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Towards a climatology of surface incoming solar radiation over the Benelux by merging long time series of Meteosat-derived estimations and ground-based measurements

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Appropriate information on solar resources is very important for a variety of technological areas, such as: agriculture, meteorology, forestry engineering, water resources and in particular in the designing and sizing of solar energy systems. Because ground-based measurements of solar radiation are usually scarce, several methods have been proposed to estimate the solar radiation incoming on a horizontal surface at ground level from images taken by satellites, and in particular by geostationary satellites.

In this contribution, we present a new climatology of surface incoming global solar radiation over the Benelux based on the first long time series (1983-2005) of Meteosat-derived solar irradiance recently released by the CM-SAF and ground-based measurements. Merging ground and satellite data enables to take advantage of both the high accuracy of ground data and the global spatial coverage of satellite information.