

## Kuwait solar energy research and development

NCAR's Renewable Energy Forecasting for Kuwait project, a 3-year, \$5.1M project sponsored by the Kuwait Institute for Scientific Research (KISR) (<https://news.ucar/126802/ncar-develop-advanced-wind-and-solar-energy-forecasting-system-kuwait>), began in July 2017.

The ultimate goal of this project is to deliver to KISR an operational wind and solar power forecasting system, for both nowcasting and day-ahead time horizons (and beyond), with which they can provide forecasts to their national power grid operators and wind/solar power plant operators. The forecasting system is called the Kuwait Renewable Energy Prediction System (KREPS).

Kuwait has a stated national goal of 15% renewable energy generation by 2030, and to that end has established the Shagaya Renewable Energy Park in the desert about 100 km west of Kuwait City. Phase 1 of Shagaya is now complete, with demonstration-scale 10-MW photovoltaic (PV) solar (Figure 1) and 10-MW wind plants (Figure 2) that were commissioned in May 2017, and a 50-MW concentrated solar power (CSP) plant (Figure 3) that was commissioned in December 2018. The official Grand Opening for the Shagaya Renewable Energy Park was held in February 2019.

Several conference presentations and journal papers have already been submitted that stem from research accomplished on this project (click on the Resources tab to see a list of these references), and many more are planned through 2019 and 2020.

Alessandrini, S., S. Sperati, and L. Delle Monache, 2019: Improving the analog ensemble wind speed forecasts for rare events. *Mon. Wea. Rev.*, conditionally accepted and in revision.

Al-Rasheedi, M., C. A. Gueymard, A. Ismail, and T. Hussain, 2018: Comparison of two sensor technologies for solar irradiance measurement in a desert environment. *Sol. Energy*, 161, 194-206, <https://doi/10.1016/j.solener.2017.12.058>.

Brummet, T., J. A. Lee, and G. Wiener, 2019: The relationship between GHI and power in Kuwait. 10th Conf. on Weather, Climate, and the New Energy Economy/18th Conf. on Artificial and Computational Intelligence and its Applications to the Environmental Sciences. Phoenix, AZ, Amer. Meteor. Soc., J3.4, <https://ams.nfex/ams/2019Annual/meetingapp.cgi/Paper/350578>.

Gueymard, C. A., and P. A. Jimenez, 2018: Validation of real-time solar irradiance simulations over Kuwait using WRF-Solar. 12th Int. Conf. on Solar Energy for Buildings and Industry (EuroSun 2018). Rapperswill, Switzerland, Int. Solar Energy Soc., 2.A-1, <https://doi/10.18086/eurosun2018.09.14>.

McCandless, T. C., and S. E. Haupt, 2019: The super-turbine wind power conversion paradox: Using machine learning to reduce errors caused by Jensen's Inequality. Wind Energy Sci. Discuss., in review, <https://doi.org/10.5194/wes-2018-74>.

Naegele, S. M., T. C. McCandless, S. E. Haupt, G. S. Young, and S. J. Greybush, 2019: Climatology of Wind Energy Variability for the Kuwait Region. 10th Conf. on Weather, Climate, and the New Energy Economy/18th Conf. on Artificial and Computational Intelligence and its Applications to the Environmental Sciences. Phoenix, AZ, Amer. Meteor. Soc., 10.2, <https://ams.confex.com/ams/2019Annual/meetingapp.cgi/Paper/352390>.

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Web: <https://www.somethingtasty.co.za/contact-us/>

Email: [energystorage2000@gmail.com](mailto:energystorage2000@gmail.com)

WhatsApp: 8613816583346

