Doing Our Best to Counter Misconceptions & Misinformation

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Two major solar eclipses are coming to North America! On Saturday, October 14, 2023, an annular ("ring of fire") eclipse sweeps from Oregon to Texas in a 125-mile-wide path that continues to the Yucatán peninsula and northern South America. Six months later, on Monday, April 8, 2024, a total solar eclipse darkens a 115-mile-wide swath from Mexico to Eastern Canada, traversing the U.S. from Texas to Maine in the process. In both cases virtually all of North America will have at least a partial solar eclipse.
Three Types of Solar Eclipses

- **Total eclipse**: The Moon is aligned perfectly with the Sun and Earth, blocking the Sun's light.
- **Annular eclipse**: The Moon is farther away, allowing a ring of sunlight to be visible around the Moon.
- **Partial eclipse**: The alignment is not perfect, resulting in a partially visible eclipse.

Not to scale
Don’t say, “Outside the path, you’ll have a partial solar eclipse. Inside the path you’ll have an annular or total solar eclipse.”

Do say, “Outside the path, you’ll have a partial eclipse. Inside the path, you’ll have an annular or total eclipse with partial phases before and after.”
How an Annular Solar Eclipse Transpires

Outside the path of annularity: No middle image!
Don’t say, “An annual solar eclipse will occur on October 14th.”

Do say, “An annular (‘ring’) solar eclipse will occur on October 14th.”
How a Total Solar Eclipse Transpires

~ 1 hour 15 minutes

Outside the path of totality: *No middle row!*
During a partial or annular (ring) solar eclipse, there is no time when it is safe to look directly at the Sun without proper eye protection. View it only through special-purpose solar filters that comply with the transmittance requirements of the ISO 12312-2 international standard for filters for direct solar viewing.

A total solar eclipse is about as bright as a full Moon — and just as safe to look at. But the Sun at any other time is dangerously bright. View it only through special-purpose solar filters that comply with the transmittance requirements of the ISO 12312-2 international standard for filters for direct solar viewing.
Don’t say, “Never look directly at the Sun without eye protection!”

Do say, “Except during totality, don’t look directly at the Sun without eye protection!”
Americans and the 2017 Eclipse, Jon Miller (U. Michigan):

“Nearly 20 million American adults traveled to a place other than their home city to improve their view of the eclipse and to increase the level of totality observed.”

But...only 31% of them traveled into the path of totality.

There is only one “level of totality”!
You get at least 80% of the center line duration even 60% of the way from the center line to the edge of the path.
Don’t say, “Outside the path you’ll have an X% annular or total eclipse.”

Do say, “Outside the path you’ll have an X% partial eclipse.”
Outside the path of totality:
- Little to no temp. & wind changes
- Little to no behavioral changes
- Little to no shadow bands
- No dramatic brightness changes
- No Baily’s beads
- No diamond ring effects
- No chromosphere & prominences
- No corona (*the main attraction!*)
- No sunset colors around horizon
- No bright stars and planets

Brightness fades by 100x to 1,000x in the last minute or so before totality!

Midday shade
ASE 2023
Overcast day

Change in Apparent Brightness During a Solar Eclipse

Pupils dilate to adjust for gradual dimming.
Don’t say, “An annular or total solar eclipse is a rare event.”

Do say, “It is rare for an annular or total solar eclipse to occur where you live.”
Don’t say, “A total solar eclipse is a once-in-a-lifetime experience!”

Do say, “You should try to see a total solar eclipse at least once in your lifetime!”
Don’t say, “A total solar eclipse is important scientifically.”

Do say, “A total solar eclipse is the most beautiful and genuinely awesome celestial spectacle you’ll ever experience!”
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