Improved Daily Light Integrals with satellite data

From its introduction forty years ago, the Daily Light Integral (DLI) metric has become an important tool for determining monthly daylight availability for crops and estimating supplemental electric lighting requirements for greenhouses. DLI charts for the continental United States have been available for nearly two decades, but it has only been in the past year or so that DLI information for geographic locations worldwide has been made available through various online DLI calculators.

These calculators however have two disadvantages. First, the DLI calculations for a given location are based on the nearest weather stations for which Typical Meteorological Year (TMY) weather data is available. There are over 1,000 such stations in the United States, but only 1,100 or so for the rest of the world. Argentina, for example, has only one weather station in Buenos Aires.

The second disadvantage is that the world’s climate is changing. Climate-based TMY weather data for a given station location is based on preferably 30 years of continuous hourly weather records. However, rising global average temperatures have resulted in changes to annual cloud cover for given geographic locations. These changes are making 30-year averages for DLI calculations increasingly unreliable.

SunTracker Technologies has responded to this challenge and will be updating its popular free DLI Calculator tool with a new and improved DLI Calculator. The new and improved free online software tool merges ground weather station data with satellite data that provides monthly shortwave (ultraviolet, visible, and near-infrared) incoming radiation for any geographic location. These data are converted from watts per square meter to photosynthetic photon flux density (PPFD) and hence monthly DLI values.

The satellite data is corrected using statistical techniques of comparison between the weather station and satellite datasets. The results are more accurate and reliable DLI values, regardless of the geographic location worldwide.

SunTracker’s DLI Calculator is available at https://www.suntrackertech.com/dli-calculator/. The new and improved version will be released on October 31st, 2020.

For more information:
SunTracker Technologies
www.suntrackertech.com

SunTracker Technologies

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- USD: 1.1810
- DKK: 7.4425
- CHF: 1.0724
- NOK: 10.9698
- ZAR: 19.5245

Foreign exchange reference rates for the Euro
Source: ECB