



Solar Radiation Resource Tools and Data Sources



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ABSTRACT

Many solar radiation resource tools and data are available from several NREL and other world wide web sites. We show examples for NREL modeling tools, including on-line interactive (Google Earth interface based) 10 km gridded solar resource data (global, direct, diffuse) from the NREL SOLAR PROSPECTOR; photovoltaic system energy production models based on PVFORM such as IN MY BACK YARD (IMBY), and two versions of interactive PVWATTS photovoltaic system energy calculators. Downloadable tools include the Solar Advisor Model (SAM) for detailed technical and financial analysis of solar conversion systems. Simple broadband and spectral clear sky models and a global horizontal to direct beam conversion model are available. Historical broadband measured data sets and a database of 3000 spectral measurements under all sky conditions and in various configurations are available. For concentrator applications, the Lawrence Berkley National Laboratory data based of 179,064 circumsolar radiation profile measurements are available. The U.S. National Solar Radiation Data Based (NSRDB) contains measured (less than 1% of the total) and modeled hourly solar data for 239 sites for 1961-1990, for 1140 sites from 1991-2005, and derived Typical Meteorological Years (TMY) for those sites. For 1998-2005 solar data on a 10 km grid derived from satellite imagery is available for the U.S. Free public access solar data is available from other government (NASA, DOE) or university sources. Several commercial providers have a variety of modeled, and sometimes measured, data available.

http://www.nrel.gov/rredc/models_tools.html

http://www.nrel.gov/rredc/solar_resource.html

http://www.nrel.gov/rredc/solar_data.html

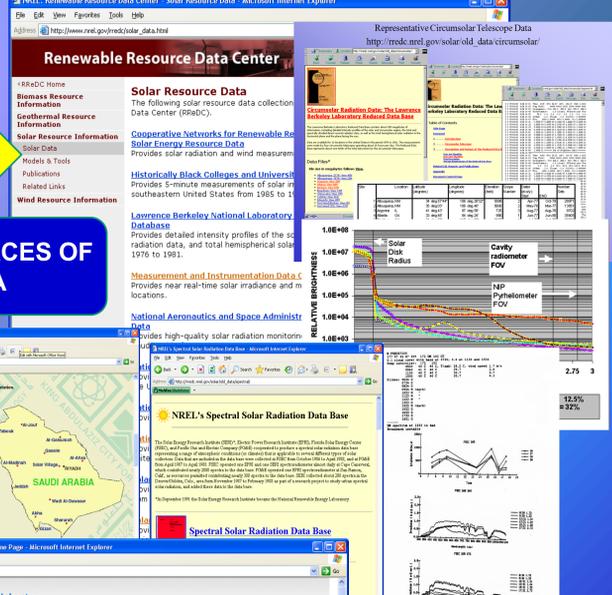


SIMPLE MODELS

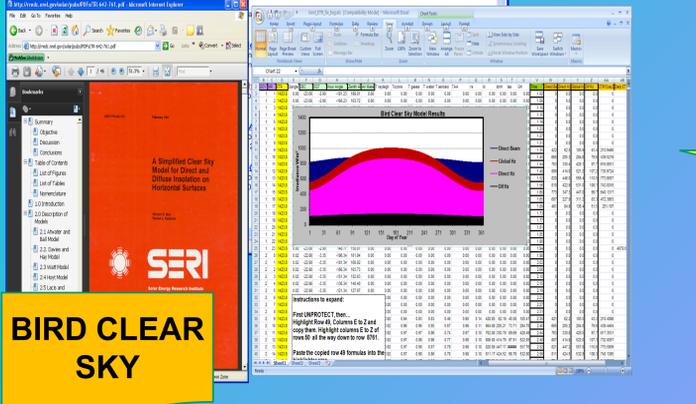


DATA

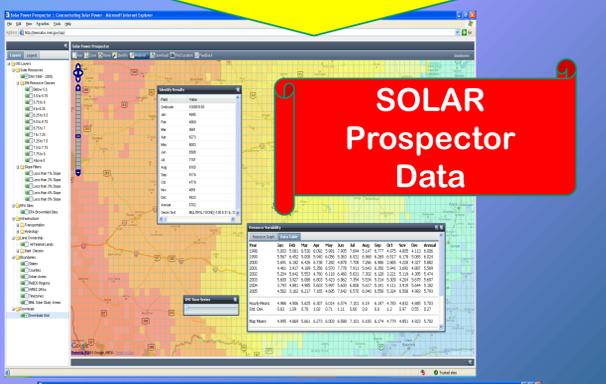
NREL SOURCES OF DATA



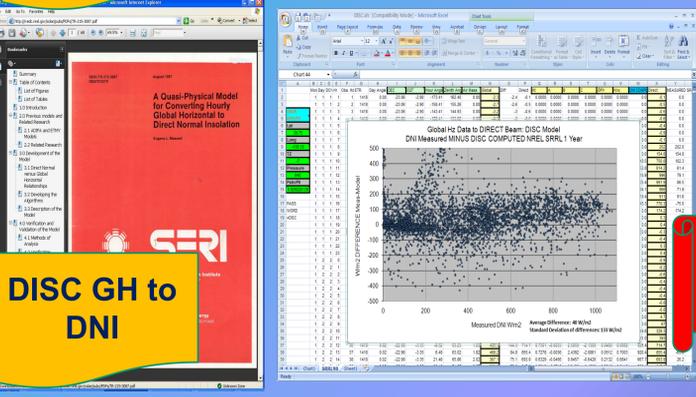
SIMULATION TOOLS AND HIGH SPATIAL RESOLUTION INTERACTIVE DATA



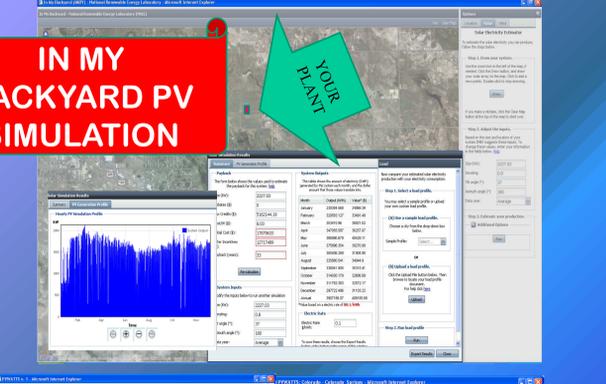
BIRD CLEAR SKY



SOLAR PROSPECTOR DATA

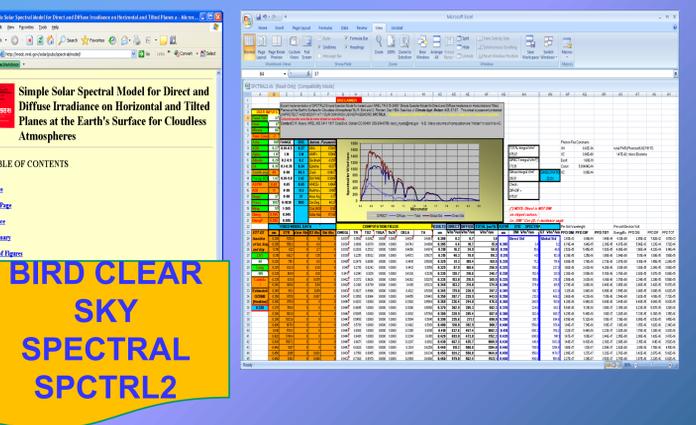


DISC GH to DNI

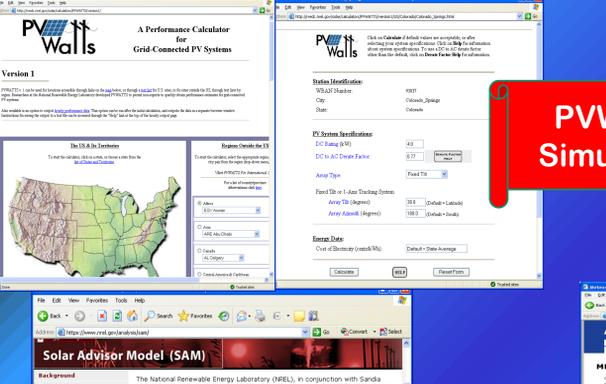


IN MY BACKYARD PV SIMULATION

FREELY AVAILABLE DATA

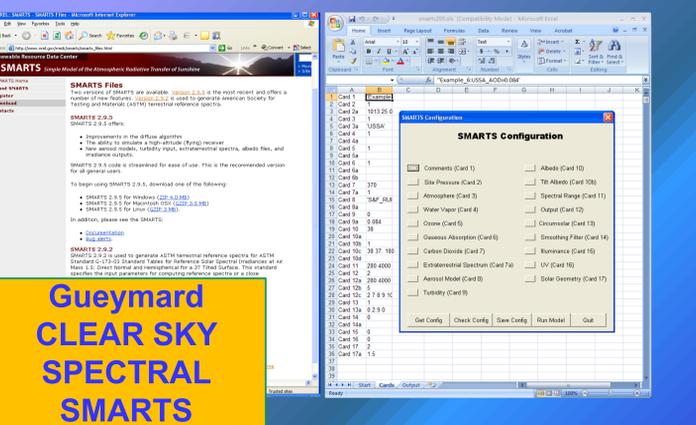


BIRD CLEAR SKY SPECTRAL SPCTRL2



PVWatts Simulation

COMMERCIAL SOURCES OF DATA



Gueymard CLEAR SKY SPECTRAL SMARTS



SOLAR ADVISOR MODEL

