

## Climatological to Near Real Time Global Meteorological Data for Agricultural, Range, and Forestry Applications

Application of Decision Support Systems (DSS) software often requires accurate environmental data on time scales ranging from daily forecasts to long-range climate outlooks. The NASA Science Mission Directorate's Applied Science Energy Management Program provides estimates of many of the required meteorological and solar parameters from a combination of assimilation models and satellite observations. However these data holdings are often in large archives and/or in formats unfamiliar to many potential users. NASA, through its Applications Program, has recognized that many potential data users are either unwilling or lack the resources required to investigate the applicability of these data to their particular application. NASA's Prediction of Worldwide Energy Resource (POWER) is one of NASA's Applications Project that has as one of its objectives the development of user-friendly data products for agricultural applications and to make these products readily accessible to the user community. The POWER project has adapted and reformatted data parameters from NASA Science Directorate sponsored research programs such as the International Satellite Cloud Climatology Project (ISCCP), the Surface Radiation Budget Project (SRB), the Global Precipitation Climatology Project (GPCP), the Tropical Rain Measuring Mission (TRMM) and the meteorological assimilation projects from the Global Modeling and Assimilation Office (GMAO).

The POWER project currently provides a database of meteorological parameters and surface solar energy fluxes on a global 1-degree latitude/longitude grid. The agricultural data products currently available through a prototype web based information interface (<http://power.larc.nasa.gov>), consist of daily integrated surface solar radiation, daily averaged dew point temperature, daily maximum and minimum temperatures, and daily precipitation. The solar data has been inferred from satellite observations that cover the time period from July 1, 1983 through December 31, 2004 (soon to be extended to June 30, 2005) and from July 1, 2006 through current time with a one-month delay; the temperature and dew point parameters are from the Goddard Earth Observing System (GEOS) version 4 analyses, and cover the time period from January 1, 1983 through current time with a one-month delay; and the daily averaged precipitation is based upon a merge of the GPCP and TRMM data files and cover the time period from January 1, 1997 through current time with a two-month delay.

Results of validation studies for each of the parameters contained in the POWER web site will be presented that illustrate the strengths and weakness of the satellite/model meteorological and solar parameters. In particular, the POWER parameters have been compared to observations from a range of ground stations with particular emphases on results from automated weather stations that are often found in the US in agricultural, range, and forestry environments.

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