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# Impacts of aerosols in photovoltaic energy production in the Mediterranean area for climate time scales

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## Résumé

Due to the increase of renewable technologies for electricity production, an exhaustive assessment of the resources and its variability in different time scales is of special interest for the stakeholders of the energy sector.

Regarding variability, photovoltaic technology electricity production is affected mainly by two factors: cloudiness and aerosols. Clouds are generally the principal source of variability of solar resource but in clear sky conditions, aerosols become the cause of the drop in photovoltaic electricity production.

The aim of this work is to evaluate the impact of aerosols in the space-time variability of photovoltaic production in the Mediterranean area. The influence of aerosols and its changes in electricity production, as well as its influence in future scenarios, is evaluated with several climate simulations with different representations of the aerosols included. These different climate simulations are needed to cover the different time scales affected by aerosols and to evaluate future projections. Besides, a photovoltaic production model is needed to obtain the electricity output.

This work shows the close link between climate and the renewable energy sector, focused in this case on the photovoltaic energy and it highlights the importance of this climate time scales for the management of the electricity system, planning operations or bankability studies.

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