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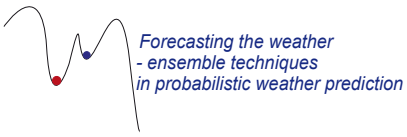

Uncertainty Evaluation of Data Sources for Resource Assessment in Solar Power

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This contribution deals with the evaluation of different available data sources, commonly employed in the solar power industry during the assessment of promising project sites, regarding their suitability for concentrating solar power projects.

Solar radiation and further meteorological parameters are an important input factor for reliable production forecasts of solar energy projects. For concentrating solar power applications only the direct normal (beam) component is required which is traditionally measured at few locations and hardly obtainable with sufficient accuracy by modelling. However, the resource estimation has a decisive influence on the suitability of a project site and consequently on the feasibility of the whole venture. Under this context, it is important to acquire the needed data not only at a high spatial and temporal resolution but also with highest possible accuracy. In order to evaluate the impact of the accuracies attached to each data set on the estimated production and consequently on the potential project revenues, a thorough assessment of the uncertainties, trends and variability has to be performed.

At the different development steps of a project, different data sets with varying accuracy are employed. The target in this work is to gain an overview on these data sources considering their different acquisition methods and level of detail. Basis of the evaluation are ground measurements on-site and modelled data sets based on remote sensing products, numerical weather models, and large scale measurement networks. Most of the modelled data sets were developed and tested for specific markets in the Western part of the Mediterranean and MENA region. The results of this work can provide a statement on the transferability and applicability of these models and data products on other locations in the Eastern Mediterranean. With the results obtained by comparing the different data sets regarding absolute values, frequency distribution and accuracies, conclusions are drawn on the current industry practice for solar measurement campaigns and methods for accuracy evaluations currently under discussion in the energy meteorology community.