Grades K-2

SOLAR SCIENCE WITH THE PEANUTS GANG!

Dear Educator,
On April 8, 2024, a solar eclipse will sweep across the United States. This gives students throughout the country a unique opportunity to learn the science behind a solar eclipse and the safe way to experience its "magic." That's why the Peanuts Gang, in cooperation with NASA and the education specialists at Young Minds Inspired, developed these free *Solar Science* activities to complement and energize your STEM curriculum. Plus, each activity includes a take-home component inviting families and their children to become citizen scientists by recording what they learn during the eclipse!

Share this program with other K-2 teachers at your school.

Tell us your opinion of the program at **ymiclassroom.com/feedback-peanutseclipse**.

We look forward to your comments and suggestions.

Sincerely,

Dr. Dominic Kinsley
Editor in Chief
Young Minds Inspired

Target Audience

Grades K-2

Program Components

Available at **ymiclassroom.com/peanutseclipse**:

- this teacher's guide
- three reproducible activity sheets
- curriculum standards
- downloadable Peanuts solar eclipse comic strips
- an online feedback form

Concepts and Skills

Staying safe while viewing a solar eclipse	Vocabulary development
Exploration of space and the solar system	Reading informational text
Engaging in real-world science experiences	Observation
	Recording data

How to Use This Program

Download and photocopy the activity sheets for your class and have students complete the take-home activities at the bottom with their families. To launch the program, provide students with copies of the Peanuts solar eclipse comic strips, or display them on your smartboard to read with the class.

Activity 1
What Is a Solar Eclipse?

Supplies needed: scissors, glue or tape, cardstock, brad fastener

Prompt students to share their ideas of why the sky is dark at night (because Earth rotates away from the Sun). Can the sky get dark during the day? Yes, during a total solar eclipse!

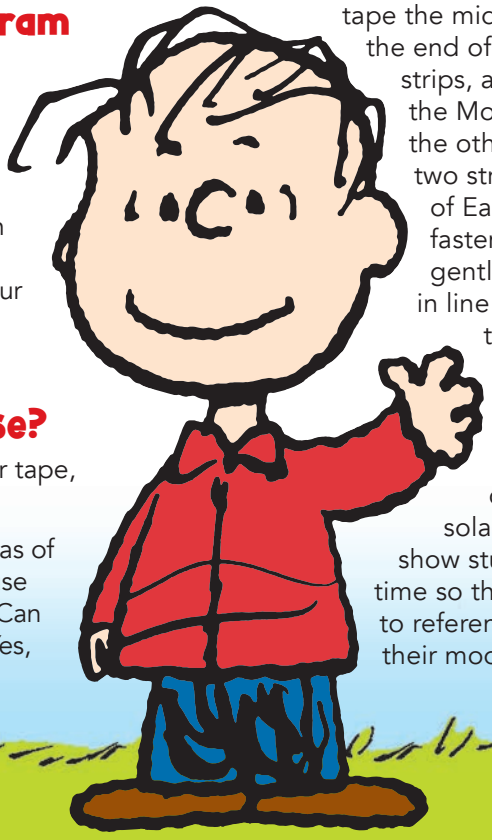
Show and discuss with students the video "What Is a Solar Eclipse?" at **https://www.youtube.com/watch?v=hyf5JF_VxwM**. Explain that a solar eclipse will happen in the United States on April 8, 2024. Most places will experience a partial solar eclipse, while some locations will experience a total solar eclipse.

Ask three student volunteers to demonstrate a solar eclipse by role-playing as Earth, the Sun, and the Moon. Have the child acting as the Moon move toward and then stop between the children acting as Earth and the Sun. Ask students to describe what happens to Earth. (The Moon blocks the Sun's light from reaching Earth.)

Pass out the activity sheet. Read the comic with the class, explaining what an ophthalmologist (eye doctor) and welder's glasses are.

Continue by reading the introduction together, then review the instructions.

Provide students with two strips of paper or cardstock, 1 inch by 6 inches. Then, help them cut out the images and glue or tape the middle of the Sun to the end of one of the paper strips, and the middle of the Moon to the end of the other strip. Secure the two strips to the center of Earth with a brad fastener. Have students gently move the Moon in line with the Sun (like the hands of a clock) to demonstrate what happens during a solar eclipse. You might create your own solar eclipse model to show students ahead of time so they have something to reference when building their models.



Questions? Contact YMI toll-free at 1-800-859-8005 or by email at feedback@ymiclassroom.com.

Extension: Describe the difference between a solar eclipse and a lunar eclipse (**https://mynasadata.larc.nasa.gov/mini-lessonactivity/what-difference-between-solar-eclipse-and-lunar-eclipse**). A *solar eclipse* occurs when the Moon passes between Earth and the Sun, causing the Moon to cast a shadow on Earth. A *lunar eclipse* occurs when Earth is between the Sun and the Moon, causing Earth to cast a shadow on the Moon. Have students use their eclipse models to show the positions of the Sun, Moon, and Earth during a lunar eclipse. The Sun and Moon will be on opposite sides of Earth.

Activity 2
Safety First

Supplies needed: white cardstock, aluminum foil, tape, scissors, and a pin or paperclip

Tell students that, throughout history, people have responded to eclipses in different ways, sometimes with fear, confusion, or amazement. Even today, some Native Americans and Indigenous people stay inside during a solar eclipse out of respect and to stay safe.

Safety is important for everyone during a solar eclipse. Never look at the Sun without protection. It can permanently damage your eyes! Instead, we can watch the eclipse online from indoors, purchase eclipse safety glasses, or build a pinhole projector.

Pass out the activity sheet and review the directions. Have students work individually or in small groups to complete the activity.

Note: If your students will be in the path of totality on April 8, 2024 (see **https://www.timeanddate.com/eclipse/solar/2024-april-8** to find out), they *can* safely look at the Sun during the few moments when it is completely covered by the Moon **under adult supervision**. Students will see the Sun's bright corona encircling the dark Moon, but they must look away as soon as the Moon starts to move past the Sun.

Extension: Ask students to draw a picture of themselves viewing a solar eclipse safely with their family and friends. Then write this phrase on the board: *Be FAES! Never KOLO directly at the UNS during a solar eclipse.* Have them unscramble the words to write the sentence correctly beneath their picture: *Be SAFE! Never LOOK directly at the SUN during a solar eclipse.*

Activity 3
Be a Citizen Scientist

Explain to students that eclipses teach scientists a lot about the Sun, the Moon, and our planet — especially how life on Earth is affected by solar eclipses. In fact, scientists have learned that some animals, like birds and insects, start preparing for nighttime when the sky grows dark during an eclipse — even though it's the middle of the day!

Pass out the activity sheet and read the passage in Part 1 with students.

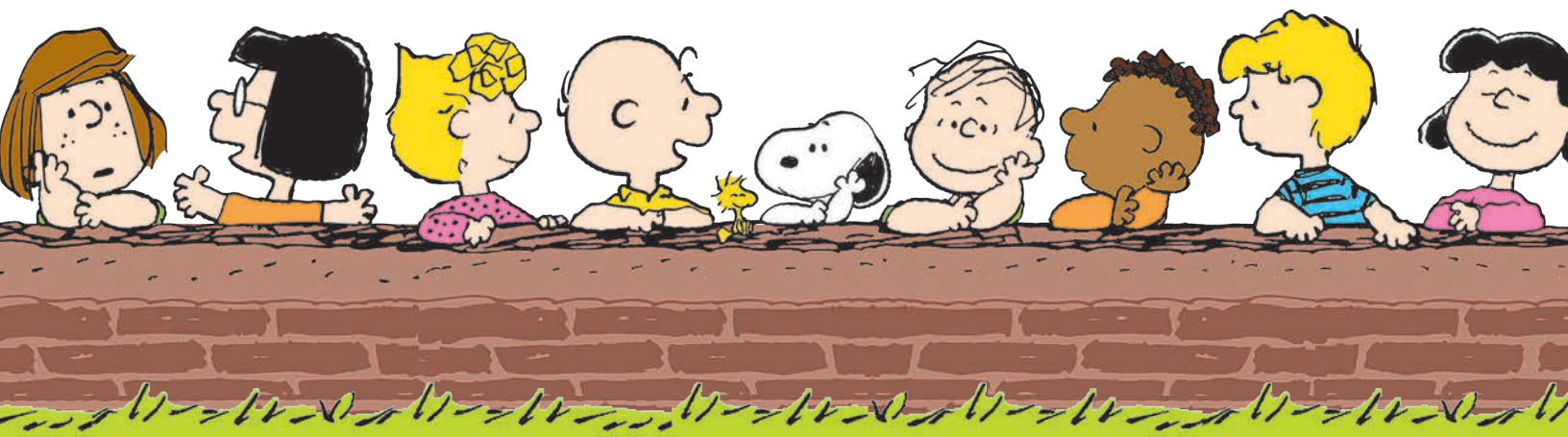
Complete Part 2 together if school is in session during the eclipse. If not, send the activity sheet home so that students can complete the activity with their families. Reiterate the importance of only doing the observation with a grownup and following all safety rules.

After the eclipse, review students' observations and compare similarities and differences.

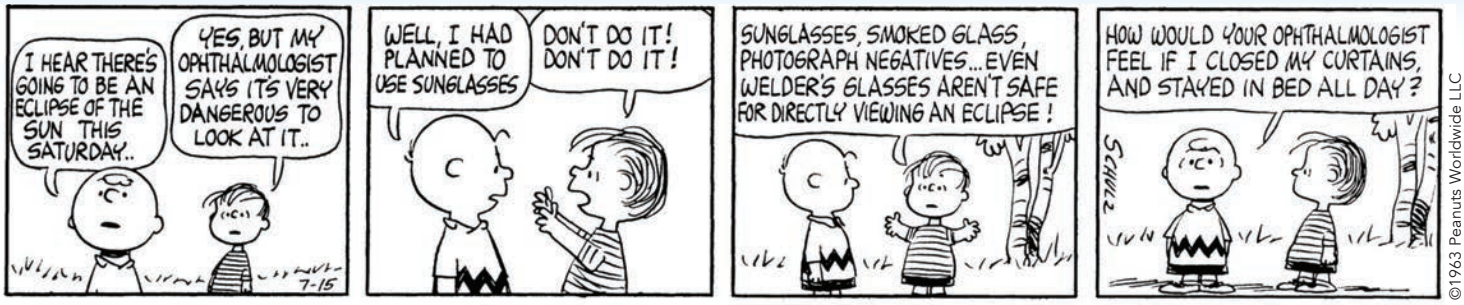
Extension: Ask students to imagine what animals and pets might think during a total eclipse when it gets dark during the middle of the day. Brainstorm words that might express their emotions or feelings, such as confused, scared, happy that it's dinnertime/time for a nightly walk, etc.

Resources

Solar Eclipse: mynasadata.larc.nasa.gov/mini-lessonactivity/what-solar-eclipse
Eclipse Safety: science.nasa.gov/eclipses/safety/
Eclipse Overview: science.nasa.gov/eclipses/faq
Sun's Corona: mynasadata.larc.nasa.gov/mini-lessonactivity/what-suns-corona
Solar Eclipse Map: science.nasa.gov/resource/nasas-2023-and-2024-solar-eclipse-map/
YMI site: ymiclassroom.com/peanutseclipse



WHAT IS A SOLAR ECLIPSE?



[Note: The 2024 solar eclipse is on a Monday. It was on a Saturday when this comic was first published.]

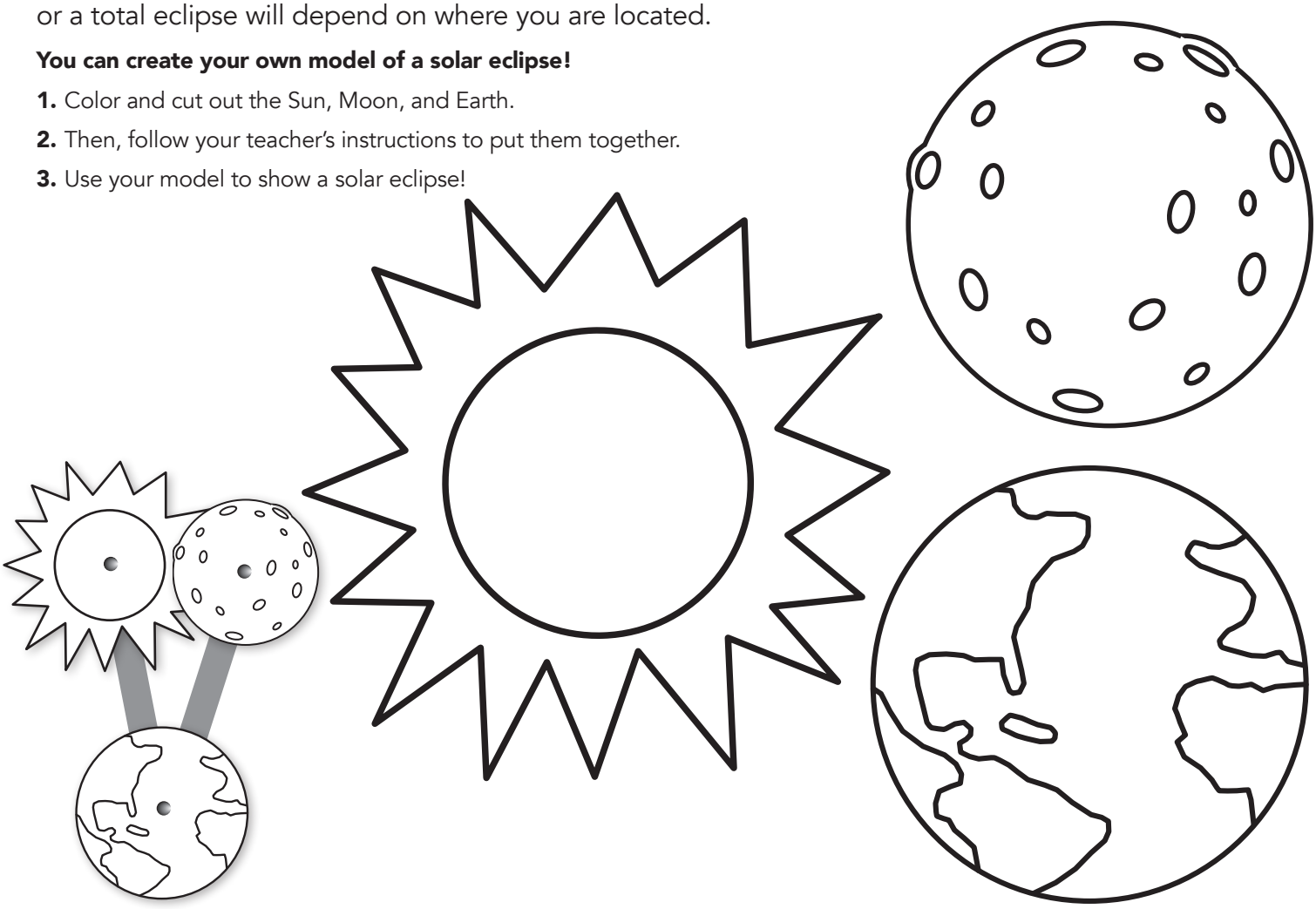
In a solar eclipse, the Moon passes between Earth and the Sun. A *partial solar eclipse* happens when the Moon's shadow blocks part of the Sun. A *total solar eclipse* happens when the Moon's shadow blocks the entire Sun. This causes the sky to get dark during the day. On April 8, 2024, people in almost every state in the U.S. will experience a solar eclipse. Whether you experience a partial eclipse or a total eclipse will depend on where you are located.

You can create your own model of a solar eclipse!

1. Color and cut out the Sun, Moon, and Earth.

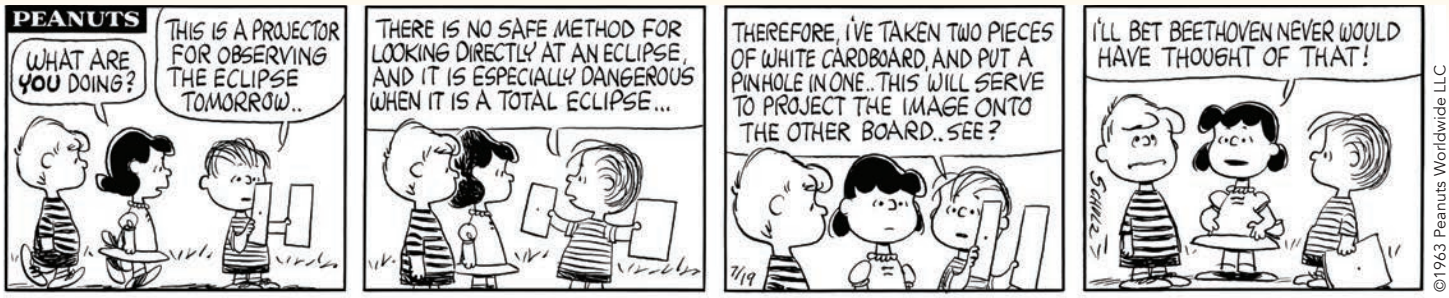
2. Then, follow your teacher's instructions to put them together.

3. Use your model to show a solar eclipse!



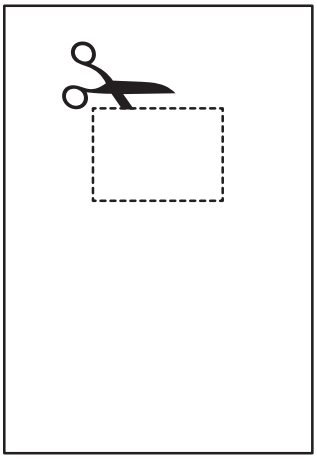
FAMILIES! Visit **https://science.nasa.gov/eclipses/future-eclipses/eclipse-2024/** to get ready for the solar eclipse on April 8, 2024. It will be twenty years before another solar eclipse crosses North America. Consider writing about the April 8 eclipse as a keepsake to look back on during the next eclipse. Add pictures of your children enjoying the eclipse safely! See safety tips at **https://science.nasa.gov/eclipses/future-eclipses/eclipse-2024/safety/**.

SAFETY FIRST

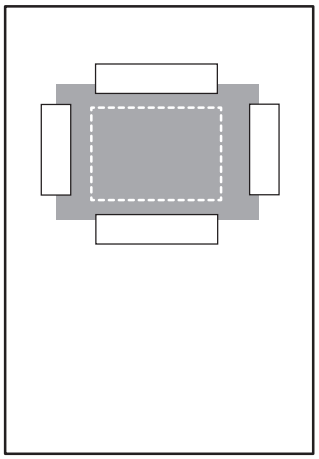


In the comic above, Linus warns that looking directly at the Sun during a solar eclipse can cause eye damage, even during a partial solar eclipse. You can watch a solar eclipse with help from a grownup if you use some safety tools like this pinhole projector that Linus made. Follow your teacher's directions to make your own pinhole projector. Be sure to stand with the Sun behind you when using your projector.

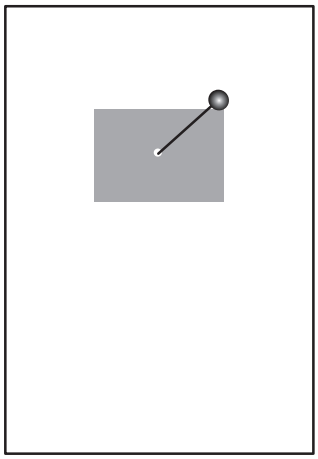
Supplies needed: two pieces of white cardstock, aluminum foil, tape, scissors, and a pin or paperclip.



1. Cut out a 2-inch-square hole in the middle of one of the pieces of cardstock.

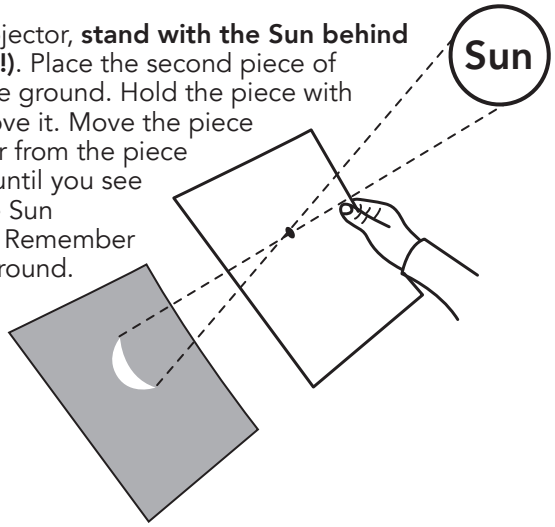


2. Tape a small piece of aluminum foil over the hole.



3. Flip the cardboard over and poke a pinhole in the middle of the foil.

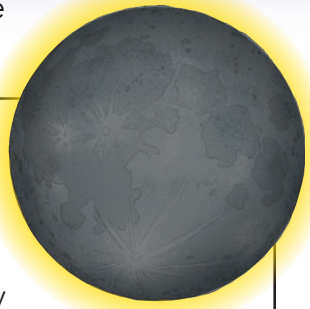
4. To test your projector, **stand with the Sun behind you (important!)**. Place the second piece of cardstock on the ground. Hold the piece with the pinhole above it. Move the piece nearer or farther from the piece on the ground until you see an image of the Sun projected on it. Remember to look at the ground. Do not look at the Sun through the pinhole!



FAMILIES! On April 8, 2024, a solar eclipse will sweep across the United States, presenting a stunning experience to millions. Visit **www.timeanddate.com/eclipse/solar/2024-april-8** to see when the solar eclipse will occur where you live. Make plans to watch it safely with your children using the pinhole projector your child made in class or eclipse safety glasses, or by watching it online indoors. See safety tips at **https://science.nasa.gov/eclipses/future-eclipses/eclipse-2024/safety/**.

BE A CITIZEN SCIENTIST

Everyone who experiences the solar eclipse on April 8 can share the same experience as NASA's scientists. Get ready to be part of this nationwide science experiment!



Part 1: Start with the facts. During a total solar eclipse, the Moon's shadow completely covers the Sun, blocking most of its light. But this only happens in places on the *path of totality*. This is the path the Moon's shadow makes as it travels over Earth blocking the Sun. For the April 8, 2024, solar eclipse, the path of totality in North America will be about 115 miles wide. If you live in the middle of this path, it will get dark for about 4 minutes. If you live somewhere else on the path, you will see a *partial eclipse* because the Moon won't completely cover the Sun. This means it won't get as dark.

Part 2: Time to observe! NASA conducts many experiments during a solar eclipse to learn more about the Sun and how it affects Earth. You can be a scientist, too — a citizen scientist! People all over the country will be helping scientists collect information and data about the eclipse. You can help by watching the eclipse with a grownup and recording what you see in the chart below. Compare your results with friends and family, just like scientists do.

First, ask a grownup to type in your town's name at **www.timeanddate.com/eclipse/solar/2024-april-8** to find out what type of eclipse you will experience: partial or total. Next, review the solar eclipse safety rules with your grownup by visiting **https://science.nasa.gov/eclipses/future-eclipses/eclipse-2024/safety/**. During the eclipse on April 8, complete the chart together.

Your Location (Town and State): _____

Type of eclipse: ☐ Partial ☐ Total

Observations:	**Light**	**Temperature**	**Animal Sounds and Behavior**
Before the Eclipse			
During the Eclipse			
After the Eclipse			

FAMILIES! Want to get a head start on viewing the next solar eclipse? Check out **https://www.timeanddate.com/eclipse/list-annular-solar.html** to learn when solar eclipses will occur worldwide over the next 10 years.