VOLUME SUMMER 2017
ISSUE 1

**Summer Edition–
August 2017**

Kansas Association of Teachers of Science

A Note from the KATS President

Thank you to each KATS member for what you do to stand for science and your students! Your KATS board is working to expand support for you in the classroom. I urge you to utilize our organization to build the network and resources that will bring about opportunities for your professional growth.

In this newsletter, you will find more about the "Great American Eclipse" that will visible in a narrow path throughout the Midwest on August 21st. If you need more resources, connect with some of our exhibitors from KATS camp in April. Harold Henderson from Lake Afton Public Observatory, Mike Ford from Banner Creek Science Center, Traci Kalihoff from Exploration Place and others. This is quite a way to start the new school year!

As an organization made up of volunteers, we strive to provide our members with tools to enhance science education at all levels throughout our state. I sincerely appreciate the work of each of member to contribute towards this goal. Join me in sharing KATS with others, as we head into the future!!

Thank you,

Carol Bonham

KATS President 2017-2018

WHAT IS A SOLAR ECLIPSE?

A solar eclipse happens when the moon casts a shadow on Earth, fully or partially blocking the sun's light in some areas.

Observers within the path of totality will be able to see the sun's corona (weather permitting), like in the images above and left. Observers outside this path will see a partial eclipse.

THE NEXT ECLIPSE

After the 2017 solar eclipse, the next total solar eclipse visible over the continental United States will be on **April 8, 2024.**

Standards Covered in this issue:

- Elementary -
  - **K-PS3-1, K-PS3-2, 1-PS4-2, 1-ESS1-1**
- Middle School -
  - **MS-ESS1.A**
- High School -
  - **HS-ESS1-4**

Inside this issue:

August 21, 2017 - Totality

On Monday, August 21, 2017 , a total eclipse will cross the entire country, west to east coast, for the first time since 1918. Weather permitting, our entire continent will have an opportunity to view a partial eclipse as the moon passes in front of the sun, casting a shadow across Earth's surface. If you are not in the northeast corner of the state your experience will be between 80 and 90 percent eclipsed. Still, a wonderful sight!

Totality with in our state.

Elementary Resources for the 2017 Solar Eclipse

Standards Addressed:

K-PS3-1: Make observations to determine the effect of sunlight on Earth's surface

The cooling that happens as the Sun is covered by the Moon is dramatic, and because it comes and goes within minutes, it is a chance to experience how much the "Sun warms the Earth".

K-PS3-2: Use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area.

While you are out there waiting for the eclipse to happen, you could be designing and building "shade" and making shadows!

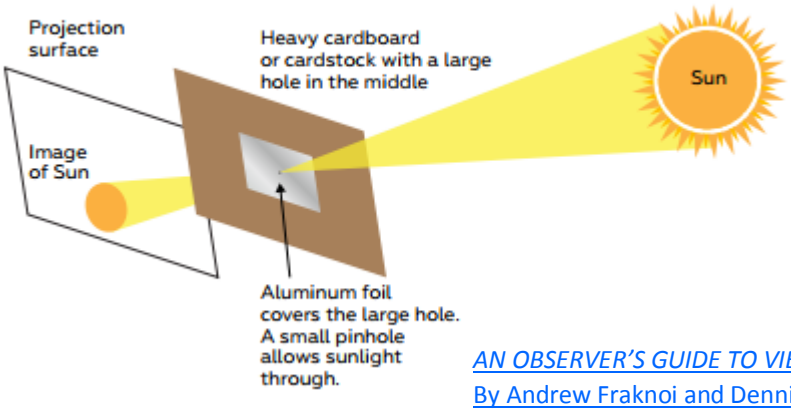
1-PS4-2: Make observations to construct an evidence-based account that objects in darkness can be seen only when illuminated.

The Sun makes a great light source for a pinhole camera projector.

1-ESS1-1: Use observations of the sun, moon, and stars to describe patterns that can be predicted.

How to make a pinhole camera projector!

A pinhole projector made with two pieces of cardboard



AN OBSERVER'S GUIDE TO VIEWING THE ECLIPSE
By Andrew Fraknoi and Dennis Schatz

NASA Teacher Toolkit - 2017 Total Solar Eclipse

Light Investigations

Click Here

Click on the picture to access a first grade lesson that explores the following questions:

- Lesson 1-Why can't I see well in the Dark? Do objects need light to be seen?
- Lesson 2-Where does light come from? Are there ways to communicate with light?
- Lesson 3-Does light go through it?
- Lesson 4- What does light have to do with shadows?

Click Here

Lesson PowerPoint can be accessed here --->

Secondary Resources for the 2017 Solar Eclipse

Standards Addressed:

NGSS DCI MS-ESS1.A - Develop and use a model of the Earth-Sun-Moon system to describe the cyclic patterns of lunar phases, eclipses of the Sun and Moon, and seasons

NGSS DCI HS-ESS1-4 - Use mathematical or computational representations to predict motion of orbiting objects in the solar system.

The August 2017 Total Solar Eclipse -

The Perfect Opportunity to Highlight Three-Dimensional Science Learning

By Dennis Schatz and Andrew Fraknoi

On August 21, 2017, 500 million people across the North America will experience one of the most beautiful astronomical phenomena: an eclipse of the Sun. If you are lucky enough to be in the 60-mile-wide path of totality (Figure 1), you will see the Moon completely cover the Sun. When only a sliver of sunlight is visible, your surroundings will begin to darken, as if the Sun were setting. Temperatures will drop and birds will go to roost, thinking that night is coming. Finally, the Sun will be totally covered and the beautiful solar atmosphere (the corona) will become visible. Totality will last two minutes or less for this eclipse, and then the Sun will slowly be uncovered.

Although only people in the narrow path of totality will see a toal eclipse, everyone in the United States (as well as Canada and Mexico) will see a partial eclipse, during which a "big bite" is taken out of the Sun (the entire area outside the path of totality in Figure 1). Teachers, students, and families will want to enjoy the beauty and they will need to be prepared to safely observe the event.

Courtesy of NSTA Science Scope March 2017

Continue reading by clicking HERE

Modeling the Eclipse

Using Various Models and Perspectives to Help Students Visualize the Solar Eclipse

William R. Thornburgh and Thomas R. Tretter

This article describes a unit in which students investigate total solar eclipses, such as the one coming August 21, from several perspectives. It incorporates mathematical thinking and aligns with the *Next Generation Science Standards*. The article lists a recommended sequence for the included instructional tasks. The first three tasks review patterns and teach students the relationship between the phases of the Moon and eclipses. The final tasks are more complex, linking observations from Earth with space phenomena.

Check these investigations out by clicking HERE.

Kansas
Association of
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KATS email: kats.org1967@gmail.com
Payments and invoices should be sent to:
KATS Treasurer
P.O. Box 780899
Wichita KS 67278

Ad Astra Happenings

GALAXY FORUM TOPICS OF CASSINI, THE SOLAR ECLIPSE AND CURIOSITY HAVE A SENSE OF IMMEDIACY
Educators will be "ahead of the curve" with information from the 2017 Galaxy Forum to be held Saturday, August 19, at the Kansas Cosmosphere and Space Center. Topics for this free event will be:

"Lord of the Rings--the Cassini Mission to Saturn" will be given by Todd Barber. Barber has been NASA-JPL's lead propulsion engineer on the Cassini mission since 2002. Cassini has orbited Saturn for 13 years. In its aptly named "Grand Finale" Cassini swoops between Saturn and its innermost ring ending in the probe's crash into Saturn on September 15, 2107. What has Cassini revealed over the years? What kind of close-ups, what kind of details, what do we hope to learn from this final mission? Barber is a Wichita native and Southeast High School grad.

"The 2017 Total Solar Eclipse: What, When, Where, Why?" As a primer on this unique event, Dean Stramel, professor of chemistry at Fort Hays State University, will look into why this is such a big deal that people travel all over the globe to see it. What is the science behind it? What are the logistics to watching it? This will be information teachers can take directly into their classrooms on Monday morning--eclipse day.

"Mars: Through the Eyes (and Lasers) of *Curiosity*" will be given by Sarah Lamm. A Kansas State senior, she has spent two summers at Los Alamos National Laboratory in New Mexico working with data from Curiosity's ChemCam instrument (it's the part that looks like the head and eye of Curiosity.) Her team's studies about the presence of manganese, an indicator of the presence of liquid water, has important implications for the habitability of Mars. She will share these and other findings and what they mean. Sarah, a Colby native, is a great illustration of what young Kansans are doing in the space sciences.

The 2016 Galaxy Forum will be Saturday, Aug. 19, from 1 p.m.-3 p.m. at the Kansas Cosmosphere and Space Center in Hutchinson

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The Galaxy Forum is free. Students and the public are also welcome. Though not required, teachers are urged to register to help with count for materials preparation. Continuing education credit available. Register with name and number attending to jeanet-testeinert@att.net or contact@adastra-ks.org

Share your Total Eclipse Plans and Experiences at:

www.kats.org