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30 years of Swedish Solar Radiation Observations

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Since 1983 a network of automatic solar radiation stations is operated by SMHI (The Swedish Meteorological and Hydrological Institute). The stations are located at latitudes between 55.7°N and 67.8°N and global and direct irradiance are measured. During the 30 year period 1983-2012, for which a good quality and homogenous radiation database has been recorded, some clear features in the surface radiation climate show up. From the start in 1983 until the first years of the 21st century there was a positive trend in global radiation at all stations. The peak was in 2002 for individual years, while a 10-year moving average currently peaks around 2005. Averaged over all stations the trend until 2005 was about +4 Wm-2/decade. This was due to a strong increase in the mean direct (horizontal) radiation of +5 Wm-2/decade, which out-weighted the slight negative trend in mean diffuse radiation of about -1 Wm-2/decade. After 2005, the "solar brightening" period reported from many parts of the world, appears to have ended over Sweden.