EMS Annual Meeting Abstracts
Vol. 13, EMS2016-167, 2016
16th EMS / 11th ECAC

Solar irradiation variability over Iberian Peninsula for electricity generation: RCM analysis regarding aerosols implications

Claudia Gutiérrez (1), Miguel Ángel Gaertner (2), Clemente Gallardo (2), and Victoria Gil (1)

(1) Instituto de Ciencias Ambientales, Universidad de Castilla-La Mancha, TOLEDO, Spain (claudia.gutierrez@uclm.es), (2) Facultad de Ciencias Ambientales y Bioquímica, Universidad de Castilla-La Mancha, TOLEDO, Spain

The aim of this work is to analyze spatiotemporal features of solar irradiation due to the importance of a good understanding of them for solar industry. It becomes essential in a society committed to a CO_2 emissions reduction and with a big share of solar energy in the electricity mix-generation.

Scarcity of well-spread measurements and observational datasets of solar global irradiation has made the satellite and modelled data an alternative for resource assessment. Not only the amount of solar radiation in an area is important, but also variability in different time scales is one of the main interests for the stakeholders in the electricity generation sector.

In addition, implications of aerosols in photovoltaic electricity generation are not negligible and must be taken into account. Due to that, simulations with a comprehensive analysis of AOD climatology are used in this study.

An analysis of variability of solar irradiation over the Iberian Peninsula in different time scales has been done in this work. Clustering techniques are used to facilitate the analysis in the domain, and relationships of complementarity between different spatial clusters are also investigated, given their relevance for electricity management in the transport network.