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Volume XXXVIII-3/W22

ESTIMATION OF SOLAR RADIATION ON BUILDING ROOFS IN MOUNTAINOUS AREA

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Keywords: Photovoltaic potential, 3D buildings, Data integration, GRASS GIS, Photogrammetry, LiDAR, Terrain model

Abstract. The aim of this study is estimating solar radiation on building roofs in complex mountain landscape areas
multi-scale solar radiation estimation methodology is proposed that combines 3D data ranging from regional scale to
architectural one. Both the terrain and the nearby building shadowing effects are considered. The approach is modu
and several alternative roof models, obtained by surveying and modelling techniques at varying level of detail, can
embedded in a DTM, e.g. that of an Alpine valley surrounded by mountains. The solar radiation maps obtained from
raster models at different resolutions are compared and evaluated in order to obtain information regarding the bene
and disadvantages tied to each roof modelling approach. The solar radiation estimation is performed within the ope
source GRASS GIS environment using r.sun and its ancillary modules.

Conference Paper (PDF, 1674 KB)

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