Assessing the solar potential of roofs in Valparaíso (Chile)

Authors
Dahyann Araya-Muñoz, Danilo Carvajal, Alejandro Sáez-Carreño, Samir Bensaid, Esteban Soto-Márquez

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Description
A computer routine was created with the aim of estimating the solar energy potential in an urban area of Valparaiso (Chile) constituting 366 houses, characterized by a high heterogeneity of roofing in terms of geometry and spatial orientation. The program routine is able to provide useful data for large scale assessment of domestic solar which includes the total hourly instantaneous solar radiation received on every roof for each hour of the year, as well as the yearly total solar radiation considering the roof geometry, tilt angle and orientation. To this end, aerial photographs were taken and topographic groundwork was carried out to produce a spatial-geometry database of the houses, which, together with local meteorological data, was used as numerical input to produce solar radiation mapping of the analysis zone. The results reflect the effect of the high heterogeneity of the input data for tilt angle, orientation and …