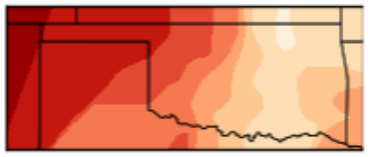


AMS 2013-2014 Solar Energy Prediction Contest

Forecast daily solar energy with an ensemble of weather models

$1,000 · 160 teams · 4 years ago

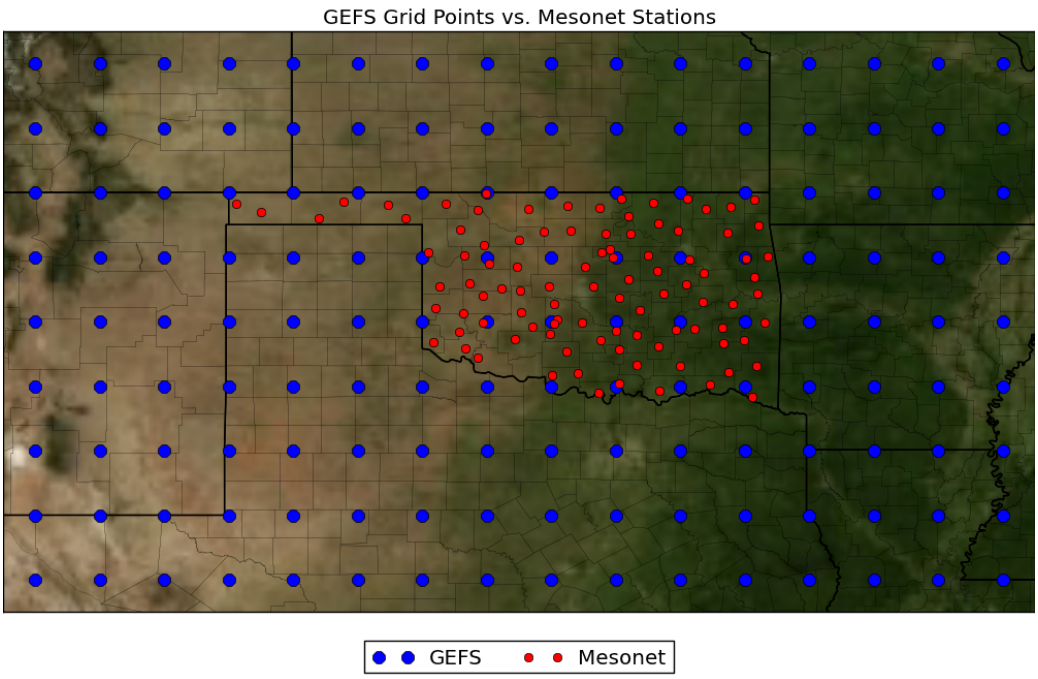
Overview

Welcome to the American Meteorological Society 2013-2014 Solar Energy Prediction Contest! This contest is organized by the American Meteorological Society Committees on Artificial Intelligence Applications to Environmental Science, Probability and Statistics, and Earth and Energy. Prizes are sponsored by EarthRisk Technologies, Inc.

Motivation

Renewable energy sources, such as solar and wind, offer many environmental advantages over fossil fuels for electricity generation, but the energy produced by them fluctuates with changing weather conditions. Electric utility companies need accurate forecasts of energy production in order to have the right balance of renewable and fossil fuels available. Errors in the forecast could lead to large expenses for the utility from excess fuel consumption or emergency purchases of electricity from neighboring utilities. Power forecasts typically are derived from numerical weather prediction models, but statistical and machine learning techniques are increasingly being used in conjunction with the numerical models to produce more accurate forecasts.

Objective



The goal of this contest is to discover which statistical and machine learning techniques provide the best short term predictions of solar energy production. Contestants will predict the total daily incoming solar energy at 98 Oklahoma Mesonet sites, which will serve as "solar farms" for the contest. Input numerical weather prediction data for the contest comes from the NOAA/ESRL Global Ensemble Forecast System (GEFS) Reforecast Version 2. Data include all 11 ensemble members and the forecast timesteps 12, 15, 18, 21, and 24. Locations of the Mesonet sites relative to the GEFS data are shown in the above figure. Training data will come from 1994-2007. Public testing data will be from 2008-2009. Private testing data for a more recent period will be used for the final evaluation.

Acknowledgements

Daily solar energy data were provided by the Oklahoma Mesonet with the assistance of Dr. Jeffrey Basara. The GEFS Reforecast Version 2 data were developed and provided by Dr. Thomas Hamill. The contest is being administered by David John Gagne and Dr. Amy McGovern of the University of Oklahoma.

About Our Sponsor

EarthRisk Technologies creates a market advantage for its clients by uniquely quantifying weather data. Our company is a research pioneer that analyzes extreme weather risk at lead times longer than one week. Our techniques enhance competitive business decisions. TempRisk, the company's first product suite, is a web-based platform that utilizes historical data, machine learning and predictive analytics to project risk for extreme winter cold and summer heat up to 40 days before it occurs. These patent-pending algorithms were developed in conjunction with Scripps Institution of Oceanography at the University of California San Diego. Energy producers and commodity investment firms currently employ TempRisk in their daily

operations. Our customers require a uniquely objective quantitative methods for extreme event prediction. Our products are continuously developing thanks to ongoing support from customer-partners including large energy companies, investment firms, and reinsurance advisors.

EarthRisk's leadership team is excited to be deeply engaged with the American Meteorological Society. In addition to our engagement with the Committee on Artificial Intelligence Applications to Environmental Science, we're also active on the AMS Energy Committee, the Board on Private Sector Meteorology, the Financial Weather/Climate Risk Management Committee, and the Weather Enterprise Economic Evaluation Team. We have a true passion for advancing meteorological methods through the intelligent application of technology and are proud to be part of the Solar Energy Prediction Contest!

Leaderboard

1 Leustagos & Titericz
2 Odeillo
3 Owen
4 Tree growers
5 Skyrocket Team
6 Duffman
7 akhenaten
8 BS Man & Paul Duan

50 discussion topics

test data - measured data at mesonets
0 replies · 3 months ago

Contest Data Citation
0 replies · 6 months ago

Publishing our work
9 replies · 2 years ago

understanding data
27 replies · 2 years ago

Moar starter code and a NetCDF4 tutorial
11 replies · 3 years ago

Launch
4 years ago

Close
4 years ago

4 years ago
Rules Acceptance Deadline

160 Teams
199 Competitors

Points **This competition awarded standard ranking points**
Tiers **This competition counted towards tiers**