



## Central Illinois Lincoln Logs

National Weather Service Lincoln, Illinois

#### **SUMMER 2017 EDITION**

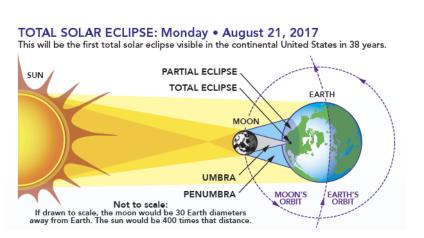
## Solar Eclipse Coming August 21st!

On Monday, August 21, all of North America will be treated to an eclipse of the sun. Anyone within the path of totality can see one of nature's most awe inspiring sights - a total solar eclipse. This path, where the moon will completely cover the sun and the sun's tenuous atmosphere - the corona - can be seen, will stretch from Salem, Oregon to Charleston, South Carolina. Observers outside this path will still see a partial solar eclipse where the moon covers part of the sun's disk. The last time the contiguous U.S. was treated to a total eclipse was in 1979.

#### The Science Behind an Eclipse

An eclipse occurs when the moon moves between the sun and the Earth, and the moon blocks the sun. There is about a 3 hour period where at least part of the moon will block the sun. All of the "lower 48" states will experience this phase. The totality phase, where the sun's disk is completely obscured, is limited to a narrow corridor.

cont. on page 2





#### **Radar Upgrades** Our radar will undergo upgrades to extend its life into the 2030s.

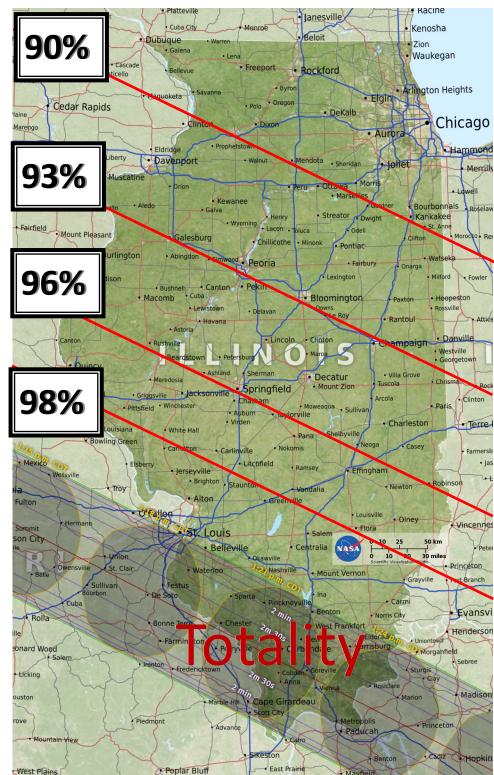
Page 4

IN THIS ISSUE



#### **Pets and the Heat** The "dog days of summer" can be rough on both humans and pets.

Page 7



#### **Viewing the Eclipse**

The map at left, courtesy of NASA, shows that far southern Illinois will be in the path of totality. This includes the southeast suburbs of St. Louis, Carbondale, Marion, and the western end of the Ohio River. However, most of the state will see at least 90% of the sun appear obscured by this eclipse.

Details for cities across the state:

Chicago: 87% obscuration. Starts at 11:54 am, peaks at 1:19 pm, ends at 2:42 pm

**Peoria: 93% obscuration.** Starts at 11:51 am, peaks at 1:18 pm, ends at 2:43 pm

**Springfield: 96% obscuration.** Start at 11:51 am, peaks at 1:18 pm, ends at 2:43 pm

Effingham: 97% obscuration. Start at 11:53 am, peaks at 1:21 pm, ends at 2:46 pm

Lawrenceville: 97% obscuration. Start at 11:55 am, peaks at 1:23 pm, ends at 2:48 pm

Carbondale: 100% obscuration. Starts at 11:52 am, totality 1:20-1:23 pm, ends at 2:47 pm

Metropolis: 100% obscuration. Starts at 11:54 am, totality 1:22-1:24 pm, ends at 2:49 pm



## NASA Eclipse Page:

https://eclipse2017.nasa.gov



Computer simulations of how the Sun will appear at maximum time of eclipse. Images courtesy of Jet Propulsion Laboratory.

# SAFELY & THE SUN

**WARNING!** Never look directly at the sun without proper eye protection. You can <u>seriously</u> injure your eyes.

Coole & Holdow M. One manager and P. Article Coole & Holdow M. One museums, schools and astronomy clubs for eclipse glasses—or purchase an ISO 12312-2 compliant and CE certified pair of these special shades!



View the eclipse with special eclipse glasses.



Regular sunglasses are not safe to view the eclipse.



Inexpensive and easy to build, the sun funnel is a device that completely encloses the light coming from a telescope and projects a magnified image of the sun, large enough for many people to view at once. http://eclipse2017.nasa.gov/make-sun-funnel

#### MAKE YOUR OWN ECLIPSE PROJECTOR

You can make this simple eclipse projector with almost any cardboard box, paper, tape and foil.

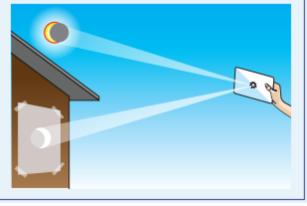
The longer the distance from the pinhole to screen, the larger the image of the sun will be.

#### NEVER look directly at the sun without appropriate eyewear. Opening in box for viewing White paper screen taped to inside end of the box Small image of Sunlight partially eclipsed Aluminum foil with pinhole sun http://eclipse2017.nasa.gov More on eclipses http://www.nasa.gov/eclipse http://eclipse2017.nasa.gov/safety More on safe viewing of eclipses http://go.nasa.gov/2evRZBG

#### MIRROR IN AN ENVELOPE

Slide a mirror into an envelope with a ragged hole about 5/8 inch (1.5 cm) cut into the front. Point the mirror toward the sun so that an image is reflected onto a screen about 15 feet (5 meters) away. The longer the distance, the larger the image.

DO NOT LOOK AT THE MIRROR, ONLY AT THE SCREEN.

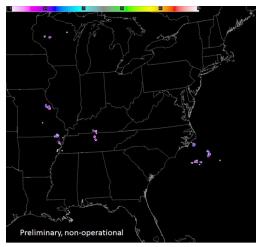


Images above courtesy of NASA.

### **GOES-R** Update

The GOES-R satellite, now designated as GOES-16, continues to undergo checkout and calibration following its launch last November. In May, it was announced that it when it becomes operational in November, it will be moved to a position of 75 degrees West longitude and become the new GOES-East satellite. The existing GOES-13 satellite, which now serves as GOES-East, will be placed in orbital storage and remain available for use if needed. GOES-14 also is in orbital storage. GOES-15 serves as the GOES-West satellite, and is scheduled to be replaced by another of the next generation satellites (GOES-S) next year.

Recent calibration efforts involve the Geostationary Lightning Mapper (GLM). This included measurements from the ground and from high-altitude aircraft to make sure the mapped lightning positions are correct. The GLM will measure total light-



ning activity (in-cloud, cloud-to-cloud, and cloud-to-ground), and will be valuable for increasing lead time of severe weather and for increased public safety.

Our staff has been undergoing training over the last several months on all the new capabilities of the GOES-16 satellite, and we are able to ingest the new imagery and data sets into our computer systems.

## Lincoln Doppler Radar to Begin Upgrades to Extend Service Life

The WSR-88D Doppler radar network was installed in the 1990's. It was originally designed to have a service life of 20 years, so the network has begun a series of upgrades in order to keep the radars operational until the 2030's. This refurbishment is called the Service Life Extension Project. The Lincoln radar will undergo its first of 4 upgrades in mid July.



The refurbishment consists of the following parts:

#### **Signal Processor**

This is the part of the radar that analyzes the returned energy to determine the location of targets (precipitation, etc.). It also filters out ground clutter from trees, buildings, and other stationary objects. It is being replaced with new, state of the art digital equipment. This is the upgrade that is being done at the present time.

#### Transmitter

This is the part of the radar that sends out the energy signal, which reflects back to the radar upon reaching a target. This upgrade will be done at a later time.

#### Pedestal

This is the part of the radar that controls the antenna. It will be replaced with a factory refurbishment, which includes replacement of gears, motors, and position sensors. This upgrade will be done at a later time.

#### **Equipment Shelter**

This contains the radar processing equipment that is located at the base of the dome, as well as backup generators. This upgrade will be done at a later time.

While the upgrade is being done, we will be utilizing radar data from our neighboring sites (Chicago, Indianapolis, Evansville, St. Louis, and Davenport).

#### **Changing of the Seasons**



## Meteorological vs. Astronomical

#### Seasons

#### by: National Centers for Environmental Information

You may have noticed that meteorologists and climatologists define seasons differently from "regular" or astronomical spring, summer, fall, and winter. So, why do meteorological and astronomical seasons begin and end at different times? In short, it's because the astronomical seasons are based on the position of Earth in relation to the sun, whereas the meteorological seasons are based on the annual temperature cycle.

#### **The Astronomical Seasons**

People have used observable periodic natural phenomena to mark time for thousands of years. The natural rotation of Earth around the sun forms the basis for the astronomical calendar, in which we define seasons with two solstices and two equinoxes. Earth's tilt and the sun's alignment over the equator determine both the solstices and equinoxes.

The equinoxes mark the times when the sun passes directly above the equator. In the Northern Hemisphere, the summer solstice falls on or around June 21, the winter solstice on or around December 22, the vernal or spring equinox on or around March 21, and the autumnal equinox on or around September 22. These seasons are reversed but begin on the same dates in the Southern Hemisphere.

Because Earth actually travels around the sun in 365.24 days, an extra day is needed every fourth year, creating what we

know as Leap Year. This also causes the exact date of the solstices and equinoxes to vary. Additionally, the elliptical shape of Earth's orbit around the sun causes the lengths of the astronomical seasons to vary between 89 and 93 days. These variations in season length and season start would make it very difficult to consistently compare climatological statistics for a particular season from one year to the next. Thus, the meteorological seasons were born.

#### **The Meteorological Seasons**

Meteorologists and climatologists break the seasons down into groupings of three months based on the annual temperature cycle as well as our calendar. We generally think of winter as the coldest time of the year and summer as the warmest time of the year, with spring and fall being the transition seasons, and that is what the meteorological seasons are based on. Meteorological spring includes March, April, and May; meteorological summer includes June, July, and August; meteorological fall includes September, October, and November; and meteorological winter includes December, January, and February.

Meteorological observing and forecasting led to the creation of these seasons, and they are more closely tied to our monthly civil calendar than the astronomical seasons are. The length of the meteorological seasons is also more consistent, ranging from 90 days for winter of a non-leap year to 92 days for spring and summer. By following the civil calendar and having less variation in season length and season start, it becomes much easier to calculate seasonal statistics from the monthly statistics, both of which are very useful for agriculture, commerce, and a variety of other purposes.

## Climate Statistics for First Half of Year

| Location    | Average<br>Temperature | Depar-<br>ture from<br>Normal | Rank         | Total<br>Precipitation | Departure from<br>Normal |
|-------------|------------------------|-------------------------------|--------------|------------------------|--------------------------|
| Champaign   | 51.1°                  | +4.2°                         | 3rd warmest  | 19.09"                 | -0.86″                   |
| Charleston  | 54.2°                  | +4.6°                         | 3rd warmest  | 24.86"                 | +3.71"                   |
| Decatur     | 51.7°                  | +2.5°                         | Tied 6th     | 21.34"                 | +1.65                    |
| Effingham   | 52.9°                  | +4.1°                         | 11th warmest | 22.08"                 | -0.54"                   |
| Galesburg   | 47.9°                  | +2.9°                         | 9th warmest  | 17.11"                 | -1.20"                   |
| Normal      | 48.5°                  | +3.3°                         | 21st warmest | 18.41"                 | -0.58″                   |
| Peoria      | 50.9°                  | +3.8°                         | 5th warmest  | 20.27"                 | +2.41"                   |
| Springfield | 53.7°                  | +4.3°                         | 3rd warmest  | 18.29"                 | -0.18"                   |

#### **Cooperative Observer News**

## Length of Service Awards for 2017

Several of our volunteer weather observers will be receiving Length of Service Awards this year. We thank these observers for their years of dedicated service to the climate needs of the nation.

| Name                       | Location    | Years of Service |
|----------------------------|-------------|------------------|
| Ruth Lynn                  | Clay City   | 45 years         |
| Rick Dickinson             | Congerville | 30 years         |
| Sonny & Lauretta<br>Snyder | Yates City  | 30 years         |
| Richard Taylor             | Sidell      | 30 years         |
| Ron Weishaar               | Cisco       | 15 years         |
| Mark Thompson              | Buffalo     | 15 years         |
| Marshall Metcalf           | Kincaid     | 10 years         |
| Darin Kronner              | Toulon      | 10 years         |
| Robert Daniel              | Virginia    | 10 years         |
| Lisa Vogel                 | Peoria      | 10 years         |

#### Pet Safety During the Summer



The "dog days of summer" is a phrase used to describe the hot and humid days of summer. It can be traced back thousands of years, to the days of the Roman Empire. It refers to the dates from July 3 through August 11, which is 20 days prior and 20 days after the star Sirius rises and falls in conjunction with the sun. Sirius was knows as the "Dog Star", because it is the brightest star in the constellation Canis Major (Large Dog).

The dangerous heat and humidity can be harmful to not only humans, but pets and other animals as well. To gather information on how to protect your pets this summer, the National Weather Service reached out to Donnie Embrey, the Team Leader for Louisa Virginia Community Animal Response Team. Donnie and his team are part of a non-profit organization dedicated to emergency preparedness, response and management specifically focused on preparedness and response for pets and their owners.

Pets are susceptible to heat illness - make sure to keep your animals hydrated! For dogs, Donnie says, "A good general guideline is that a healthy dog should drink between ½ and 1 ounce of water per pound of body weight each day under normal conditions." When it comes to diet, Donnie says, "reducing a pet's food intake on warmer days can help the pet cope with the heat, especially reducing the intake of grain based foods that cause a metabolic spike in body temperature." A common misconception is that giving your pet a buzz cut in the summer is a good idea, but that may not be best for your pet. "A pet's coat acts as insulation, it keeps it warm in the winter and cool in the summer by blocking the heat of the sun from reaching the skin." Check with a veterinarian or professional groomer to find out what's best for your pet.

Hot asphalt or cement can easily burn an animal's paws, so try to minimize walking your pet during the hottest part of the day. Not sure how hot the asphalt is? Place the back of your hand on the asphalt - if it's too hot for you, it's too hot for them. A few signs of heat illness in pets are rapid or irregular heart rate, excessive drooling, lethargy, refusal to eat, or excessive panting. "Panting is a normal cooling mechanism for a dog," says Donnie, "but a very bad sign for a cat. Be aware of excessive panting in dogs." If you notice any of these signs of heat illness, get your pet into a cooler environment. Apply cool towels to the pet, remove the towels, wring out the warm water, re-wet and reapply. Provide plenty of cool fresh water for the pet, but be careful not to chill the pet."

Last but not least, **NEVER leave a pet unattended inside a vehicle**. The temperature inside a vehicle can rise very quickly and is just as dangerous for pets as it is for people. Rolling down the windows is not a safe alternative. Keep these things in mind and have a safe and fun-filled dog days of summer.