

# Mesonet Solar Radiation Description

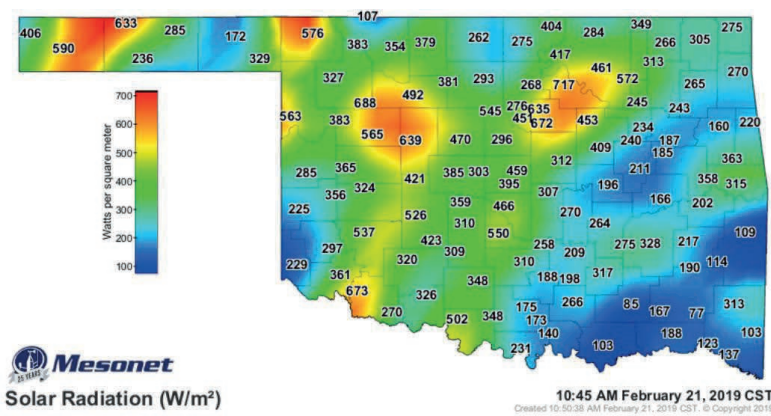


## Solar Insolation

While the word sounds like “insulation” it actually means the amount of sunlight reaching a point. Just above the Earth’s atmosphere at about 100 miles altitude, solar insolation is a fairly constant 1,360 watts per square meter (1,360 W/m<sup>2</sup>). On the Earth’s surface, the solar insolation value depends on: cloudiness, pollution, time of day, season, and other factors such as location. A bright, clear, summer day in Oklahoma might have insolation values as high as 1,000 W/m<sup>2</sup>. However, if we are designing a solar energy system, we should use some type of typical or average value for solar insolation. Mesonet has a wide range of solar radiation data that is very useful in planning.

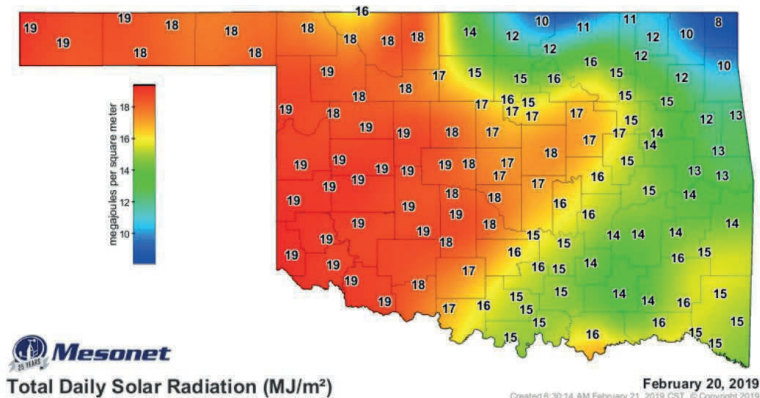
## Solar Radiation (W/m<sup>2</sup>)

This is the amount of sunlight hitting a horizontal surface, updated every five minutes at a particular site scattered about the state, in Watts per square meter. While interesting, this is a snapshot of what is occurring now. One cannot really use this screen and data to plan solar energy systems.



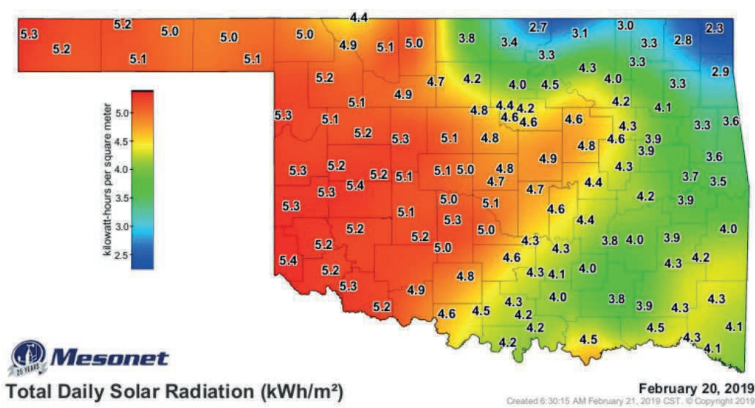
## Total Daily Solar Radiation (MJ/m<sup>2</sup>)

The Total Daily Solar Radiation map displays the integrated solar radiation (MJ/m<sup>2</sup>) for each Mesonet station for the previous day. This map is updated each night. Megajoules (MJ) is an energy unit in the SI measurement system. This map is a bit more useful but still too short a time period (one day) to be of much use in planning solar energy systems.



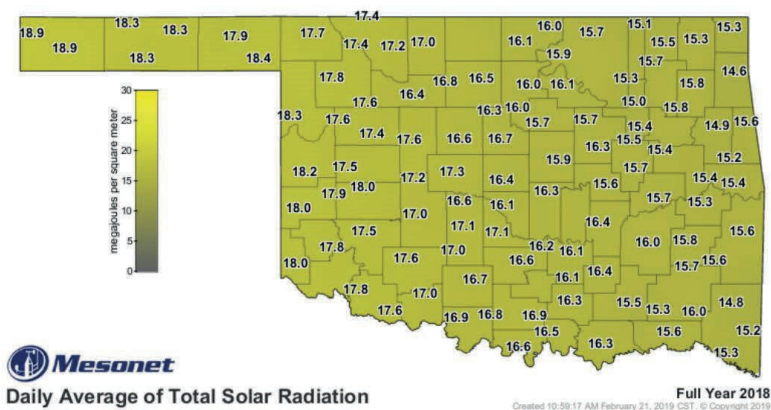
## Total Daily Solar Radiation (kWh/m<sup>2</sup>)

The Total Daily Solar Radiation map displays the integrated solar radiation (kWh/m<sup>2</sup>) for each Mesonet station for the previous day. This map is updated each night. Kilowatt-hours (kWh) is an energy unit in both the SI and Imperial measurement system. This unit of energy is useful in that it can be related to electrical energy. As with the previous maps however, the time period (one day) is a bit too short to be of much use in planning solar energy systems.



## Mesonet Long Term Averages Maps

These maps (Under the “Past Data” drop-down) are useful for designing solar energy systems. The long-term data tells us how much solar energy we might expect over a month, season, or year. Sometimes the actual solar energy will be more or less, but this is our best estimate at how much solar energy is available for planning purposes.



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