On the 21-years HelioClim-1 database of daily values in solar radiation for Europe and Africa

B. Espinar and L. Wald

MINES ParisTech, Sophia Antipolis cedex, France (lucien.wald@mines-paristech.fr)

Images from the Meteosat satellites offer a synoptic view of the clouds over Europe and Africa and can be used to assess the surface solar irradiance (SSI). The HelioClim-1 database, abbreviated in HC-1, contains daily means of SSI for the period 1985–2005. It has been created from archives of images of the series of geostationary Meteosat First Generation satellites. The agreement of HC-1 with the corresponding measurements made at ground in the World Meteorological Organization network has been reported by several studies and is good as a whole. HC-1 can be used to provide a first description of the change in SSI over the 21 year period, thus palliating gaps in ground-based measurements. If an accurate sort of calibration function can be found between existing HC-1 values and measurements, then HC-1 values can be transformed into an accurate and complete time-series reproducing the measurements. The HC-1 database may help in qualifying ground-based measurements by showing noticeable drifts in measurement quality. The HC-1 data can be retrieved by users from the SoDa Service (www.soda-is.com), freely without registration. The Global Earth Observation System of Systems (GEOSS) has created the GEOSS Data Collection of Open Resources for Everyone (GEOSS Data-CORE) which is a distributed pool of documented data sets with full, open and unrestricted access at no more than the cost of reproduction and distribution. HC-1 has been identified as a Data-CORE by the GEOSS in November 2011. HC-1 supports research and business by providing data of known quality on surface solar irradiance. Several examples of use of HC-1 were found in scientific journals in various domains: agriculture, air quality, architecture, climate, electricity production, forestry, human health, oceanography and solar energy. Approximately 100000 requests to HC-1 were made by users in 2012. This number demonstrates the usefulness of HC-1.