THE GLOBE PROGRAM

(https://ww w.globe.gov)
(/)
uts_action=%2Flogin%2Flogin&_58_redirect=https://observer... home)

GLOBE Observer (https://observer.globe.gov) / Science (https://observer.globe.g

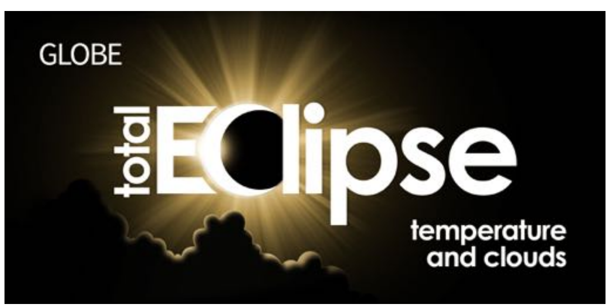
Share

How Cool is the Eclipse?

The Earth is solar-powered. So what happens when the Sun's light is blocked, even temporarily? If you measure air and surface temperature, how cool is the eclipse?

Help us answer these questions and others by collecting citizen science data using the GLOBE Observer app during the Total Solar Eclipse on August 21st, 2017.

- Observe how the eclipse changes atmospheric conditions near you
- Contribute to a citizen science database used by scientists and students to study the effects of eclipses on the atmosphere
- Provide comparison data even if you are not in the path of totality



The eclipse app button is already visible within GLOBE Observer, and you can make clouds measurements now. Air temperature measurement will become available on August 18th.

Need to get the app? Learn how here. (https://observer.globe.gov/about/get-the-app)

Other questions that aren't answered below? Try the eclipse FAQs page. (https://observer.globe.gov/science-connections/eclipse2017/eclipse-faqs)

Looking for printable GLOBE Observer materials and other activities? Visit the eclipse resources (https://observer.globe.gov/observer-community/eclipse-resources) or clouds resources (https://observer.globe.gov/observer-community/clouds-resources) pages.

How should I make observations during the eclipse?

First and foremost, make sure you are being safe when you are observing the eclipse. Looking directly at the Sun is unsafe except during the brief total phase of a solar eclipse (“totality”), when the moon entirely blocks the Sun’s bright face, which will happen only within the narrow path of totality. For more details about how to observe safely, including the appropriate type of eclipse glasses and filters to use, visit the NASA Eclipse 2017 webpage. (https://eclipse2017.nasa.gov/safety)

Also, a total solar eclipse is an amazing experience, apart from the interesting science involved. Especially for first-time eclipse observers, we recommend you put down your phone or camera during the precious few minutes of totality itself and just enjoy the experience. The data collection procedures below take that into account, and ask you to make observations and measurements before and after totality, but not during totality itself.

Cloud Type and Cover

The simplest way to participate without needing any additional equipment is by making clouds observations using the GLOBE Observer app. (https://observer.globe.gov/about/get-the-app)Clouds are an important part of the Earth's energy budget, and you may observe changes as the Sun becomes more and more blocked during the eclipse. We would like you to make regular observations for about two hours before and after the point of maximum eclipse. That will cover the period when the moon first starts blocking the Sun, called first contact, all the way to last contact, when the moon moves completely past the Sun and is no longer blocking any portion of it.

Try to make observations about every 15-30 minutes, more often if you wish, especially any time you notice something changing. If you are also measuring air temperature, the special eclipse page on the app will remind you with notifications to make your measurements about every third air temperature measurement. Feel free to add narrative comments to your photos about anything interesting you see happening.

Air Temperature

If you'd like to take it a step further and get a separate thermometer (anything from a simple liquid-filled thermometer to more complex digital models - see more about different types here (https://observer.globe.gov/science-connections/eclipse2017/eclipse-faqs#thermometers)), you can also collect and report data about air temperature on a special page that will be available in the GLOBE Observer app (https://observer.globe.gov/about/get-the-app) starting on August 18th. Whatever type of thermometer you use, make sure you are taking your measurements in the shade, even if that is just the shadow of your body with the thermometer held at arm's length.

Here's the preferred schedule for air temperature measurements:

- For two hours before and after maximum eclipse, take a measurement every ten minutes.

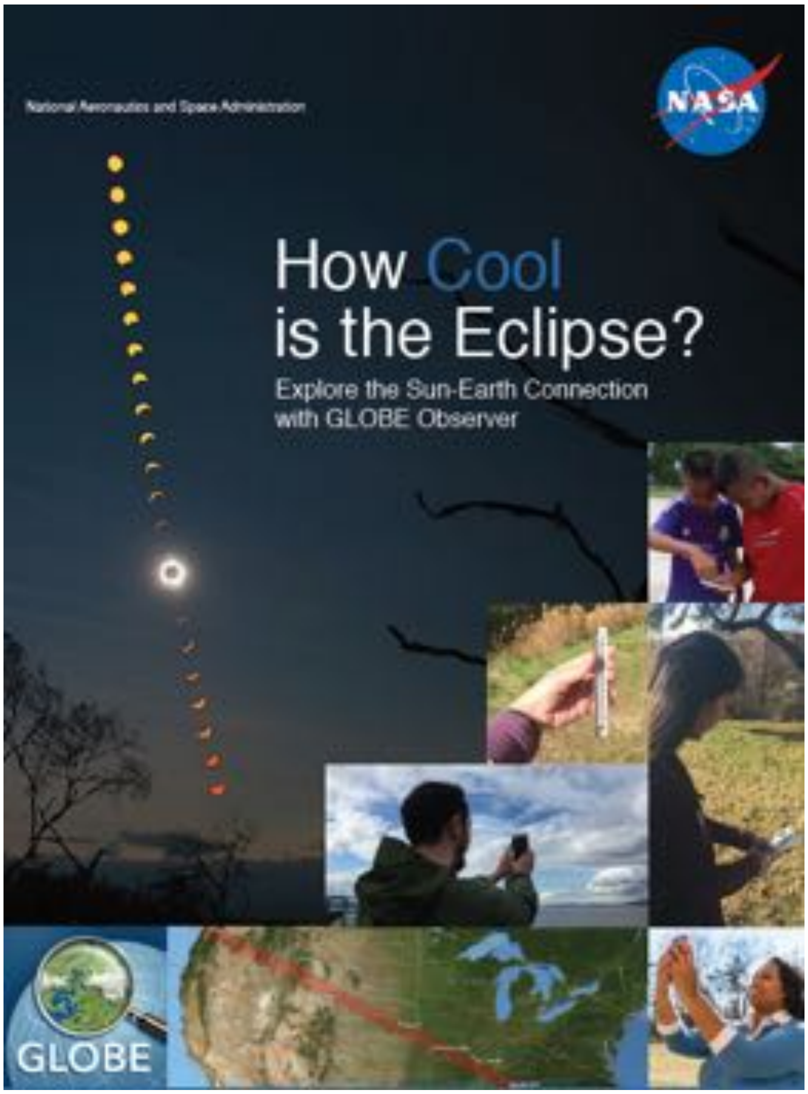
- If you can, increase that to every five minutes for the half hour before and after totality or the maximum eclipse at your location.
- You can also take measurements the day before the eclipse. Ideally, these would be near the time maximum eclipse will occur the following day. For example, if the time of totality for your location is 10:15 am on August 21st, make measurements at about 10:15 on August 20th.

Surface Temperature and Other Variables

There are many other atmospheric variables that could be interesting to observe, but won't have a designated place to enter via the GLOBE Observer app. For example, surface temperature using an infrared thermometer or wind speed and direction using an anemometer (wind speed gauge). These types of observations can always be noted in the comments of a cloud or air temperature measurement. For those willing to put in a bit of extra time to be trained in the GLOBE surface temperature protocol, acquire an infrared thermometer and set up an observation site, you can collect that data during the eclipse and report it through the GLOBE Data Entry app (https://www.globe.gov/globe-data/data-entry/data-entry-app) or via the online data entry form (https://data.globe.gov/#/entry). You can find more information about the training requirements on the protocol eTraining page (https://www.globe.gov/get-trained/protocol-etraining/etraining-modules/0/0/requirements#Observers). To measure surface temperature, you will need to complete an introduction to GLOBE (https://www.globe.gov/get-trained/protocol-etraining), an introduction to the atmosphere protocols (https://www.globe.gov/get-trained/protocol-etraining/etraining-modules/16867642/12267) generally, and then learn how to do the surface temperature protocol (https://www.globe.gov/get-trained/protocol-etraining/etraining-modules/16867642/12267) specifically. The training slides can be downloaded by anyone, but you will need to log in with your GLOBE Observer account information to take the short quizzes to get credit for the training and be able to enter data. Especially for educators, you may find the eclipse page on the GLOBE formal education website (https://www.globe.gov/web/eclipse/overview) useful.

More Information and Other Citizen Science Projects During the Eclipse

For general information about eclipses, as well as maps of planned events, video interviews with scientists, and much more, visit the NASA Eclipse 2017 website (https://eclipse2017.nasa.gov/). They also have suggestions about how to observe the dimming of daylight (https://eclipse2017.nasa.gov/measuring-dimming-daylight), and other activities you can try (https://eclipse2017.nasa.gov/citizen-explorers) before or after the eclipse. For those with telescopes and especially those on the path of totality, another project looking for volunteers is the Citizen Continental-America Telescopic Eclipse Experiment, or Citizen CATE (https://sites.google.com/site/citizencateexperiment/). Apps such as iNaturalist (http://www.inaturalist.org/) or iSeeChange (https://www.iseechange.org/)are also venues for reporting general observations of nature, during the eclipse or any time.



GLOBE Observer

Part of the GLOBE program

Sponsored by: (http://www.nasa.gov/)

NASA Official: Lin Chambers
Site Curator: Holli Riebeek Kohl

Privacy Policy (http://www.nasa.gov/about/highlights/HP_Privacy.html)
Contact GLOBE Observer (mailto:globeobserverhelp@lists.nasa.gov)

(https://www.globe.gov)
(/)
ıts_action=%2Flogin%2Flogin&_58_redirect=https://observer.gl... home)

GLOBE Observer (https://observer.globe.gov) / Training (https://observer.globe.g

Share

Clouds Training

The app tutorial provides the information you need to make a cloud observation, but if you'd like more information or more practice, check out the GLOBE *Clouds* eTraining (http://www.globe.gov/get-trained/protocol-etraining/etraining-modules/16867642/12267) module for teachers. It explains what clouds are and how they form; why clouds are an important element of the Earth system; and explain why cloud observations are important for understanding our changing Earth system. The tutorial also provides a step by step guide how to visualize cloud data on a map interface using GLOBE's Visualization Site.

Cloud Observation Resources

Simple Cloud Tutorial (/documents/19589576/20846667/Simple+Cloud+Tutorial/6192139e-99c1-4682-b096-53c99aa3b08f)- PDF version of the in-app tutorial, providing information to make an observation.

NOVA Cloud Lab (http://www.pbs.org/wgbh/nova/labs/lab/cloud/research/classification/) - Practice your cloud classification skills by clicking cloud images in the NOVA Cloud Lab Gallery. Select the cloud type from the drop down menu and click submit. Were you correct?

Cloud Cover Practice (http://www.globe.gov/globe-gov-cms-portlet/html/etraining/open_window.jsp?url=https%3A%2F%2Fzebrazapps.com%2Fembed%2F%23%2Fff5f29880f0042c5b

884e3fc67ea97f0) - This interactive web-based tool allows you to calibrate your eye by practicing cloud cover estimation using images on the computer.

Contrail Formation Tutorial (http://www.globe.gov/globe-gov-cms-portlet/html/etraining/open_window.jsp?url=https%3A%2F%2Fzebrazapps.com%2Fe%2F699134bfa0b74d53a382f21e8d375024) - In this tutorial, you can explore the physics of contrail formation in the atmosphere and develop the ability to recognize the several types of contrails that form under varying atmospheric conditions. Practice classifying the type and abundance of contrails.

Cloud Type Practice (http://www.globe.gov/globe-gov-cms-portlet/html/etraining/open_window.jsp?url=https%3A%2F%2Fzebrazapps.com%2Fembed%2F%23%2Fe7ac1eeb4717444183a36606035ecfd7) - This interactive web-based tool asks a series of questions to help you narrow down the type of cloud you are observing. It can be used both for practice and in the field to identify clouds.

GLOBE Cloud Chart (http://www.globe.gov/documents/348614/782194b1-b5c3-4416-b3aa-b4a208ea5812) - This printable photo chart illustrates each cloud type.

Cloud Identification Key (https://zebrazapps.com/embed/#/e7ac1eeb4717444183a36606035ecfd7) - Use this step-by-step key to identify each type of cloud you see.

SciGirls Cloud Clues Activity (Visual Opacity) (/documents/19589576/20846667/scigirls2015+cloudclues.pdf/3c87e51b-1b12-4309-9285-ca68280ea4fe) - This hands-on learning activity explores designing an experiment to categorize the opacity of different materials, extending the concept to real life and how the differing opacity of clouds can effect surface temperature.

Did you Know?

Big Sky Cumulonimbus Cloud

During May, in years when El Niño is active in the Pacific, moisture flows across Northern Mexico and is lofted to great heights by heating over the Chihuahua Desert. This supercell sprang up just west of La Pryor, Texas, and was photographed by an observer on a bluff above the Rio Grande south of Quemado, Tx. The image on radar appeared to encompass an area some 100 miles wide from north to south.

Photo by Kay Cunninghan, a Texas rancher.

THE GLOBE PROGRAM

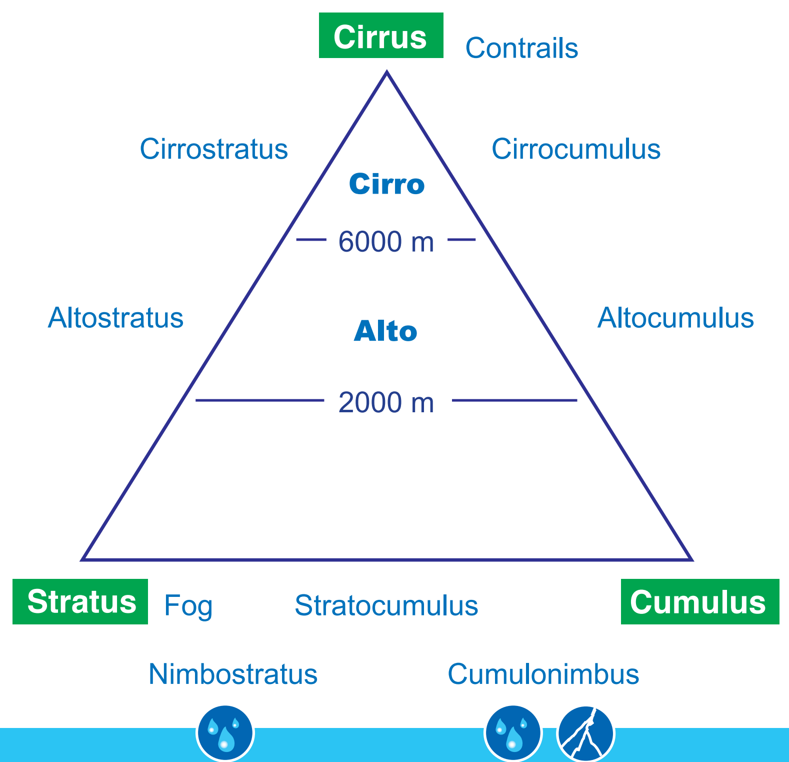
Cloud Identification Chart

2017

Sponsored by: NASA Supported by: NSF NOAA Implemented by: UCAR

Observation Basics

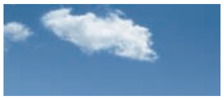
Cloud Type



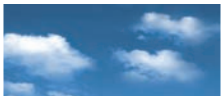
Cloud Cover

☐ Few (<10%)

☐ Isolated (10-25%)

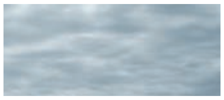


☐ Scattered (25-50%)



☐ Broken (50-90%)

☐ Overcast (>90%)

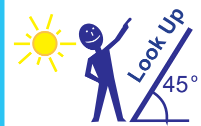


Sky Color

☐ Deep Blue

☐ Blue

☐ Light Blue



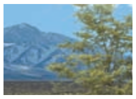
☐ Pale Blue

☐ Milky

Sky Visibility

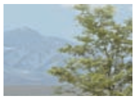
☐ Unusually Clear

☐ Clear

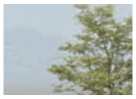


☐ Somewhat Hazy

☐ Very Hazy



☐ Extremely Hazy



Cloud Opacity

☐ Transparent

☐ Translucent

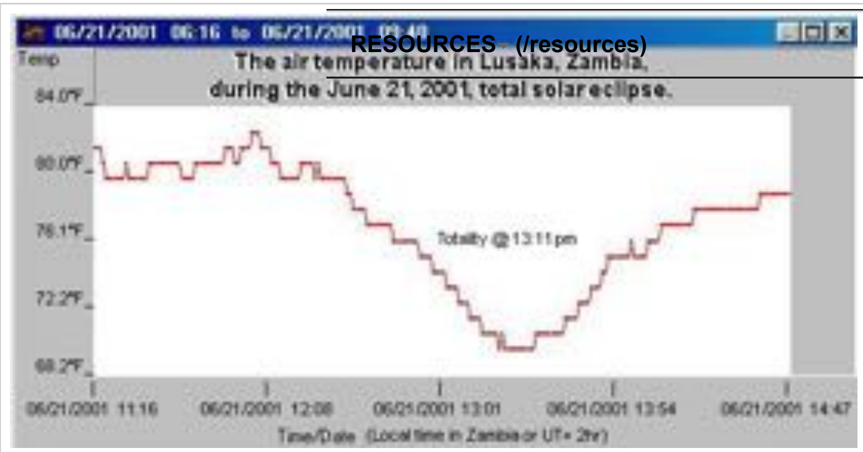
☐ Opaque

www.globe.gov

Sponsored by: NASA Supported by: NSF NOAA Implemented by: UCAR

Temperature Change during Totality

When sunlight fades at twilight, we always notice how things start to cool down. The same is true for the temporary dimming during a total solar eclipse. Why not use a thermometer to measure it?



The Moon's shadow is cool, literally! When it swept by Lusaka, Zambia, on June 21st in 2001 the air temperature dropped nearly 15 degrees F. This graph shows a series of measurements made by NASA astronomer Mitzi Adams during the total solar eclipse using a *Thermochron Temperature Logger*.
Credit: Dr. Mitzi Adams NASA/MSFC

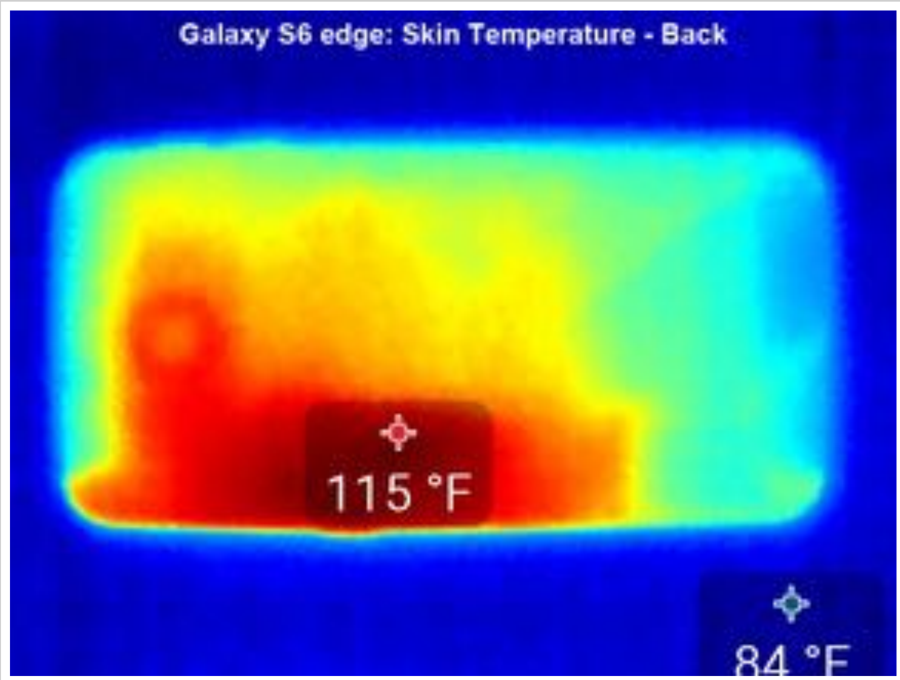
How to do it - In the hour before the eclipse, make several measurements of the temperature in data groups about 5 minutes in length, then average together the measurements within each group. Note the time at the midpoint of each group. Make these measurements groups regularly as the eclipse approaches, as it is happening, and during the hour after it has ended. Graph the results in terms of the time from the midpoint of the eclipse when the sun is completely eclipsed. You may need to experiment before the eclipse to find the best time interval for your measurements. This will depend on the technology you select. Some thermometers take many minutes to register an air temperature so you need to at least give the thermometer system enough time to register a 'stable' temperature. This is a significant problem worth discussing in a bit more detail!

A significant problem you may encounter is that making ambient air temperature measurements during a rapidly-changing phenomenon. During totality, the time from full daylight to darkness and back again is only about 2 – 3 minutes. This may be too quick a change for your thermometer to measure it! The best thing to do is to experiment with your thermometer to see how quickly it registers an air temperature change. One way to do this on a warm day is to measure your indoor air temperature, then carry the thermometer outside and measure how long it takes for it to finally make a stable reading on the outdoor temperature. For air temperature, some thermometers, such as an ordinary analog mercury thermometer, may take several minutes to do this. Other digital thermometers, normally designed for medical or liquid measurements, may take a much longer time. Ideally, since the temperature change during totality may only be ten degrees or so, you need a thermometer or sensor system that can register an air-based ten-degree change in a matter of a minute or so, and to do this reliably.

Scientists spend a lot of time getting to know their instruments, their accuracy and precision, and noise characteristics before using them under actual research conditions. In many cases, they actually design their instruments right from the start to overcome many of the limitations that stand in the way of making the measurement they want. Likewise, if you want to make measurements of temperature changes during an eclipse, you need to select the best equipment to do this and get to know its limitations.

Technology Suggestions

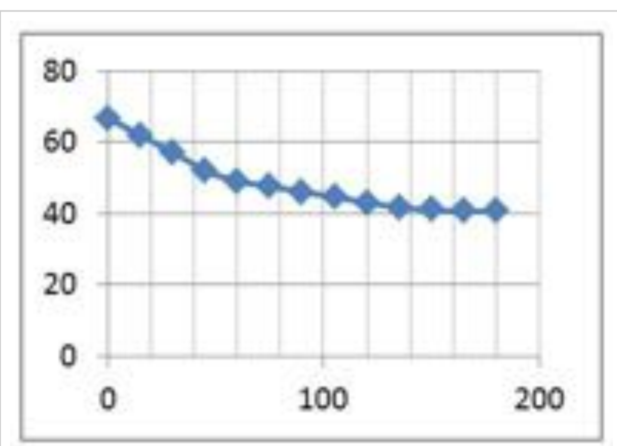
IPhone and iPad App. Be careful. Some Apps do not make a measurement of your local temperature, but go off and consult a weather service to give you an average hourly temperature! What you want is an app that makes an actual measurement in real-time. Also, for accurate readings, you need an App that uses an external temperature sensor, not one built-in to the very hot iPhone body.



Internal heat sensor - Although they were well for monitoring whether your smartphone is over-heating, they cannot be used to reliably measure environmental temperature except under certain circumstances. For instance, if you use one of the apps to make a measurement immediately after you start the phone, and the phone has been unused and powered down for several hours before, the smartphone may give a reasonable estimate for the current, ambient temperature. Here is an infrared image of a smartphone, which shows the kinds of thermal backgrounds an internal sensor has to cope with in order to make an environmental measurement!

External heat sensor – These sensors are plugged into the audio jack of the smartphone and often attached to a cable. Measurements are more accurate for low-temperature measurements below room temperature. Once again, it is an encapsulated, thermistor-based design that allows the sensor to be far from a local source of heat, and so is capable of making accurate environmental measurements.

Measuring issues – The internal-sensor-based smartphones can be placed in contact with other solid objects whose temperature you want to measure. A finite time must pass in order for the smartphone to reach, at least approximately, the temperature of the tested solid. For measuring local atmospheric conditions, a longer time will be required because of the less-efficient thermal conductivity of air. Also, the smartphone needs to be out of direct sunlight to avoid solar heating. External sensor systems have probes that can usually be dipped into liquids if covered with a plastic sandwich bag. As described below, these systems have a very rapid and repeatable response to temperature changes, however they also require an equilibrium time in order to reach the same temperature as the test object. This will, again, be longer for gas measurements than for solid or liquid measurements.



OmniTemp (iOS) – The external sensor is sold separately and costs $10.00. The temperature is graphically displayed over a selectable 1-minute span, 1-hour span or 1-day span, so that you can immediately see when the temperature has reached equilibrium with its test object. Resolution 0.1°C (0.1°F). Accuracy ±1°C (±2°F) Required sensor hardware, order at http://omnisensor.net/

(http://omnisensor.net/) An example of an outdoor air temperature measurement is shown in the graph. Starting at room temperature 66.7 F, it reaches the ambient outdoor air temperature after 165 seconds (3 minutes) at 40.6 F. Another way to say this is that after 2.5 minutes it is at 99% of final outdoor air temperature. Eclipse temperature measurements should not be made at a cadence faster than this 3-minute time interval to avoid false readings.

Analog Mercury Thermometer – This is an Old School technology, but it is a reliable way to measure temperature. Any standard weather thermometer will be designed properly to record air temperature changes over the likely 10 – 15 F range. The big question is whether these thermometers can detect a ten-degree change in air temperature in only a minute or so!

Research Suggestions - If you are using a 'weather station' set-up, why not keep track of the air pressure and wind speed too? Compare your results with a partner's results in another neighborhood, or in another town if you have relatives located along the path of totality! Why might some locations give more of a temperature change than others? What would you predict the changes would be in different locations? Does the presence of a local body of water, or roadway asphalt, make a difference? Does the local temperature at the start of the eclipse make a difference to how low the temperature falls?

Attention Citizen Scientists!

Would like to contribute your data to a database used by students and scientists to study the effects of the eclipse on the atmosphere? General citizen scientists can observe and report clouds and air temperature with GLOBE Observer, while those interested in pursuing additional online training (especially formal and informal educators) are encouraged to check out other data collection and research ideas from the full GLOBE Program. After the eclipse, you can use the GLOBE Visualization System to check out the data collected by you and your fellow citizen scientists, and to help you answer your own scientific questions.

Program Link: https://www.globe.gov/web/eclipse/overview (https://www.globe.gov/web/eclipse/overview)
Observer Link: https://observer.globe.gov/science-connections/eclipse2017 (https://observer.globe.gov/science-connections/eclipse2017)

Search

TEXT RESIZE

(http://science.nasa.gov)

(/flickr-gallery)

(https://eclipse2017.nasa.gov/sites/default/files/interactive_map/index.html)

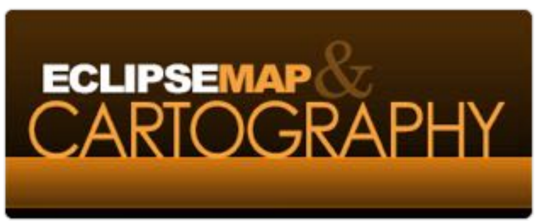
(/downloadables)

(/2017-total-solar-eclipse-who-what-where-when-and-how)

(/nasas-eyes)

(/eclipse-live-stream)

(/event-locations)



(/eclipse-maps)

(https://www.facebook.com/NASASunScience/) (https://twitter.com/NASASun) (https://www.youtube.com/playlist?list=PLF14609877EF3419B) (https://www.instagram.com/NASAGoddard/)

(//www.flickr.com/groups/nasa-eclipse2017) (https://www.snapchat.com/add/nasa)

ECLIPSE 101 (/eclipse-101) (/eclipse-101)

- NASA's Eyes (/nasas-eyes)
- The 2017 Total Solar Eclipse (/2017-total-solar-eclipse-across-america)
- Eclipse: Who? What? When? Where? and How? (/total-solar-eclipse-who-what-when-where)
- How Eclipses Work (/how-eclipses-work)
- Eclipse History (/eclipse-history)
- Eclipse Maps (/eclipse-maps-0)

HOME OMNITEMP SUPPORT CONTACT US

CONTACT US

197 East Hamilton Avenue,
Suite 203, Campbell, CA
95008 United States

408-831-0111
support@omnisensor.net

Name

Phone

Email address

Message

CONTACT US

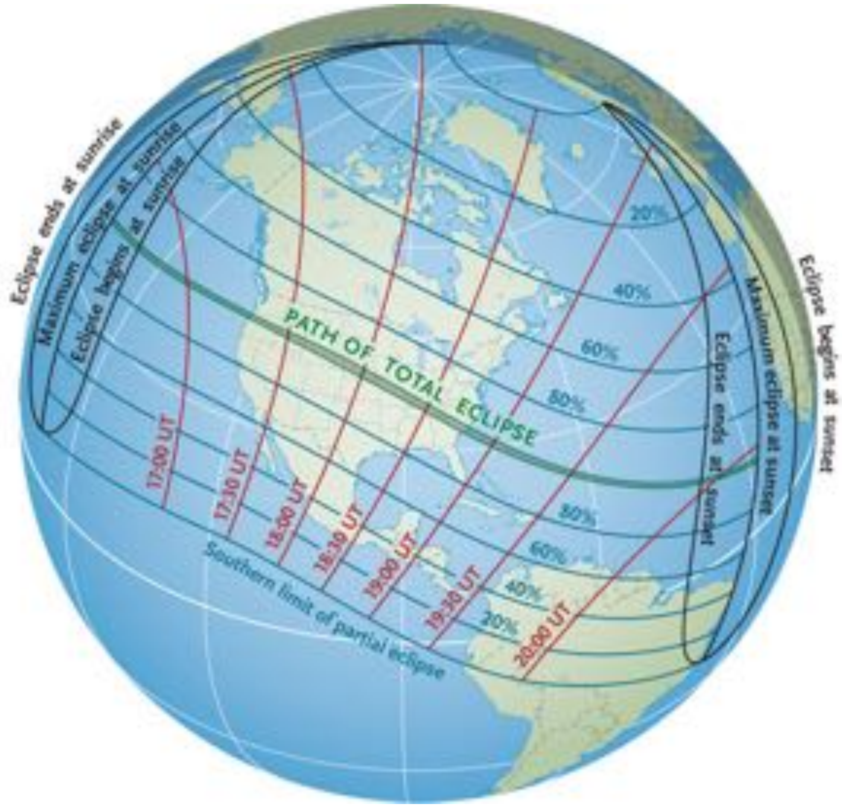
The Solar Eclipse for the Rest of Us

By: **Alan MacRobert** | August 14, 2017

Totality watchers get the best show, but a far greater number of people will be in partial-only territory. Here's how to make the most of it.

The Christmas 2000 eclipse was partial only. For Fred Espenak, its maximum "eclipse magnitude" (middle image) was 43%.
Fred Espenak

Over the years we've had a lot to say about America's total eclipse of the Sun coming up on August 21st. You can visit our eclipse landing page, and get local maps as detailed as you want. But as the broader maps in this article show, for the vast majority of people in North America, Central America, and northern South America, the eclipse will be only partial.



The partial eclipse crosses most of the Americas. The red lines give the Universal Time of mid-eclipse. The blue lines tell the eclipse magnitude (the percent of the Sun's diameter covered) at that time. Of totality's 8,600-mile-long track, about 30% falls on land.
Sky & Telescope, *source:*
Fred Espenak

Here are ways to make the most of it — without endangering your eyes.

How to Watch

The blindingly brilliant surface of the Sun can be *actually* blinding, perhaps permanently, if you stare at it for any length of time. And that also goes for the bright part of a partially eclipsed Sun.

You have two basic ways to watch safely: directly through a *safe solar filter,* or indirectly by *projection.*

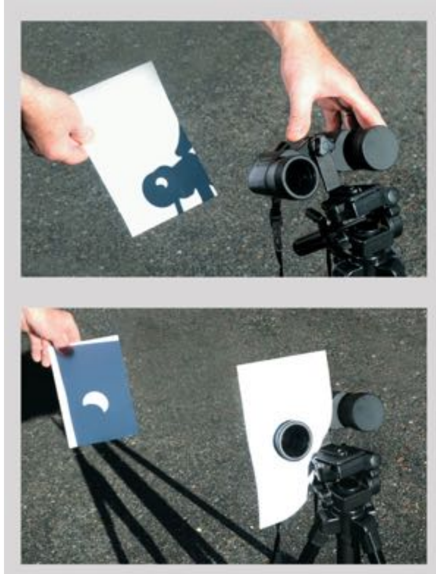
Direct viewing: For this you'll need a filter that's specifically designed for Sun viewing: one that reduces the Sun's invisible infrared and ultraviolet rays as much as it does visible light. All of the inexpensive little "eclipse glasses" that we've tested do fine, but just to be sure, look for "ISO 12312-2" printed on them. Check the AAS's safe vendor guidelines to ensure your eclipse glasses aren't fakes.

For binoculars or telescopes, you can buy solar-filter material made of glass or thin, metal-coated plastic film — either as a sheet you can cut with scissors to attach over the front of your optics, or pre-mounted in a cell sized to fit firmly onto the front (don't let it blow off!). Leave the film slack; wrinkles don't matter, but stretching it will haze out the view and compromise safety. When we tested various glass and thin-film solar filters few years back, we liked the Baader Astro-Solar thin film the best.

Projection means projecting an image of the Sun onto a piece of white paper and watching the paper. The oldest, simplest, but poorest projection method is to use a pinhole. For instance, take a long box, cut a hole in one end, tape aluminum foil over the hole, and put a pinhole in the foil. Tape white paper inside the other end of the box, close it up, and cut a big hole in the side so you can look at the paper. Aim the pinhole at the Sun, and an image of the Sun's face will fall on the paper.

But the image will be very small and dim. Experiment with different sized pinholes. A large one makes the image bright but fuzzy; a small one makes it sharp but dim.

Much better is to use binoculars or a telescope to project a big, bright image, as shown on the next page. Aim the instrument at the Sun (without looking in it! Move it around until its shadow is minimized and light floods out of the eyepiece). On a telescope, use your lowest-power eyepiece. Focus the image with the focus knob and/or by moving the paper catching the image closer or farther back. If the scope's aperture is larger than about 3 inches, cut a clean, 3-inch hole in thin cardboard and tape it over the front. You don't want to let a damaging amount of solar heat inside.



Projecting the Sun. Put binoculars on a tripod and point them sunward. Adding a cardboard shield around them creates a large shaded area for viewing the projected image.

What To Watch For

· Can you see any **sunspots?** Don't get your hopes up; the Sun is well past the 2014 maximum of its 11-year activity cycle, and its face these days is pretty quiet, sometimes completely blank. But if you do see a spot or two, they will be landmarks for events coming up. If you're projecting the Sun's image onto paper, wiggle the paper to distinguish sunspots from tiny paper flaws.

· **First contact** is the moment when the edge of the Moon first touches the Sun's western edge. Find the exact time of this event for your location by clicking on this Google Map. But the Moon's edge will take a little while after first contact to intrude enough to begin to show. How well can you time when this happens? What's the delay as seen with your setup? Set your timepiece accurately beforehand.

· As the Moon leisurely intrudes farther onto the Sun, look for irregularities showing up on the edge of the Moon's silhouette. These are **lunar mountains** and valleys seen in profile along the Moon's limb. The Sun's edge, by contrast, is perfectly smooth.

· Keep an eye on those sunspots. If the black lunar silhouette approaches a big one, and if you're looking through a fairly large filtered scope, you should be able to see that, by comparison, the **sunspot's dark umbra is not truly dark**. Photos to the contrary, sunspot umbras shine with about 20% the surface brightness of the rest of the Sun. They would appear blindingly brilliant if the rest of the Sun weren't there and dictating the density of your solar filter.

· As the eclipse progresses, look around at the **landscape and blue sky**. Is the blue becoming deeper and purer? You may be surprised by how much sunlight has to be lost before the world *looks* any different. This is a measure of how well our eyes naturally adapt to changing lighting conditions.

If the partial eclipse at your site is deep and the Sun becomes a thin crescent, watch for the landscape to take on a slightly alien, silvery look, with shadows turning crisper than usual.

· **How deep** will the eclipse become at your location? The Google Map tells this two ways. The maximum *magnitude* of the partial eclipse is the *percent of the Sun's diameter* that the Moon will cover. The *obscuration* tells what fraction of the Sun's *surface area* is covered. That's also about how much light is lost (although the Sun's disk is a little dimmer around its edges than near its middle, a solar-atmosphere effect called *limb darkening*).

· **Venus and Jupiter** may become visible if the sky turns a deep enough blue. Venus is your first try. Look for it 34° (about 3½ fists at arm's length) to the Sun's celestial west. Next brightest is Jupiter, 50° to the Sun's east.

Unless the eclipse becomes total or very nearly so, you don't have much hope for Mars (magnitude +1.8) some 8° west of the Sun, Regulus (+1.4) just 1° to the Sun's east-southeast, and certainly not Mercury, fainter still at +3.3, 10° to the Sun's southeast.

· Look for dim **dapples of sunlight on the ground** under trees. A leaf canopy may form many pinhole projectors, and during a partial eclipse each dapple will show an identical dent. Or make little holes between the fingers of your two hands laid across each other, as shown in the photo at lower left.

And then watch everything slowly unwind in reverse, until the Moon's last trace slides off eastward into invisibility, and last contact ends the show until next time.

And when is that?

The next North American partial eclipse happens for the northeastern U.S. and eastern Canada around sunrise on June 10, 2021. Then nearly all the continent is partially eclipsed on October 14, 2023, when an annular eclipse runs from Oregon to Texas and points south.

The next *total* solar eclipse awaits North Americans on April 8, 2024, running from Mexico through Texas, the Midwest, northern New England, and the Maritimes. Again, almost all of the continent will be partially eclipsed.

During the partial eclipse, cross two hands so your fingers make a waffle pattern. The holes between them act as pinhole projectors to create tiny crescent Sun images in the shadow below.
J. Kelly Beatty

This article originally appeared in Sky & Telescope*'s August 2017 issue. For more information about the eclipse, visit our 2017 total solar eclipse landing page.*

CATEGORIES
Astronomy News, Eclipses, Observing, Observing News & Current Celestial Events, The 2017 Total Solar Eclipse, Types of Objects to Observe

TAGS
solar eclipse 2017

RELATED POSTS
Solar Eclipse Activities for Kids and Families [http://www.skyandtelescope.com/2017-total-solar-eclipse/solar-eclipse-activities-kids-families/]
Eclipse Planning: Explore Weather Model Forecasts [http://www.skyandtelescope.com/2017-total-solar-eclipse/eclipse-weather-model-forecast/]
Will Monday's Total Eclipse Change Your Life? [http://www.skyandtelescope.com/observing/clear-or-cloudy-get-ready-for-an-eclipse-adventure/]
***Sky & Telescope* Answers Your Eclipse Questions: Part II [http://www.skyandtelescope.com/2017-total-solar-eclipse/sky-telescope-answers-eclipse-questions-part-ii/]**
Diamond of Three Rings [http://www.skyandtelescope.com/2017-total-solar-eclipse/diamond-of-three-rings/]

About Alan MacRobert

Sky & Telescope senior editor Alan MacRobert has been covering all aspects of astronomy since 1982.
View all posts by Alan MacRobert →

2 thoughts on "The Solar Eclipse for the Rest of Us"

Robert Victor
August 15, 2017 at 2:00 am

On another post, it was stated:
"When's the next solar eclipse?

The next total solar eclipse will occur on June 2, 2019, when the eclipse path will fall largely over the Pacific Ocean. Some viewers on land in Chile and Argentina will spot totality at sunset. Find more information at NASA's eclipse site."

The date of that total solar eclipse is actually July 2, 2019.

Gos
August 17, 2017 at 9:44 am