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## Direct normal irradiance forecasting on one hour-ahead under partially-cloudy sky conditions through Meteosat second generation satellite images

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Predicting atmospheric features is a key to managing solar plants and is therefore necessary for correct electrical grid management. An unexpected atmospheric change can provoke a range of problems related to various solar plant components affecting the electricity generation system and, in consequence, causing alterations in the electricity grid. Mainly, changes are produced by cloud transients that make that solar radiation decrease a lot in a short temporal space. For that reason, to have the knowledge about future alterations in the solar resource is very important to avoid problems in the components of solar power plants and in the electricity integration into the electrical grid. In this work, a methodology based on remote sensing techniques has been developed to predict Direct Normal Irradiance (DNI) for one hour ahead, in 15 minutes periods, where Meteosat Second Generation satellite images were processed to identify cloud motions and to predict the DNI according to these motions. Normalized root-mean square error (nRMSE) presented a value of about 30% from 15 minutes to one hour.

### Biography

Joaquín Alonso Montesinos has completed his PhD from the University of Almería, Spain and Post-doctoral studies from the same University. He is member of a research group 'Solar Energetic Resources, Climatology and Atmospheric Physics' at the University of Almería. He has published more than 10 papers in reputed journals, has authored and coauthored different conference papers, both national and international, and has participated in different projects related to solar radiation. Furthermore, he is serving as reviewer in different impact journals.

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