

NREL updates solar radiation database

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The U.S. Department of Energy's (DOE) National Renewable Energy Laboratory (NREL) and collaborators released a 20-year updated version of the U.S. National Solar Radiation Database, a web-based technical report that provides critical information about solar and meteorological data for 1,454 locations in the U.S. and its territories.

The updated database covers 1991-2010 and includes data from 2006-2010 for the first time. It also features improved cloud algorithms for modeling [solar radiation](#) data, and an improved State University of New York (SUNY) model for gridded data based on satellite observations.

The database, which tracks hourly solar and meteorological parameters, is widely used by solar system designers, building architects and engineers, renewable energy analysts and others to plan, size and site solar electric systems.

The National Solar Radiation Database (NSRD) provides solar resource information to industry in support of central [solar power plant](#) and distributed rooftop feasibility studies, economic analyses and research. The database also underlies other industry data and tools, including NREL's Typical Meteorological Year (TMY) data sets, PVWattsTM calculator, Solar Power Prospector and System Advisor Model (SAM).

The project was completed in collaboration with Clean Power Research and the [National Climatic Data Center](#) (NCDC). This update, which supersedes the 1961-1990 and 1991-2005 NSRDB releases, is available

in three forms:

- A station-based data set at the 1, 454 [Weather Service](#) stations (860 of the stations have serially complete data records).
- A 10 km gridded data set (the Clean Power Research SolarAnywhere® v2.2 product based on the SUNY model) for the continental U.S and Hawaii from 1998-2009 (solar radiation values only). NREL has filled gaps in this data set, and the NSRDB version is serially complete.
- A solar-only enhanced research data set for the 1,454 weather observing stations.

A copy of the 1991-2010 report can be viewed and downloaded without cost on the NCDC website.

The revised National Solar Radiation Database 1991-2010 Update: User's Manual is available on the NREL Renewable Resource Data Center.

The NSRDB solar data fields include global horizontal, direct normal, and diffuse horizontal irradiance. The NSRDB also features a 20-year summary with statistics (monthly/annual, diurnal, and persistence) for the 860 serially complete stations.

NREL has applied uncertainty estimates to each hourly data record to help users determine the suitability of data for each application. Station data are broadly classified based on uncertainty as Class I, II and III. The first two classifications segregate serially complete stations by data of higher and lower quality respectively; Class III stations have data gaps in the period of record, yet hold enough data in the time series to support many applications.

NREL is currently in the process of updating the Typical Meteorological Year data sets using data from the NSRDB update.

Provided by National Renewable Energy Laboratory

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