



Comparison between satellite and instrumental solar irradiance data at the city of Athens, Greece

Yannis Markonis, Thanos Dimoulas, Athina Atalioti, Charalampos Konstantinou, Anna Kontini, Magdalini-Io Pipini, Eleni Skarlatou, Vasilis Sarantopoulos, Katerina Tzouka, Simon Papalexiou, and Demetris Koutsoyiannis
National Technical University of Athens, Greece (imarkonis@itia.ntua.gr)

In this study, we examine and compare the statistical properties of satellite and instrumental solar irradiance data at the capital of Greece, Athens. Our aim is to determine whether satellite data are sufficient for the requirements of solar energy modelling applications. To this end we estimate the corresponding probability density functions, the auto-correlation functions and the parameters of some fitted simple stochastic models. We also investigate the effect of sample size to the variance in the temporal interpolation of daily time series. Finally, as an alternative, we examine if temperature can be used as a better predictor for the daily irradiance non-seasonal component instead of the satellite data.

Acknowledgement: This research is conducted within the frame of the undergraduate course "Stochastic Methods in Water Resources" of the National Technical University of Athens (NTUA). The School of Civil Engineering of NTUA provided moral support for the participation of the students in the Assembly.