

Calculation of potential solar radiation from geomorphologic information for snow melting estimation

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This paper concerns the improvement of solar radiation estimation at a water basin, considering not only the latitude, but also the specific geomorphologic characteristics of the area. A Geographical Information System (GIS) is used in order to calculate the potential solar radiation to each basin cell, for each hour of a mean year. The solar altitude and azimuth, the aspect and azimuth of all basin cells and the shadow effects due to the geomorphology, are considered for the calculations. The hourly estimations are integrated to daily, monthly and yearly basis in order to compare the potential solar radiation of different basins. Also the procedure can be used for the estimation of the true received radiation considering point measurements of solar radiation. This information is extremely useful in order to understand and predict the snow melting process at mountain basins.