

Indian Solar Radiation Atlas is launched

On 3 June 2015, the National Institute of Wind Energy (NIWE), Chennai has launched the Indian Solar Radiation Atlas – an on-line GIS-based information portal to facilitate expansion of the solar energy sector in the country. NIWE is a research institute under the Ministry of New and Renewable Energy (MNRE), Government of India (GoI). The Solar Radiation Resource Assessment (SRRA) wing of the NIWE is responsible for setting up and maintaining ground stations at different States and Union Territories in the country (Figure 1). The Solar Radiation Measuring Network, now with a strength of 121 ground stations, was initially started with the Solar Mapping and Monitoring (SolMap) Project, supported by the German Federal Ministry for the Environment, under the International Climate Initiative^{1,2}. These ground stations are located mostly at technological universities and engineering colleges across the states. SolMap Project facilitated setting up the Solar Radiation Measuring Network and later the development of

this Atlas. SRRA has technically collaborated with the German International Cooperation (GIZ), under the Indo-German Energy Programme, and also received technical assistance from Germany-based Suntrace.

These ground stations are part of the Solar Radiation Measuring Network that periodically measures the three parameters of solar radiation, namely global horizontal irradiance (GHI), direct normal irradiance (DNI) and diffuse horizontal irradiance (DHI). These are highly accurate measures of solar radiation in a particular region. The Atlas presently indicates the annual average values of GHI, DNI and DHI, along with the administrative details of the ground stations. It also provides details of solar resources at any location with 3 km × 3 km spatial resolution. The solar radiation data, collected from the ground stations, are also subject to validation and combination with satellite-derived estimates collected from the Meteosat-5 and Meteosat-7 satellites.

The National Solar Mission now sets a revised target of adding 100,000 MW of solar power to the national power grid by 2022 (ref. 3). Consequently, MNRE, GoI is making a target of capacity addition of 15,000–17,000 MW in solar energy in 2015–16. The Atlas will help in identifying most preferred locations for solar power development across the country. It will also help in determining the energy production. It also supports risk assessment with an estimate of inter-annual variability data. The Atlas is expected to be an important tool for the policymakers, solar power developers, planners of the state solar parks, investors, and financial institutions involved in renewable energy. The Atlas is available at http://niwe.res.in/indian_solar_atlas.php of http://niwe.res.in/departmentsrra_solar_map.php.

A district-level geo-specific record includes a structured detail of information such as latitude, longitude, elevation, annual average values of GHI, DNI and DHI, values of relative humidity, air temperature, wind speed, wind direction, rain accumulation and atmospheric pressure. Data on many of these parameters can be utilized for planning and deployment of other kinds of renewable energy sources. The future researchers can also use data derived from this Atlas for assessing impact of solar radiation in climate change, and its impact on the environment, ecology and society.



Figure 1. Solar Radiation Resource Assessment network of ground stations.

1. Kumar, A., Gomathinayagam, S., Giridhar, G., Mitra, I., Vashistha, R., Meyer, R. and Chhatbar, K., *Energy Procedia*, 2014, **49**, 2351–2361.
2. Mitra, I., Chhatbar, K., Kumar, A., Giridhar, G., Vashistha, R., Meyer, R. and Schwandt, M., *Int. J. Renew. Energy Dev.*, 2014, **3**(3), 207–216.
3. Press Information Bureau, Revision of cumulative targets under National Solar Mission from 20,000 MW by 2021–22 to 1,00,000 MW, 2015; <http://pib.nic.in/newsite/PrintRelease.aspx?relid=122566>

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