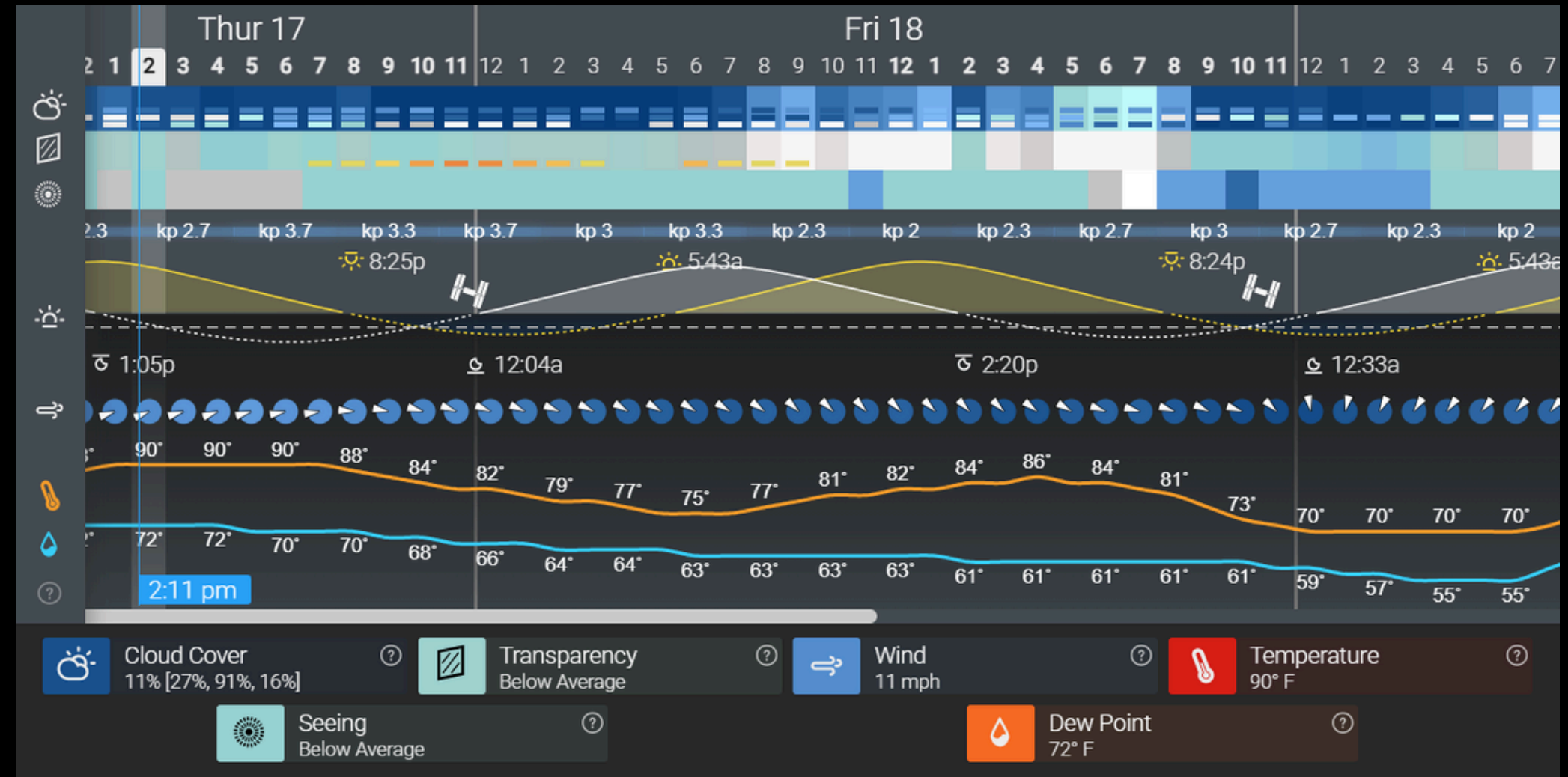
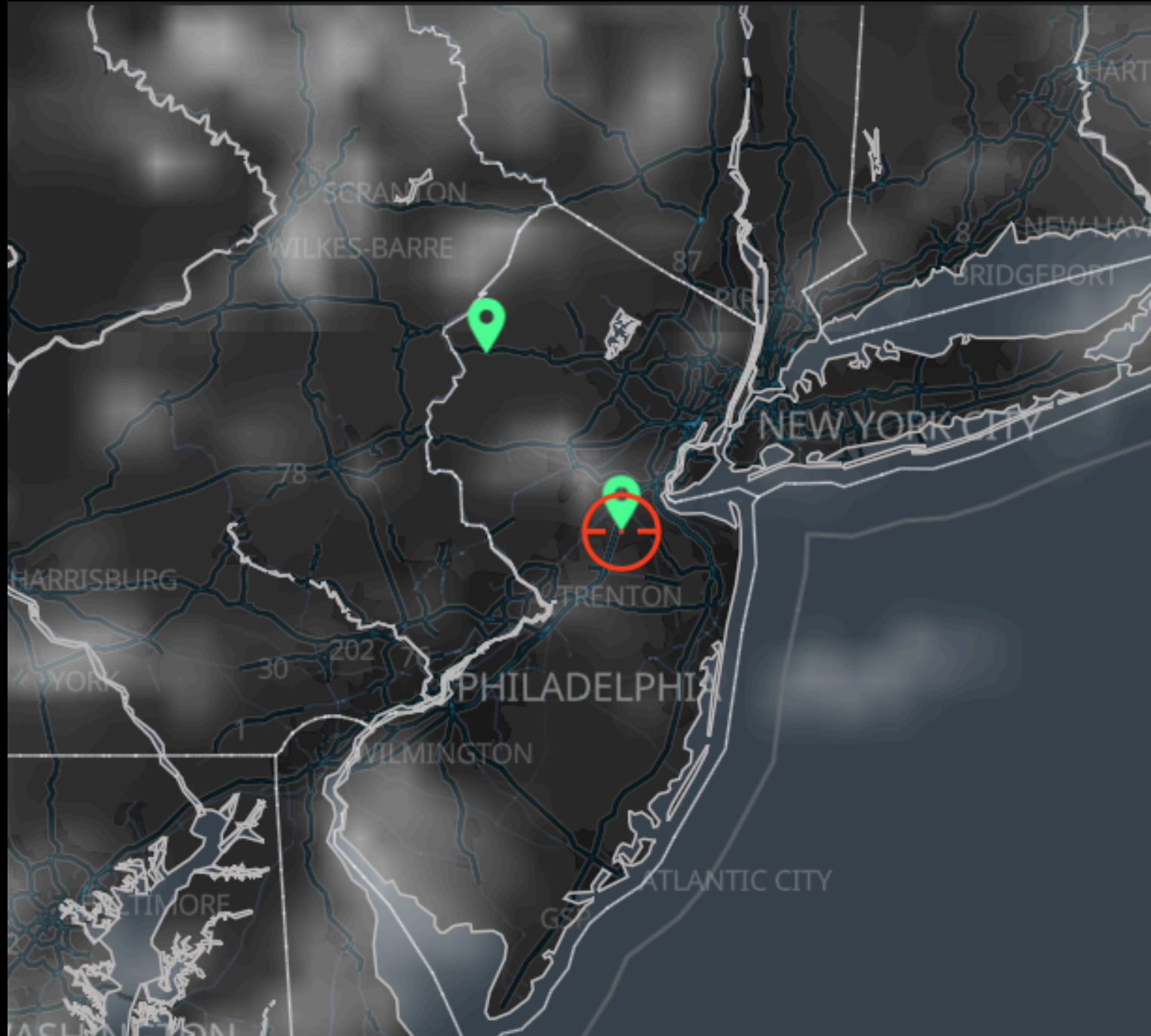
Follow us!

Stay updated on all of our upcoming events,
announcements, and more!

Follow [@EBAstronomy](#) on Facebook and Instagram.



Conditions Overview - Weather




Conditions Overview – Who's Up There?







Moon Details

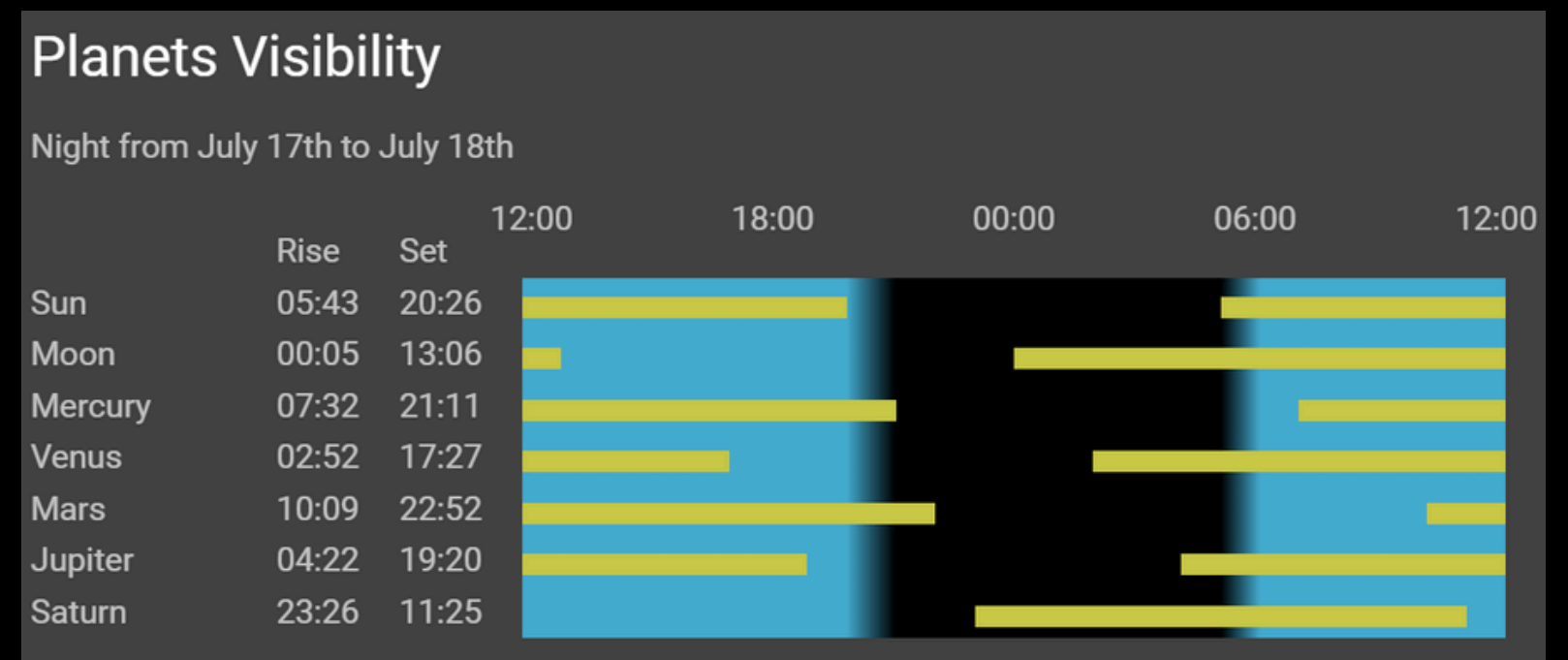
Current Moon Phase
Waning Gibbous



Altitude -12° ↓
Illuminated 53%
Age (days) 22

Next Moon Phase

-  Thur Jul 17
-  Thur Jul 24
-  Fri Aug 1
-  Sat Aug 9



SOURCE: STELLARIUM

Upcoming UACNJ Events!



UACNJ: Paul Fischer, NWJAA: "BANG Woosh ZooOOOM"

- Date: Saturday, 7/19, 8PM
- Location: Jenny Jump State Forest, near Hope, NJ
- Free weekly programs with a live presentation followed by stargazing on the observatory's telescopes until 10:30 PM, weather permitting

UACNJ: Nathaniel A. Frissell, University of Scranton: "HamSCI: Space Weather We Can Do Together!"

- Date: Saturday, 7/26, 8PM
- Location: Jenny Jump State Forest, near Hope, NJ
- Free weekly programs with a live presentation followed by stargazing on the observatory's telescopes until 10:30 PM, weather permitting

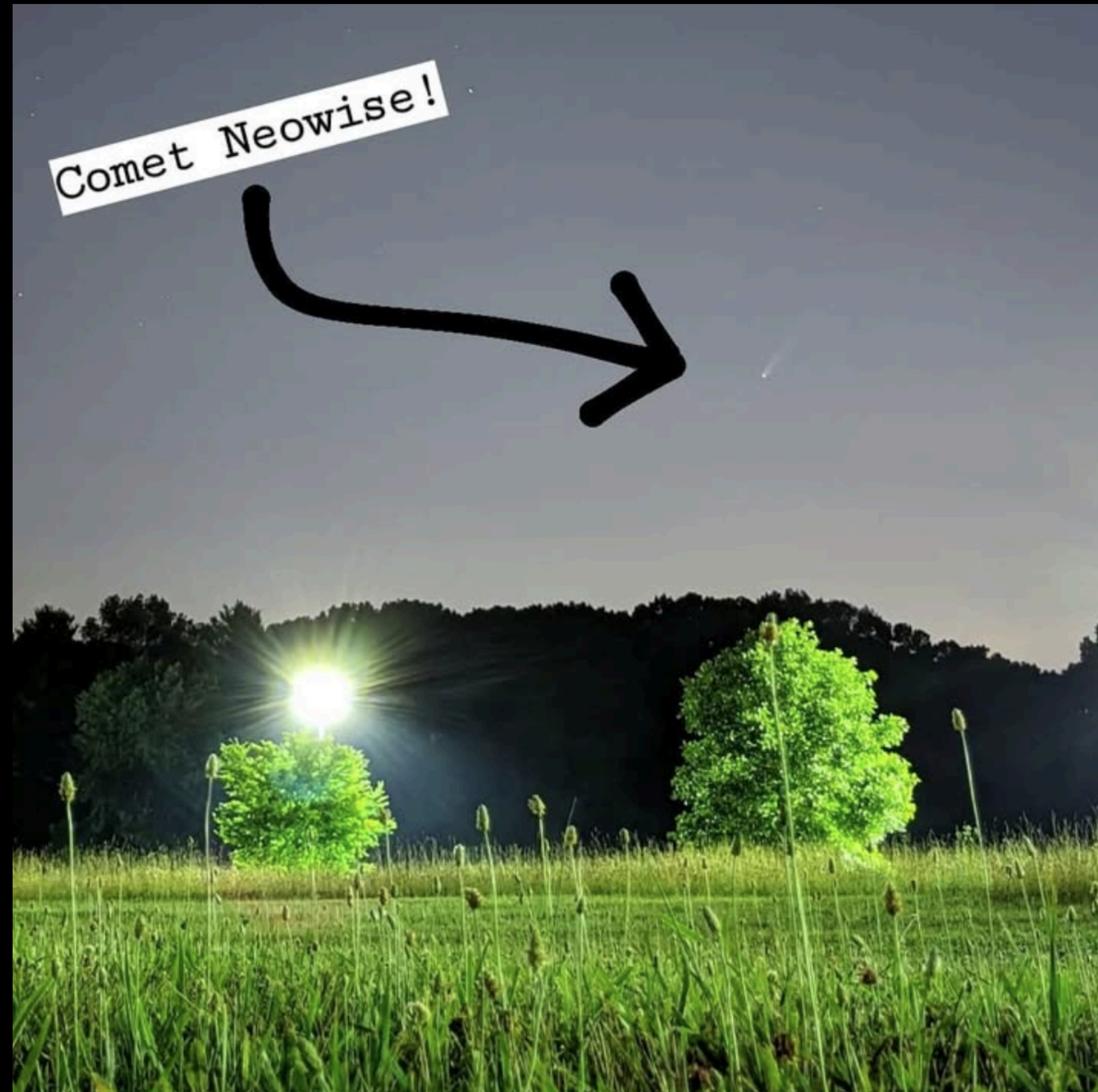
Open Discussion

Comet Neowise - 5 Year Anniversary

Were you able to capture it?

Discovered by NASA's NEOWISE mission, it made its closest approach to the Sun in July 2020 and subsequently became visible in the evening sky.

The comet is not expected to return to the inner solar system for another 6,800 years.



Open Discussion

Perseids Meteor Shower

- Active from July 17 to August 24
- The peak expected on the night of August 12 into the early morning of August 13
- The best time to view the shower is after midnight, in the constellation Perseus



SOURCE: FLORION GOGA/REUTERS

Open Discussion

Quick Fire Presentations – August Meeting

Do you have an astronomy topic you'd like to present at our Thursday, 8/21 meeting? We're looking for a couple presenters who would like to give a 5 – 10-minute talk on an astronomy related topic.

This is a low pressure, welcoming environment!

Questions? info@ebastro.org

Interested? <https://tinyurl.com/ebacqf2025>



Open Discussion

The EB Astronomy Club Board Is Seeking A Secretary.

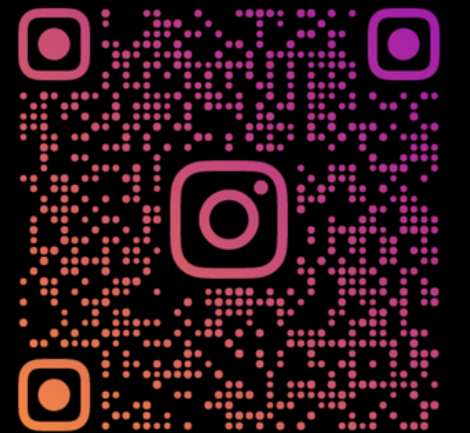
We are a new organization with the mission of bringing the excitement of astronomy to the East Brunswick community and beyond through free monthly meetings and more!

If you are interested in volunteering, please see us after the meeting or reach out to us here: info@ebastro.org





Thank you for attending!



@EBASTRONOMY