



Cloud physical parameters for an improved solar power plant site selection and characterisation

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Solar energy users nowadays use METEOSAT-based surface solar irradiance retrievals to assess the long-term irradiance conditions at a potential power plant site while cloud climatologies are typically not used. Within the planning of a solar power plant and the local electricity grid integration a number of technical parameters as e.g. tilt angle and battery storage for photovoltaics, storage size for concentrating thermal power plants, power inverter response curves, or thin film characteristics have to be chosen.

Meteosat Second Generation satellites provide the opportunity to calculate cloud physical parameters like cloud type, cloud height, cloud optical depth and scattered cloud indices like fractal box dimensions. It is an upcoming research question how cloud climatologies and knowledge on cloud physical parameters can be used in the solar power plant planning phase. This paper discusses approaches as quantifying e.g. the typical duration of low production phases as a result of cloudiness, the direct to diffuse ratio at a location, the discrimination of bright and dark overcast situations, or the discrimination of scattered, broken and isolated cloud situations.