

## Models Comparison for Solar Radiation

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**Abstract :** Due to the current high consumption and recent industry growth, the depletion of fossil and natural energy supplies like oil, gas, and uranium is declining. Due to pollution and climate change, there needs to be a swift switch to renewable energy sources. Research on renewable energy is being done to meet energy needs. Solar energy is one of the renewable resources that can currently meet all of the world's energy needs. In most parts of the world, solar energy is a free and unlimited resource that can be used in a variety of ways, including photovoltaic systems for the generation of electricity and thermal systems for the generation of heat for the residential sector's production of hot water. In this article, we'll conduct a comparison. The first step entails identifying the two empirical models that will enable us to estimate the daily irradiations on a horizontal plane. On the other hand, we compare it using the data obtained from measurements made at the Adrar site over the four distinct seasons. The model 2 provides a better estimate of the global solar components, with an absolute mean error of less than 7% and a correlation coefficient of more than 0.95, as well as a relative coefficient of the bias error that is less than 6% in absolute value and a relative RMSE that is less than 10%, according to a comparison of the results obtained by simulating the two models.

**Keywords :** solar radiation, renewable energy, fossil, photovoltaic systems

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