

Feature Story: ALPO Eclipse Section Part 2: The 21 August 2017 Total Solar Eclipse – The Great American Eclipse

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Location, Location, Location

A series on the 2017 total solar eclipse, site selection, weather prospects, observing the eclipse and specific observing projects will be a focus over the next several issues of the JALPO leading up to the eclipse. This second article in the series overviews the observer's eclipse site selection.

On 21 August 2017, the United States will experience its first total solar eclipse since February 26, 1979. All of the Continental United States will experience at least a significant partial solar eclipse; the eclipse is being referred to as "The Great American Eclipse". For those fortunate enough to live along the narrow track of totality, or travel to the path of totality, up to 2 minutes and 40 seconds under the shadow awaits observers. The partial phase of an eclipse never compares to totality; one should plan now to get to the total line!

In real estate, the phrase "location, location, location" is often used by realtors and clients looking for a property in an upscale neighborhood, often due to upper home prices, lack of crime and/or excellent neighborhood schools. The same phrase can be used for determining your observing location for a total solar eclipse.

There are several factors that go into your site selection. These include:

- Where the total solar eclipse path runs;
- Getting to the potential site;
- Accommodations and other logistics like food;
- The observer's safety at the potential site; and
- Weather prospects.

The Total Eclipse Path

First, let's review the dynamics of what one is looking at when examining an eclipse path plotted on a map.

As can be seen by the three 2017 eclipse maps in figures 1, 2 and 3, varying details of the path of totality are available. First: plan to travel to the path of totality. Remember that this is no substitute for a total solar eclipse.

The NASA graphic in Figure 1 shows what is referred to as the orthographic map of

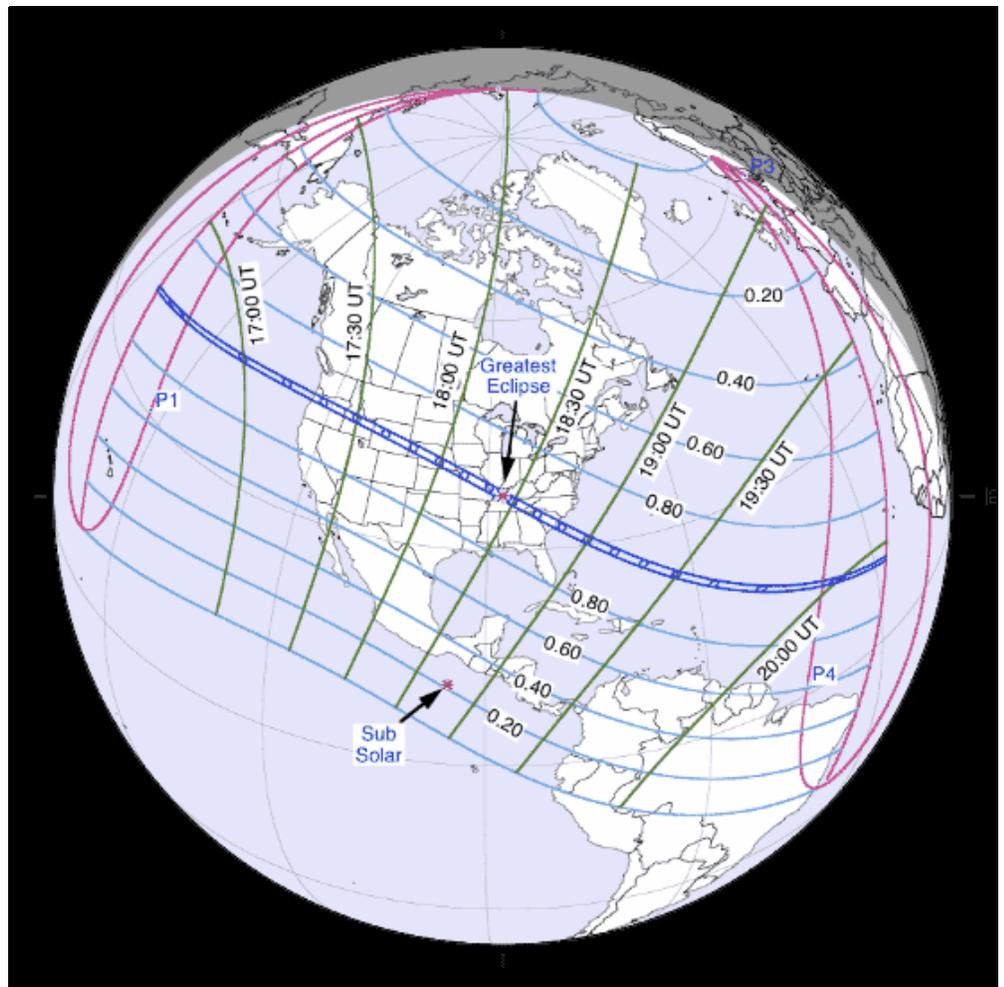


Figure 1. The 21 August 2017 eclipse path Courtesy: the National Aeronautics and Space Administration.

the eclipse. First, this map shows both the partial and total limits of the 21 August 2017 solar eclipse. This is a good starting point, yet it does not provide the eclipse-chaser with enough detail as to the limits of totality. If you are outside those limits, you will see a only partial eclipse. Imagine traveling some distance to see a total, then setting up just outside of either the northern or southern limit and observing a deep partial eclipse. A nice view, yet it still is not a total solar eclipse.

Fred Espenak's map in Figure 2 allows the observer to get an idea as to which states the path of totality passes, with the indication of a few of the larger cities, like Kansas City and St. Louis. Let's say you look at this map and decide you want to travel to Kansas City for barbeque and a total solar eclipse. Here's the problem: if you set up for the eclipse at the wrong KC

barbeque restaurant, you might well be south of the southern limit, again seeing only a deep partial solar eclipse. But at least you had some good barbeque...

So more detailed maps are needed. Enter maps like Dr. Michael Zeiler's map in Figure 3. This is at a more detailed scale, allowing you to see where the central line within the path of totality passes, the northern and southern limits, and major and minor roads into and out of the area. Zeiler's map also shows other important details, such as the duration of totality as you move away from the central line, Websites like Zeiler's, Bill Kramer, and Xavier Jubier allow the eclipse-chaser to look at the path in varying details all along the path of totality in an easy and very-interactive way.

Fred Espenak has published in 2015 *Road Atlas for the Total Solar Eclipse of 2017*. This very useful book includes a comprehensive series of 37 maps of the path of totality as the shadow moves across the United States. The scale — 1:700,000, or 1 inch = 11 miles — provides you with both major and roads as well as towns and cities, rivers, lakes, parks, national forests, wilderness areas and mountain ranges. Even if you have your site picked, hotel reservations made, and your telescope packed, I would still highly recommend this as a part of your must-have materials. *Road Atlas for the Total Solar Eclipse of 2017* is available in both black & white and color; again I highly recommend the color version.

One closing and important thought on location, location, location. There are a number of observers who will set up right

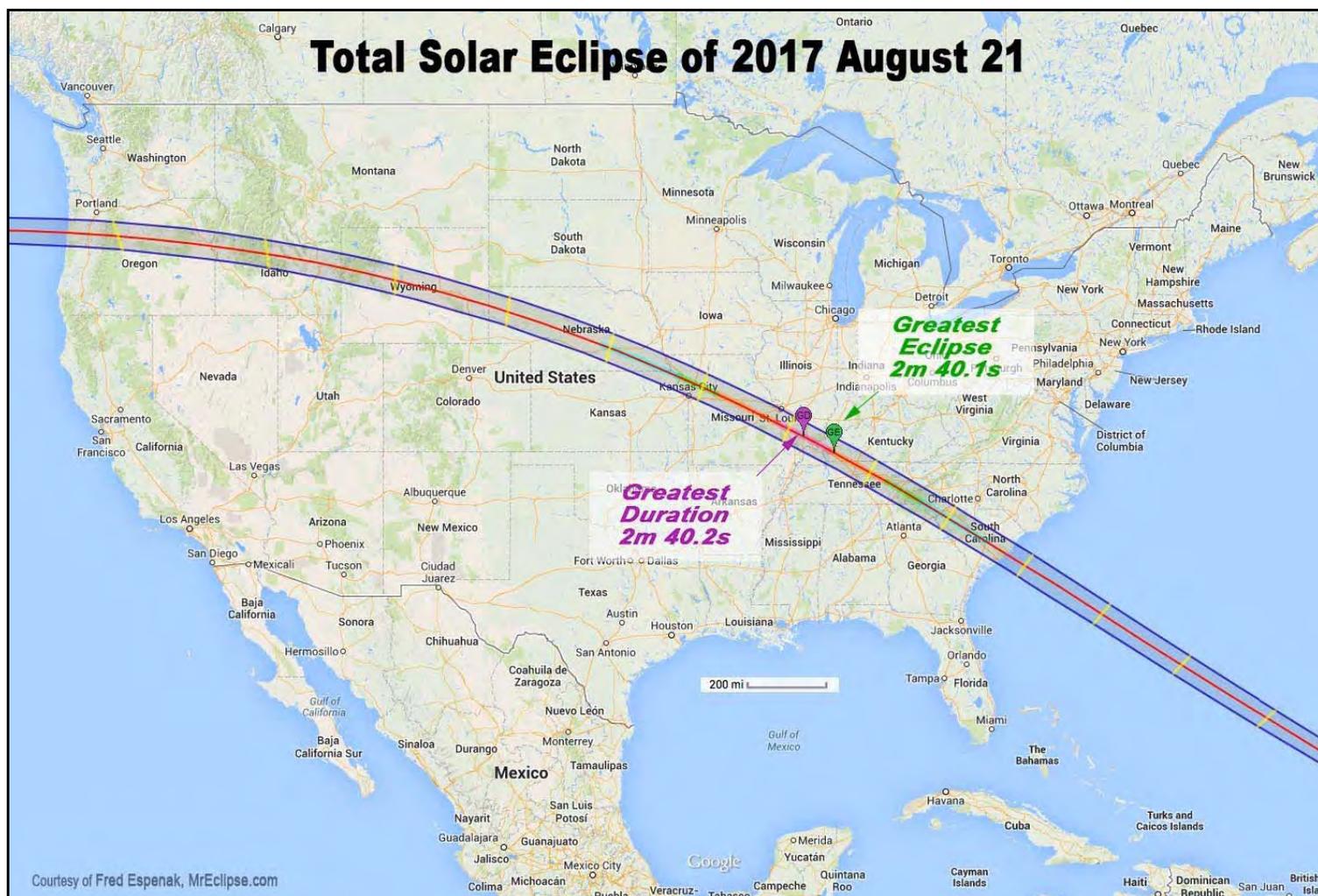


Figure 2. The 21 August 2017 eclipse path in more detail. Courtesy: Fred Espenak.

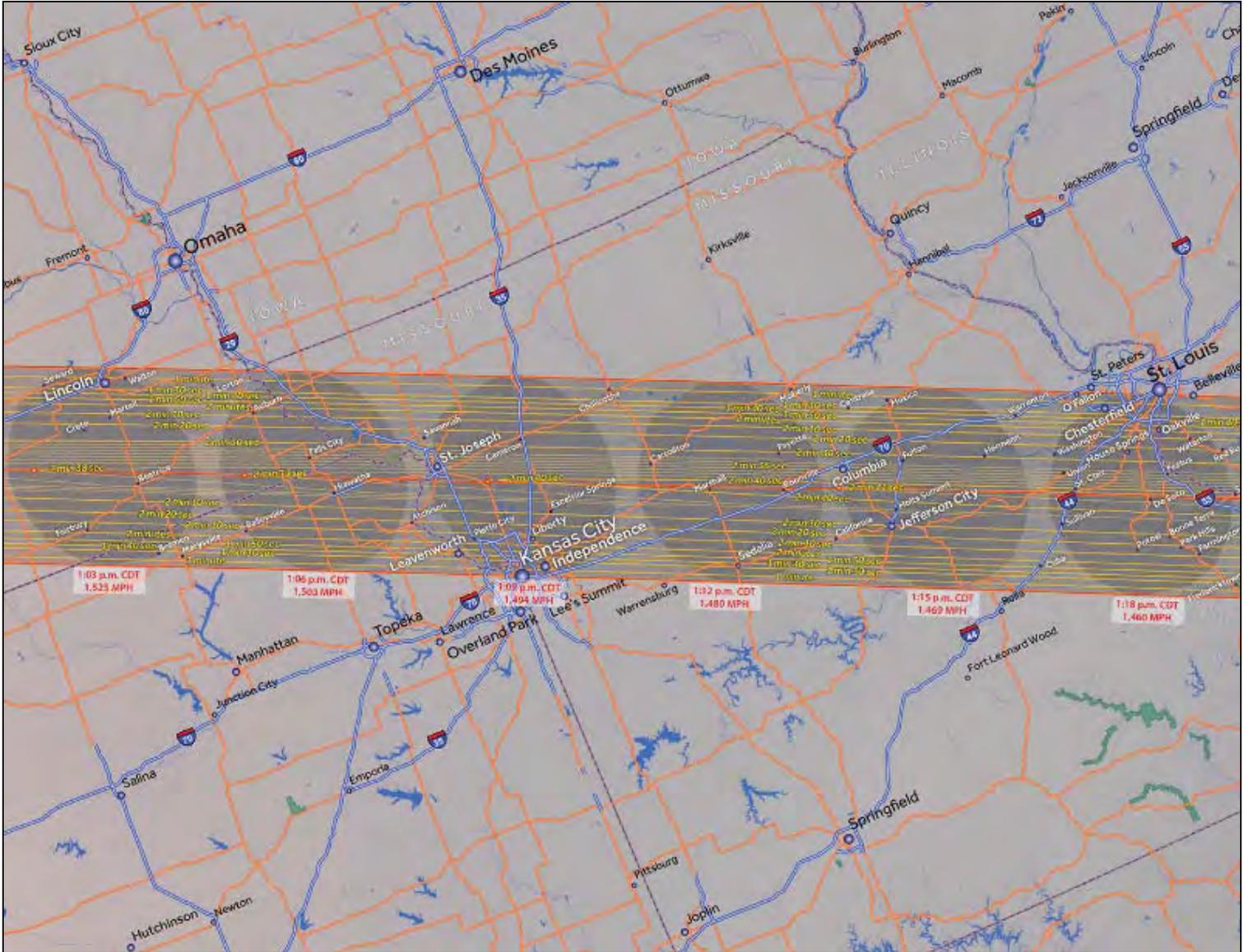


Figure 3. The 21 August 2017 eclipse path around St. Joseph, MO, showing the northern and southern limits as well as the central line of totality's path, where the longest duration of totality will occur along that part of the eclipse path. *Courtesy: Dr. Michael Zeiler and Polly White*

inside the northern and southern limits to see what is sometime referred to as a grazing total eclipse. Even though totality is shorter, observers in these locations see an incredible display of Bailey's beads for an extended time, as the sunlight peeks in and out of lunar mountains and valleys. ALPO member Derald Nye has observed eclipses in this fashion, as have I (July 1972).

Getting to the Potential Site

Part of your site decision might well include how you will travel from your home to the total eclipse path. Will you go to the path

of totality closest to your home? With the best or better weather prospects? Fly to the site? Fly to the site and then rent a car?

Perhaps you'll make this decision after you choose your preferred site or sites. Yet transportation is something to keep in mind. A word of caution here: you do NOT want to take off for your planned observing site the day of the eclipse! Or even the day before the eclipse. Roads will become very crowded, for the most part, and the only reason you will want to be on the road that close to the path of the eclipse is to chase down clear(er) skies. More on that point in

the Weather Prospects section of this article.

Getting to the site is one of those important points to consider now and NOT August 15th. Is your car serviced and ready for the trip? Can you easily take the equipment with you that you would like to use? How about other items, like folding chairs? Who will be traveling with you? Will you need to stop overnight on the way to your selected eclipse site? How will you monitor developing weather prior to the eclipse as you travel to your site, giving you the opportunity to change to an alternate?

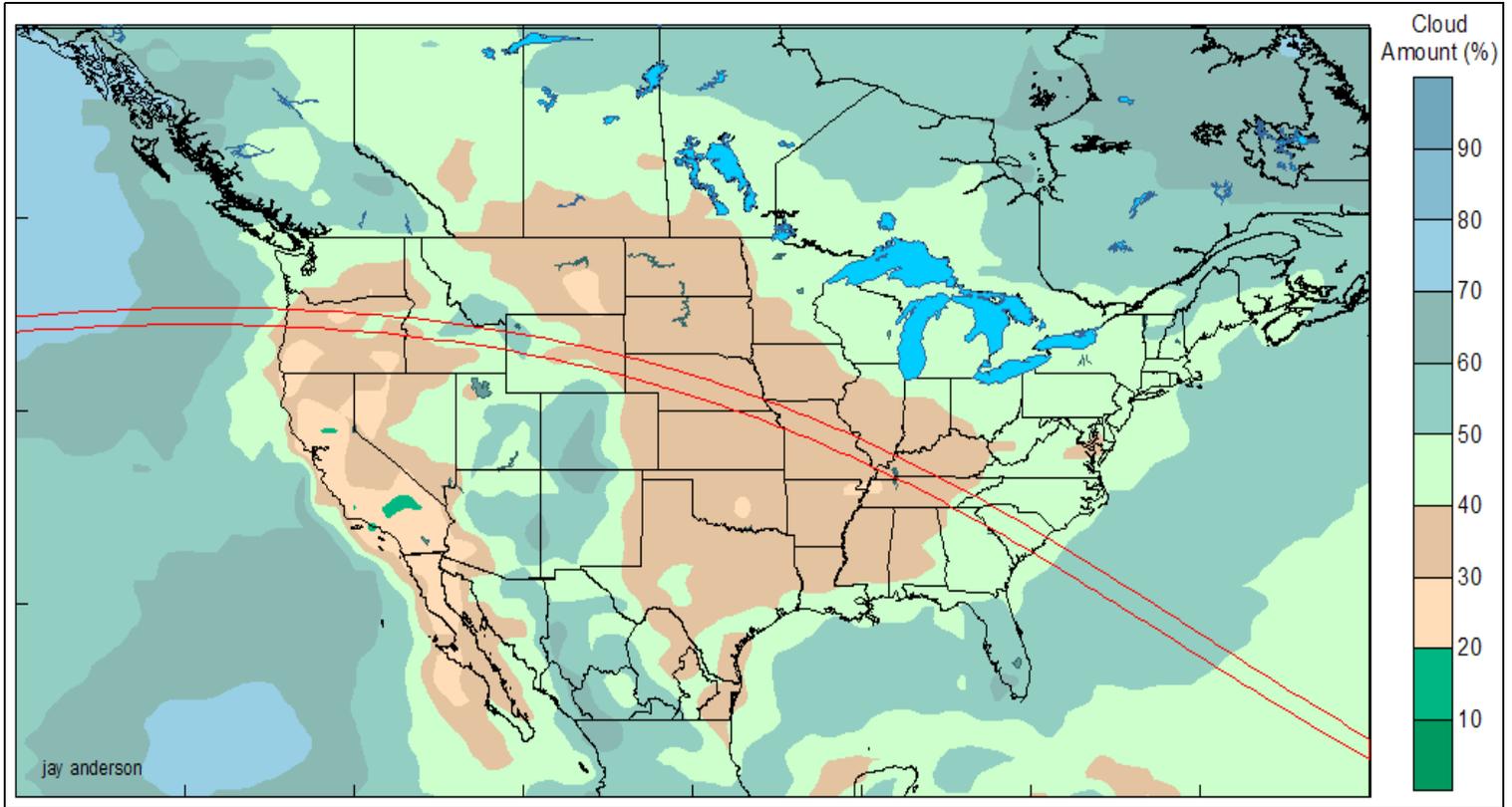


Figure 4. Average August Cloud Amount along the eclipse track. *Courtesy: Jay Anderson.*

Some Continental United States observers will fly to the eclipse. Is there an airport close enough to your selected eclipse site? What are the airline regulations for any equipment you might want to take with you? (A future part of this series will overview equipment options.) Have you reserved a rental car? Are you sharing with someone else?

You might consider other modes of transportation such as Amtrak. Yet know arrival delays are the rule, not the exception.

Accommodations and Other Logistics Such as Food

It might be hard to believe, but there are a number of hotels and camp sites already booked for the eclipse. Once you choose your site, this should be a priority NOW. Since many hotels and properties will consider the eclipse a special event, you might need to book for two or three days minimum. And consider renting a house for a few days or a week; it can be more

economical than a week at a hotel. If you are traveling in a group, a home rental has some real benefits.

Do you need a special diet, or will you survive off of fast-food? One of the advantages of renting a home is that you can use the kitchen if you prefer.

Some folks may need to be close to medical care in case of an emergency. Keep this in mind as you determine your site selection. And do not forget other important personal items, like prescriptions, etc. You do not want to get on a plane or a one-day's drive away and realize you left personal items at home.

The Observer's Safety at the Potential Site

One might not think that personal safety could be an issue, even here in the United States. Overseas we have needed to understand the surroundings and human environment. For example, were we observing from a dry climate? What about being in a country that seems on the verge of civil war? Here we do not have to worry

about the latter (I hope), yet there are neighborhoods you do not want to be caught in at night, even 2½ minutes of darkness. Another reason to get to your planned observing site early and check it out.

What about local wildlife and flora? You do not want to be running from a rattlesnake at mid-totality.

Many will joining others at sites they know are safe, with plenty of resources like water. Just be safe, and keep all of this in mind.

Finally: Weather Prospects

Weather prospects should be one of the variables that drive your site selection. Overall the continental United States has a very good change of most seeing the 2017 total solar eclipse. However you should at least be aware of the annual patterns in the area you have selected.

Retired meteorologist Jay Anderson is one of the very best in understanding eclipse dynamics and weather patterns. His

forecasts have been used over the years by many “umbraphiles”, including me. I first met Jay prior to the 26 February 1979 total solar eclipse, where he told us that we

would enjoy reasonably good skies due to a “trough aloft.”

Keeping up on the local forecasts prior to the eclipse may allow you time to travel to a potentially clearer site if weather forecasts look much better elsewhere. Another reason to have Fred Espenak’s *Road Atlas for the Total Solar Eclipse of 2017*. Understand that the closer you get to the eclipse date, the more-difficult it might be to relocate. And some will want to just “stick it out” at their chosen site anyway.

For the 30 June 1973 total solar eclipse, our group of five decided that we wanted to see a sunrise total solar eclipse with all of the special attributes that come with such a set of circumstances. So we headed to Paramaribo, Suriname, to observe that eclipse. Two days before the eclipse, it became painfully obvious there was no way to see the eclipse due to weather. So we thought outside the box, contracted for a plane and pilot to fly us above the expected 8,000-ft cloud ceiling. We took off, ascended quickly, and easily captured and imaged totality. In those days, flying an eclipse path was thinking outside the box!

Consider the weather prospects if you can. You do not want to do all of this planning and then be clouded out.

In Closing...

The bottom line is plan now! Location, location, location is that first step. We will also review equipment options in a future article in this series.

References

Bill Kramer’s Eclipse Chasers’ Map: <http://www.eclipse-chasers.com/tseCalculator.php?TSE=tse2017d>

Espenak, Fred. *Road Atlas for the Total Solar Eclipse of 2017*. Astropixels Publishing. <http://mreclipse.com/pubs/Atlas2017.html>

Xavier Jubier’s Interactive Map: http://xjubier.free.fr/en/site_pages/solar_eclipses/TSE_2017_GoogleMapFull

Zeiler, Dr. Michael and Polly White. <http://www.greatamericaneclipse.com/>

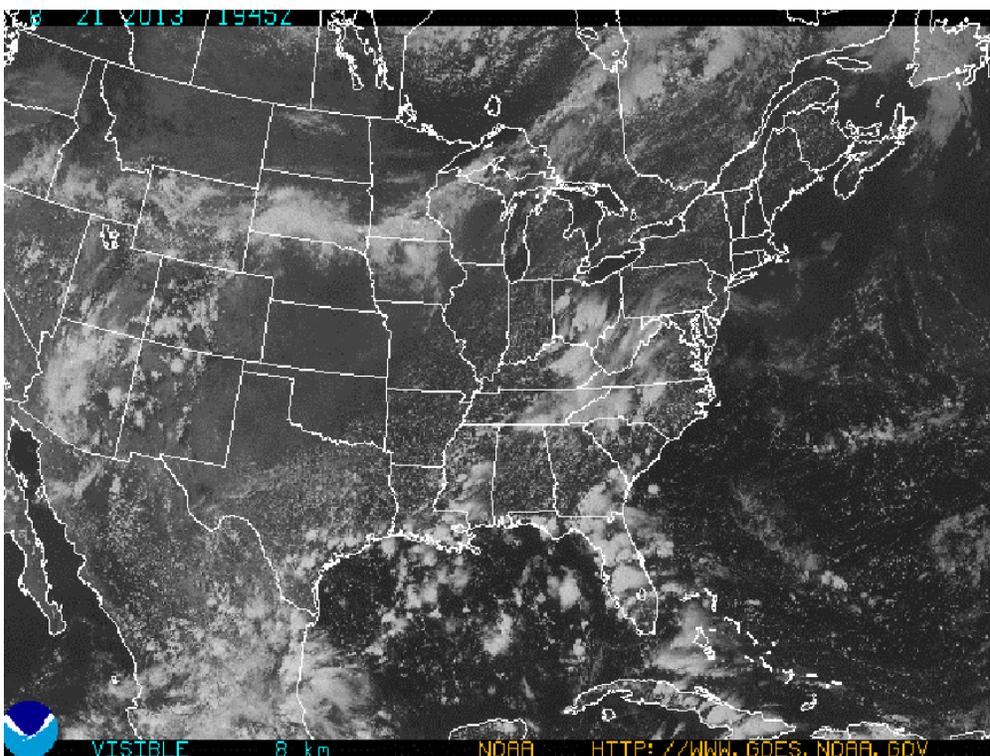
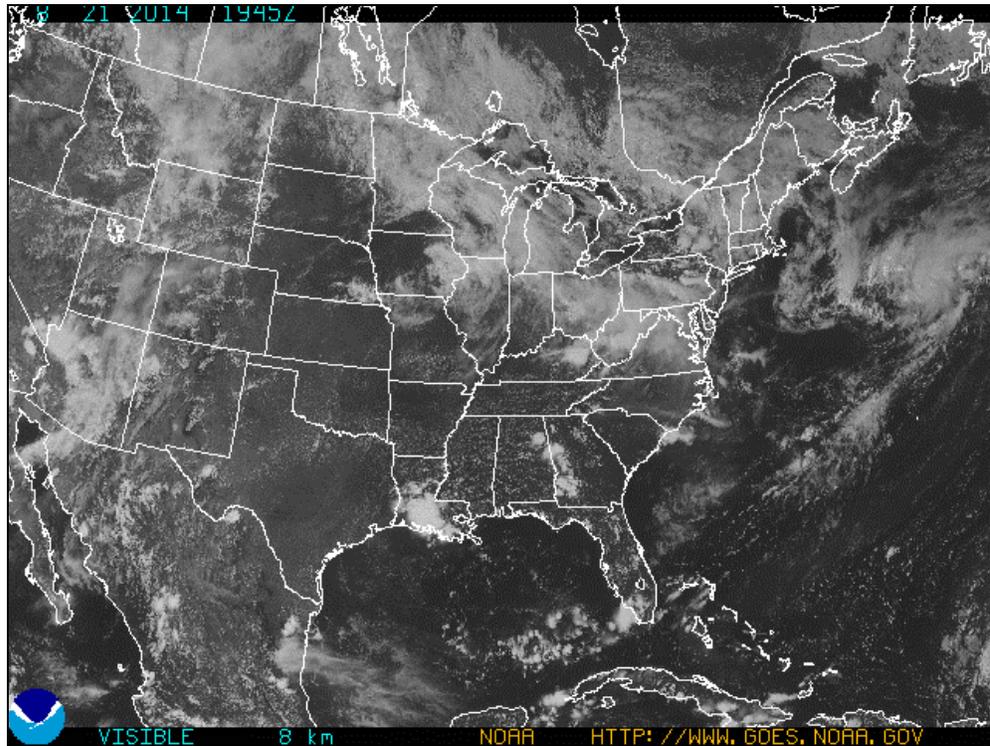


Figure 5. Cloud cover at the time of totality on 21 August 2014 (top) and 21 August 2013 (bottom). GOES Satellites. Courtesy: The National Oceanic and Atmospheric Administration (NOAA).